REQUEST FOR QUALIFICATIONS AND PROPOSAL FOR CONSULTING SERVICES TO DEVELOP A COMPREHENSIVE STORMWATER MASTER PLAN FOR THE TOWN OF JOHNSTOWN, COLORADO

FEBRUARY 16, 2024

RFP 2024-01

Anderson Consulting Engineers, Inc.
Civil • Water Resources • Environmental

February 16, 2024

Jason Elkins, P.E.
Town of Johnstown
Public Works Director
450 S. Parish Avenue
Johnstown, Colorado 80534

RE: Proposal for Comprehensive Stormwater Master Plan for the Town of Johnstown, Colorado

Dear Mr. Elkins:

Anderson Consulting Engineers, Inc. (ACE) is pleased to submit the attached qualifications proposal for providing Masterplan Storm Drainage Design Services for the Johnstown Comprehensive Stormwater Master Plan. We believe our proposal demonstrates the exceptional qualifications of ACE and the ACE Project Team, which includes Majestic Surveying, GPRS, and Honey Creek Resources for providing surveying, CCTV/utility locating services, and funding evaluation services, respectively, in support of this project. As requested, this submittal is being made in electronic form (PDF via OneDrive link).

With over 30 years of continuous experience successfully completing planning, design and permitting services for numerous drainage planning and flood mitigation projects throughout Colorado, ACE's history and experience is unsurpassed. Our Team's prior experience completing similar Master Plans for communities within the Northern Colorado Front Range, as well as our on-going work within the Big Hollow Gulch and Bunyon Basins, will give us a unique advantage to facilitate the preparation of an insightful plan, in a highly economical manner. As indicated in the enclosed document, the ACE Project Team is uniquely qualified to provide all services required to produce a holistic Masterplan for the Town of Johnstown. If selected, we will ensure that this project would be afforded all of the attention, care and detail deserving of a stormwater master plan intended to guide the Town's storm drainage mitigation and enhancements for years to come.

Please note that we hereby acknowledge receipt of Addenda No. 1 and No. 2 issued to this RFP. We are also willing to enter into the Town of Johnstown's Standard Contract Agreement (included with the RFP) without exceptions. Finally, as requested, ACE's SAM Unique Entity Identifier (UEI) is NUMMXNDH1LZ9.

We appreciate being considered for the opportunity to work together with you and the Town of Johnstown to prepare this landmark Masterplan. If you require additional information or clarification regarding this submittal, please do not hesitate to contact us.

Sincerely,
Anderson Consulting Engineers, Inc.

Jamis D. Darrow, P.E., CFM, MBA
Principal Engineer/Project Manager
Jamis.Darrow@acewater.com
970-226-0120

SECTION 1: QUALIFICATIONS OF FIRM AND PROJECT TEAM

Anderson Consulting Engineers, Inc. (Anderson or ACE) is an employee-owned water resources/civil engineering consulting firm located in Fort Collins, Colorado providing a full range of water resources services **since 1988**. For more than 30 years ACE's principals have specialized in hydrologic and hydraulic engineering projects that emphasize both master planning and design projects that incorporate flood mitigation/mapping, National Flood Insurance Program (NFIP) and local floodplain regulations, urban stormwater/stormwater quality management, and infrastructure improvements. ACE continues to emphasize a practical approach to the evaluation and design of water resources projects, resulting in a company culture that that has won the confidence of our wide variety of clients. A comprehensive list of the services provided by ACE is listed below.

Anderson Consulting Engineers, Inc.
375 E. Horsetooth Rd, Bldg. 5, Ste. 100
Fort Collins, CO 80525
Office: 970-226-0120
Website: www.acewater.com

Principals
President: Greg Koch, P.E., CFM
Vice President: Aaron Hansen, P.E., CFM
Secretary: Brian Smith, P.E., CFM
Treasurer: Jamis Darrow, P.E., CFM

Hydrologic Analysis
- Flood Frequency Analysis
- Low Flow Investigations
- Drainage Studies
- Rainfall/Runoff Modeling
- Watershed Modeling
- Flood Routing in Rivers and Reservoirs

Hydraulic Analysis
- Channel Flow and Floodplain Modeling (1D, 2D)
- Hydraulic Structures and Bridges (1D, 2D)
- Dam Break Modeling
- Alluvial Fan Flooding Simulation
- Routing of Mud and Debris Flows
- Closed Conduit Modeling

Design of Hydraulic Systems
- Bridges/Culverts/Erosion Countermeasures
- Aquatic Organism Passage (AOP) Facilities
- Flood Conveyance Channels
- Diversions, Intakes and Head Gates
- Urban Storm Drainage Systems
- Regional Detention Ponds
- Inverted Siphons

Irrigation Engineering Support
- Assessment of Hydraulic Structures
- Irrigation Needs Evaluation and Planning
- Design and Construction Management of Irrigation/Hydraulic Structures
- Design of Automated Control Systems for

Stormwater Drainage and Management
- Design and Construction Management of Urban Capital Improvement Projects
- Hydrologic Analysis and Modeling
- Hydraulic Analysis and Modeling
- Drainageway Planning and Alternative Development

Resident Engineering
- Shop Drawing/Submittal Review and Approval
- Construction Reports
- Owner/Contractor Coordination
- Construction Inspection/Observation
- Progress Meetings
- Pay Applications

Floodplain Studies
- Conditional Letter of Map Revision (CLOMR)
- Hydraulic Analysis of Channel Modifications
- NFIP Compliant Floodplain/Floodway Analyses
- Letter of Map Revision (LOMR) & PMR
- DFIRM Mapping and Database Preparation
- Flood Mitigation Plans
- Levee and Floodwall Certification

Geomorphic Investigations
- Channel Stability Assessment
- Planform and Profile Evaluation
- River Response Assessment
- Stream Classification
- Analysis of Historic Channel Response

Channel Restoration and Stabilization
- Biotechnical Slope Protection
- Bank Protection and Channel Armoring
- Bendway Weirs, Groins, and Levees
- Drop Structures and Grade Controls

Sediment Transport Analysis

- River Aggradation and Degradation
- Scour Analyses
- Bed Load and Suspended Load Relationships
- Modeling of Watershed Sediment Runoff
- Annual Sediment Yield Determination
- Reservoir Sedimentation

Flood Damage Assessments

- Damage Inventories
- Construction, engineering, and permitting cost estimates
- Emergency Permit Applications

Water Quality Investigations

- Stormwater Management
- Site Specific LID and BMP Facility Design
- Water Quality Master Plans

Geographical Information Systems

- Data Collection/Management/Analysis/Display
- Geodatabase Management
- Geospatial Analyses
- Data Visualization
- Data Query and Analyses
- Map/Graphic Generation

Drone Services

- Ortho Production
- Site Analysis and Documentation (Pre/During and Post Project)
- Programmable Video Flight

COMPANY RESOURCES

ACE currently has a staff of 16 people consisting of 13 engineers, of which 10 are Registered Professional Engineers in Colorado. Five of our engineers are also Certified Floodplain Managers. **All our Senior Staff have been with the company for at least 20 years and consist of some of the same staff that were involved with Frederick/Dacono and Firestone Master Drainage Plans**. Our continuity of Senior Staff ensures management and oversight consistency throughout the duration of the project. ACE's Senior Staff are typically registered in several states, and all have advanced degrees and/or education in their fields.

ACE STAFF OFFERS:

- **Extensive experience with master planning and designing flood mitigation, storm drainage, and water quality improvements.**
- **Unparalleled hydraulic modeling and hydrologic analysis expertise in both riverine and urban settings**
- **30 years of experience producing FEMA-compliant submittals, including 15 years of corporate DFIRM production experience**
- **245 combined years of water resources/ civil engineering experience**
- **A commitment to excellence in the successful completion of a wide variety of municipal storm water and flood mitigation projects.**
- **A dedicated staff located in Fort Collins, CO devoted to providing prompt response/service to the Town of Johnstown**

Senior staff are supported by dedicated, experienced engineers, most of whom also possess advanced degrees. In addition, the staff includes a full complement of technical support personnel including GIS analysts, and a certified Unmanned Aerial Vehicle (UAV, aka drone) pilot.

ACE continues to provide engineering services from its single corporate office in Fort Collins specializing in: (a) the preparation of master drainage plans; (b) complex hydrologic and channel hydraulic modeling (1D, 2D and 1D unsteady); (c) alternative engineering/economic evaluations; (d) analysis, design and construction of flood control facilities, major irrigation system components, and drainage improvement projects; (e) analysis, design and construction of channel stability and stream restoration projects; (f) completion of floodplain mapping and management studies; (g) water quality planning and design; (h) resident engineering services and related construction support;

and (i) drone services, including ortho production, site analysis and documentation, programmable video flights.

ACE has emphasized servicing governmental clients at all levels, including municipalities, counties, states, and federal agencies. However, our main client emphasis has been on municipalities, counties, and stormwater/ irrigation districts.

ACE has a track record of success in retaining staff at all levels, which is illustrated in the adjacent Staff Table. This permanence of company personnel provides continuity and stability in project management, while promoting continuous quality service and accountability over multi-year contracts. The table also identifies the level of experience at ACE, which can be utilized as project needs arise. ***The Town of Johnstown can be assured that the same personnel who initiate work under this contract will be here to complete the work. The Town can also be assured that we maintain a reservoir of additional resources that can be implemented as the project demands.***

ACE Staff Member	Total Years Experience	Total Years Experience with ACE
Greg Koch, P.E., CFM	38	33
Aaron Hansen, P.E., CFM	28	28
Michelle Martin, P.E.	22	22
Brian Smith, P.E., CFM	21	21
Scott Parker, P.E.	22	21
Jamis Darrow, P.E., CFM	20	20
Jason Albert, P.E.	20	20
Matt Clark, P.E.	15	15
Michael Turner, P.E.	12	12
Clark Kephart, P.E.	11	11
Alison Osborn, EIT	4	4
Craig Hocking, EIT	5	3
Kevin To, EIT	3	3
Brian Thompson, GIS Specialist	27	17
Ben Ackert, GIS Specialist	19	16
ACE Project Manager **ACE Assistant Project Manager**		

CUSTOMER SERVICE PHILOSOPHY

Anderson Consulting Engineers, Inc. (ACE) strives for a holistic view of each of our projects, with the goal being resolution of our clients' situations to their satisfaction. This begins with listening closely to our clients to fully understand their goals, issues, and concerns. Our prior experience in numerous communities allows us to hold initial project discussions with clients concerning subjects that are often beyond those with obvious connections to the anticipated project. Once a client's needs are fully defined, ACE's approach combines the strong technical capabilities and common-sense approach necessary to evaluate feasible alternative solutions and produce a wide range of project deliverables. Finally, the straightforward communication skills of ACE's staff and our "common-sense view" toward providing the most cost effective and innovative solution to every project has served our clients well for over 30 years, resulting in more than 95% of our work being conducted for repeat clients.

THE ACE PROJECT TEAM/SUBCONTRACTORS

Anderson Consulting Engineers has assembled a project team that we believe is unsurpassed with respect to providing the experience, expertise and attention to detail necessary to support Town of Johnstown with the Stormwater Master Plan Project. The ACE Project Team includes personnel that offer many years of experience collaborating in flood mitigation planning and design, hydrologic and hydraulic modeling, and the preparation of master planning reports, including prioritization and conceptual cost estimates for the selected plan of improvements and an evaluation of the funding mechanism to support these capital improvements.

To ensure the successful completion of work and ensure continuity throughout the duration of the contract, we intend to optimize the utilization of the expertise that our members bring to the project team. Therefore, the ACE Project Manager and primary point of contact for the Stormwater Master Plan Project will be **Jamis Darrow, P.E. CFM**. Mr. Darrow will be responsible for project management, coordination with the project team, and general oversight of the project. Mr. Darrow will be assisted by **Mr. Brian Smith, P.E. CFM,** who will serve as assistant Project Manager and Technical Advisor/QAQC, providing a secondary contact should Mr. Darrow not be available. **Mr. Clark Kephart, P.E. and Ms. Alison Osborn, EIT** will be responsible for the hydrologic and hydraulic modeling, evaluation of existing drainage facilitates, and the formulation of conceptual improvements. They will be assisted by our GIS analyst **Mr. Ben Ackert**.

Several other members of the ACE Staff, along with highly qualified staff from **Majestic Surveying, LLC**, and **Honey Creek Resources** will provide support for the project. Abbreviated bios for Jamis Darrow and Brian Smith are presented below; full resumes for the staff intended to participate in this study can be found in Appendix B. The ACE Project Team Organization Chart, which illustrates roles and responsibilities for the Town of Johnstown Storm Water Master Plan is included as Figure 1.1.

Jamis Darrow, P.E., CFM Mr. Darrow is a Project Manager with Anderson Consulting Engineers, Inc. He has a B.S. in Civil Engineering (Colorado State University, 2002), an M.S. in Hydraulic Engineering (Colorado State University, 2004), a M.B.A. (Colorado State University, 2013) and over 20 years of experience with ACE conducting hydrologic and hydraulic studies. He is a registered professional engineer in Colorado (PE #42130) and Utah (PE #10147986-2202), and a Certified Floodplain Manager. Mr. Darrow has also served for nearly two years as a volunteer on the Larimer County Flood Review Board, reviewing CLOMR's, LOMR's, No-Rise applications, and floodplain development permits on behalf of Larimer County. Mr. Darrow has been the engineer on studies involving: (a) floodplain and floodway delineations in both natural and urban riverine settings, in support of applications to the FEMA, (b) preliminary and final design of flood control channels, detention ponds, hydraulic structures, irrigation canal structures, channel erosion protection measures, storm sewers, and dam outlet works; (c) preparation of master drainage plans; and (d) hydrologic/hydraulic modeling of urban drainage systems.

Years of Professional Experience: 20
Relevant Experience:

- **Firestone Outfall System Plan,** Firestone, CO
- **Urban Stormwater Management Master Plan,** Longmont, CO
- **St. Vrain Creek Floodplain Mitigation and Fastracks FTD Site Drainage Improvement Alternatives,** Longmont, CO.
- **Allison Draw Floodplain Reduction Alternatives,** Cheyenne, Wyoming
- **River Bluffs Restoration and Resiliency Plan,** Larimer County, Colorado.
- **Main Street/17th Avenue Storm Sewer Replacement Project,** Longmont, Colorado.
- **Chestnut Street to Eastman Park Drive Storm Drainage Improvement Projects**, Windsor, CO
- **Bohn Park Drainage Improvement Project,** Lyons, CO

Brian Smith, P.E., CFM is a Principal Engineer of Anderson Consulting Engineers, Inc. (ACE) who specializes in hydraulic and hydrologic analyses, drainage master plan studies, urban drainage system design, and flood mitigation studies. He has a B.S in Civil Engineering (Colorado State University, 2001) and an M.S. in Hydraulic Engineering (Colorado State University, 2003), and has over 21 years of experience as senior engineer and project manager for public and private sector clients in Colorado, Wyoming, Nebraska, Kansas, Utah, Mississippi, Louisiana, and Indiana. Mr.

Smith is a registered professional engineer in the State of Colorado (PE #41276), Nebraska (#E-18088), and Wyoming (#19079) and is a Certified Floodplain Manger. He has worked as project manager on various studies involving: preparation of master drainage plans; hydrologic/hydraulic analyses of natural and urban drainage systems; preliminary and final design of flood control channels, detention ponds, water quality ponds, and hydraulic structures; and CLOMR and LOMR applications to FEMA.

Years of Professional Experience: 21
Relevant Experience:

- **Frederick/Dacono Outfall System Plan,** Town of Frederick and City of Dacono, Colorado
- **Comprehensive Drainage Plan,** Greeley, CO
- **Basin-Wide Evaluation of Master Plan Improvements – Old Town Basin,** Fort Collins, CO
- **Poudre River Whitewater Park Design,** Fort Collins, CO
- **Remington Street Storm Sewer Outfall Design,** Fort Collins, CO
- **Canal Importation Basin Detention Ponds and Drainage Improvements,** Fort Collins, CO
- **Terry Lake Neighborhood (TLN) Regional Detention Pond Design**, Longmont, CO
- **West Vine Basin Outfall Design**, Fort Collins, CO

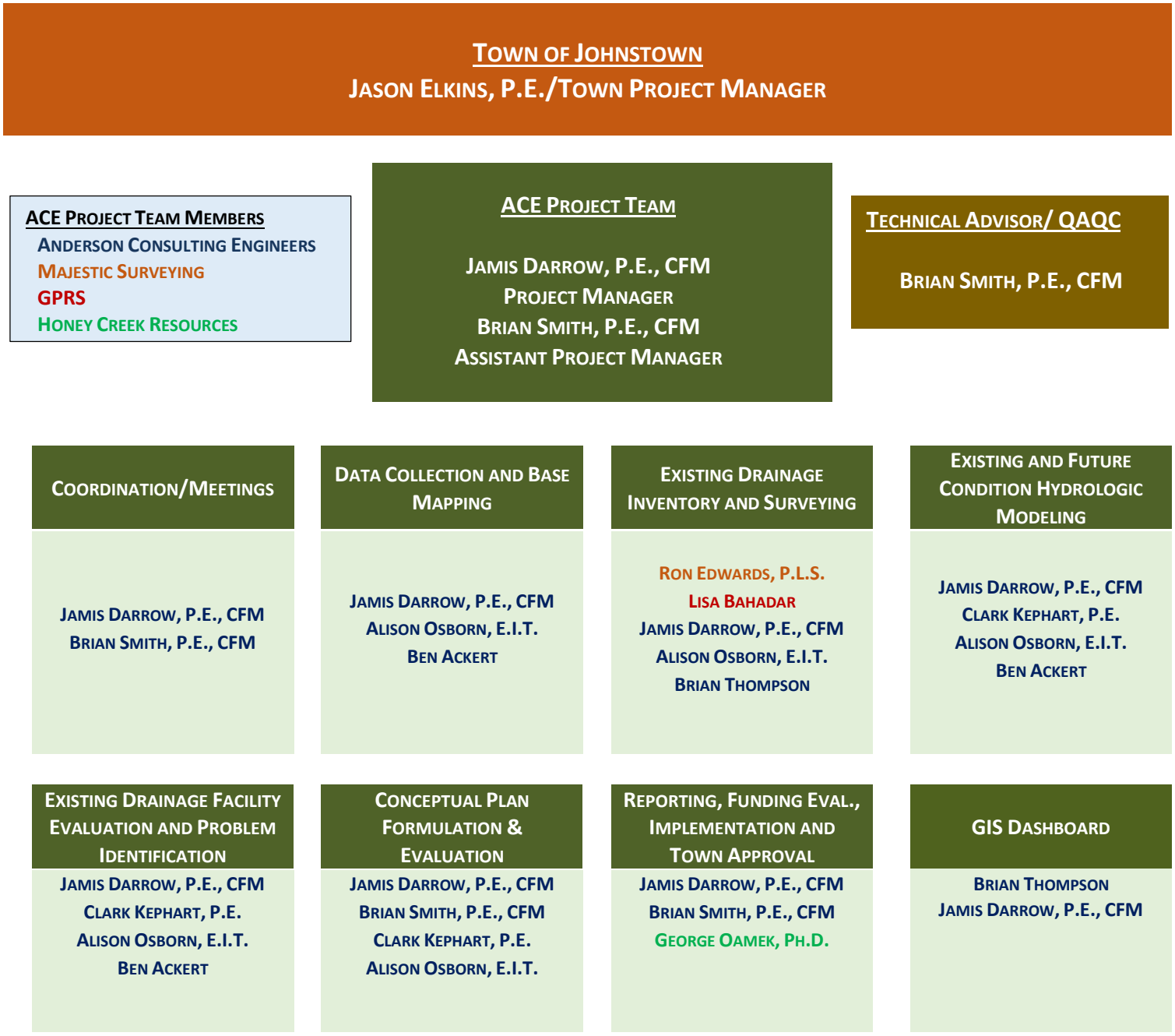
ACE's capabilities will be bolstered on this project through project team members who not only provide incomparable experience and technical expertise with respect to the multiple facets of this complex project, but also well-established relationships within the Project Team. The following sections present the ACE Project Team members whose services will be utilized during this project.

Majestic Surveying is a Colorado company that offers Professional Land Surveying solutions for an array of projects. Through experience, dedication and knowledge, their company delivers a quality product that can be relied upon through the completion of a project. They are dedicated to utilizing cutting edge technology for optimum surveying solutions, while providing industry standard deliverables. Majestic Surveying will spend approximately two weeks collecting project survey, locating property boundaries, and preparing any necessary legal descriptions for temporary or permanent easements. With well over 50 years of combined experience in Northern Colorado, including staff members who have collaborated with ACE on dozens of projects over many years, their team is dedicated to the advancement and quality of life in Colorado.

GPRS provides video pipe inspections (CCTV) out of Denver, Colorado. CCTV, a sewer inspection service uses industry-leading video cameras to inspect underground water, sewer lines and lateral pipelines. Their NASSCO certified technicians can locate clogs, investigate cross bores, find structural faults and damages, and conduct lateral sewer line inspections. GPRS's utility locating services are enhanced by their ability to discover, inspect, and map water and sewer systems by using robotic video pipe cameras, push cameras, and lateral launch cameras. GPRS Video Pipe Inspections can also gather detailed information to fully document manhole defects and conditions.

Honey Creek Resources is a consulting firm specializing in water, transportation, and environmental economics. Founded in 2004 by George Oamek, Ph.D. Honey Creek Resources specializes in water resource-related economics. Dr. Oamek is an economist with 35 years experience in the areas of agricultural economics, water and wastewater utility finance, natural resource economics, and project feasibility. Clients in the region include the North Weld County Water District, Northern Colorado Water Conservancy District, Xcel Energy, Cannon Land Company, and the Colorado Water Conservation Board. In support of this project, Honey Creek Resources will assess current funding mechanisms for capital improvement projects within the Town of Johnstown, and provide guidance on future funding mechanisms for the selected plan of the Stormwater Master Plan. Mr. Oamek and ACE staff have collaborated on numerous projects including the Estes Valley Storm Water Management Project, and the Frederick/Dacono OSP.

FIGURE 1.2 - ACE PROJECT TEAM ORGANIZATION CHART



RELEVANT PROJECT EXPERIENCE

ACE staff have extensive experience completing master plans including Stormwater Master Plans, Riverine Master Plans and Water Quality Master Plans. These studies have identified countless improvements, dozens of which have been constructed (many of those designed by ACE staff) as a result of master planning efforts. Table 1.1 on the following page provides a list of many of our company's prior master planning studies along with some of the projects constructed as a result of the identified study. These projects represent a small sampling of previous projects similar in scope and/or budget to the Johnstown Storm Water Master Plan. This demonstrates the ACE Project Team's long-term experience conducting storm drainage master plan-type projects for a variety of communities.

Table 1.1 identifies numerous master drainage plans completed by ACE staff. These projects include the Frederick/Dacono OSP, the Longmont Storm Drain Master Plan, the Estes Valley Stormwater Management Project, and the Old Town Basin Existing Condition Hydrology Update and Basin-Wide Evaluation of Masterplan Improvements Detailed project. Detailed project descriptions for these projects are included in Appendix C. In addition, ACE staff have recently completed a number of projects within the Town of Johnstown requiring coordination with, and approval from, Town staff. These projects include the Little Thompson River scour evaluation for the River Bend Estates, and the Big Hollow Gulch analysis and design of Regional Drainage Facilities and Irrigation Storage (project description provided in Appendix C). Finally, it is noted that ACE staff is also currently analyzing existing condition hydrology within the Bunyan Basin. Because it is believed that that project may provide benefits to the Town of Johnstown Stormwater Master Plan a project description for this project has also been provided in Appendix C.

EXPERIENCE WITH SIMILAR SIZED MUNICIPALITIES

Anderson Consulting Engineers, Inc. (ACE) has refined its engineering practice over the years to focus specifically on providing services of water resources engineering needs of our clients, which primarily consist of local Municipalities, Counties and Government Entities. **Our approach to meeting each of our client's individual needs combines our strong technical capabilities along with a commonsense attitude toward providing the most cost effective and integrated solution to every water resource engineering project.** To demonstrate this, the following is a list of similar sized Municipalities we have worked with on similar types of work: (a) Town of Frederick; (b) City of Dacono; (c) Town of Estes Park; (d) Town of Lyons; and (e) Town of Windsor.

EXPERIENCE WITH GRANT FUNDED PROJECTS

The ACE project team also has extensive experience managing and completing grant funded projects including FEMA Pre-Disaster Mitigation (FEMA), Emergency Watershed Protection (NRCS), DOLA, and CDBG-DR grants. Through work on these project ACE staff has learned many valuable lessons pertaining to grant funded projects including but not limited to: (a) the importance of staying within the scope of work as identified by the grant funding; (b) the importance of adhering to/meeting grant budgets and deadlines; and (c) understanding alternative grant sources to identify/obtain supplemental funding.

INNOVATIVE APPROACH

Over the years ACE has made it a priority to use emerging technologies not only in their engineering work but also leveraging these technologies in ways that increase community engagement and participation in our projects. Depending on client goals and project objectives, we have used several different methods.

The following method is the one we feel could provide the greatest benefit for the Johnstown Stormwater Master Plan.

Master Plans and the Resulting Constructed Projects

Stormwater Master Plans	
Fort Collins, Colorado	
Spring Creek Basin Master Drainage Plan, Fort Collins, CO	Boxelder Creek/Cooper Slough Master Drainage Plan, Fort Collins, CO
Regional Detention Pond Improvements: Taft Hill Road, Rolland Moore Park, & C&S RR	*Boxelder Creek Outfall Project*
BNSF Railroad Detention Pond Improvements	*Prospect Road Bridge Replacement Project*
Drake Road Bridge, Channel Restoration and Water Quality Pond	*East Side Detention Facility*
Riverside Avenue Bridge and Channel Improvements	Poudre School District Facilities Services Site Master Drainage Plan, Fort Collins, CO
Timberline Road Bridge Improvements	*Multiple Detention, Storm Sewer, Channelization, Site Drainage & Flood Proofing Projects*
Centre Avenue Bridge and Roadway	Upper Cooper Slough Master Drainage Plan, Fort Collins, CO
Old Town Master Drainage Plan, Fort Collins, CO	*LWIC Spill Structure*
Howes Street Storm Sewer Outfall and Water Quality Pond	Evergreen Park/Greenbriar Stormwater Master Plan, Fort Collins, CO
Jefferson & Riverside Storm Sewer Improvements	*Multiple Storm Channel, Storm Sewer and Regional Detention Pond Projects*
UDALL Regional Water Quality Ponds	Canal Importation Basin Master Drainage Plan, Fort Collins, CO
Oak Street Storm Sewer and Outfall	*Canal Importation Ponds and Outfall (CIPO) Project*
Greeley, Colorado	
28th Avenue Basin Comprehensive Drainage Plan, Greeley, CO	Grapevine Basin Comprehensive Drainage Plan, Greeley, CO
35th Avenue/22nd Street Outfall	*Monfort Park Regional Detention Pond/Inlet & Outlet Facilities*
16th Street/27th Avenue Outfall (Under Design)	*23rd Street/50th Avenue Storm Sewer*
West Lake Detention Pond and Outlet	*16th Street Channel Stabilization and Culvert Enlargement*
Clarkson Spill Structure	*10th Street/32nd Avenue Storm Sewer and Channel*
Country Club Basin Comprehensive Drainage Plan, Greeley, CO	*4th Street Storm Sewer and Bestway Detention Pond*
Country Club West Detention Pond	*Franklin Park Pond and Outfall Storm Sewer*
49th Avenue & 10th Street Storm Sewer and Channel	*Northview Bypass Channel/Greeley No. 3 Ditch Underchute & Side Spill Weir*
Epple Park Pond Outlet and Larson Ditch Stabilization	*Northview Regional Detention Pond and Outfall Pipe*
South Eagleview Detention Pond, Inlet & Outlet Facilities, and Outfall Channel	Sheep Draw Basin Comprehensive Drainage Plan, Greeley, CO
North Eagleview Detention Pond and Outlet	*C Street Bridge Enlargement*
Downtown/North Greeley Basin Comprehensive Drainage Plan, Greeley, CO	*71st Avenue Bridge*
14th Avenue Storm Sewer	*U.S. Hwy 34 Bypass/95th Avenue Culvert and Drainage Channel*
Fort Collins, Colorado	
Spring Creek Basin Master Drainage Plan, Fort Collins, CO	Boxelder Creek/Cooper Slough Master Drainage Plan, Fort Collins, CO
Regional Detention Pond Improvements: Taft Hill Road, Rolland Moore Park, & C&S RR	*Boxelder Creek Outfall Project*
BNSF Railroad Detention Pond Improvements	*Prospect Road Bridge Replacement Project*
Drake Road Bridge, Channel Restoration and Water Quality Pond	*East Side Detention Facility*
Riverside Avenue Bridge and Channel Improvements	Poudre School District Facilities Services Site Master Drainage Plan, Fort Collins, CO
Timberline Road Bridge Improvements	*Multiple Detention, Storm Sewer, Channelization, Site Drainage & Flood Proofing Projects*
Centre Avenue Bridge and Roadway	Upper Cooper Slough Master Drainage Plan, Fort Collins, CO
Old Town Master Drainage Plan, Fort Collins, CO	*LWIC Spill Structure*
Howes Street Storm Sewer Outfall and Water Quality Pond	Evergreen Park/Greenbriar Stormwater Master Plan, Fort Collins, CO
Jefferson & Riverside Storm Sewer Improvements	*Multiple Storm Channel, Storm Sewer and Regional Detention Pond Projects*
UDALL Regional Water Quality Ponds	Canal Importation Basin Master Drainage Plan, Fort Collins, CO
Oak Street Storm Sewer and Outfall	*Canal Importation Ponds and Outfall (CIPO) Project*
Windsor, Colorado	
Law Basin Master Drainage Plan, Windsor, CO	Jacoby Basin Master Drainage Plan, Windsor, CO
John Law Residential Flood Risk Reduction/PDM Channel Project	*WCR 15 Storm Sewer*
West Tributary Channel and Culverts	Timnath Basin Master Drainage Plan, Windsor, CO
Windsor Lake/Kern Reservoir Conversion to Regional Detention Facility	Ptarmigan Basin Master Drainage Plan, Windsor, CO
Greeley No.2 Canal Flood Mitigation Improvements	River Ridge Basin Master Drainage Plan, Windsor, CO
Windsor Basin Master Drainage Plan, Windsor, CO	Bluff Basin Master Drainage Plan, Windsor, CO
Chimney Park Detention Pond and Channel	Oklahoma Basin Master Drainage Plan, Windsor, CO
High School Basin Master Drainage Plan, Windsor, CO	SH 257 Basin Master Drainage Plan, Windsor, CO
Loveland, Colorado	
Hogback Basin Master Drainage Plan and Outfall Design, Loveland, CO	Airport Basin Master Drainage Plan, Loveland, CO
Dry Creek Master Drainage Plan Amendment, Loveland, CO	Little Barnes Ditch Conceptual Master Plan, Loveland, CO
Longmont, Colorado	
Terry Lake Neighborhood Master Drainage Plan, Longmont, CO	Urban Stormwater Management Master Plan, Longmont, CO
Terry Lake Neighborhood Regional Detention Pond Design	*St. Vrain Creek Flood Conveyance Channel*
Weld County, Colorado	
Tri-Town Basin Master Drainage Plan, Weld County, CO	Godding Hollow Basin Master Drainage Plan, Weld County, CO
Frederick's Eigth and Main Regional Detention Pond	*Various channel and culvert projects*
Various channel, culvert, and bridge projects	
Frederick/Dacono	
Frederick/Dacono Outfall System Plan, Frederick, CO	*Bella Rosa/Colorado Blvd Culvert Project*
Estes Park	
Estes Valley Stormwater Management Project, Town of Estes Park, CO	
Colorado State University	
Veterinary Teaching Hospital Campus Master Drainage Plan, Fort Collins, CO	CSU Foothills Campus Master Drainage Plan, Fort Collins, CO
VTH Outfall Channel and Pipe System	
On-Site Storm Water Quality Pond	
Riverine Master Plans	
Poudre Downtown Master Drainage Plan, Fort Collins, CO	St. Vrain Creek Watershed Master Drainage Plan, Boulder County, CO*
Logan River Watershed Master Drainage Plan, Logan, UT	Poudre River Flood Mitigarion and Maintenance Master Plan, Greeley, CO
Fish Creek Restoration Master Plan, Estes Park, CO*	Fall River and Upper Big Thompson River Restoration Master Planning, Estes Park, CO*
Water Quality Master Plans	
Boxelder Creek /Cooper Slough Basin Water Quality Master Plan, Fort Collins, CO	Stormwater System Assessment and BMP Guidance Project, Worland, WY
Canal Importation Basin Water Quality Master Plan, Fort Collins, CO	Town of Windsor, Colorado NPDES Phase II Permitting
Old Town Basin Water Quality Master Plan, Fort Collins, CO	Weld County School District, Colorado NPDES Phase II Permitting
Spring Creek Water Quality Master Plan, Fort Collins, CO	

* ACE staff served as a sub-consultant to assist in geomporphic assessments, sediment transport analyses, hydraulic analyses, and/or identification of stormwater solutions in support of these master planning efforts.

Storymaps are perhaps our most successful/effective community engagement and project update tool. The Storymaps produced by ACE can range from simple informational postings about project updates and progress to complex productions explaining project rationale, background, and project goals, as well as soliciting community input. They are an effective tool to present complex project information in a media rich, interactive environment that helps communities visualize project goals and status. This product has been so successful that some communities have adopted Storymaps produced by ACE as an internal community planning tool. The following link provides access to the Storymap we prepared in support of the Frederick and Dacono Outfall System Plan.

Fredrick and Dacono Outfall System Plan (click to follow link)

We envision this as a tool to facilitate public outreach for the Stormwater Master Plan Project. For example, ACE would be able to visually present to the community the known stormwater facilities and proposed improvements to keep the community informed of potential improvements. The identification of additional flood problems could be solicited and compiled in order to develop a well-informed plan for the community. This product could also be used for informal projects as the study progresses. A tangible benefit of this type of community engagement is that with a well-informed, participatory community, where the stakeholders feel their voice has been heard, interactive Storymaps could reduce community comments, thereby accelerating final adoption of the Master Plan.

CLIENT REFERENCES

Over ACE's more than 30-year history as a Fort Collins consulting firm, projects similar to the Johnstown Storm Water Master Plan have been a mainstay to our company's success. Consequently, our history and experience in performing Master Planning, hydrologic and hydraulic analyses and modeling in support of these services is extensive.

Four clients for which ACE has provided similar engineering services for are identified below:

- City of Longmont
  Ms. Monica Bortolini
  Public Works and Natural Resources
  385 Kimbark Street
  Longmont, CO 80501
  (303) 651-8328
- City of Logan, Utah
  Mr. Darren Farar
  City Engineer
  290 N 100 W
  Logan, UT 84321
  (435) 255-7078
- City of Fort Collins
  Mr. Matt Fater
  City of Fort Collins Utilities
  PO Box 580
  Fort Collins, CO 80522
  (970) 416-2146
- Town of Frederick
  Mr. Kevin Ash
  Town Engineer
  401 Locust Street
  Frederick, CO 80530
  (720) 382-5602

"Anderson Consulting Engineers has provided outstanding service to the City Fort Collins over the past two decades. I've had the pleasure of working with ACE on several successful projects for the City from stormwater master plans to capital improvement projects, including the Canal Importation Ponds and Outfall Project. Besides their commitment to engineering excellence, I appreciated their dedication to this project from design to construction to project closeout. Their staff longevity with the firm also makes a difference on these large-scale multi-year projects."

– Matt Fater, Fort Collins Utilities

1.1 PROJECT UNDERSTANDING

The "Storm Water Master Plan for the Town of Johnstown" (2001 Master Plan) was completed by The Engineering Co. (TEC) in 2001. The 2001 Master Plan covers six major watersheds contributing stormwater to the Town of Johnstown (Old Town, Bunyan, Pulliam, Elwell, Twin Mounds, and Johnson's Corner). After development of existing condition hydrology, the 2001 Storm Water Master Plan presented general and basin specific policies for proposed improvements, along with specific proposed improvements, identified to address existing drainage issues. An area map illustrating the prior stormwater master plan basin areas contributing to the Town of Johnstown is provided in Figure 2.1.

Additional hydrologic data for basins contributing to the Town of Johnstown include an ongoing study of existing condition hydrology for the Bunyan Basin, and a completed hydrologic study within the Big Hollow Gulch, both of which were conducted by Anderson Consulting Engineers. The Bunyan Basin study is being completed to define existing condition flows contributing to the Hillsborough Ditch so that capital improvements may be constructed to protect future developments from 100-year discharges. The analyses are utilizing Mile High Flood District (MHFD) methodologies (CUHP and EPA SWMM 5.2) and NOAA Atlas rainfall intensities. The Big Hollow Gulch study established baseline hydrology for the Big Hollow Gulch basin, which was then utilized to develop improvements in the upper part of the basin. The Big Hollow Gulch hydrology was developed utilizing Town of Johnstown rainfall data and EPA SWMM to generate basin runoff and route flows through the basin.

ACE staff anticipates that work completed on both projects will provide savings through our ability to seamlessly incorporate this work into the existing condition analyses of the current Master Plan study. While additional efforts may be required within these basins (specifically inventory of existing facilities and future/proposed condition analyses), our familiarity with these studies and their results, and our ability to incorporate their results into this master plan will provide project savings to the existing condition analysis task.

Since completion of the 2001 Master Plan, development within the Town of Johnstown has continued and is anticipated to expand to areas where drainage improvements were not previously planned or only have recently been identified. This development pressure, along with the Town's desire to provide improved data, improved mapping and exhibits using GIS, and more extensive/detailed analysis of existing and future conditions is prompting the need for this study. It is noted that the original basins studied in the 2001 Master Plan along with the Big Hollow Gulch Basin comprise approximately 55% of the Town of Johnstown's growth management area. For the purposes of this scope and budget, we have assumed that those basins will be the focus of this study. If the Town would like to study all areas within the Growth Management Area discussions will be required to either identify additional budget, or redefine the level of detail for the studied areas.

The Town would like to ensure that the updated Stormwater Master Plan study accomplishes the following goals: (a) identify flow patterns; (b) quantify current and future stormwater runoff; (c) identify specific areas of concern; (d) located existing local and "regional" drainage facilities (public or private); (e) inventory and assess existing stormwater facilities; (f) determine the impacts of Big Thompson and Little Thompson floodplains on local facility outfalls; (g) provide a 10-year Capital Improvement Plan that identifies stormwater mitigation projects based on anticipated growth, future roadway alignments, etc.; and (h) prepares a financial analysis for stormwater improvements. The results of the study will be summarized and presented in a project report and will also be presented in a GIS dashboard. ACE's extensive history providing master planning services will prove invaluable in the successful completion of this project because ACE staff has:

- Recently completed stormwater master plans for communities of similar size, including Frederick, Dacono, and Firestone
- Worked on multiple projects that were funded through grants, including the FEMA Hazard Mitigation Assistance Program
- Developed GIS Dashboards to present project goals, progress, and results to a variety of project stakeholders.

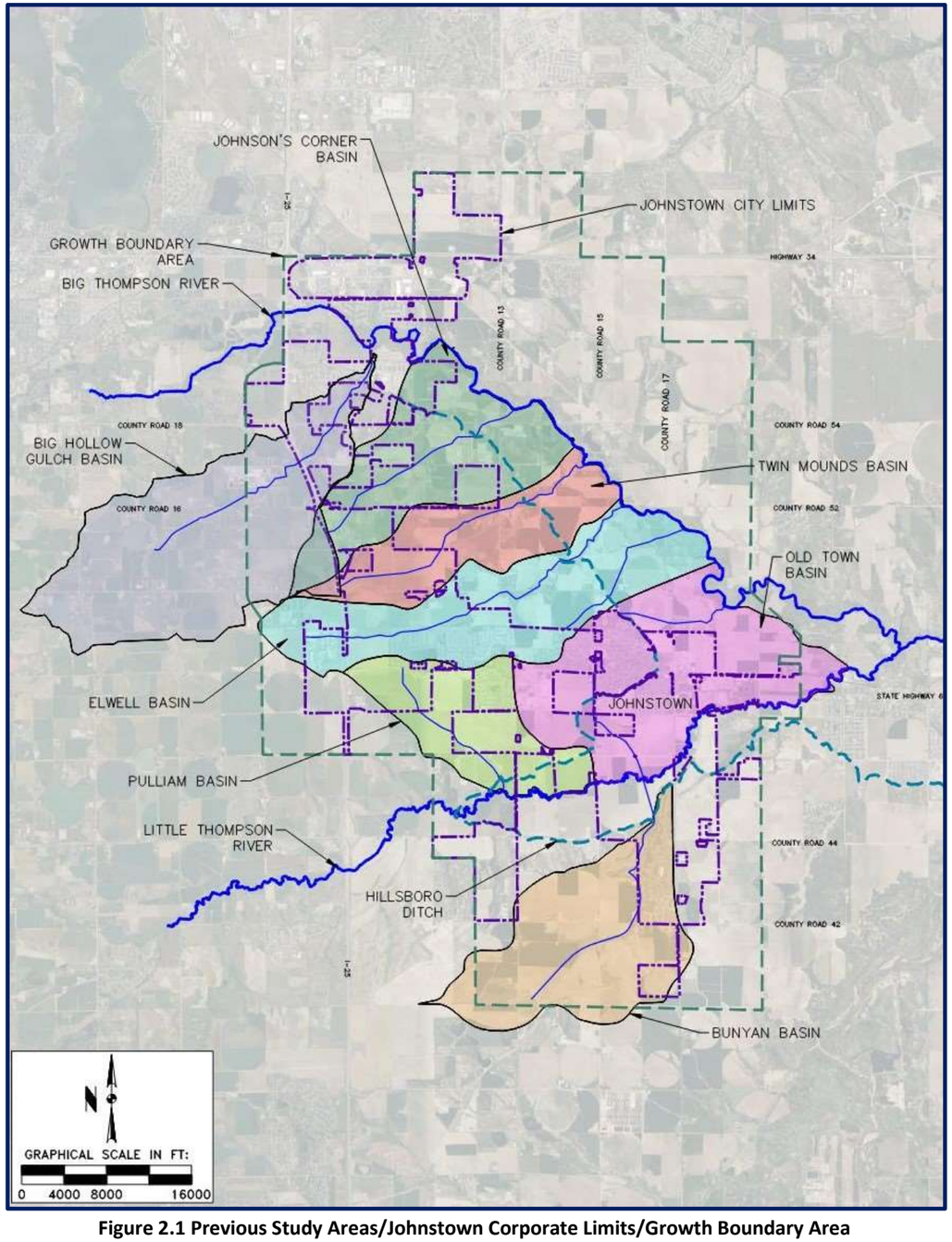


Figure 2.1 Previous Study Areas/Johnstown Corporate Limits/Growth Boundary Area

- Specific insight into:
    - Mile High Flood District procedures and standards
    - Local rainfall data
    - Colorado Revised Statute 37-92-602 (8) which defines release criteria for stormwater detention ponds owned/operated by a government agency, or subject to oversight by a governmental agency.

1.2 SCOPE OF WORK

The subsequent detailed scope defines the specific work effort proposed to be completed by the ACE Project Team in the formulation of the Johnstown Comprehensive Stormwater Master Plan. ACE will be responsible for the management and completion of all aspects of this project and will conduct all hydrologic/hydraulic modeling and analyses for the basins studied as part of this project. Majestic Surveying will provide surveying services and GPRS will provide the collection of CCTV data of existing storm sewers and culverts as requested in the RFP. George Oamek, an economist with Honey Creek Resources, will conduct the financial analysis and forecasting required for the funding evaluation and rate study. Additional information on the ACE Project Team is presented in Section 1 of this RFP response. A proposed overall schedule for the project has been prepared and is presented in Section 3 of this RFP. As requested by the RFP, the proposed project budget has been provided separately in a PDF labeled "Fee Proposal."

TASK 1. PROJECT COORDINATION AND DATA GATHERING

In accordance with the RFP Scope of Services, this task will include a project kickoff meeting to review and agree upon all technical aspects of the project. Prior to the project kickoff meeting, the ACE Team will review the currently available information from the previous drainage/master plan studies within the Town's boundaries and growth management area. A summary of the results and drainage criteria from these plans will be prepared for presentation and discussion during the meeting. Due to our prior work in the study area, our thorough review of the 2001 Master Plan report, and our familiarity with the Town's current and proposed Streets and Stormwater Design Standards Update (which is currently in draft form), we can expedite this process. This meeting will also provide an opportunity for the ACE Team to learn about specific drainage problems from the Town's perspective to ensure these areas are adequately accounted for in the study, and to discuss the Town's goals and schedule for the public engagement process that will be a critical component of study.

Based on previous experience in conducting drainage plan studies of this size, we have found that regular project status meetings result in the development of a team-like atmosphere, leads to more productivity, facilitates the achievement of project goals, and keeps the project on schedule. In order to ensure timely completion of project milestones, share information, and make timely decisions, the following coordination meetings have been assumed as part of this Task:

- Project kick-off meeting and initial site visit
- Project status meeting at the 30% milestone to be conducted in person (assumed to be conducted at the conclusion of Task 3.1)
- Project status meeting at the 60% milestone to be conducted in person (assumed to be conducted at the conclusion of Tasks 3.2 and 4)
- Project status meeting at the 90% milestone to be conducted in person (assumed to be conducted at the conclusion of Task 5, with all technical work completed)
- Additional project status meetings are planned to be held outside of the 30%, 60%, and 90% milestones to help keep the project on schedule and facilitate regular coordination between the ACE Team and Town Staff. Nine separate monthly progress meetings have been assumed. This scope assumes that these meetings will be held remotely via Zoom or Microsoft Teams.

- Community engagement workshops (3 workshops have been assumed per the RFP and it is assumed these workshops will be conducted at the completion of Task 3.2, Task 4, and prior to the final adoption of the Master Plan)
- Coordination meetings with other project stakeholders, specifically the Hillsborough Ditch Company and CDOT (up to 3 meetings have been assumed as part of this scope and budget)
- Attendance and presentation to the Town Council (2 presentations have been assumed at the completion of the 60% milestone and at the completion of the study for final adoption).

Key members of the ACE Project Team will attend the kickoff meeting and project status meetings. The ACE Project Manager will be responsible for conducting all progress meetings, preparing meeting agendas, compiling meeting minutes, developing decision logs, and documenting future assignments. We have found that documenting meeting outcomes are invaluable with respect to tracking important project decisions and keeping the project on schedule.

As part of community engagement workshops and presentations to the Town Council, other stakeholders, and community members, ACE will assist Town Staff with the preparation of presentation materials. Based on previous experience, ACE has found that the presentation of digital information with interactive features such as GIS driven maps and databases provides the most effective means of communicating the large amount of data that will be developed as part of the study and will result in more end user feedback. As discussed in Section 1 of this RFP response, StoryMaps are an effective software tool to communicate the various components of a master plan study. Interactive GIS maps can be embedded within the StoryMap to graphically display the results of the study and can easily be accessed by Town Staff and the public. An example of the StoryMap prepared for the Fredrick/Dacono OSP can be found using the link provided in Section 1 of this RFP response.

Deliverables for the meetings and coordination items of this Task will include:

- ✓ Monthly budget updates to determine if the project is on budget.
- ✓ Meeting agendas, minutes, decision logs, and assignment logs
- ✓ Preparation of presentation materials and attendance at community engagement workshops
- ✓ Preparation of presentation materials and attendance at Town Council meetings.

Due on-going work in the area, the ACE Team has already compiled and reviewed several of the pertinent drainage studies impacting the Johnstown planning area and adjacent jurisdictions. As necessary, further coordination and data collection efforts will be performed to ensure a comprehensive data collection effort has been conducted. The ACE Team will also coordinate with the Town to obtain drainage reports from existing and proposed developments within the Town Limits for incorporation into the study as directed by the Town Project Manager.

The ACE Team has also already obtained 2013 LiDAR topography for the study area, as well as aerial imagery, the Town's jurisdictional boundaries and parcel boundaries. It is assumed that the Town will provide zoning maps, current subdivision and land use maps, hydrographic features, and transportation features as part of their current GIS database information. We have also obtained all effective floodplain boundaries within the study area from FEMA's website as presented in Figure 2.2. The municipal data we have already collected will be verified with the Town's GIS database to ensure they are up to date. As necessary, information from the drainage reports will be utilized to update topographic information for subdivisions that were constructed after 2013. All base map information will be compiled into a comprehensive GIS database that will be provided digitally as part of the final Master Plan submittal.

Information gathered as part of this Task will be reviewed and used to formulate base mapping for the project. Soils and wetland information will be obtained from the Soil Conservation Service database and the U.S. Fish and Wildlife Service National Wetland Inventory database, respectively. An existing land use map which will be utilized to develop

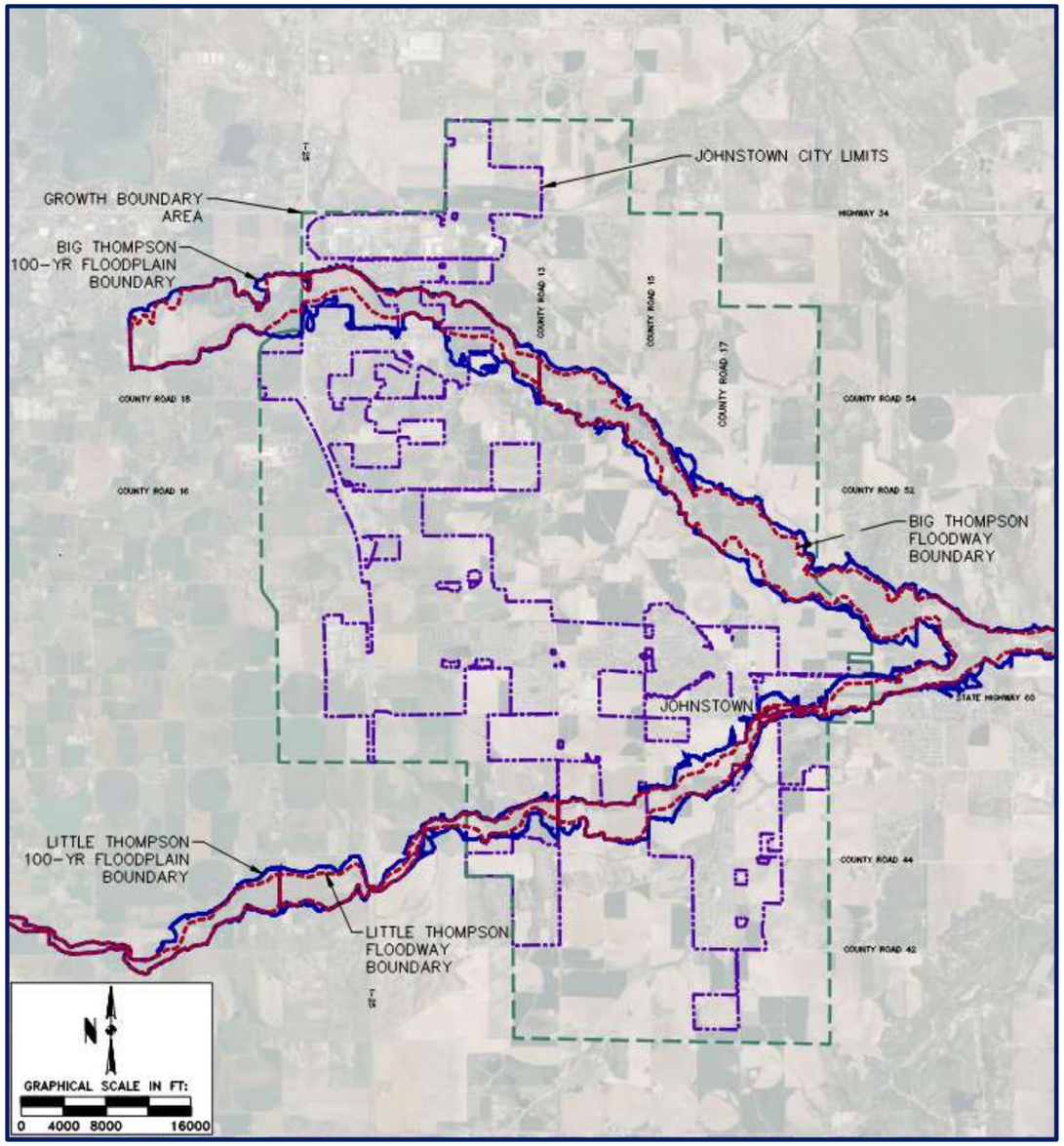


Figure 2.2 Regulatory 100-Year Floodplain and Floodway

existing percent impervious values for the hydrologic study, will be prepared and provided to Town Staff for their review and approval. Assumptions with respect to future development build out and future condition percent impervious values will be informed by the Town's comprehensive land use plan, which will be reviewed with Town Staff to determine if any modifications to the plan are needed.

With direction by Town Staff, the ACE Team will incorporate pertinent information from development drainage reports, Town utility mapping, and documentation from previous capital improvement projects to facilitate the development of maps and a GIS database of existing critical drainage facilities. For the purposes of this scope of work, it has been assumed that existing critical drainage facilities will be limited to the following: (a) detention facilities with storage volumes equal to or greater than 3 acre-feet; b) crossing structures of all major arterial roadways; (c) crossing structures of non-arterial roadways that are 36-inches in size or greater; (d) existing lift stations and siphons; (e) major drainage channels and storm sewer systems greater than 24-inches in size; and (e) water quality facilities. It is noted that the drainage facility inventory conducted as part of the previous master plans or development drainage reports can be leveraged to quickly develop a preliminary list of known drainage facilities. This scope assumes that Town Staff will be able to identify the existing developments that currently have detention ponds and other critical drainage facilities to expedite the drainage facility inventory.

Once the critical drainage facilities inventory map has been completed, the ACE Team will conduct site visits to visually inspect and document the existing condition of all major facilities. Based on experience gained from previous master plan studies, it is our opinion that field verification and inventory survey to accurately define culvert crossing inverts, road overtopping elevations, detention pond facilities, storm sewers, lift stations, and siphons are invaluable with respect to the development of the SWMM models and hydraulic analyses of these facilities. Therefore, we have included effort in this proposal for our Licensed Land Surveyor, Majestic Surveying, to survey the following existing facilities: (a) road crossing structure sizes, inverts, and overtopping locations; (b) detention pond outlet facilities and emergency spillways (stage/storage curves will be developed from drainage reports or from the 2013 LiDAR data); (c) storm sewer manhole locations with pipe sizes and invert elevations recorded; (d) lift station locations; and (e) siphon locations. Based on a quick review of aerial imagery, ACE has identified approximately 35 road crossings and 10 detention ponds for survey. It is ACE's opinion that the $50,000 survey allowance noted in the RFP should be adequate to conduct the survey effort to locate all critical existing stormwater components horizontally and vertically. It is assumed that final survey efforts and budget will be negotiated with Town Staff once all critical infrastructure has been identified.

To the extent the information is available, ACE will collect and review electronic pdf versions of road crossing design drawings, CDOT bridge and culvert inspection reports, drainage reports, and operation/maintenance manuals for lift stations, siphons, and detention ponds. As part of the field verification, the ACE Team will collect digital photographs to document the entrance and exit conditions, as well as the condition of the culvert material. Guidelines established by AASHTO in the 2020 Culvert and Storm Drain System Inspection Guide will be utilized to rate the condition of crossing on a point scale (e.g., 1=Good to 4=Severe). For buried storm sewer systems, or longer crossings that cannot be rated by visual inspection, CCTV inspections will be conducted by our subconsultant GPRS. Based on the $25,000 CCTV allowance specified in the RFP, it is estimated that approximately 2-miles of pipe systems can be inspected with CCTV methods. Prior to performing any CCTV inspections, ACE will coordinate with Town Staff to identify storm sewers and crossings that would be good candidates for CCTV inspection. The final budget needed for CCTV inspection can be adjusted based on the actual linear feet of pipelines that are inspected.

Results of the field reconnaissance and existing condition assessment will be compiled and tabulated for each drainage basin and included as part of the Master Plan report for future refence. This information will also be incorporated into the updated GIS database and dashboard developed as part of Task 2. It is assumed that each facility will include the following information: (a) pipe material and size; (b) detention pond volume; (c) invert elevation(s); (d) condition; and (e) existing/future condition capacity.

Deliverables for this task will include the following:

- ✓ GIS database and maps for the data collection and field verification information that will include: soil classification, existing land use/zoning, assumed future land use/zoning, existing wetlands, and existing critical drainage facilities
- ✓ Tabular spreadsheet list and map of existing critical drainage facility components and characteristics
- ✓ ACAD file from our Licensed Land Surveyor, Majestic Surveying, documenting the existing drainage facility inventory.
- ✓ Digital photo documentation for all existing critical drainage facilities and detention ponds.

TASK 2. GIS DATA REVIEW AND GIS DASHBOARD DEVELOPMENT

The first steps in a GIS database development project are clear identification of final products, the determination of existing information, existing data schema identification and evaluation of that schema for the current project goals. As part of this Task, ACE GIS staff will evaluate the Town's current GIS database. The database will be evaluated for data completeness and data collection needs will be documented. The database schema will also be evaluated, and through coordination with Town Staff, adjustments will be made to the schema in order to incorporate desired information mentioned in this RFP. Once the data gaps have been identified and the data schema finalized, collection of existing and new information can begin.

ACE would then coordinate with Town Staff, and possibly outside contractors, to exhaust all existing data sources for the layers desired in the final database. These data sources, along with new information collected in the fieldwork phase of this project, will be incorporated into the database following the updated database schema. As the data is incorporated into the database, GIS quality control tools will be used to ensure that the incorporated data is topologically correct. Unique identifiers will also be assigned to all assets during the data incorporation phase of the project.

ACE staff will develop a memo regarding database schema standards that the Town can distribute to contractors with the goal of ensuring incoming data matches the Town's updated data schema. With standards in place, the Town will be able to seamlessly integrate new information moving forward. As the project progresses, new data developed during the project will be incorporated into the GIS database for the 30%, 60%, 90% and final milestone deliverables. This data will include information generated during the data collection and field verification process, results from the hydrologic and hydraulic modeling, and identify the 10-Year Capital Improvement Plan components and costs.

ACE continually strives to evolve our services to provide the best possible product for our clients and match the demands of the current business climate. We utilize available technologies and client input to develop strategies to communicate our project goals and progress. Interactive, media rich web-based communication tools have been developed and used to keep clients and stakeholders informed and engaged. Over the years ACE has made it a priority to use emerging technologies not only in their engineering work but also leveraging these technologies in ways that increase community engagement and participation in our projects.

The final presentation for the data produced by this project (both existing and newly collected data) can take many forms. Dashboards and webmaps for online viewing of the data can be as simple or as robust as the client desires. In viewing the Town's current web-based GIS, ACE proposes that in order to maintain consistency with the Town's current capabilities, ACE will develop the following for the final presentation of GIS data:

- Interactive webmap displaying existing conditions:
  - ✓ Current stormwater system assets containing all evaluation information collected as part of Task 1
  - ✓ Drainage basin delineations created as Part of Task 3.1
  - ✓ Hydrologic soil types and existing wetland areas
  - ✓ Flood hazard layers obtained from FEMA
  - ✓ Zoning and land use layers
  - ✓ Results of the existing SWMM model showing flow rates at critical locations created as part of Task 3.1.

- Interactive webmap displaying future/proposed conditions:
  - ✓ Assumed future land use/zoning
  - ✓ Results of the future/proposed SWMM models showing flow rates at critical locations created as part of Tasks 3.2 and 4
  - ✓ Proposed 10-Year capital improvement projects created as part of Task 4 with links to conceptual project schematics and cost estimates.

Note that these maps can easily be configured to include or exclude information if they are to be disseminated to the public. ACE recently completed similar webmaps for the Frederick/Dacono OSP. During this project we were tasked with creating multiple webmaps that excluded certain Town budget and financing information that was deemed unfit for public release. Upon project completion, there will have to be GIS data management by Town Staff. ACE will assist Town Staff in migrating all web-based materials over to the Town's infrastructure and provide a document regarding GIS database updates and maintenance.

Deliverables for this task will include the following:

- ✓ Updated GIS database and maps for the study, provided at the 30%, 60%, 90% and final milestones
- ✓ Memo documenting the creation of the database, the utilized schema, and directions for updating the database with new information while maintaining the existing database standards.

TASK 3. STORMWATER MASTER PLAN PREPARATION

This Task will include the development of all hydrologic and hydraulic modeling necessary to evaluate existing and assumed future conditions for all watersheds identified as part of this Master Plan study. Results from the existing condition analysis will be utilized to determine the capacity of existing stormwater infrastructure and determine where proposed improvements should be investigated. Results from the future condition analysis will be utilized to conceptually size proposed improvements that are selected for inclusion as part of the comprehensive 10-Year Capital Improvement Plan. This task also includes the development of the Master Plan report. Due to the significant effort identified for this Task, the scope for this task has been broken down into following subtasks to facilitate budgeting and schedule tracking as part of the overall project:

- Task 3.1: Existing Condition Modeling and Identification of Drainage Issues
- Task 3.2: Future Condition Modeling Assuming On-site Detention
- Task 3.3: Reporting

TASK 3.1 EXISTING CONDITION MODELING AND IDENTIFICATION OF DRAINAGE ISSUES

Utilizing the existing topographic data, zoning map, and comprehensive land use map, subbasins will be delineated within each of the larger drainage basins. The subbasin delineations completed for the 2001 Master Plan will be utilized as the initial subbasins delineations for this study. These initial subbasins will then be modified to reflect the 2013 topography and other changes within each basin since the completion of the 2001 Master Plan. This scope of work assumes that the average size of the subbasins will be approximately 50-75 acres in urbanized areas, and 100-acres or greater in currently undeveloped areas. Subbasin delineations will be submitted to the Town for review and approval prior to developing hydrologic subbasin parameters. Upon finalization of the subbasin delineations, GIS applications and workflows will be employed to efficiently develop hydrologic subbasin parameters. While not specifically identified in the RFP, this scope of work assumes that CUHP-2005 (Version 2.0.1 or newer) will be utilized to develop subbasin hydrology. If the Town would prefer another method for generating subbasin hydrology, this can be discussed as part of the final scope and budget negotiations.

It is noted that the 2001 Master Plan utilized rainfall intensities for the various storm return intervals based on the City of Loveland's information. However, review of the recently published Johnstown Streets and Stormwater Design Standards Update (which is still in draft form) indicates that rainfall data from the NOAA Atlas 14 shall be used for projects/developments in Johnstown moving forward. Due to the difference in these methods for determining rainfall, ACE will coordinate with Town Staff to determine which rainfall criteria will be utilized for this study. In addition, it is common for different rainfall intensities to be established at the centroid of each of the larger watersheds depending on watershed size. If desired by Town Staff, this method can be utilized for this study or rainfall at a single, centralized location, can be defined for use on all watersheds. This decision will also be discussed with Town Staff prior to proceeding with defining rainfall intensities for this study. Our understanding of NOAA Atlas and CUHP procedures for developing rainfall and subbasin runoff, will promote the efficient completion of the existing condition hydrologic analysis. Similar to the 2001 Master Plan, this scope assumes that only the 5-year (Johnstown minor storm event) and the 100-year (Johnstown major storm event) return intervals will be evaluated as part of this study. If additional return intervals are desired by the Town to be included as part of this Study, this can be discussed during final scoping and budgeting negotiations.

Hydrologic results from the CUHP analysis will be imported into the existing condition SWMM model for hydraulic computations and hydrograph routing along the drainageways. EPA-SWMM (Version 5.2.1), or newer, will be utilized to model existing conditions. This scope assumes that flow routing in the EPA-SWMM model will be conducted with the kinematic wave routing method. Storage and discharge rating curves for existing detention ponds will be developed from the field survey and existing topographic data or information from pertinent drainage development reports. Tabular spreadsheet data will be developed to document the rating curve information for each pond. Hydraulic capacity calculations of existing crossing structures will be conducted using the Federal Highway Administration's Hydraulic Toolbox computer program (HY-8) for culverts and the U.S. Army Corps of Engineer's HEC-RAS program for bridges. As previously mentioned, EPA-SWMM models will be developed for the 5-year and 100-year return periods.

Results of the existing condition EPA-SWMM models will be tabulated and reviewed for problem areas. Discharges from the various return interval SWMM models will be used to determine the storm capacity for each of the critical crossing structures identified as part of Task 1. These capacities will then be compared back to the Town's drainage criteria to determine if the existing crossing is meeting current criteria. Crossings that do not meet criteria will be identified and earmarked for further evaluation and recommendations for future improvements. In addition, the capacities of major drainageway conveyance channels and storm sewers will be evaluated for potential problems and those with inadequate capacities

will be tagged for further evaluation and recommendations for future improvements. Results of this subtask will be incorporated into the GIS Dashboard and utilized to develop the 30% report submittal as discussed in Task 2 and Subtask 3.3.

Deliverables for this subtask will include the following:

- ✓ 30% report submittal documenting the development and results of the existing condition CUHP and EPA-SWMM modeling and existing critical facility evaluation.
- ✓ GIS Dashboard update presenting the results of the existing condition analysis.

TASK 3.2 FUTURE CONDITION MODELING ASSUMING ON-SITE DETENTION

A fully developed CUHP analysis will be conducted to develop hydrology based on the assumed build out of subbasins that are currently partially developed or undeveloped. The comprehensive land use plan obtained and reviewed as part of Task 1 will be used to inform the fully developed percent impervious values for the CUHP analysis. Once completed, the fully developed hydrology will be imported into the existing condition EPA-SWMM models to develop the future condition EPA-SWMM models. On-site detention for subbasins assumed to be developed in the future will be represented with conceptual detention ponds that determine the storage volume required to release to the defined Master Plan criteria. For the purposes of this scope, it has been assumed that conceptual ponds will be sized to detain the 5-year developed condition runoff to no more than the 5-year existing condition peak flow, while also limiting release of 100-year developed condition runoff to the 100-year existing condition peak flow. Results of the future condition EPA-SWMM models will be tabulated and compared back to existing condition results at critical drainage locations. Discharges from the various return interval SWMM models will be used to determine how the capacity of existing crossing will be impacted under fully developed conditions and determine if additional locations need to be earmarked for further evaluation and recommendations for future improvements. Results of this subtask will be utilized to evaluate improvements for the 10-Year Capital Improvement Plan, as discussed in Task 4, and will also be utilized to develop the 60% report submittal as discussed in Subtask 3.3.

Deliverables for this subtask will include the following:

- ✓ 60% report submittal, following the completion of Task 4, documenting the development and results of the future condition CUHP and EPA-SWMM modeling, and preliminary recommendations for future improvements.
- ✓ GIS Dashboard update presenting the results of the future condition analysis.

TASK 3.3 REPORTING

For each of the major watersheds, a master planning document will be prepared that is generally formatted in accordance with MHFD guidelines. It is anticipated that these separate basin reports will be prepared as sections to be included in the overall Stormwater Master Plan Report; providing detailed information for site designers and engineers as specific developments and improvements are considered. While the Stormwater Master Plan report will include the basin specific sections, it will also include a standalone summary of all recommended storm drainage improvements as part of the 10-Year Capital Improvement Plan, an overall plan for implementing the stormwater improvements on a regional basis, and a detailed discussion of the funding evaluation and options for the Town. This planning document will provide guidance for drainage improvements and development within the entire study at a level necessary for decision makers, planners, and community administrators. The development of the report has been broken down into the following phases that correspond to identified project milestones:

- 30% Report Submittal – to be completed at the end of Tasks 1 and 3.1. This will document the data collection, field verification, and existing condition modeling efforts. This submittal will also

include updates to the GIS database and dashboard for the data collection and existing condition modeling results.

- 60% Report Submittal – to be completed at the end of Tasks 3.2 and 4. This will document the future condition modeling efforts, and preliminary identification of proposed improvements. Comments generated from the 30% submittal will be addressed as part of the 60% submittal. This submittal will also include updates to the GIS database and dashboard for the future condition modeling results and identification of the 10-Year Capital Improvement Plan.
- 90% Report Submittal – to be completed at the end of Task 5. This will provide a rough draft of the entire Master Plan study, including proposed 10-Year Capital Improvement Plan formulation, prioritization of the selected plan of proposed improvements, associated capital plan conceptual costs, and the funding evaluation and rate study that will be completed as part of Task 5. A separate standalone document for the 10-Year Capital Improvement Plan that summarizes the selected projects, evaluation criteria utilized to prioritize the projects, and potential funding mechanisms to pay for the projects will also be prepared and submitted as part of this milestone. Comments generated from the 60% submittal will be addressed as part of the 90% submittal. This submittal will also include a draft of the final GIS database and dashboard for the entire Master Plan study.
- Final Report Submittal – to be completed once review comments have been received from the 90% submittal. This will provide a final version of the entire Master Plan study, standalone 10-Year Capital Improvement Plan and GIS Dashboard for the Town's formal adoption.

As each milestone is reached and report phase is produced, Town Staff, community members and other stakeholders will be able to review the report and provide comment. Comments received from the previous submittal phase will be incorporated into report for the new submittal phase. This ensures that Town Staff and others who will utilize the report to guide future stormwater decisions within the community will have the opportunity to provide input and comments as the study is developed, rather than conducting this process at the end of the study which can lead to lengthy and costly revisions, or Town Staff and community members not feeling like they had a voice in the process.

Deliverables for this task will include the following:

- ✓ Ten hard copies and an original electronic pdf version of the final Master Plan report
- ✓ Electronic files of all models, maps, GIS shapefiles, and AutoCAD files
- ✓ A final GIS Dashboard, and associated digital files, for inclusion with the Town's GIS system.

TASK 4 10-YEAR CAPITAL IMPROVEMENT PLAN

This Task will utilize the results of the future condition modeling to formulate proposed improvements that can feasibly be implemented in the next 10-year period. Potential conceptual drainage improvements may include regional detention and/or conveyance enhancements for road crossings, outfall systems and open channels. While regional detention may be considered at any location within the study, the focus on regional detention will be in locations where downstream conveyance systems have limited capacity and which would be physically challenging or prohibitively expensive to upgrade. If it is practicable to improve downstream conveyance systems, preference will likely be given to the conveyance alternative. A primarily conveyance-based improvement approach is recommended where possible, due to the potential for a completely detention-based storm drainage system being overwhelmed by extreme storm events (greater than the 100-year event) which can render the detention improvements only minimally effective. On the other hand, a conveyance-based system can provide some level of flood risk reduction regardless of the magnitude of a storm event. In addition, it is possible that alternative methods such as LID's may be utilized in certain scenarios. However, through recent experiences in Old Town Fort Collins, we have observed that such methods do not provide significant detention capabilities, even at more frequently occurring flood events. They can however provide

significant water quality benefits. In our experience, the most innovative solutions arise through the design process. For example, while providing stormwater detention in Fort Collins at the Canal Importation Pond and Red Fox Meadows, ACE staff designed a multi-use detention facility that helped provide floodplain mitigation benefits, while at the same time establishing a natural area in the middle of town. Details of this project are provided in Appendix C with the project descriptions. Other innovative solutions could potentially include providing recreation/natural areas within floodplain corridors.

The ACE Team will work closely with the Town Staff to formulate potential alternative conceptual improvements. The conceptual improvements will be hydraulically evaluated using the future condition EPA-SWMM models. If it is determined that regional detention improvements are practical, and the Town decides to include regional detention improvements as part of the 10-Year Capital Improvement Plan, ACE will develop a set of proposed condition SWMM models to account for the reduced discharges associated with the regional detention improvements. HY-8 and HEC-RAS models will be developed to appropriately size crossing structures and conveyance channels to safely convey the future condition, or proposed condition flows, if applicable. Conclusions from the hydraulic evaluation will result in the development of a preferred plan of improvements that will be recommended for the Town Council's approval.

Conceptual designs will then be completed for the recommended facilities identified in the selected plan of improvements. Opinions of probable cost, including engineering design, permitting, construction, and land acquisition will be developed for the proposed improvements and presented in spreadsheet format. It is assumed that the MHFD UD-MP Cost Spreadsheet and CDOT Cost Data Books with adjustments for recent construction cost inflation and other indices will be utilized to develop the opinions of probable cost for the funding evaluation.

Facilities identified in the 10-Year Capital Improvement Plan will be evaluated and prioritized based on several factors that will likely include: benefits to public health and safety, locations where flood mitigation is acutely needed, locations where development is imminent, cost, and physical requirements of existing and future storm drainage facilities. Potential implementation scenarios will be identified in the context of the funding evaluation and the Town's preferences for funding mechanisms.

Deliverables for this task will include the following:

- ✓ A prioritized 10-year capital improvement plan that includes conceptual level design, alignments, and cost estimates.
- ✓ A standalone document for the 10-Year Capital Improvement Plan that summarizes the selected projects, evaluation criteria utilized to prioritize the projects, and potential funding mechanisms to pay for the projects. This will be submitted as part of the 90% milestone deliverables.

TASK 5. RATE STUDY

Funding of the stormwater improvements associated with the Master Plan will be affected by the Town's respective utility enterprise structure. George Oamek from Honey Creek Resources has been added to the project team to assist the Town in developing a funding process. The 10-Year Capital Improvement Plan can be funded through various funding routes because Johnstown's Stormwater enterprise fund provides a dedicated revenue stream and ability to avoid TABOR revenue issues. Financing sources for individual projects, or the program in its entirety, would typically involve some combination of revenue bonds, capital reserves, and grant funds to the degree they are available. Dedicated stormwater impact fees and monthly user charges would be relied upon to cover these financing costs. Property tax revenues may or may not be a component of enterprise revenues, depending on the specific jurisdiction. These revenues could be further leveraged to issue traditional revenue bonds, State and Federally backed revenue bonds, and provide local cost shares for grants.

Typical funding sources for a stormwater enterprise would include dedicated impact fees and monthly user charges. Property tax revenues may or may not be a component of enterprise revenues, depending on the specific jurisdiction. These revenues could be further leveraged to issue traditional revenue bonds, State and federally backed revenue bonds, and provide local cost shares for grants.

Our experience reinforces that, in addition to overall project cost, the combination of project funding, timing and sequencing of individual projects are critical to successful implementation and cannot be separated. As a result, the development of an analytical spreadsheet model is recommended to assess different combinations of each. This model is anticipated to be relatively simple but would include current revenue sources, future revenue sources including financing, and capital and operational costs over the 10-year implementation period.

For this task, the baseline funding effort includes:

- A schedule of project implementation and recommend funding sources for each project.
- Estimate of the impact to overall stormwater-related costs, to assess the incremental changes in stormwater fees.
- A comparison of current fees and potential future fees, with a comparison to fees paid in surrounding communities. This would include discussion of the similarities and differences of stormwater financing in Johnstown with neighboring communities.

Once the baseline funding effort has been completed, the second phase will be initiated that will address questions that will likely arise in the implementation phase and during public involvement activities. These potential additional deliverables would include:

- A series of implementation scenarios conditioned by the availability of alternative funds, construction sequences, organization structures, and the public's tolerance for absorbing rate and fee increases.
- A more detailed examination of user charge impacts by customer classification, including residential, commercial, industrial, and other land use classifications.

The stormwater improvement implementation policy/plan will be closely tied to the funding evaluation and subsequent identification of a preferred funding methodology for the Town. Potential implementation scenarios will be identified in the context of the funding evaluation and the Town's preference for funding mechanisms.

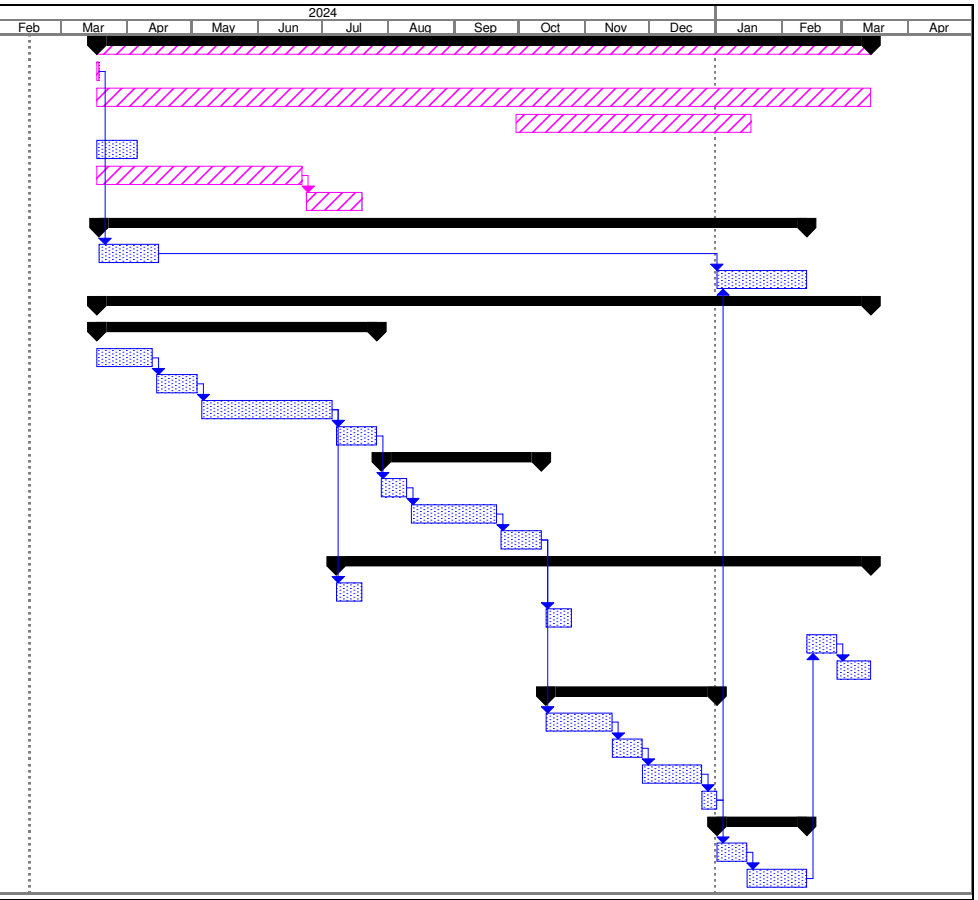
Deliverables for this task will include the following:

- ✓ Documentation of current Johnstown and nearby municipalities stormwater fees and assumptions used in the development of the financial model.
- ✓ Electronic files of the final model
- ✓ Incorporation of the funding evaluation and results from the financial modeling as part of the standalone document for the 10-Year Capital Improvement Plan.

SECTION 3 – SCHEDULE OF SERVICES

We are keenly aware of the timely response that is necessary to complete this project and are enthusiastically committed to providing the services necessary to support the work to meet the Town's schedule. Accordingly, we have prepared a task-based work schedule, presented as below, which we believe will allow for completion of the study in the Spring of 2025. Potential (although unlikely) impacts to the project schedule may include review delays, issues associated with organizing public meetings, and subconsultant schedules. As discussed in Section 4, project schedule will be monitored and maintained through continual coordination and the use of monthly progress reports. Should any issues arise that could potentially impact project schedule, the ACE project manger would immediately notify the Town's project manager to discuss potential delays and formulate any necessary actions to mitigate delays.

ID	Task Name	Start	Finish
1	**Task 1 - Project Coordination and Data Gathering**	**Mon 3/18/24**	**Fri 3/14/25**
2	Subtask 1.1 - Kickoff Meeting	Mon 3/18/24	Mon 3/18/24
3	Subtask 1.2 - Progress Meetings	Mon 3/18/24	Fri 3/14/25
4	Subtask 1.3 - Community Engagement Workshops/Coordination with Stakeholders	Mon 9/30/24	Fri 1/17/25
5	Subtask 1.4 - Information Gathering	Mon 3/18/24	Fri 4/5/24
6	Subtask 1.5 - Conditions Assessment	Mon 3/18/24	Fri 6/21/24
7	Subtask 1.6 - Field Verifications	Mon 6/24/24	Fri 7/19/24
8	**Task 2 - GIS Data Review and GIS Development**	**Tue 3/19/24**	**Wed 2/12/25**
9	Subtask 2.1 - Review and Evaluate Existing Town GIS Data and Schema	Tue 3/19/24	Mon 4/15/24
10	Subtask 2.2 - Update/Modify Existing GIS Database to Reflect Master Plan Information	Thu 1/2/25	Wed 2/12/25
11	**Task 3 - Stormwater Master Plan Preparation**	**Mon 3/18/24**	**Fri 3/14/25**
12	**Subtask 3.1 - Modeling of Existing Conditions and Identification of Existing Drainage Issues**	**Mon 3/18/24**	**Fri 7/26/24**
13	Subtask 3.1.1 - Subbasin Delineation	Mon 3/18/24	Fri 4/12/24
14	Subtask 3.1.2 - Hydrologic Parameters, Land Use, Rainfall Data, and Subbasin Runoff	Mon 4/15/24	Fri 5/3/24
15	Subtask 3.1.3 - Development of SWMM Hydrograph Routing Model	Mon 5/6/24	Fri 7/5/24
16	Subtask 3.1.4 - Hydraulic Evaluation of Existing Drainage Facilities and Problem ID	Mon 7/8/24	Fri 7/26/24
17	**Subtask 3.2- Modeling of Future Conditions Assuming On-Site Detention**	**Mon 7/29/24**	**Fri 10/11/24**
18	Subtask 3.2.1 - Development of Hydrologic Parameters, Land Use, and Subbasin Runoff	Mon 7/29/24	Fri 8/9/24
19	Subtask 3.2.2 - Development of SWMM Hydrograph Routing Model	Mon 8/12/24	Fri 9/20/24
20	Subtask 3.2.3 - Evaluation of Existing Drainage Facilities with Future Condition Hydrology	Mon 9/23/24	Fri 10/11/24
21	**Subtask 3.3 - Reporting**	**Mon 7/8/24**	**Fri 3/14/25**
22	Subtask 3.3.1 - 30% Submittal	Mon 7/8/24	Fri 7/19/24
23	Subtask 3.3.2 - 60% Submittal	Mon 10/14/24	Fri 10/25/24
24	Subtask 3.3.3 - 90% Submittal	Thu 2/13/25	Wed 2/26/25
25	Subtask 3.3.4 - Final Report	Thu 2/27/25	Fri 3/14/25
26	**Task 4 - 10-Year Capital Improvement Plan**	**Mon 10/14/24**	**Wed 1/1/25**
27	Subtask 4.1 - Formulate Conceptual Stormwater Management Improvement Alternatives	Mon 10/14/24	Wed 11/13/24
28	Subtask 4.2 - Develop Recommendations for Water Quality and Other Environmental Requirements	Thu 11/14/24	Wed 11/27/24
29	Subtask 4.3 - Prepare Conceptual Design and Cost Estimates for Selected Plan of Improvements	Thu 11/28/24	Wed 12/25/24
30	Subtask 4.4 - Develop Prioritization Matrix and Standalone Report	Thu 12/26/24	Wed 1/1/25
31	**Task 5 - Rate Study**	**Thu 1/2/25**	**Wed 2/12/25**
32	Subtask 5.1 - Review and Evaluate Existing Town Stormwater and Development Rate Fees	Thu 1/2/25	Wed 1/15/25
33	Subtask 5.2 - Future Rate Implementation Planning	Thu 1/16/25	Wed 2/12/25



BUDGET AND COST CONTROL

For all work conducted for the Town of Johnstown, the ACE Project Manager will ultimately be responsible for the timely completion of all phases of the project within budget. The project manager's responsibilities include: (a) ensuring that all company resources are made available to the project team; (b) overseeing financial performance and progress of the project; and (c) ultimate technical review of all deliverable products. To facilitate tracking the budget and progress of projects, several tools are utilized by the Anderson Consulting Engineers. These tools include:

ACE's Quality Control Program is designed to:

- **Have all levels of management maintain an effective quality control program with active participation by all project personnel.**
- **Ensure that quality is an integral part of the entire project and not just an "end of job" review.**
- **Consider quality standards and objectives as superior to budget and schedule considerations in all management decisions.**
- **Commit the resources needed to achieve the quality goals and objectives as set by the client and project manager.**

- ***Preparation of an initial project budget form*** that allocates manpower, level of effort and other direct costs on a task-by-task basis. Level of effort can be tracked on a weekly basis and direct costs on a monthly basis to monitor expenditures for each task.
- ***Preparation of a detailed, task oriented, project schedule*** including the identification of all milestones, deliverables, meetings, and presentations.
- ***Monthly meetings with the project team*** (with more frequent meetings held as specific phases of the project dictate) to update the project/task budget status, discuss project/task progress and scheduling, and identify potential problems associated with the completion of each task.
- ***Biweekly status reports and progress meetings***, as required by the project, to keep the client and all project team members apprised of current progress and needs of the project.
- ***Monthly billing review reports*** **supported by** ***weekly task-oriented time sheets*** that document costs accrued to date for each task and the total project.

This proactive approach to project management provides the ACE project manager with the flexibility to expand the level of effort, as necessary, to meet project deadlines and maintain the original project schedule. It is recognized that all projects are modified to some degree, as the actual work progresses, and the full details of the project elements become apparent. Our management approach provides a flexible project framework that supports and directs the day-to-day work effort, achieves scheduled milestones, and maintains the overall project goals. Should an unforeseen issue arise, that will impact the schedule such that milestones are impacted, the Project Manager will immediately contact the Town of Johnstown's Project Manager to discuss and work through solutions.

ACE's internal project management controls provide for the efficient completion of projects on time and under budget, while resulting in the preparation of work products of uniquely high quality which have long been our trademark and for which we are well known. This is exemplified in our record of small- and large-scale projects completed on time and either at or under budget.

QUALITY ASSURANCE/QUALITY CONTROL

As professional engineers and scientists, ACE understands that a systematic approach is the best means of ensuring the quality of our work products and meeting the performance standards required by our

clients. Systematic quality assurance and control is accomplished by appropriate and timely review of the project goals; contracted scopes of work, budgets, and schedules; technical methods; and all work products including design plans and bid documents. Typically, an internal quality control team comprised of the Project Manager and one or more senior engineers will be assigned to each project. We generally involve the Town PM at this point to ensure an early and complete understanding of expectations regarding project products and schedule, and to determine that the work product meets the Town's requirements and performance standards. Project requirements are defined and discussed in detail with all project team members, including subconsultants. The essential facets of ACE's quality control process include:

- ✓ Agreement on a detailed scope of work for each task.
- ✓ Preparation of budgets and schedules for performing the work.
- ✓ Frequent communication on progress of the work, issues encountered, and milestones achieved.
- ✓ Periodic review of performance related to the planned schedule and budget goals.
- ✓ Quality standards for all field data collection efforts and subcontractor work.
- ✓ Outline and scheduling of meetings to coordinate efforts of the various disciplines involved in any given project.
- ✓ Utilization of QA/QC checklists during the technical evaluation of alternatives, as well as the development and review of products including design drawings and bid documents.
- ✓ Review of work product items as they are produced to ensure the requisite accuracy is achieved.

SECTION 5 – AVAILABILITY TO PERFORM THE WORK

Anderson Consulting Engineers, Inc. (ACE) prides itself on the fact that it has built a strong coalition of clients consisting primarily of local Municipalities, Counties and Government Entities. Part of the equation in maintaining these working relationships is ensuring that staffing is sufficient to successfully complete projects on time and within budget. Fortunately, ACE has managed to strike a fine balance of staff personnel to workload, giving us the ability to fully utilize our staff while ensuring projects are completed on time and within budget.

Because ACE is an employee owned firm, we are afforded increased responsiveness and flexibility to reallocate our firm's resources, as necessary, to meet the needs of this project as needs may evolve. It has been our experience that small, local, employee-owned companies such as our firm, tend to be more responsive to their clients' needs.

Table 5.1. Employee Commitment to Project

Statistics for Key Project Staff		
ACE Employee	Project Commitment (Over the Next Year)	
	% Capacity Available	% Capacity Required
Jamis Darrow, P.E., CFM, MBA	40%	20%
Clark Kephart, P.E.	50%	15%
Alison Korionoff, E.I.T.	70%	45%
Ben Ackert	50%	20%
Brian Thompson	80%	20%
Brian Smith, P.E., CFM	15%	<5%

The Project Manager being assigned to this project has substantial experience balancing the needs of multiple clients at the same time. Given the present staffing at ACE, the anticipated work effort required for this project would represent a fraction of our annual workload. Consequently, staff dedicated to meeting the needs of the Town Project Manager can be readily assigned and prioritized to satisfy those needs. ***In summary, ACE can confidently make a commitment to provide its staff and resources to fulfill the needs of the Town of Johnstown and produce a high-quality product in a timely***

and cost-effective manner. Our anticipated commitment of project staff is illustrated for each ACE Employee in Table 5.1. It is noted that the table below only identifies select ACE Employees; however, numerous other individuals from our staff can and will be made available to address unforeseen contract requirements. Finally, it is noted that the final commitment of staff to the project may vary depending on the final scope of services.

SECTION 6 – OTHER

SMALL BUSINESSES

As noted in Section 1, the ACE project team is comprised of the following companies: Anderson Consulting Engineers, Majestic Surveying, GPRS, and Honey Creek Resources. While none of these team members qualify as minority-owned business enterprises, ACE, Majestic Surveying and Honey Creek Resources are all small business enterprises (SBE).

We feel that because our team is comprised of small businesses, we provide value to the Town and the project due to the facts that we operate with low overhead, offer competitive billing rates, and have the ability to readily reallocate resources to the project as deadlines may require.

PRIOR EXPERIENCE WITH THE TOWN OF JOHNSTOWN

As discussed in Section I, ACE staff have recently worked on a number of projects within the Town of Johnstown. These experiences have resulted in our staff becoming familiar with Town of Johnstown stormwater criteria and staff. These experiences have given our staff familiarity with the Town's criteria and have also exposed us to proposed criteria changes. Many of the proposed changes are consistent with MHFD criteria (which ACE staff is intimately familiar with due to working for other communities including City of Boulder, Boulder County, Frederick, and Castle Rock, all of which utilize MHFD criteria).

Recent projects which ACE staff have contributed engineering services to within the Town of Johnstown include the hydraulic and scour analyses for the Riverbend Estates subdivision at the Little Thompson River, the existing condition hydrologic analyses for the Bunyan Basin, and the analysis and design for regional drainage facilities and irrigation storage along Big Hollow Gulch and the Ridge Development. Project descriptions for the last two projects mentioned above are provided in Appendix C.

APPENDIX A
REQUIRED FORMS
(ATTACHMENT A, W9)

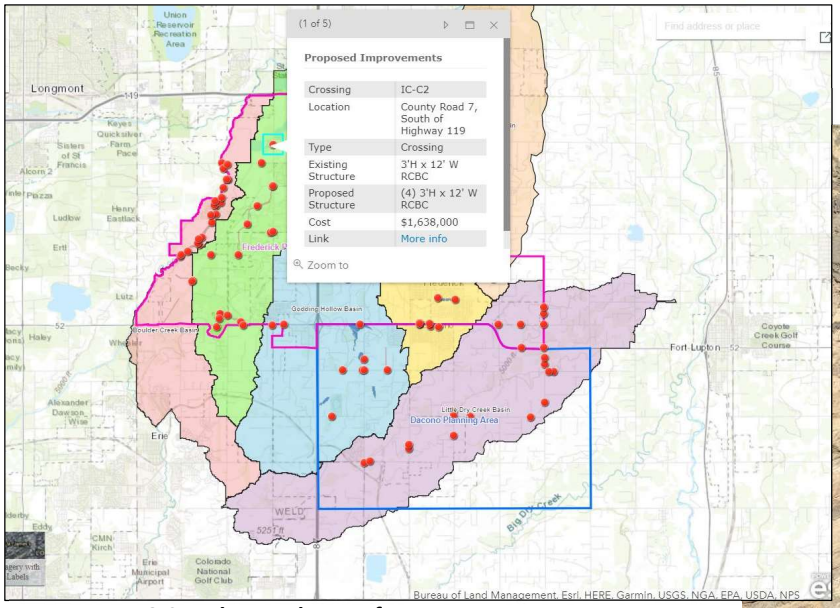
Stormwater Conveyance Channel

Field Verification and Data Collection Forms

EXISTING DETENTION POND

Stage (NAVD 88) (ft)[1]	AutoCAD Area (ft^2)[2]	AutoCAD Area (acre)	Unit Depth (ft)	Total Volume (ft^3)	Total Volume (acre-ft)	Pipe Discharge (cfs)[3]	Weir Discharge (cfs)[4]	Total Discharge (cfs)	Notes:
4956.31	0	0.00	0.0	0	0.00	0.00	0.00	0.00	Water Quality Release Not Modeled
4957.00	429	0.01	0.69	99	0.00	0.00	0.00	0.00	
4958.00	15137	0.35	1.69	6137	0.14	0.00	0.00	0.00	
4959.00	41464	0.95	2.69	33354	0.77	0.00	0.00	0.00	
4960.00	54504	1.25	3.69	81190	1.86	0.00	0.00	0.00	
4960.88	58128	1.33	4.57	130739	3.00	0.00	0.00	0.00	Invert of 10-Year Weir
4961.00	49488	1.14	4.69	137189	3.15	0.00	0.00	0.00	Weir Flow Through 10-Year Opening
4962.00	64245	1.47	5.69	193895	4.45	1.10	0.00	1.10	
4962.55	66835	1.53	6.24	229940	5.28	3.00	0.00	3.00	Top of Inlet Box for 100-Year Opening
4962.88	68709	1.58	6.57	252304	5.79	11.64	0.00	11.64	Add Weir Flow Around Top of Box
4963.00	69461	1.59	6.69	260594	5.98	16.76	6.90	23.66	
4963.50	72874	1.67	7.19	296174	6.80	21.59	101.10	122.69	Orifice Flow Through 100-Year Opening/ Emergency Spillway Elevation

[1]Invert based on survey
[2]Based on 2013 LiDAR contours or information provided in drainage report
[3]10-Year discharge based on 1.0' wide x 1.67' high triangular weir
[3]Discharge controlled by weir around 4.3' wide x 4.3' long top of box
[3]100-Year discharge based 18" outlet pipe with no orifice plate
[4]Weir flow approximated as a broad crested weir



GIS Web-Based Maps for Data Management

Big Hollow Gluch Culvert Crossing of County Road 18

ANDERSON CONSULTING ENGINEERS

REQUEST FOR QUALIFICATIONS
FOR CONSULTING SERVICES TO DEVELOP A
COMPREHENSIVE STORMWATER MASTER PLAN
FOR THE TOWN OF JOHNSTOWN, COLORADO

ATTACHMENT A-RFQ SUBMISSION FORM FOR ELECTRONIC SUBMISSION

(Include this form as a PDF with your electronic submission)

Does your offer comply with all the terms and conditions? (YES / NO)
If no, indicate where exceptions can be found in the proposal.

Does your offer meet or exceed all specifications? (YES / NO)
If no, indicate where exceptions can be found in the proposal.

Does your offer intend to comply with the Town's Professional Service Agreement? (YES / NO)
If no, indicate what exceptions you may have to the Agreement template.

Have All Addendums Been Acknowledged? (YES/NO)

(Please Note Addendums by Number/Date) *Addendum #1: 01/03/2024*
Addendum #2: 01/17/2024

Has a Duly Authorized Agent of the Consultant Signed the Cover Letter? (YES / NO)

Has your UEI been included in your Cover Letter? (YES / NO)

Has a W-9 Form Been Included With the Proposal? (YES / NO)

Does Consultant agree to execute contract documents electronically if the Town so requests?

(YES / NO)

Person authorized to execute contract documents:

Printed Name: Jamis Darrow

Title: Principal Engineer

Email Address: Jamis.Darrow@acewater.com

Date: 2/16/2024

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ **Go to *www.irs.gov/FormW9* for instructions and the latest information.**

Give Form to the requester. Do not send to the IRS.

Print or type. See **Specific Instructions** on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

Anderson Consulting Engineers, Inc.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☑ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

375 E. Horsetooth Rd, Bldg 5, Suite 100

Requester's name and address (optional)

6 City, state, and ZIP code

Fort Collins, CO 80525

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN,* later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

8	4	–	1	4	7	8	0	5	0

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here | **Signature of U.S. person ▶** Leah Fiske **Date ▶** 02/13/2024

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9.*

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

APPENDIX B
STAFF RESUMES

Stormwater Conveyance Channel

Field Verification and Data Collection Forms

EXISTING DETENTION POND

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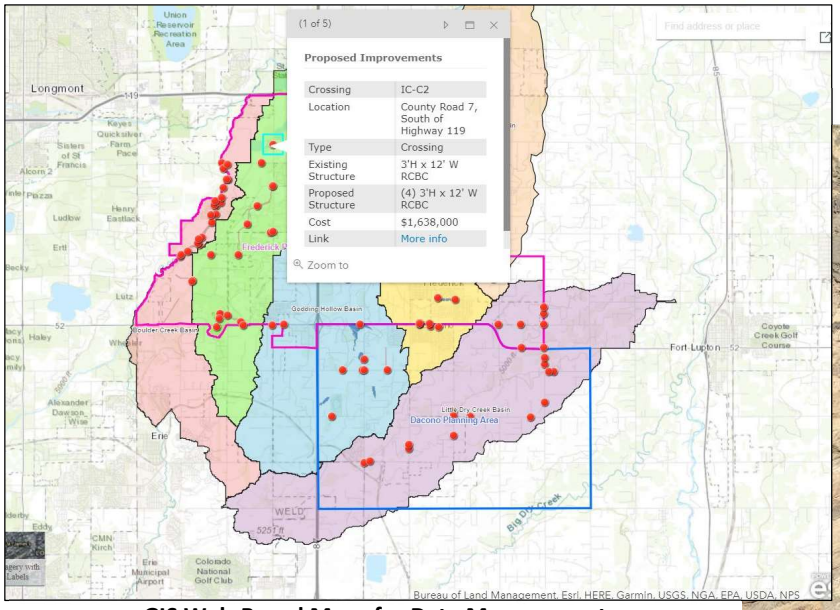

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ANDERSON CONSULTING ENGINEERS

REQUEST FOR QUALIFICATIONS
FOR CONSULTING SERVICES TO DEVELOP A
COMPREHENSIVE STORMWATER MASTER PLAN
FOR THE TOWN OF JOHNSTOWN, COLORADO

Jamis D. Darrow, P.E., CFM, M.B.A.
Principal Engineer/Project Manager
Jamis.Darrow@acewater.com

Professional Engineer:
Colorado #42130
Utah #10147986-2202
Certified Floodplain Manager

Education:
B.S./Civil Engineering
Colorado State University/2002

M.S./Hydraulic Engineering
Colorado State University/2004

M.B.A./Business Administration
Colorado State University/2013

Technical Expertise:
Hydraulic Analysis/Modeling and Design, Riverine Channel Stability/Floodplain Studies, Civil/Hydraulic Structure Design, Drainage and Flood Control Design, Hydrologic Analysis/Modeling

Service: Larimer County Flood Review Board (since October, 2022)

Years of Experience:
20

Jamis D. Darrow, P.E., CFM, M.B.A.

Principal Engineer/Project Manager

SKILLS:

Mr. Darrow is a Principal Engineer and owner of Anderson Consulting Engineers who has twenty years of experience. Mr. Darrow has served as a project manager/engineer in numerous projects and studies involving: (a) *hydrologic/hydraulic modeling* of natural riverine and urban drainage systems; (b) preliminary and final design of flood control channels, detention ponds, hydraulic structures, storm sewers, and river restoration projects; (c) evaluation and design of mitigation measures for channel bed and bank erosion; (d) geomorphic and sediment transport assessments; and (e) floodplain and floodway delineations in both natural and urban riverine settings in support of CLOMR, LOMR and PMR submittals to the Federal Emergency Management Agency.

Mr. Darrow is proficient in the application of and theoretical basis for numerous hydrologic and hydraulic computer models, including (a) many versions of the EPA Stormwater Management Model (EPA SWMM, UDSWM2000, and MODSWMM); (b) the U.S. Army Corps of Engineers' River Analysis System (HEC-2 and HEC-RAS); (c) 2D and Combined 1D/2D hydraulic modeling and mapping (HEC-RAS 2D and RASMapper); (d) culvert design software (HY-8); and (e) the Mile High Flood Control Districts' Colorado Urban Hydrograph Procedure Computer Program (CUHP). Mr. Darrow is also proficient in the use AutoCAD Civil 3D drafting software, and ArcGIS software. The following is a selected sample of studies for which Mr. Darrow has managed or significantly contributed his technical expertise:

PROJECT EXPERIENCE:

- ***Firestone Outfall System Plan: Firestone, Colorado.*** *Ongoing project to complete a Storm Water Master Plan for Firestone, Colorado. Includes existing condition, future condition and proposed condition hydrology.*
- ***Urban Stormwater Management Master Plan Update: Longmont, Colorado.*** *Project involved updating hydrologic models, identification/conceptual design/prioritization of proposed improvements and a qualitative review of the City's MS4 program.*
- ***St. Vrain Creek Floodplain Mitigation and Fastracks FTD Site Drainage Improvement Alternatives: Longmont, CO.*** *Project defined flood hazards for more than 7 miles of St. Vrain Creek and proposed floodplain mitigation alternatives.*
- ***Allison Draw Floodplain Reduction Alternatives: Cheyenne, Wyoming.*** *Project evaluated alternatives to reduce 100-year floodplain extents along Allison Draw, south of Cheyenne Wyoming.*
- ***Chestnut Drainage Improvement Project: Windsor, Colorado.*** *Project included design of 830 feet of 48-inch RCP and 1,600 feet of 60-inch RCP along with providing nearly 13 acre-feet of flood detention volume.*
- ***Main Street/17th Avenue Storm sewer Replacement Project: Longmont, Colorado.*** *Design of nearly 1,900 feet of 18-inch RCP, 400 feet of 24-inch RCP, 400 feet of 36-inch RCP, nine manholes, nine Type R inlets, and two combination Type 13 inlets.*

Brian A. Smith, P.E., CFM
Principal Engineer/Project Manager
Brian.Smith@acewater.com

Professional Engineer:
Colorado #41276
Nebraska #E18088
Wyoming #19079
Certified Floodplain Manager

Education:
B.S./Civil Engineering
Colorado State University/2001

M.S./Hydraulic Engineering
Colorado State University/2003

Technical Expertise:
Hydraulic Modeling: 1D & 2D
Hydrologic Modeling
Design of Hydraulic Systems
Riverine Channel Stability
Floodplain Studies: CLOMR/LOMR
Drainage and Flood Control Design
Urban Drainage Master Planning
Resident Engineering

Years of Experience:
21

Brian A. Smith, P.E., CFM

Principal Engineer/Project Manager

SKILLS:

Mr. Smith is a principal engineer and project manager with Anderson Consulting Engineers, Inc. He has 20 years of experience managing and conducting projects for public and private sector clients in Colorado, Wyoming, Kansas, Utah, Mississippi, Louisiana, and Indiana. Mr. Smith has served as a project manager/senior engineer for studies involving: (a) hydrologic, hydraulic and two-dimensional hydraulic analyses of natural and improved river systems; (b) floodplain/floodway delineations in both natural and urban riverine settings, in support of CLOMR and LOMR applications to FEMA; (c) preliminary and final design of flood control channels, detention ponds, water quality ponds, hydraulic structures, irrigation canal structures, channel erosion protection measures, and storm sewers; (d) preparation of master drainage plans; and (e) hydrologic/hydraulic modeling of urban drainage systems.

Mr. Smith is proficient in the application of and theoretical basis for numerous hydrologic and hydraulic computer models, including (a) the U.S. Army Corps of Engineers' River Analysis System (HEC-RAS) and Backwater Profile computer model (HEC-2); (b) the unsteady flow module of HEC-RAS; (c) two-dimensional hydraulic modeling using HEC-RAS2D, FLO-2D, River 2D, PCSWMM2D and SRH; (d) the Federal Highway Administration computer program for designing culverts (HY-8); (e) the U.S. Army Corps of Engineers' Hydrologic Modeling System (HEC-HMS); (f) the Environmental Protection Agency's (EPA) Stormwater Management Model (EPA-SWMM); (g) the Urban Drainage and flood Control Districts' Colorado Urban Hydrograph Procedure Computer Program (CUHP); and (h) MODSWMM (a modified version of UDSWMM).

PROJECT EXPERIENCE:

- ***Frederick/Dacono Outfall System Plan: Town of Frederick and City of Dacono, Colorado**. Project involved updating the storm drainage masterplan for five major drainage basins within the communities and included hydrologic and hydraulic analyses, flood mitigation planning, cost-estimation, financial planning and public process.*
- ***Old Town Basin Master Plan Improvement Evaluation: Fort Collins, Colorado.** Project involved completing hydrologic and hydraulic evaluations to update and re-prioritize the preferred Masterplan of Improvements for the Old Town Basin in Fort Collins. Conceptual cost estimates were completed for the proposed projects.*
- ***Comprehensive Drainage Plan: Greeley, Colorado.** Project involved a comprehensive masterplan update for several basins within the City of Greeley. The plan revised the previous selected plan of improvements and updated conceptual cost estimates.*
- ***Poudre River Whitewater Park Project: Fort Collins, Colorado.** Project included the design and construction oversight of an $11.5 million whitewater park in Old Town Fort Collins and required stream restoration, permitting, storm sewer design, development of a localized storm drainage mater plan, public process, scour analyses, design of erosion countermeasures, CLOMR, and LOMR submittal.*
- ***Remington Street Storm Sewer Outfall Design, Fort Collins, Colorado**. Project included the design and construction oversight of approximately 2,300-feet of large diameter storm sewer in an urban corridor and required hydrologic and hydraulic analyses, permitting, water quality design and a no-rise analysis.*

Clark W. Kephart, P.E.
Project Engineer II
Clark.Kephart@acewater.com

Professional Engineer:
Colorado #51867
Nebraska #E20105

Education:
B.S./Civil Engineering
University of Nebraska/2010

M.S./Hydraulic Engineering
University of Nebraska/2013

Technical Expertise:
Hydraulic Modeling
Hydrologic Modeling
Sediment Transport Modeling
Floodplain Studies
Design of Hydraulic Systems
Stormwater Drainage Design
Master Planning
CLOMR
LOMR
Resident Engineering

Years of Experience:
11

Clark W. Kephart, P.E.

Project Engineer II

SKILLS:

Mr. Kephart is a Professional Engineer with Anderson Consulting Engineers who has eleven years of experience. Mr. Kephart has served as a project engineer in numerous projects and studies involving: (a) *hydrologic/hydraulic modeling and design* of natural riverine and urban drainage systems; (b) *floodplain and floodway delineations* in both natural and urban riverine settings, in support of CLOMR and LOMR applications to the FEMA; (c) *two-dimensional modeling* of river systems and their floodplains and (d) *preparation of countywide DFIRM conversions.* Mr. Kephart has also served as Resident Engineer overseeing construction activities on numerous projects.

Mr. Kephart is proficient in the application of and theoretical basis for numerous hydrologic and hydraulic computer models, including (a) the U.S. Army Corps of Engineers' Flood Hydrograph Package (HEC-HMS); (b) the U.S. Army Corps of Engineers' River Analysis System (HEC-RAS); (c) 2D and Combined 1D/2D hydraulic modeling and mapping (SRH-2D, HEC-RAS 2D and RASMapper); (d) the Environmental Protection Agency's (EPA) Stormwater Management Model (EPA SWMM); and (e) the Mile High Flood District's Colorado Urban Hydrograph Procedure Computer Program (CUHP). Mr. Kephart is also proficient in the use AutoCAD Civil 3D drafting software, and ArcGIS software. The following is a selected sample of studies for which Mr. Kephart has significantly contributed his technical expertise:

PROJECT EXPERIENCE:

- ***Frederick-Dacono Outfall System Plan: Frederick & Dacono, Colorado***. *Mr. Kephart assisted in updating the storm drainage masterplan for five major drainage basins which involved hydrologic and hydraulic analyses, flood mitigation planning, and public process.*
- ***Remington Street Strom Sewer Outfall Design: Fort Collins, Colorado.*** *Project included the design and construction oversight of approximately 2,300-feet of large diameter storm sewer in an urban corridor and required hydrologic and hydraulic analyses, permitting, water quality design and a no-rise analysis.*
- ***Poudre River Whitewater Park Project: Fort Collins, Colorado***. *Project included the design and construction oversight of an $11.5 million whitewater park in Old Town Fort Collins and required stream restoration, permitting, storm sewer design, development of a localized storm drainage master plan, public process, scour analyses, design of erosion countermeasures, CLOMR, and LOMR submittal.*
- ***Oak Street Strom Sewer Extension Project: Fort Collins, Colorado.*** This project involved the development of storm sewer improvements outlined in the City of Fort Collins Old Town Basin Master Plan. Improvements are located within the Oak Street Storm Outfall in downtown Fort Collins. Hydrologic and hydraulic modeling with EPA-SWMM and PCSWMM 2D were utilized to size storm sewer infrastructure.
- ***Replacement of LCR 45E Crossing of Dale Creek: Larimer County, Colorado.*** This project included hydrologic analysis, hydraulic design, and erosion countermeasure design of the LCR 45E crossing at Dale Creek. HEC-HMS was utilized to evaluate the Dale Creek drainage basin and to develop design flows for sizing the new crossing structure.

Alison O. Korionoff, E.I.T.
Engineer II
Alison.Korionoff@acewater.com

Education:
B.S./Civil Engineering
Montana State University/2019

Technical Expertise:
Hydraulic Modeling
Hydrologic Modeling
Stormwater Drainage Evaluation
Master Planning

Years of Experience:
4

Alison O. Korionoff, E.I.T.

Engineer II

SKILLS:

Mrs. Korionoff is a Project Engineer with Anderson Consulting Engineers, Inc. (ACE) since January 2020. Mrs. Korionoff has served as a project engineer in several projects and studies involving: (a) *hydrologic/hydraulic modeling* to develop a master drainage plan; (b) *hydrologic/hydraulic modeling* to evaluate existing storm drainage systems*; and* (c) *field reconnaissance and survey* to identify existing land use, drainage patterns, drainage facilities, and identify drainage issues.

Mrs. Korionoff is proficient in the application of and theoretical basis for numerous hydrologic and hydraulic computer models, including (a) the U.S. Army Corps of Engineers' Flood Hydrograph Package (HEC-HMS); (b) the U.S. Army Corps of Engineers' River Analysis System (HEC-RAS); (c) the Environmental Protection Agency's (EPA) Stormwater Management Model (EPA SWMM), Autodesk Storm and Sanitary Analysis (SSA), and Computational Hydraulics International's (CHI) Personal Computer Storm Water Management Model (PCSWMM); and (d) the Mile High Flood District's Colorado Urban Hydrograph Procedure Computer Program (CUHP). Mrs. Korionoff is also proficient in the use of AutoCAD Civil 3D drafting software. The following is a selected sample of studies for which Mrs. Korionoff has significantly contributed her technical expertise:

PROJECT EXPERIENCE:

- ***Bunyan Basin Drainage Hydrologic Analyses: Johnstown, Colorado.*** On-going project to evaluate the Bunyan Basin Drainage crossing of the Hillsborough Ditch. This is an evaluation of existing hydrologic conditions for Bunyan Basin and the impact it may have on a proposed development downstream of the crossing during larger return periods.
- ***City of Longmont Master Drainage Plan: Longmont, Colorado.*** This project developed a city-wide storm drainage master plan for both existing and future development conditions. This master plan also involved problem identification, drainage improvement alternative evaluation, and development of a selected plan.
- ***City of Fort Collins Oak Street Outfall: Fort Collins, Colorado.*** On-going project to reduce existing flooding in downtown Fort Collins by extending the existing storm drainage system and the addition of new laterals.
- ***South Loveland Outfall pipe and Channel Project: Loveland, Colorado.*** This project evaluated an existing stormwater collection and conveyance system and designed improvements to the downstream receiving channel to convey 100-year return period flows to the Big Thompson River.
- ***Oxbow Property Planning and Floodplain Permitting: Fort Collins, Colorado.*** On-going project to design both a detention pond and water quality features to facilitate future development.
- ***Owl Creek Irrigation District Lucerne Master Plan, Level 1 Study: Thermopolis, Wyoming.*** This project involved extensive field inventory and the evaluation of existing facilities within the Lucerne and RE-lift irrigation canals.

Brian D. Thompson
Senior GIS Analyst
Brian.Thompson@acewater.com

Senior GIS Analyst

Education:
B.S./Geography (Concentration in GIS)
Towson University/1996
Michigan State University/2011

Certified Drone Pilot

Professional Certificate in Watershed Management

Technical Expertise:
GIS Analysis
Watershed Management
GPS Technologies
Drone Technology
Remote Sensing
Spatial Analysis
Database Design
Cartography
Web Design

Years of Experience:
27

Brian D. Thompson

Senior GIS Analyst

SKILLS:

Mr. Thompson is a GIS Analyst with Anderson Consulting Engineers, Inc. (ACE) with 27 years of experience. Mr. Thompson is knowledgeable in the use of Geographic Information Systems (GIS), Database Design, Watershed Management, performing and managing large scale field data collection projects, MS4 data collection, BMP Inspection and Maintenance, Drone Operation, Remote Sensing, Global Position Systems (GPS), and Web Design.

Mr. Thompson has worked on a wide variety of projects including irrigation master plans, comprehensive watershed studies, geomorphological investigations, municipal separate storm sewer system (MS4) data collections, FEMA flood mapping projects, and project documentation with drone technologies. The following is a selected sample of studies for which Mr. Thompson has significantly contributed his technical expertise:

PROJECT EXPERIENCE:

- ***Frederick/Dacono Outfall System Plan.*** Anderson Consulting Engineers, Inc. (ACE) was contracted by the Town of Frederick and City of Dacono to prepare an Outfall System Plan (OSP). Mr. Thompson's role in this project was to utilize the field collected data and project conceptual drawings to build public outreach interactive maps for the Town Boards to use in their presentations. These interactive maps are currently being used by town staff for internal planning efforts and public informational purposes.
- ***Boulder County Public Health (BCPH) Storm Drain System (MS4) Mapping/GIS Project.*** Boulder County Public Health Department (BCPH) contracted ACE to complete an inventory of stormwater infrastructure within the County and to develop a Geographic Information System to manage the data. This project was in support of the BCPH department's efforts to adhere to their MS4 permit. Mr. Thompson was responsible for developing the custom data dictionary for the field data collection, organizing field personnel, and performing the extensive field data collection efforts related to this project. The field data collection effort resulted in the collection and assessment of 881 stormwater related features extending over a dispersed 50 square mile project area. Ownership and maintenance responsibilities were determined for each feature and the data was compiled along with over 1,400 photographs into a deliverable GIS database.
- ***Estes Valley Stormwater Master Plan, Town of Estes Park, CO.*** ACE developed a stormwater master plan for the Town of Estes Park and the adjacent Estes Valley. Mr. Thompson coordinated the field crews while performing the field data collection and assessment for the entire stormwater system within the project area, creating the Town's first stormwater database. The fieldwork required hiking in rugged terrain and problem-solving infrastructure connectivity in the field, often in adverse weather conditions. The resulting GIS database included 1,025 field collected and assessed stormwater infrastructure features. The stormwater GIS database collected during this project was done in a manner that will lay the foundation for satisfying requirements of a future MS4 permit for the Town of Estes Park.

Ben N. Ackert
Senior GIS Analyst
Ben.Ackert@acewater.com

Senior GIS Analyst

Education:
B.S./Natural Resource Management (Concentration in Spatial information Systems)
Colorado State University/2004

Technical Expertise:
GIS Analysis
Remote Sensing
Spatial Analysis
Cartography
Data management
CUHP
Database development

Years of Experience:
16

Ben N. Ackert

Senior GIS Analyst

SKILLS:

Mr. Ackert is a Senior GIS Analyst with Anderson Consulting Engineers and has sixteen years of experience. Mr. Ackert has served as a GIS Analyst in numerous projects and studies involving: (a) *hydrologic/hydraulic modeling and design* of natural riverine and urban drainage systems; (b) *floodplain and floodway delineations* in both natural and urban riverine settings; (c) *raster data analysis* for development of high hazard zones, sediment transportation and waster surface elevations; (d) *spatial data analysis* in support master drainage plan development (e) *preparation of countywide DFIRM conversions* including preparing Flood Insurance Studies (FIS) and Flood Insurance Rate Maps (FIRM) and DFIRM databases.

Mr. Ackert is proficient in the application of ArcGIS, and ArcCatalog, including the Spatial Analyst and 3D-Analyst. He also has experience using HEC-RAS, AutoCAD, CUHP/EPA SWMM and ArcHydro tools. The following is a selected sample of studies of which Mr. Ackert has significantly contributed his technical expertise:

PROJECT EXPERIENCE:

- ***Firestone Outfall System Plan: Firestone, Colorado.*** *Ongoing project to complete a Storm Water Master Plan for Firestone, Colorado. Includes developing existing condition, future and proposed condition hydrology.*
- ***Frederick/Dacono Outfall System Plan: Town of Frederick and City of Dacono, Colorado****. Updated the storm drainage masterplan for five major drainage basins within the communities and included hydrologic and hydraulic analyses, flood mitigation planning, and public process.*
- ***Longmont Master Drainage Plan Update: Longmont, Colorado.*** *Project involved updating hydrologic models, identification/conceptual design/prioritization of proposed improvements and a qualitative review of the City's MS4 program.*
- ***Estes Valley Stormwater Management Project: Estes Park, Colorado.*** *Project involved the development of a stormwater Master Plan for the Town of Estes Park and included existing infrastructure inventory, establishment of drainage criteria, hydrologic and hydraulic modeling, and approval of the plan by the Town Board.*
- ***Boulder County Storm Drain System (MS4) Mapping/GIS Project: Boulder County, Colorado.*** *Project involved the collection and verification of outfall locations contributing to the TMDL reach of Boulder Creek. Deliverables included the development of a countywide map for the Illicit Discharge Detection and Elimination and nutrient target analysis.*
- ***Fort Collins Water Quality Master Plan Alternative Evaluation: Fort Collins, Colorado.*** *Project involved the development of a Stormwater Quality Master Plan to identify where water quality and habitat could be improved in conjunction with and capital drainage improvement projects.*
- ***Various Hydraulic/Hydrologic Studies.*** *Collection and preparation of GIS data for hydrologic and hydraulic modeling using updated land cover/land use data, soils, and other data to develop new floodplain mapping for FEMA flood hazard studies.*

Honey Creek Resources, Inc.

GEORGE E. OAMEK, PH.D.

25593 OLD LINCOLN HIGHWAY, HONEY CREEK, IOWA, 51542 402-980-9770 GEORGE.OAMEK@HONEYCREEKRESOURCES.COM

EDUCATION

Ph.D., Agricultural Economics, Iowa State University, 1988
M.S., Agricultural Economics, Colorado State University, 1981
B.S., Agricultural Economics, Colorado State University, 1979

EXPERTISE

Dr. Oamek has over 35 years of experience in water resource planning, socioeconomics, agricultural economics, economic feasibility studies, and utility economics.

RECENT PROJECT EXPERIENCE

North Weld County Water District, Lucerne, Colorado: Water Rates and Fees, Drought Mitigation Plan, Strategic Planning, ongoing. Lead analyst for: converting the District's water rates and fees to a cost-of-service basis using the base-extra capacity cost allocation method; (2) calculating water resource fees and plant investment fees; developing the District's Drought Mitigation Plan; and strategic planning with respect to long-range water supply.

Town of Frederick and City of Dacono, Stormwater Master Plans, 2022. As a subconsultant to Anderson Consulting Engineers, developed the financial planning analyses and resulting rates and fees necessary to implement the towns' Master Plans.

Cannon Land Company, Fort Lupton, Colorado: Economic Feasibility of Irrigation Development, 2022. Expert witness in Colorado Water Court in support of developing new water storage rights for irrigation use in the South Platte River system.

Town of Estes Park, Stormwater Utility Feasibility Assessment, 2018. Teamed with Anderson Consulting Engineers, evaluated the feasibility of the Town creating a regional stormwater utility and how it may be funded over time. Alternatives ranged from creating a stormwater enterprise for the Town to the creation of a regional stormwater authority.

Northern Colorado Water Conservancy District, Northern Integrated Supply Project (NISP) EIS, 2007-2019. As a member of two successive third-party preparer teams, conducted the recreation component of the socio-economic impacts of the proposed Glade and Galeton Reservoirs. A major component was the development of visitation estimates to Glade and the relative trade-offs between the economic value of flatwater recreation and river-based recreation.

Trout and Raley, Denver, Colorado: NISP Irrigation Exchange Program, 2021. Principal Investigator for potential implementation of the irrigation exchange component for Northern Colorado Water Conservancy District's proposed Northern Integrated Supply Project (NISP). This effort focuses upon potential terms of exchange between affected irrigators and the Northern District.

PROFESSIONAL ENDEAVORS

Honey Creek Resources, Inc., 2004-2014, 2022
Headwaters Corporation, 2016-2022
CH2M HILL, 1987-95, 2014-2015
HDR Engineering, Inc., 1995-2004

Ronnie L. Edwards, PLS
Co-Owner/Project Manager
Majestic Surveying, LLC
(970) 415-1482
rone@majesticsurveying.com

Professional Registration:
Colorado Licensed Land Surveyor
Professional Land Surveyor (PLS) #38480 (*since 2015*)

Applications: Trimble Business Center / Trimble Access / AutoCAD Civil3D 2018

References:
Tawnya Ernst, Real Estate Specialist III, Operations Services/Natural Areas, City of Fort Collins, 970-416-2245, ternst@fcgov.com
RJ Fulton, GIS Specialist, Public Works Administration, City of Loveland, 970-962-2513, RJ.Fulton@cityofloveland.org
Adam Lacey, PE, CFM, RESPEC Eng, Colorado Springs, 719-283-7672, Adam.Lacey@respec.com

Relevant Experience:
Shields Survey, Ltd. Co. 2000-2001 (Gunner)
King Surveyors 2001-2018 (Gunner, Party Chief, Drafter, Project Manager, PLS)
Majestic Surveying 2018-present (Owner, PLS)

Ron Edwards has 19 years of experience in the field of Land Surveying and is currently a project manager and co-owner of Majestic Surveying. His experience in the land surveying profession includes boundary surveys, such as Land Survey Plats, Subdivision Plats, ALTA/NSPS Land Title Surveys, and Annexation Plats; topographic surveys, including bathymetry, for design, analysis and planning purposes; and construction surveying which includes the layout of site infrastructure, site improvements and as-built surveys. Additional experiences include drafting parcel descriptions & monument records, researching public records and municipal code.

Below is a small fragment of relative project experience**:**

- **Poudre River Whitewater Park**, Fort Collins, CO - Topographic Survey, Subdivision Plat, & Construction Staking
- **FCRID Hydraulic Evaluation**, Fort Collins, CO – Structure Survey from Fossil Creek Reservoir Inlet Ditch Diversion Dam downstream to Harmony Road & FCRID crossing.
- **Erosion Protection Design**, Fort Collins CO - Topographic Survey of a portion of Larimer County Parcel No. 728000002 located Southwest of the Boxelder Sanitation District Treatment Plant & Poudre River
- **6400 East Tributary at Paintbrush Park**, Castle Rock, CO – Topographic Survey, Bathymetric Survey & project area Base-mapping

APPENDIX C
PROJECT DESCRIPTIONS

Stormwater Conveyance Channel

Field Verification and Data Collection Forms

EXISTING DETENTION POND

Stage (NAVD 88) (ft)[1]	AutoCAD Area (ft^2)[2]	AutoCAD Area (acre)	Unit Depth (ft)	Total Volume (ft^3)	Total Volume (acre-ft)	Pipe Discharge (cfs)[3]	Weir Discharge (cfs)[4]	Total Discharge (cfs)	Notes:
4956.31	0	0.00	0.0	0	0.00	0.00	0.00	0.00	Water Quality Release Not Modeled
4957.00	429	0.01	0.69	99	0.00	0.00	0.00	0.00	
4958.00	15137	0.35	1.69	6137	0.14	0.00	0.00	0.00	
4959.00	41464	0.95	2.69	33354	0.77	0.00	0.00	0.00	
4960.00	54504	1.25	3.69	81190	1.86	0.00	0.00	0.00	
4960.88	58128	1.33	4.57	130739	3.00	0.00	0.00	0.00	Invert of 10-Year Weir
4961.00	49488	1.14	4.69	137189	3.15	0.00	0.00	0.00	Weir Flow Through 10-Year Opening
4962.00	64245	1.47	5.69	193895	4.45	1.10	0.00	1.10	
4962.55	66835	1.53	6.24	229940	5.28	3.00	0.00	3.00	Top of Inlet Box for 100-Year Opening
4962.88	68709	1.58	6.57	252304	5.79	11.64	0.00	11.64	Add Weir Flow Around Top of Box
4963.00	69461	1.59	6.69	260594	5.98	16.76	6.90	23.66	
4963.50	72874	1.67	7.19	296174	6.80	21.59	101.10	122.69	Orifice Flow Through 100-Year Opening/ Emergency Spillway Elevation

[1]Invert based on survey

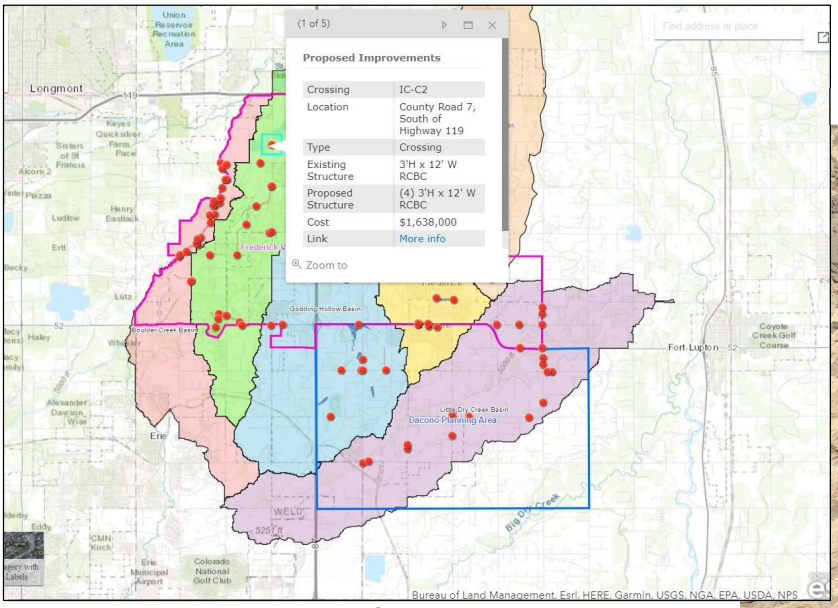
[2]Based on 2013 LiDAR contours or information provided in drainage report

[3]10-Year discharge based on 1.0' wide x 1.67' high triangular weir

[3]Discharge controlled by weir around 4.3' wide x 4.3' long top of box

[3]100-Year discharge based 18" outlet pipe with no orifice plate

[4]Weir flow approximated as a broad crested weir



GIS Web-Based Maps for Data Management

Big Hollow Gluch Culvert Crossing of County Road 18

REQUEST FOR QUALIFICATIONS
FOR CONSULTING SERVICES TO DEVELOP A
COMPREHENSIVE STORMWATER MASTER PLAN
FOR THE TOWN OF JOHNSTOWN, COLORADO

FREDERICK – DACONO OUTFALL SYSTEM PLAN
FREDERICK & DACONO, COLORADO

Anderson Consulting Engineers, Inc. (ACE) was contracted by the Town of Frederick to prepare an Outfall System Plan (OSP) for the areas within the planning boundaries of the Town of Frederick and City of Dacono. This study was completed in April 2022. The OSP updated the I-25 Corridor Master Drainage Plan completed by ACE in 1999, and other previous master plan studies. The study also included all upstream watersheds, incorporating the recent hydrologic modeling and master planning completed for the Town of Erie. In total, the Frederick-Dacono OSP studied the following drainage basins: (1) Godding Hollow Basin; (2) Tri-Town Drainageway Basin; (3) Idaho Creek Basin; (4) Little Dry Creek Basin; (5) Sump Basin; and (6) the Boulder Creek Corridor. The following tasks describe the work effort that has either been completed or is slated to be finalized by the end of 2021:

Client: Mr. Kevin Ash
Town Engineer, Frederick
401 Locust Street
Frederick, CO 80530
(720) 382-5602

Mr. Gary Odehnal
City Engineer, Dacono
(970) 219-9821

- **Field reconnaissance and field surveying** to identify existing land use, drainage patterns, existing drainage facilities, and identify drainage issues. This included the survey of existing road crossing culverts and detention pond outlet facilities throughout the basins.
- **Detailed hydrologic modeling using CUHP/EPA SWMM** of ***existing development conditions*** with existing drainage facilities for the 2-, 5-, 10-, 25-, 50-, and 100-year storm events. This modeling incorporated numerous existing and approved developments, along with their various stormwater facilities, notably on-site and regional detention ponds. The hydrologic modeling was then revised to represent ***fully developed conditions*** with conceptual on-site detention facilities based on basin-specific detention requirements.

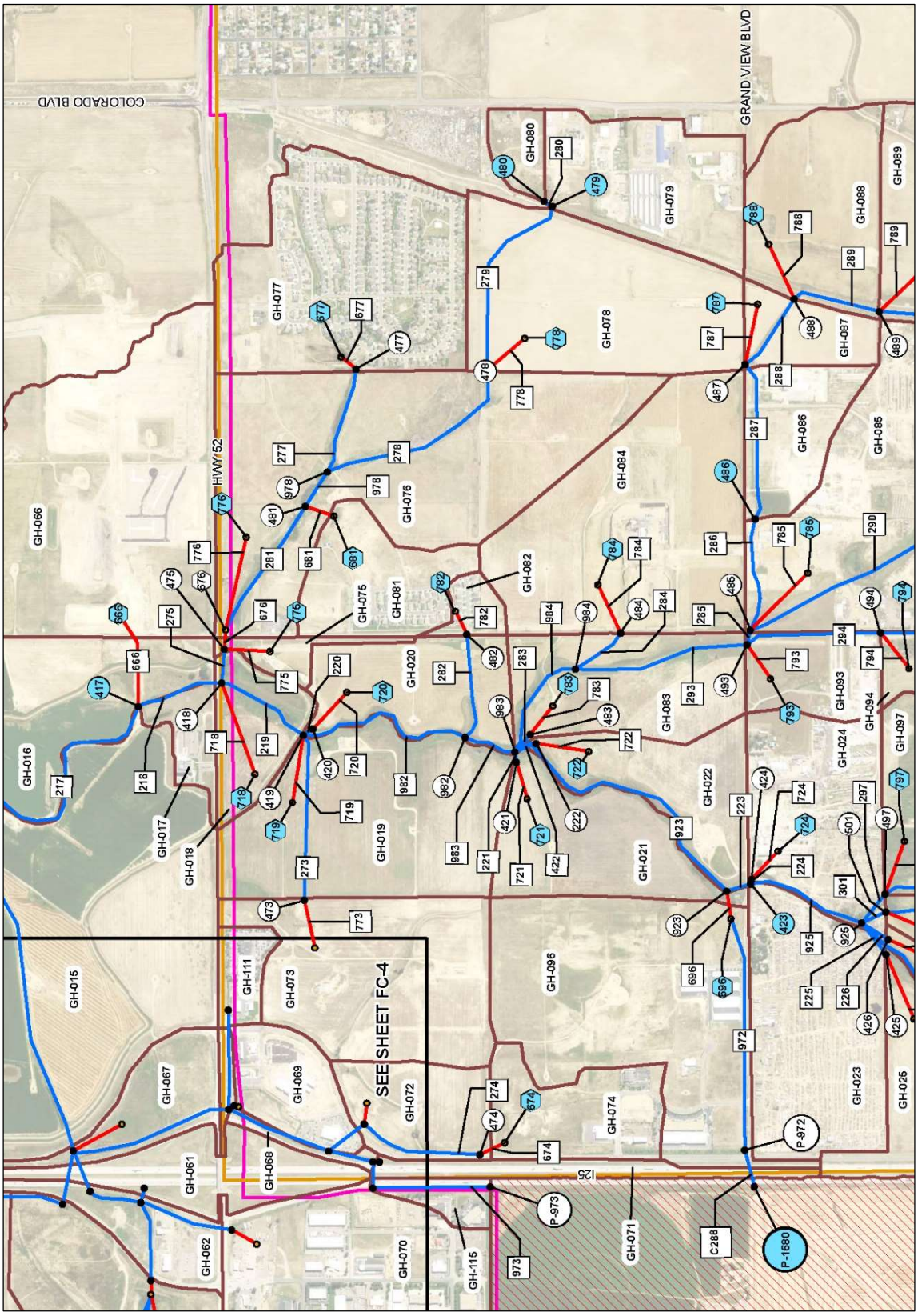

Tri-Town Drainageway North of Bella Rosa Parkway

- **Hydraulic evaluation of existing drainage facilities and identification of flooding problems** based on community-dependent drainage criteria at each location, known roadway overtopping locations, and institutional knowledge of Town/City Staff.
- **Formulation of conceptual improvement alternatives and development of a comprehensive plan of storm drainage improvements** including hydrologic modeling of future conditions to confirm resolution of identified problem areas.
- **Conceptual design of drainage facility improvements** throughout the study area, including conceptual cost estimates and easement/land acquisition requirement, supported by a prioritized implementation plan.
- **Preparation of an MHFD Outfall System Plan Report.**
- Community support through participation in **public open houses**, an **evaluation of funding alternatives**, and **MS4 compliance evaluation and recommendations.**

Stage (NAVD 88) (ft)[1]	AutoCAD Area (ft²)[2]	AutoCAD Area (acre)	Unit Depth (ft)	Total Volume (ft³)	Total Volume (acre-ft)	Pipe Discharge (cfs)[3]	Weir Discharge (cfs)[4]	Total Discharge (cfs)	Notes:
4916.89	0	0.00	0.0	0	0.00	0.00	0.00	0.00	No Water Quality Outlet
4917.00	1080	0.02	0.11	40	0.00	0.60	0.00	0.60	Normal Depth Through Low Flow Opening
4918.00	9569	0.22	1.11	4661	0.11	9.67	0.00	9.67	Orifice Flow Through Low Flow Opening
4919.00	17611	0.40	2.11	18048	0.41	15.41	0.00	15.41	
4919.33	36215	0.83	2.43	26615	0.61	16.86	0.00	16.86	
4920.00	40182	0.92	3.11	52387	1.20	21.00	0.00	21.00	Add Weir Flow Through 10-Year Opening
4921.00	60562	1.39	4.11	102412	2.35	28.67	0.00	28.67	Top of Inlet Box for 100-Year Opening
4922.00	103226	2.37	5.11	183364	4.21	50.37	0.00	50.37	Orifice Flow Through 100-Year Opening
4923.00	166883	3.83	6.11	317150	7.28	56.52	0.00	56.52	
4923.25	199443	4.58	6.36	362880	8.33	57.96	0.00	57.96	Emergency Spillway Elevation
4924.00	217561	4.99	7.11	519207	11.92	62.07	67.55	129.62	

[1] Invert based on survey
[2] Based on 2013 LiDAR contours or information provided in drainage report
[3] Low flow discharge based on 2.5' wide x 0.92' high rectangular orifice at bottom of box
[3] 10-Year discharge based on 1.0' wide x 1.63' high rectangular weir/orifice near top of box
[3] 100-Year discharge based 30" outlet pipe with no orifice plate
[4] Weir flow approximated as a broad crested weir

Typical Stage-Storage-Discharge Curve and Operation Summary for Existing Detention Ponds



Hydrologic Modeling Conveyance Element Map for a Portion of the Godding Hollow Basin

In support of the Estes Valley Stormwater Management Project, Anderson Consulting Engineers (ACE) completed two separately funded projects: **Phase I Estes Valley Stormwater Master Plan** (SWMP, State/Federal Grant Funded) and **Phase II Estes Valley Stormwater Utility Feasibility Study** (SUFS, Locally Funded).

Client: Town of Estes Park
Public Works Department: Engineering Division
170 MacGregor Avenue
Estes Park, CO 80517
Greg Muhonen, P.E., Public Works Director
David Hook, P.E., Engineering Manager
(970) 577-3587

The **Phase I EV SWMP** consisted of the following tasks: a) stormwater infrastructure inventory and GIS database creation; b) hydraulic evaluation of existing facilities; c) establishment of drainage criteria; d) an evaluation of future conditions; e) assessment of existing facilities and identification of drainage issues; f) development of improvements; g) documentation of findings and recommendations in a Stormwater Master Plan report; and h) participated and led numerous public and Town Board meetings. The SWMP was completed within the ~31 sq.mi. Estes Valley Development Code Boundary (GMA) and included five major watersheds totaling ~210 sq.mi. of contributing drainage area.

Data Collection/GIS Database Development: ACE field staff collected field data and performed conditional assessments of the majority of the stormwater infrastructure within the Estes Valley. The extensive fieldwork took place from October 2016 through February 2017 with several additional visits thru June of 2017. The data collection required field staff to hike in rugged terrain with variable/adverse weather conditions and solve infrastructure connectivity issues in the field. The field data collection was the first ever holistic inventory of the Town's stormwater infrastructure portfolio and populated the initial Estes Valley stormwater GIS database. Specific tasks required to complete field inventory included the following:

- **Field data collection and condition assessment** of **1,025 stormwater related infrastructure features** at elevations above 7,500 feet;
- **Development of a custom Trimble data dictionary** to support field data collection. Town and ACE staff collaboratively developed the final data dictionary used by ACE field staff to complete the infrastructure inventory of: 60 bridges; 225 culverts; 28 detention ponds; 5.3 miles of open channel; 7.1 miles of storm drains; 400 inlets; 55 manholes; and 165 outfalls;
- **Design plan set incorporation** into delivered GIS database. Plan sets collected from a variety of sources were directly linked in the GIS database; and
- **The developed GIS stormwater database** consisted of **1,025 features along with 1,520 linked photographs** that will aid in future infrastructure identification, assessments, and management.

Hydraulic Evaluation of Existing Facilities, Hazard Identifications, and Development of Improvements: ACE staff determined the hydraulic capacity of 58 major facilities along the 5 major drainages in the Valley. Stormwater design criteria were confirmed with the Town and utilized to identify 20 existing major stormwater facilities that do not meet current criteria. Additionally, a GIS evaluation of 8,600 building footprints in the Estes Valley located along minor drainages indicated that as many as 600 buildings may have local flooding issues. Alternatives evaluated to address identified stormwater problems included regional detention and several types of channelization. Approximately 20 major regional and 300 minor local improvement projects were identified, prioritized, and conceptual cost estimates developed for implementation. The total planning level cost for all project was approximately $79 million.

Reporting and Public Meetings: A flexible stormwater master plan report was produced containing hardcopy and electronic versions of the collected data, documentation, evaluations, and results. ACE staff attended and presented at four public meetings and five Town Board work sessions and/or regular meetings.

The **Phase II EV SUFS** was completed in partnership with the Headwaters Corporation, Inc. The SUFS consisted of the following general tasks: (a) development of a stormwater management cost forecast including infrastructure design and construction, operations, maintenance, administration, and staffing needs; (b) identify pros/cons of a potential stormwater entity's organizational structure (e.g. district, authority, enterprise, department/utility within a current structure, etc.); (c) identification of potential funding opportunities (e.g. grants) and mechanisms (e.g. fees, taxes, bonds, loans, etc.) for implementation of proposed improvements; (d) development of several rate structures based on selected organizational structure and funding mechanisms; (e) development of several revenue generation scenarios based funding opportunities, growth projections, and implementation timelines; (f) assisting with the development of a stormwater ordinance; and (g) participating in three Town Board work sessions and meetings.

URBAN STORMWATER MANAGEMENT MASTER PLAN UPDATE
LONGMONT, COLORADO

Anderson Consulting Engineers, Inc. (ACE) was contracted by the City of Longmont to update the city's "Urban Stormwater Management Master Plan" which was originally developed between 1993 and 1995. The current effort is being completed in numerous phases to meet the evolving goals and needs of the City, with final completion anticipated in 2022. These phases involve the following specific tasks:

Client: Ms. Monica Bortolini, PE, CFM
Senior Civil Engineer/Floodplain Administrator
City of Longmont, 385 Kimbark Street
Longmont, CO 80501, (303) 651-8628

- **Extensive Field Reconnaissance Efforts and Surveying** to identify existing land use, drainage patterns, existing drainage facilities, and identify drainage issues. This included the survey of 567 storm sewer manholes, 322 outfalls/culverts, and 59 additional drainage structures.
- **Citywide (112.7 square miles) Hydrologic Modeling Update using CUHP/EPA SWMM** for use in all subsequent phases, including the routing of both surface and subsurface flow. This effort includes the evaluation of stormwater runoff for the 2-, 5-, 10-, 25-, 50-, 100- and 500-year storm event for the following: (a) The Dry Creek 2 Basin, which was broken up into 91 subbasins with a total area of 18.1 square miles; (b) The East Saint Vrain Basin, which was broken into 91 subbasins with a total area of 7.9 square miles; (c) The Hover Basin, which was broken into 47 subbasins with a total area of 3.6 square miles; (d) the Left Hand Basin, which was broken into 206 subbasins with a total area of 19.5 square miles; (e) the Lykins Gulch Basin, which was broken into 37 subbasins with a total area of 12.3 square miles; (f) the Saint Vrain Basin, which was broken into 110 subbasins with a total area of 11.2 square miles; (g) the Spring Gulch 1 Basin, which was broken into 124 subbasins with a total area of 25.2 square miles; and (h) the Spring Gulch 2 Basin, which was broken into 101 subbasins with a total area of 14.9 square miles. Also included in this effort is the evaluation of major irrigation canals (e.g., Oligarchy Ditch) to determine the hydraulic impact of these canals on stormwater runoff.

Project Highlights:
- Citywide (112.7 square miles) Hydrologic Model Update
- Problem Identification
- Alternative Analysis and Conceptual Design of Drainage Improvements
- Selected Plan of Improvements
- Final Design of Selected Drainage Improvements

- **Problem Identification** based on pre-defined drainage criteria and the updated hydrologic modeling, Citizen complaints, maintenance crew observations, and institutional knowledge of City Staff.
- **Alternative Analysis and Conceptual Design of Capital Improvement Projects** throughout the City of Longmont.
- **Selected Plan and Project Prioritization based on an Evaluation Matrix** based on the following factors: (a) benefit/cost; (b) potential loss of life; (c) constructability; (d) level of protection; (e) maintenance; and (f) multifaceted use potential.
- **Final Design of Regional Drainage Facilities** such as the TLN Regional Detention Pond in north Longmont.
- **Qualitative evaluation of the City's Municipal Separate Storm Sewer Systems (MS4) Phase II Stormwater Management Program** in relation to other Northern Colorado Communities (Fort Collins, Greeley, Loveland and Windsor) to support the community in evaluating and improving their MS4 program.

Left Hand Creek


Completed Embankment for the TLN Regional Detention Pond (Prior to Revegetation)

OLD TOWN BASIN EXISTING CONDITION HYDROLOGY UPDATE AND BASIN-WIDE EVALUATION OF MASTERPLAN IMPROVEMENTS FORT COLLINS, COLORADO

Encompassing over 2,100 acres, the Old Town Basin is especially vulnerable to damages attributable to urban flooding due to high imperviousness and lack of adequate drainage infrastructure. The City of Fort Collins contracted with both Anderson Consulting Engineers (ACE) and ICON to update the previous Master Drainage Plan Study for this basin, which was completed by ACE in 2003. Working in partnership, ICON updated the existing condition hydrology for the entire basin using EPA-SWMM and ACE utilized the updated hydrology model to develop and evaluate numerous storm drainage improvement alternatives for five of the major outfalls within the basin. As part of the study, ICON also developed a basin wide FLO-2D (rain on-grid) model to inform the EPA-SWMM model and to update the existing flood damage estimate for the basin. The project culminated with an optimization and prioritized plan of improvements, with corresponding construction costs for the City's use in budgeting and implementing these large capital improvement projects.

Clients:
Mr. Matt Fater, PE
Director, Civil Engineering
City of Fort Collins Utilities
200 Wood Street/P.O. Box 580
Fort Collins, CO 80522, (970) 416-2146

Mr. Dan Evans, PE, CFM
Stormwater Master Planning Manager
City of Fort Collins Utilities
200 Wood Street/P.O. Box 580
Fort Collins, CO 80522, (970) 416-2217

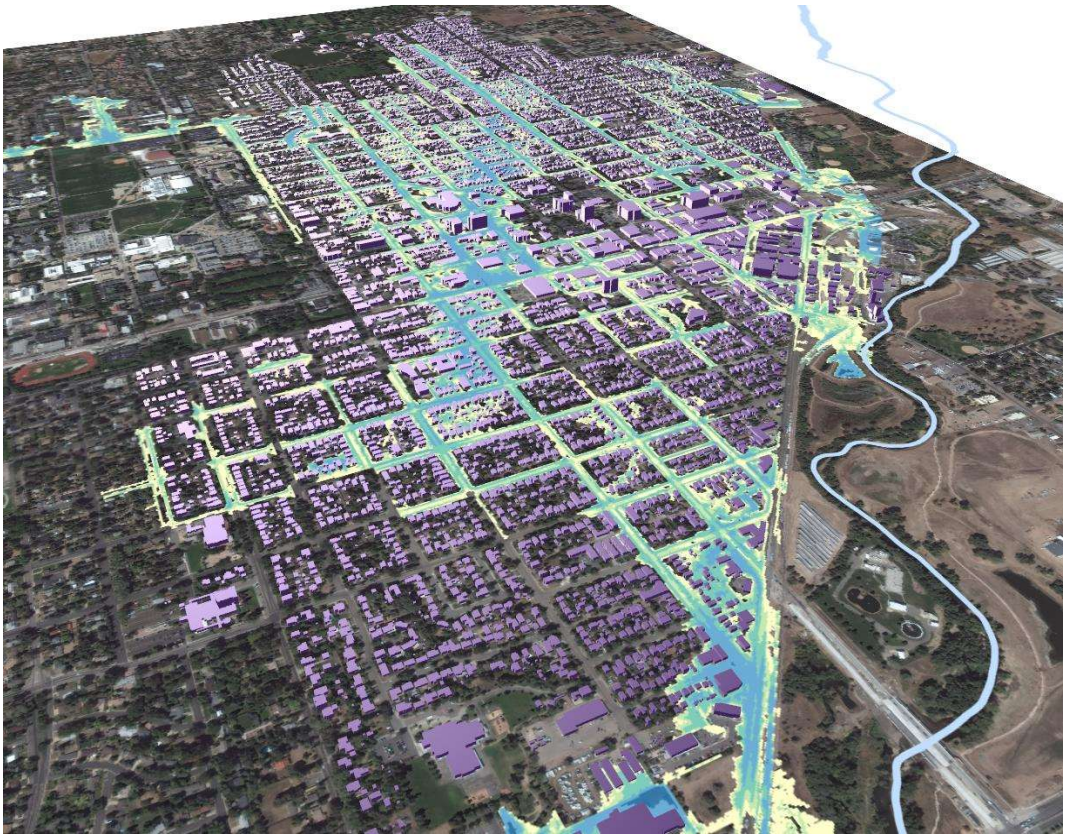
Project Highlights:

- Hydrologic and Hydraulic modeling utilizing EPA-SWMM
- 2-D Modeling with FLO-2D (rain on grid) for the entire basin
- Updated the existing flood damage estimates
- Alternative analysis and conceptual design of drainage improvements
- Updated selected plan of improvements for five major outfalls
- Implementation and prioritization evaluation
- Conceptual cost estimates
- Development of a web-map for presentation and simplified viewing of results

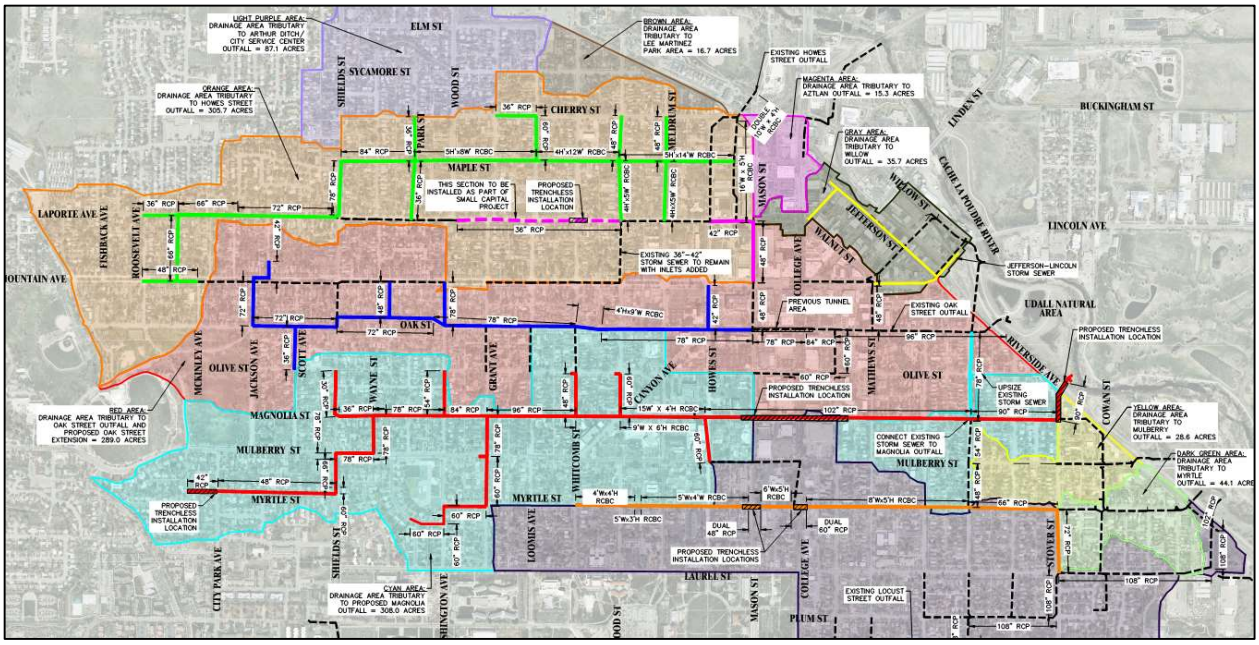
Urban Flooding in Old Town Basin

The project consisted of the following key elements:

- **Hydrologic and hydraulic evaluation of the basin utilizing an EPA-SWMM model** that consisted of over 200 subbasins, approximately 500 nodes and 700 links for both surface and subsurface flow;
- **Development of a FLO-2D (rain on grid) model for the entire basin with a 10-ft grid cell size** that was utilized to define rating curves for split flow paths at roadway intersections for the EPA-SWMM model and to develop flood inundation depths at structures for the flood damage assessment;
- **Updated the flood damage assessment for the basin** that concluded approximately 550 structures would be damaged, at a present-day cost of approximately $90 million, if a 1-percent annual chance flood were to happen under current conditions;
- **Formulation and Evaluation of Conceptual Design Improvements** for five of the major outfalls within the basin that included approximately 10 miles of new conceptual storm sewers ranging in size 36"-90" diameter;
- **Consideration for other improvement opportunities as part of the projects** that included LID features, street scaping, water quality treatment and tree canopy management;
- **Conceptual design and cost estimates that resulted in approximately $168 million in proposed improvements;** and
- **Development of an implementation and prioritization plan based on** constructability, flood reduction, benefit-cost ratios, and residual damages.



Flood Inundation Map from FLO-2D Model



Excerpt from the Optimized Plan of Improvements

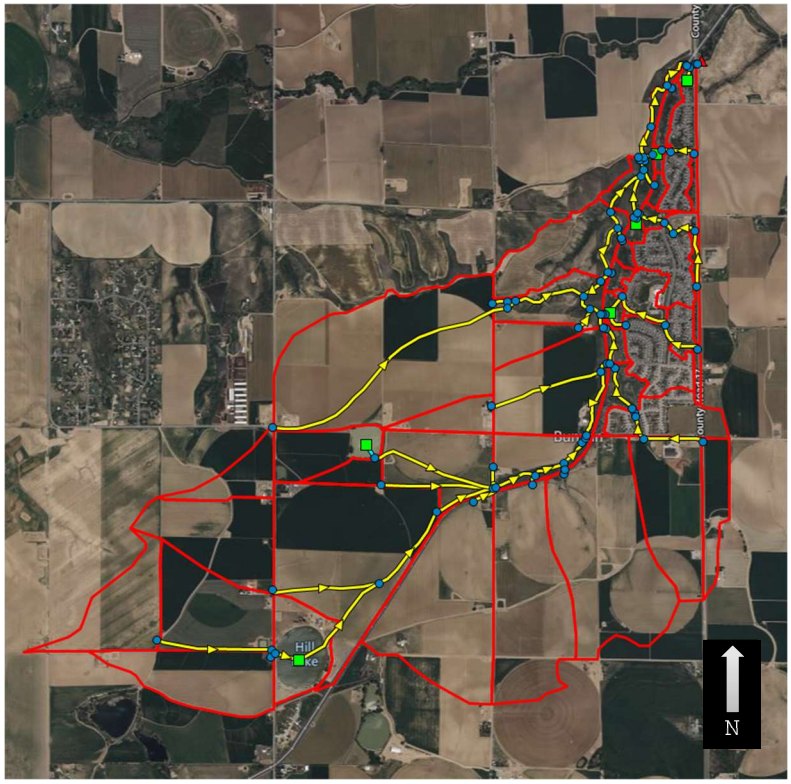
HYDROLOGIC ANALYSES FOR THE BUNYAN BASIN DRAINAGE CROSSING OF THE HILLSBOROUGH DITCH
EXISTING CONDITION HYDROLOGIC INVESTIGATION
WELD COUNTY, COLORADO

Anderson Consulting Engineers (ACE) is currently contracted by the Riverbend Estates Partners to investigate the **Existing Hydrologic Conditions in Bunyan Basin in Johnstown, Colorado** to support the design of a proposed development north of the existing basin. Hydrologic investigation was one of several tasks performed for the study, which also included project meetings, field reconnaissance, and summarizing findings in a project report. The hydrologic investigation portion of the project included the following tasks:

Client: Ms. Mary Wohnrade
Wohnrade Civil Engineers, Inc.
(720) 259-0965
mary@wcecivil.com

- **A Review of Existing Information** was conducted initially to understand how any previous studies in the area had evaluated hydrologic conditions to understand overall drainage patterns within the basin.
- **Mapping of Existing Drainage Facilities** using existing development drainage reports to make sure any pertinent information was incorporated into the hydrologic modeling.
- **Modeling of Existing Conditions** using PC SWMM, an application that uses EPA SWMM version 5.2.4, was used to evaluate the 2-, 5-, 10-, 25-, 50-, and 100-year storm events. Tasks specific to the hydrologic modeling effort included subdividing the basin into 45 subbasins, application of an inflow hydrographs for each of the subbasins developed from **CUHP,** with soils information from **USGS** and **rainfall data** developed utilizing NOAA Atlas, and **incorporating any field findings** into the model.
- Upon model completion, results will be used to **Identify Existing Drainage Issues** that may impact the proposed development during larger storm events. The primary improvements that will be designed/sized utilzing hydrologic results include an engineered crossing of the Hillsborough Ditch, and a draingage swale through the proposed Riverbend Estates subdivision.

Bunyan Basin Crossing of County Road 42



Bunyan Basin SWMM Schematic

ANALYSIS AND DESIGN, FOR REGIONAL DRAINAGE FACILITIES AND IRRIGATION STORAGE
BIG HOLLOW GULCH AND THE RIDGE DEVELOPMENT
JOHNSTOWN, COLORADO

Reference: Mr. Roy Bade
Caliber
(480) 398-4594
Roy.bade@caliberco.com

The Ridge development site encompasses approximately 160 acres in the northwestern portion of the Town of Johnstown. It is situated between the eastern frontage road of I-25, on the southwest, and Larimer County Road 18 (LCR 18) on the north. Big Hollow Gulch, an ephemeral stream with its headwaters west of I-25, bisects the site. Anderson Consulting Engineers was contracted by Caliber to complete a hydrologic and hydraulic study, submit applicable permits, assist in the production of design sheets, and complete a LOMR following construction.

ACE utilized EPASWMM to create a baseline **hydrologic analysis for the Big Hollow Gulch Basin**. The results of the baseline hydrologic were then utilized in the development of a pre-project floodplain and floodway analysis through the project site. The baseline hydrologic and hydraulic modeling were then altered to aid in the design and analysis of regional detention features and culvert crossings.

An irrigation reservoir dam is located in the project site. The water right associated with the existing irrigation dam adjudicates a storage right of 28 acre-feet. The level of stored irrigation water must accommodate storm runoff detention storage above the maximum irrigation storage level. **Design of irrigation improvements** was conducted in an iterative fashion in conjunction with the **design of regional drainage facilities**. Regional detention was designed in accordance with Johnstown standards to reduce post-project flows for the 5-year storm event and above.

Final design of regional detention facilities, irrigation improvements, site grading, and culvert crossings were used to define post-project hydrology and hydraulic modeling. A post-project floodplain and floodway were delineated. Post-project hydraulic modeling was utilized for the **design of erosion counter measures**.

The project will be **permitted through the Town of Johnstown** by demonstrating **no-adverse impact.** Prior to construction, ACE will prepare a "Letter of Intent for Non-Jurisdictional Water Impoundment Structures" to submit to the SEO for review and concurrence regarding both the irrigation embankment and Jennifer Road embankment. Following construction ACE will prepare a LOMR for the Big Hollow Gulch that covers the project site to the confluence with the Big Thompson River.

Canal Importation Ponds and Outfall Project (CIPO)

Clients: Mr. Matt Fater, PE
Director, Civil Engineering
City of Fort Collins Utilities
200 Wood Street/P.O. Box 580
Fort Collins, CO 80522, (970) 416-2146

The Canal Importation Basin is located in west-central Fort Collins, Colorado, and encompasses approximately 3,200 acres of nearly fully-developed land. In 2001 a Master Drainage Plan was completed by Anderson Consulting Engineers, Inc. (ACE), which identified over $50 million for regional drainage related improvements within the basin. The Canal Importation Ponds and Outfall (CIPO) Project addresses two of the thirteen drainage improvement projects identified in the Master Drainage Plan, with an estimated construction cost of $21 million. The project was a collaborative effort between ACE and Ayres Associates.

The purpose of the CIPO Project was to develop an outfall for the Canal Importation Basin, that would collect, detain, and convey storm water runoff generated within the basin, and discharge to Spring Creek. This project consisted of the following:

- **Hydrologic modeling** of the tributary drainage basin to define design discharges;
- Formulation and **hydraulic design** of all listed drainage improvements;
- **Final design of three regional detention ponds, providing nearly 140 acre-feet of active storm water detention capacity, which also included extended detention storm water quality ponds configured to appear natural and provide wetland and terrestrial habitat**;
- Final design of over 2 miles of subsurface drains;
- Relocation of a **700 foot long, 12-inch diameter water line**;
- Relocation of approximately **750 feet of 8-inch diameter PVC sanitary sewer service lines**;
- Relocation of nearly **900 foot, 16-inch diameter PVC sanitary sewer line**;
- Final design of a 112 foot, **8'W x 4'H RCBC siphon under an irrigation ditch**;
- Final design of a 175 foot, **48-inch RCP siphon under a major roadway arterial**;
- Final design of a 745 foot storm sewer consisting of 42-inch RCP, 36-inch RCP, and 33-inch RCP;
- Final design of a 415 foot storm sewer consisting of **7'W x 3'H RCBC, 48-inch RCP, 42-inch RCP and Type 13 Inlets within a residential neighborhood;**
- Final design of a 550 foot storm sewer consisting of 42-inch equivalent HERCP, 42-inch RCP and 12-inch PVC;
- Final design of a 56-foot storm sewer consisting of 30-inch RCP;
- Final design of a 20-foot storm sewer consisting of a 48-inch RCP;

Completed Detention Ponds – Fairbrooke and Kane


Storm Sewer and Inlet Installation on Suffolk Street

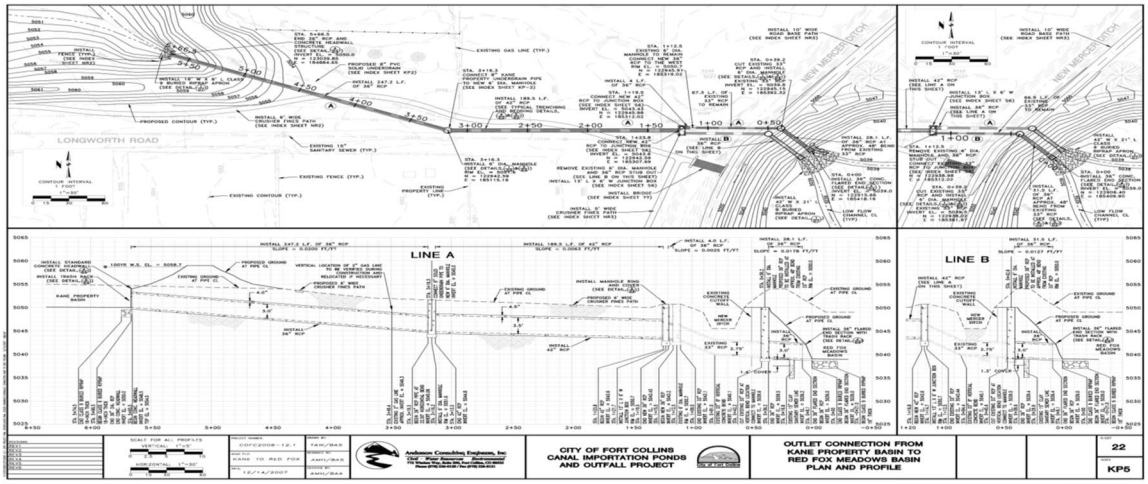

Storm Sewer Crossing at Taft Hill Road

- Final design of several smaller drainage improvements (spillways, cutoff walls, and grade control structures);
- Final design of water quality **BMPs including wetland channels, inlet treatment, and two extended detention water quality detention ponds and outlet structures;**
- Final design of erosion control measures (riprap and turf reinforcement mat);
- Incorporated "art in public" places into the design, including the use of project-specific form liner for concrete headwalls;
- Preparation and coordination of a **91 sheet set of final design drawings, technical specifications, and contract documents**;
- Preparation of an Individual 404 Permit for the U.S. Army Corps of Engineers;
- Preparation of a well permit for the State Engineers Office;
- Preparation of a Floodplain Use Permit for the City of Fort Collins;
- Assisted in preparation of the Storm Water Management Plan;
- **Construction management services during the approximately 3-year construction time period**;
- Preparation of as-built drawings; and
- Preparation of a design report documenting post-project condition results and residual floodplain information.

Water Quality Outlet Structure

Completed Red Fox Meadow Detention/Water Quality Pond

Outlet Headwall with Form Liner



Design Plan for Canal Importation Pond Outlet Connection Plan and Profile

benesch

PROPOSAL

TOWN OF JOHNSTOWN

STORMWATER MASTER PLAN

WHAT'S INSIDE

FEBRUARY 16, 2024

Benesch
7979 E. Tufts Avenue, Suite 800
Denver, CO 80237
www.benesch.com
P 303-771-6868

February 16, 2024

Town of Johnstown
Public Works Department
450 S. Parish Ave.
Johnstown, CO 80534

RE: Town of Johnstown - Comprehensive Stormwater Master Plan

Dear Members of the Selection Committee:

Benesch is pleased to submit this proposal to develop a comprehensive townwide Stormwater Master Plan. Benesch has assembled an elite team of experienced staff that are extremely familiar with all tasks outlined in the statement of work. We have appreciated the opportunity to work alongside Johnstown on recent projects and sincerely wish to be selected so we may continue working with the Town.

When you choose Benesch, you can expect the following key advantages:

Strong Track Record / Established Relationship: Our team has worked with Johnstown staff in the past and truly embraces the partnering approach to this project. We have delivered numerous successful projects to the Town and are comfortable working within Town staff expectations. Having a trusted working relationship adds value to the Town and ensures we can hit the ground running. We are local and always available to our partners at Johnstown.

Leader in Asset Management: Benesch believes that master planning efforts are most useful when they are actionable. That's why we are proposing to integrate an asset management approach to this master plan. Our approach utilizes a tailorable analysis tool that interfaces seamlessly with existing asset management software to analyze and process pipe inspection data from various sources. We will provide defensible data driven solutions that prioritize system needs. Our process has helped many municipalities increase their return on investment in their infrastructure and more efficiently plan and execute projects.

Extensive Knowledge: Our team brings extensive knowledge of storm system design, maintenance and repair with practical applications that can be of great benefit to your asset management framework. The design of new and rehabilitated storm systems is a core service at Benesch, an important distinction allowing us to successfully evaluate any agency's public liability of their infrastructure. We will leverage our knowledge of both the asset class and asset management principles to help create and establish a master plan the Town can utilize for years.

As you review our qualifications, we would like you to consider that our experience, expertise, innovative thinking and client service separates us from others and will ultimately determine the success of projects. We have assembled a team that has proven talent and capabilities and are extremely excited about partnering with Johnstown. We appreciate this opportunity and thank you for your consideration.

Sincerely,

Travis Greiman, PE, CAMP
Project Manager
E: tgreiman@benesch.com
P: 720-473-7587

Johnny Olson, PE
Principal in Charge
E: jolson@benesch.com
P: 720-647-7904

▶ We acknowledge receipt of Addendum #1 and Addendum #2.

▶ Our UEI from SAM.gov is: ZQJ3YUBMR2M5

Benesch has a strong Colorado presence with local staff providing high quality engineering services along the Front Range since 1962. Our projects range in size and complexity from large scale, high-profile public improvements to smaller, more focused assignments. Our Denver office has a talented pool of over 80 personnel and has established trusted relationships with local and state agencies throughout Colorado. On top of that, Benesch employs over 1000 professional and support personnel including engineers, construction managers, inspectors, planners, designers, public involvement specialists and scientists across 20 states with 50 locations.

Our experienced staff brings you a thorough knowledge of stormwater conveyance networks, pipe rehabilitation methods, and data-driven decision-making tools used to achieve the greatest Return on Investment for our clients.

We can help you by developing master plans for your stormwater systems that take advantage of the asset deterioration tools, as well as the information gathered by CCTV inspection.

ENR TOP 500 DESIGN FIRMS #101

ENR Mountain States #26
Colorado/Wyoming Top Design Firms 2023

1000 Nationwide Employees **50** Locations **20** States

BENESCH PRACTICE AREAS INCLUDE:

- Hydraulic Modeling
- Pipe Condition Assessments
- 2D Flood Modeling
- CIP Development
- Asset Management
- Development of Master Plans

LOCAL OFFICE
7979 E. Tufts Avenue, Suite 800
Denver, CO 80237

80+ Colorado Employees

Eugene Lynne is a land surveying and civil engineering consulting firm specializing in project support services. Their survey services cover topography, utility mapping, boundary determination, and construction surveying. Civil consulting services include land entitlements, site design, drainage, water and sewer design, grading, and stormwater management. With over 20 years of experience shaping Colorado's infrastructure, Eugene Lynne is recognized as a DBE certified firm. They distinguish themselves through a well-educated staff, technology use, and a commitment to safety and comprehensive deliverables.

Utility Mapping Services, Inc. (UMS) is a highly specialized, small business specifically focused on performing Subsurface Utility Engineering (SUE). UMS approaches SUE as a highly specialized, strategic, and technologically advanced professional engineering service. UMS is proficient with utility designating, locating field activities, utility coordination and engineering services for large design and design-build projects.

GovRates is a top-tier consulting firm specializing in utility, financial, rate, and management services for governments. Their experienced team has worked across multiple states and jurisdictions, delivering high-quality solutions. They recently completed projects for the City of Seward, Alaska, and the City of Flint, Michigan, showcasing their expertise and commitment to excellence. Known for their exceptional value and outstanding customer service, GovRates is well-equipped to exceed expectations in fulfilling this RFQ.

PROJECT TEAM

LEGEND:
- Benesch
- Eugene Lynne
- UMS
- GovRates

SUBJECT MATTER EXPERTS
- Steve Roth, PE, CAMP
- Joe File, PE, CFM
- Tom Fuentes, PE

LOCAL PROJECT MANAGER
- Travis Greiman, PE, CAMP

PRINCIPAL IN CHARGE
- Johnny Olson, PE

MASTER PLAN
- Travis Greiman, PE, CAMP
- Joe File, PE, CFM
- Tom Fuentes, PE

PUBLIC ENGAGEMENT
- Travis Greiman, PE, CAMP

RIVER / 2D MODELING
- Patrick Bussen, PE, CFM

10-YEAR CIP
- Travis Greiman, PE, CAMP
- Steve Roth, PE, CAMP

CCTV
- Paul's Anytime

SURVEY
- Heath Hildebrand, PLS

GIS
- Dan Gwartney, GISP

RATE STUDY
- Bryan Mantz

SUE
- Cameron Greer, PE

INFO GATHERING / CONDITION ASSESSMENT
- Austin Fling, EIT

PROJECT LEADERS

The Benesch Team will provide Johnstown with proven project partners that have the capacity and availability to begin immediately.

TRAVIS GREIMAN, PE, CAMP | LOCAL PROJECT MANAGER

Travis has over 17 years of civil engineering experience, including eight years of experience with the City of Centennial employed as a Project Manager, Engineering Manager, and Public Works Director. He has initiated, led, and delivered several master plans including the City of Centennial's Intelligent Traffic System (ITS) Master Plan, 10-year Capital Improvement Plan, and Roadway Design and Construction Standards. This work required him to regularly interface with City of Centennial Council, staff, contractors and consultants, and the public to collect input, create content, and build consensus on the proposed plans. He has led asset management services for Benesch's Denver office working for clients across the metro area across a variety of asset classes.

TOM FUENTES, PE | SUBJECT MATTER EXPERT

Tom has over 30 years' experience in public capital improvement projects. His project experience includes floodplain management, CLOMR/LOMR processing for floodplain map revisions, hydraulic structure and culvert design, irrigation structure / canal design, preliminary / final design, stream restoration, environmental permitting, preparation of drainage memorandums and reports, utility plans, construction plans, stormwater management plans, specifications, cost estimates, and design support during construction. Tom is a member of the Association of State Floodplain Managers (ASFPM), and the Colorado Association of Stormwater and Floodplain Managers (CASFM).

STEVE ROTH, PE, CAMP | SUBJECT MATTER EXPERT

Steve has over 25 years of experience as a project manager and design engineer on a wide variety of stormwater projects. He has prepared Stormwater Master Plans, Asset Management Plans, designed stormwater retrofit solutions in existing neighborhoods, and stormwater Best Management Practices (BMPs). In addition to this experience, he has also prepared hydraulic analysis and stream bank stabilization analysis on rivers in Kansas such as the Kansas, Missouri, Arkansas, Smoky Hill, Saline and Neosho Rivers. He also serves as the On-Call engineer for the Fairfax, Kaw Valley and Merriam Drainage Districts in Kansas.

JOE FILE, PE, CFM | SUBJECT MATTER EXPERT

Joe has over 25 years of experience as a water resources, dam and levee engineer. He has managed complex hydrologic and hydraulic engineering projects for a variety of clients including the States of Kansas and Missouri, FEMA, NRCS, and a variety of Cities, Counties, Watershed Districts, Levee Districts and Drainage Districts. In addition, he has worked on a variety of projects including levee certification, hydraulic/hydrologic modeling, dam design and construction, dam breach inundation mapping, emergency action planning, unsteady flow modeling, urban stormwater management and design, dam and levee feasibility studies, and land development and design.

PROJECT SUPPORT

We have assembled a team with key partners uniquely built to provide Johnstown with the required services while bringing added value to save the Town time and money while not compromising quality.

▶ JOHNNY OLSON, PE | PRINCIPAL IN CHARGE

After 31 years with the Colorado Department of Transportation as the CDOT Deputy Director, Johnny brings a great depth of local experience to his role at Benesch. He has had unique experience managing projects, leading task forces and building consensus among stakeholders. His expertise includes project management, transportation planning, highway design, construction management and contract management.

▶ PATRICK BUSSEN, PE, CFM | RIVER / 2D MODELING

Patrick has 12 years of experience as a water resources engineer, including project management responsibilities. His knowledge is focused on hydrologic and hydraulic engineering, stormwater drainage analysis, flood inundation mapping, flood reduction studies and levee riverine and interior drainage analyses. Patrick has experience with stormwater mitigation and alternatives analysis and has performed technical reviews of complex hydrologic and hydraulic studies.

▶ DAN GWARTNEY, GISP | GIS

Dan has over 18 years of detailed experience in GIS, remote sensing, database management, staff management, project management, and technologic innovation. He has extensive experience in mapping water resources such as wetland delineation, floodplain mapping, and three-dimensional modeling. Dan has extensive experience with Municipal Stormwater programs around the country.

▶ AUSTIN FLING, EIT | INFO GATHERING / CONDITION ASSESSMENT

Austin serves as the water resources design engineer for a number projects. Austin has been involved with floodplain analysis, pipe culvert and inlet design, hydrology and flow analysis. He has experience in multiple hydrology and hydraulic modeling programs as well as Civil 3D, OpenRoads, and ArcGIS. Having also worked on several Johnstown projects, he will provide the Town continuity of service and historical knowledge.

▶ CAMERON GREER, PE | SUE LEAD

Cameron has 17 years of experience in utility surveying, CAD and as a SUE project manager/project engineer. His responsibilities include properly geo-referencing SUE data onto plans, profiles, and cross sections in a manner that greatly facilitates design, coordination, and construction efforts. Cameron works closely with prime engineering firms or directly with clients to communicate utility issues and collaborating with designers, utilities, and contractors in resolving utility conflict issues.

▶ HEATH HILDEBRAND, PLS | FIELD VERIFICATION SURVEY LEAD

Heath is a project surveyor/project manager with 24 years of experience in public improvements and private development. He is a professional land surveyor licensed in Colorado. He stresses data management, which is a key element for project success and believes continuing education will bridge the gap between new technologies and practical surveying techniques resulting in accurate data information.

▶ BRYAN MANTZ | RATE STUDY LEAD

Bryan serves as the President of GovRates, a utility, financial, rate, and management consulting firm. He has successfully completed thousands of rate and financial projects for local government entities throughout the United States, including stormwater rate and assessment studies for many jurisdictions. He is actively involved with the American Water Works Association (AWWA), which deals with water, wastewater, and stormwater issues.

AVAILABILITY TO PERFORM WORK

We recognize that providing adequate staff to meet Town needs and schedules are critical to meeting Johnstown's expectations on this contract. Before we pursue a contract, we verify the correct staff will be available by utilizing our staffing database. The database is a tool Benesch has developed to project the hours each employee will work on specific projects each given month. At the time of submitting this proposal, our asset management design team has an average availability of 44% during the period of this contract. That availability is sufficient to meet the needs of the contract and provide the high quality of service desired.

EXECUTIVE SUMMARY

Benesch intends to build on our successful relationship with the Town to deliver this Stormwater Master Plan. Through our various planning and design projects, we have developed touch points with the Town's proposed development, existing and proposed drainage infrastructure, and more. That understanding allows us to reduce the initial data collection and understanding period and get deeper quicker than if we were coming in brand new.

While useful as guidance documents, many master plans do not provide any operational or tactical direction to implement the identified recommendations. To avoid a plan that simply admires the problem, Benesch proposes to utilize an asset management approach to develop a 10-year CIP. This allows the Town to consider risk factors and other customized prioritization criteria while ranking projects.

▶ ASSET MANAGEMENT

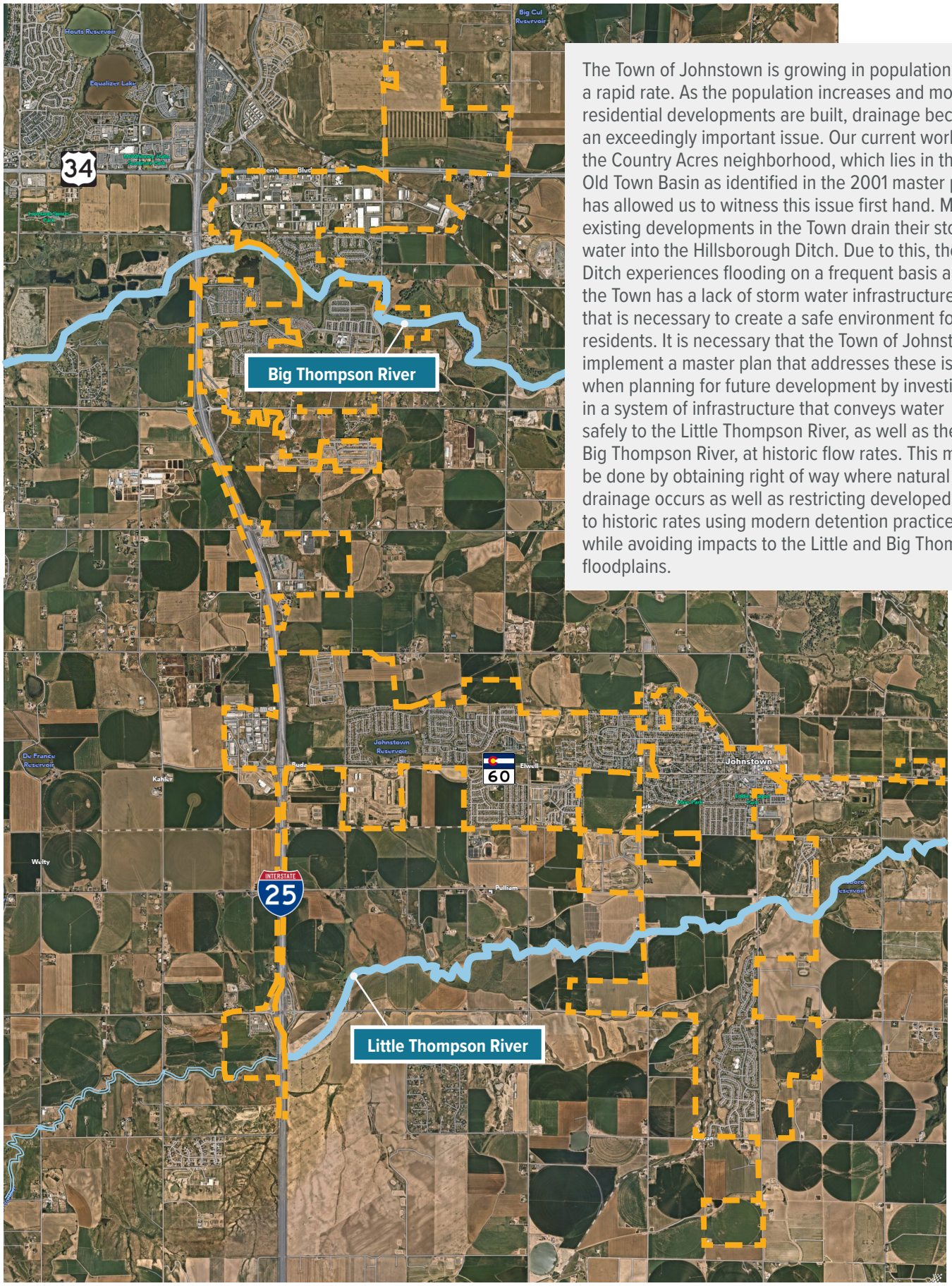
An effective asset management strategy requires three key elements:

1. **Comprehensive inventory of assets.**
2. **Determination of the level of service desired.**
3. **Assessment of the criticality of each asset to identify an effective capital improvement plan.**

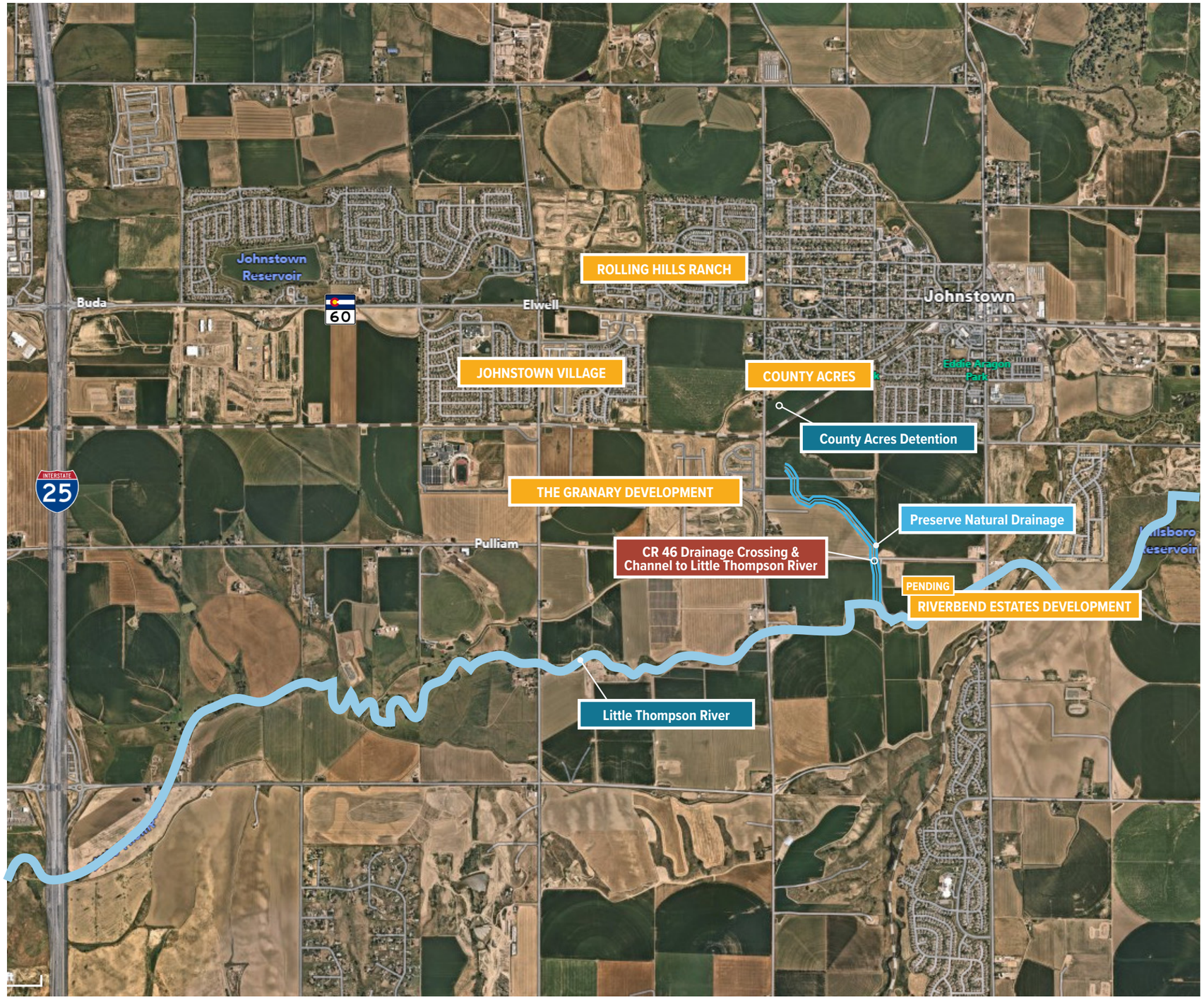
GOAL	BENESCH BENEFIT
DEVELOP a better understanding of the stormwater conveyance system's capacity, both now and in the future.	Benesch's highly technical team that will prepare a hydraulic model of the Town's stormwater conveyance system. With this model we can then anticipate what impact growth in population and new businesses will have on your system's capacity.
PREPARE a plan that will allow the Town to understand the impact of your current and anticipated future growth.	We will deploy the same approach we've used for other communities we work with that are experiencing exponential growth and prepare a range of anticipated industrial flows. We will then prepare multiple solutions so the Town can select the right project.
CREATE a Master Plan based on documented data-driven decision-making process.	We will prepare a custom approach to master planning that integrates several aspects of both Asset Management and Value Planning approaches to provide a master plan that will document all assumptions, data, analysis criteria and alternatives to provide a transparent living document.

▶ PHASING

We propose to phase the project to deliver critical items early and work on other tasks subsequently. This will allow the Town to provide guidance to proposed development as quickly as possible and follow up with CIP lists, rate studies and GIS dashboards. Please see the included schedule and roadmap for more information.



The Town of Johnstown is growing in population at a rapid rate. As the population increases and more residential developments are built, drainage becomes an exceedingly important issue. Our current work in the Country Acres neighborhood, which lies in the Old Town Basin as identified in the 2001 master plan, has allowed us to witness this issue first hand. Many existing developments in the Town drain their storm water into the Hillsborough Ditch. Due to this, the Ditch experiences flooding on a frequent basis and the Town has a lack of storm water infrastructure that is necessary to create a safe environment for its residents. It is necessary that the Town of Johnstown implement a master plan that addresses these issues when planning for future development by investing in a system of infrastructure that conveys water safely to the Little Thompson River, as well as the Big Thompson River, at historic flow rates. This must be done by obtaining right of way where natural drainage occurs as well as restricting developed flows to historic rates using modern detention practices all while avoiding impacts to the Little and Big Thompson floodplains.



CRITICAL ISSUES:

- Hillsborough Ditch flooding issues
- Lack of Right of Way for major drainage patterns
- Lack of strict master plan components
- Lack of existing infrastructure
- Asset management and planning of necessary drainage components
- Understanding and considering proposed and future development activity

GOALS:

- Restrict the amount of water flowing into the Hillsborough Ditch
- Identify major drainageways that follow historic paths to the Little Thompson and Big Thompson Rivers
- Develop plans to obtain Right of Way and drainage easements for major drainageways
- Identify strategic locations for detention
- Avoid floodplain impacts

KNOWN CHALLENGES:

- Acquisition of property
- Hillsborough Ditch and Great Western Railroad Crossings

TASK 1

PROJECT COORDINATION AND DATA GATHERING

Benesch will coordinate the work tasks being delivered by the entire Project Team to ensure project work completion stages are on schedule. We will arrange project staffing and assigning of tasks, scheduling and invoicing, run progress meetings, keep a running log of notes and action items, and lead all public outreach efforts.

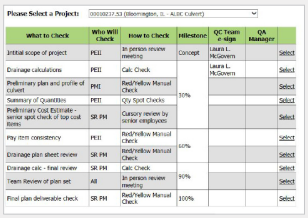
▶ STAKEHOLDER INVOLVEMENT

Stakeholder participation is an essential element of the decision-making process and, ultimately, the success of the project. We will rely on stakeholders to help identify areas of existing flooding and known problems with the Town's existing drainage features. There may also be opportunity to leverage stakeholder knowledge to confirm the results of our modeling effort.

Travis Greiman and key staff will lead the stakeholder involvement efforts with support from Benesch's in-house public engagement and graphic design staff. Our team will develop and implement a public plan that meets both project and community needs. This may include many public engagement tools that we have used on similar projects, such as an interactive project website, project handouts and displays, electronic public comment collection, virtual or in-person public meetings, presentations and 3D visualizations.

We integrate virtual public meetings with traditional public involvement practices to continue to engage and inform the public. The virtual public meeting is advertised the same way as a traditional public meeting through direct mailers, flyers, newspaper notices, website and social media posts.

Travis Greiman, Project Manager, has presented at numerous City Council meetings, public forums, and stakeholders summits during his time at the City of Centennial. With support from Johnny Olson, he will lead all presentations associated with this scope of work.



What to Check	Who Will Check	How to Check	Milestone	QC Team e-sign	QA Manager	
Initial scope of project	PEIL	In person review meeting	Concept	Laura L. McGovern		Select
Drainage calculations	PEIL	Calc. Check		Laura L. McGovern		Select
Preliminary plan and profile of culvert	PM	Red/Yellow Manual Check	30%			Select
Summary of Quantities	PEIL	Qty Spot Checks				Select
Preliminary Cost Estimate - sense spot check of top cost items	SR PM	Cursory review by senior employees				Select
Pay item consistency	PEIL	Red/Yellow Manual Check	60%			Select
Drainage plan sheet review	SR PM	Red/Yellow Manual Check				Select
Drainage calc - final review	SR PM	Calc Check				Select
Team Review of plan set	All	In person review meeting	90%			Select
Final plan deliverable check	SR PM	Red/Yellow Manual Check	100%			Select

QUALITY CONTROL/QUALITY ASSURANCE

Benesch's internal quality control program, called the Project Quality Management Program (PQMP), is directed by the firm's leadership. Simultaneous and thorough review of all project documentation will be made by both Benesch's Project Manager, Travis Greiman and QA/QC, Steve Roth, Joe File and Tom Fuentes, to assure that it is complete, accurate and meets all the Town's requirements. To enhance our team's performance for the Town, Benesch will pursue constant open communication, including scheduled meetings with all key team members. We are committed to providing all the necessary tools and resources to make each task successful.

Our Quality Management System involves:

Project-Specific Quality Management Plan (PQMP)

Each project at Benesch, regardless of size, begins with the creation of a customized PQMP. Your project(s) will be no exception. We use an online, intranet tool consisting of a series of templates as the basis for each PQMP. The plan identifies checkpoints for project deliverables. We delineate and document what will be checked, at what intervals and with what system (electronic, red/yellow highlights, calculation checks, etc.).

Checking in – Who, What, When and How (3WH)

The PQMP creator automatically creates a tracking database called the 3WH Tracker (who-what-when-how). The 3WH checker includes QC tasks for required completion before a deliverable can be sent to the client. The QC checker e-signs tasks; the QA reviewer is then required to sign off, personally confirming work has been completed and documented. Our Corporate Director of Quality Management monitors this database to ensure all projects comply with this policy.

Benesch strongly believes in quality. We further believe QC checks need to happen at the correct time, by technically proficient staff, at the appropriate level of detail for each milestone. A testament to our quality is seen in this project team's very stable workload with nearly 100% consisting of repeat work for existing clients.

▶ EVALUATION OF AVAILABLE DATA

Benesch will obtain and organize available storm water inventory data, perform analysis on connectivity, and prepare extent maps for discussions with Town staff and stakeholders at kick off meetings. This process will ensure accurate incorporation into a comprehensive master plan. Prior to the kickoff meeting, Benesch will ensure the entire team is up to speed on the status of the Town's current design criteria, the latest stormwater inventory data, previous CIPs done across Town Watersheds, the Town's Draft Stormdrain Design Standards, and other necessary documents as available. This will include the evaluation of relevant information from previous studies to evaluate previous decisions made by the Town, the validity of the data and any changes that have occurred, and the best ways to incorporate this relevant information into the overall master plan.

This task includes two proposed meetings with Town staff. The first meeting will kick-off the project including discussion of any available information, data, and resources. At this meeting we will discuss existing stormwater models for the Town, what information can be used and what information needs updated, as well as establish certain levels of detail for the modeling. We will have discussions with key staff with first-hand knowledge of the stormwater systems and institutional knowledge of how the systems have functioned during major runoff events. Problem areas will be defined at this meeting to ensure we are focusing efforts on solving existing problems or high-risk areas.

If needed, a second meeting will consist of interviews with key Town staff to gain information on the stormwater systems and known issues with these systems. Benesch will conduct interviews with identified Town staff and stakeholders to gain additional knowledge and understanding of problems within the existing system along with noting future development plans. Estimated high water marks, road/street closures, damages and other specific information relevant for particular events are essential to development of an implementable stormwater improvement plan. This information will be used to help calibrate or "truth" existing modeling or new modeling once it is created, ensuring the accuracy of the model response.

It is important to note that there is a substantial amount of existing data that can be leveraged to develop the Master Plan. The stormwater inventory data will play a key role in the development of this plan. The following is an example list of data that will be utilized and/or enhanced as part of the data assessment.

▶ 2D MODELING

This 2D modeling will be utilized to initially assess flood prone areas and determine initial flood risk. These areas will then be vetted with Town staff and, if necessary, will also utilize input from questionnaires provided to citizens in specific neighborhoods or locations. This modeling will be used to help determine where additional SWMM modeling is necessary, or if the risk is so minimal in an area that additional SWMM modeling is not required. This approach will allow us to maximize the use of Town funding for assessing high risk areas, while quickly eliminating low risk areas from additional study requirements. This modeling will be used as an initial risk assessment tool to help prioritize modeling enhancement areas, determine potential project locations, and rank projects according to probability and consequence of failure.

CASE STUDY:

COUNTRY ACRES DRAINAGE MITIGATION

Background: Severe flooding occurred on Sandra Drive from storms in the summer of 2023, causing flood damage to basements of homes.

Scope: Benesch is currently under contract to provide flood mitigation engineering services to includes meetings with homeowners, hydrology, hydraulics, storm sewer size upgrades, detention pond design and development of regional storm system outfall to the Little Thompson River. The work includes subconsultants to provide design surveys, subsurface utility exploration / investigation and right-of-way services.

Unique Features: Benesch is coordinating the design with homeowners, property owners, railroad crossing and Hillsborough Ditch Company.

▶ Through projects like these, Benesch has developed an intimate understanding of the Town's existing drainage challenges and has been working with many of the same stakeholders we will work with to develop the Town's Stormwater Master Plan. We will leverage this understanding as a foundation and continue to build. Additionally, we believe this project experience provides us insight into how to accelerate portions of the Master Plan so the Town can guide existing and future development toward a comprehensive stormwater management strategy.

▶ CCTV DATA

Benesch understands the Town has some existing CCTV data and wishes to augment this information with new CCTV runs of CMP pipe. Benesch would look to partner with Paul's Anytime (to keep a consistent Town/vendor relationship) to deliver these new videos. The condition data will be gathered both through the generated reports and a visual review. We will use the information to further build out the Town's asset inventory.

▶ BRIDGE INSPECTION

As requested in the Town's RFP, we will integrate our deep experience with bridge inspection into the effort. We have confirmed we can access the Town's existing inspection data in the SIMSA portal (which will replace BrM), and we will be inspecting the Town's major structures in April 2024 through a larger contract with CDOT. Through additional field visits of minor structures and review of inspection reports, we will work to pull out relevant findings associated with the waterway: scour, waterway adequacy, and more.

▶ FIELD VERIFICATIONS

The RFQ indicates that field verification will likely be necessary to complete the asset inventory. Benesch will review the Town's available data and perform a gap analysis. We would propose limiting field verifications to pipes and structures greater than 36-48 inches to limit the field verification work and focus on the infrastructure that has the greatest impact on the drainage network. Where field verification is required, we have partnered with Eugene Lynne and UMS to perform the survey and SUE work, respectively. Based on the allowance set by the Town, we estimate 15 working days of field survey work can be allotted with the rest of the allowance going toward SUE potholing.

Benesch is assisting the city of Kansas City, Kansas with the development of Stormwater Asset Management Plan which will utilize CCTV and manhole inspection data to develop a priority based ranking system for the maintenance and replacement of all pipes within the city's 13,500 structures and 300 miles of pipe. While not every pipe will be inspected, this information will be valuable in estimating the condition of the uninspected pipes. For those that are inspected, we have developed an analysis that will quickly identify not only the types of repairs that need to be scheduled, but a budgetary estimate of the cost of those repairs.

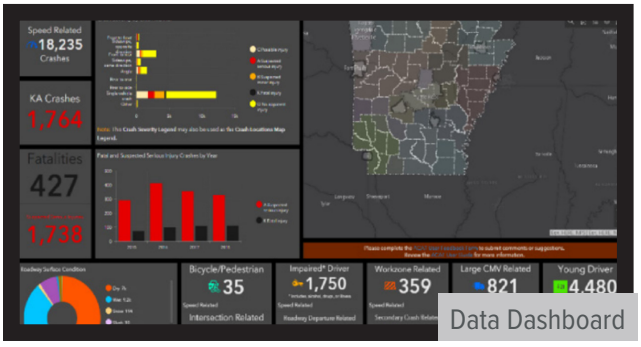
TASK 2

GIS DATA REVIEW & GIS DASHBOARD DEVELOPMENT

Benesch's familiarity with GIS platforms starts at the time of inspection and runs through database preparation, attribute creation, data management, and ultimately the creation of data dashboards. Using the Collector and Survey123 apps, we can automate data collection that uploads easily into an ArcGIS platform. From there, data manipulation and analysis is simplified and we can create powerful visual dashboards.

BENESCH SOFTWARE EXPERTISE/PARTNERSHIPS

Our team has partnered with state and local agencies nationwide to develop Key Performance Indicators (KPI) for various business operations, workflows, and asset groups. A key step in this process is to analyze each KPI to ensure they are sustainable financially and deliver long term value to the organization. These indicators will be tied to the milestones identified not only in the asset management roadmap, but also to other outcomes of the target setting process.



Data Dashboard

Benesch's experience with multiple visualization platforms/tools (GIS, Tableau, Power BI, others) will facilitate the development of timely quality analytics, reports and dashboards. We will reduce the risk of decisions being based on old, incomplete data, or limited reporting. Benesch will reduce exposure to financial, scheduling and regulatory risk through faster access to more reliable information. The development of data dashboards will allow all stakeholders to recognize the progress of the program quickly, but also easily identify areas that may require additional effort to stay on track.

TASK 3

STORMWATER MASTER PLAN PREPARATION

▶ STORMWATER QUANTITY RISK ASSESSMENT

The first step in the risk analysis is to identify and define what the risks are to the storm systems, by first developing your Levels of Service (LOS) for storm assets. As detailed in the RFQ we will utilize the American Water Works Association's performance benchmarking survey, and other sources to help you define each service that the stormwater system provides ratepayers. Once each service has been identified, we will work with you to define what level of service should be provided.

In our work with the City of Kansas City, Kansas we were able to define over 70 unique Levels of Service for assets operated and maintenance by their Water Pollution Control Department. These Levels of Service were then used to develop Key Performance Indicators that provide the department a clear window into the operations of that group. Similarly, we will work with you to identify the Level of Services that are important to you in the following three categories.

Organization LOS refers to agency-wide performance expectations relative to the established vision, mission, goals and core values.

Customer LOS addresses quality (how good is the service); function (is asset suitable for intended purpose); and capacity/use (is the service over/under used).

Technical LOS focuses on operations (activities needed to provide service); maintenance (actions needed to retain desired service level); renewal (action needed to return to original); and upgrade/new (effort necessary to enhance service level).

Benesch has expertise in the use of a wide variety of proprietary and non-proprietary software, including HEC-HMS, HEC-RAS (steady and unsteady flow), XP-SWMM, PC-SWMM, EPA-SWMM, and Bentley, as well as a number of other additional software packages. If the Town desires that specific software be used, Benesch can accommodate this need. Benesch proposes to use PC-SWMM to model the Town's storm water system unless another model is specifically desired by the Town. PC-SWMM can accommodate both the pipe flow component as well as the open channel/overland flow component of the storm water network. PC-SWMM is a fully GIS integrated model that allows for the storm water inventory to be easily incorporated into the model and extracted out of the modeling once complete, so that results can be clearly displayed in GIS. While PC-SWMM is a proprietary software, the output files can be exported to EPA-SWMM, which is a public domain software and is pre-approved by FEMA for use as well.

Benesch proposes to use the most recently LiDAR dataset produced after the 2013 floods for the modeling. Benesch will convert this topography to a ground surface, and will use this topography, aerial imagery, the Town's storm water network inventory, and field reconnaissance to develop the system hydrology to model the 2-, 5-,10-, 25-, 50-, 100- and 500-yr events. GIS processes will be used to create the basins, land use, and flow paths as well as other watershed characteristics. This information will then be imported into the PC-SWMM model. Benesch will use the storm water inventory to input the pipe geometry into the PC-SWMM model. Detention and storage areas will be input based upon the topography and the storm water network.

Cross-sections for overland flow will be taken from the inventory or cut from the topography and input into the model. If a particular area would be better represented by 2D modeling, Benesch proposes to use the 2D overland module within PC-SWMM to perform this modeling. All modeling will be FEMA compliant following FEMA guidelines and specifications.

Once the modeling has been completed, Benesch will evaluate flood risk within each Town defined watershed. Once an initial assessment has been done, Benesch will meet with Town Staff to discuss our findings associated with those high-risk areas. One of the goals of the meeting will be to vet the modeling based on staff knowledge of historic flooding issues. For those areas not able to be fully vetted by staff, we may develop a mailing for local property owners in certain potential high-risk areas to gage the modeling results as compared to knowledge of historic flooding events from property owners. Once we have a good understanding of the likelihood of damages and the magnitude of the consequences associated with the flooding, we will evaluate all deficiencies in the Town's storm water system on a watershed basis. Benesch will then develop a list of areas to consider for improvement alternatives or mitigation projects to develop alternatives that mitigate risk. This base modeling will then be used in the alternatives analysis and stormwater master planning.

Most local agencies use the MHFD Criteria Manuals as a base. As such, we are very familiar with the MHFD Urban Storm Drainage Criteria Manuals and to apply them to develop runoff calculations, inlet capacity calculations and Best Management Practices spreadsheets. We will refer to Volume 1 as we work through hydrology and hydraulics for this scope of work.

DETERIORATION CURVES

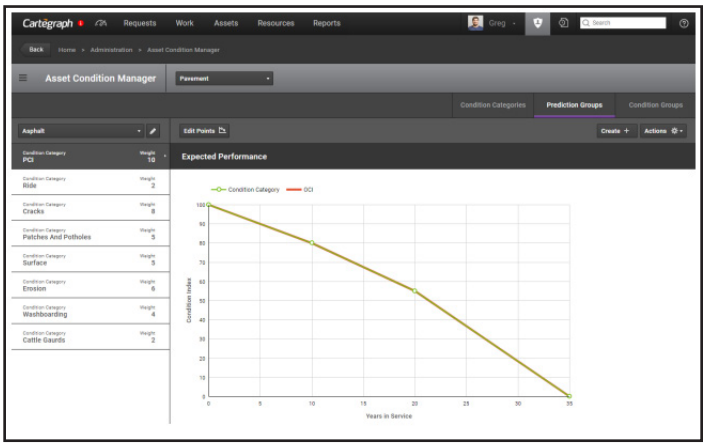
Using the CCTV data provided by the Town and age data that can either be pulled from the Town's GIS data, or development from any of a number of sources, we can develop asset deterioration curves for each of the pipe material types that can be found within your collection and conveyance systems. Since there are several industry standard values and curve types we will be able to generate curves that represent your reality.

While the deterioration and potential failure of a pipe is certainly a concern that needs to be addressed in the master plans, it is also important to identify what other Consequences of Failure exist for the stormwater system. Many of these consequences will be unique to the type of asset (e.g. manhole vs pipe), but they will also be unique to which system we are studying. Based on our experience with other clients, we have developed a library of these factors that we can explore with you to select those that are the most applicable to your community.

In addition to Water Quantity and Water Quality, aging infrastructure can play a substantial role in evaluating likelihood of failure and associated consequences. Unfortunately, all too often asset information is collected for the sole purpose of simply locating and identifying inlets and storm sewer conduits within a jurisdiction.

However, the value of this infrastructure asset data can and should be leveraged to provide additional value. For this project, we propose to utilize the Town's storm water inventory as the base data and a custom software developed by Benesch, to predict remaining asset life and to allow for risk-based decision-making based on likelihood/consequence of failure. This tool incorporates deterioration modeling and forecasting projections for stormwater assets.

For this project, we propose to assess remaining asset life and associated risk of the loss of that asset. Depending on the severity of the deficiency and the associated risk, this information may then be used to develop standalone projects, or it may be used as a prioritization function for projects that are defined based on water quality or water quantity needs.



Cartegraph's Asset Condition Manager

We will develop deterioration curves for certain stormwater assets, potentially including reinforced concrete box culverts, pipes, inlets, manholes, and ditches. For each element, potential variations such as pipe material types are available as well. The Town has indicated a focus on corrugated metal pipe deterioration, and this will certainly be a high priority to address with these models. We will work with Town staff to pick the appropriate condition deterioration curves most applicable for each material type and asset, and then forecast the deterioration for a given evaluation period.

When the deterioration curves are combined with return-on-investment benefits from planned work actions, we will be able to project current and future conditions of individual assets for the entire network. This will allow us to recommend a plan of actions for extending service/functional lives of assets and ultimately mitigate risks.

TASK 4

10-YEAR CAPITAL IMPROVEMENT PLAN

While useful as guidance documents, many master plans do not provide any operational or tactical direction to implement the identified recommendations. To avoid a plan that simply admires the problem, Benesch proposes to utilize an asset management approach to develop a 10-year CIP. An asset management approach will consider condition data, risk, and other customized screening criteria all within the context of the broader context of the Stormwater Master Plan. The resulting 10-year CIP list will be data driven, defendable and actionable.

▶ BENEFITS TO THIS PRIORITIZATION APPROACH

CUSTOMIZABLE

Benesch's highly technical team will prepare and calibrate a hydraulic model of the collection system. To determine the future needs of your system we will employ asset management processes that will allow us to predict the state of all your assets throughout the planning period.

DEFENDABLE & DATA-DRIVEN

Since the priority projects will all be based on Town-owned GIS data or information developed during the analysis, any stakeholder will be able to determine how the priority list was developed.

TRANSPARENT

By documenting the analysis process within the Sewer Master Plan, all the decisions will be fully explained providing complete transparency on how the process arrived at the provided recommendations.

▶ PRIORITIZATION OF 10-YEAR PLAN

The key to developing a comprehensive CIP, is developing a risk-based approach that will allow the Town to directly compare the storm assets by risk. In fact, the approach we will propose using will allow you to perform a risk-based comparison between all your assets, not just stormwater. So regardless of what type of asset you'll be reviewing, be it a wastewater pump, or a road or bridge, the risk analysis will allow you to perform an apples-to-apples comparison through the developed Levels of Service. We will also continue to utilize the Town's existing asset management software for this project by building asset rehabilitation and replacement scenarios.

The prioritization of assets and projects will be further augmented by Benesch's proprietary asset management tool. Benesch's asset tool ultimately will contribute to the generation of a Stormwater Master Plan for the Town of Johnstown. Based on project rankings, projected conditions, and forecasted demands on the infrastructure, projects will be identified using the VBA logic functions and improvements can even be assigned to a given fiscal year.

▶ DEVELOPING SPECIALIZED PRIORITIZATION CRITERIA

An asset management approach would use condition ratings as the foundation for prioritization. Through review of the Town's data as described in Task 1 along with Benesch's firsthand experience with these structures, we would utilize standard prioritization criteria to capture the Town's concerns. Stormwater infrastructure criteria often include the following:

- Pipe size, material, and age
- Condition rating
- Failure risk
- Consequence of failure

Additionally, the Benesch Team would work with major stakeholders to develop secondary and tertiary prioritization criteria to help prioritize structures with the same condition rating and represent priorities beyond the structures themselves. We will meet with stakeholders such as the County floodplain administrator, ditch companies and private property owners to develop prioritization criteria that represent relevant concerns, considerations and priorities. By defining specific criteria and relevant ranges and scores, the prioritization criteria are almost infinitely customizable and can be structured to accurately represent all stakeholder interests.

While not an exhaustive list, we have listed some example criteria for the major stakeholders below:

- Hydrology and hydraulics
- Consistency with existing master plans
- Consistency with FEMA and USACOE regulations and plans
- Structures
- Overtopping risk (which considers frequency and severity)
- Scour concerns
- Priority of stream improvements from relevant master plans
- Floodplain
- Opportunity to make improvements consistent with the propose Storm Master Plan
- Opportunity to improve/reduce floodplain
- Opportunity to reduce sedimentation
- Environmental
- Presence of hazardous/deleterious materials
- Opportunity to restore natural channel

By pulling in the right subject matter expert from the Benesch Team to talk to each stakeholder, we will develop meaningful prioritization criteria that will inform our final recommendations for removal, replacement, or rehabilitation.

▶ STORMWATER SYSTEM INFRASTRUCTURE IMPROVEMENTS AND REHAB TECHNOLOGIES

Drawing on our extensive stormwater planning, design, and construction experience, we will present recommendations on rehabilitation technologies for pipes, manholes, inlets, and other structures. Through the lens of our past experience, we can hone these recommendations to ensure the Town is efficiently employing each rehab method. The primary rehab techniques will be integrated into the tool.

Throughout the process, many flood improvement alternatives for the Town will be developed. There are numerous combinations of conveyance and volume reduction alternatives that will be considered. The key is to select those that integrate water quality and are achievable, and then prioritize and rank them for consideration.

Constructability, timing with other Town CIP projects (such as streets projects or other utility projects), aging infrastructure issues, water quality enhancements that coordinate with the Town's stormwater management plan, cost and benefits will be considered for each. Too many stormwater master plans outline those LARGE projects that are super expensive and can never be built. We will work closely with the Town to make sure all recommended solutions are relevant, realistic and consider the overall scale of the community. It is not our intent to provide an unlimited number of mitigation options that can never be achieved in a lifetime. Instead, after considering numerous potential projects, we will provide a recommendation for three to ten projects for each basin within the Town, ranging from low cost, easily implementable to higher cost, highly beneficial projects. These projects can then be sequenced based on criteria developed in coordination with Town staff that make them achievable and implementable.

▶ ANALYSIS OF ALTERNATIVES

After defining LOS and potential rehab methods, the Benesch analysis tool will incorporate logic to identify warranted actions (preventative, maintenance, repairs, rehabs, replacements). Each action has an established "benefit" as well as multiple subcategories. In other words, the improvement in condition ratings and influence on the service life of that structure that occur from an action are presented. Each action has a different "benefit" based on the characteristics and condition of the structure. If any action is warranted, then project costs are calculated and assigned. The objective is to present the Town with "Return on Investment" (ROI) for any proposed action so that one action can be evaluated against another, resulting in the Town implementing defendable, documented decision making.

Final recommended projects will be based upon several factors including:

- Maximized Benefits – Balancing short and long-term benefits
- Construction and Maintenance Cost considerations
- Water Quality integration
- Age of infrastructure
- Environmental Impacts and probability of permits
- Utility conflicts
- Property acquisition needs
- Potential funding Partnerships

Final sequencing of the projects will be based on:

- Order of completion required to ensure no adverse flooding impacts at any location throughout the watershed
- Cost and availability of funds
- Alignment with other priority CIP projects (water, sewer, streets, parks…)
- If feasible, addressing the worst flooding areas first

▶ COST CONTROLS

The staff we have identified will be committed to this project from beginning to end and can do so without sacrificing any other commitments. Benesch maintains a staffing database to track labor resources and compare against project needs. The database is updated monthly, and our staff holds weekly meetings to discuss staffing. By regularly tracking our labor resources, we are able to keep a close eye on the level of effort expended on projects. Combining the staffing database with easy access to project financials in our Deltek Vision accounting software, the Project Manager can track labor expenditure on a daily, weekly, or monthly basis to ensure tasks are not overrun without prior authorization. We will track each task separately and allocate allowances for survey, SUE, and CCTV as directed in the RFP to ensure the effort on each task and the project as a whole is closely monitored.

TASK 5

RATE STUDY

Benesch has partnered with GovRates to deliver the rate study. Developing a financial and rate plan for the Town's stormwater utility will involve:

- Working with the Town to establish business and financial goals, objectives, and targets to be incorporated into the financial and rate plan for the stormwater utility. The plan should consider best management practices as recognized by the utility industry.
- Recognizing the stormwater utility's operations and processes such that the cost of service and revenue necessary to fully fund the utility's operations can be identified.
- Developing optimal funding and financing strategies for the multi-year capital improvement program to minimize rate increases and help keep rates affordable and competitive while adhering to utility best management practices.
- Classifying costs as appropriate and developing equitable and defensible rates, fee, and charges.
- Performing rate / bill comparisons and benchmarking with other stormwater utilities.
- Developing a non-propriety, high-quality, state-of-the-art, customized, and easy-to-use financial planning model that properly represents the stormwater utility's business attributes and allows for scenario, sensitivity, and risk assessment analyses given changes in key assumptions such as system growth, usage per customer, staffing changes, capital needs, etc. The model will have a graphical management dashboard to allow the Town to analyze the forecasted financial position of the stormwater utility, to evaluate funding and rate scenarios, and to determine potential risks and business strategies. The management dashboard will graphically represent financial and operational metrics that add value to the presentation of the financial forecast results for each scenario that the Town would like to explore. The Project Team's financial models also have one-tab rate and financial worksheets to allow high-level scenario analysis.
- Preparing a comprehensive report documenting all assumptions, methodologies, and findings. A detailed report will help the Town staff reconcile projected vs. actual results and will provide assurance that all relevant operational and financial considerations were incorporated into the financial plan.
- Providing easy-to-understand briefing documents and other deliverables to facilitate public acceptance of the study recommendations.

Frequent communication will be a cornerstone of the project management approach. We will provide regular updates on our progress to provide the Town staff with confidence that project goals and objectives were being met.

Our Project Team will provide multiple draft (work-in-progress) versions of the state-of-the-art, customized, and easy-to-use rate study financial model – with graphical management dashboards – to the Town staff for review. Staff feedback during the various stages of the model development would help to optimize the financial models for Town internal use after the project is finished. Following project completion, GovRates will be available pro bono to provide financial model support.

The anticipated approach and work flow will follow the chart below. The recommendations developed during the study would consider utility best management practices.

PLANNING

- Data Compilation and Review
- Institutional Background
- Policy Review and Development
- Business Goals and Objectives
- Financial Targets
- Automatic Rate Increase or Rate Increase Pass-Through Provisions
- Political Considerations

ANALYSIS

- Historical Customer Statistics
- Historical and Budgeted Revenues and Expenditures
- Cash Reserves by Fund
- Capital Improvement Program Funding
- Revenue Requirements Analysis and Timing of Rate Adjustments
- Rate Covenant Compliance
- Cost-of-Service Evaluation
- Rate and Fee Design
- Customer Impact / Affordability
- Benchmarking

COMMUNICATION

- Graphical Management Dashboard
- Comprehensive Report
- Briefing Document (PowerPoint Presentation)
- Public Outreach

TASK 6

DELIVERABLES

Benesch will consolidate the findings and recommendations associated with previous tasks into an overall Stormwater Master Plan. The Master Plan will include recommendations for capital improvement projects prioritized based on the likelihood of failure and associated consequences, best management practices to reduce TMDLs and meet the Town's future MS4 permit requirements and stormwater management plan, and our assessment of the stormwater system capacity and remaining infrastructure life.

Benesch will complete the following tasks:

- An executive summary of the other tasks contained in the project approach will be provided to the Town.
- Each section (task) of the Master Plan will include a summary of findings, documentation, recommendations and conclusions. In addition, detailed descriptions of all modeling and data review will be provided, as well as any supporting maps, models, GIS data or additional information generated for the project.
- Individual Project Recommendations and Descriptions will be provided for each recommended CIP project. This will consist of a GIS-based map showing the location of the project and a project schematic. A summary table of project components and a project narrative will be provided for each project.
- A Risk-based Project Sequencing summary table of all projects will be provided, summarizing cost, consequence of failure, likelihood of failure, and overall priority ranking will be included in the Master Plan. This section will include a narrative summarizing ranking criterion, and assessment criteria for risk.
- Cost Estimates will be developed for each project. Working with the Town and using a combination of methods including recent Town bid tabs and cost estimating software, we will develop costs for major construction items. In most cases, engineering, ROW acquisition, construction management and other project costs will be based on an agreed upon percentage of construction costs. An appropriate contingency will also be assigned to each project, based on an agreed upon percentage of construction costs. We will also perform a desktop review for utility conflicts, environmental concerns, significant ROW acquisition, permitting issues, aesthetic issues and disruption of services.
- A draft of the Master Plan will be provided to the Town for review and comment. Benesch will incorporate the Town's comments into the final documents.
- Ten hard copies professionally bound of the Stormwater Master Plan at 100% phase.
- Hydrologic and Hydraulic Models with digital copies of input and output files, analyzing existing and proposed improvements and stormwater systems.
- A complete GIS compatible dashboard of existing and future system, with components alpha-numerically identified in a comprehensive manner for incorporation into the Town's existing GIS system.
- A 10-year financial planning model based on the financial analysis/rate study per the outlined scope of services herein.

VALUE ADDED

MS4 PERMIT

After developing a Stormwater Master Plan, the Town may also wish to consider undertaking an effort to establish its own MS4 permit. To support the MS4 permit, a Stormwater Management Program (SMP) must be created. This document addresses six minimum control measures; public education and outreach, public involvement and participation, illicit discharge detection and elimination, construction site stormwater runoff control, post-construction stormwater management in new development and redevelopment projects, and pollution prevention/good housekeeping for municipal operations. Much of this information can be derived from the Stormwater Master Plan. Benesch has assisted communities across the region in laying the foundation for an MS4 permit and will approach this project with an understanding that the Town may wish to move in that direction.

GRANT WRITING

Today's dollars are tight, with many competing needs. From roadways and bridges to traffic and stormwater needs, limited budgets can make it challenging for communities to fund necessary improvements. That's where Benesch can help. Our team specializes in helping municipalities stretch their available dollars and develop creative funding strategies that combine and maximize potential available dollars.

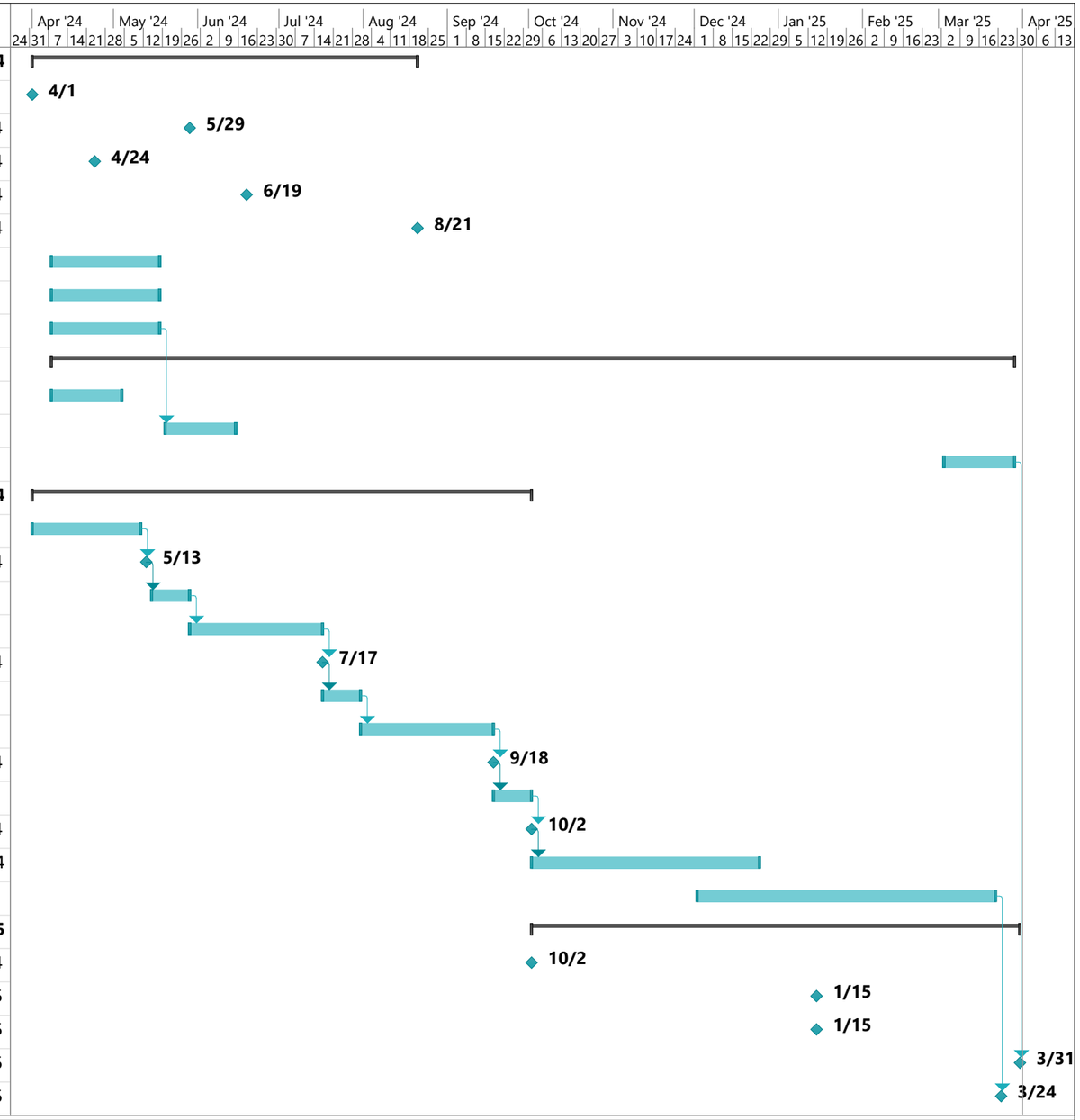
Benesch assists you with the whole process – from start to finish. From helping to develop value engineering solutions to economizing on projects to continually seeking out funding opportunities – we go beyond providing engineering for a project. In fact, we have a proven track record of helping secure millions of dollars in grant funding for public facilities, stormwater programs, road construction and reconstruction, water/wastewater facilities, comprehensive plans and more. Plus, we have an extensive knowledge of federal funding programs and requirements.

PHASING

We propose to phase the project to deliver critical items early and work on other tasks subsequently. This will allow the Town to provide guidance to proposed development as quickly as possible and then develop CIP lists, rate studies, and GIS dashboards to assist with annual budget development, capital improvement program planning, and more.

TASK	MONTHS											
	1	2	3	4	5	6	7	8	9	10	11	12
1 PROJECT COORDINATION AND DATA GATHERING												
2 GIS DATA REVIEW AND GIS DASHBOARD DEVELOPMENT												
3 STORMWATER MASTER PLAN PREPARATION												
4 10-YEAR CAPITAL IMPROVEMENT PLAN												
5 RATE STUDY												
6 DELIVERABLES												
Stormwater MP						●						
Project Recommendations									●			
Prioritization of Capital Improvements									●			
Complete GIS Dashboard												●
10-year Financial Planning Model												●

ID	Task Mode	Task Name	Duration	Start	Finish
1		**1) PROJECT COORDINATION AND DATA GATHERING**	**102 days**	**Mon 4/1/24**	**Wed 8/21/24**
2		a) Kick-Off Meeting	0 days	Mon 4/1/24	Mon 4/1/24
3		b) 30% Progress Meeting	0 days	Wed 5/29/24	Wed 5/29/24
4		c) Community Engagement Workshop #1	0 days	Wed 4/24/24	Wed 4/24/24
5		d) Community Engagement Workshop #2	0 days	Wed 6/19/24	Wed 6/19/24
6		e) Community Engagement Workshop #3	0 days	Wed 8/21/24	Wed 8/21/24
7		f) Information Gathering	30 days	Mon 4/8/24	Fri 5/17/24
8		g) Conditions Assessment	30 days	Mon 4/8/24	Fri 5/17/24
9		h) Field Verifications	30 days	Mon 4/8/24	Fri 5/17/24
10		**2) GIS DATA REVIEW AND GIS DASHBOARD DEVELOPME**	**255 days**	**Mon 4/8/24**	**Fri 3/28/25**
11		a) Review Existing GIS	20 days	Mon 4/8/24	Fri 5/3/24
12		b) Update Existing GIS	20 days	Mon 5/20/24	Fri 6/14/24
13		c) Incorporate CIP Into GIS	20 days	Mon 3/3/25	Fri 3/28/25
14		**3) STORMWATER MASTER PLAN PREPARATION**	**132 days**	**Mon 4/1/24**	**Wed 10/2/24**
15		Watershed Delineation and 2D Modeling	30 days	Mon 4/1/24	Fri 5/10/24
16		a) 30% Milestone	0 days	Mon 5/13/24	Mon 5/13/24
17		b) Town Review	10 days	Wed 5/15/24	Tue 5/28/24
18		Proposed Stormwater Conveyance	35 days	Wed 5/29/24	Tue 7/16/24
19		c) 60% Milestone	0 days	Wed 7/17/24	Wed 7/17/24
20		d) Town Review	10 days	Wed 7/17/24	Tue 7/30/24
21		Finalize Analysis and Recommendations	35 days	Wed 7/31/24	Tue 9/17/24
22		e) 90% Milestone	0 days	Wed 9/18/24	Wed 9/18/24
23		f) Town Review	10 days	Wed 9/18/24	Tue 10/1/24
24		g) Final Plan Submittal	0 days	Wed 10/2/24	Wed 10/2/24
25		**4) 10-YEAR CAPITAL IMPROVEMENT PLAN**	60 days	Wed 10/2/24	Tue 12/24/24
26		**5) RATE STUDY**	80 days	Mon 12/2/24	Fri 3/21/25
27		**6) DELIVERABLES**	**128 days**	**Wed 10/2/24**	**Mon 3/31/25**
28		a) Stormwater MP	0 days	Wed 10/2/24	Wed 10/2/24
29		b) Project Recommendations	0 days	Wed 1/15/25	Wed 1/15/25
30		b) Prioritization of Capital Improvements	0 days	Wed 1/15/25	Wed 1/15/25
31		c) Complete GIS Dashboard	0 days	Mon 3/31/25	Mon 3/31/25
32		d) 10-year Financial Planning Model	0 days	Mon 3/24/25	Mon 3/24/25



Project: Johnstown Storm MP S
Date: Wed 2/14/24

Task	Project Summary	Manual Task	Start-only	Deadline	
Split	Inactive Task	Duration-only	Finish-only	Progress	
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress	
Summary	Inactive Summary	Manual Summary	External Milestone		

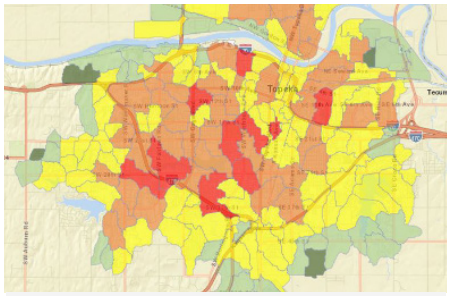
COUNTRY ACRES DRAINAGE MITIGATION | TOWN OF JOHNSTOWN, CO

In the aftermath of summer storms in 2023, Sandra Drive experienced severe flooding resulting in substantial damage to the basements of residences in the area. In response, Benesch has played a crucial role in delivering comprehensive flood mitigation services. This has involved consultations with homeowners, detailed assessments of hydrology and hydraulics, enhancements to storm sewer sizes, the design of detention ponds, and the establishment of a regional storm system outfall directed towards the Little Thompson River.

The project's scope includes collaborating with subconsultants contributing to design surveys, subsurface utility exploration and investigation, as well as right-of-way services. The project involved third party coordination of design with homeowners, property owners, railroad crossing and Hillsborough Ditch Company.

REFERENCE:
Jason Elkins, PE | Town of Johnstown
E: jelkins@johnstownco.gov

STORMWATER MANAGEMENT PROGRAM | CITY OF TOPEKA, KS



The City of Topeka has made a significant effort in recent years to improve its stormwater management program and mitigation/planning efforts and do so in a holistic and fiscally responsible way. The City's most recent efforts compared municipalities handling stormwater master planning and mitigation efforts with available funding sources. 2D HEC-RAS modeling, part of a KDA Technical Assistance project, played a key role in establishing new stormwater standards and stream buffer setbacks in the City. The model was also crucial for stormwater master planning, Capital Improvement Plan projects, and Business Risk Exposure scoring. The 2D modeling, complemented by PC-SWMM modeling for specific areas, enabled comprehensive analysis within budget constraints. Leveraging USACE data, the approach resulted in a successful Stormwater Program and a relevant Master Plan.

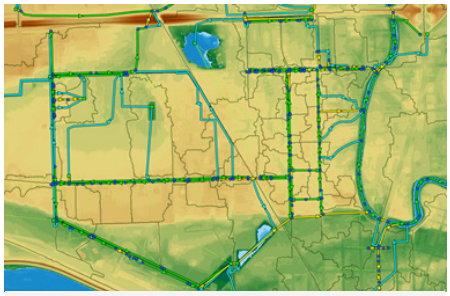
REFERENCE:
Braxton Copley | City of Topeka
E: bcopley@topeka.org

HARVARD GULCH MASTER PLANNING STUDY | CITY AND COUNTY OF DENVER

Benesch was selected by the City and County of Denver to prepare a master plan for the Harvard Gulch reaches between Logan Street and Colorado Boulevard. The study considers 29 bridge and culvert structures that cross natural and concrete channels. Benesch and a team of specialty subconsultants will work with a variety of stakeholders - including DOTI Bridge, DOTI Transportation, DOTI Floodplain/MHFD - to craft customized screening criteria that will prioritize structures and various work actions (rehab vs. replacement vs. removal). The work includes analyzing bridge inspection data, floodplains, existing and future land use, existing and future transportation networks, and more to deliver a plan consistent with existing master plans.

REFERENCE:
Jason Wennen | City & County of Denver
E: jason.wennen@denvergov.org

CID STORMWATER MASTER PLAN | CITY OF KANSAS CITY, MO



The project began by collecting watershed data, including previous studies, FEMA Maps, land use maps, and historic information. A comprehensive field survey of sewer lines was conducted, with the data integrated into a GIS database for the entire watershed. Four SWMM models were then created: one for existing conditions, another with structural improvements, a third with both structural improvements and Best Management Practices (BMPs), and a fourth focused on wetlands. Calibration involved resident questionnaires, complaint files, and a separate HEC-1 model. Flood-prone areas were identified, leading to the development of a capital improvements model, including new storm sewers and pump stations. A subconsultant contributed to water quality improvements, designing BMPs for the third model. Wetland study and planning, supported by UG and EPA grants, resulted in a comprehensive watershed retrofit study.

REFERENCE:
Terry Godard | City of Kansas City, MO
E: Terry.godard@kcmo.org

WPC ASSET MANAGEMENT PROGRAM | KANSAS CITY, KS

REFERENCE:
Randal Phillips | Kansas City, KS
E: rphillips@wycokck.org

Over a nearly 90-year period, Benesch has been involved in the design and construction of nearly every asset type owned and maintained by Kansas City, Kansas. Benesch is currently engaged in working with the city to implement better asset management through Lucity with KCK's flood pump stations, stormwater conveyance system, sanitary sewer lift stations and treatment plants. In each of these asset categories, Benesch has been responsible for collecting and digitizing record drawings, maintenance records, operations and maintenance documents, developing and utilizing asset condition ratings, developing asset depreciation curves, life-cycle analysis, replacement costs, developing risk ratings based on likelihood of failure, and consequence of failures as well as long-term financial planning. One unique feature we have developed is the tagging of all wastewater pump station and treatment plant equipment with QR codes. By tagging all equipment, city staff will be able to simply access equipment records by scanning the tag with the Lucity Mobile application.

WATERSHED STUDIES | CITY OF MCPHERSON, KS

REFERENCE:
Jeff Woodward | City of McPherson
E: jeffw@mcpcity.com

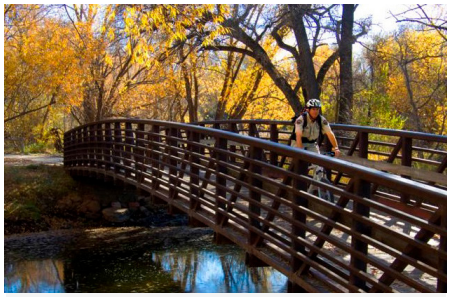
Benesch completed studies on Dry Turkey Creek and Bull Creek watersheds which combined encompass all the City Limits area of 7.5 square miles for this city of 14,000 residence. The study included identifying potential regional detention facilities and hydraulic restrictions, performing a stream assessment, and developing a list of proposed improvements for inclusion in the City's Capital Improvement Plan. Benesch performed field surveys to collect location and elevation data on the City's stormwater conveyance system, performed a stream assessment including review of the waterway, detention facilities, and stream stability. Additionally, Benesch was tasked with creating a basin-wide 2D hydraulic model, utilizing a 2D HEC-RAS analysis of an area over 44 square miles in size, to illustrate the breadth and depth of flooding throughout the city. This information was used to provide an overall report on the health of these creeks and the development of a Capital Improvement Plan to improve or perform maintenance activities in the creeks.

BRUSH CREEK NEIGHBORHOOD SEWER REHABILITATION | CITY OF KANSAS CITY, MO

REFERENCE:
Karine Papikain | City of Kansas City
E: karine.papikain@kcmo.org

Benesch reviewed manhole inspection data, CCTV data and field investigations to identify and quantify structural deficiencies, develop rehabilitation recommendations and prepare construction contract documents to improve the reliability and performance of the combined sewer collection system located in the BC1 Basin. Smoke testing included more than 430,000 linear feet of sewer lines within the area that are 12-inch in diameter and smaller. Utilizing field data, in combination with CCTV and manhole inspection data, provided by the City, the project team proposed rehabilitation recommendations on a risk based priority basis. This risk-based approach ensures the City spends its funding on those areas of highest need as well as those areas where failure would result in the largest disruption of service to City customers. Based on the results of this risk-based approach, the project team will develop construction documents to rehabilitate the system within the City's $20 million budget.

ASSET MANAGEMENT PROGRAM | CITY OF FORT COLLINS, CO

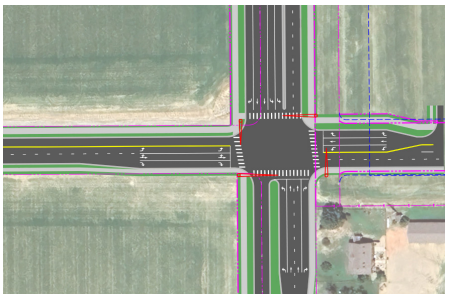


REFERENCE:
Jill Wuertz | City of Fort Collins
E: jwuertz@fcgov.com

Benesch has partnered with the City of Fort Collins to develop full asset management plans for nine different asset categories constituting over 3,000 individual assets. The asset categories range from NBI bridges and short-span pedestrian structures, to playgrounds, parks and water conveyance assets. Benesch's scope included the establishment of level of service categories, defining of risks and their levels, creation of condition assessment matrices, field inspections and prioritization of asset work actions. Based on ISO and APWA strategic asset management frameworks, Benesch created unique tools for the City that allow for the evaluation and assessment of individual assets, asset categories and the entire asset network. This required coordination across city departments, forward-thinking plans regarding rating scales, naming conventions and evaluation assessments. Currently Benesch staff are partnering with City personnel to acquire field data associated with various asset service level components in order to enhance deterioration, forecasting and CIP planning modules.

Benesch has delivered traffic studies for the Town which provides an understanding of pending and future major development activity within the Town limits. This understanding can be directly applied to the development of a Stormwater Master Plan.

COLORADO BLVD & ROOSEVELT PKWY ALTERNATIVES STUDY | TOWN OF JOHNSTOWN, CO



REFERENCE:
Jason Elkins, PE | Town of Johnstown
E: jelkins@johnstownco.gov

The intersection of Colorado Blvd and Roosevelt Pkwy in Johnstown, CO is immediately adjacent to the newly opened Roosevelt High School and multiple residential and mixed-use developments that are in the planning process. The increased traffic from the high school has brought the planning for intersection upgrades to the forefront to eventually be installed before adjacent developments come online. Benesch was tasked with conducting a traffic study for the intersection to determine multiple alternative intersection types that will operate at an acceptable level of service in the present and in the future. Using the data from the traffic analysis the final report was also to include a recommended alternative and concept designs of each alternative. Additionally, Benesch was tasked with presenting the concepts and recommended concepts to the Town Council.

The intersection studied is outside of the completed major developments in the area and therefore the existing traffic was minimal outside of the school ingress and egress hours. However, the adjacent developments will soon be coming online with large volumes of traffic. Accurate trip generation and vehicle assignment were key in determining future traffic movement patterns. Additionally, a property immediately adjacent to the intersection was to be avoided creating non-standard alignment geometry for approaches.

CO 60 SYSTEM FEASIBILITY STUDY | TOWN OF JOHNSTOWN, CO

REFERENCE:
Matt LeCerf | Town of Johnstown
E: mlecerf@johnstownco.gov

CO 60 is the primary corridor connecting I-25 and downtown Johnstown. The corridor is approximately five miles long and had not been studied since the 2006 SH 60 (the naming convention for state highways was updated since this study was completed) Environmental Overview Study (EOS). Johnstown is experiencing and will continue to experience major traffic growth with many new developments under construction or in the planning phase. Benesch was tasked with updating the previous EOS for the portion of CO 60 with the Town of Johnstown limits. The Town wanted to confirm or update the findings of the previous study while understanding the future traffic, safety, and right-of-way needs of the corridor. This required traffic counts throughout the corridor and multiple Synchro models to determine the ultimate cross section for the roadway and recommendations for intersection control that would operate at acceptable levels of service.

The major growth of the area required special attention for trip generation and vehicle assignment. Many new access points from the various developments required a thorough study of traffic patterns that will occur in the future.

THOMPSON PARKWAY TRAFFIC STUDY | TOWN OF JOHNSTOWN, CO

REFERENCE:
Jason Elkins, PE | Town of Johnstown
E: jelkins@johnstownco.gov

The intersection of Thompson Parkway and Union Street is controlled by a roundabout that regularly backs up during peak hours. In addition, other intersections in the area backup due to overflow from this roundabout and the intersection of Thompson Parkway and US-34. The retail development and surrounding area are also poised to continue to grow. Benesch conducted a traffic study for the development area focusing on the Thompson Parkway and Union Street roundabout. The project had 33 traffic counts conducted and outreach with stakeholders in the area to determine issues and potential solutions. Various traffic analysis software will be used in this project including Synchro, SimTraffic, HCS, and SIDRA. Ultimately, Benesch will recommend improvements to the roundabout and surrounding intersections to stakeholders and Town Council.

APPENDIX A
RESUMES

benesch

Travis Greiman, PE, CAMP

Local Project Manager

Travis has a significant amount of experience in managerial roles, including Public Works Director. In his role at the City of Centennial, Travis was actively involved in the conceptual planning, Capital Improvement Program planning, and budget planning has over eight years of experience with the City of Centennial employed as a Project Manager, Engineering Manager, and Public Works Director. He has initiated, led and delivered several master plans including the City of Centennials Intelligent Traffic System (ITS) Master Plan, 10-year Capital Improvement Plan, and Roadway Design and Construction Standards. This work required him to regularly interface with City of Centennial Council, staff, contractors and consultants, and the general public to collect input, create content, and build consensus on the proposed plans. He has experience in all major design components including geometric road design, roadside grading, ADA sidewalks and curb ramps, signing/striping signals, construction phasing, storm sewer design, specifications and construction cost estimating.

City of Centennial - Public Works Director *

Public Works Director: Travis was in managerial roles, including Public Works Director. In his role at the City of Centennial, Travis led the annual creation and management of the City's $16M Capital Improvements budget and $15M Operations budget. He was responsible for the delivery of services for 400+ centerline miles including engineering review and inspection of private development projects; maintenance and operations including pavement maintenance, snow and ice control, and ROW maintenance; annual paving program; Capital Improvement Program; traffic engineering, and fleet and facilities. He served as the Public Works liaison in emergency operations planning. He created and executed the strategic annual work plan to ensure service delivery to ensure continuous delivery of municipal services. Additionally, he achieved and maintained American Public Works Association accreditation for the Public Works Department.

City of Arvada - Pavement Management Program

Project Manager: Travis is leading Benesch's team to update and modernize Arvada Public Works Streets Division's Pavement Management Program. Benesch is quantifying existing conditions of street and operations, identify desired future conditions and detect gaps between existing and future conditions. Benesch will provide actionable recommendations, policies, performance measures and budget guidelines that the City can reference and implement to achieve the newly established goals. Travis and the Benesch Team will deliver a data-driven framework that integrates program findings and facilities CIP development in 2022, creating a 10-year Master Plan for the Public Works Streets Division.

City of Fort Collins - Transportation Strategic Asset Management Master Plan

Project Manager: Travis served as a project manager, delivering a Strategic Asset Management Master Plan document to the City. Benesch assisted the City in defining and establish level of service criteria for the City's transportation infrastructure asset classes including streets, bridges, traffic devices, sidewalks and ramps, railroad crossings, and transit and parking facilities. Using those LOS criteria as a basis, Benesch created an asset management framework that allowed the City to implement a comprehensive asset management strategy for the Infrastructure Department, to prioritize projects within and across each asset class, and to provide data-driven decisions for annual budgeting and capital expense planning. The framework considered a variety of unique and asset-specific priority, risk assessment, and level of service screening criteria for each asset class. The Master Plan document was delivered with guidance on how the City can utilize and update it into the future.

Education
BS, Civil Engineering, University of Colorado - Boulder

Years of Experience: 17

Registrations and Certifications
Professional Engineer:
CO, PA, NJ

Certified Municipal Engineer: NJ

Certified Asset Management Professional

* Denotes projects completed while employed at the City of Centennial.

Stephen J. Roth, PE, LEED AP

Subject Matter Expert

Steve has over 24 years of experience as a project manager and design engineer on a wide variety of stormwater projects. He has prepared Stormwater Master Plans, Asset Management Plans, designed stormwater retrofit solutions in existing neighborhoods, and stormwater Best Management Practices (BMPs). In addition to this experience he has also prepared hydraulic analysis and stream bank stabilization analysis on rivers in Kansas such as the Kansas, Missouri, Arkansas, Smoky Hill, Saline and Neosho Rivers. He also serves as the On-Call engineer for the Fairfax, Kaw Valley and Merriam Drainage Districts in Kansas.

CMP Replacement Capital Improvement Plan, Fairfax Drainage District

Design Engineer: During the Flood of 1993, the impacts of the deteriorating condition of the District's CMPs were exposed by pipe failures and sinkholes that occurred. Given the large number of CMPs, and the cost to replace them, the development of a priority-based list of replacement was necessary to spread the capital costs across multiple years. This project included the development of a pipe Risk Rating system that would account for the likelihood and consequence of failure for each pipe within the District's stormsewer system. The results of this analysis were used to prepare a 20-year Capital Improvement Plan that provided a detailed list of CMP rehabilitation and replacement projects.

Stormwater Master Plans, City of Lee's Summit, MO

Project Manager: This project included the development of Stormwater Master Plans for two watersheds within the City of Lee's Summit, Missouri. The scope of the project included preparing a Preliminary Engineering Study (PES) for each of the twenty-three flooding areas within the two watersheds. The purpose of the PES was to review the existing conditions within the area and provide an analysis of several alternate solutions. The team's approach was to visit each project location and perform a field reconnaissance of the area. This is served two purposes; by walking the area we were able to brainstorm in the field regarding potential solutions to the flooding and it also gave the team better insight when dealing with the public at subsequent public meetings. Because of the diverse nature of the problem sites, the design team was directed to consider both innovative and traditional solutions. These solutions included utilizing stormwater Best Management Practices (BMP) such as bio-swales, rain gardens, porous pavement, etc.

MS4 Program Management Services, Unified Government of Wyandotte County / KCK

Project Manager: Benesch has acted as an extension of staff in the development and execution of the Stormwater Management Plan for the Unified Government of Wyandotte County / Kansas City, Kansas since 2010. In addition to assisting staff in multiple compliance activities, Benesch has performed multiple studies to identify, analyze and reduce sources of potential water pollution within the County. These efforts have also included identifying and developing strategies to protect and enhance existing streams.

Education
BS, Civil Engineering,
University of Kansas

Years of Experience: 24

Registrations and Certifications
Professional Engineer:

- Kansas (16797)
- Missouri (PE-2005000037)
- North Carolina (43401)

LEED Accredited Professional (10238739)

Professional Affiliations
American Water Works Association – Kansas

Tom Fuentes, PE

Subject Matter Expert

Mr. Fuentes has over 30 years' experience in public capital improvement projects. His project experience includes floodplain management, CLOMR/LOMR processing for floodplain map revisions, hydraulic structure and culvert design, irrigation structure / canal design, preliminary / final design, stream restoration, environmental permitting, preparation of drainage memorandums and reports, utility plans, construction plans, stormwater management plans, specifications, cost estimates, and design support during construction. Mr. Fuentes is a member of the Association of State Floodplain Managers (ASFPM), and the Colorado Association of Stormwater and Floodplain Managers (CASFM).

Boulder County, CO - Flood Recovery Projects

Lead Hydraulics Engineer: Tom oversaw the preparation of hydraulic structure plans, floodplain reports and stream restoration for flood recovery in Lefthand Canyon, Geer Canyon Creek and James Creek watersheds. Tom coordinated with the Lefthand Watershed Oversight Group, Division of Natural Resources Colorado Water Conservation Board, US Forest Service and Central Federal Lands Highway Division. He developed flood recovery plans for culvert replacements on North Cedar Brook Road and Linden Drive, provided cost estimates and specifications for AD plans and flood recovery reimbursements and assisted Boulder County in obtaining necessary floodplain development permits. Tom obtained CLOMR/LOMR enabling the reconstruction of approximately 10 miles of Lefthand Canyon Drive along Lefthand Creek.

El Paso County, CO - Woodmen Road Widening

Hydraulics Engineer: Tom directed the drainage design for Woodmen Road from Powers Boulevard to State Highway 24. The project included development of an urban and rural roadway drainage collection system and preparation of storm water management plans and drainage reports. The project also included implementation of portions of the Sand Creek and Falcon Tributaries drainage basin planning studies (DBPS) and preparation of required hydraulics reports to obtain a floodplain development permit issued by the Peaks Pike Regional Building Department. Floodplain stabilization grade control structures were implemented for Sand Creek and Black Squirrel Creek in accordance with the DBPS. A new bridge for Sand Creek and CBC extension for Black Squirrel Creek was included in the final drainage design. A LOMR was obtained for Sand Creek and three other flooding sources adjacent to Woodmen Road.

Town of Parker - Pine Drive Extension and Sulphur Gulch*

Task Manager: As the drainage task manager, Tom directed drainage plan preparation for the extension of Pine Drive across Sulphur Gulch. The project included a new roadway bridge and floodplain modifications in Sulphur Gulch. The floodplain modifications included stabilization check structures in accordance with the Sulphur Gulch Outfall Systems Planning study. Tom was responsible for the preparation of a CLOMR/LOMR map revision for the FEMA regulated floodplain, and for rehabilitation of a detention pond outlet structure.

City of Westminster / CDOT - Little Dry Creek Culvert / Pedestrian Trail*

Utility / Drainage Project Engineer: Project included design of a new pedestrian trail and culvert for city parks and trails program. Coordinated drainage design with UDFCD, City of Westminster and CDOT. Work included preparation of final design plans and specifications for a pedestrian trail / culvert crossing of Sheridan Boulevard near 76th Avenue. Prepared final hydraulics report and LOMR floodplain analysis, which included a new pedestrian culvert in Little Dry Creek.

Denver Parks and Recreation, CO - Bear Creek Channel Rehabilitation*

Project Engineer: Responsible for preparing construction plans, specifications, cost estimates, and post design services for a grouted boulder sloping drop structure/fish ladder/boat chute and channel bank restoration design, including bend-way weirs, riprap spur dikes and riprap revetment. Project sponsored by UDFCD, Denver Parks and Recreation and Denver Wastewater Management Division.

Education
BS, Civil Engineering Technology, Colorado State University - Pueblo

Years of Experience: 30

Registrations and Certifications
Professional Engineer:
CO, AZ

* Denotes projects completed prior to joining Benesch

Joe File, PE, CFM

Subject Matter Expert

Mr. File has over 25 years of experience as a water resources, dam and levee engineer. He has managed complex hydrologic and hydraulic engineering projects for a variety of clients including the States of Kansas and Missouri, FEMA, NRCS, and a variety of Cities, Counties, Watershed Districts, Levee Districts and Drainage Districts. In addition, he has been the Engineer of Record on a variety of water resources engineering projects including levee certification, hydraulic and hydrologic modeling, dam design and construction, dam breach inundation mapping, emergency action planning, unsteady flow modeling, urban stormwater management and design, dam and levee feasibility studies, and land development and design. He has served as Project Manager on over dozens of FEMA levee certification projects in the States of Kansas and Missouri, has served as the technical advisor, project engineer and even a Drainage Commissioner for Watershed, Drainage and Levee Districts across Kansas.

Education
BS, Civil Engineering / Natural Resources & Environmental Science
Kansas State University

Years of Experience: 25

Registrations and Certifications
Professional Engineer: KS, OK, MO, NE, IA, (TX Pending)

Certified Floodplain Engineer

Junction City, KS - Stormwater Management Master Plan *

Project Manager: Mr. File led the development of a comprehensive stormwater management master plan for the City of Junction City. The project consisted of a regulatory review of the City's NPDES permit and Ordinances, Stormwater Inventory, Comprehensive Stormwater System Modeling, CIP development, City Operations & Maintenance Program Review, and Stormwater Rate Study. As part of this project, AMEC developed a recommended Stormwater Program for the City and developed a recommendation for a funding strategy through the use of a stormwater utility. PC-SWMM was used to model the City's stormwater system, to assess the existing capacity of the system and the associated flooding areas. This modeling was the basis for the development of the Capital Improvement Program.

City of Topeka, KS – Shunganunga Creek Stormwater Master Plan

Technical Director: This project includes stormwater master plan services to reduce flooding on Shunganunga Creek and Tributaries within the City of Topeka. The USACE completed an alternatives analysis for Shunga Creek, and this project expands on the USACE alternatives analysis to evaluate additional flood reduction alternatives for Shunga Creek, tributaries to Shunga Creek, as well as the overall alignment with the City of Topeka's Stormwater Master Plan.

City of Topeka, KS - Stormwater Master Plan

Technical Director: This project includes stormwater master plan services, including Business Risk Exposure (BRE) scoring, an analysis of drainage basins to determine conveyance deficiencies, an analysis of alternatives and potential mitigation projects, Capital Improvement Plan development, and a final Master Plan with an explanation of improvement projects per sub-basin analyzed, including engineering and construction cost estimates, project sequencing, and special considerations including utility conflicts, environmental and permitting issues. Joe serves as a technical director for the project, steering the inputs for the BRE scoring, developing the methodology for the alternatives analysis, and evaluating special project considerations for each CIP project.

Sedgwick County, KS - West Branch Chisholm Creek Watershed Improvement Study

Project Manager and Engineer of Record: Mr. File performed a watershed study for the West Branch Chisholm Creek watershed which includes portions of Sedgwick County, Park City, Valley Center and Wichita. The purpose of the study was to evaluate flood risk and water quality concerns such as channel erosion and sedimentation throughout the watershed, and to identify alternatives to reduce the impacts of these issues. This study identified several areas that are highly susceptible to flooding, and potential improvement projects that

Patrick Bussen, PE, CFM

River / 2D Modeling

Patrick has 12 years of experience as a water resources engineer, including project management responsibilities. His knowledge is focused on hydrologic and hydraulic engineering, stormwater drainage analysis, flood inundation mapping, flood reduction studies and levee riverine and interior drainage analyses. Patrick has experience with stormwater mitigation and alternatives analysis and has performed technical reviews of complex hydrologic and hydraulic studies.

Education
MS, Biological & Agricultural Engineering
Kansas State University

BS, Biological & Agricultural Engineering
Kansas State University

Years of Experience: 12

Registrations and Certifications
Professional Engineer: KS

Certified Floodplain Manager (CFM)

City of Topeka, KS - Stormwater Master Plan

Water Resources Engineer: As part of the City's efforts to reduce overall risk for the Topeka watersheds, Patrick performed analyses of the existing systems to determine conveyance deficiencies, utilizing PCSWMM modeling software to evaluate areas with complicated stormwater systems. Alternatives analyses were also performed for these areas to help identify potential mitigation projects. This helped define the Capital Improvement Plan and serve the City's needs for holistic planning.

City of Topeka, KS - MS4 Program Development *

Project Manager and Water Resources Engineer: This project resulted in the development of a comprehensive program for the City's construction and post construction stormwater management needs, including both stormwater quantity and quality. Patrick assisted in the development of new predictive and science-based stream buffer setbacks, which were then provided to the City as part of the recommended revisions to the design standards and ordinances.

City of Topeka, KS – Shunganunga Creek Stormwater Master Plan

Water Resources Engineer: This project includes stormwater master plan services to reduce flooding on Shunganunga Creek and Tributaries within the City of Topeka. The USACE completed an alternatives analysis for Shunga Creek, and this project expands on the USACE alternatives analysis to evaluate additional flood reduction alternatives for Shunga Creek, tributaries to Shunga Creek, as well as the overall alignment with the City of Topeka's Stormwater Master Plan.

City of Junction City – Junction City Stormwater Management Master Plan *

Water Resources Engineer: Patrick performed hydrologic and hydraulic analyses for the citywide stormwater study for Junction City, including evaluation of the network capacity and recommended improvements. He employed the latest available PC-SWMM modeling software and utilized ArcGIS platform to develop and represent spatially accurate computer modeling elements, water surface elevations and floodplain boundaries associated with the stormwater system.

City of Manhattan – Wildcat Creek 2D Modeling, Riley County, KS *

Engineer and Technical Reviewer: Patrick performed a watershed-wide H&H study covering approximately 100 square miles. The latest available version of HEC-RAS software was employed to study the watershed using 2D, rain-on-grid computations on unstructured 2D meshes. A network of 2D model subbasins were utilized to provide sufficient detail in the breakout of excess rainfall calculations to calibrate model to several historical flood events. Incorporated culverts and bridges throughout the watershed. Patrick utilized ArcGIS platform to develop and represent spatially accurate data, including hydrologically enforced digital elevation models (derived from Lidar), vegetative roughness data and excess rainfall values. Output data products were developed from the modeling, including water surface elevations, velocities, depths, and floodplain boundaries. He performed various project management duties and provided detailed technical reviews and presented findings to City and County personnel and provided hands-on training sessions on the use of HEC-RAS 2D modeling capabilities.

Dan Gwartney, GISP, CFM

GIS

Dan has over 18 years of detailed experience in GIS, remote sensing, database management, staff management, project management, and technologic innovation. He has extensive experience in mapping water resources such as wetland delineation, floodplain mapping, and three-dimensional modeling. Dan has extensive experience with Municipal Stormwater programs around the country maintaining complex geospatial and relational databases for asset mapping, impervious surface identification, and scripting custom analytics. He has specific skills in setting up and maintaining complex Stormwater Utility databases and has worked on more than 20 utilities around the United States. Dan specializes in raster analytics, python scripting, machine learning/deep learning, and web app development.

South East Metro Stormwater Authority Utility

Project Manager: Dan served as project manager and lead geospatial for the South East Metro Stormwater Authority (SEMSWA) in Colorado's Stormwater Utility Database maitenance. He has worked with SEMSWA on their Utility Database for over 15 years, annually updating their impervious surface information and developing their spatially derived Master Account File. Duties included analysis of property attributes for rate assessments and revenue estimates, digitizing of impervious-area for storm water billing purposes, service-area analysis and data extraction and analysis. Additionally, he coordinated and managed all GIS data using geodatabases for efficient file management and intuitive nomenclature. He converted a highly manual billing process to semi-automated procedure using complex geospatial modeling. He continually provides automation assistance to the client, while streamlining workflow procedures. He routinely develops semi-complex processing algorithms for rapid database updates due to the dynamic nature of the utility from year-to-year. Additional duties include assistance with maintaining impervious surface digitization and attribute verification, ensuring data gaps are accounted for and corrected. Impervious area for new developments can be verified via engineering designs, planning documentation, and assessor information.

Web Application and Dashboard Development for Multiple Clients

Project Manager: Dan has helped multiple Benesch clients set up ArcGIS Online (AGOL) accounts, shared portal resources, and web applications including dashboards to assist with asset infrastructure asset management and mapping. He has worked with the Fairfax Drainage District (FFDD) in Kansas City, MO to start a new AGOL portal for collaboration, outreach communication, and asset monitoring. He has also worked with the Harpeth Valley Utilities District (HVUD) in Nashville, TN to set up dashboards indicating sewer line health and cleaning status with dynamic information based on feature query and map extents. Both projects include routine maintenance of web-based feature services, as well as ensuring mapping and attribute updates are accurate and portrayed correctly on the web mapping platform.

Kansas Department of Agriculture (KDA) RiskMAP Services

Task Manager/Geospatial Scientist : Dan serves as a Task Manager/Geospatial Scientist for RiskMAP across multiple counties in the State of Kansas. Risk MAP projects include data collection and data conversions in accordance with requirements based on FEMA guidelines and specifications. Dan is responsible for developing ArcGIS Field Maps for field survey data collection, updating and maintaining tools for delineating floodplains, and developing new tools to assist with submittal preparation and QAQC. Dan has developed a floodplain plotting tool that reduces HEC-RAS 2D flooded mesh cells to realistic regulatory floodplains. He is also responsible for creating and maintaining QAQC review documentation templates and staying abreast with changes to the FEMA Technical References and submittal requirements. Maintaining QAQC and database schemas ensures products will be accepted by FEMA's mapping partner and automated reviewers. Dan has helped define remote sensing methodologies for developing higher quality land cover mapping products that are utilized in BLE and data development tasks for hydraulic analysis. Land cover is produced from 1m resolution NAIP imagery through machine learning procedures. Additionally, Dan supports high level LiDAR point cloud analysis from aerial and UAV platforms delineating a variety of derivative products. This includes the production of Digital Surface Models (DSM). DSM's are produced from computing building footprints from LiDAR point cloud data and fusing them back to the bare earth DEM for later use in hydraulic modeling. Dan has worked on multiple RiskMAP projects for KDA over his entire career.

Education

M.S. Urban and Environmental Geosciences, University of Missouri – Kansas City

Advanced Certificate in GIS, University of Missouri – Kansas City

B.S. Geography, University of Kansas

Years of Experience: 18

Registrations and Certifications

Certified Floodplain Manager

GISP

Professional Affiliations

American Society for Photogrammetry and Remote Sensing (ASPRS)

Utility Mapping Services, PC. Utility Engineering, Mapping, Coordination, Management, Geophysics
WWW.UMSI.US Ph: 720.230.0780 Fax: 406.495.9923
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CAMERON GREER, E.I.

PROJECT MANAGER

QUALIFICATIONS

Mr. Greer has 17 years of experience in utility surveying, CAD and as a SUE project manager / project engineer and has been with UMS since December 2005. Mr. Greer manages Phase I and II operations, data acquisition, processing, review, and analysis and is the point of contact on Colorado projects. He works closely with prime engineering firms or Clients directly in communicating utility issues and collaborating with designers, utilities, and contractors in resolving utility conflict issues. These tasks include data management using OpenRoads Designer, interpreting imported data, and creating preliminary and final deliverables. Mr. Greer responsibilities include properly geo-referencing SUE data onto plans, profiles, and cross sections in a manner that greatly facilitates design, coordination, and construction efforts. His duties have also included survey data collection using RTK GPS and robotic total station methods, acquiring or establishing project control, and locating project control points. He has routinely performed work for state transportation departments in ten different states; however, since 2008 Mr. Greer's primary role has been focused with managing SUE projects. Mr. Greer has been recently trained in the use of Bentley's OpenRoads Designer and Subsurface Utility Engineering software that can be used to create 3D models of existing utility infrastructure. In 2015, Mr. Greer participated in Bentley's 2015 *Be Inspired* award competition in which UMS was selected as a finalist in the Utilities and Communications category for a 3D existing utility model that he created using the Bentley SUE utility design application for a high-pressure gas main project along SR-510 in Lacey, Washington.

REGISTRATION

Montana, Engineer Intern, 2008, License # PEL-EI-LIC-51473

EDUCATION

B.S. Construction Engineering Technology, Montana State University, 2005

AFFILIATIONS

ACEC, ASCE

EXPERIENCE

Project Engineer/Project Manager, Utility Mapping Services, Inc., 2005 to present

PROJECT EXAMPLES

- Colfax and Chamber Intersection Improvements, Aurora, CO – City of Aurora
- Industrial Lane Phase 2, Broomfield, CO – City and County of Broomfield
- Ralston Creek, Arvada, CO – Mile High Flood District
- Ridge Road Widening, Castle Rock, CO – Town of Castle Rock
- JC-73, Evergreen Colorado – Jefferson County
- North Dry Gulch, Lakewood, CO – Mile High Flood District
- Facility Perimeter Security, Denver, CO – City and County of Denver
- 120th Avenue, Washington to York, Northglenn, CO – City of Northglenn
- South Kipling Parkway, Jefferson County, CO – Jefferson County
- Vine and Lemay, Fort Collins, CO – City of Fort Collins
- Gun Club Road, Aurora, CO – City of Aurora
- Washington Street, Denver, CO – City and County of Denver
- 52nd and Emerson, Denver, CO – City and County of Denver
- US-550 at 9th and 12th – Durango, CO - Colorado Department of Transportation
- Tennessee and Oneida Storm Phase 1 – Denver, CO – City and County of Denver
- Imboden Road, 56th Avenue to 64th Avenue – Aurora, CO – City of Aurora
- SH-52 and US-287 – Longmont, CO - Colorado Department of Transportation
- US-34; Denver Avenue to Rocky Mountain Avenue – Loveland, CO – City of Loveland
- Marion Street System - Denver, CO – City and County of Denver
- Dartmouth Avenue Bridge Widening – Englewood, CO – City of Englewood
- Loveland Signals – Loveland, CO – Colorado Department of Transportation

Eugene Lynne

Heath E. Hildebrand, PLS
Partner, Principal Surveyor

Education
Bachelor of Science in Geology/Chemistry
July 1997
University of South Dakota
Vermillion, South Dakota

Professional Registrations

- Licensed Professional Land Surveyor, State of Colorado PLS–38211
- FAA Certified UAS Pilot Certificate Number 4561873

With Eugene Lynne since Aug. 2015

EXPERIENCE

Mr. Hildebrand is a project surveyor/project manager with 24 years of experience in public improvements and private development. He is a professional land surveyor licensed in Colorado. He has been a partner with Eugene Lynne since August 2015.

Mr. Hildebrand is leading the next generation of land surveyors with his combined office and field/construction experience. Mr. Hildebrand has been involved in a variety of surveys including planimetric, utility, topographic, boundary, and right–of–way surveys. With ten years prior construction experience, he excels in transportation and structural layout. He enjoys project control networks, record research, datum transformations, and mapping projects. He is proficient with various field instrumentation and office software. He stresses data management, which is a key element for project success and believes continuing education will bridge the gap between new technologies and practical surveying techniques resulting in accurate data information.

PROJECT EXAMPLES

Town of Johnstown

- State Highway 60 & Carlson Blvd—Principal Surveyor overseeing the collection and production of design survey deliverable.
- State Highway 60 and County Road 13—Principal Surveyor overseeing the survey control, collection and modeling effort for planimetric, topographic and boundary survey.

Stream Restoration

- Dutch and Racoon Creek—Principal Surveyor orchestrating the survey collection methodology and production for FEMA floodplain study upstream of Platte Canyon Road.
- Traditions Metropolitan District—Principal Surveyor leading the design survey to inform Traditions Pond and drainageway improvements.

City of Louisville

- Dillon Road—Powerline Trail Design & SH 42 and Hecla—Survey manager for design survey and project control diagrams produced for the pedestrian hybrid beacon designs.

PROFESSIONAL CERTIFICATIONS:

- CMC – Certified Management Consultant, No. 12237146
- CGFM – Certified Government Financial Manager, No. 15636
- Series 50-Qualified Municipal Advisor Representative
- Series 54-Qualified Municipal Advisor Principal

EDUCATION:

- MBA with Honors, Finance, Rollins College, 1999
  - Awarded Merit Scholarship
- B.S., Economics, University of Pennsylvania, Wharton School of Business, 1996
- B.A.S., Management and Technology, University of Pennsylvania, School of Engineering and Applied Science, 1996

PROFESSIONAL AFFILIATIONS:

- American Water Works Association (AWWA)
  - Chair of National Finance, Accounting, and Management Controls Committee
  - Co-Chair of Publications Arm of National Rates and Charges Committee
- Association of Government Accountants (AGA)
- Institute of Management Consultants USA (IMC-USA)
- Water Environment Federation
  - Utility Management Committee

PROFESSIONAL HONORS:

- Two-Time National Best Paper Award: AWWA Management and Leadership Division

www.govrates.com

BRYAN A. MANTZ, CMC, CGFM

PRESIDENT

Profile

Mr. Mantz serves as the President of GovRates, a utility, financial, rate, and management consulting firm that primarily serves governments. He has over 25 years of financial and accounting experience, most of which have been spent as a rate and financial consultant to local governments. He has successfully completed thousands of rate and financial projects for local government entities throughout the United States, including stormwater rate and assessment studies for many jurisdictions.

As a certified management consultant (CMC), Mr. Mantz has a long history of delivering results and excellent performance based on client testimonials, references, and repeat business. He is also a certified government financial manager (CGFM), a Series 50-qualified Municipal Advisor Representative, and a Series 54-qualified Municipal Advisor Principal. He can legally provide debt financing support to local governments.

Mr. Mantz is actively involved with the American Water Works Association (AWWA), which deals with water, wastewater, and stormwater issues. He currently serves as the Chair of AWWA's national Finance, Accounting, and Management Controls Committee and as the Co-Chair of the publications arm of the AWWA's national Rates and Charges Committee.

A recognized expert in rate and financial issues, Mr. Mantz has been published in the *Journal AWWA*, the *Journal of Government Financial Management*, and *Government Finance Review*, and his publications have been translated into other languages and used in university settings. He is the recipient of two national AWWA Management and Leadership Division Best Paper Awards

Mr. Mantz is a coauthor or contributing author of several utility manuals of practice that are continually referenced by the utility industry for guidance on the development of rates, fees, and charges. He is frequently invited to be a speaker at national and state conferences.

CMC CERTIFIED MANAGEMENT CONSULTANT

CGFM CERTIFIED GOVERNMENT FINANCIAL MANAGER

MSRB-REGISTERED MUNICIPAL ADVISOR

APPENDIX B
WORK SAMPLE

benesch

Stormwater Master Plan

1. Executive Summary

In 2020, the City of Topeka solicited proposals from qualified engineering firms to develop a stormwater master plan, so that a planned approach could be applied to stormwater infrastructure projects to reduce flood risk across the city. Wood E&IS (now WSP) and their subcontractor Benesch were selected to complete the stormwater master plan. The first component of the plan includes an assessment of the stormwater system across the City, called Business Risk Exposure (BRE) scoring, ranking the stormwater-related risk to citizens and city infrastructure. The second component of the plan includes planning level Capital Improvement Plan (CIP) recommendations throughout a large portion of the City. These projects address both aging infrastructure as well as flooding issues, with alternatives identified that would comply with current City stormwater criteria which the City indicated was a requirement of this project.

The first step in the master planning process was to identify the overall risks associated with the existing stormwater systems and evaluate priorities for improvements. This was done by evaluating the likelihood and consequences of failure for the existing systems, utilizing BRE assessment methodology. The city was separated into sub-basins and the BRE scoring was completed per sub-basin. The BRE scoring included an assessment in five categories- asset failure probability, nuisance flooding, community impacts, average annualized loss and average annualized population impact. The sub-basins were ranked, with the highest BRE score given a BRE ranking of 1.

Given the available budget for the project and the needs of the City, 46 basins were selected for mitigation analysis, based on the BRE scoring and the desire to capture regional issues. An alternative approach to traditional modeling methods was utilized, to allow a much larger portion of the City to be included in the mitigation analysis, while staying within the budget constraints. Storm Water Management Modeling (SWMM) is a more traditional modeling method for alternatives analysis in urban watersheds, as it accurately represents subsurface flow through the pipe network, in addition to surface flow. However, this type of modeling is labor intensive and more costly to develop. Our alternative approach utilized information from previous 2D modeling that was performed for the City of Topeka, data obtained from the City's GIS inventory, and various calculations based on standard and published methodologies that were captured in spreadsheets specifically developed for this project, to determine improvement recommendations. Additional storm pipes and full replacement of the existing storm pipes were both considered, and a recommendation was made based on a number of factors. Channel improvements are based on capacity needs to limit adjacent flooding. For areas with downstream limitations to increased conveyance, upstream detention opportunities were evaluated. The estimated storage volume needs were calculated, and potential detention areas were identified. Substantial calibration was performed to validate the alternative process and spreadsheet approach for identifying planning-level project recommendations, which are detailed in further sections of this report. There are certain areas in the City of Topeka that aren't well suited for the spreadsheet approach due to the flat terrain and interconnection of the storm pipes. SWMM modeling was developed and utilized for those specific areas to appropriately identify proposed recommendations reduce the existing flooding.

Reports have been prepared for the 46 basins that were selected for mitigation analysis and are included in the Appendix section of this report. The reports describe the analysis performed for the existing conditions and proposed recommendations. It is noted that some of the proposed recommendations are derived from other

drainage studies that have recently been performed for targeted areas in the City. Each report describes the CIP projects identified within the basin. The descriptions of each identified project include the estimated 100-yr floodplains for existing conditions, the estimated 100-yr floodplains for the improved conditions, figures and associated tables for the proposed recommendations, details on CIP project considerations, an image of the potential utility and structural conflicts, and budget-level cost estimates. Project considerations may include constructability concerns and conflicts, sequencing needs, coordination needs, and assumptions that impact the estimated costs.

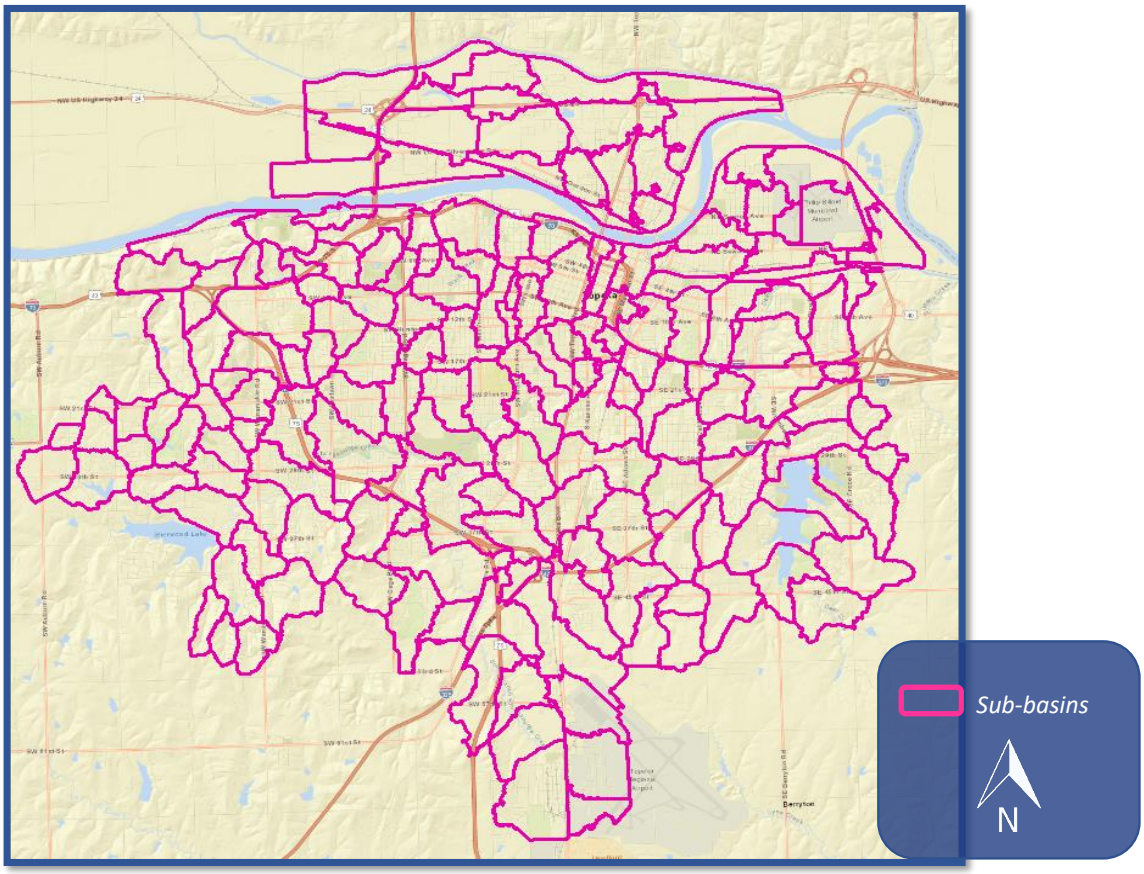
A study of the Shunganunga Creek watershed was recently performed to identify future projects in the Shunganunga Creek watershed, building on previously developed material and studies. The Shunganunga Creek Master Plan report is included in the Appendix section of this report. A total of 122 CIP projects have been identified as part of this Stormwater Master Plan.

The identified CIP projects are intended to be tools to assist the City with implementation of a comprehensive and cohesive stormwater program that can be coordinated with other City projects, provides valuable information for budgeting and potential funding opportunities, affords adequate flexibility for future unknowns, and gives a framework for the City to balance various needs in a fair manner.

Ten initial CIP recommendations have been identified for inclusion in a strategic mitigation plan, that can serve as a roadmap for future stormwater risk reduction over the next twenty to thirty years. These recommendations are included in the following table.

Rank	Project	Estimated Cost
1	Storm sewer improvements on SE California Ave, between SE 5th Street and the outlet to Shunganunga Creek	$4.3M
2	Storm sewer improvements east of SW Jewell Ave, between SW Willow Ave and SW 2nd St	$7.1M
3	Flood Benching (Detention) project along Shunganunga Creek, at Big Shunga Park	$3.4M (varies)
4	Detention project along Ward Creek, north (upstream) of SW Huntoon St	$520K
5	Levee project on the left bank of Shunganunga Creek, between Randolph Ave and Wasbhurn Ave, and channel modification between SW 21st Street and I-70	Determined by USACE
6	Channel improvements on Shunganunga Creek Tributary 7, west of the Topeka Country Club area, with additional detention south of SW 29th Street	$900K
7	Storm sewer improvements on SW College Ave, between SW 8th Ave and SW 6th Ave	$6.3M
8	Construction of two large detention dams in the Colly Creek Watershed, upstream of the South Branch/Wood Valley dam	$5.8M
9	Detention project southwest of the SW Drury Lane and SW Ward Pkwy intersection	$226K
10	Levee improvement project for the spoil bank levee located on the right bank of Shunganunga Creek, between I-70 and SE 6th Street	$2.4M

Figure 2: Sub-basin Breakouts



The following sections describe in detail the analysis that was developed for each of the five BRE categories.

4.1 Asset Failure Probability

The asset failure probability category is used to evaluate the likelihood of potential failure for the existing stormwater infrastructure. Five components are included in the stormwater conveyance asset failure probability analysis, including material type, increase in demand, collateral damage associated with other utility services, remaining service life and the controlling storm event. A GIS shapefile was obtained for the City of Topeka Stormwater System. Ratings for each of the five asset components were assigned to approximately 25,000 enclosed pipes and culverts.

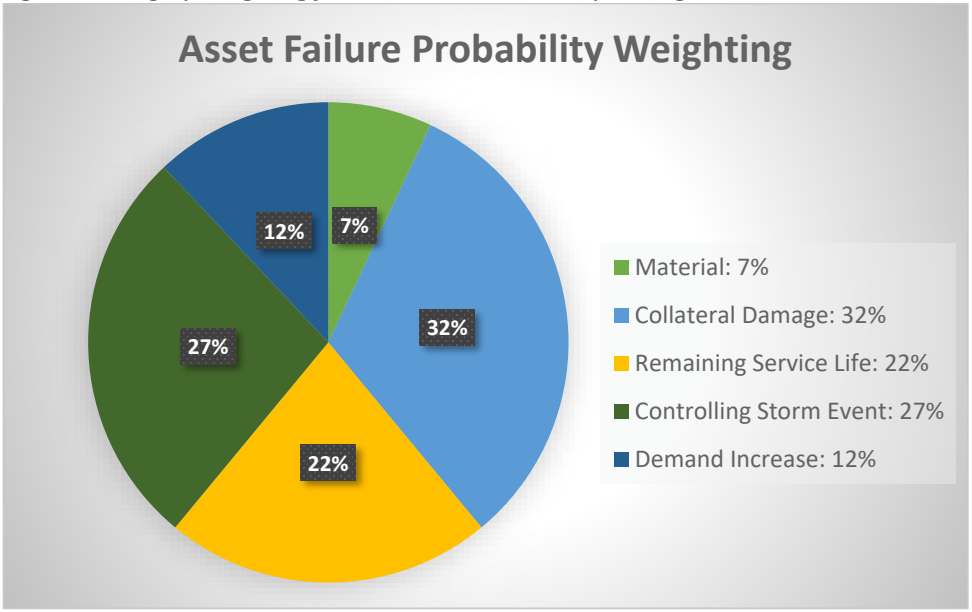
4.1.5 Increases In Demand

When evaluating asset failure probability, it is also important to evaluate future increases in demand for the system. The City of Topeka has implemented stormwater management design requirements to limit the increase of discharges from newly developed or re-developed areas. A comparison of existing conditions versus proposed conditions flows is evaluated prior to approval by the City. Therefore, it is assumed that all storm pipes have a low risk associated with increase in flows associated with development/redevelopment.

4.1.6 Overall Asset Failure Probability

The overall asset failure probability values were then determined, using a weighting system of the five captured categories. An iterative process was used to determine the appropriate weighting percentages based on several discussions with City staff, to ensure that the scoring was adequately representing the City's primary challenges and needs associated with the storm assets and was not putting too much weight on an individual characteristic. The final weighting percentages are shown in Figure 4.

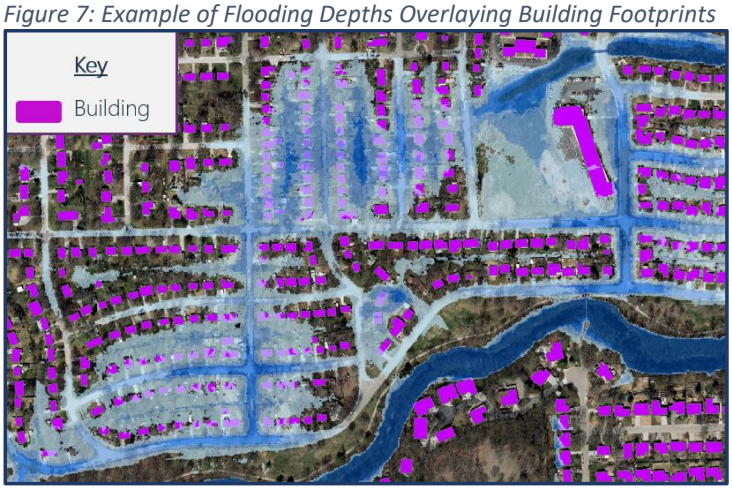
Figure 4: Category Weighting for Asset Failure Probability Scoring



To allow for more differentiation when comparing the stormwater conveyance asset failure probability scores, the resulting averages when using the percentages described in Figure 4 were then multiplied by 20 to determine the stormwater conveyance asset failure probability score for each storm pipe. This resulted in integer values, rather than decimal values. A list of the asset failure probability scores, including only those pipes with asset failure probability scores of 50 or greater, are included in Appendix E and sorted by the Facility ID.

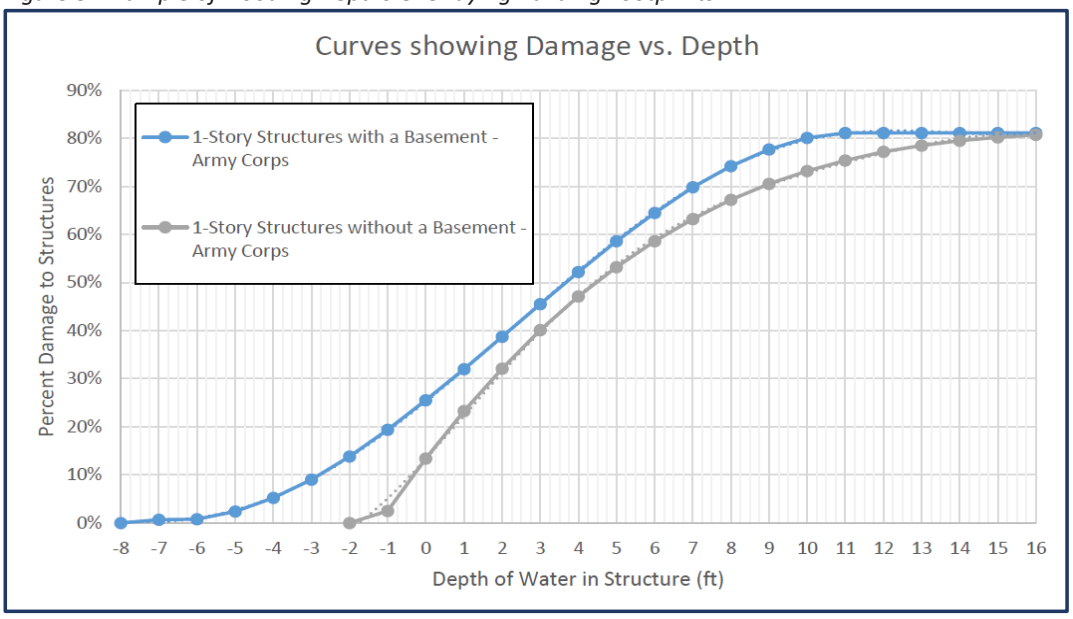
To evaluate flood damages, each building footprint was first correlated with an assessed property value, using data provided by the Shawnee County appraiser's office, and then correlated with a maximum flood depth for each storm frequency (2yr, 5yr, 10yr, 25yr, 50yr, 100yr, 500yr).

Figure 7: Example of Flooding Depths Overlaying Building Footprints



A curve was developed to quantify the damage associated with varying flood depths at existing building structures. Depth versus damage curves developed by the US Army Corps of Engineers were utilized. For the purpose of this analysis, it is assumed that each structure is 1-story with a basement. Therefore, the top curve (blue curve) is being utilized in this analysis.

Figure 8: Example of Flooding Depths Overlaying Building Footprints



infeasible. The overall topography creates a slight bowl shape. Based on the LIDAR, the existing ditches generally carry flows to the low spot in this bowl. The amount of grading needed to create ditches with enough capacity and sufficient slope would create large footprints and would likely encroach upon buildings, as some of the buildings are close to the street. It is noted that the ability to control backwater from Shunganunga Creek would also be hindered if there were no storm structures to connect flap gates onto. Existing and proposed conditions, including the alignment of the proposed stormwater improvements, are shown in Figures 18 and 19. Additional information on these recommendations can be found in the Basin 4A, 29D and 54D Appendix sections of this report.

Figure 18: Existing Conditions 100-year flooding with free outflow into Shunganunga Creek

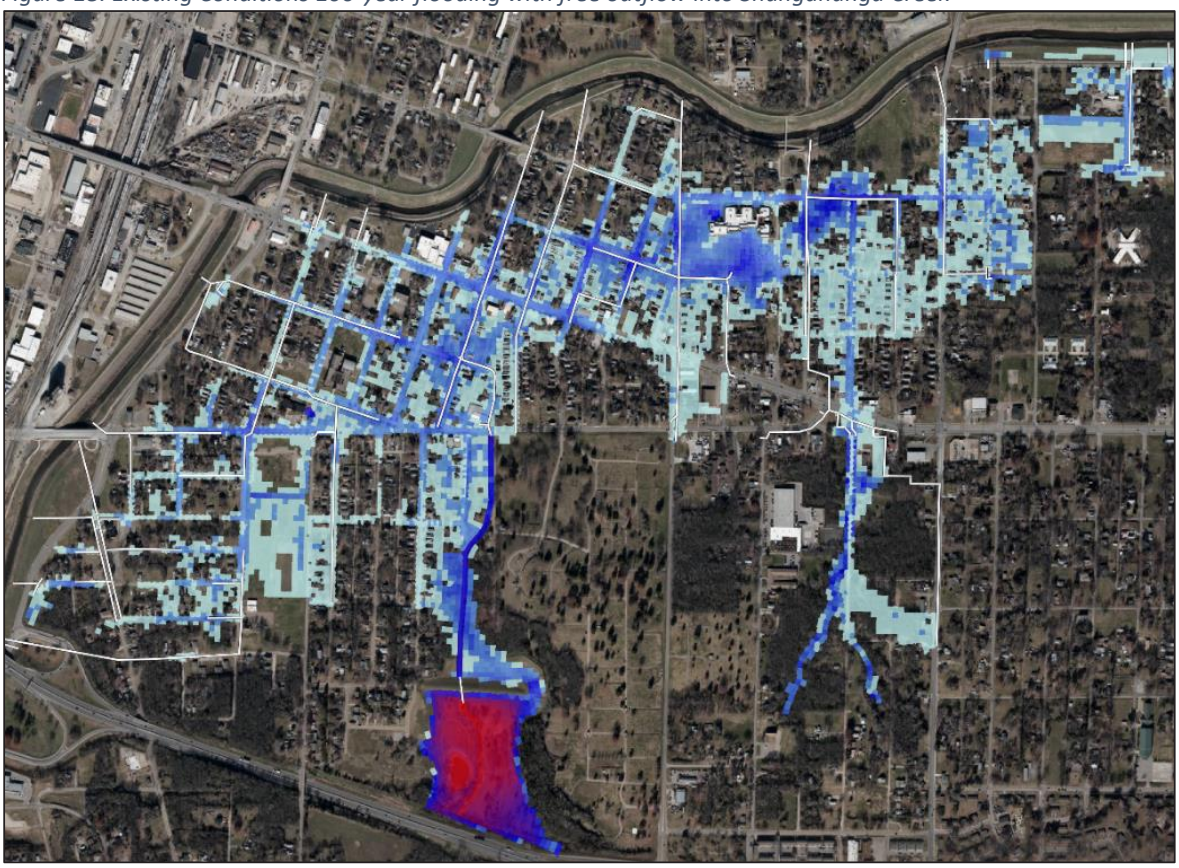
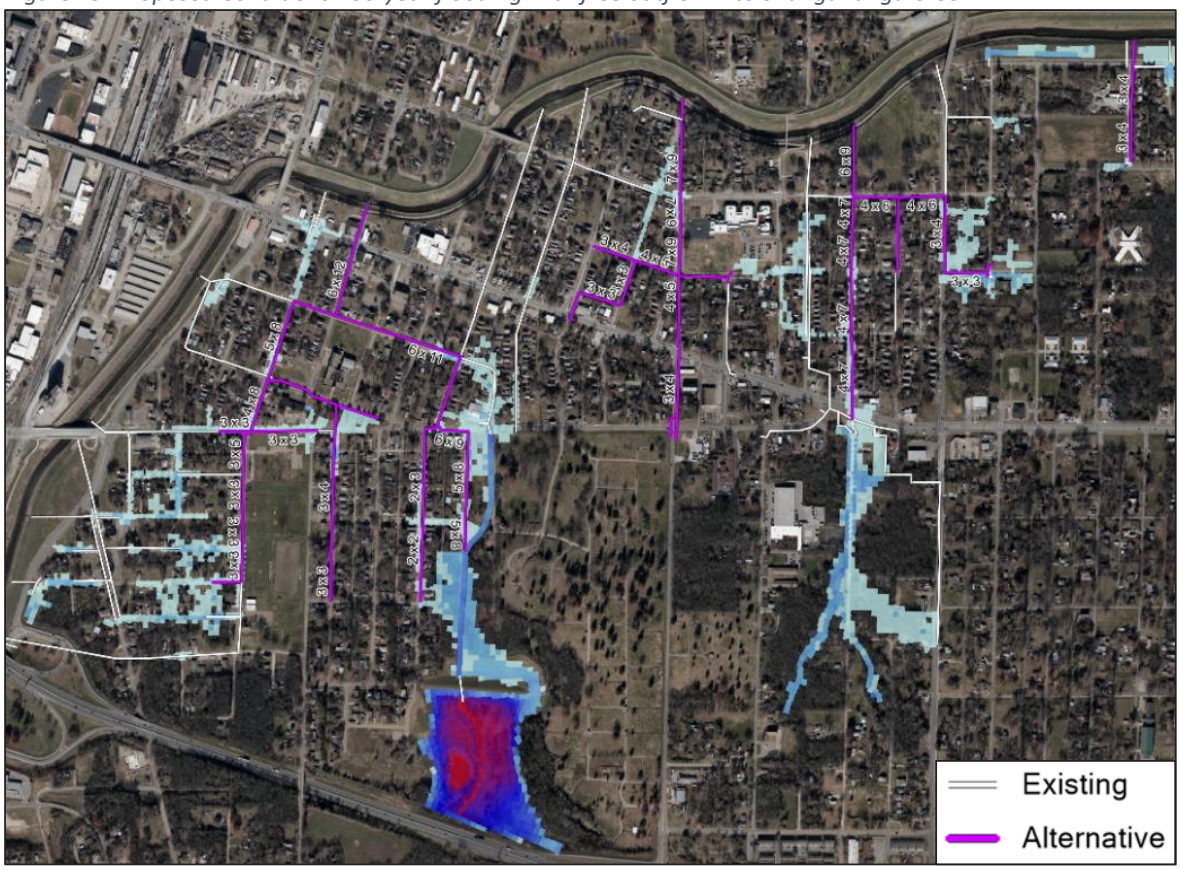


Figure 19: Proposed Conditions 100-year flooding with free outflow into Shunganunga Creek



7. CIP Development

Projects were identified within each studied basin for Capital Improvement Plan (CIP) development, based on the proposed recommendations from the spreadsheet analysis and the supplemented SWMM modeling. A report has been prepared for each basin that was selected for mitigation analysis, including the results from the spreadsheet analysis and details on the future improvements that have been identified within each basin. The improvements have been separated into CIP projects for planning purposes. The basin reports are included as Appendix sections of this report.

The reports include tables and figures of the recommended improvements, including the sizes of the proposed storm sewer modifications. The location of the proposed storm pipes are approximated based on the existing pipe network per the City's GIS database or alternate paths that appear feasible. Engineering judgement was used to estimate the improvement recommendations between the flow locations analyzed, understanding

BASIN 1

CITY OF TOPEKA UTILITIES

Proposed Projects

SW Meadow Lane and 31st

Existing Conditions for 100-Year Storm

BASIN 1

Proposed Projects

SW Meadow Lane and 31st

Improved Conditions for 100-Year Storm

Facility ID	Project Type	Recommended Structure
99940633	Upsize and Full Replacement	54-inch RCP
99940634	Upsize and Full Replacement	54-inch RCP

BASIN 1

CITY OF TOPEKA UTILITIES

Proposed Projects

SW Meadow Lane and 31st

Project Considerations

- There is one water line crossing on SW 31st Street and one gravity sanitary line crossing near north end of project area.
- This storm network enters a storage area located on the south side of the I-470 ramp. It appears that this storage area is large enough to handle the increased flows associated with the enlarged storm pipes, without overtopping the ramp. However, an analysis shall be performed to determine whether additional storage is needed.
- A portion of this project is in the KDOT right-of-way and would need KDOT approval.
- In-basin pre-requisite projects that are needed to achieve capacity benefits from this project include the following drainage improvement projects:
  - None

APPENDIX C
REQUIRED DOCUMENTS

benesch

ATTACHMENT A-RFQ SUBMISSION FORM FOR ELECTRONIC SUBMISSION

(Include this form as a PDF with your electronic submission)

Does your offer comply with all the terms and conditions? (YES / NO)
If no, indicate where exceptions can be found in the proposal.

Does your offer meet or exceed all specifications? (YES / NO)
If no, indicate where exceptions can be found in the proposal.

Does your offer intend to comply with the Town's Professional Service Agreement? (YES / NO) See attached.
If no, indicate what exceptions you may have to the Agreement template.

Have All Addendums Been Acknowledged? (YES/NO)

(Please Note Addendums by Number/Date)

Has a Duly Authorized Agent of the Consultant Signed the Cover Letter? (YES / NO)

Has your UEI been included in your Cover Letter? (YES / NO)

Has a W-9 Form Been Included With the Proposal? (YES / NO)

Does Consultant agree to execute contract documents electronically if the Town so requests?

(YES / NO)

Person authorized to execute contract documents:

Printed Name: Jess Hastings, PE

Title: Senior Vice President, Colorado Division Manager

Email Address: jhastings@benesch.com

Date: 2/16/2024

Exceptions List – Comprehensive Stormwater Master Plan for Town of Johnston, CO

Agreement

2.01 Please insert the following at the end of the provision, "Contractor shall perform its services consistent with the professional skill and care ordinarily provided by firms practicing in the same or similar locality under the same or similar circumstances (hereinafter the "Standard of Care")."

3.01 Please strike "~~proper~~" from the second sentence.

4.01.A.2 Please strike "~~combined single limits~~".

4.01.A.3 Please replace "~~any one occurrence~~" with "each accident" in the first sentence.

4.01.B Please revise the last two sentences as shown below:

The Town shall have the right to request and receive ~~a certified copy of any policy and~~ a copy of any endorsement ~~thereto~~. Except for workers compensation insurance and the Professional Liability policy, the Town shall be listed as an additional insured party on Contractor's insurance policies.

4.01.C. In the second sentence, please replace "~~materially changed~~" with "have a reduction in limits or coverages by endorsement".

4.02 Please revise the provision as shown below:
Damage and Indemnity. Contractor assumes ~~full~~ responsibility for ~~any and all~~ damages to the extent caused by Contractor's negligent acts, errors or omissions during the performance ~~exercise~~ of its Services ~~activities, or failures to act,~~ under this Agreement. Contractor agrees that it will at all times protect, defend, indemnify and hold harmless the Town, its elected officials, employees, ~~agents,~~ and their successors and assigns, from and against ~~all~~ liabilities, losses, claims, demands, actions and costs (including reasonable attorneys' fees), ~~arising from or related~~ resulting from ~~to~~ loss or damage to property or injury to or death to any persons ~~arising from or resulting in any manner from the~~ to the extent caused by negligent acts, errors or omissions ~~actions or failures to act~~ of Contractor or any invitees, guests, agents, employees or subcontractors of Contractor, whether brought by any of such persons or any other person. Regarding liability, losses, costs, claims, demands and causes of action arising out of the Contractor's performance of professional services, it is expressly agreed by the Town, that Contractor's duty to defend shall mean only the reimbursement of the Town's reasonable attorneys' fees and costs once it has been determined the extent that such were caused by the negligent acts or omissions of the Contractor.

5.01 Please insert the following at the end of the provision, "Notwithstanding the foregoing or anything to the contrary in the Contract Documents, in the event of termination for cause this Agreement will not terminate if Consultant cures its failure within seven (7) days of receipt of the written notice specifying the failure. Neither Contractor, nor its subcontractors shall be responsible for errors or omissions in documents which are incomplete as the result of an early termination under this Agreement."

8.01 Please insert the following at the end of the provision, "and Contractor shall perform its services as expeditiously as is consistent with professional skill, care and the orderly progress of the Project.

8.03 Please revise as shown below:
In the conduct of the Services, Contractor shall comply with all applicable and non-conflicting laws, rules and regulations, and the directives or instructions issued by the Town or its designated representatives. If any discrepancy or inconsistency should be discovered between the specifications established for the Services and any law, regulation, ordinance, order or decree applicable to the Services, Contractor will immediately report such discrepancy or inconsistency to the Town and will conform its work to any orders or instructions issued by the Town.

8.07 Please revise as shown below:
No consent or waiver, express or implied, by ~~the Town either~~ party to or of any breach or default by ~~Contractor~~ the other party ~~in the performance by Contractor~~ of its obligations hereunder shall be deemed or construed to be a consent or waiver to or of any other breach or default ~~by the Town~~. Failure on the part of ~~the Town~~ either party to complain of any act or failure to act or to declare ~~Contractor~~ the other party in default, irrespective of how long such failure continues, shall not constitute a waiver by ~~the Town~~ either party of its rights hereunder.

8.11 Please revise as shown below:
If any judicial proceedings may hereafter be brought to enforce any of the provisions of this Agreement, ~~the Town, if~~ the prevailing party, shall be entitled to recover the costs of such proceedings, including reasonable attorney's fees and reasonable expert witness fees. For purposes of this Agreement, the Prevailing party is the party who recovers at least 75% of its total claims in the action or who is required to pay no more than 25% of the other party's total claims in the action when considered in the totality of claims and counterclaims, if any. In claims for money damages, the total amount of recoverable attorney's fees and costs shall not exceed the net monetary award of the prevailing party.

8.13 Please in the following at the end of the provision, "or on the part of any employee, shareholder, agent of Contractor".

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ **Go to *www.irs.gov/FormW9* for instructions and the latest information.**

Give Form to the requester. Do not send to the IRS.

Print or type. See **Specific Instructions** on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

Alfred Benesch & Company

2 Business name/disregarded entity name, if different from above

Benesch

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☑ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

35 West Wacker Drive, Suite 3300

Requester's name and address (optional)

6 City, state, and ZIP code

Chicago, IL 60601

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN,* later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

3	6	–	2	4	0	7	3	6	3

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here **Signature of U.S. person ▶** Kristin S. Hoon **Date ▶** 01/02/2024

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9.*

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*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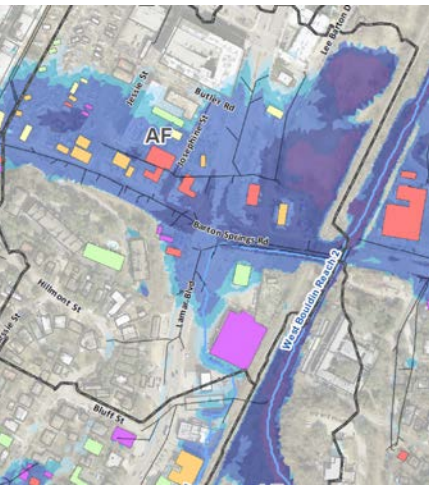
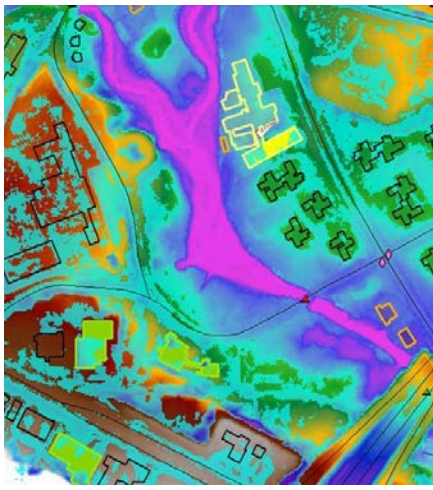




STATEMENT OF QUALIFICATIONS

Town of Johnstown

Comprehensive Stormwater Master Plan

February 16, 2024

FREESE AND NICHOLS

303-664-6522 | freese.com
4600 South Syracuse Street, 9th Floor | Denver, CO 80237

ATTACHMENT A-RFQ SUBMISSION FORM FOR ELECTRONIC SUBMISSION

(Include this form as a PDF with your electronic submission)

Does your offer comply with all the terms and conditions? (YES / NO)
If no, indicate where exceptions can be found in the proposal.

Does your offer meet or exceed all specifications? (YES / NO)
If no, indicate where exceptions can be found in the proposal.

Does your offer intend to comply with the Town's Professional Service Agreement? (YES / NO)
If no, indicate what exceptions you may have to the Agreement template.

Have All Addendums Been Acknowledged? (YES/NO)

(Please Note Addendums by Number/Date)
Addendum #1 - 01/03/2024; Addendum #2 - 01/17/2024

Has a Duly Authorized Agent of the Consultant Signed the Cover Letter? (YES / NO)

Has your UEI been included in your Cover Letter? (YES / NO)

Has a W-9 Form Been Included With the Proposal? (YES / NO)

Does Consultant agree to execute contract documents electronically if the Town so requests?

(YES / NO)

Person authorized to execute contract documents:

Printed Name: David Bennett, PE, Assoc. DBIA

Title: Vice President/Principal

Email Address: david.bennett@freese.com

Date: February 16, 2024

February 16, 2024

Jason Elkins, PE | Public Works Director
Town of Johnstown
Submitted via email to jelkins@johnstownco.gov

RE: Comprehensive Stormwater Master Plan

Dear Mr. Elkins and Selection Committee Members:

Our Understanding and Commitment to Provide Services

Freese and Nichols, Inc. (FNI) understands that the Town is requesting services to evaluate current flood risks, aid in the management of the stormwater program, and provide an update of the drainage Capital Improvement Program (CIP) to identify future projects. FNI understands the importance of these items and has experience creating and leveraging Stormwater Master Plans to develop a prioritized CIP and create a foundation for a sustainable stormwater management program. We are a client-focused, regionally based firm that specializes in serving our clients with nationally recognized experience, and we are committed to helping the Town of Johnstown deliver infrastructure improvements to improve the citizens' quality of life, public safety and reliability of service. Benefits of choosing the FNI team include:

Trusted Advisor with Hands-on Stormwater Management Experience: Proposed Project Manager, Morgan Lynch, served as a Watershed Manager with the Mile High Flood District for five years. She has the experience and best-practices insight to collaborate with Town staff and stakeholders in developing a Stormwater Master Plan that incorporates existing data with freshly compiled and assessed information to identify and prioritize practical solutions for flood risk area. Our technically diverse Stormwater Management Group has completed numerous multi-faceted drainage improvement projects, such as rural and urban neighborhood drainage design, bridge and culvert design, large scale hydrologic analysis, conditions assessment, CIP ranking processes and FEMA funded mitigation. This depth of expertise will create a comprehensive and cohesive strategy for developing the Stormwater Master Plan.

Municipal Focus: Our dedication to serving City governments is instilled in our firm's culture. We have assisted many local municipalities with initiatives to identify and prioritize critical infrastructure improvement projects, develop approaches to support these projects, and provide information to make better floodplain management and drainage decisions, while assessing project funding needs.

Dedication to Quality Service: Quality service is the cornerstone of our commitment to our clients. FNI's mission to provide "innovative approaches... practical results... outstanding service" is embedded in our culture, and the Town can trust that we will make client satisfaction our highest priority.

We are excited about the opportunity to continue working with the Town of Johnstown on this important project. Please contact us directly with any questions regarding our qualifications or our firm.

Sincerely,

David Bennett, PE, Assoc. DBIA*
Principal-in-Charge
720-779-0995 | david.bennett@freese.com
**Authorized agent of FNI*

Morgan Lynch, PE, CFM
Project Manager
720-773-5558 | morgan.lynch@freese.com

Contact Person

Morgan Lynch, PE, CFM

Unique Entity Identifier (UEI)

UEI: KKJCTMJ3HZJ4

Eligibility

- ✓ Successfully provided services of similar magnitude
- ✓ Financial ability to successfully perform the services
- ✓ No conflict of interest
- ✓ Will not engage in the review or submittal of private land development project in the Town of Johnstown for the duration of the project
- ✓ Not involved with the application for the grant award or in the preparation of this RFQ
- ✓ Will provide UEI/ DUNS numbers for all team members during contract negotiation
- ✓ Commit to regular submittal of invoices meeting standards for federally funded projects

01

Qualifications of Firm and of the Project Team

Qualifications of the Firm and of the Project Team

FNI is a client-focused, regionally based firm with national expertise. We meet client needs with responsiveness and flexibility. Dating back to our firm's founding in 1894, we put relationships first — clients, teaming partners and staff — and seek long-term relationships, many of which are counted in decades, not years.

FNI has assembled a team with a **comprehensive background in stormwater planning and management.** The FNI team consist of professionals who work almost exclusively on drainage and flooding projects for public client and regional authorities. We are experts at assisting our clients with stormwater master planning (more than 50 cities), stormwater fee development, floodplain management, policy development, regulatory compliance, staffing assistance, environmental services and capital funding options.

One of the strengths of FNI's team is its members' background in providing practical solutions to support cities in resolving flood issues and managing development. Our team members are experienced in citywide and watershed-level modeling, studies and master plans, conditions assessment, rate studies, and the design and construction management of critical stormwater facilities. This diversity provides the City with sound recommendations that are constructible and effective in their flood management and the protection of residents and the community's infrastructure. FNI has been a leader in supporting City staffs in the drafting of design standards and policies for development in their communities. This provides City staff with an ally to work with developers in building infrastructure that is effective, sustainable and more easily maintained.

In the following pages, we will **introduce our team** (pages 2-4) and provide **examples of similar projects/references** (pages 5-12). **Work samples** demonstrating our 10-step process outlined in the Project Approach are included in the Appendix, as well as **resumes** detailing our team members' individual experience.

Morgan Lynch, PE, CFM
Project Manager

Morgan Lynch is **FNI's Colorado-based Stormwater Leader** and has direct experience in all stages of stormwater management. Utilizing her **diverse background** in both the public and private sectors, Morgan has become an efficient project manager and prioritizes client needs when solving complex problems. Morgan is the Town's **dedicated point-of-contact.**

FNI by the Numbers

50+
Stormwater Master Plans Completed

300+
Flood Studies Completed

1,000+
Flood Projects Designed

150,000
Square Miles of H&H Modeling

> "Innovation is the essence of the Freese and Nichols culture. We've structured our company to inspire innovation every day. The results are solutions for our clients that span disciplines and geography."
>
> **Brian Coltharp | FNI President and CEO**

Subconsultant Team Members

OV Consulting | Public Outreach

OV Consulting (OV), is a **woman-owned Disadvantaged Business Enterprise (DBE/MWBE)** that has been providing planning and design services in the Denver region and surrounding states for more than 20 years. The firm specializes in tackling complex urban challenges through innovation in urban planning, placemaking, multimodal connectivity and transportation design. In recent years, OV has expanded its practice to include planning that brings nature and resiliency to the urban footprint, supporting sustainable and livable community design. OV's technical success is built on a significant background in stakeholder coordination and community education, outreach and historic context that ensures community-supported solutions. In recent years, OV has led numerous efforts, including the Healthy River Corridor Study and South Platte River Needs Assessment examining the future of the South Platte River through Denver, the Montclair Resiliency Planning and Education Study and subsequent Hale Parkway Concept Design and the Globeville Stormwater Study and 48th Avenue Greenway. Recent awards in innovative design and effective community buy-in include the Colorado Association of Stormwater and Floodplain Managers (CAFSM) Grand Award for Engineering Excellence.

Project Manager Morgan Lynch and Beth Vogelsang of OV Consulting worked together on the Healthy River Corridor Study to identify a 200-foot influence zone along the South Platte River and establish the goals and direction for enhancing the river's edge for riparian habitat, mobility options, recreational and open space opportunities and supporting land uses.

King Surveyors | Surveying

King Surveyors, a division of Landpoint, is an award winning land surveying company that operates in many of the fastest growing economic regions across the United States. The company is a multifaceted professional services firm that concentrates on providing clients with construction, route, topographical and other land surveying services. By utilizing advanced GNSS equipment, 3D scanning solutions, unmanned aerial vehicle (UAV) technology and an in-house project management platform the firm is able to complete projects at an unrivaled pace while keeping consistent quality in their work.

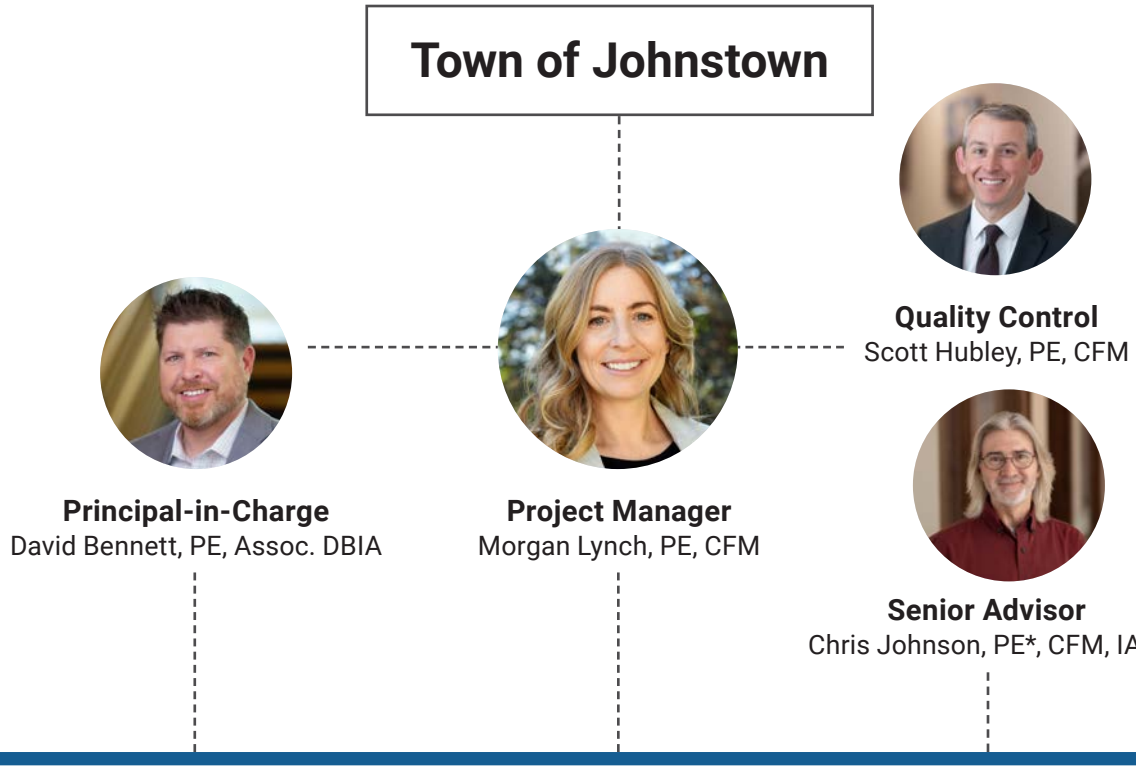
OV Consulting developed a pilot program for Denver Public Works to address community education and awareness of local flood concerns, land use and development impacts on flood conditions, and resiliency strategies designed to mitigate urban flooding and improve water quality within the Upper Montclair Basin

DES Pipeline Maintenance | CCTV

DES Pipeline maintenance has been in business for over 30 years. They currently service more than 25 different municipalities/water districts, as well as servicing several new construction companies. DES' CCTV operators are certified under the Pipeline Assessment Certification Program (PACP) provided by National Association of Sewer Service Companies (NASSCO). DES is experienced in working with VCP as well as PVC pipes. DES has a diverse and extensive fleet of equipment, including units that can access hard to reach areas/easements and units that can accommodate areas with limited street parking etc. **DES has recently completed CCTV and jet cleaning services for approximately 7,000 linear feet of storm sewer in the Town of Johnstown.**

Organizational Chart

FNI has assembled a team — **led by Project Manager, Morgan Lynch** — of professionals who have worked on large-scale stormwater projects and are available to serve as your trusted advisors. Our stormwater specialists bring comprehensive expertise in stormwater master planning. This cohesive team will work with your staff and each other to develop a comprehensive Stormwater Master Plan



MAJOR WORK AREAS

Conditions Assessment
David Bennett, PE, Assoc. DBIA
Steven Rhodes, PE*

GIS Data Review/ Dashboard Development
Ben Hawkins, GISP
Heath Myers
Haley Hight

Stormwater Master Plan/10-year CIP Plan
Jeremy Dixon, PE, CFM
Bethany Fleitman, PE*, CFM

Rate Study
Trey Shanks, IAM
Peter Purdy, PE*, IAM

Surveying
Paul Groves, PLS
King Surveyors

CCTV
Victor Garza
DES Pipeline Maintenance

Public Outreach
Beth Vogelsang, AICP
OV Consulting

**Licensed in a state other than Colorado*

Stormwater Infrastructure Assessment and Utility Fee Development

Town of Wake Forest, North Carolina

FNI is assessing the existing condition of the Town's stormwater infrastructure to establish a proactive maintenance plan, which will lead to the Town's need to develop a SWU fee to fund these ongoing maintenance activities, specifically as they relate to the State's MS4 Stormwater permit. FNI will coordinate with the Town's stakeholder committee to aid in the development of the SWU fee and assist the Town to implement the fee for users of the storm system in accordance with applicable state law.

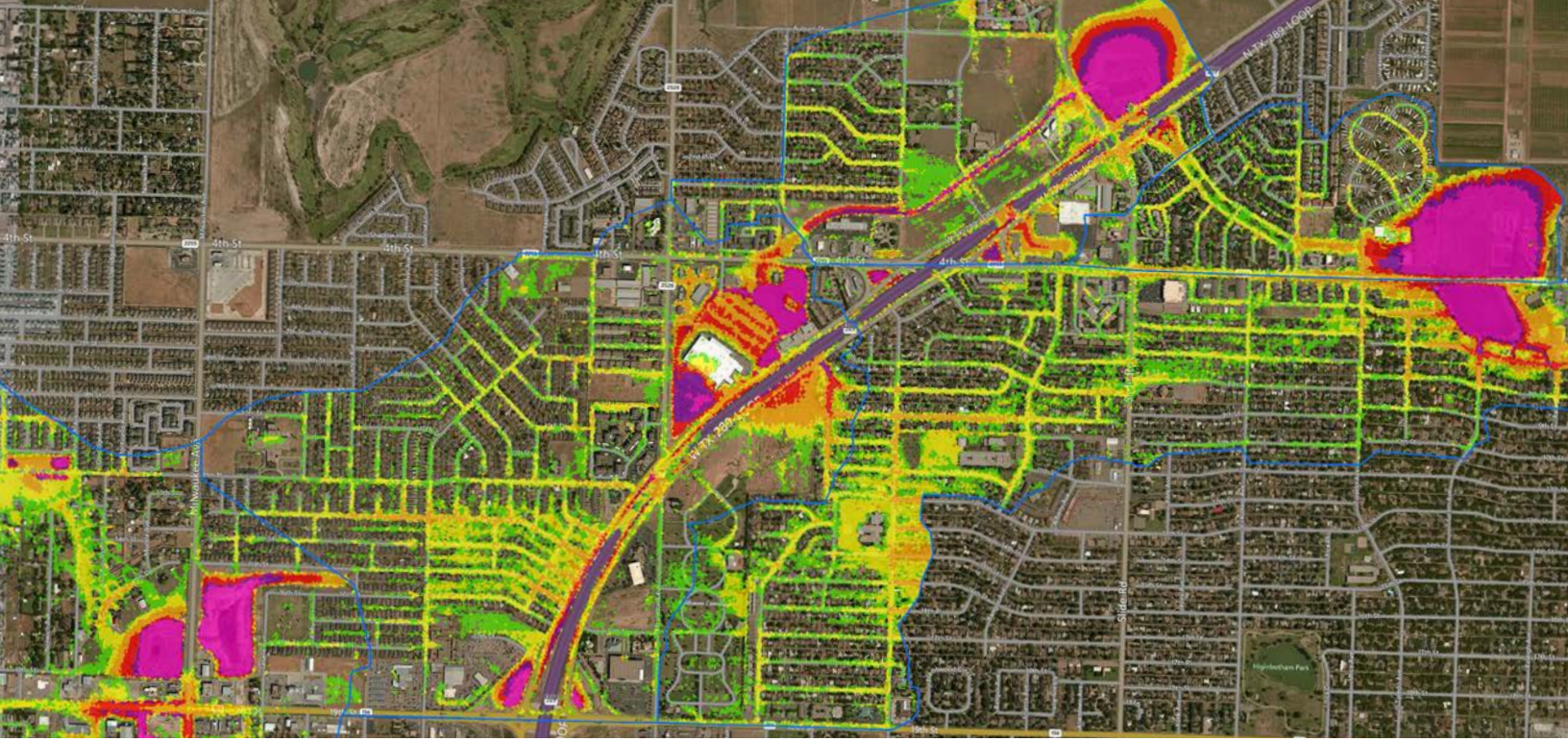
FNI will provide the Town with a realistic assessment of the current watershed condition related to water quality, asset management stream health and ecology, flood management, and historical, existing and future erosion processes in the watersheds. FNI will perform a rain-on-mesh analysis to better determine and identify concern areas. FNI will combine field inspections of the reaches and stormwater control measures (SCMs) within the watershed with a desktop watershed modeling analysis. A criticality assessment will be performed to help inform the Town on which assets to perform conditions assessments on. FNI will train Town staff to perform these conditions assessments.

LOCATION
Wake Forest, North Carolina

COMPLETION
Ongoing

REFERENCE
Nick Nolte
Assistant Stormwater Engineer
919-435-9449
nnolte@wakeforestnc.gov

RELEVANCE
- Conditions Assessment
- GIS Dashboard
- Funding Assessment and Stormwater Fee Implementation
- Citywide Modeling
- Water Quality Project Development



Stormwater Master Plan

City of Lubbock, Texas

The Lubbock Stormwater Master Plan began in 2015, taking a holistic look at the City's Stormwater Program and defining the direction of the program moving forward in a comprehensive and living way to promote responsible development. The project included five main areas of work: visioning, public outreach, drainage criteria and policies, modeling and capital improvement planning.

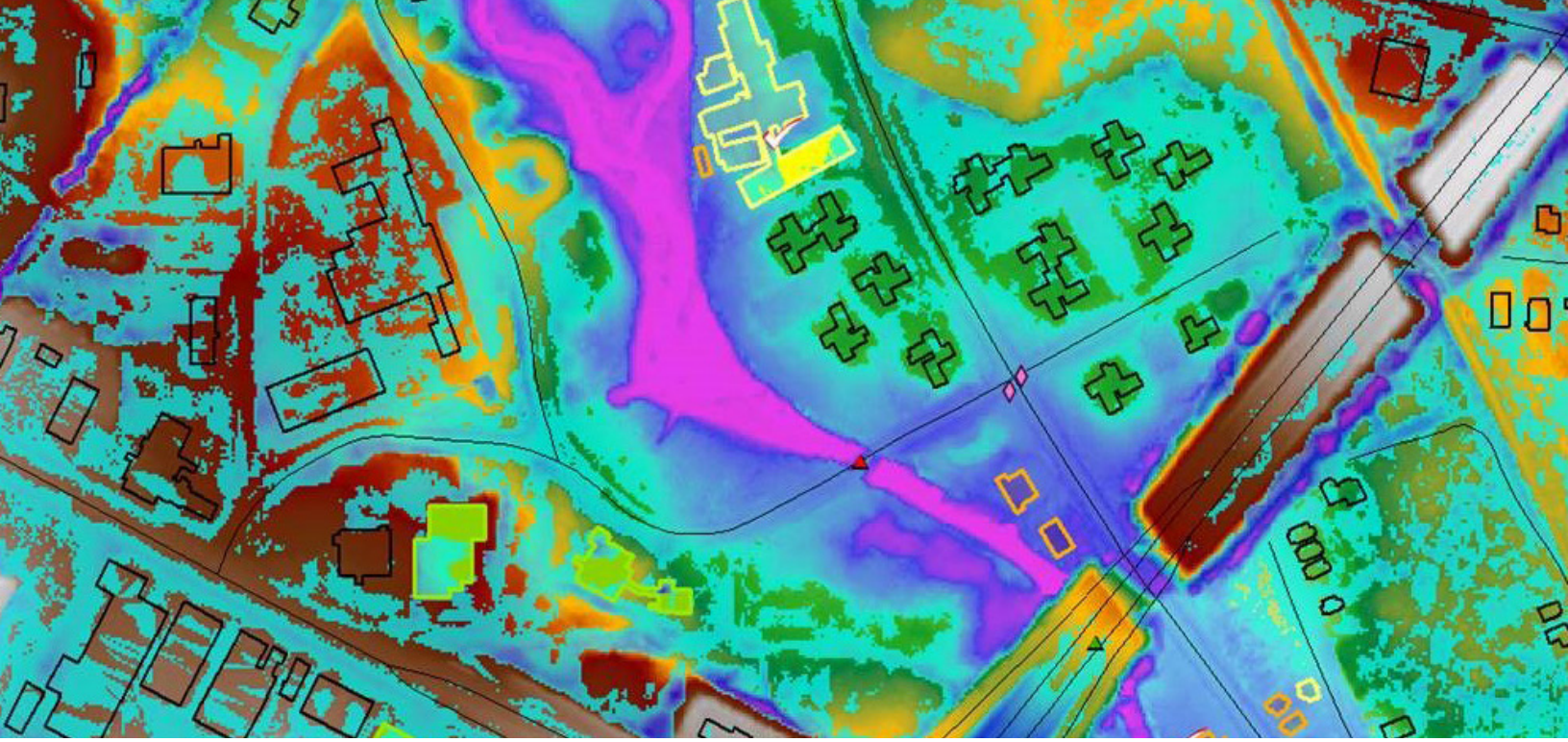
The plan began with FNI-led visioning sessions with City departments and key stakeholders to identify areas of overlap and opportunities for collaboration, and to help streamline planning efforts. FNI led the review and update of drainage criteria and policies. The modeling effort included the development of an inventory of existing data, studies and models to assist in the review of development submittals. The team updated Master Drainage Plan models for dozens of basins to inform future conveyance corridors and identify drainage needs before any problems develop.

LOCATION
Lubbock, Texas

COMPLETION
2017

REFERENCE
Mike Keenum, PE, CFM
City Engineer/Division Director of Engineering
806-775-2393
mkeenum@mylubbock.us

RELEVANCE
- Citywide Modeling
- Policy Updates
- GIS Dashboard
- Public Outreach
- Capital Project Prioritization



Watershed Master Plan

City of Fayetteville, North Carolina

FNI is working on behalf of the City of Fayetteville to develop a framework for modeling and asset management for the city's stormwater infrastructure. The foundation of this effort is a citywide Infoworks Integrated Controls Management (ICM) rain-on-mesh model that provided a data-driven methodology for identifying, prioritizing, and categorizing the areas of flooding concern throughout the city. The City used this methodology to inform decision-making regarding the allocation of resources to address the various deficiencies in the stormwater management network identified in the modeling. FNI also developed a new asset management database and schema that will house the city's geospatial infrastructure data and seamlessly integrate with their existing work order tracking software.

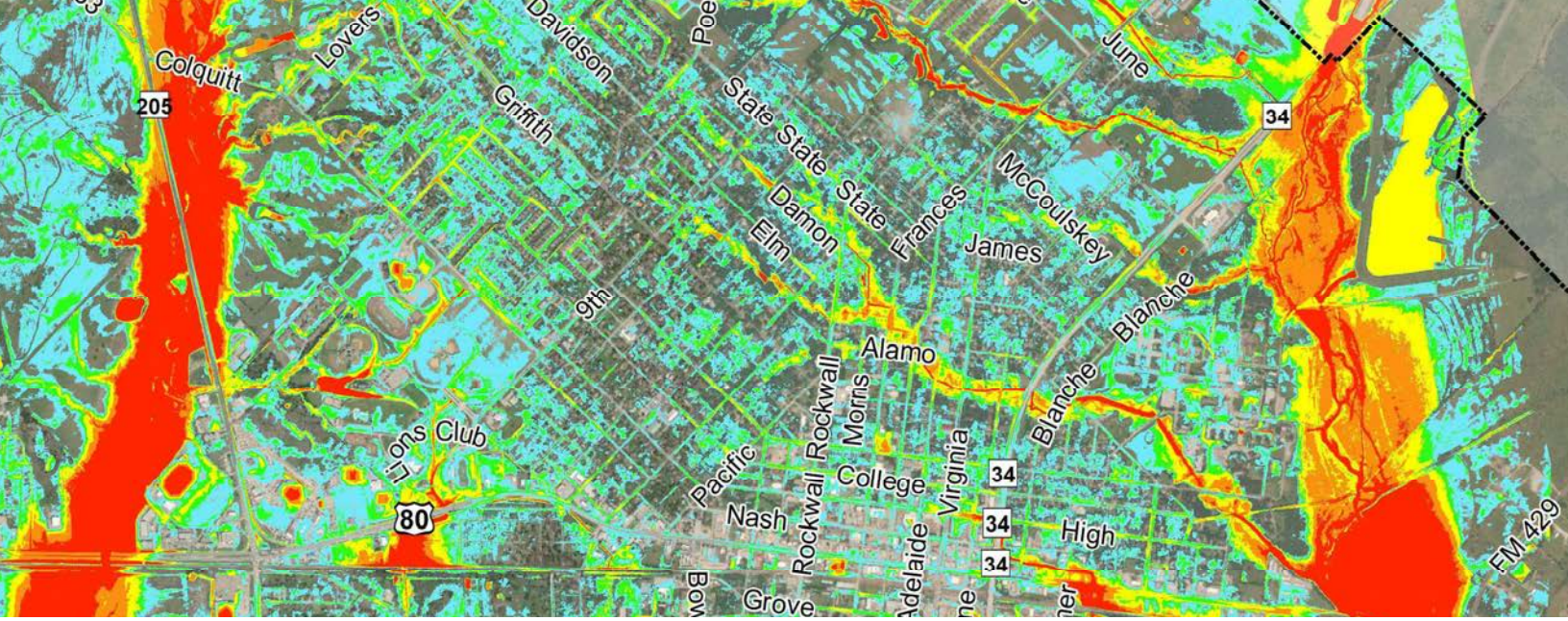
This effort included Citywide HEC-RAS and ICM models, consultant selection, development of a stormwater geodatabase, citywide dam storage analysis and a focused downtown flood study. Ongoing activities include consultant management, program management, continued updates to program documents and ad-hoc services as needed.

LOCATION
Fayetteville, North Carolina

COMPLETION
Ongoing

REFERENCE
Sheila Thomas-Ambat, PE
Public Services Director
910-703-2951
sheilathomasambat@
fayettevillenc.gov

RELEVANCE
- Citywide Modeling
- Asset Management
- Capital Project Prioritization
- GIS Dashboard



Stormwater Master Plan and Funding Strategy

City of Terrell, Texas

FNI developed a Drainage Master Plan for the City of Terrell. The master plan included a citywide inventory and conditions assessment of existing drainage infrastructure, delivered as a cloud-hosted spatial database through ArcGIS Online, which is available through web-based interactive maps where data can be viewed and queried, and simple maps may be exported. By maintaining the database and linking it to the work order system, the City would be able to more actively manage its stormwater assets. Maintaining high quality data would allow many future opportunities to reduce costs and strategically renew aging infrastructure. FNI also recommended drainage maintenance best practices based on a peer review exercise with other local municipalities.

In addition to the inventory, FNI analyzed the existing infrastructure under existing and ultimate land use conditions. Through these analyses and in collaboration with City staff, locations were selected for the development of projects to accommodate the ultimate conditions flow and alleviate existing flooding. Twenty projects were identified throughout Terrell. Cost estimates were developed for major projects that would require additional funding. FNI also identifies smaller projects that the City could implement using existing “paygo” capital funding.

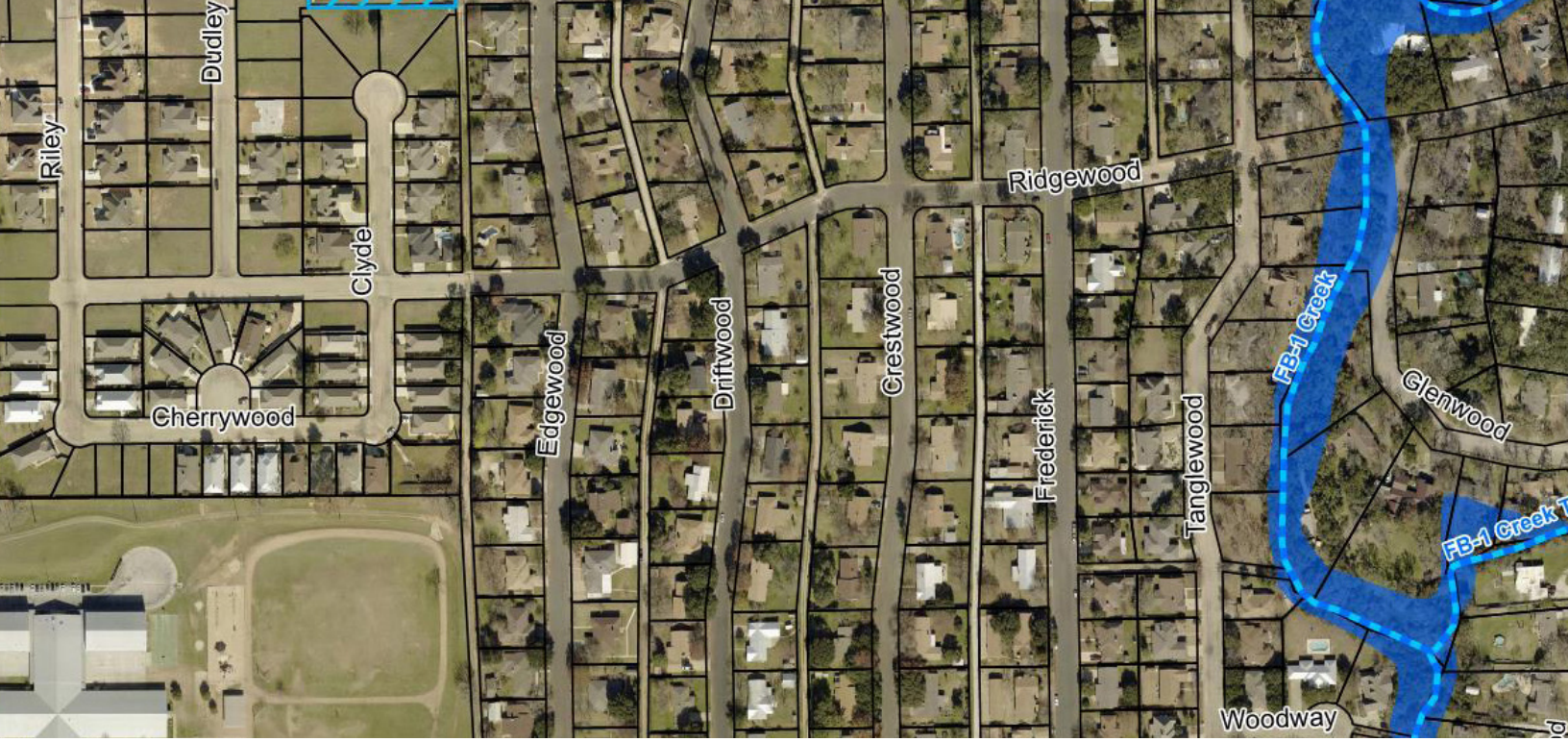
FNI prioritized projects based on an evaluation of life safety (road flooding), property damage, flood frequency, project cost and public impact. A project prioritization database was provided to allow the City to update priorities and new projects are identified or previously identified projects are completed. FNI developed a funding strategy to demonstrate how reliance on the Stormwater Utility Fee to fund the large capital projects would require immediate and regular increases. Any opportunities for grants and low interest loans would be regularly pursued when grant requirements are in alignment with City goals.

LOCATION
Terrell, Texas

COMPLETION
2020

REFERENCE
Glenn Caldwell
Public Services Director
972-551-6614
gcaldwell@cityofterrell.org

RELEVANCE
- Citywide Modeling
- GIS inventory
- Funding Assessment and Stormwater Fee Implementation
- Capital Project Prioritization
- Drainage Criteria Review



Citywide Drainage Master Plan and Stormwater Utility Fee Evaluation

City of Fredericksburg, Texas

FNI developed a drainage master plan to guide future investments necessary to mitigate existing flooding problems and minimize future drainage concerns within the City. The scope of the capital improvement plan (CIP) included developing a comprehensive inventory of the City's infrastructure; preparing engineering models to predict flood risk and infrastructure capacity; documenting issues based on staff/residents' knowledge and model results; and developing prioritized mitigation solutions, cost estimates and funding mechanisms. One significant benefit of this approach is the ability to rank all identified mitigation and improvement strategies with a common set of prioritization criteria.

In addition to developing the CIP, FNI reviewed various aspects of the City's drainage program and provided recommendations for the City's consideration or implementation. The review included the evaluation of the structure of the existing drainage utility fee, effective hydrologic and hydraulic (H&H) models, floodplain mapping, existing drainage criteria and citywide vegetation management.

FNI gathered information from the public to garner support from the community, created a quantitative and repeatable scoring system to rank CIPs based on criteria that is important to the community and developed a "living CIP database" that allows the City staff to update and maintain the drainage master plan as projects are completed or new projects identified.

LOCATION
Fredericksburg, Texas

COMPLETION
2016

REFERENCE
Clinton Bailey, PE
City Manager
830-997-7521
cbailey@fbgtx.org

RELEVANCE
- GIS Inventory
- Flood Risk Modeling
- Capital Project Identification and Prioritization
- Drainage Fee Review
- Drainage Criteria

Watershed Study and Stormwater Utility Fee

City of Farmers Branch, Texas

FNI provided risk assessment, H&H modeling and streambank stabilization design and construction to restore Farmers Branch Creek. The projects provided an essential understanding of flooding and erosion risk throughout the watershed and included a sequence of emergency erosion protection and bank stabilization projects along the reach following a series of dam failures.

Initially, FNI conducted a watershed study to develop existing conditions using H&H models, identify existing flooding and erosion hazards and propose capital improvement alternatives to alleviate the identified hazards. The study resulted in a prioritized CIP that included both flood risk reduction and erosion control projects for 23 areas along the creek.

Shortly after completion of the study, the Dallas-Fort Worth area experienced frequent and torrential rainfall, and a large dam at the downstream end of the study reach failed, causing rapid and severe erosion, channel downcutting upstream and subsequent failure of upstream check dam structures. The progressive and unmitigated erosion threatened private residences and additional check dams, as well as a public storm sewer outfall and a sanitary sewer line crossing the creek.

The following year, a second period of heavy rain necessitated re-evaluation of the channel and design of long-term, permanent channel improvements to alleviate erosion along the channel embankments. FNI designed and built a grade control structure, 500 LF of streambank stabilization improvements and implemented emergency rehabilitation measures to avoid a third dam failure.

LOCATION
Farmers Branch, Texas

COMPLETION
2018

REFERENCE
Marc Bentley, PE, CFM
Project Manager
Birkhoff Hendricks & Carter,
214-361-7900
info@bhcllp.com

Formerly City of Farmers Branch Director of Public Works

RELEVANCE
- Flood Risk Modeling
- Capital Plan Development
- Stormwater Fee Development

Wichita River Floodplain Study and Drainage Master Plan

City of Wichita Falls, Texas

Wichita River Floodplain Study – It was late afternoon on the Friday before Memorial Day 2015, but as most people were starting their holiday weekend, the City of Wichita Falls had more pressing concerns. The weather service was projecting that the next day, the Wichita River would crest potentially as high as 30 feet — 6 feet above the flood of record. The City knew the flooding could be severe, but they didn't know where. So, they called on FNI for help. Our team stayed late to develop GIS files for floodplain delineations of a variety of potential flood stages. Within hours, the City had the flood maps they needed, enabling them to alert residents and evacuate neighborhoods before floodwaters arrived. Later, FNI worked with the City to refine the maps based on more detailed modeling so they could be prepared before the next flood event.

Drainage Master Plan – FNI performed an update to the City's Drainage Master Plan, including revisions to the City's drainage manual and ordinance documents, and completed need-area screening, a detailed study of 15 need areas and CIP development. The need-area screening phase included a high-level review of 65 need areas to assess problem severity and establish improvement priorities. The screening data was organized into a customized database that allows the City to continuously manage its CIP moving forward. The detailed study phase included in-depth analyses of the 15 highest-ranking need areas. Detailed H&H models of existing conditions were developed using EPA-SWMM, HEC-HMS, and HEC-RAS for local storm drain and open channel systems. Proposed improvements were developed for each need area, along with cost estimates, and were organized into a ranked CIP to guide the City's implementation over the next 10 to 15 years.

LOCATION
Wichita Falls, Texas

COMPLETION
2016

REFERENCE
Russell Schreiber
Public Works Director
940-761-7477
russell.schreiber@
wichitafallstx.gov

RELEVANCE
- Ordinance and Criteria Manual
- Flood Risk Modeling
- Capital Project Identification and Prioritization

Drainage Master Plan

City of Bedford, Texas

FNI is preparing a Drainage Master Plan for the City of Bedford that will provide strategic direction for the City and includes a stormwater utility fee audit, development of a flood history database, inventory and conditions assessment of constructed and natural stormwater infrastructure, H&H modeling of areas with flood risk, nearly 10 stream miles of geomorphic investigation and characterization of erosion concerns, and capital project identification and prioritization. Through these master plan tasks, the City will be able to actively manage its stormwater assets, maintain high quality data, and increase the understanding of flood risk and erosion concerns throughout their waterways.

As part of the stormwater utility fee audit, FNI identified gaps within the revenue generation methodology and recommended improvements to the City processes.

LOCATION
Bedford, Texas

DATES
2024

REFERENCE
Cheryl Taylor
Public Works Director
817-952-2256
cheryl.taylor@
bedfordtx.gov

RELEVANCE
- Flood Risk Modeling
- Channel Conditions Assessment
- Infrastructure Assessments
- Capital Project Prioritization
- Stormwater Fee Audit

Drainage Project Prioritization System

City of Fort Worth, Texas

The City of Fort Worth developed its stormwater utility fee in 2006 and subsequently used the revenues to sell a series of bond packages. These bond funds were spent to fund a backlog of CIP projects. Without future rate increases, the utility has now reached its debt capacity, and the City is transitioning to a pay-as-you-go system with a significant reduction in its annual budget for stormwater capital improvements. This funding reduction has created a greater emphasis on how the City prioritizes its limited stormwater funds.

In response to this transition, FNI is assisting the City with the development of a prioritization system to guide its stormwater planning team in selecting areas to study and mitigation alternatives to move into capital project development. FNI developed a needs-based prioritization system in GIS to rank the City's 300 storm drain mapsheds based on factors, such as structure flooding, road flooding, pipe capacity, infrastructure criticality and drainage complaints. FNI utilized pairwise methodology for developing the prioritization system based on City priorities identified in the Comprehensive Plan but tailored to the Stormwater Utility's mission. Then, FNI reviewed all the stormwater studies developed by the City over the past 10 years and performed a data mining exercise to extract critical performance metrics for each project that aligned with the City's priorities. This information was used to develop a risk-based ranking of mitigation alternatives that can move forward to capital projects. The system was documented in a Microsoft Access database, which can be used by City staff moving forward to manage planning efforts.

More than 80 reports were reviewed to develop a list of more than 500 alternatives. These were filtered to 200 viable alternatives, which were scored and ranked. The top 50 included further evaluation, including site visits, updated cost estimates and project life-cycle assessments.

LOCATION
Fort Worth, Texas

DATES
2023

REFERENCE
Jennifer Dyke, CFM
Stormwater Program Manager
817-392-2714
jennifer.dyke@
fortworthtexas.gov

RELEVANCE
- Capital Project Prioritization

02
Project Approach

Project Approach

This planning effort represents a comprehensive assessment of the Town's stormwater needs and infrastructure. FNI's proposed approach meets the goals of the Town stated in the RFQ by following the concepts of a stormwater master plan, which provides the Town a foundation for a **sustainable long-term stormwater management program.**

FNI's approach is scalable and adaptable based on available existing information and funding so that value can be derived at any level of engagement. The approach described below, based on our experienced stormwater engineering knowledge, as well as the principles of ISO55000 and the Institute of Asset Management, is intended to provide the Town with the following:

- An initial storm system inventory in GIS,
- A baseline understanding of its storm system needs
- A prioritized 10-year CIP to address those needs
- A rate study to address maintenance, compliance and CIP needs

FNI will coordinate with stakeholders like the Great Western Railroad

Stormwater Infrastructure Data Review and Preparation

A **detailed review of existing data** is necessary to become aware of the constraints, infrastructure, land use and existing conditions of the Town. FNI will utilize available information in GIS, flood modeling, and other available data to create base files that will form the basis of the conditions assessment. FNI is adept at pulling data together, and compiling figures and databases that aid our field and desktop efforts. All data will be fed into a database for long-term planning and asset management by the Town. FNI will prepare this data for a Criticality and Conditions Assessment.

Criticality Assessment of Stormwater Infrastructure

FNI will develop a **criticality assessment** framework for the Town's stormwater infrastructure system and collaborate with the Town to identify critical assessments based on H&H modeling and other desktop analysis. FNI will create a high-level, citywide rain-on-mesh model using HEC-RAS 2D to identify areas that may have the highest risk of flooding. This initial low-resolution assessment has proven to be cost-effective since it provides quick insights into major flow characteristics and problem areas within the Town. It also serves as a good learning tool for the community to understand the issues and to provide feedback on areas of concern and share historical perspectives. The effort — combined with the Town's flood history data and known infrastructure needs — identifies initial priority areas and becomes the foundation for a more detailed model of the system once the field data becomes available. **The intent will be to build on this model during the stormwater master plan effort to develop a comprehensive understanding of the problem areas.**

FNI will then utilize the results from the criticality assessment to rank and prioritize the Town's stormwater infrastructure system. This will allow the team to identify the best approach for an intentional and focused conditions assessment. The criticality assessment will be a screening level assessment to estimate the consequence and risk of failure of infrastructure so that the most critical infrastructure gets proper emphasis and focus for conditions assessments. This criticality assessment approach is intended to maximize the Town's financial resources when obtaining information for important storm infrastructure investment decision making.

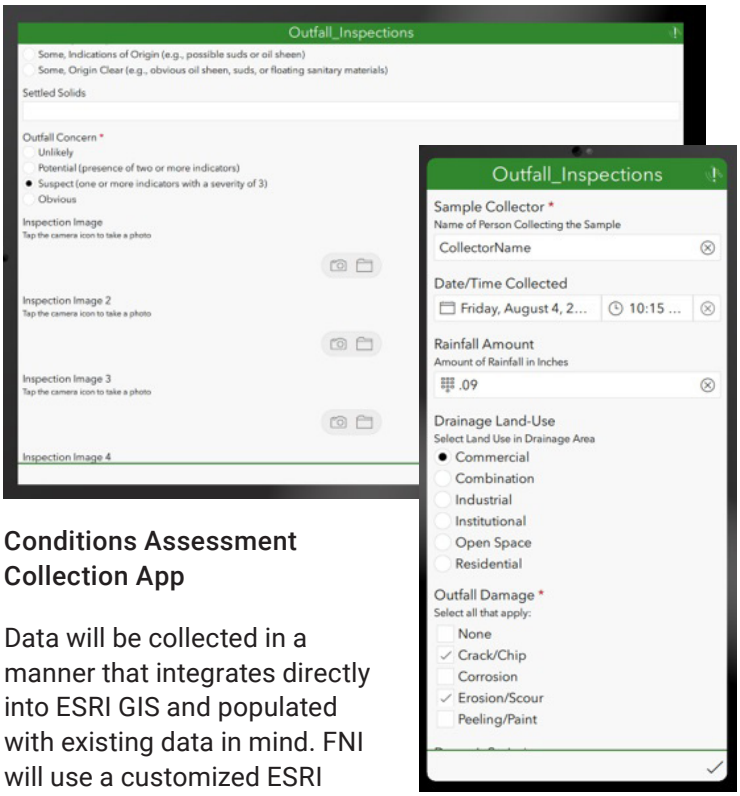
Using the results of the criticality assessment and community feedback, FNI will meet with Town staff to select the assets and approach(es) to conduct the conditions assessment. FNI strongly recommends that semi-quantitative visual inspections are used to assess the storm system. To do so, FNI will conduct a physical assessment of the linear features in the watersheds and other areas of drainage infrastructure or stormwater control measures, as applicable. **Our proposed team has performed dozens of physical storm system assessments for more than 20 municipalities**.

For any streams of interest, a geomorphic assessment would include a reach-by-reach assessment of streams to identify areas of instability and the associated probable causes, completion of a field reconnaissance form that ties GPS points, photos, observations and overall rating into one form that can be referenced. Any physical assessments of the Hillsboro Ditch may also be needed, depending on existing data.

The Hillsboro Ditch plays a critical role in existing drainage patterns.

Asset Inventory

FNI will collect, compile and review all the Town's existing storm system information to identify data gaps. An **asset inventory** can be an expensive endeavor, so focusing efforts where additional information provides the most value is recommended. Through an initial desktop criticality analysis developed with feedback from Town staff, FNI will create a targeted approach to the storm system inventory, combining a mix of desktop mapping, field observations, video inspection and other relevant approaches. We understand that the Town's older infrastructure, generally comprised of corrugated metal pipe, is of particular interest. Similarly, we would anticipate storm main lines with large contributing drainage or flood prone areas, key for H&H modeling will rate of high importance for detailed inventory.



Conditions Assessment Collection App

Data will be collected in a manner that integrates directly into ESRI GIS and populated with existing data in mind. FNI will use a customized ESRI Field Maps application and/or ArcGIS Survey123 application to collect the Town's field data and map metro-district owned assets that are identified as critical. These apps will be provided to Town staff for ongoing use. Field-collected information will be tracked in ArcGIS Online for live tracking, allowing for course corrections and adjustments on the fly to capture needed information. This data will be structured in a **GIS Dashboard** along with data from the Stormwater Master Plan to create a comprehensive map of the stormwater management program. Similarly, FNI will coordinate with Town staff to structure the data in a manner that is consistent with other Town GIS data.

Standards for management of data, workflows, ownership of and access to data, and operating procedures are critical to the successful and lasting implementation of and stormwater management program. Incorporating knowledge gained about the storm system data and existing processes and approaches through staff interviews, FNI will develop a proposed data management plan for the effective execution of the storm system inventory.

Conditions Assessment

To be efficient with funds, FNI will utilize the criticality assessment to identify areas for CCTV and field survey. Pipeline and manhole cleaning will be utilized only where necessary to complete the inspection to identify/classify defects. If deemed necessary, pipe and manhole defects will be classified following agreed upon standards with Town staff, such as NASSCO PACP. This enables the next step of using **conditions assessment** tools to prioritize the segments of the pipe and manholes that require maintenance, repair, rehabilitation or replacement. At the direction of the Town, existing inspection checklists for bridges and potential riverine assessments will be utilized to help visually identify poor rated infrastructure.

Once the conditions assessment is complete, FNI will meet with the Town to discuss the identified problem areas, expected measurable benefit, constraints (such as utilities), planning-level cost and other factors to determine which identified sites will need to be evaluated in greater detail, including obtaining field survey, for consideration in the formal prioritization phase discussed below. Coordination with external stakeholders, Hillsboro Ditch Company and Great Western Railroad, will be critical at this phase to develop criteria for project development.

Modeling Framework Development

An initial desktop analysis will use GIS modeling tools and previous reports to identify potential problem areas based on parameters, such as land use, time period of development, impervious cover, flooding issues, water quality models and other reports or documents. Rain on mesh, combined with prior drainage complaints or flooding reports will be the primary tool for identifying problem areas. We have found that developing a sound understanding of known issues and development trends substantially improves the efficiency of field efforts and helps focus the effort on areas of concern while still evaluating all reaches of the watershed with a visual inspection.

FNI would be able to begin the modeling analysis while field investigations are ongoing. We will delineate watersheds, define watershed parameters and combine the rain-on-mesh information with drainage complaints to develop prioritized watersheds for investigation.

When the results of the low resolution Town-wide modeling have been analyzed, and system configuration data is available, detailed existing conditions modeling will begin. Detailed existing conditions modeling will be prioritized based on findings from staff interviews, field reconnaissance, the 2D high level, rain-on-mesh model, and the initial problem areas that are identified.

FNI recommends the **development of a framework for modeling the entire system** first, then building specific local models for the prioritized hotspots, and provide coverage to a certain threshold of pipe size, land use of contributing drainage area or major thoroughfare crossings. FNI proposes storm drain analysis of selected storm drain pipes using software packages such as PC or EPA-SWMM. Detailed hydraulic modeling on the Hillsboro Ditch may also be necessary, for which FNI proposes HEC-RAS for hydraulics. A detailed proposed scope of work is provided on pages 18-19. All aspects of the storm drain modeling can be tailored to the Town's preferences and long-term goals for the program. This will require close coordination, through milestone review meetings, to optimize the many potential goals.

Solution Identification

Once the conditions assessments and existing conditions modeling is complete, work will focus on characterizing infrastructure condition needs and flood risks and clearly articulating objectives for potential solutions. A list of conceptual solutions to infrastructure needs and flood risks will be identified that are practical and meet the Town's objectives. Using the planning constraints previously identified, such as level-of-service, anticipated funding, utility conflicts and community initiatives, we will identify and evaluate **alternative solutions.** In a work session with stakeholders, FNI will present the alternatives and initial findings, including locations, type and sizes, preliminary elevation information, critical assets and preliminary recommendations. The selection of alternatives to carry forward into project development will be conducted collaboratively.

Project Development

Project development integrates prior work activities and defines the project in sufficient detail for efficient design and construction. All work associated with preparing the project list, along with stakeholder input, support project development activities. We will prepare cost estimates for all activities required for future implementation of flood hazard reduction and repair/rehabilitation projects, such as design, permitting, construction and Town administrative costs. Project development is foundational to an efficient capital project delivery program. FNI developed this as

a discrete step of the planning process for other clients. Its value to confirm the conceptual solution as feasible, identify and manage implementation risks, and to clearly define the project scope, budget and schedule from design through construction has been proven.

Project Prioritization

Individual projects will be entered into a GIS Dashboard summarizing all projects across the Town. FNI will work with stakeholders, including the community, to establish a **project prioritization matrix** early in the project based on risk identification and objective engineering to meet Town objectives. With community feedback, each project will have a Project Scorecard clearly highlighting the criteria and overall rank.

It is important to establish project ranking to objectively determine where the next round of resource investments should be made. Prioritization should be updated after the project development step due to changes in the scope of the project that can sometimes occur as more details become available. For example, it may be a priority to leverage state or federal funding for future projects. Thinking about this during the Project Development phase may result in multiple projects being combined and additional strategies to engage the community during the development of that project to increase the likelihood for grant funding.

10-Year CIP

Programming projects into a multiyear **capital improvements plan** is a critical and visible decision process. These capital improvements must be capable of practical implementation and provide recognized value to the Town. For projects that are too large for full implementation in one step, we will recommend a logical phasing approach.

FNI will prepare preliminary recommendations and host a work session with the Town to program the final 10-year rolling capital project plan. This plan will be based on current resources, potential outside funding sources and future capital investment forecasts.

Public and Stakeholder Engagement

In this effort, OV will work hand-in-hand with the Project Manager, Morgan Lynch, and Town staff to detail and confirm the desired engagement strategy at the onset of the process. The recommended strategy will be unique to each phase of the planning process and build upon a tiered communication approach with 1) Town staff, 2) stakeholders, and 3) the community. This series of meetings through each phase of the process can be accompanied by website updates, e-newsletters and/or online surveys as desired. Accessibility and translation or interpretation can be part of all communication, as needed. The following describes the strategic communication approach to obtain buy-in at all phases of plan development:

The first phase of engagement will focus on existing conditions and known concerns and will launch with a staff walk of key areas of concern or challenge. This is an opportunity for the team to listen and learn from staff and inform the data-gathering stage of work. During this phase, the team will also conduct a results workshop with stakeholders where the team will learn of local constraints, confirm initial findings from the conditions assessment, and identify stakeholder priorities and criteria. This problem area identification with stakeholders is essential to moving the team into detailed modeling. Another key component of this first phase of analysis will be a community education and outreach event. This initial opportunity to engage with the public will inform, confirm, and expand the team's understanding of the key issues and priority considerations.

After the first community outreach event and stormwater master plan report submittal, the team will meet with Town

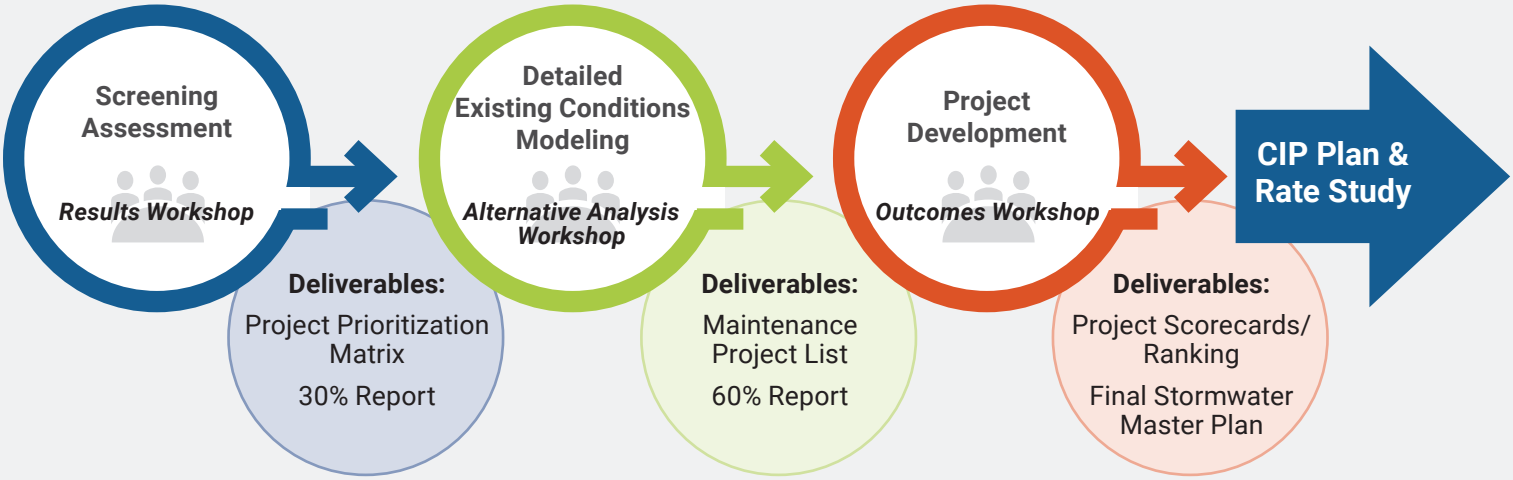
Stakeholder Success Story

OV Consulting managed a community-based resiliency planning study for stormwater management, water quality improvements and river corridor flooding in the Globeville basin. The technical evaluation and coordinated community planning effort resulted in a cohesive strategy for green and grey infrastructure improvements and recommendations for levee improvements that enable community benefits, strengthen neighborhood connectivity and unify segments of the Globeville community. Essential to success was the development of the community's understanding of the physical conditions and flood risks, and the establishment of trust in the city's team. Numerous stakeholder, community and elected official basin tours and over 50 stakeholder and community meetings were held in support of this process. **This project was awarded the 2021 Colorado Association of Stormwater and Floodplain Managers (CASFM) Grand Award for Engineering Excellence.**

staff on the refinement of priority areas and potential solutions. This internal working session and related follow-up coordination will be essential to confirm alternatives and potential solutions to be shared with stakeholders and the alternatives analysis stakeholder workshop. This stakeholder workshop is anticipated to be an informational session with stakeholders enabling feedback on direction and preferences, preferred projects, and related scoring. The outcomes of the alternatives analysis will be shared with the community at a community meeting.

During the final phase of study and plan development, the team will return to the stakeholder group to share the final study direction, recommendations, design, and key outcomes. This final phase of engagement can also include a third community meeting to share the outcomes of the plan and future strategies for success.

Stormwater Master Plan Process



Rate Study

Identification of Utility Policies and Goals

Identifying the Town's goals for its stormwater program is the first step in determining the rates necessary to fund the program. FNI will engage with the Town to discuss key policy issues and determine the framework for future changes to the stormwater utility fee rates.

Program Cost Evaluation

FNI will prepare a financial analysis of the stormwater program including the CIP developed as part of this master planning process, operations and maintenance objectives, and staffing and equipment needs. The analysis will include adjustments to account for inflation, debt service requirements, and reserve balances. FNI will work with Town staff to prioritize stormwater services to select the highest value components to fund with a Stormwater Utility (SWU). Factors to be evaluated may include: development standards; storm system inventory and analysis for maintenance and capital needs; prioritization of capital projects; current (e.g., MS4) and future regulatory compliance requirements; and opportunities to leverage SWU revenues for additional matching funding (e.g, grants, public-private partnerships).

Rate Structure Basis

Water utilities use meters to directly measure usage of the system. For stormwater systems, no comparable direct measure exists, but impervious area is the most common factor considered, as the hard surface of development generally results in an increase in runoff (quantity, rate, pollution) for the Town to manage. FNI will evaluate alternative rate structures and provide recommendations to the Town that balance administrative burden and equability. Recommendations will include creating an optimal funding strategy for the Town that balances the impacts of debt and cash financing. FNI recommends evaluating current available data, including Town electronic parcel data, recent aerial photography, planimetrics, and land use classifications for use in identifying impervious area as a means of determining each developed property's contribution to the drainage system. A standard unit of impervious area measure, typically an Equivalent Residential Unit (ERU) is recommended to be identified for the Town and is usually based on the average impervious area of a single-family residence in the Town. FNI would identify the ERUs for each developed property through the use of ESRI GIS software, available collected digital data, and machine learning algorithms.

Proposed Scope of Services

Assumptions

FNI (Freese and Nichols, Inc) understands that the Town of Johnstown (Town) desires to develop a comprehensive Stormwater Master Plan. This detailed scope of work for the Stormwater Master Plan task as outlined in the Project Approach is based on the information in the Request for Qualifications for Consulting Services to Develop a Comprehensive Stormwater Master Plan for the Town of Johnstown, Colorado (dated January 3, 2024). This is a Draft scope of work developed based upon FNI's understanding of the requirements in the RFQ. If selected, FNI recommends a final scoping discussion with the Town to finalize the scope of work that aligns to the needs of the Town and this project.

Basic Services

1. PROJECT COORDINATION AND DATA GATHERING

a. Kick-Off Meeting
   i. FNI shall prepare an agenda, organize, and prepare minutes for the Kick-Off Meeting.
   ii. The Public Engagement process shall be discussed at the Kick-Off meeting and integrated into the Project.

b. Community Engagement Workshops
   i. FNI and OV Consulting shall coordinate public engagement workshop style meetings (assume 3).

c. Coordination with Stakeholders
   i. FNI and OV Consulting shall coordinate with adjacent agencies and other stakeholders to determine the potential for mutually beneficial projects, and to verify adjacent agency stormwater improvements, whether existing or planned are memorialized in the Town of Johnstown's Stormwater Master Plan if they are determined to have any impact on the Town's current jurisdictional boundary or future growth area. This task assumes final coordination only. Stakeholder Working Group Workshops are further defined under Task 3.

d. Progress Meetings (no change from 1.e in RFQ)

e. Information Gathering (no change from 1.f in RFQ)

f. Conditions Assessment (no change from 1.g in RFQ)

g. Field Verifications (no change from 1.h in RFQ)

Deliverable: FNI will prepare a criticality assessment based on the information collected in Task 1.

2. GIS DATA REVIEW and GIS DASHBOARD DEVELOPMENT

a. FNI shall have the expertise needed to review the Town of Johnstown's existing GIS data and schema and evaluate this data for completeness. It is assumed that FNI will meet with Town staff to verify the format of the data, set up a proposed schema to be reviewed by the Town, prior to the development of any GIS deliverable.
   i. Where new layers are required, FNI shall develop GIS data using the current ESRI data models at the time of task initiation. FNI shall research and develop data for use in modeling environments where the direction of flow is associated to the lines and all verified features are topologically correct to properly represent spatial relationships.
   ii. Unique IDs will be verified, and as necessary, created, for all the features in the system for the association of any CCTV information and other available data, such as material type, age, inverts, etc.
   iii. Information gathered from field surveys is to be used to update the existing GIS data. This will include all elevation information for points, lines and surface structures along with key features and locations such as detention areas.
   iv. Information available at the notice to proceed shall be used to develop the GIS data which may include data from additional sources. Data from the modeling and system assessments will be input into the GIS layers for conditions, criticality, modeled information, and overall assessments. Any as-builts or plans used in the data development will be attached to the features in the GIS. The data will be developed in a manner that provides a straightforward methodology to update the information as conditions in the system change or features are replaced or repaired. Documentation is to be developed by FNI for the GIS date related to the ongoing maintenance needs, related table associations, and data development methodologies.

b. FNI shall conduct GIS updates to include existing facilities. FNI shall develop additional application data specific to the storm system information. This will have layers with attribute information for the assets, soils, drainage areas, and other related features. The application will have preconfigured fields for parameters like asset type, material, date built, and ownership. It will also provide the ability to create custom fields.

c. FNI shall incorporate new stormwater capital projects identified as part of the Capital Improvement Plan preparation into a comprehensive GIS platform for integration to the Town's system.

Deliverables: A GIS-compatible dashboard of existing and future storm system, with components uniquely identified and networked in a comprehensive manner for incorporation into the Town's existing GIS system.

3. STORMWATER MASTER PLAN

a. Screening Assessment and Review - This task includes the development of screening assessment and a review of current stormwater criteria, standards, and specifications.
   i. Screening Assessment (Rain on Mesh Analysis) – Provide rapid assessment desktop analysis for the Town of Johnstown and Extra-Territorial Jurisdiction (ETJ) as a screening tool to identify flooding hot spots and ponding locations. FNI will develop a rain on mesh analysis in HEC-RAS 2D. Detailed hydrology will not be performed and storm drains will not be represented in the model. The purpose of the model is a screening tool to identify potential problem areas where flooding is leaving the ROW.
   Deliverables: FNI will present the screening results to the Town to discuss potential problem areas and identify areas for additional field survey and conditions assessments.
   ii. Methodology Review – Review of the current Draft Storm Drain Design Standards and Town Specifications. FNI will conduct a meeting with the Town to discuss review comments and any recommended suggestions to the modeling approach methodology. **Deliverables:** The results of the review will be documented in a Technical Memorandum to use as the basis for the modeling approach.
   iii. Results Workshop – FNI and OV Consulting will meet with the Town and stakeholders to discuss the problem areas and identify additional information essential to project development, including historical development trends, constraints such as stakeholder criteria, utilities or easements, to understand the feasibility of potential alternatives. This information will be included in the GIS dashboard (completed under a separate task), outreach graphics to further learn from the community about problem areas. Stakeholders will discuss prioritization criteria based on objective engineering and risk identification.
   Deliverables: The results of the workshop will be to identify and prioritize problem areas for additional screening to confirm project feasibility. In addition, results of the workshop will be included on infographics for community outreach to educate and gather information on the problems areas and insights on community values.
   iv. Stormwater Master Plan Report – 30% – FNI will complete a draft narrative to be reviewed and approved by the Town that includes the results of the data collection and conditions assessment tasks (completed under separate tasks), documentation of the methodology approach, summary of the screening assessment and documentation of the project prioritization matrix, it is assumed the project prioritization matrix will be the foundation for the Project Scorecard mentioned in Task 3b. The narrative will provide problem area locations and identified constraints to be used in future tasks for more detailed modeling and project development.
   Deliverable: Electronic draft and final 30% narrative of the Stormwater Master Plan.

b. Existing Conditions Modeling - This task includes the development of new hydrologic and hydraulic modes for the existing (referred to as historic in the RFP) and fully developed conditions for the jurisdictional limit for the Town of Johnstown. Incrementally building on the screening assessment modeling will help develop an understanding of the problem area. It is assumed that the previous HEC-RAS modeling for the Hillsboro Ditch will be utilized as part of the Existing Conditions Analysis.
   i. Local Systems –FNI will develop EPA-SWMM (PC-SWMM if approved by the Town) for each of the study areas identified after the screening and conditions assessment is complete. FNI will work with the Town to identify a maximum number of areas for more detailed modeling and alternative analysis. It is assumed 6-8 areas will need to be further evaluated. FNI assumes the models will be developed based on the following methodology:
   (ii) Data sources – the SWMM model will be constructed from the information compiled in the GIS Dashboard, as-built records and LiDAR information.
   (iii) Hydrology
      (1) Delineate contributing watershed sub-basins to the storm drain system in sufficient detail to describe the behavior of the system.
      (2) All existing inlet capacity will be accounted for in the model though each inlet may not be individually modeled. It may be necessary to group or lump inlets at intersections to limit the detail in the model.
      (3) Calculations will be based on future land use conditions using the SCS Curve Number method and SWMM routing. It is assumed land use conditions will be provided by the Town.
      (4) Precipitation inputs will be based on NOAA Atlas 14. Precipitation values that reflect climate change projections based on the published values by the Colorado Water Conservation Board may be used if deemed necessary.
      (5) All hydrologic calculations will be performed with PC or EPA SWMM
   (iv) Hydraulics
      (1) Storm drain network will be constructed from the information compiled in the GIS Dashboard, as-built record data, and field survey. Plan information can also be considered, such things as major throughfare plans may help inform future storm drain locations.
      (2) Some laterals or inlet leads may be omitted for simplicity.
      (3) 2D overland flow calculations will be conducted where necessary. Portions of the model may be modeled using 1D overland flow links.

(4) All hydraulic calculations will be performed within HECRAS 2D or SWMM.

(v) Flood Hazard Identification - Identify and summarize the flood risk of local systems including:

(1) Structures at risk of flooding. Flooding potential will be based on approximation of finished flood elevation based on lowest adjacent grade elevation from the terrain.

(2) Cause and frequency of flooding.

(3) Level of protection provided by the drainage system.

(4) Inundation mapping resulting from 2D Models.

Deliverable: The results of the Existing Conditions Modeling will inform the range of alternatives to be considered to mitigate the flood risk. Digital models and figures will be developed and included for review in the 60% Stormwater Master Plan Report.

vi. Potential Maintenance Project List –Based on the findings of the conditions assessment and asset inventory, FNI will develop a list of maintenance projects that do not require hydrologic or hydraulic modeling but will provide substantial benefit of the performance of the drainage system, for example replace CMP with RCP piping or recommendations to increase infiltration through the use of Stormwater Control Measures.

(1) Projects will be based on data collection performed in Task 1 and the conditions assessment.

(2) For each project, FNI will identify the extents graphically.

(3) For each project, FNI will develop a budgetary cost estimate for the proposed improvements.

(4) It is assumed a maximum of fifteen (15) projects will be identified.

Deliverable: Graphical extents and cost estimate for each small project identified.

vii. Local Systems Alternative Project Development – FNI will develop concept alternatives to mitigate flood risk. It is assumed two alternatives for each project area will be considered. These alternatives could potentially include detention, storm drain/inlet, and open channel/surface drainage improvements. Each alternative will have an approximate ranking based on the Project Prioritization Matrix and a planning level cost estimate. The alternative will be graphic in nature to communicate to the community and stakeholders the potential solution.

Deliverable: Exhibits showing the location for flood mitigation alternatives, table providing approximate rankings and cost estimate.

viii. Alternative Analysis Workshop – FNI and OV Consulting will present results of the Existing Conditions Modeling, Small Project List and Alternative Development to the Town and external stakeholders. The Existing Conditions Modeling will provide the foundation for understanding the cause of the problem area and the resulting Alternative Project Development. The stakeholders will provide feedback regarding alternative feasibility and identify the preferred alternative for refinement in the Project Development task and to be included in the 10-year CIP Plan.

Deliverable: The selected alternatives will be documented and used for Project Development as well as used for community outreach.

ix. Stormwater Master Plan Report – 60% –FNI will complete a draft narrative to be reviewed and approved by the City that includes the results of existing conditions modeling and alternative project development. This deliverable will provide a clear and concise understanding of the problem areas and preferred alternative to be used in future tasks for more detailed modeling and project development.

Deliverable: Electronic draft and final 60% narrative of the Stormwater Master Plan and associated models and GIS data.

c. Project Development - This task includes detailed assessment of improvement alternatives to address flood prone areas or poorly rated stormwater infrastructure identified in Task 2. Based on the results of the detailed hydrologic and hydraulic analysis, FNI will further refine measures to reduce flood risk within the study areas.

i. Project Development Detailed Modeling – Up to ten (10) system-wide alternatives previously identified will be analyzed with more detailed modeling. FNI will use any proposed improvements previously documented, update to current criteria, and make other adjustments as deemed necessary by FNI and the Town.

Deliverables: For each alternative, the following will be developed:

(ii) Detailed hydraulic model; conceptual graphics and schematics to communicate the concept

(iii) Identified projects shall have a one page "Project Scorecard" which describes the project in detail and includes the ranking number from the matrix. Development of digital GIS Dashboard (GIS Dashboard is completed under a separate task) information depicting proposed infrastructure and cost estimate

iv. Stormwater Master Plan Report – 90% – FNI will complete a draft narrative to be reviewed and approved by the Town that includes the results of Project Development Modeling. This deliverable will provide a clear and concise understanding of the problem areas and preferred alternative to be used in future tasks for more detailed modeling and project development.

Deliverable: Electronic draft and final 90% narrative of the Stormwater Master Plan. Final recommendations from the Stormwater Master plan will be presented to the stakeholders and community.

v. Stormwater Master Plan Report – Final – FNI will incorporate all comments from the Town, community, and stakeholders in a final Stormwater Master Plan narrative.

Deliverable: Electronic submittal and ten (10) hard copies professionally bound of the Stormwater Master Plan at 100% phase. Hydrologic and Hydraulic Models with digital copies of input and output files, analyzing existing and proposed improvements and stormwater systems.

4. 10-YEAR CAPITAL IMPROVEMENT PLAN

a. FNI shall summarize identified system deficiencies, prepare detailed planning level cost estimates for each identified deficiency upgrade, prepare a prioritization matrix based on project ranking scorecards, and spread costs over a 10-year period.

i. Identify Capital Improvement Projects (CIP) needs based on a ten (10) year time frame and recommend projects based on two (2) year increments.

ii. Verification of prioritized list of CIP projects shall provide justification for the areas of the highest concern and be ranked using a comprehensive ranking matrix based on cost benefit analysis and its impact on Level of Service, risk of flooding, resiliency enhancements, water quality and public support. It is anticipated that the "Project Scorecard" will be included in the GIS Dashboard developed by FNI for future capital improvement projects.

iii. Recommendations for changes or modifications should be developed for consideration for stormwater projects and programs over the next ten (10) years and include sustainable design standards/approach where feasible. FNI will meet with the Town to discuss CIP strategy and develop a cohesive CIP plan.

iv. FNI will evaluate and provide recommendation of alternative funding options such as grants, loans, and/or public-private partnership to supplement funding of future CIP projects. This information shall be summarized and shall include a summary of each including funding entity, partnering potential, grant and/or loan cycles, match funding requirements and a summary of what type of projects are preferred/eligible.

Deliverable: Prioritization of capital improvements project based on level of service, risk of flooding, resiliency, water quality/quantity and public support, summarized and presented using a comprehensive matrix with project scorecards included in GIS. The CIP shall be presented as a stand-alone document.

5. RATE STUDY

a. FNI will conduct a financial analysis of the projected Stormwater Capital Improvement Plan expenditures developed during the master planning process. FNI will meet one (1) time with City staff in a virtual meeting to obtain historical costs and revenues, identify planned operations expenditures, and establish projected financial factors for the planning horizon. A recommended financial strategy will be developed with financial projections of existing revenue sources, expenditures for capital and operations, and financial factors including inflation, interest rates, growth rates, as well as cash reserve and debt service coverage targets. The financial strategy will identify a recommended approach to fund operations and CIP identified through this Stormwater Master Plan over a 10-year period, considering a combination of existing revenue sources and grants.

Deliverable: A 10-year financial planning strategy based on the financial analysis/ rate study per the outlined scope of services herein.

Additional Services

Any services performed by FNI that are not included in the Basic Services described above are Additional Services. Additional Services to be performed by FNI, if authorized by Client, are described as follows:

a. Emergency design services for storm water infrastructure that may be in failing condition.

b. Executive Summary for Stormwater Master Plan report or outreach materials for the community in the form of graphics or mailings for project communication.

c. Additional CCTV or field survey beyond what is described under Basic Services.

d. Geomorphic assessments of existing channels.

e. Structural bridge inspections.

f. Website support, e-newsletters, and online surveys for community and stakeholder outreach.

Time of Completion

FNI is authorized to commence work on the Project upon execution of this Agreement and agrees to complete the services in 18 months following the Notice to Proceed.

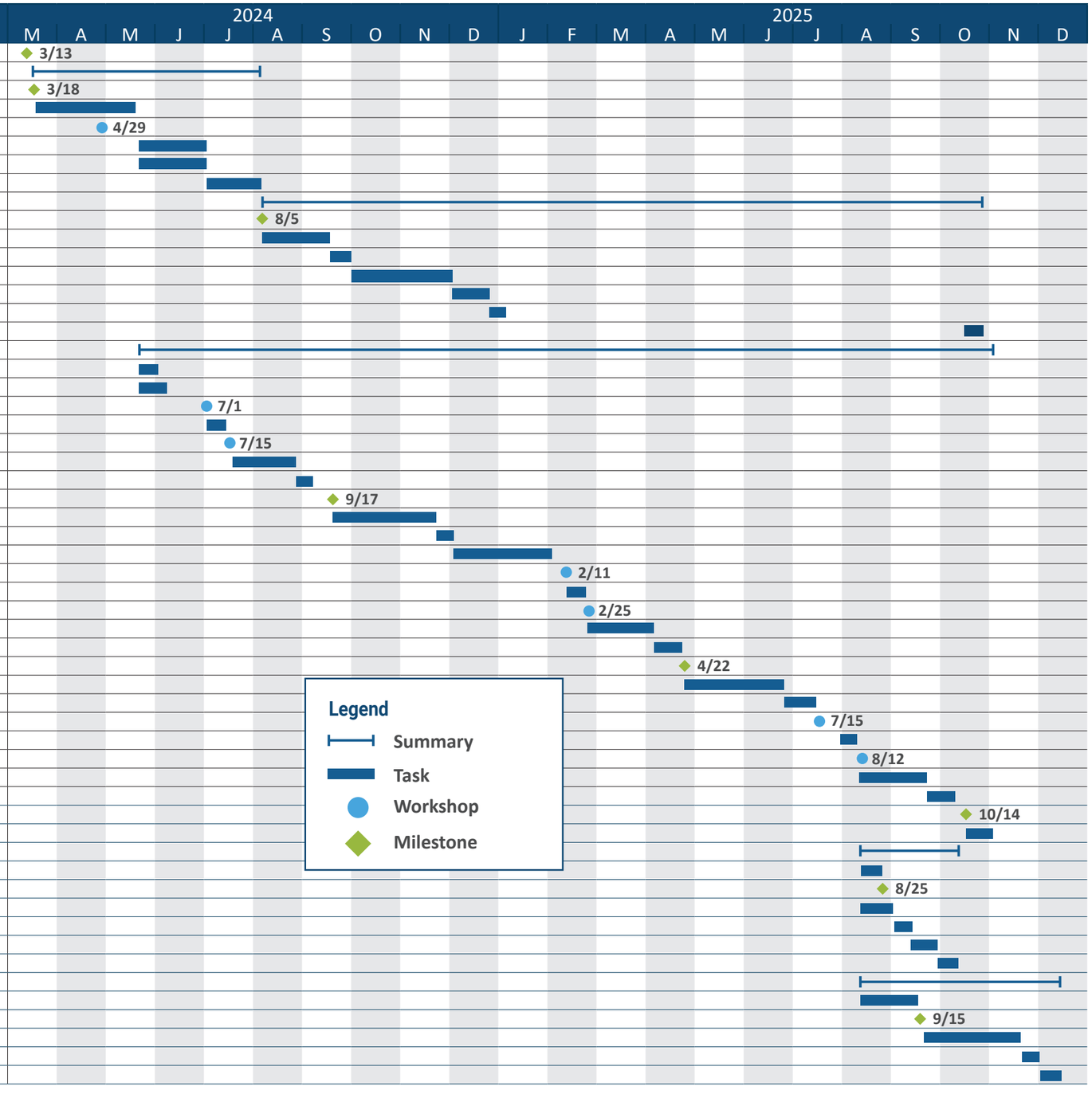
If FNI's services are delayed through no fault of FNI, FNI shall be entitled to adjust contract schedule consistent with the number of days of delay. These delays may include but are not limited to delays in client or regulatory reviews, delays on the flow of information to be provided to FNI, governmental approvals, etc. These delays may result in an adjustment to compensation as outlined on the face of this Agreement and in Attachment CO.

03

Schedule of Services

Schedule of Services

Task Name	Duration	Start	Finish
Notice to Proceed	**0 days**	**03/13/24**	**03/13/24**
Data Gathering	**100 days**	**03/18/24**	**08/05/24**
Kickoff - Meeting with Town	0 days	03/18/24	03/18/24
Data Collection/ Review	45 days	03/19/24	05/20/24
Town Staff Walkshop/Site Visit	0 days	04/29/24	04/29/24
Desktop Conditions Assessment	30 days	05/21/24	07/01/24
Desktop Criticality Assessment	30 days	05/21/24	07/01/24
Field Inspections/Verifications	25 days	07/02/24	08/05/24
GIS Data Review and GIS Dashboard	**320 days**	**08/05/24**	**10/27/25**
GIS Dashboard - Meeting with Town	0 days	08/05/24	08/05/24
GIS Schema Development	30 days	08/06/24	09/16/24
GIS Schema Review	10 days	09/17/24	09/30/24
Develop GIS Data	45 days	10/01/24	12/02/24
GIS Development with Field Information	15 days	12/03/24	12/23/24
GIS Dashboard - Town Review	10 days	12/24/24	01/06/25
Finalize GIS Dashboard with CIP Plan	10 days	10/14/25	10/27/25
Stormwater Master Plan	**380 days**	**05/21/24**	**11/03/25**
Screen Assessment (Rain-on-Mesh)	10 days	05/21/24	06/03/24
Methodology Review	15 days	05/21/24	06/10/24
Results Review - Stakeholder Workshop (#1)	0 days	07/01/24	07/01/24
Incorporate Stakeholder Feedback	10 days	07/02/24	07/15/24
Community Engagement Workshop (#1)	0 days	07/15/24	07/15/24
Stormwater Master Plan Report - 30%	30 days	07/16/24	08/26/24
Town Review	10 days	08/27/24	09/09/24
Comment Review Meeting - Town	0 days	09/17/24	09/17/24
Existing Conditions Model	45 days	09/17/24	11/18/24
Develop Maintenance Project List	10 days	11/19/24	12/02/24
Local Systems Alternative Development	45 days	12/03/24	02/03/25
Alternative Review - Stakeholder Workshop (#2)	0 days	02/11/25	02/11/25
Incorporate Stakeholder Feedback	10 days	02/11/25	02/24/25
Community Engagement Workshop (#2)	0 days	02/25/25	02/25/25
Stormwater Master Plan Report - 60%	30 days	02/25/25	04/07/25
Town Review	10 days	04/08/25	04/21/25
Comment Review Meeting - Town	0 days	04/22/25	04/22/25
Project Development Modeling	45 days	04/22/25	06/23/25
OPCC/ Project Scorecard	15 days	06/24/25	07/14/25
Project Review - Stakeholder Workshop (#3)	0 days	07/15/25	07/15/25
Incorporate Stakeholder Feedback	10 days	07/29/25	08/11/25
Community Engagement Workshop (#3)	0 days	08/12/25	08/12/25
Stormwater Master Plan Report - 90%	30 days	08/12/25	09/22/25
Town Review	10 days	09/23/25	10/06/25
Comment Review Meeting - Town	0 days	10/14/25	10/14/25
Final Stormwater Master Plan	15 days	10/14/25	11/03/25
10-Year Capital Improvement Plan	**45 days**	**08/12/25**	**10/13/25**
Develop CIP Plan	10 days	08/12/25	08/25/25
Verify CIP Plan - Town Meeting	0 days	08/25/25	08/25/25
Research Funding Alternatives	15 days	08/12/25	09/01/25
Submit Draft CIP Funding Strategy	10 days	09/02/25	09/15/25
Town Review	10 days	09/16/25	09/29/25
Finalize CIP Funding Strategy	10 days	09/30/25	10/13/25
Rate Study	**90 days**	**08/12/25**	**12/15/25**
Data Collection	25 days	08/12/25	09/15/25
Data Review - Town Meeting	0 days	09/15/25	09/15/25
Draft Financial Planning Strategy	45 days	09/16/25	11/17/25
Town Review	10 days	11/18/25	12/01/25
Final Funding Planning Strategy	10 days	12/02/25	12/15/25



04

Project Management and Cost Controls

Project Management and Cost Controls

Effective cost, schedule, and quality control begins with effective project management. To control costs, deliver quality work and maintain the schedule the project should be:

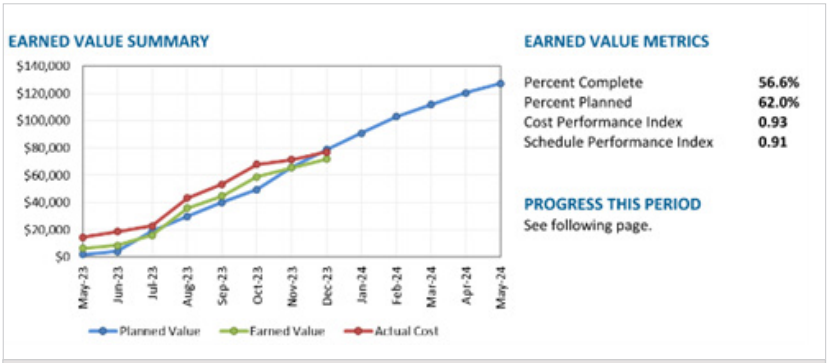
- Scoped and budgeted correctly
- Qualified team needs to be mobilized efficiently
- Clear roles and responsibilities need to be defined
- Quality needs to be checked and verified
- Communication should be streamlined
- Tools and processes need to be in place to provide appropriate oversight

Our project management approach is modeled after industry proven processes of initiating, planning, executing, monitoring and controlling, and closing. This will allow us to verify the project meets the stated objectives, the deliverables are submitted on-time, within budget and they meet the Town's quality standards. FNI's approach to how these principles have been customized and adapted for the Town is outlined below.

Project Management Approach

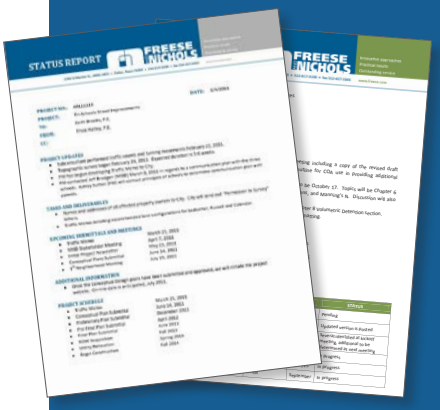
INITIATING

After project award, our **Project Manager Morgan Lynch** will coordinate with the Town to develop the scope and budget for the stormwater master plan.



FNI uses Earned Value principles to monitor and control cost and schedule. Custom reports are provided to the client to streamline reporting requirements. Additionally, these tools allow FNI to identify potential issues early to allow for course correction measures. The image depicts an example of our SARA CTP FFRD pilot study, where initial costs were above plan. The project manager swiftly adjusted the composition of the team, allowing costs to trend back towards the plan over time. The project is now forecasted to be on budget.

FNI uses an online contract review system, referred to as OLCR, to facilitate reviews of contract language, scope, schedule, and budget to verify the appropriate personnel review this information prior to contract execution. It is a requirement that our **Senior Advisor Chris Johnson** reviews the scope for technical accuracy and completeness during our OLCR process. This is the first step in our risk management process to align FNI's understanding with the Town's expectations thus reducing the potential for contract amendments. Additionally, during this phase of the project, the Senior Advisors review the scope and confirm qualified team members are assigned and available to support the project.



One-Page Project Reports

FNI has developed a standard one-page reporting procedure that can be used for both internal project team communication and regular project updates for the Town. Our One-Page Report is a snapshot view of the project, allowing project managers to be alerted to possible issues and delays, and to keep the Town informed about the project schedule and budget.

Personal Communication

Face-to-face meetings and conversations are imperative in building and maintaining trust in relationships and in helping solve problems. FNI staff will periodically meet with the Town to discuss project progress, including whether the project is on schedule, the Town's needs are being properly addressed, and the product complies with the project's intent.

PLANNING

Our **Project Manager Morgan Lynch** will develop a Project Management Plan (PMP) and a Communications Plan. The PMP will outline the schedule, project baseline, assign roles and responsibilities of the team, and document potential risks and mitigation measures. The PMP serves as the roadmap for how the team will meet schedule expectations, within the established budget, by detailing how tasks are delegated, documenting task-level budgets, and outlining internal milestones.

The Communication Plan will outline communication pathways within the team and our subconsultant teams to set expectations for clear responsive and proactive coordination and communication. Morgan will serve as the single point-of-contact with Town staff and will prepare and facilitate the kickoff meeting to discuss communication cadence, invoice format and expectations and review the risk register. Morgan will closely manage the workload of team members and confirm the Town's schedule expectations are met.

Outlining clear roles and responsibilities, documenting communication pathways, mapping out internal deadlines, and proactively managing risks to the schedule and budget in a robust PMP and Communications Plan is the first step to controlling cost.

EXECUTING

Morgan will coordinate project activities with the team and subconsultants in compliance with the PMP, Communications Plan and Quality Control Plan (QCP). She will also provide technical direction to the team and verify team members are adhering to the Quality Control Plan.

MONITORING AND CONTROLLING

FNI will maintain close coordination with the Town through regular team meetings with stakeholders and Town staff. We will notify the Town's Project Manager immediately if something requires attention and will provide monthly status reports with updates on project schedules, activities and coordination items to stay on schedule. The team will also track every project decision via a decision log for incorporation into deliverables.

Morgan will be responsible for monitoring and controlling scope, costs, schedule and risks; delivering monthly progress reports; facilitating project coordination meetings and submitting accurate invoices. She will implement earned-value principles to effectively control costs and schedule. During project planning, Morgan will prepare a detailed schedule that will be baselined upon the Town's approval. Each month, she will prepare the estimate to complete (ETC) and project percent complete, allowing us to calculate cost and schedule variance, cost and schedule performance indices (CPI and SPI) and estimate at completion (EAC). Establishing a narrow threshold for the CPI and SPI indices will permit early detection of project risks and allow Morgan to mitigate risks early, increasing the probability that the project will not exceed the budgets set.

CLOSING

Prior to submitting our final invoice, Morgan will schedule a project close-out meeting with the Town to verify all contract requirements have been met and that the project met the stated objectives.

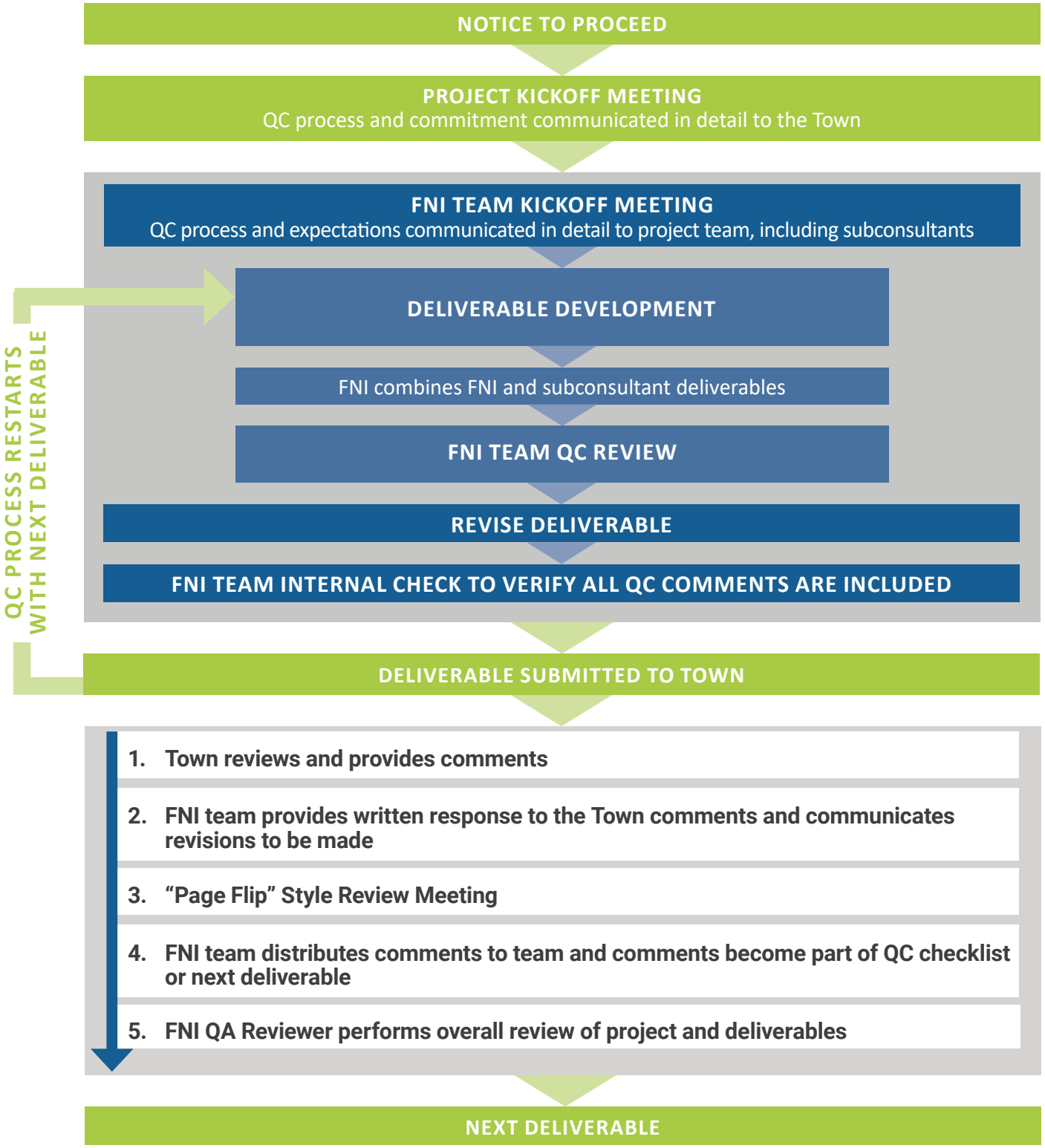
Continuous Improvement is Key to Delivering Quality

For more than two decades, FNI has set a course focused on **continuous improvement**. It is a key tenet to delivering quality in all that we do. Continuous improvement requires methodical planning, measuring, analyzing and refining, resulting in a repeatable systematic approach. It instills accountability and transparency, encouraging self-improvement in the workplace.

Our commitment to quality and continuous improvement was validated when FNI became the first engineering/architecture firm to receive the **Malcolm Baldrige National Quality Award**, the highest level of recognition for performance excellence in the United States. The Baldrige experience still drives our commitment to delivering quality service today.

QA/QC APPROACH

A robust and detailed QA/QC program at the project level verifies quality standards are consistently met for each contract assignment, resulting in quality deliverables for the Town. **Quality Control Lead Scott Hubley** will prepare a formal QC Plan for the Stormwater Master Plan, detailing the documents to be checked or reviewed, QC schedules and responsible personnel. Our systematic QA process confirms an effective QC approach is followed and project objectives are carried out. QC reviews confirm the technical accuracy of project components.



05 Availability to Perform Work

Availability to Perform Work

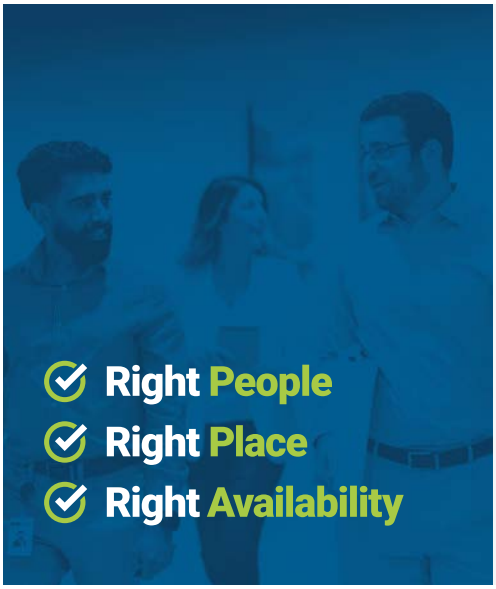
FNI's current workload will not hinder our ability or commitment to provide the Town with the same quality and timely service as received by all of our clients.

FNI forecasts and programs resources in our proprietary eResource software to provide the design support hours over the life of the project to reserve and assign the appropriate resources and resource levels to maintain project schedule. **Morgan Lynch** will maintain a detailed project schedule in MS Project so that if deviations occur, they can be communicated and corrected in real time before the schedule becomes unrecoverable.

Should additional resources become required throughout the course of providing services, or should the project schedule become accelerated, **FNI can draw from the expertise and resources of our entire firm** to help meet your needs. We will commit the resources necessary to get the job done.

Our proposed team members are 100% available for the hours budgeted for this project. Availability shown on each team member's resume represents their project workload during the course of this project.

Morgan Lynch is our dedicated PM and her current and projected workload allow her to be available to meet all project needs throughout the course of the project. Specialty staff that are dedicated to QA/QC and tasks outside the Stormwater Master Plan will be available as needed throughout the project. FNI has confirmed the availability of our subs to meet the time commitment that is estimated for this project.



Choosing a Project Team

We've put forth the advance-planning effort to verify we have the **right team members**, in the **right place**, with the **right availability** to meet client goals. Several factors influenced this choice, including individual experience and history of working together on common projects.

Our chosen team combines decades of experience in a wide range of disciplines. This complementary blend of team member expertise in their various areas of specialization results in a solid, well-rounded team, which ultimately benefits the client.

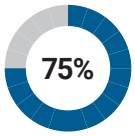
Beyond the proposed team, FNI has access to **1,200+ employees firmwide** to assist, as necessary. As a firm focused on client service, we will commit the resources required to get the job done.

A01

Appendix 1: Resumes

David Bennett PE, Assoc. DBIA

Principal-in-Charge/Conditions Assessment



Availability

David Bennett is a Colorado-based Vice President/Principal who fully understands the budget and customer service needs of municipal clients.

David has a wide range of municipal and water district experience in water resources projects serving in a variety of roles, including Principal-in-Charge, Client Representative, Senior Advisor, QA/QC and Project Manager. His breadth of experience includes hydraulic structures, water/wastewater conditions assessment and rehabilitation, dams/levees, erosion repair, stormwater, site grading and hydraulic modeling. As an FNI Principal, David represents all FNI projects in the Colorado region.

EXPERIENCE

24 years

EDUCATION

BS, Civil Engineering, The University of Texas at Arlington

REGISTRATIONS

Professional Engineer, CO #PE.0062666

Certified Design-Build Professional, Assoc DBIA, Design-Build Institute of America, #60-3432-539102

PROFESSIONAL AFFILIATIONS

American Water Works Association, Member #00623277

Water Environment Association of Texas, State-Level Secretary

Water Environment Federation, Collection Systems Committee Member, Conditions Assessment

RELEVANT PROJECT EXPERIENCE

Central Basin Planning Hydraulic Model Update | San Antonio Water System (SAWS) | Principal-in-Charge
FNI provided basin-wide planning, alternative analyses, preliminary design development for condition and capacity constraints, and remedial measure development for 28 constraint areas and more than 164 miles of small- and large-diameter wastewater pipeline in poor condition to support SAWS in complying with its 2013 Consent Decree.

River Outfall Pipeline, Project 2A | San Antonio River Authority (SARA) | Project Manager
FNI provided the conditions assessment and design of 4,000 LF of 48-inch CIPP sewer main rehabilitation by Cured-In-Place Pipe (CIPP). CIPP rehabilitation was chosen to reduce conflicts, costs and disturbances for the 48-inch pipeline through a residential neighborhood. A detailed by-pass pumping plan and traffic/lane closure plan was developed to facilitate construction phasing.

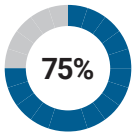
Ogden Lane Wastewater Conditions Assessment and Pipe Bursting | City of Alamo Heights, TX | Senior Advisor
FNI provided design services to replace an existing 8- and 10-inch clay and concrete sanitary sewer line using trenchless technology and pipe bursting, including the rehabilitation of eight existing 24-inch manholes.

Cooperating Technical Provider Conditional Letter of Map Revision/ Letter of Map Revision Delegation Support | SARA | Client Representative
FNI is evaluating conditional and final map revision requests for streams in the San Antonio River Authority's jurisdiction.

Brooks Development Authority Green Stormwater Infrastructure Placement Guidebook | SARA | Principal-in-Charge
FNI developed a green stormwater infrastructure placement guidebook for the Brooks Development master-planned community in San Antonio. The document serves as a guide for the implementation of nature-based flood solutions that reduce flood risk, improve water quality, reduce heat island effects, increase groundwater recharge, and provide human health benefits within the Brooks Development site.

Morgan Lynch PE, CFM

Project Manager



Availability

Morgan Lynch is FNI's Colorado-based Stormwater Leader and has direct experience in all stages of stormwater management.

She provides diverse managerial and technical expertise for a variety of stormwater projects, including master planning, floodplain mapping and review, storm drainage infrastructure, criteria development, and channel design in an urbanized setting. Utilizing her diverse background in both the public and private sectors, Morgan has become an efficient project manager and prioritizes client needs when solving complex problems. She is proficient in EPA SWMM, HEC-RAS, HEC-HMS and FLO-2D.

EXPERIENCE

21 years

EDUCATION

BS, Civil Engineering, Colorado State University

REGISTRATIONS

Professional Engineer, CO #PE.0044653

Certified Floodplain Manager, Association of State Floodplain Managers, #0789-05N

PROFESSIONAL AFFILIATIONS

Previous Board Member of the Metro South Platte River Roundtable,

Member Municipal and Industrial Sub-Committee Colorado Association of Stormwater and Floodplain Managers (CASFM), Past Chair, 2021-2023; Chair, 2019-2021

CASFM Flood Technical Assistance Partnership, Committee Chair, 2021-2023

Water Education Colorado Water Leaders Program, Completed 2020

Colorado Riparian Association, Member

**Experience prior to FNI*

RELEVANT PROJECT EXPERIENCE

Floodplain Mapping Program* | Mile High Flood District (MHFD) | Watershed Manager
Co-authored the Mile High Flood District's Flood Hazard Area Delineation Guidelines (FHAD) update in 2017 and 2022. Managed and provided technical review for consultant teams to complete multiple major drainageway plans for various local governments, often running concurrently, including hydrology development, FHAD mapping, alternative analysis and conceptual plan design. With multiple stakeholders, Morgan would facilitate meetings to understand the different goals and develop a product that would be useful for future flood mitigation.

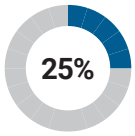
Maintenance Eligibility Program Review* | Sand Creek Watershed, MHFD | Watershed Manager
Responsible for the technical review of all development projects located in the Sand Creek Watershed, including Arapahoe, Adams, and Denver Counties. Specifically, development plans that would impact major drainageways or were identified in local major drainageway plans. Plans were reviewed for technical accuracy and conformance with local criteria. Follow-up meetings with the development team to review comments were conducted at the request of the local municipality.

Urban Storm Drainage Criteria Manual Volume 3 Chapter 4 Update* | MHFD | Assistant Project Manager
Morgan managed the first draft of the update to Volume 3 Chapter 4, Stormwater Control Measures. This project updated the chapter currently covering the design and maintenance of stormwater control measures. The effort included initial outreach and education to a variety of stakeholders, including local governments, to share information regarding the update and how stakeholders could participate. A series of meetings for each fact sheet was held to gather information, comments and practices used across the State to help inform the update. Drafts of each fact sheet were made available for stakeholder comment along with an instructional video.

City of Irving Stormwater Master Plan | City of Irving, TX | Assistant Project Manager
FNI is assisting the City to develop a stormwater master plan that includes an update to the current drainage criteria, conditions assessment, project development, CIP and funding strategy.

Scott Hubley PE, CFM

Quality Control



Availability

Scott Hubley's background in H&H modeling, including open-channel studies, closed-system analyses, flood damage analyses, FEMA map revisions and watershed studies offers owners a technically sound, on-target look at their existing and future stormwater systems.

Scott has been involved in the design and construction of $100 million in stormwater improvements. He is also experienced in advanced modeling techniques, including dynamic storm drain analysis, unsteady open-channel modeling and 2D representation of overland flow. He is proficient in HEC-RAS, HEC-HMS, ArcGIS, InfoWorks SD and EPA SWMM.

EXPERIENCE

18 years

EDUCATION

MEng, Civil Engineering, Texas A&M University

BS, Civil Engineering, Texas A&M University

REGISTRATIONS

Professional Engineer, CO #PE.0063698

Certified Floodplain Manager, #1499-08N

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers, Member

Texas Floodplain Management Association, Treasurer

Texas Society of Professional Engineers, Member

American Council of Engineering Companies, Board Member, Tarrant County Chapter

RELEVANT PROJECT EXPERIENCE

City of Irving Stormwater Master Plan | City of Irving, TX | Senior Advisor
FNI is assisting the City to develop a stormwater master plan that includes a drainage criteria/design manual, funding strategy and stormwater infrastructure inventory and conditions assessment.

Stormwater Master Plan, Ordinance and Design Manual Update | City of Wichita Falls, TX | Project Manager
FNI performed an update to the City's Drainage Master Plan, including revisions to the drainage manual and ordinance documents, and completed need-area screening, a detailed study of 15 need areas and CIP development.

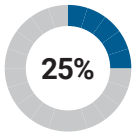
Stormwater Master Plan | City of Lubbock, TX | QA/QC
As a subconsultant, FNI performed a review and update of the City's entire stormwater program and led the update of the Drainage Criteria Manual. Services included benchmarking similar communities, preparing proposed updates to technical guidelines and governing ordinances, and leading a review of the proposed updates with a technical stakeholder group.

Stormwater Master Plan | City of Terrell, TX | Senior Advisor
FNI updated a 1980s-era drainage master plan to serve the city's high-growth and recently annexed areas. Included an assessment of existing infrastructure prioritized CIP and funding assessment, as well as H&H modeling, GIS inventory and Best Management Practices review of City's criteria. The detailed analysis included both urban and riverine flooding.

Comprehensive Storm Drainage System Assessment (CSDSA) | City of Dallas, TX | Senior Advisor
FNI is performing a comprehensive storm drainage system assessment, which includes a review of the existing organizational structure, current operational business processes, asset inventory, conditions assessments, modeling of priority flooding areas, recommending solutions and refining the capital projects planning process. Based on the findings, FNI will provide recommendations to maximize service delivery and protect existing assets.

Chris Johnson PE*, CFM, IAM

Senior Advisor



Availability

Chris Johnson served as the City of Fort Worth's Stormwater Program Manager, overseeing the City's $40 million per year drainage utility. He will bring his first-hand municipal experience to advise the team on developing a master plan that is technically sound, affordable and acceptable to the community.

Chris is one of FNI's most experienced project managers for the evaluation, development and implementation of strategically focused, business-case stormwater master plans and studies. His experience in addressing customer service issues, funding challenges and infrastructure rehabilitation and development will provide Town staff with a guide for navigating the identification, prioritization and implementation of a stormwater CIP. Chris' broad base of municipal stormwater experience offers City staff additional insight into the comprehensive scope and metrics of a working master plan and CIP. He is skilled in public presentations and the facilitation of cross-departmental planning and project implementation

EXPERIENCE

40 years

EDUCATION

BS, Civil Engineering, Texas A&M University

REGISTRATIONS

Professional Engineer, TX* #65958

Certificate in Asset Management, Institute of Asset Management, #1042413

Certified Floodplain Manager #0282-00N

RELEVANT PROJECT EXPERIENCE

City of Irving Stormwater Master Plan | City of Irving, TX | Project Manager
Chris is managing FNI's preparation of a stormwater master plan, including an evaluation of their program operations, a review of their asset inventory, conditions assessments, capital backlog, developing rehabilitation and flood reduction projects, and preparing a short- and long-term capital improvement plan.

Stormwater Master Plan Needs Assessment | City of Denton, TX | Project Manager
Chris led FNI's effort to evaluate the city's stormwater program organization, policies, processes, capital project backlog, prioritization approach, funding resources, and maintenance practices. He defined a comprehensive master plan scope and implementation strategy.

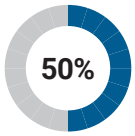
Stormwater Master Plan | City of Terrell, TX | Senior Advisor
Chris provided guidance on CIP preparation, communicating the plan to City leadership and performing the funding assessment for this update to the city's 40-year-old drainage master plan. Work included an assessment of existing infrastructure prioritized CIP and funding assessment, H&H modeling, GIS inventory, and Best Management Practices review of City's criteria.

Bedford Drainage Master Plan | City of Bedford, TX | Senior Advisor
Chris is providing senior level guidance on this citywide plan, bringing his hands-on municipal stormwater program experience related to policies, processes, field operations, event response, and capital project financing.

CSDSA | City of Dallas, TX | Project Manager
Chris is managing FNI's work to evaluate the existing organizational structure, current operational business processes, asset inventory, conditions assessments, modeling of priority flooding areas, recommending solutions, and refining the capital projects planning process.

Steven Rhodes PE*

Conditions Assessment



Availability

Steven Rhodes has expertise in infrastructure asset management principles and leverages this expertise to provide digital solutions to help clients better understand their data, communicate project complex information to stakeholders, and make informed data-driven decisions on infrastructure needs.

Steven is an Associate in FNI's Infrastructure Management Consulting Group and has served as Project Manager or Task Lead for variety of infrastructure conditions assessment, risk-based assessment, and renewal planning projects. He specializes in providing data analysis and visualization services for his clients.

EXPERIENCE

17 years

EDUCATION

BS, Civil Engineering, The University of Texas at Arlington

REGISTRATIONS

Professional Engineer, TX* #118701

Pipeline Assessment Certification Program, National Association of Sewer Service Companies, #U-0419-070305243
**renewal in progress*

PROFESSIONAL AFFILIATIONS

American Water Works Association, Member

Water Environment Association of Texas, Member

RELEVANT PROJECT EXPERIENCE

Storm Drain Asset Management Program | City of Benbrook, TX | Project Manager
FNI is performing an asset inventory and conditions assessment of the City's storm drain system over the course of four years, which consists of field surveys to identify and collect asset attributes for inlets, manholes, mains and channels.

Comprehensive Storm Drainage System Assessment | City of Dallas, TX | Project Engineer
FNI is performing a comprehensive storm drainage system assessment, which includes a review of the existing organizational structure, current operational business processes, asset inventory, conditions assessments, modeling of priority flooding areas, recommending solutions and refining the capital projects planning process. Based on the findings, FNI will provide recommendations to maximize service delivery and protect existing assets.

City of Irving Stormwater Master Plan | City of Irving, TX | Project Engineer
FNI is assisting the City to develop a stormwater master plan that includes a drainage criteria/design manual, funding strategy and stormwater infrastructure inventory and conditions assessment.

Stormwater Master Plan | City of Bedford | Project Engineer
FNI performed a needs assessment of the current Bedford stormwater program with the goal of developing a recommended strategy for a Citywide Drainage Master Plan.

Interceptor Conditions Assessment Program (ICAP) | Fort Worth Water | Project Engineer
As a partner in the City's Interceptor conditions assessment Program (ICAP), FNI applies robotic assessment technology to investigate hundreds of thousands of feet of large-diameter gravity sewer. The largest implementation of this technology in the world, the information collected results in millions of dollars of savings and added value for the City. FNI continues to provide ongoing services for this multiyear, citywide program, inspecting more than 1,050,000 LF of interceptors within the first eight years of a 10-year program.

EXPERIENCE

12 years

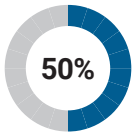
EDUCATION

MS, Geographic Information Systems, The University of Texas at Dallas

BA, Anthropology, Texas A&M University

Ben Hawkins GISP

GIS Data Review/Dashboard Development



Availability

Ben Hawkins' experience includes mapping for stormwater utilities and stormwater planning and design projects.

Ben is experienced with collecting, creating and managing spatial data, workspaces and geodatabases, as well as editing features and georeferencing to assist in mapping various factors associated with modeling existing and future systems. His software background includes ArcCatalog, and ArcMap.

RELEVANT PROJECT EXPERIENCE

Stormwater Master Plan | City of Terrell, TX | GIS Analyst
FNI updated a 1980s-era drainage master plan to serve the city's high-growth and recently annexed areas. Included an assessment of existing infrastructure prioritized CIP and funding assessment, as well as H&H modeling, GIS inventory and Best Management Practices review of City's criteria. The detailed analysis included both urban and riverine flooding.

Drainage Master Plan | City of College Station, TX | GIS Analyst
FNI developed a citywide Drainage Master Plan that included a hydrologic analysis for approximately 25 stream miles and for a drainage area of approximately 17 square miles that covers multiple watersheds within the city limits. FNI also developed floodplain maps for future development and performed a qualitative channel-erosion reconnaissance.

Vensel and Cooley Creek Master Drainage Plans | City of Tulsa, OK | GIS Analyst
FNI prepared a master drainage plan for the Cooley Creek and Vensel Creek basins. Tasks include a collection of field surveys, H&H data development for existing and fully urbanized conditions, floodplain mapping, flood hazard analysis, stream erosion analysis, flood alternatives analysis, cost estimates, and preparation and submission of a Master Drainage Plan.

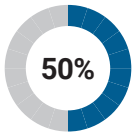
Town Creek and Shannon Creek Master Drainage Plan | City of Burleson, TX | GIS Analyst
FNI performed a detailed H&H analysis of Town Creek and Shannon Creek and their tributaries within the city limits and extraterritorial jurisdiction. The total drainage area of the streams was approximately 11 square miles with a stream length of approximately 17 miles.

Stormwater Utility Development | City of Celina, TX | GIS Analyst
FNI assessed the City's stormwater management program and developed an SWU to create a stable financing mechanism. FNI performed a gap analysis and identified and prioritized CIP projects. The project included MS4 permitting, public outreach and assessment of the development review process.

West Rowlett Creek Stormwater Master Plan Updates | City of Frisco, TX | GIS Analyst
FNI updated the H&H models to include developments and changes to the drainage patterns throughout the watershed over the past eight years.

Heath Myers

GIS Data Review/Dashboard Development



Availability

Heath Myers' expertise consists of desktop wetland and stream analysis, delineating floodplain impacts from hydrologic models, and providing mapping support for mitigation projects.

Heath is proficient in HEC-GeoRas, HEC-GeoHMS, ArcHydro, Trimble Pathfinder software, 3D and Spatial Analyst. He has experience with designing and maintaining interactive web-based mapping services using ArcGIS Field Maps, ArcGIS Dashboards, and ArcGIS Survey123.

EXPERIENCE

12 years

EDUCATION

BS, Spatial Science, Texas A&M University

PROFESSIONAL AFFILIATIONS

Urban and Regional Information Systems and Geographic Information Systems and Science (URISA), Member

RELEVANT PROJECT EXPERIENCE

Stormwater Master Plan Needs Assessment | City of Denton, TX | GIS Analyst
Heath provided GIS mapping support for FNI's Stormwater Group by creating a mapbook identifying channel conditions for six channels in Denton, Texas.

Hazardous Roadway Overtopping Mitigation Development | City of Fort Worth, TX - Transportation and Public Works | GIS Analyst
FNI worked with the City to identify and plan $40 million in feasible crossing capacity improvements and implement safety improvements at dangerous creek crossings. Heath assisted in Archeology and Environmental Memos for multiple projects. Heath assisted in preparing GPS data for environmental field crews and working with CAD Designers and Engineers to use the latest project design to identify potential environmental impacts.

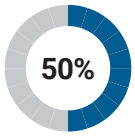
Little Elm Creek Master Flood Study | City of Celina, TX | GIS Analyst
FNI is developing master H&H models for Little Elm Creek and Tributaries and performing a hydraulic evaluation of potential alignment alternatives for the proposed J. Fred Smith Parkway. Heath provided GIS mapping support for FNI's Environmental Group by preparing and processing GPS data collected by environmental field crews to identify potential impacts for a proposed roadway alternatives in Celina, Texas. Heath calculated potential impacts to be used in an Alternatives Analysis to identify potential PCN triggers.

Dutch Branch Park Drainage Master Plan | City of Benbrook, TX | GIS Analyst
FNI is assisting the City in developing a master plan to address drainage concerns at Dutch Branch Park. Heath provided GIS mapping support for FNI's Environmental Group by preparing and processing GPS data collected by environmental field crews and creating figures used in the Delineation Report and PCN Memos for the park.

West Irving Creek Phase A | City of Irving, TX | GIS Analyst
FNI is providing design services for the first phase of West Irving Creek drainage improvements. Heath provided GIS mapping support for FNI's Environmental Science Group to assist in Archeology and Environmental Memos for the West Irving Creek drainage improvements project in Irving, Texas. Heath assisted in preparing GPS data for environmental field crews and working with CAD Designers and Engineers to use the latest project design to identify potential environmental impacts.

Haley Hight

GIS Data Review/Dashboard Development



Availability

Haley Hight's experience includes mapping utility assets, collecting and creating spatial data and managing and analyzing data.

Haley worked for the City of Burleson, Texas for five years, giving her unique insight into the GIS needs of cities. Her software background includes ESRI's ArcGIS suite of products, including ArcMap, ArcGIS Pro, Experience Builder and Dashboard application development, ArcGIS Online and ArcGIS Portal.

EXPERIENCE

7 years

EDUCATION

BS, Geology, The University of Texas at Arlington

AA, Mathematics, Tarrant County College

AS, , Tarrant County College

REGISTRATIONS

GIS Certification, The University of Texas at Arlington

RELEVANT PROJECT EXPERIENCE

Stormwater Utility Fee Review and Roadway User Fee Feasibility Study | City of Celina, TX | GIS Analyst
FNI is reviewing the City's fee structure, identifying projected service costs for storm system management, and providing support for utility billing records updates. FNI is also evaluating a roadway user fee for ongoing roadway management needs.

Stormwater Utility Fee Development and Implementation Assistance | City of Midwest City, OK | Assistant Project Manager
FNI is supporting Midwest City with the development and implementation of a stormwater utility fee and assisting with integrating the fees into the City's utility billing system.

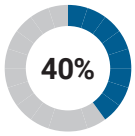
Storm Drain Asset Management Program | City of Benbrook, TX | GIS Analyst
FNI is performing an asset inventory and conditions assessment of the City's storm drain system over the course of four years, which consists of field surveys to identify and collect asset attributes for inlets, manholes, mains and channels.

Stormwater Asset Inventory and Assessment | Town of Siler City, NC | GIS Analyst
FNI is providing design services to develop the Town's stormwater utility, including a stormwater infrastructure system inventory, an update of their system GIS mapping, H&H modeling, and an infrastructure condition and criticality assessment.

Wastewater Master Plan | Greenville Utilities Commission, NC | Senior GIS Analyst
FNI is supporting Greenville Utilities Commission with the development of an interactive trigger-based CIP tool to address existing capacity and renewal needs. The tool will be used to update project prioritization as information is updated.

Jeremy Dixon PE, CFM

Stormwater Master Plan/10-year CIP Plan



Availability

Jeremy Dixon is a career-long H&H Modeler, experienced with 1D and 2D, riverine and urban flood modeling, who provides his clients with a working understanding of their system's strengths, weaknesses and opportunities.

He regularly works with clients to develop and update stormwater system models, as well as to help their staffs with software selection and training. He is proficient in HEC-RAS, HEC-HMS, InfoWorks ICM, XP-SWMM, EPA-SWMM and GIS applications for water resources. Jeremy's wide range of software experience allows for him to identify the right tool for the job, based on each individual client's needs. If certain aspects of a software are lacking, he has been known to develop useful scripts to achieve project goals efficiently.

EXPERIENCE

12 years

EDUCATION

MS, Civil Engineering, Texas Tech University

BS, Civil Engineering, Texas Tech University

REGISTRATIONS

Professional Engineer, CO #PE.0063510

Certified Floodplain Manager, Texas Floodplain Management Association, #2416-13N

PROFESSIONAL AFFILIATIONS

Texas Floodplain Management Association, Member

Association of State Dam Safety Officials, Member

RELEVANT PROJECT EXPERIENCE

Stormwater Master Plan | City of Terrell, TX | Project Manager
FNI updated a 1980s-era drainage master plan to serve the city's high-growth and recently annexed areas. Included an assessment of existing infrastructure, prioritized CIP and funding assessment, as well as H&H modeling, GIS inventory and Best Management Practices review of City's criteria. The detailed analysis included both urban and riverine flooding.

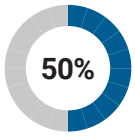
Drainage Master Plan | City of College Station, TX | H/H Engineer
FNI developed a citywide Drainage Master Plan that included a hydrologic analysis for approximately 25 stream miles and for a drainage area of approximately 17 square miles that covers multiple watersheds within the city limits. FNI also developed floodplain maps for future development and performed a qualitative channel-erosion reconnaissance.

Upper Langham Creek Frontier Program | Harris County Flood Control District | H/H Engineer
FNI provided H&H management in conjunction with natural channel and water quality feature design services within the watershed. Jeremy performed multiple tasks under this scope, including conceptual analysis of alternatives for Cypress Creek Overflow management within the basin, development reviews for conformance with the program and the HCFCD regulatory program, and several other tasks using HEC-HMS, HEC-RAS, and XP-SWMM models.

Comprehensive Storm Drainage System Assessment | City of Dallas, TX | Task Leader
FNI is performing a comprehensive storm drainage system assessment, which includes a review of the existing organizational structure, current operational business processes, asset inventory, conditions assessments, modeling of priority flooding areas, recommending solutions and refining the capital projects planning process. Based on the findings, FNI will provide recommendations to maximize service delivery and protect existing assets.

Bethany Fleitman PE*, CFM

Stormwater Master Plan/10-year CIP Plan



Availability

Bethany Fleitman has specific expertise in complex and large-scale studies, conducting flood mitigation feasibility studies, developing conceptual design alternatives, preparing adverse impacts assessments, managing future growth and development, and FEMA coordination (CLOMR/LOMRs).

She has substantial experience with H&H analyses for a variety of stormwater projects, including open channels, complex storm drains, flood control studies, bridges, culverts, scour analyses, ponds, pump stations, levees and dams. Bethany is proficient with many different software packages, including HEC-RAS (1D and 2D), HEC-HMS, ICPR, XP-SWMM and ArcGIS.

EXPERIENCE

7 years

EDUCATION

MS, Environmental Engineering, Texas Tech University

BS, Environmental Engineering, Texas Tech University

REGISTRATIONS

Professional Engineer, TX* #137433

Certified Floodplain Manager #3357-17N

RELEVANT PROJECT EXPERIENCE

Bedford Drainage Master Plan | City of Bedford, TX | Project Manager
FNI is preparing strategic direction by evaluating stormwater utilities, drainage, infrastructure and historic data as part of the development of the City's drainage master plan.

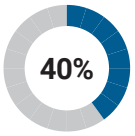
Drainage Master Plan | City of Amarillo, TX | Stormwater Engineer
FNI led the review of the City's existing development standards and ordinances, including benchmarking similar communities and preparing recommendations for updates to technical guidelines and governing ordinances. Bethany served as production staff.

Town Creek and Shannon Creek Master Drainage Plan | City of Burleson, TX | Project Manager
FNI performed a detailed H&H analysis of Town Creek and Shannon Creek and their tributaries within the city limits and extraterritorial jurisdiction. The total drainage area of the streams was approximately 11 square miles with a stream length of approximately 17 miles. Bethany set deadlines, assigned responsibilities, monitored and summarized progress of the project, accomplished project goals, led project meetings, coordinated the collection and dissemination of information, and managed all aspects of the project, including the subconsultants.

Delaware Creek Sanitary Sewer Improvements | City of Irving, TX | Stormwater Engineer
FNI designed a $55 million multiphase channel improvement retrofit project consisting of more than three miles of channel improvements and more than one mile of sewer improvements. The project included 10 bridges and three pedestrian bridges crossing the improved channel. FNI developed designs for several wall types for different portions of the project including modular block gravity, cast-in-place cantilever and soil nail walls. Bethany served as production staff.

Trey Shanks IAM

Rate Study



Availability

Trey Shanks leads FNI's Infrastructure Management Group. He provides City staff data-driven recommendations and funding consulting to cost-effectively invest in infrastructure renewal and management.

Trey's team applies financial planning and asset management concepts to assist public clients serving from 5,000 to more than 1 million in population. He and his team have conducted numerous asset inventory and conditions assessments, establishing a prioritization approach for system maintenance and providing a foundation for master planning and capital improvements. He has worked with dozens of cities to implement and update stormwater utility fees and other funding mechanisms as part of their stormwater management programs.

EXPERIENCE

29 years

EDUCATION

MS, Environmental Management, University of Houston-Clear Lake

BS, Chemistry, The University of Texas at Austin

REGISTRATIONS

Utility Risk and Resilience Certification Program, American Water Works Association

Certificate in Asset Management, Institute of Asset Management, #1041700

PROFESSIONAL AFFILIATIONS

Texas Floodplain Management Association, Member

Water Environment Federation, Member

American Water Works Association, Member

RELEVANT PROJECT EXPERIENCE

Stormwater Utility Fee | City of Lubbock, TX | Project Manager
FNI improved the equitability of the City's stormwater utility fee program to reduce legal risk of challenge by developing an impervious-area based approach. FNI worked with City staff to shepherd the changes through successful City Council adoption, maintaining required funding levels. FNI developed a live-link stormwater utility billing update mechanism and associated City staff worklfow to allow for seamless billing maintenance for ongoing billing accuracy.

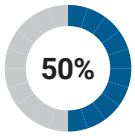
Citywide Drainage Master Plan | City of Fredericksburg, TX | Project Team
FNI developed a drainage master plan to guide future investments necessary to mitigate existing flooding problems and minimize future drainage concerns within the City. Trey identified and helped the City implement updates to the City's stormwater utility fee structure and rates to improve equitability to reduce legal risk while increasing rates to adequately fund CIP identified in the drainage master plan. Trey converted the City's meter-based fee approach to one based on impervious area that more directly represented each property's use of and impact to the drainage system.

Stormwater Utility Implementation | City of Terrell, TX | Project Manager
FNI helped this rapidly growing rural community with aging stormwater infrastructure to develop and implement a dedicated stormwater utility fee to fund needed flood protection improvements. FNI's dynamic scenario financial model allowed for development of a tailored fee structure that met the needs of the community and gained crucial support of the voting Council.

Stormwater Utility Fee Review and Roadway User Fee Feasibility Study | City of Celina, TX | Senior Advisor
FNI is reviewing the City's fee structure, identifying projected service costs for storm system management, and providing support for utility billing records updates. FNI is also evaluating a roadway user fee for ongoing roadway management needs.

Peter Purdy PE*, IAM

Rate Study



Availability

Peter has extensive experience completing financial analysis and cost-sharing agreements for municipalities.

Peter regularly manages teams of GIS analysts and financial analysts to complete projects and leads stakeholder engagement with city staff and other consultants. His software background includes AutoCAD Civil 3D, ESRI ArcGIS Pro and Microsoft Excel.

EXPERIENCE

11 years

EDUCATION

MBA, Texas A&M University

BS, Architecture, Texas Tech University

BS, Civil Engineering, Texas Tech University

REGISTRATIONS

Professional Engineer, TX* #126254

Certificate in Asset Management, Institute of Asset Management, #6130977

RELEVANT PROJECT EXPERIENCE

Bedford Drainage Master Plan | City of Bedford, TX | Staff Team
FNI is preparing strategic direction by evaluating stormwater utilities, drainage, infrastructure and historic data as part of the development of the City's drainage master plan. Peter is leading the audit of the current stormwater utility fee.

Stormwater Infrastructure Assessment and Utility Fee Development | Town of Wake Forest, NC | Staff Team
FNI is performing a conditions assessment of the Town's stormwater infrastructure to establish a proactive maintenance plan and a rain-on-mesh analysis to identify concern areas. FNI is combining field inspections and SCMS with a desktop watershed modeling analysis, performing criticality assessments and training Town staff to perform the conditions assessments. Peter is leading the stormwater utility fee development and implementation.

Stormwater Utility Fee Review and Roadway User Fee Feasibility Study | City of Celina, TX | Project Manager
FNI is reviewing the City's fee structure, identifying projected service costs for storm system management, and providing support for utility billing records updates. FNI is also evaluating a roadway user fee for ongoing roadway management needs.

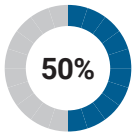
Stormwater Utility Fee Update Study | City of DeSoto, TX | Project Manager
FNI is providing an update to the stormwater utility fee to move from a per meter basis to an impervious area basis. This includes evaluating revenues and expenses, providing different funding level options, and billing integration. Peter is the day-to-day contact and sets deadlines, assigns responsibilities and monitors the progress of the project. He manages all aspects of the project, including the subconsultants and client contact.

City of Irving Stormwater Master Plan | City of Irving, TX | Staff Team
FNI is assisting the City to develop a stormwater master plan that includes a drainage criteria/design manual, funding strategy and stormwater infrastructure inventory and conditions assessment.

Rowlett Stormwater Utility Study | City of Rowlett, TX | Assistant Project Manager
FNI is updating the City's stormwater utility fee to enhance its equitability and to verify that fees are proportional to the rate payer's use of the City's storm system infrastructure.

Beth Vogelsang AICP

Public Outreach



Availability

Beth brings a wealth of knowledge in urban land use and transportation planning and a comprehensive understanding of the historic and current-day practices that shape our urban communities.

Beth Vogelsang is the Principal Planner and Owner of the planning and design firm OV Consulting for over 20 years and located in Denver Colorado. Beth has a unique ability to integrate livable community design, placemaking, connectivity, and resiliency through open and transparent communication and project management. Beth serves on the University of Colorado Denver College of Architecture and Planning's Urban Design Advisory Council and supports the Urban Design and Planning program through numerous speaking engagements.

EXPERIENCE

20+ years

EDUCATION

Master of City Planning, San Diego State University

BA, Political Science, University of Colorado at Boulder

REGISTRATIONS

American Institute of Certified Planners

PROFESSIONAL AFFILIATIONS

American Planning Association

University of Colorado Urban Design Advisory Council

Urban Land Use Institute

Women's Transportation Seminar

RELEVANT PROJECT EXPERIENCE

Healthy River Corridor Study | City and County of Denver, CO | Project Manager
Beth recently completed the Healthy River Corridor Study which identified a 200' influence zone along the South Platte River through the City and County of Denver and established the goals and direction for enhancing the river's edge for riparian habitat, mobility options, recreational and open space opportunities and supporting land uses. Through collaborative management, Beth led a 40-person Stakeholder Committee including agencies, waterway organizations, major landowners, and developers to agreed-upon recommendations. Stakeholder management was complemented by an extensive in-person community outreach program to underserved neighborhoods along the river corridor that illustrated river and infrastructure history and opportunities for future community benefits.

I-25/South Platte River Framework Study | City and County of Denver, CO | Project Manager
Beth was the Project Manager for this study, she researched and evaluated historic and current day infrastructure, land use, trip generation, and environmental and social equity conditions along the central I-25/ South Platte River corridor through Denver. The results of this effort were reviewed with DOTI leadership and Department managers through a series of stakeholder workshops exploring today's development demands, infrastructure capacity, utilities, and community characteristics through this critical corridor.

Globeville Stormwater Systems Study | City and County of Denver, CO | Project Manager
Beth managed a community-based resiliency planning study for stormwater management, water quality improvements and river corridor flooding in the Globeville basin. Numerous stakeholder, community and elected official basin tours and over 50 stakeholder and community meetings were held in support of this process. This project was awarded the 2021 Colorado Association of Stormwater and Floodplain Managers (CASFM) Grand Award for Engineering Excellence.

King Surveyors

EXPERIENCE

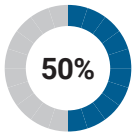
25 years

REGISTRATIONS

Professional Land Surveyor, Colorado #38209

Paul Groves PLS

Surveying



Availability

Paul has developed a good working relationship with many of our major clients ranging from engineers, local municipalities and construction firms.

Paul started working for King Surveyors in 1999 as a crew chief using GPS equipment. During this time, he was responsible for construction, topographic and boundary surveying. After 11 years in the field, Paul moved into the office where he was a Project Manager in the Construction Department. This position requires him to communicate and work with engineers, architects, contractors and land developers to prepare the company's field crews for the roadway staking, sanitary and storm sewers, waterlines, detention ponds and buildings. Recently he has transitioned into managing the Topographic/Boundary Department, where he discusses the scope of work with clients, provides proposal of fees, coordinates the completion of survey work, reviews and certifies the completed work. Paul also built and maintains a private GPS-VRS network for King Surveyors. He is responsible for the majority of North Weld County Water Districts easements and design work. He was appointed President of King Surveyors in 2016.

RELEVANT PROJECT EXPERIENCE

12th Street Storm Outfall | City of Greely, CO | Surveyor
King Surveyors was tasked with performing a topographic survey and determining the right-of-way of 19 blocks of 12th Street and 2nd Avenue to aid with proposed improvements to the storm sewer in this area. Field operations consisted of a topographic survey which included roadways, all underground utilities, portions of irrigation ditches, railroad tracks, Highway 85 and a small portion of the wastewater treatment plant as well as locating property boundary monuments to aid in the determination of street and highway rights-of-way.

7th Avenue Outfall | jjCon Engineering | Surveyor
A topographic survey was performed approximately seven city blocks. This included a base map drawing showing rights-of-way, property lines, existing easements, property owners and subdivision information. King Surveyors also provided property description and exhibit drawings for right-of-way takes, permanent easements and temporary construction easements. Additionally, Paul reviewed title reports for each property.

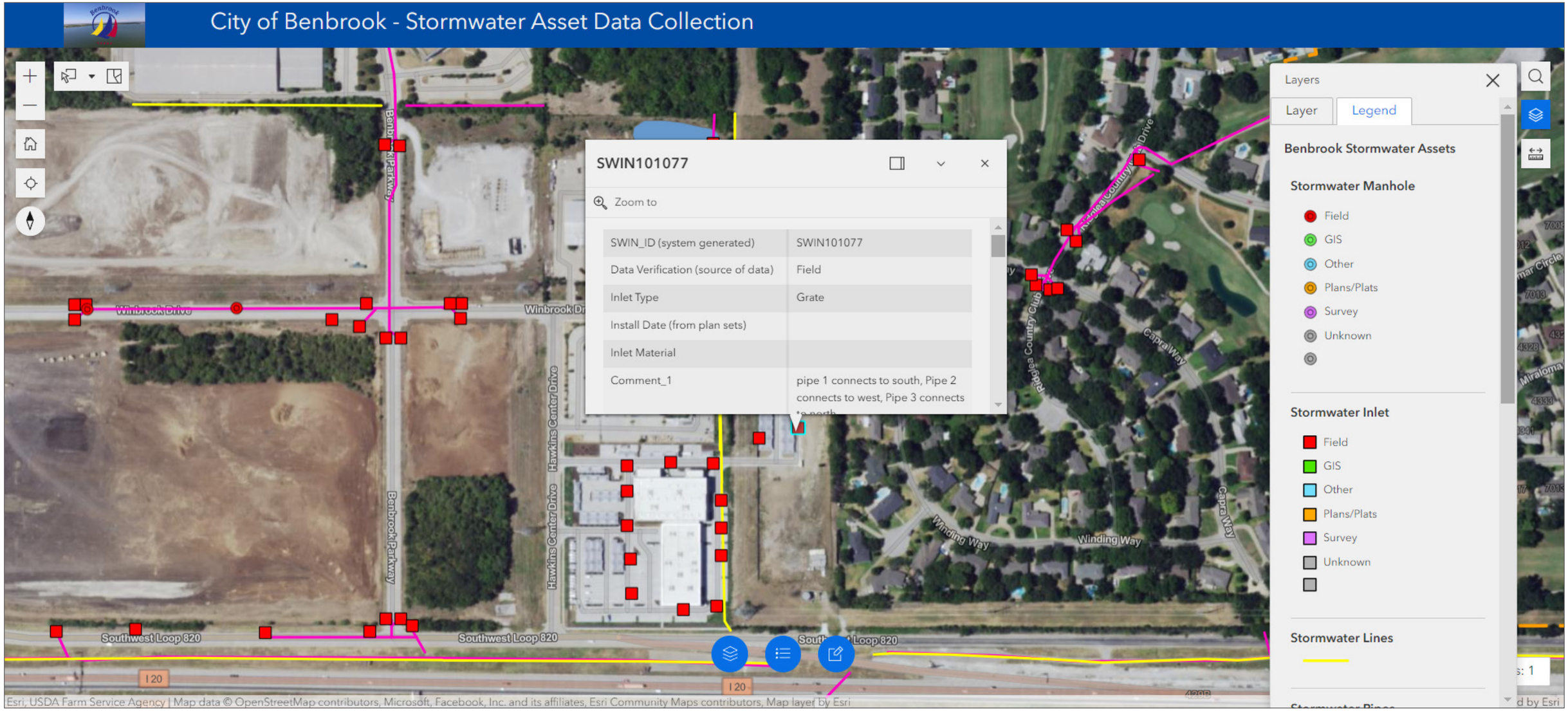
Ashcroft Draw Sewer | JVA, Inc. | Surveyor
King Surveyors provided a topographic survey of Ashcroft Draw Sewer – Phase 2 along with locating test holes and wetlands. A basemap was prepared, which included existing road right-of-way, property lines and easements. Road right-of-way, plat research and review of the work was completed in preparation for the base map. Property descriptions were prepared with exhibit drawings for permanent and temporary construction easements. All upstream manholes in sheep draw trunk line were located and dipped.

A02

Appendix 2: Work Samples

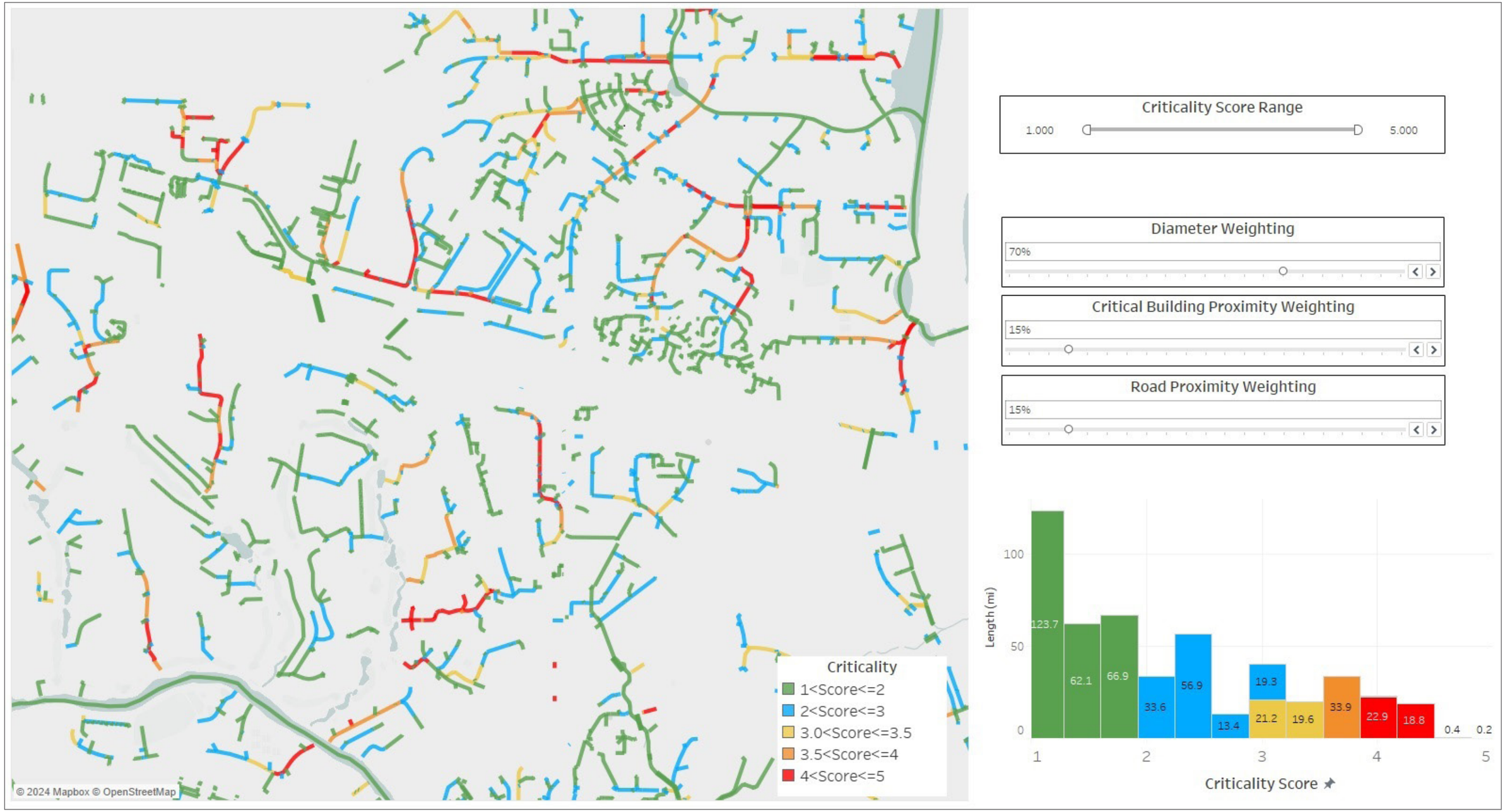
Work Samples

1. Data Collection



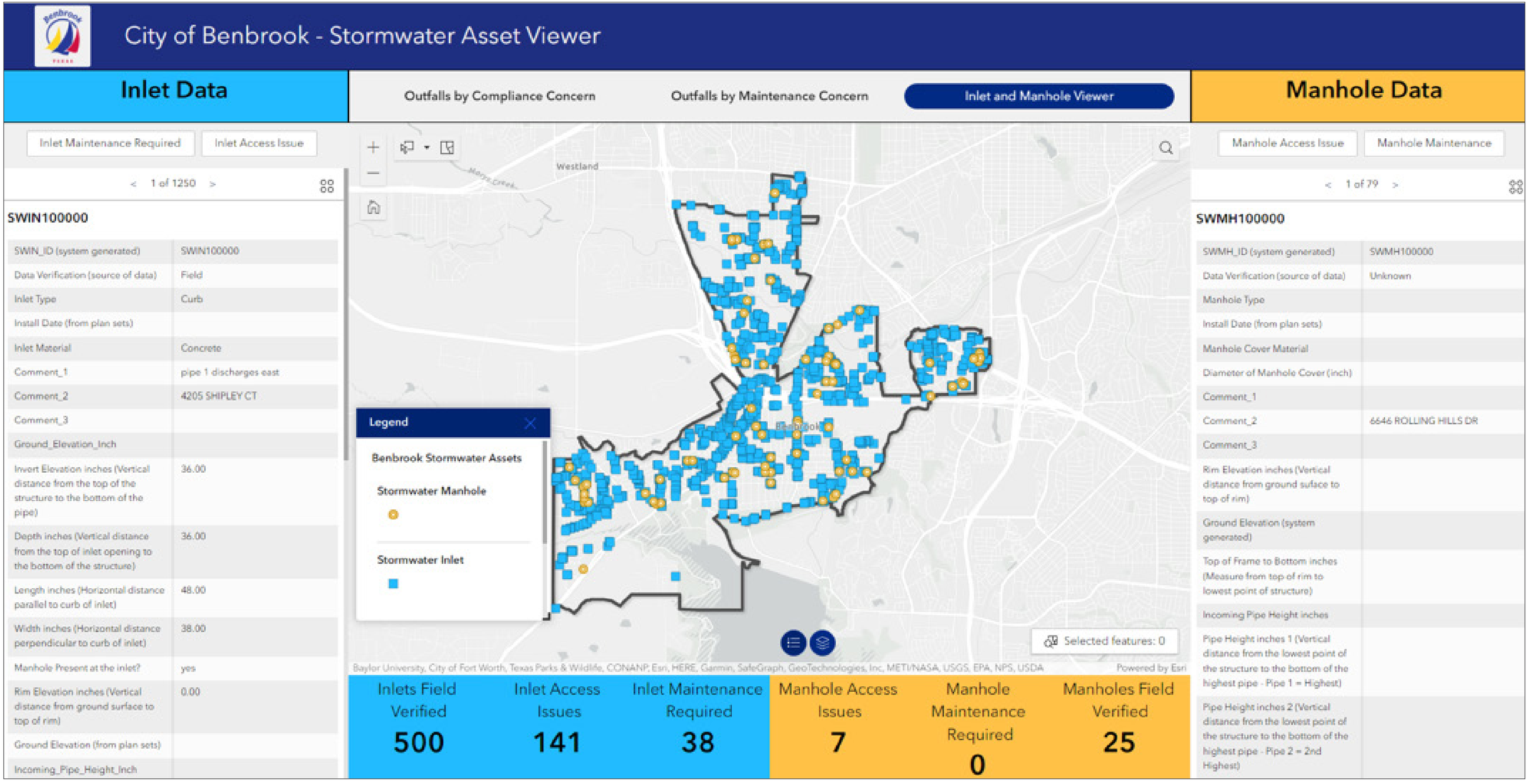
FNI will work with the Town to collect and interrupt existing data that may be available including but not limited to plats, as-builts, existing CCTV data, criteria, models and existing reports. A thorough upfront review will help identify needs and efficiencies throughout the master planning process.

2. Criticality Assessment of Stormwater Infrastructure



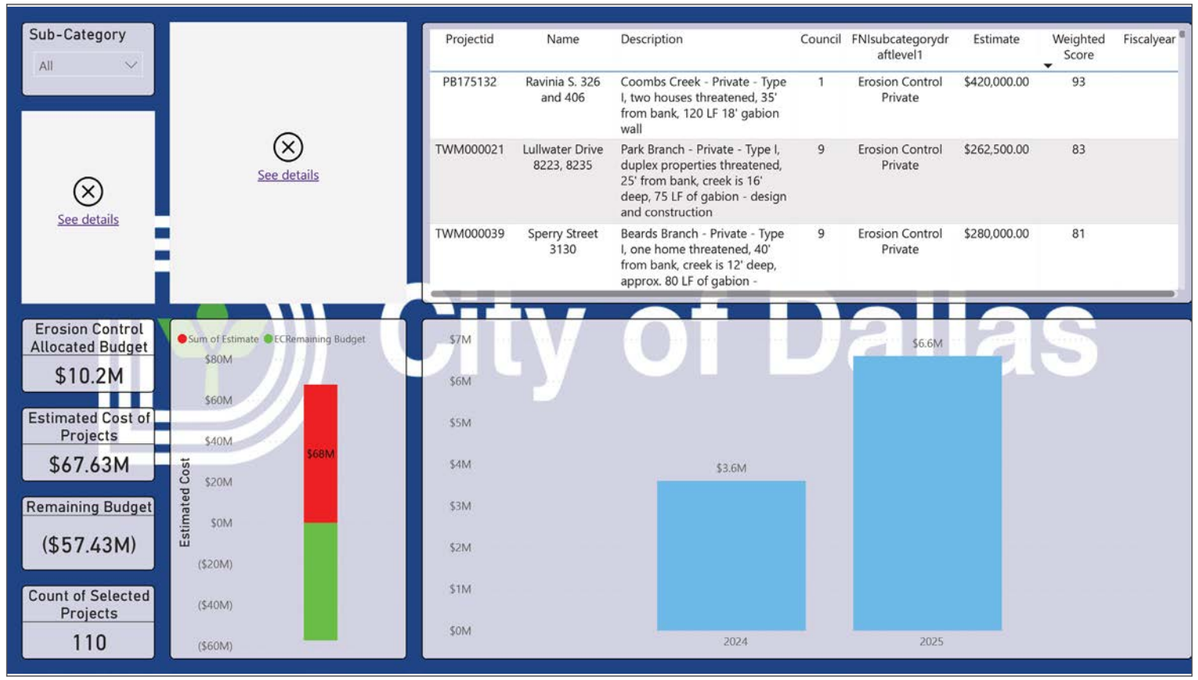
A criticality assessment framework can be customized based on the needs of the Town to inform areas for detailed conditions assessment and to understand potential areas of concern.

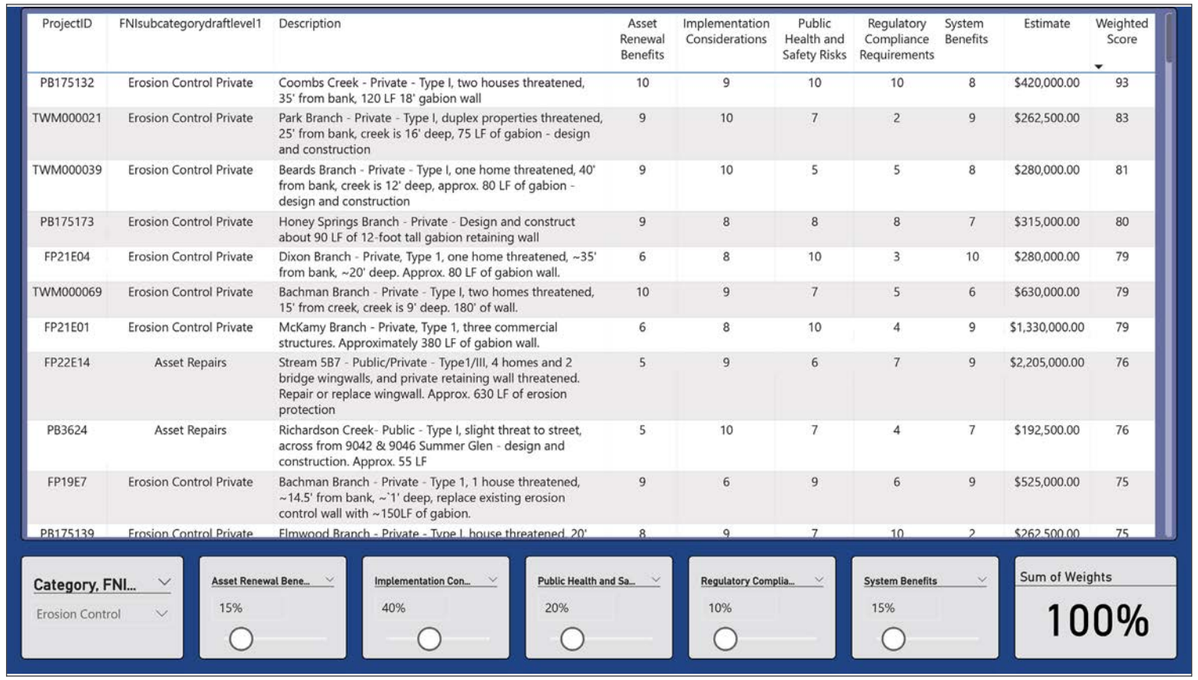
3. Asset Inventory

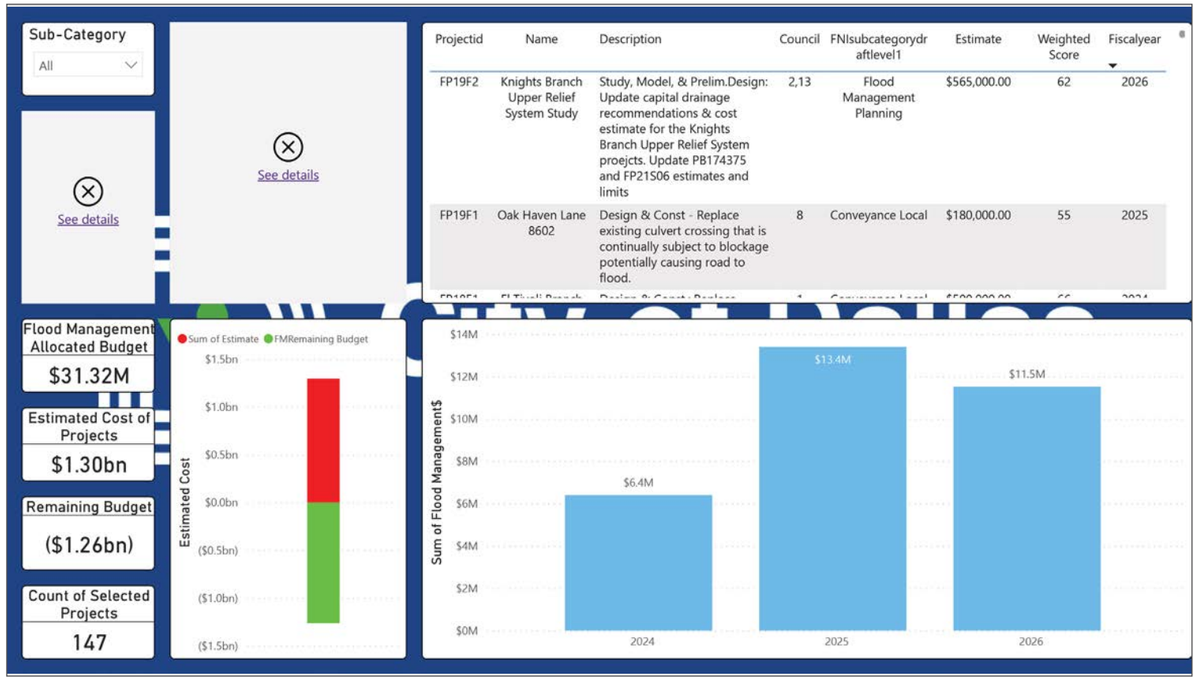


Building on the Town's existing data and the criticality assessment, FNI will create a targeted approach to asset inventory and collect data using ArcGIS Survey123 to build a foundation for a sustainable stormwater management program.

4. GIS Dashboard

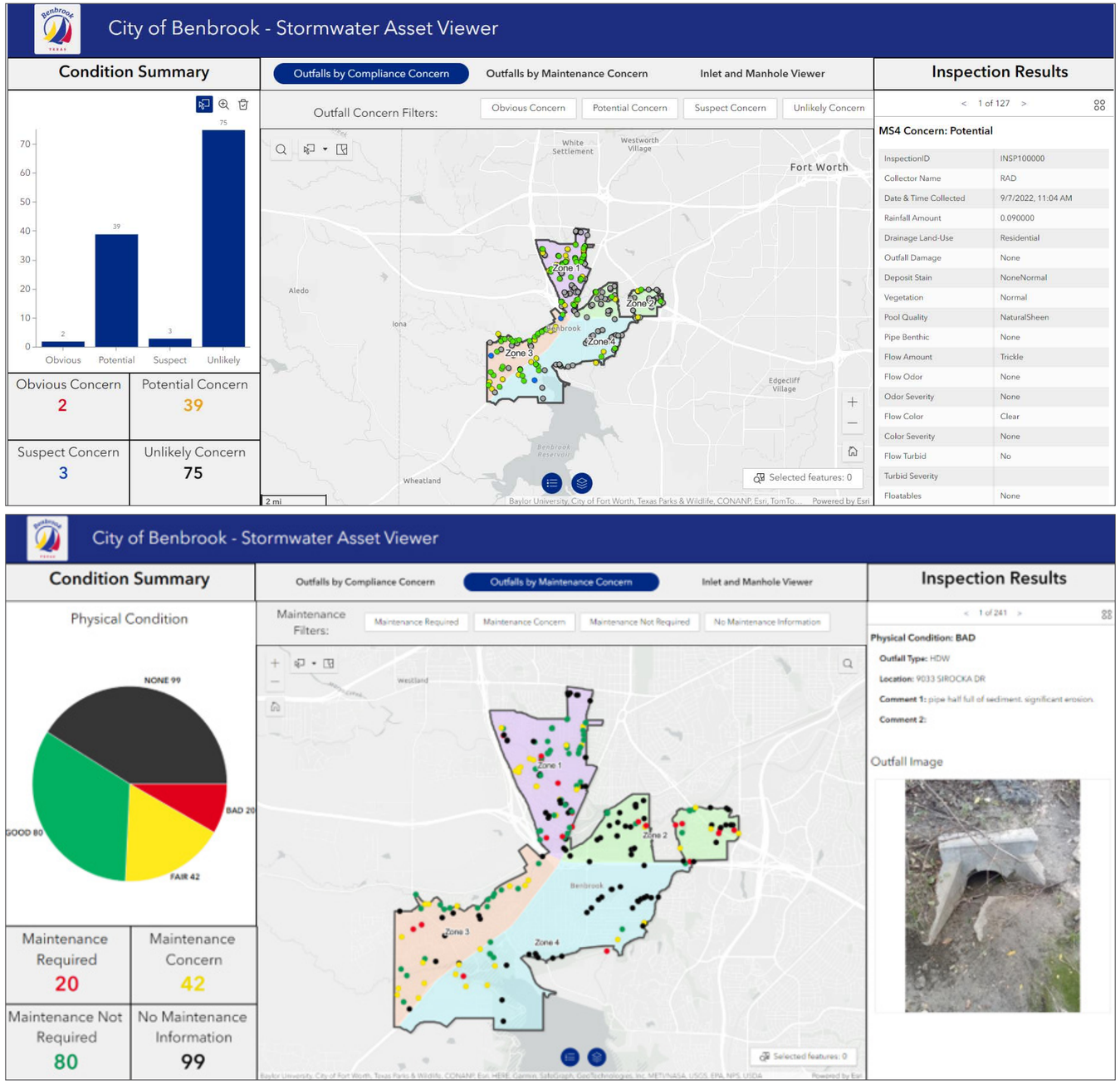




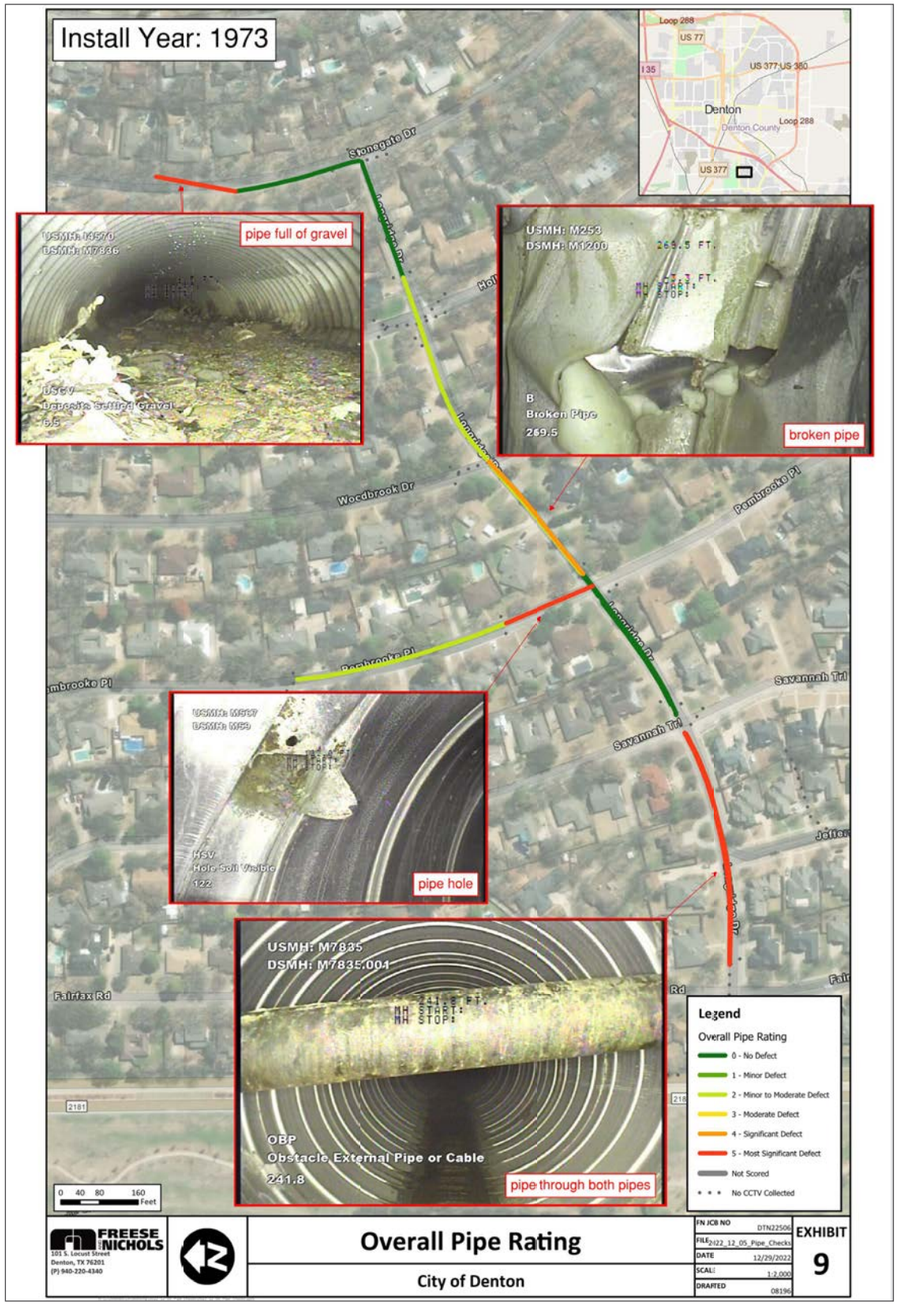


FNI will work with the Town to develop a GIS Dashboard based on the needs of the project. The approved 10-year CIP will be incorporated into the GIS Dashboard at the end of the project.

5. Conditions Assessment

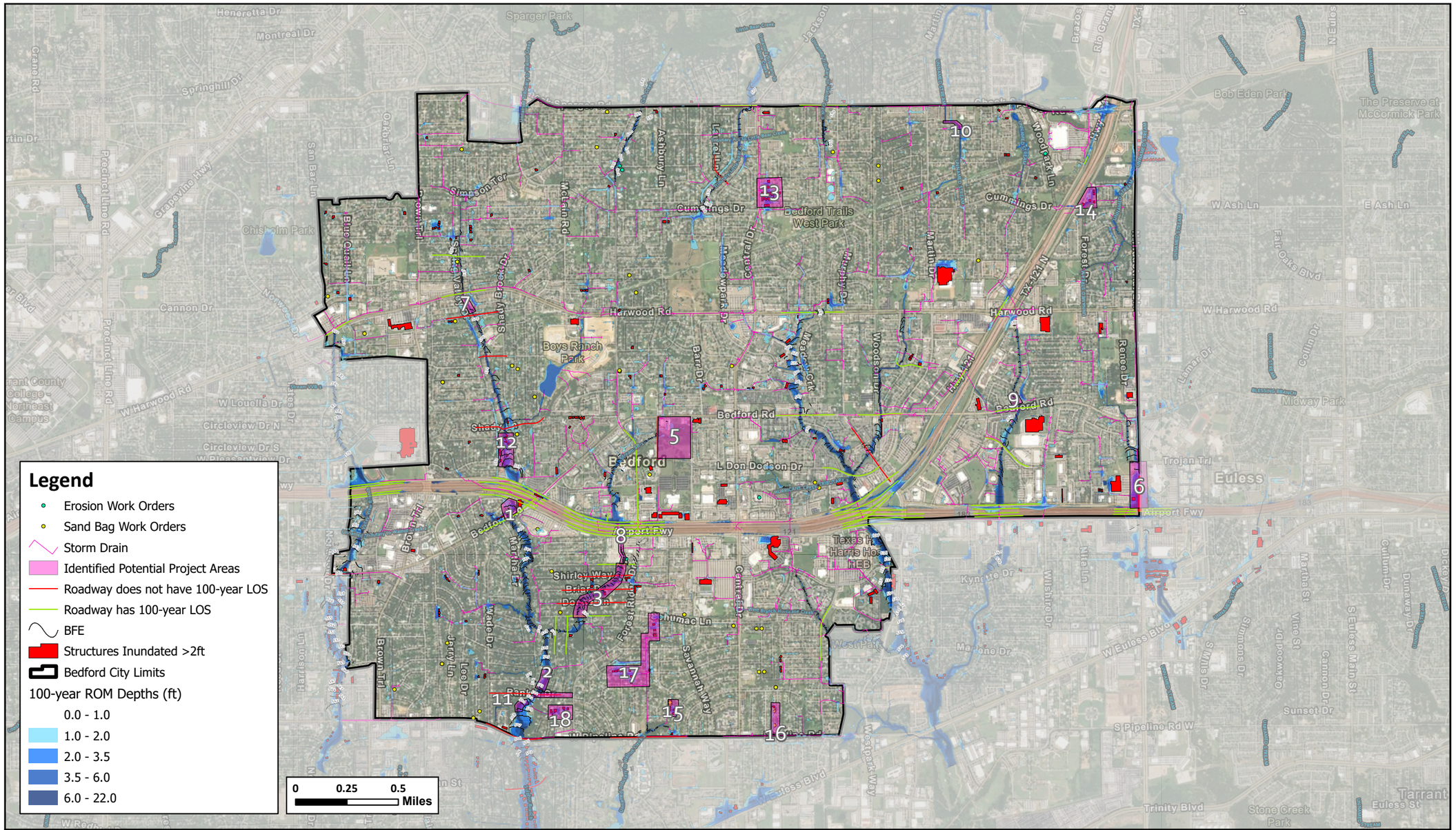


FNI will leverage data collection efforts, criticality framework and rain-on-mesh modeling to maximize funding available for CCTV and field survey to help develop a conditions assessment of the Town's stormwater infrastructure.



Example of conditions assessment completed for the Denton Stormwater Master plan.

6. Modeling Framework Development



FREESE AND NICHOLS
801 Cherry Street, Suite 2800
Fort Worth, TX 76102
(P) 817-735-7300 (F) 817-735-7491

100-Year ROM Results

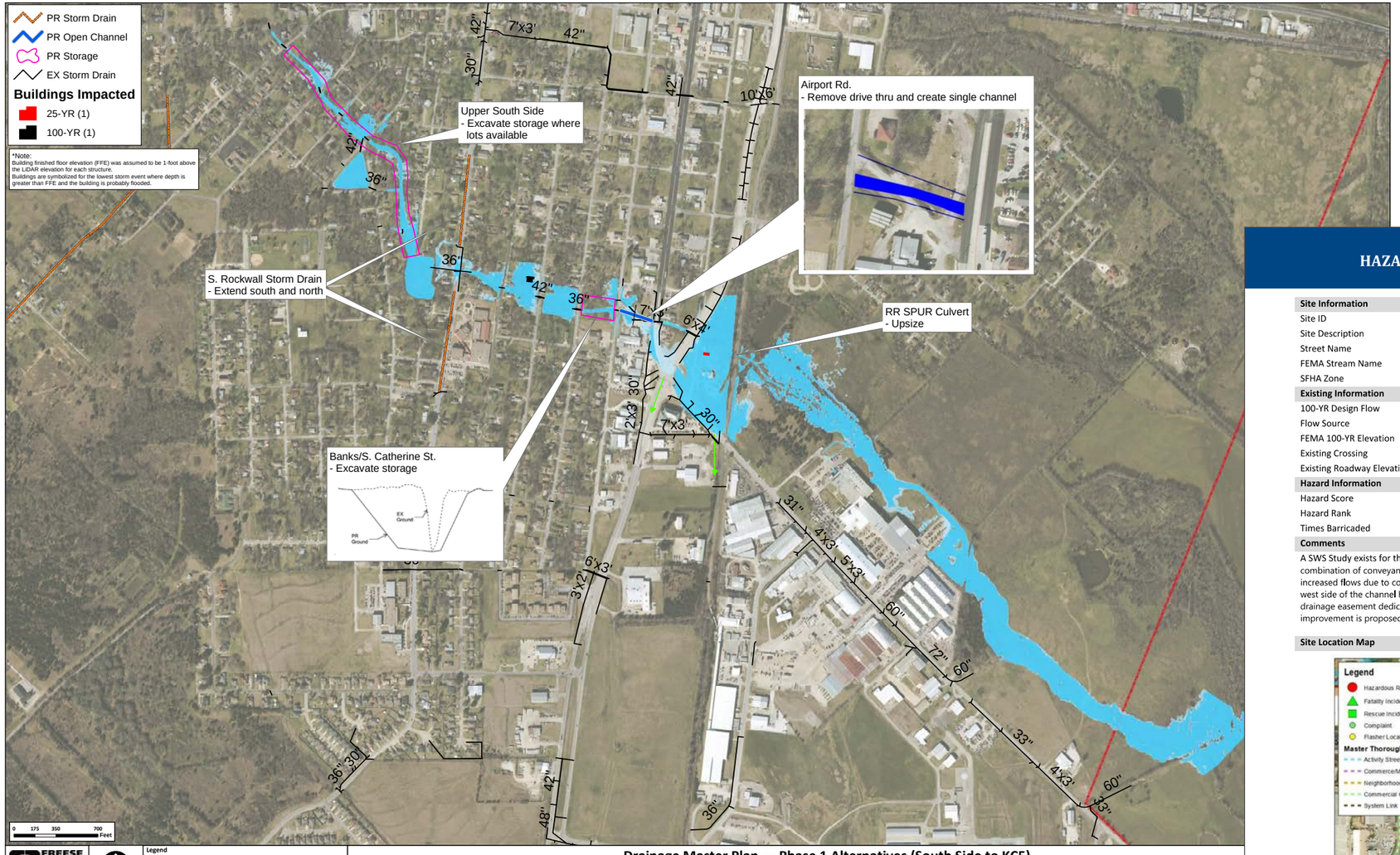
City of Bedford

FN JOB NO	BED22468
FILE	BedfordExhibits
DATE	11/16/2022
SCALE	1:276
DRAFTED	02645

EXHIBIT 3

Initial rain on mesh (ROM) modeling will provide the baseline understanding of potential flood risk area. Overlaying that information with the Town's area of concern will help identify potential project areas for detailed modeling.

7. Alternative Analysis



Drainage Master Plan — Phase 1 Alternatives (South Side to KC5)

City of Terrell, Texas

By incrementally adding detail to the H&H model will help FNI and the Town fully understand the cause of identified flood risk. This understanding will allow for efficient analysis of potential alternatives to mitigate that risk.

STORMWATER PLANNING
HAZARDOUS ROADWAY OVERTOPPING
SITE SUMMARY

Fort Worth Stormwater Management

Site Information			
Site ID	41		
Site Description	4200 Hardy at WF-4		
Street Name	Hardy Street		
FEMA Stream Name	Stream WF-4		
SFHA Zone	AE Floodway		
Existing Information		**Proposed Information**	
100-YR Design Flow	3329		
Flow Source	FIS	MTP XS	
FEMA 100-YR Elevation	645.10	MTP or ROW width	50
Existing Crossing	2-60" RCP	Proposed Crossing	5-11'x10' RCB
Existing Roadway Elevation	642.00	Proposed Roadway Elevation	646.10
Hazard Information			
Hazard Score	33	Ease of Implementation Score	2.7/5
Hazard Rank	20	Project Construction Cost	$3.4M
Times Barricaded	1	Total Project Cost	$4.5M

Comments

A SWS Study exists for this crossing: Lebow Creek Master Plan. The proposed alternative from the study includes a combination of conveyance and culvert improvements as well as a large detention area north of Long Avenue to offset increased flows due to conveyance and to prevent overflow across Long Avenue in the 100-year storm. Most of the lots on the west side of the channel have been acquired for the possible expansion of the channel overbank/detention. About 5' of drainage easement dedicated on every lot adjoining the channel is necessary for the channel improvements. This culvert improvement is proposed as 3-10'x9' RCB.

Site Location Map

FNI will work with the Town to present alternatives in a format that works for Town's needs.

8. Project Prioritization

Drainage Master Plan Update
Project: RHEA ROAD DRAINAGE PROJECT

Project Information

Project ID:	Area_38B	**Status:**	In Study
Project Name:	RHEA ROAD DRAINAGE PROJECT	**Council District:**	3
Project Type:	Pipe System	**Panel #:**	87A, 87C
Date Identified:	1991	**# Structures Impacted:**	0

Problem Description:

Rhea Road was designed to convey street flow to a small storm drain system at the downstream portion adjacent to McGrath Creek. There have been reports of road flooding at Ben Milam School on the east side of Rhea Road. Runoff on Rhea Road outfalls into McGrath Creek channel at the south end of the watershed. The channel is not adequate in size and TxDOT has projected to enlarge the channel in 2021.

Proposed Improvements:

Although McGrath Creek is undersized, this area would still benefit from a storm drain system. This system will reach from Southwest Pkwy northward along Rhea Road. The main trunk line of proposed system would convey runoff south on Rhea Road and should be sized to meet City criteria including any necessary inlets and laterals on adjacent streets.

Project Photos

Looking west on Rhea Road at existing inlet south of Covington Dr.

Looking south from Covington Drive at alley outfall into McGrath Creek.

CIP Ranking Criteria Score

Life Safety:	1
Road Flooding:	3
Project Cost:	0
Property Damage:	2
Maintenance Cost:	3
Total Weighted Point Score:	36.3
CIP Rank:	4

Project Costs

Conceptual Cost Range: > $2,000,000
Est. Construction Cost:

City of Bedford, Texas
Drainage Master Plan Needs Assessment
Potential Project Name: Crossing Improvements (SB-1)
Rank: **1**

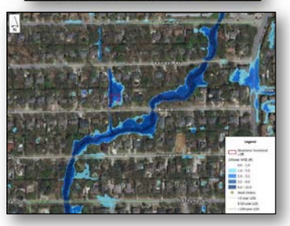
Potential Project Summary

Potential Project Name:	Crossing Improvements (SB-1)
Project ID:	3
Flooding Issue / Source:	Undersized crossings along SB-1
Identified From:	Current Drainage CIP
Description:	Undersized crossings and erosion and along SB-1 (Circle Lane, Shirley Way, Briar Dr, Donna Ln, Schumac Lane)

Scoring and Ranking

Category	Score	Weight
Life Safety (0-3)	3	*35%*
Property Damage (0-3)	1	*25%*
Infrastructure Renewal (0-3)	3	*20%*
Project History (0-3)	3	*15%*
Development Areas (0-1)	0	*5%*
Total:	**10/13**	

Project Rank: 1



One Page Report
SWS-054 Zoo Creek Storm Drain Flood Mitigation Study
Conveyance – Sandage Relief Line – Overall

Database ID:	352	**Project Type:**	Major Drainage Rehabilitation Improvements
Council District:	9	**Planning Stage:**	Strategic
Mapshed Number:	55	**Precondition:**	
Planning Sector:	TCU/Westcliff	**Status:**	Planning
Source of Flooding	Overland Flow	**Phase:**	Overall
		Date Identified:	4/8/2019
		Scheduled Start:	

Rank: 3
Score: 61.6

Scoring Breakdown

S1 - Road - Model	24%
D1 - Structure - Model	24%
D3 - Criticality	0%
D4 - Score/Cost	6%
T1 - Structure - Reported	4%
V1 - Road - Reported	41%

Potential Funding Partners:		**Related Alternative Database ID:**	**Rank:**
		Relationship Type:	
SW Share:	100%	**Data Mining Complete:**	Yes **Data Class:** 4
SW Cost:	$23,114,597		
MSCR:	1.3		
Benefit:	N/A		
Cost:	$23,114,597		
BCR:	N/A		

Model

Road Flooding	Count of improved crossings/sumps:		6
	Pre-/post-project level of service:	Less than 2-yr /	Less than 2-yr
Structure Flooding	Count of structures with reductions in structural flooding:		90
	Pre-/post-project onset of flooding:	5 /	5

Reported Flooding Incidents

		Fatality:	Rescue:	Response:	Complaint:
Road Flooding	Count of roadway instances by type:	0	6	5	14
Structure Flooding	Count of homes with structural flooding instances:				1
	Count of instances of structural flooding:				1

Description:

The purpose of the Sandage Ave. Relief Line is to provide additional storm drain capacity from Cleburne Rd. to Forest Park. The majority of the relief line is proposed within the Sandage Ave. and Devitt St. right of way which varies in width from 50 to 60 feet. The 10'x10' RCB relief line begins at Forest Park, just south of Robert St., near the McPherson outfall. The park outfall will be protected from erosion by a 90'x120' riprap basin. The 10'x10' RCB will follow Sandage Ave. south to the existing 72-inch storm drain crossing at Sandage Ave. approximately 300 feet south of Berry St. At this point, the relief line will transition to an 8'x8' RCB. The 8'x8' RCB will follow Sandage Ave. to Devitt St. where it will continue east to Cleburne Rd. At Cleburne Rd. the relief line will connect to the existing 48-inch storm drain.

Comments:

Lubbock at Devitt from 2004

Enhanced Prioritization Ranked List of Alternatives

Grouped Rank	DBID	Report Name	Alternative Name	Individual Rank	Score	SW Cost	MSCR	Planning Stage	Council District	Related Alt. No.	Relationship Type	Phase	Precondition	Data Class
1	62	00084 Lebow Creek Master Plan	Upper Lebow Channel Improvements and Detention (Overall)	1	82.32	$30,886,930	1	Strategic	2			Overall		3
2	14	00080 Central Arlington Heights	2.a. Voluntary Property Acquisition and Demolition with Greenway Detention	2	76.81	$1,899,588	10.1	Strategic	7					3
3	352	SWS-054 Zoo Creek Storm Drain Flood Mitigation Study	Conveyance – Sandage Relief Line – Overall	3	61.6	$23,114,597	1.3	Strategic	9			Overall		4
	535	SWS-054 Zoo Creek Storm Drain Flood Mitigation Study	Conveyance – Sandage Relief Line – Phase 1	4	59.8	$18,538,246	1.6	Strategic	9	352	Parent-Child	1 of 2		4
	536	SWS-054 Zoo Creek Storm Drain Flood Mitigation Study	Conveyance – Sandage Relief Line – Phase 2	5	52.92	$4,588,887	5	Strategic	9	352	Parent-Child	2 of 2		4
4	13	00080 Central Arlington Heights	1.b. Pipe Rehabilitation (Cured-in-Place Pipe)	6	51.1	$9,731,350	0.5	Strategic	7					3
5	128	SWS-005 Greenfield	Option 2 - Storm Drain and Detention Improvements	9	44.77	$6,067,970	4.1	Feasibility	2				Street CIP	3
6	497	SWS-052 WAH Pershing	Bayouts	10	43.78	N/A	N/A	Strategic	7					1
7	173	SWS-008 Lake Arlington	7.4.2 - Loop 820 Culvert Improvements	11	43.31	$1,189,517	6.8	Strategic	5				Street CIP	3
8	373	CIP#00084 Upper Lebow Detention Study	Alternative 4a - Design Storm Variance within Existing Easement (Wet ponds) (10-YR)	12	41.89	N/A	N/A	Strategic	2					1
9	97	SWS-002 Garden Acres	Alternative B - Storm Drain - Small Pipes	13	35.81	$23,671,786	N/A	Strategic	6	96	Alternate		Street CIP	0
10	98	SWS-002 Garden Acres	Alternative C - Storm Drain and Detention	14	35.81	$22,883,746	N/A	Strategic	6	96	Alternate		Street CIP	0
11	96	SWS-002 Garden Acres	Alternative A - Storm Drain - Large Pipes	15	35.81	$21,680,412	N/A	Strategic	6				Street CIP	0
12	99	SWS-002 Garden Acres	Alternative D - Improved Channels	16	35.81	$6,944,149	N/A	Strategic	6				Street CIP	0
13	411	CIP#00626 Loving Avenue Culvert and Channel Improvements	Alternative 1 - Culvert and Channel Improvements	17	35.65	$5,152,050	4.4	CIP	2					3
14	51	00084 Lebow Creek Master Plan	Lower Lebow Channel Improvements (Overall)	18	35.16	$13,146,762	0.6	Project Development	2			Overall		3
15	257	SWS-026 Prairie Dog Creek	Project 3 – Channel Improvements at Parker Henderson Road	19	31.78	$2,840,195	5	Strategic	5				Street CIP	3
16	443	CIP#01367 East Downtown Storm Drain	9th Street Improvements	20	31.76	N/A	N/A	CIP	9					1
17	506	CIP#01669 Westcliff Drainage Improvements (Surrey Street)	Westcliff Drainage Improvements (Overall)	21	30.91	N/A	N/A	CIP	9			Overall		1
	510	CIP#01669 Westcliff Drainage Improvements (Surrey Street)	Westcliff Drainage Improvements - Phase 1	8	45.01	$6,640,420	4.7	CIP	9	506	Parent-Child	1 of 3		3
	511	CIP#01669 Westcliff Drainage Improvements (Surrey Street)	Westcliff Drainage Improvements - Phase 3	63	11.88	N/A	N/A	Strategic	9	506	Parent-Child	3 of 3		1
18	412	CIP#00627 9100 Trinity Boulevard Culvert Improvements	Alternative 1 - Replace Trinity Blvd Walker / Lorean Branch with 1-1010' Bridge	22	30.22	$16,873,576	0.3	Strategic	5				Street CIP	1
19	229	SWS-017 Wildcat Branch	Alternative 4 - Purchase of At Risk Structures - 5-yr	23	30	$1,399,304	10.7	Strategic	5					3
20	314	SWS-039 Misc Stream Crossings	Section H - Wagley Robertson Road - Alternative 2 - Bridges (Full Section)	24	29.49	$5,841,833	0.5	Strategic	7				Street CIP	3

Scoring Summary
SWS-054 Zoo Creek Storm Drain Flood Mitigation Study
Conveyance – Sandage Relief Line – Overall

RESULTS	
Rank:	3
Score:	61.6
MSCR:	1.3

MAPSHED RESULTS			
Mapshed Number:	55	**Mapshed Rank:**	2
Planning Sector:	TCU/Westcliff		

SCORING BREAKDOWN

Criterion	Score	Weight	Weighted Score	Percentage of Total
D1	100	15%	15	24%
D3	0	5%	0	0%
D4	26	15%	3.9	6%
S1	100	15%	15	24%
T1	10.81	25%	2.7	4%
V1	0	25%	25	41%
		TOTAL SCORE	**61.6**	

COST / BENEFIT

Benefit (from report):	N/A
Cost (from report):	$23,114,597
Cost (Updated OPC):	N/A
Benefit (current dollars):	N/A
Cost (current dollars):	$23,114,597
BCR:	N/A
SW Share:	100%
SW Cost:	$23,114,597

Scenario	Model - Count of Flood-prone Structures by Storm Event					
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Pre-project						
Post-project						

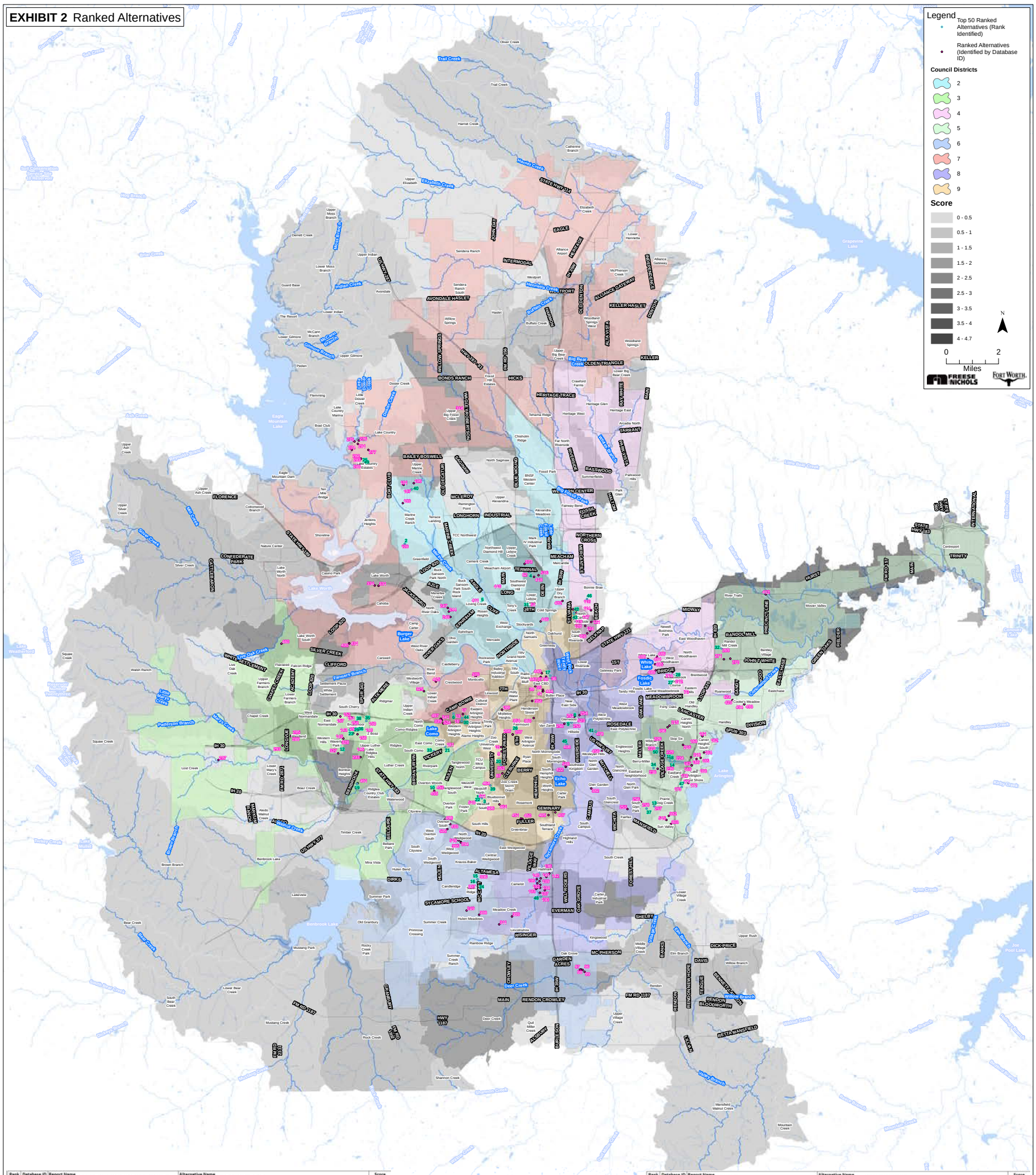
Scenario	Model - Count of Hazardous Crossings/Sumps by Storm Event					
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Pre-project						
Post-project						

	Count of Reported Flooding Incidents by Type			
	Fatality	Rescue	Emergency Response	Complaint
Road	0	6	5	14
	Homes	Instances	Structure Type	
Structural	1	1	3	

FNI has developed a variety of Project Scorecards and Prioritization Matrices to meet the needs of client.

9. CIP

EXHIBIT 2 Ranked Alternatives

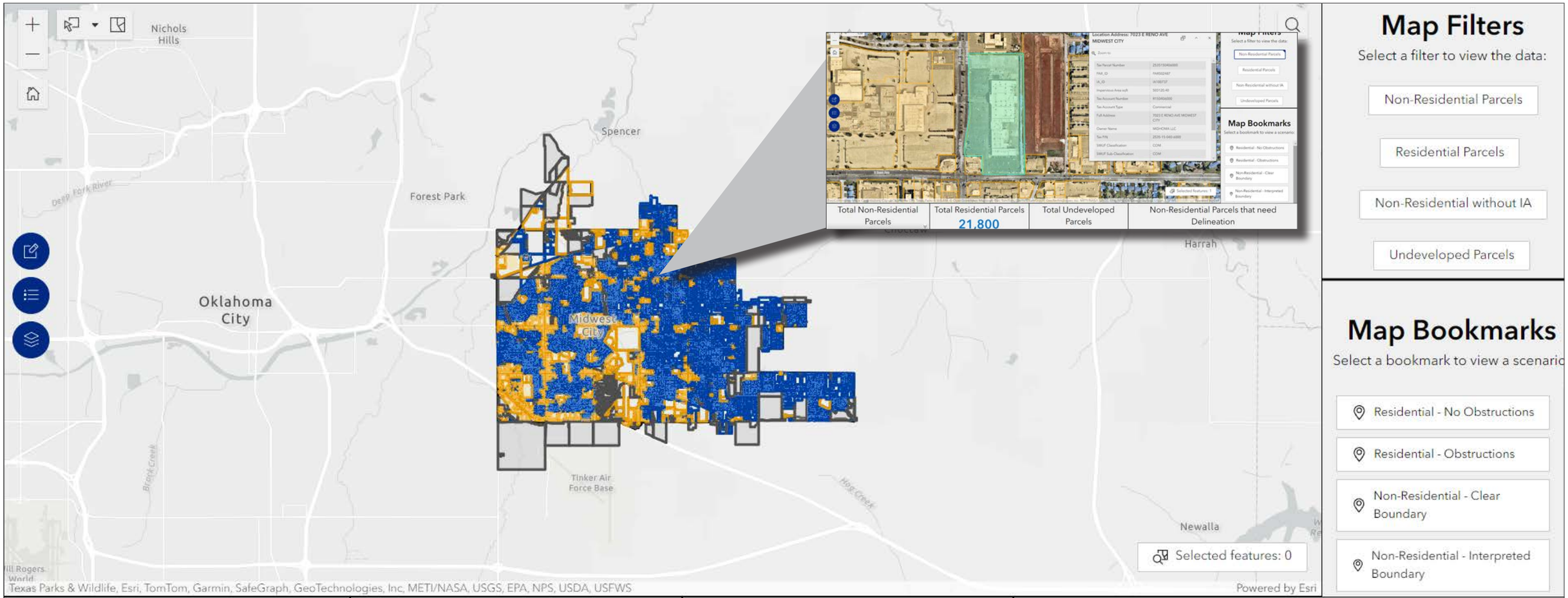


Rank	Database ID	Report Name	Alternative Name	Score
1	510	CIP#01669 Westcliff Drainage Improvements (Surrey Street)	Westcliff Drainage Improvements - Phase 1	85.63
2	128	SWS-005 Greenfield	Option 2 - Storm Drain and Detention Improvements	78.42
3	506	CIP#01669 Westcliff Drainage Improvements (Surrey Street)	Westcliff Drainage Improvements (Overall)	72.72
4	62	00084 Lebow Creek Master Plan	Upper Lebow Channel Improvements and Detention (Overall)	68.63
5	411	CIP#00626 Loving Avenue Culvert and Channel Improvements	Alternative 1 - Culvert and Channel Improvements	66.83
6	14	00080 Central Arlington Heights	2.a. Voluntary Property Acquisition and Demolition with Greenway Detention	59.13
7	253	SWS-025 Glenwood Creek	Alternative Zero - UPRR Culvert Improvements	55.47
8	523	SWS-025 Glenwood Creek	Glenwood Conveyance (Overall)	55.47
9	522	SWS-025 Glenwood Creek	Glenwood Detention (Overall)	55.47
10	452	CIP#01607 Overton Woods Drainage Improvements	Alternative A - 12X10 RCB Culvert - Bellaire Drive Diversion to Stream CF-3	54.28
11	229	SWS-017 Wildcat Branch	Alternative 4 - Purchase of At-Risk Structures - 5-yr	51
12	328	SWS-041 Plantation Creeks	Improvement Alternative 1: 10-YR LOS Culvert Improvements	51
13	257	SWS-026 Prairie Dog Creek	Project 3 – Channel Improvements at Parker Henderson Road	50.46
14	224	SWS-017 Wildcat Branch	Alternative 2B - Lower Channel Improvements and Culvert Replacements	46.65
15	306	SWS-036 Edgecliff Branch	Alternative 2 - Phase 1 (25-YR Design) - McCart Avenue at Edgecliff Branch Improvements	46.21
16	514	SWS-036 Edgecliff Branch	McCart Avenue at Edgecliff Branch Drainage Improvements - Alternative 2 (Overall)	45.73
17	36	00083 East Central Business District	Project 2A - 4th Street Trunkline Outfall Improvements	44.05
18	225	SWS-017 Wildcat Branch	Alternative 2C - Lower Channel Overbank Cuts	42.05
19	521	CIP#01853 Royal Creek Channel Repair	Royal Creek Channel Repair and Culvert Improvements	41.76
20	352	SWS-054 Zoo Creek Storm Drain	Sandage Relief Line	37.7
21	181	SWS-010 Como Creek	6.2.4 - Home Buyouts	37.67
22	511	CIP#01669 Westcliff Drainage Improvements (Surrey Street)	Westcliff Drainage Improvements - Phase 3	36.05
23	143	SWS-007 Broadmoor Closed System	9.4.1 Broadmoor	35.57
24	307	SWS-036 Edgecliff Branch	Alternative 2 - Phase 2 (25-YR Design)- Misty Meadow Channel Stormwater Detention	35.16
25	283	SWS-032 Lake Country - Open Channel	Alternative 1 - Additional Culvert	34.9

Rank	Database ID	Report Name	Alternative Name	Score
26	354	SWS-056 Near Southside	2. Fairmount - Magnolia Bottleneck Removal	34.22
27	212	SWS-015 Woodhaven	Alternative 2 - Conveyance	33.49
28	214	SWS-015 Woodhaven	Alternative 4 - Combination of increased channel capacity and storage	33.26
29	158	SWS-007 Broadmoor Open Channel	Alternative 1: Culvert Improvements	29.05
30	16	00080 Central Arlington Heights	1.a. South Hi Mount Surface Detention	28.7
31	51	00084 Lebow Creek Master Plan	Lower Lebow Channel Improvements (Overall)	28.45
32	269	SWS-030 WF-1	Group No. 2a - Sandybrook Drive Culvert Improvements	28.2
33	507	CIP#00098 East Como Area Drainage Improvements	East Como Drainage Improvements (Overall)	28.2
34	238	SWS-019 Eastland Creek	Project Alternative #1 - Jennifer Court and Eastland Road Improvements	27.54
35	150	SWS-007 Broadmoor Closed System	9.4.2 Calmont East	27.4
36	155	SWS-007 Broadmoor Closed System	9.4.7 Raton	27.4
37	258	SWS-026 Prairie Dog Creek	Project 4 – Level of Service Improvement for Culvert Crossings	27.12
38	151	SWS-007 Broadmoor Closed System	9.4.3 Calmont West	26.57
39	464	CIP#01662 Bluebonnet Hills	Alternative 4 - Inlet Improvements	26.41
40	107	SWS-003 Lake Crest	Design Point 5: Ditch along Bob Hanger Street between Brahma Trail and Hereford Drive	25.26
41	478	CIP#01712 Burchill Channel	Maddox Avenue Alternative 1 - Closed System	24.97
42	517	CIP#00485 Dry Branch Creek Detention Improvements	Dry Branch Creek Detention Improvements (Overall)	24.85
43	401	CIP#00485 Dry Branch Creek Detention Improvements	Ultimate Detention Basin B	23.3
44	13	00080 Central Arlington Heights	1.b. Pipe Rehabilitation (Cured-in-Place Pipe)	23.15
45	408	CIP#00544 Harvey Street Park Storm Drain Rehabilitation	Structural Repair and Utility Relocations	23.15
46	110	SWS-004 Bonnie Brae & Carter- Riverside Neighborhoods	Drainage Area A – Chesser Boyer System	22.94
47	173	SWS-008 Lake Arlington	7.4.2 - Loop 820/Culvert Improvements	22.49
48	130	SWS-006 Hallmark	Storm Drain Line A - Sycamore School Road	22.31
49	280	SWS-032 Lake Country - Neighborhood	Drainage Structure System I1- Storm Drain System Improvements	22.28
50	223	SWS-017 Wildcat Branch	Alternative 1A - Improvements to Mt. Tabor Frac Pond	22.27

FNI will incorporate the final 10- year CIP plan into the Stormwater Master Plan report and GIS Dashboard.

10. Rate Study



FNI will evaluate alternate rate structures based on current available data.

A03

Appendix 3: W-9 Form

W-9 Form

DocuSign Envelope ID: 438BFAF4-EDA1-41A7-9849-049E638A6D19

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ Go to *www.irs.gov/FormW9* for instructions and the latest information.

Give Form to the requester. Do not send to the IRS.

Print or type. See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.
Freese and Nichols, Inc

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☑ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):
Exempt payee code (if any) 5
Exemption from FATCA reporting code (if any) _____
(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.
801 Cherry Street, Suite 2800

Requester's name and address (optional)

6 City, state, and ZIP code
Fort Worth, TX 76102

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN,* later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number
[ ][ ][ ] – [ ][ ] – [ ][ ][ ][ ]

or

Employer identification number
7 5 – 1 5 3 1 9 3 5

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here Signature of U.S. person ▶ DocuSigned by: Gwen Pery B3C985A17F6C44A... Date ▶ 1/4/2024

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9.*

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

Cat. No. 10231X Form **W-9** (Rev. 10-2018)

Mission

Innovative approaches
Practical results
Outstanding service

Vision

Be the firm of choice for clients and employees

Values

FREESE AND NICHOLS LEADS

- L — LEARN CONTINUOUSLY
- E — ENGAGE AS FAMILY
- A — ACT WITH INTEGRITY
- D — DELIVER QUALITY
- S — SERVE ALWAYS

FREESE AND NICHOLS

303-664-6522 | freese.com
4600 South Syracuse Street, 9th Floor | Denver, CO 80237

Statement of Qualifications for

COMPREHENSIVE STORMWATER MASTER PLAN

ICON ENGINEERING

February 16, 2024

TABLE OF CONTENTS

APPENDIX

- 1-page Resumes
- Attachment A
- W-9 Form
- Work Examples

7000 S. Yosemite Street, Suite 120
Centennial, CO 80112
(303) 221-0802
iconeng.com

February 16, 2024

Jason Elkins, PE - via email: jelkins@johnstownco.gov
Town of Johnstown
450 S. Parish Avenue, Johnstown, CO 80534

RE: COMPREHENSIVE STORMWATER MASTER PLAN QUALIFICATIONS

Dear Jason and Selection Committee Members:
ICON Engineering is pleased to submit this proposal to prepare a Comprehensive Stormwater Master Plan for the Town of Johnstown. We believe our experience working in both Northern Colorado and metro Denver communities, in addition to our experience with guidelines and criteria developed by the Mile High Flood District (MHFD), will provide the perfect merger to meet current goals for this project. ICON brings an unmatched balance of technical expertise, creative solutions, and the use of cutting-edge technology to our master plan studies, which we feel will strongly benefit the Town both today and into the future. With that said, *Why Select ICON?*

- **Community Experience.** ICON has a history of working on stormwater master plans with communities of all sizes along Northern Colorado and the Front Range. ICON has recently worked on stormwater master plans for the Towns of Bennett, Milliken, Wellington, Firestone and Lyons, and partnered with the Cities of Dacono, Fort Collins, and Greeley for their Stormwater Master Plans as well. We truly understand the expectations of nearby communities and know how to develop master plans that will be clear, concise, and provide a vital framework for the Town as development occurs.
- **ICON's largest client is the Mile High Flood District (MHFD).** The MHFD exemplifies innovation in Colorado and across the front range. Our work with the MHFD remains on the cutting edge and includes all facets of stormwater engineering from planning through design and construction. Although we anticipate that the goals for Johnstown will be different than the MHFD, the work will still rely on appropriate application of the District's hydrology and hydraulic standards.
- **Cutting Edge Technology.** ICON's current planning studies incorporate today's latest technology and project visualization techniques. ICON routinely integrates two-dimensional flood modeling in the form of RAS-2D, FLO-2D, and dynamic SWMM modeling to thoroughly understand and manage complex drainage situations. This work helps display flood reduction attributes of recommendations and is often used to support future grant requests for project funding. Utilizing Mapbox GL JS, project webmaps *(see Wellington Stormwater Master Plan)* help both technical and non-technical audience interpret the model results.
- **Project Partners.** Our amazing subconsultants are always key to our success. For this project, we have engaged **DHM Design** who we routinely partner with to provide master plans that surpass client expectations. **Calibre Engineering** is also on our team to help us plan the future budget so we can make our proposed improvements a reality.

To help us visualize the overall project, we took drone photos throughout the Town of Johnstown, as well as created an interactive *Webmap showing a 2D Rain on Grid Model* to help us obtain a better understanding of any flooding patterns and foster initial design ideas. Our experienced key staff members are described in detail within our proposal, and we are well supported from a staffing and capacity perspective. This should bring you comfort in knowing we are committed to this project's success for the Town of Johnstown. ICON has no conflict of interest with any other work within the Town of Johnstown, and we have not been involved with the grant application or preparation of the RFQ for this project. Thank you for your time and we look forward to working with you on this important project for your community.

Sincerely,
ICON Engineering, Inc. *(UEI No. NLY UJU 9M2 FN4)*

Jaclyn Michaelsen, PE, CFM
Senior Project Manager | jmichaelsen@iconeng.com
o: (303) 221-0802 | c: (970) 310-1547

Craig Jacobson, PE, CFM
Principal | cjacobson@iconeng.com
o: (303) 221-0802 | c: (303) 898-9717

A. QUALIFICATIONS OF FIRM & PROJECT TEAM

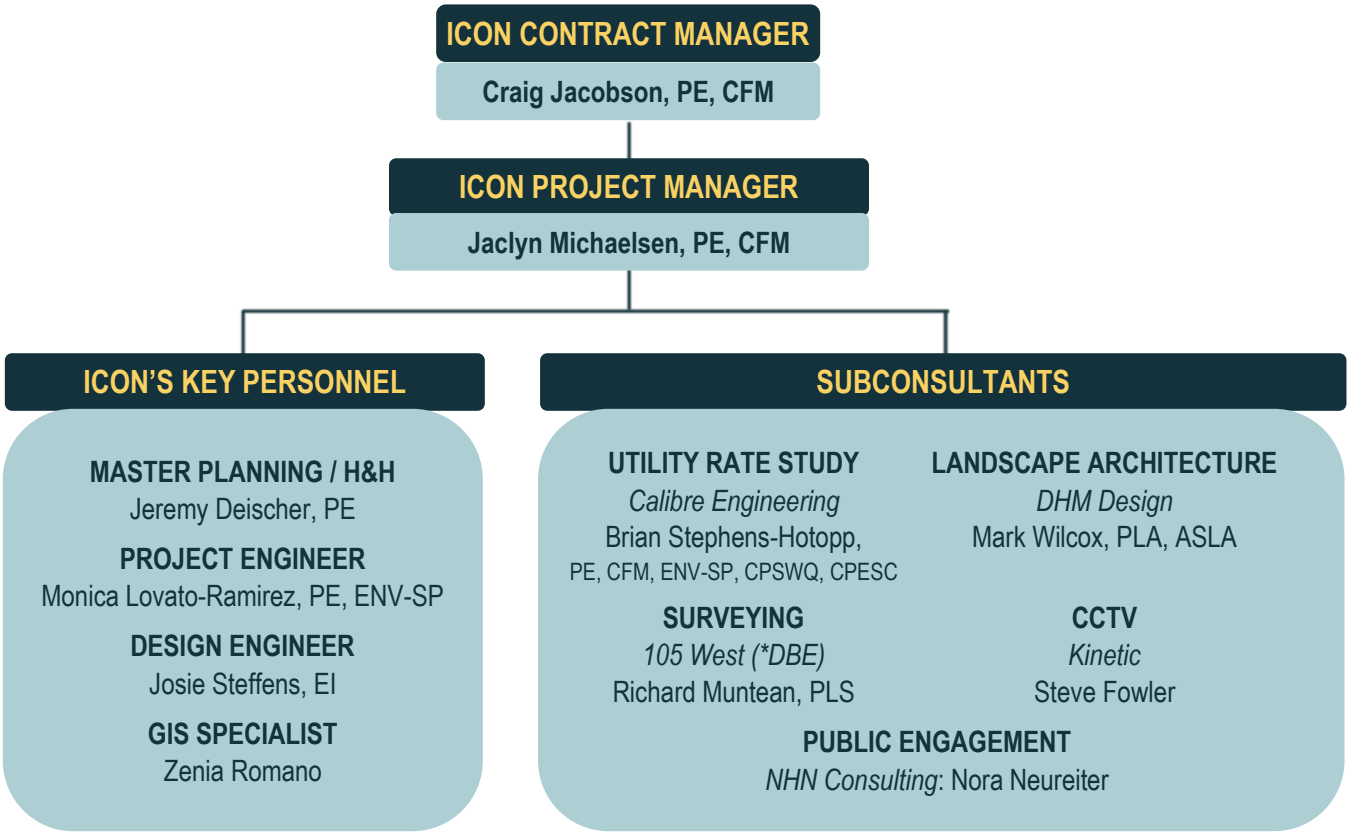
1. Firm Experience

Celebrating 27 years, ICON is a civil engineering firm serving primarily Colorado's public sector clients. Our planning, design, and management of civil engineering projects is most notably expressed through our stormwater and stream restoration, municipal engineering, and roadway design services. We have a total of 37 employees including 16 registered Professional Engineers and 10 Certified Floodplain Managers, with additional support engineers, GIS specialists, CAD technicians, and administrative personnel, who have the time and availability to work on this project. ICON is proficient in producing engineering plans that are efficient, easy to understand, and minimize risk.

ICON has a strong commitment to making improvements within the state of Colorado. The following are the services ICON Engineering excels at providing our Clients.

- Master Planning and Civil Design
- Drainage Infrastructure
- Stormwater Quality
- Flood Risk Management
- Hydrology & Hydraulics / 2D Analysis
- Flood Documentation, Damage Assessment & Recovery
- FEMA Map Revisions
- Benefit Cost Analysis
- Floodplain Delineation
- Stream Restoration & Habitat Enhancement
- Parks & Trails
- GIS Inventory & Analysis
- Roadway Design

2. Project Team



The makeup of ICON's project teams is particularly important to our success. We pledge to the Town of Johnstown that once we are under contract, we will maintain our staff availability to meet the project schedule. Below is a brief description of the key personnel assigned to this project—100% of our team is local and have worked together successfully on master planning and stormwater projects in the past. For additional details about our staff, resumes can be found in the ***APPENDIX*** of this submittal.

ICON'S KEY PERSONNEL	STORMWATER/MASTER PLANNING EXPERIENCE
 **CRAIG JACOBSON, PE, CFM** **Senior Principal | Contract Manager** Craig will be responsible for the overall management of this contract. He brings over 26 years of experience in water resource engineering in the Rocky Mountain Region, including design of public sector infrastructure, flood control measures, drainage improvement, floodplain delineation, master planning, water quality, and design of stabilization and restoration improvements along rivers and major drainageways. He has managed all of ICON's master planning efforts and many design projects for MHFD, City of Greeley, and City of Boulder. He is an expert modeler using both 1D (HEC-RAS) and 2D (HEC-RAS and FLO-2D) analyses. Craig's repertoire includes stormwater rehabilitation projects which focus on cost effective technologies used to add service life without the cost of full replacement.	• Town of Wellington Stormwater Master Plan • Old Town Fort Collins Hydrology Update—Ft. Collins • Sharktooth Basin Master Plan—Greeley • Upper Cooper Slough Master Plan—Ft. Collins • Boxelder Creek Basin Hydrology Update—Ft. Collins • North Greeley and Downtown Stormwater Master Plan • Dry Gulch Drainageway Plan—MHFD • Boulder Creek Restoration Plan—MHFD
 **JACLYN MICHAELSEN, PE, CFM** **Associate Principal | Senior Project Manager** Jaclyn, who works out of ICON's Fort Collins remote location, hold expertise in hydraulic engineering focusing on master planning and design of large storm sewer projects used for flood mitigation. She has 23 years of experience and specializes in master planning, drainage analysis and design, 1D and 2D hydrologic and hydraulic modeling, river analysis, dam design and analysis, floodplain delineation, stream stability, groundwater modeling and analysis, and construction observation. Jaclyn has worked on the design and analysis of high hazard dams, large storm sewer systems, detention facilities, passive and active flood protection measures, and channel improvements.	• Town of Wellington Stormwater Master Plan • Old Town Fort Collins Hydrology Update—Ft. Collins • Garfield-Harrison Outfall System—Loveland • 12th Street Storm Outfall, Phase 1B—Greeley • Mulberry-Riverside Outfall Improvements —Fort Collins • Josephine Stormwater Improvements—Milliken • Upper Cooper Slough Master Plan Update—Fort Collins
 **JEREMY DEISCHER, PE, sUAS Drone Pilot** **Project Manager | Master Planning, H&H** Jeremy brings expertise in hydrologic and hydraulic engineering, focusing on master plan development and design of stormwater projects used for flood mitigation. With 10 years of experience, his projects have included developing hydrologic and hydraulic models using geo-referenced data, creating the ability to seamlessly transition between the modeling program and a GIS interface. Jeremy has experience in all components of a master planning study including geo-referenced basin delineation, conceptual design of improvements and report production. Jeremy is very experienced in 2D hydraulic modeling which has been utilized on previous master plans for benefit-cost analysis that were carried forward in the pursuit of a grant.	• Town of Wellington Stormwater Master Plan • Sharktooth Bluffs Stormwater Master Plan—Greeley • Town of Dacono Stormwater Master Plan • Town of Lyons Stormwater Master Plan • Sand Creek Drainageway Plan—MHFD • Boulder Creek Restoration Plan—MHFD • Tributaries to Willow Creek Master Plan—MHFD • North Greeley and Downtown Stormwater Master Plan

ICON'S KEY PERSONNEL, *Cont'd*	STORMATER/MASTER PLANNING EXPERIENCE
 **MONICA LOVATO-RAMIREZ, PE, ENV-SP** **Project Engineer | H&H Analysis** Monica brings 7 years of experience with advanced skills in storm sewer design, master planning, open channel design, drainage analysis, and hydraulic and hydrologic modeling and design. She regularly utilizes HY-8, HEC-RAS, GEO-HecRas, SWMM 5.1, UD-Sewer, and StormCAD software. Monica has working knowledge of the Mile High Flood District's design criteria and has designed projects according to several different local government agencies.	• Firestone Outfall Systems Plan—Firestone • North Greeley and Downtown Basin Master Plan Addendum—Greeley • Brighton North Outfall, Phase III—Brighton • 12th Street Storm Outfall, Phase 1B—Greeley • Ruston Park Storm Drain Analysis—Federal Heights
 **JOSIE STEFFENS, EI** **Design Engineer | Floodplain Analysis** Josie has gained a breadth of knowledge on floodplain information development and design techniques. Her projects have utilized her skills in developing hydrologic and hydraulic models using geo-referenced data, creating the ability to seamlessly transition between the modeling program and a GIS interface. Josie is familiar with all the components of master planning studies including delineating basins utilizing GIS geoprocessing tools, creating hydrologic and hydraulic models for multiple frequency storms, and designing alternatives to help mitigate flood damage.	• Brighton South Outfall—Brighton • Jessup Street Storm Drain Analysis—Brighton • Sand Creek Major Drainageway Plan and FHAD—Denver • Dry Gulch FHAD—Lakewood/Denver
 **ZENIA ROMANO** **GIS Specialist** Zenia is a GIS professional with experience in document analysis for the ever-changing geographic information systems industry. Her strength lies in collaborating with a team to ensure she utilizes every source necessary for a well-informed outcome. Zenia is proficient in using a variety of CAD and GIS software, including OpenCities Map and ArcDesktop, and has a proven history in cartography, map making and CAD design.	GIS Services for: • Willow Creek Tributaries Major Drainageway Plan and FHAD—Centennial • LOMC Reviews (MHFD) • North of Boulder Creek, Residences One and Two Floodplain Support—CU Boulder • Columbine Valley and Cherry Hills Village On-Call Contracts

SUBCONSULTANTS

DHM DESIGN | Landscape Architecture

DHM DESIGN

ICON and DHM Design have worked together for over 15 years on dozens of projects. Established in 1975, DHM specializes in landscape architecture, land planning, urban design, and ecological design. They believe stormwater quality, natural habitat, and recreation opportunities interconnect, creating layered solutions that contribute to healthy communities. With decades of experience, their staff works toward functioning and flexible designs that integrate with the natural elements within each drainage system.

With an extensive knowledge base in ecological sciences, natural systems and resource management, DHM offers specialized technical services to support projects from conception to completion. Services include assessments of stormwater management, permitting, supporting field work, habitat and wildlife assessments, mitigation work and specific site restoration.

CALIBRE ENGINEERING | Utility Rate Study

Calibre

Founded in 2000, Calibre is a Service Disabled Veteran Owned Small Business (SDVOSB) with a mission to support and serve our communities through high-calibre civil, structural, and whitewater engineering. They have firsthand experience responding to bank collapses and infrastructure failures, and have designed interactive water play features to encourage human connection. Their staff has experience developing comparative utility rate studies, establishing long-term stormwater user fees, and seeking short- and long-term funding solutions for stormwater utilities and City agencies. Calibre and ICON recently worked together on City Center Planning and Design project in Aurora.

105 WEST, INC. *(*M/WBE)* | Land Surveying

105 West has built a reputation for providing cost-effective solutions to modern-day survey challenges on time and under budget since 2006. Their staff is focused on providing surveying and mapping services to the highway, light rail, heavy rail, and aviation industries. They understand that municipal projects require a great deal of coordination with public agencies, and they give attention to detail to subsurface utilities, quality control, and safety within their projects. ICON is currently working with 105 West on a project in Broomfield.

NHN CONSULTING *(*M/WBE)* | Public Engagement

ICON and NHN have worked together on a variety of projects for over ten years - currently on the 48th Avenue Outfall project in Denver. NHN provides public involvement, government relations, and communications services. They develop innovative and targeted public engagement plans based on stakeholder research, a deep understanding of project goals and community drivers, and meticulously crafted communication strategies. NHN Consulting plays an integral part in crafting written materials for a full range of communication outlets.

The team at NHN Consulting is committed to broad outreach that is inclusive of the diverse and varied communities and interests that make up the Town of Johnstown. Their outreach strategies are sensitive to the cultural, historic, social, economic, and language needs of local neighborhoods. Bilingual team members can also support language interpretation and translation needs.

KINETIC INDUSTRY | CCTV Services

Founded in 2014, Kinetic began in the energy sector in Northern Colorado providing the infrastructure, utility, telecom, and oil/gas industries hydrovac, utility locating, potholing and traffic control services. They have since expanded their offerings to include CCTV and pipe cleaning services and are excited for the opportunity to work within the Town of Johnstown.

SUBCONSULTANTS | Key Personnel

Mark Wilcox, PLA, ASLA—Landscape Architect | DHM Design

Mark brings 30 years of landscape architecture experience to the team. His diverse talents range from managing projects to creating beautiful renderings. He understands the technical aspects of funding and implementing his teams design, and has a true passion for seeing Colorado's outdoors become each community's greatest asset. He has been involved in a variety of projects from planning and designing green infrastructure, parks, trails, public facilities, streetscapes and more. Mark has worked with ICON on dozens of projects including the West Vine Basin and Mulberry-Riverside Drainage Improvements projects in Fort Collins, and the award-dinning 39th Avenue Greenway in Denver.

Brian Stephens-Hotopp, PE, CFM—Utility Rate Study Specialist | Calibre Engineering

Acting as a City Engineer representing small and large municipal agencies, Brian spent nearly a decade advancing stormwater management across the Midwest. His experience includes developing utility cost comparisons across agencies and states; developing long-term plans for utility funding; researching and establishing new stormwater user fees; developing programming to fund stormwater improvements; finding and obtaining grant and low-interest finance funding for stormwater capital improvement plans; and writing funding applications. He has managed municipal budgets as large as $25M and established new utility rates for half a dozen communities.

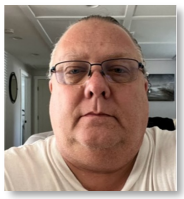
Richard Muntean, PLS—Land Surveying | 105 West, Inc. (*M/WBE)

Rich has more than 27 years of surveying experience in boundary, topographic, and ROW surveying. His expertise includes ROW plans, topographic design surveys, geodetic control networks, ownership maps, data processing and project management. His software expertise includes AutoCAD Civil 3D, Microstation, and OpenRoads. 105 West is currently performing survey services on ICON's Broomfield Heights Stormwater and Pedestrian Improvements project in Broomfield.

SUBCONSULTANTS | Key Personnel, *Cont'd*

Nora Neureiter—Public Engagement | NHN Consulting (*M/WBE)

Nora Neureiter has over 20 years of experience in public policy, communications and constituent relations. Nora has performed public engagement services to ICON on many of our past projects including Jackson Street Storm Sewer Improvements and Sanderson Gulch Channel Improvements projects in Denver. Previous work includes the 13th Avenue Multi-modal Study in Aurora, the Pecos Street Redesign in Adams County, and the Main Street Master Plan in Longmont. All projects combined a multi-phased approach to educate the public on much need improvements early in the process, with ample opportunity for individual property owners, businesses and community members to understand the project at the alternatives and preferred concept design milestones.



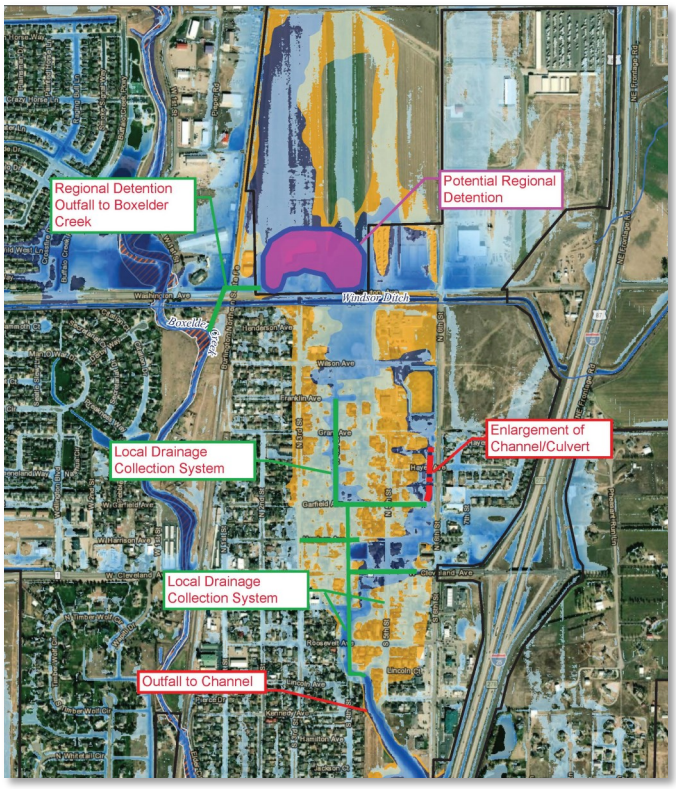
Steve Fowler—CCTV | Kinetic Industry

Steve has over 30 years of experience in the sewer and storm sewer industry. He has overseen field operations for over 20 years of his career including overseeing crews performing CCTV, Vac/Jetting, Repairs, Manhole Lining, CIPPR Repairs, and Lift Stations. Steve has also performs staff management duties, traffic control on site, and managing Kinetic's equipment and safety procedures. He is adept at prioritizing customer needs and ensuring projects are completed to job specifications and deadline requirements.

3. Project Examples

Wellington Stormwater Master Plan | Wellington, CO (2022)

The Town of Wellington, a rapidly growing community in Northern Colorado, was in desperate need of stormwater master plan to help mitigate existing flooding hazards and plan for future stormwater needs. The stormwater masterplan, funded by a CDBG Colorado Development Block Grant, analyzed nearly four square miles within the current Town limits and additionally eighteen square miles within the Town's Growth Management Area. The study included numerous irrigation canals that intercept stormwater throughout the watershed as well as several drainageways with FEMA regulated floodplains present. Using CUHP 2.0 and EPA SWMM, baseline SWMM models were developed to establish peak flows throughout the study area. Two-dimensional modeling was used to analyze flow patterns throughout the basin and revealed flow patterns through agricultural areas that would not have been identified using standard techniques. An online project webmap was developed (LINK here) was prepared to help present two-dimensional and hydrologic results to audiences with varying technical backgrounds.



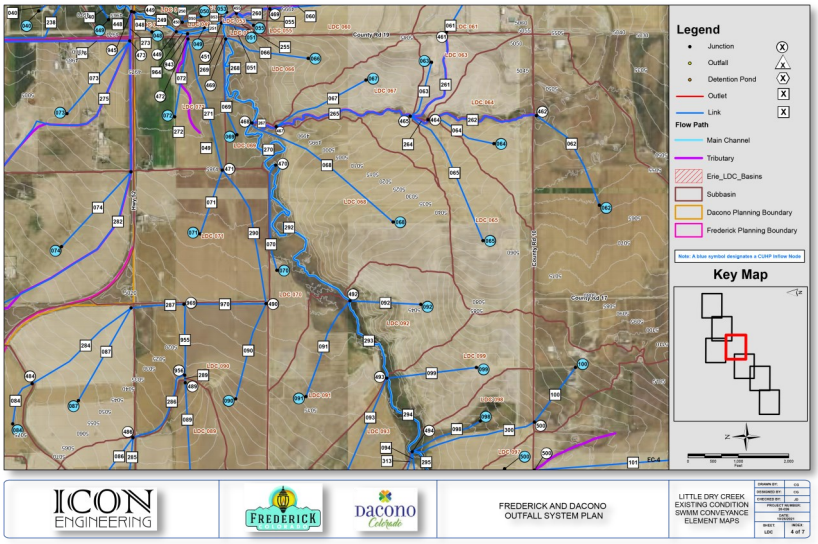
Through close communication with Town Staff, alternatives explored wide-ranging mitigation goals which included both short-term needs such as additional inlets to maximize the performance of existing infrastructure as well as long-term regional detention facility planning for future development. Costs and prioritization of improvements were provided to the Town to assist in their implementation efforts.

As part of the stormwater masterplan, the existing drainage criteria was reviewed for conformance with other northern Colorado communities and MHFD guidance with recommendations provided to the Town.

Reference: Nathan Ewert, PE, CFM | Town of Wellington | c: (970) 473-0014 | ewertna@wellingtoncolorado.gov

Frederick-Dacono Outfall System Plan | Frederick, CO (2022)

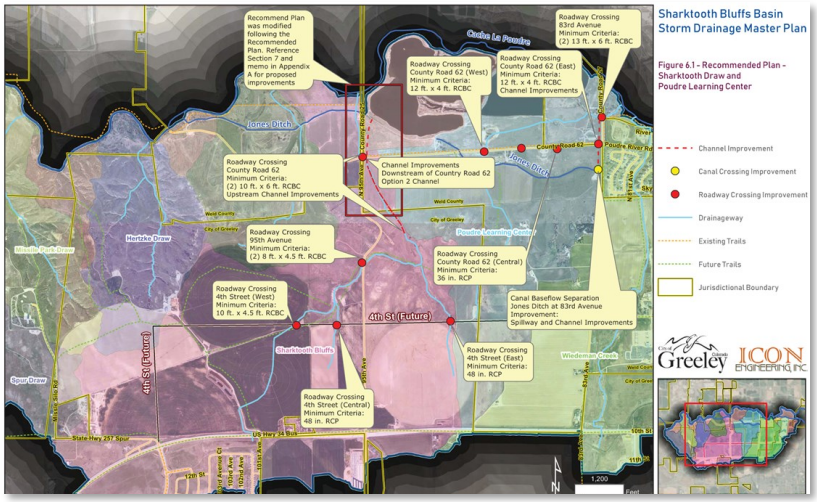
The Frederick Dacono Outfall Systems Plan was developed in conjunction with Anderson Consulting Engineers for Little Dry Creek, a left bank tributary to the South Platte River. The study was developed to assist the Town of Frederick and City of Dacono plan for future annexation and development in the watershed. Several hydrologic scenarios were created using CUHP / SWMM for the nearly 20 square mile study area to evaluate both existing conditions land use and future land use, with consideration given to future detention. Alternatives were designed to ensure roadway crossings were adequately sized for existing flows and fully developed watershed discharges. Proposed improvements will be integrated into the Town's CIP program in the coming years.



Reference: Brian Smith | Anderson Consulting | (970) 226-0120 | brian.smith@acewater.com

Sharktooth Bluffs Basin Stormwater Master Plan | Greeley, CO (2019)

As Greeley continues to expand western and annex additional land, the City identified the Sharktooth Basin as a pivotal area to prepare a stormwater master plan to guide future development and address existing flooding hazards. The study area, encompassing approximately eight square miles within the City of Greeley, the Town of Windsor, and unincorporated Weld County is expected to grow by up to fifty percent within the next twenty years. The baseline hydrologic model utilized CUHP and EPA SWMM and consisted of over one hundred subwatershed to study the eleven separate tributaries. Two-dimensional modeling was used to validate basin delineation, and identify areas of high-hazard flooding not previously identified in past studies.



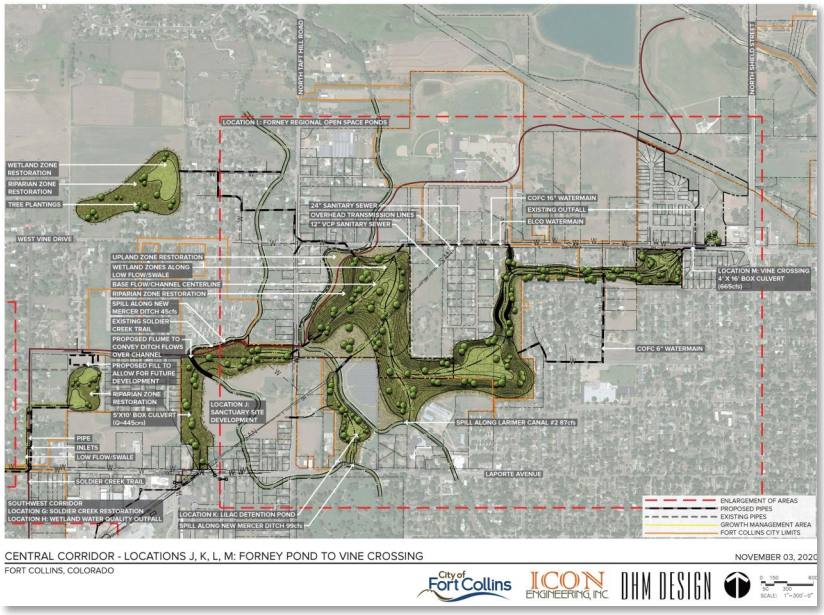
Alternatives developed aimed to mitigate existing flooding hazards identified in the baseline modeling and observed flooding from residents and provide guidance for future development. Future land use hydrology models allowed the team to develop the required detention volumes for each subwatershed. For tributaries where FEMA regulatory floodplains do not exist and allow the City to regulate the extents of development, stream corridors or 'buffers' widths were developed to aid City staff in talks with developers to provide the drainage ways adequate space as development occurred. A benefit-cost analysis was completed to analyze proposed improvements to help prioritize projects with the resulting conceptual design refined to a 20% design.

Reference: Karen Reynolds | City of Greeley | (970) 336-4031 | karen.reynolds@greeleygov.com

West Vine Basin Stormwater Master Plan | Fort Collins, CO (2021) (*w/DHM Design)

Following ICON's hydraulic update for this watershed, this master plan focuses on development of alternatives, developing of a scoring matrix to assess alternatives, benefit cost analyses, development of project recommendations, public process support, mitigation plan description, and development of visual renderings and conceptual design drawings. Overall, this analysis considers existing and proposed land use, existing and proposed drainage infrastructure, known and identified flooding problems, stormwater quality enhancement, right of way requirements, existing documented wetlands and riparian zones, and project costs.

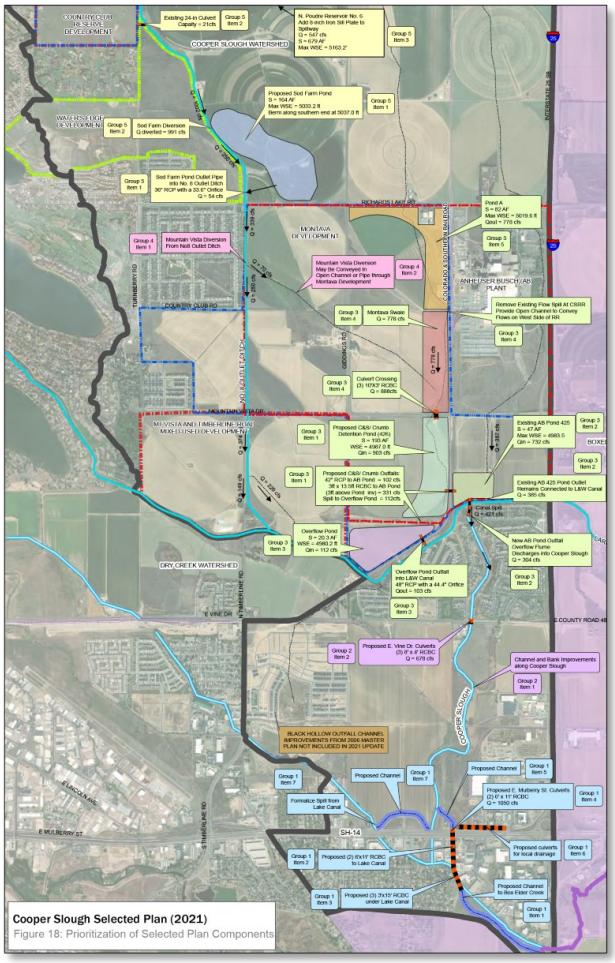
Reference: Beck Anderson | City of Fort Collins
(970) 221-6682 | banderson@fcgov.com



Upper Cooper Slough Master Plan Update | Fort Collins, CO (2020)

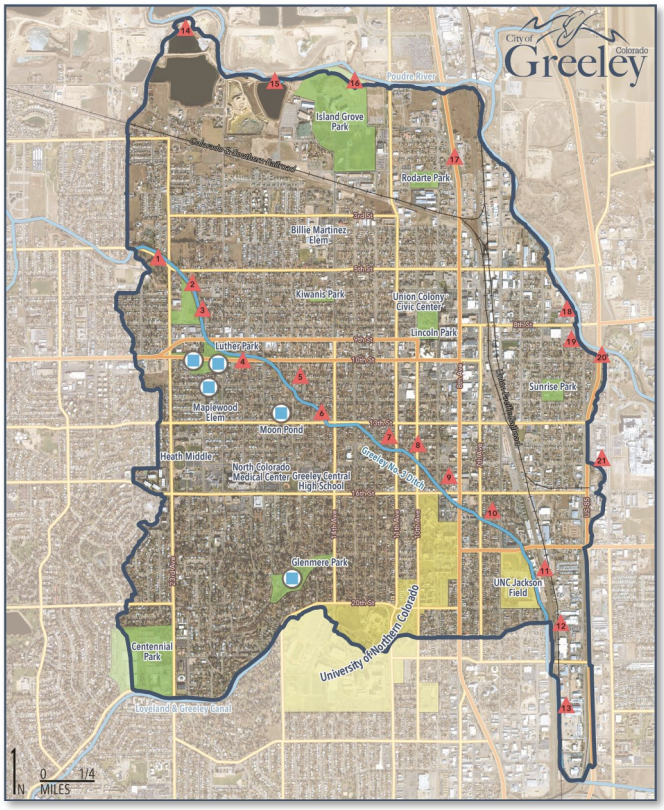
The purpose of the study was to review the changes in hydrology along Cooper Slough, given the inclusion of past master planning solutions and future development potential. Following the hydrology updates in the Box Elder Watershed, this update to the proposed master plan improvements became necessary. For this project, ICON collaborated the City and key stakeholders, including active development groups and the Larimer and Weld Irrigation Company. Project work included hydrologic and hydraulic modeling (EPA-SWMM kinematic and dynamic methods), 2D floodplain assessments, alternative development, benefit costs comparisons, cost estimating and project phasing recommendations. The selected plan of improvements resulted in a combination of stormwater, detention, water quality, and roadway improvements that functions both for City stormwater management and future development needs

Reference: Beck Anderson | City of Fort Collins
(970) 221-6682 | banderson@fcgov.com



North Greeley Downtown Drainage Master Plan | Greeley, CO (2019) (*w/DHM Design)

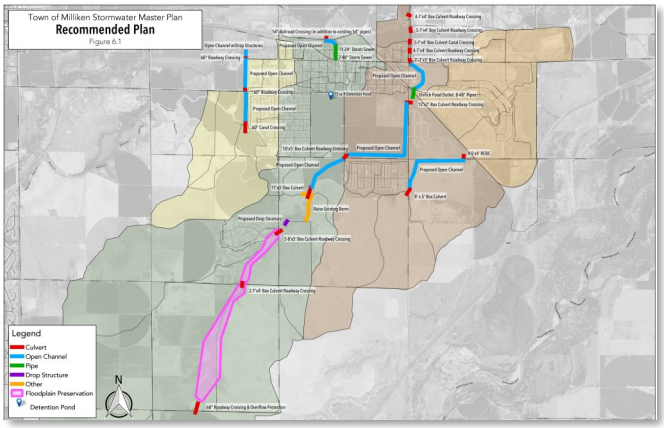
ICON assisted the City of Greeley with the development of a storm drainage master plan for the North Greeley and Downtown Basin. This project included and updated hydrologic evaluation of complex urban runoff for the City. This urbanized five square mile watershed has no well-defined major drainageway, with storm runoff generally conveyed overland through the downtown area. Hydrologic analysis included 300 subwatersheds and involved diversion curves generated by FLO-2D to determine flow splits at street intersections. Alternatives were developed to, at a minimum, provide storm drainage capacity meeting current city criteria and solutions to reduce flooding on insurable structures. Alternatives were evaluated using a benefit-cost analysis of over 5,000 structures. The benefit-cost analysis was performed using FLO-2D inundation for each of the city's design return intervals. Modeling was predominately completed using EPA-SWMM, but supplemented with FLO-2D and unsteady flow HEC-RAS to define complicated flow splits, canal spills from the Greeley No. 3 Canal, and flood inundation potential. The selected plan was refined to a 20% design level.



Reference: Karen Reynolds | City of Greeley | (970) 336-4031 | karen.reynolds@greeleygov.com

Milliken Stormwater Master Plan & Josephine Stormwater Improvements Milliken, CO (2015)

In September 2014, ICON Engineering completed a stormwater masterplan for the Town of Milliken. The plan provided important basin delineation, hydrologic, hydraulic engineering and 2D floodplain analysis for the Town's watersheds. The master plan identified function of existing stormwater facilities, existing flood hazards, and proposed improvements to mitigate those hazards. The resulting benefit cost analysis provided valuable input to prioritizing improvements known as the Josephine Storm Sewer Outfall. The Master Plan work was also useful in establishing current stormwater criteria and the Town's storm water utility fee that was codified in 2015. The Town's master plan work was developed in hardcopy and online formats.



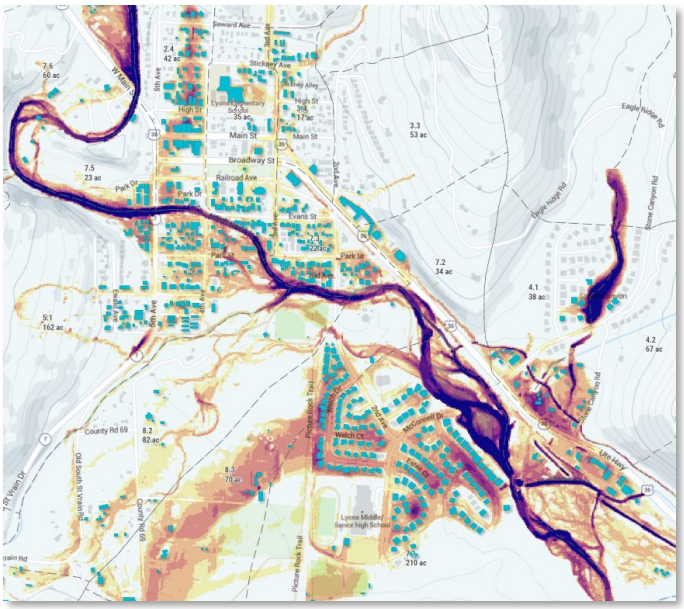
Refer to link: Milliken Stormwater Master Plan

The Josephine Storm Water Improvements Project results in the reduction of local flood hazards in the Town of Milliken's largest subwatershed running through one of the oldest portions of Milliken. ICON designed a storm sewer system will reduce flood damages from storm water flows that exceed the limited capacity of what remains of Lola Tributary. Sheet flows, ponding, and dangerous flood conditions affecting public and private property will be reduced. And the modern storm sewer improvements to Lola Tributary will increase the natural and beneficial use of the floodplain. Overall, the project mitigates a significant hazard in the Old Town neighborhoods of Milliken. The project also reduces the overtopping of the Highway from approximately 155 cfs to approximately 30 cfs.

Reference: Kent Brown | Town of Georgetown | (303) 569-2555 | townadmin@townofgeorgetown.us

Town of Lyons Stormwater Master Plan | Lyons, CO (2016) (*w/DHM Design)

ICON was tasked to create a master watershed study and master drainage plan for this 8.6 mile study area within the Town of Lyons and its immediate upstream tributary drainages. The study identified and quantified the tributary drainage basins to the Town and the existing drainage improvements in Town, researched historic issues, calculated and determined needs for runoff conveyance and potential mitigation including the quality of the runoff from the drainage basins, evaluates and established methods for regional and localized mitigation measures, created budgets for implementation, and identified permitting requirements. The result was a Watershed Master Drainage Plan for the Town and Immediate Upstream Tributary basins which included the analysis, plans and recommendations, provisions for standards and codes, budgets and implementation schedules for the systems necessary to provide a safe, sustainable and resilient Town. This plan enabled Lyons to move toward implementation of critical projects to reduce the potential damages from localized flooding.



Reference: Victoria Simonsen | Lyons Town Administrator | (303) 823-6622 x19 | vsimonsen@townoflyons.com

B: PROJECT UNDERSTANDING AND APPROACH

Project Understanding

ICON Engineering has compiled a team that is committed to assisting the Town of Johnstown in creating a comprehensive Stormwater Master Plan for the Town and it's growing community. We will provide the following services:

- Surveying to supplement GIS information and data required to provide a detailed model
- Assessment of the Town's existing storm drainage systems
- Hydrologic analysis to quantify flows
- Hydraulic Analysis to determine street, existing storm drainage system and inlet capacities
- Development of a comprehensive Stormwater Master Plan for the Town of Johnstown
- Perform a Rate Study to plan for future funding and implementation of the proposed projects identified in the master plan

Town of Johnstown

The Town of Johnstown has thrived for nearly 120 years! The 13.84 sq mile municipality started as a farming and ranching hub. Gradually, Johnstown evolved from a small rural community into a thriving town with businesses, schools, and other amenities, officially incorporating as a municipality in the early 20th century. Today, Johnstown continues to grow and prosper, serving as a vibrant community in northern Colorado.

Over the past 20 years, Johnstown has experienced significant growth and development. The town's population has steadily increased as more people have moved to the area seeking employment opportunities, affordable housing, and a high quality of life. This influx of residents has led to the expansion of housing developments and the construction of new neighborhoods to accommodate the growing population. Overall, Johnstown's growth over the past two decades reflects its emergence as a dynamic and thriving community in northern Colorado, attracting residents and businesses alike with its opportunities and amenities.

As Johnstown experiences growth, planning for drainage infrastructure becomes increasingly important in order to manage stormwater runoff effectively and mitigate the risk of flooding. This

Stormwater Management Plan must be fully comprehensive to assess current drainage systems, identify areas prone to flooding, and outline strategies for improvement. This plan needs to incorporate both short-term solutions to address immediate needs and long-term strategies to accommodate future growth. By proactively planning for drainage infrastructure, Johnstown can effectively manage the challenges associated with growth while preserving the safety, health, and resilience of the community.

Existing Master Plan

The previous master plan has a been a great planning document to help direct the Town as they grow. Since that master plan was developed over 20 years ago, updating it offers several advantages:

1) Reflect Current Conditions: An updated plan takes into account changes in population, land use, and climate patterns that have occurred over the past two decades. This ensures that the stormwater management strategies are relevant and effective for present-day conditions.
2) Improved Data and Technology: Advances in technology and data collection methods allow for more accurate assessments of stormwater runoff, flood risk areas, and infrastructure needs. Incorporating these advancements into the updated plan will lead to more precise modeling and analysis.
3) Enhanced Resilience: Advances in technology and data collection methods allow for more accurate assessments of stormwater runoff, flood risk areas, and infrastructure needs. Incorporating these advancements into the updated plan will also lead to more precise modeling and analysis.
4) Community Engagement: The process of updating the stormwater master plan provides an opportunity for community engagement and input. Soliciting feedback from residents, businesses, and other stakeholders can help identify local concerns, priorities, and preferences, leading to more inclusive and effective stormwater management solutions.
5) Cost Savings: By identifying cost-effective solutions and prioritizing infrastructure investments based on current needs and future projections, an updated master plan can help optimize financial resources and minimize long-term maintenance and operational costs.
6) Sustainable Development: Incorporating principles of sustainability and green infrastructure into the updated plan can promote environmentally friendly stormwater management practices which contribute to ecosystem health and water quality improvement.

Ultimately, updating the Town of Johnstown's 20-year-old stormwater master plan will enable your community to adapt to changing conditions, improve resilience, and better manage stormwater resources in a sustainable and cost-effective manner.

Project Approach

The development of the master plan study will generally follow the scope-of-work outlined in the RFP, including what is outlined in the attached ***Proposed Schedule on Page 21.*** At the onset of the project, the team will coordinate with the Town and key stakeholders to ensure all project goals and timelines are identified. Previous data, such as the previous stormwater master plan, planning documents, and infrastructure inspections, will be reviewed as the baseline hydrologic models are developed. With input from the City, problem areas will be identified, including degrading or undersized infrastructure that pose flooding hazards to residents. Alternatives will be designed to mitigate flooding hazards to rehabilitate or replace key infrastructure as discussed with project stakeholders. The highest-ranking alternatives will be refined to a conceptual design plan of improvement and include cost estimates for each improvement. Funding opportunities, such as a stormwater utility fee structure, will be evaluated and we will provide recommendations to assist the City in securing long term funding to implement the plan of improvements. An optional service of reviewing the current development standards and providing recommendations of modifications will also be included.

Key tasks will include:

Project Coordination and Data Gathering

The RFP outlines the expectation for this task. There are a few areas that we would like to expand upon further:

- ## Project Meetings

  Project Meetings are anticipated to occur twice a month between ICON's management staff and the Town's project manager in order to keep the project on schedule and budget. Additional members from the Town may be asked to attend meetings as directed by the Town's project manager. ICON will prepare and distribute project agendas and meeting minutes. Additional correspondence is anticipated via phone conferences and email .

- ## Community Engagement Workshops

  Public Engagement is a critical part of stormwater master plans that are often are overlooked by communities. Overall, public outreach plays a vital role in promoting community involvement, raising awareness, gathering input, addressing concerns, and building support for stormwater management initiatives outlined in the master plan. Effective communication and engagement strategies can enhance the plan's success and contribute to the long-term resilience and sustainability of the community.

  Involving the community in the planning process fosters transparency and builds trust. It allows residents and stakeholders to voice their concerns, provide feedback, and contribute valuable insights based on their local knowledge and experiences. Public outreach efforts can also educate residents about stormwater management practices, the importance of reducing runoff pollution, and the potential impacts of stormwater on water quality, flooding, and ecosystems. By raising awareness, communities can foster a culture of environmental stewardship and encourage behavior change.

  Engaging stakeholders such as local businesses, government agencies, and community groups ensures that diverse perspectives are considered in the planning process. Stakeholders may have valuable expertise, resources, or priorities that can inform the development of the master plan and enhance its effectiveness. Public outreach activities provide opportunities to identify and address local concerns related to stormwater management, such as flooding in certain neighborhoods, erosion problems, or pollution hotspots. By understanding community priorities and challenges, planners can tailor the master plan to meet the specific needs of different areas within the jurisdiction.

Additionally, engaging the public early in the planning process can help build support for the implementation of the master plan. When residents and stakeholders feel heard and included in decision-making, they are more likely to support funding initiatives, policy changes, and infrastructure projects aimed at improving stormwater management. Public outreach efforts can also serve as a platform for communicating risks associated with stormwater, such as flood hazards or water quality concerns.

NHN Consulting (NHN) is included in our team to assist in the public outreach process. They develop innovative and targeted public engagement plans based on stakeholder research, a deep understanding of project goals and community drivers, and meticulously crafted communication strategies. As stated in the RFP, there will be three engagement workshops that will be lead by NHN. They will help create a workshop that will result in useful information that can be used to enhance the stormwater master plan.

A project page for the stormwater master plan project will be developed and updated throughout the project's development. After the baseline hydrology phase is complete and the problem identification phase is underway, an interactive online survey will be created to collect additional feedback .

- ## Stakeholder Coordination

  The irregular boundary of Johnstown emphasizes the necessity of collaborating with neighboring municipalities to develop

an implementable plan effectively. ICON recognizes the importance of coordinating with adjacent jurisdictions to align our master planning efforts with their drainage studies and planning initiatives. *Having previously created the stormwater master plan for the Town of Milliken and maintaining close partnerships with the City of Loveland, ICON is well-equipped to facilitate this coordination process.* Additionally, our status as on-call consultants for both the City of Loveland and Weld County further strengthens our ability to foster collaboration and ensure seamless integration of stormwater management strategies across jurisdictions. Through proactive engagement and partnership, we aim to develop a comprehensive and sustainable plan that addresses the unique challenges and opportunities presented by Johnstown's complex boundary.

- ## Information Gathering/Field Verifications

  In order to create an accurate PC/EPA SWMM model and integrate the existing infrastructure with local runoff, 105 West will perform field verifications as needed. 105 West will also perform periodic field verifications to ensure that the information obtained from the Town does not have any datum busts. Online Lidar data can be downloaded to be used as needed to enhance the study. Lidar was downloaded for this proposal in order to create a 2D model to create a more detailed, accurate, and holistic assessment of runoff patterns through the town and surrounding areas.

- ## Maintenance Crew

  Having a meeting with the Town's maintenance crew will provide valuable insight into the Town's existing infrastructure and drainage problems. Maintenance crews often have intimate knowledge of the infrastructure's condition, including areas prone to flooding, recurring drainage issues, and maintenance challenges. Their input can help identify priority areas for improvement, highlight potential maintenance needs, and inform decision-making related to stormwater management and infrastructure maintenance. Additionally, involving maintenance staff in the planning process fosters a sense of ownership and collaboration, leading to more effective and sustainable solutions for addressing drainage problems and maintaining the Town's infrastructure and will help direct future improvements.

- ## Condition Assessment

  Kinetic Industry is on our team to provide additional CCTV data collection as needed to help assist in making recommendations for pipe replacements and repairs and to supplement the conditions assessment of the existing infrastructure. Kinetic Industry is a single resource for municipal and industrial utility projects and are a leader in the underground utility industry. They have 24/7 availability and rapid response services to minimize risks to infrastructure, unplanned maintenance, and costly shutdowns.

- ## GIS Data Review and Dashboard Development

  ICON's team can provide valuable assistance in GIS data review and compilation. Zenia Romano is ICON's GIS specialist. She brings extensive GIS experience and expertise to the team. With her proficiency in GIS technologies and data analysis, she can effectively review existing GIS data sets, identify any gaps or inconsistencies, and compile comprehensive datasets tailored to the specific needs of the project. Zenia's skills enable her to ensure data accuracy, integrity, and compatibility, laying a solid foundation for informed decision-making and effective planning processes. By leveraging ICON's GIS expertise, we can deliver high-quality GIS solutions that support the project's objectives and contribute to its overall success.

  Integrating stormwater master plans into an online environment has become standard practice for all our master plan projects. ICON is extremely well-versed in several different platforms that can be implemented based on Town's preferences. Some of options that will be discussed with the Town during scoping include:

  ESRI – ESRI is often the most popular and easily integrated into a Town hosted online platform. In addition to creating dashboards to present spatial datasets, ICON has developed several different ESRI storymaps. These storymaps have been extremely useful to present information to audiences of varying technical backgrounds into an easily digestible format. Some examples include:

  - Willow Creek Upstream of Quebec - Public Storymap
  - Willow Creek Upstream of Quebec Technical Stream Assessment
  - Poudre River Alternatives
  - High Line Canal Stormwater Conversion Design Report

Mapbox GL JS – An open source platform, Mapbox often provides additional functionality not available in a typical ESRI interface. These webmaps, hosted by ICON, are often useful for Town staff when reviewing modeling. Some previously completed webmaps include:

- North Greeley and Downtown Basin SWMP
- Town of Wellington SWMP
- Sand Creek Major Drainageway Plan
- Town of Lyons SWMP

Felt – ICON prides itself on being on the fore front of emerging spatial technologies and pushing the boundaries of current technology. One emerging technology that has filled the gaps in missing features of both ESRI and Mapbox platforms recently is Felt. ***ICON was one of one Felt's first adopters, and has developed a preliminary webmap for the Johnstown study.***

- **Johnstown SWMP**
- Brighton South Outfall SWMP
- Dry Gulch FHAD

Online Master Plans – In addition to visual representations of master plan moving to an online interface with webmaps, ICON has experience converting the text based study into an online interface. This can be done through a ESRI storymap platform as referenced above or through online languages as was utilized in the Town of Milliken and Town of Lyons Stormwater Master Plans, and the Leyden Creek Major Drainageway Plan, accessible at the links below:

- Town of Milliken SWMP
- Lyons Online SWMP
- Leyden Creek Online Major Drainageway Plan

We also have drone capabilities and can create a website utilizing the information obtained. These websites serve as valuable communication tools, offering stakeholders a visual representation of the project area and the ability to explore key features, potential challenges, and proposed solutions. By presenting information in a user-friendly and accessible format, stakeholders can gain a deeper understanding of the project scope, objectives, and implications. This transparency fosters engagement, encourages feedback, and facilitates informed decision-making among Town officials, Council members, and other stakeholders. Example Project Sites Utilizing Drone Footage:

- Brighton South Outfall SWMP
- Westerly Creek at Stanley Marketplace
- 12th Street Outfall
- Willow Creek at Sterling Ranch

Stormwater Master Plan

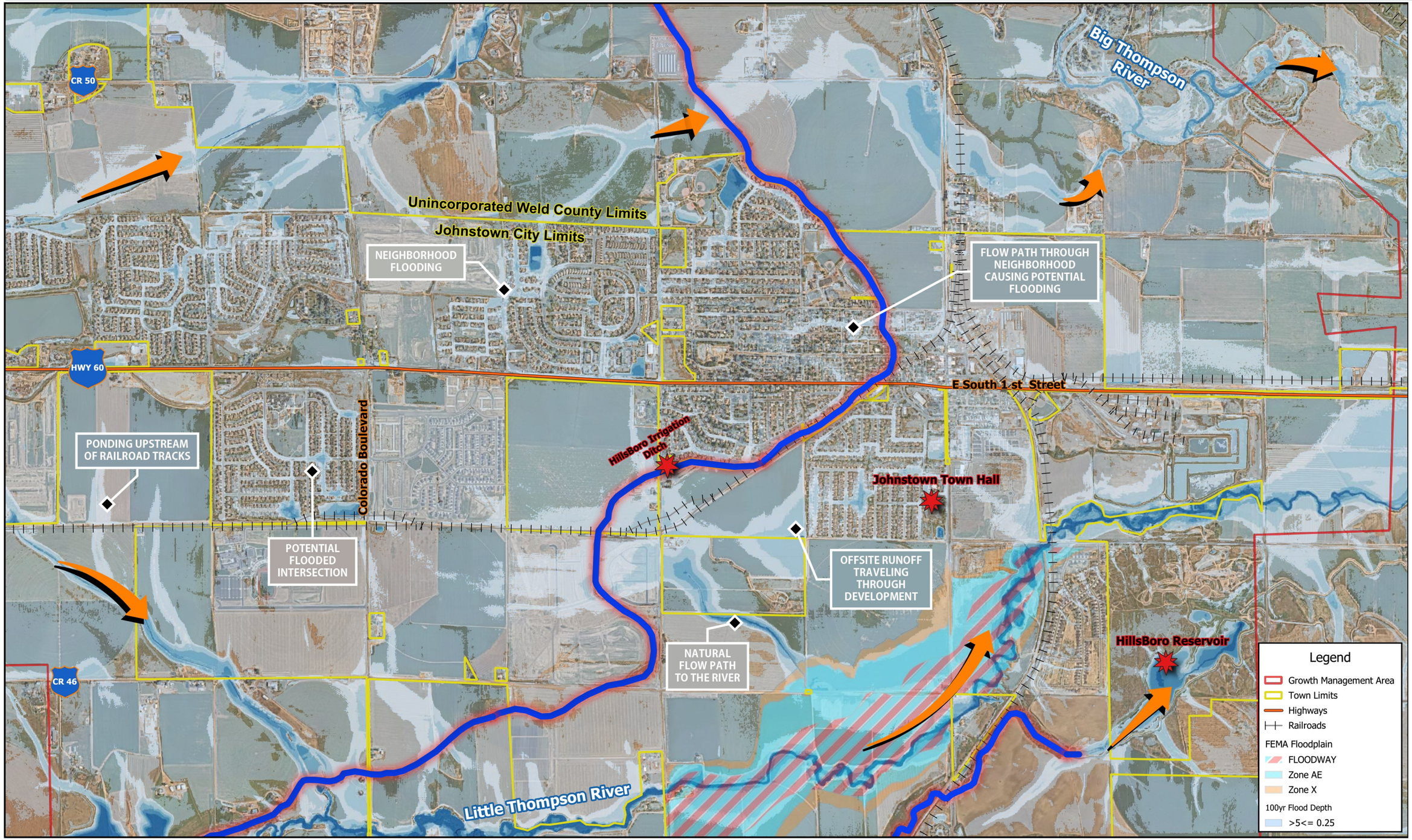
There are many key items required to make a masterplan that can be used as a planning tool for decades to come, including:

2D Rain on Grid: At the onset of every master plan, a 2D rain-on-grid model is developed to analyze runoff patterns throughout the Town and surrounding area. This model serves as a foundational tool for identifying key design points and assessing potential flood concerns. By simulating rainfall events and the resulting runoff, the model provides insights into how runoff flows through the area, highlighting vulnerable zones and areas susceptible to flooding. This information is invaluable for informing the design and implementation of stormwater management strategies, guiding infrastructure development, and mitigating flood risks effectively. ***Exhibits A and B on the following pages show a 2D Rain on Grid model that was created specifically for this proposal.***

Ditch Modeling: The Hillsboro Ditch travels through the Town. According to the current Master Plan, as the ditch travels through the town the volume of storm runoff collected in the ditch will quickly exceed the ditches capacity, thereby overtopping the banks of the river and causing downstream flooding.

Ditches often create modeling headaches. FEMA recommends assuming the ditch is full, and the water passes through if it has no impact on the runoff. This modeling approach is often inaccurate and does not represent existing conditions. We recommend creating a dynamic model of the ditch assuming that at the time of a storm event the decreed flow is in the ditch. Inflow hydrographs are input as inflows and outflow hydrographs and locations are determined by the model. The existing engineered outflow structures will be added into the ditch as well as the existing topography to help locate the spill locations along the banks. The master plan will look at improvements that will pass the water through the ditch and/or upstream infrastructure. The proposed improve-

FIGURE 1



ICON ENGINEERING

Figure 1 : Rain on Grid 2D Analysis - Downtown Johnstown

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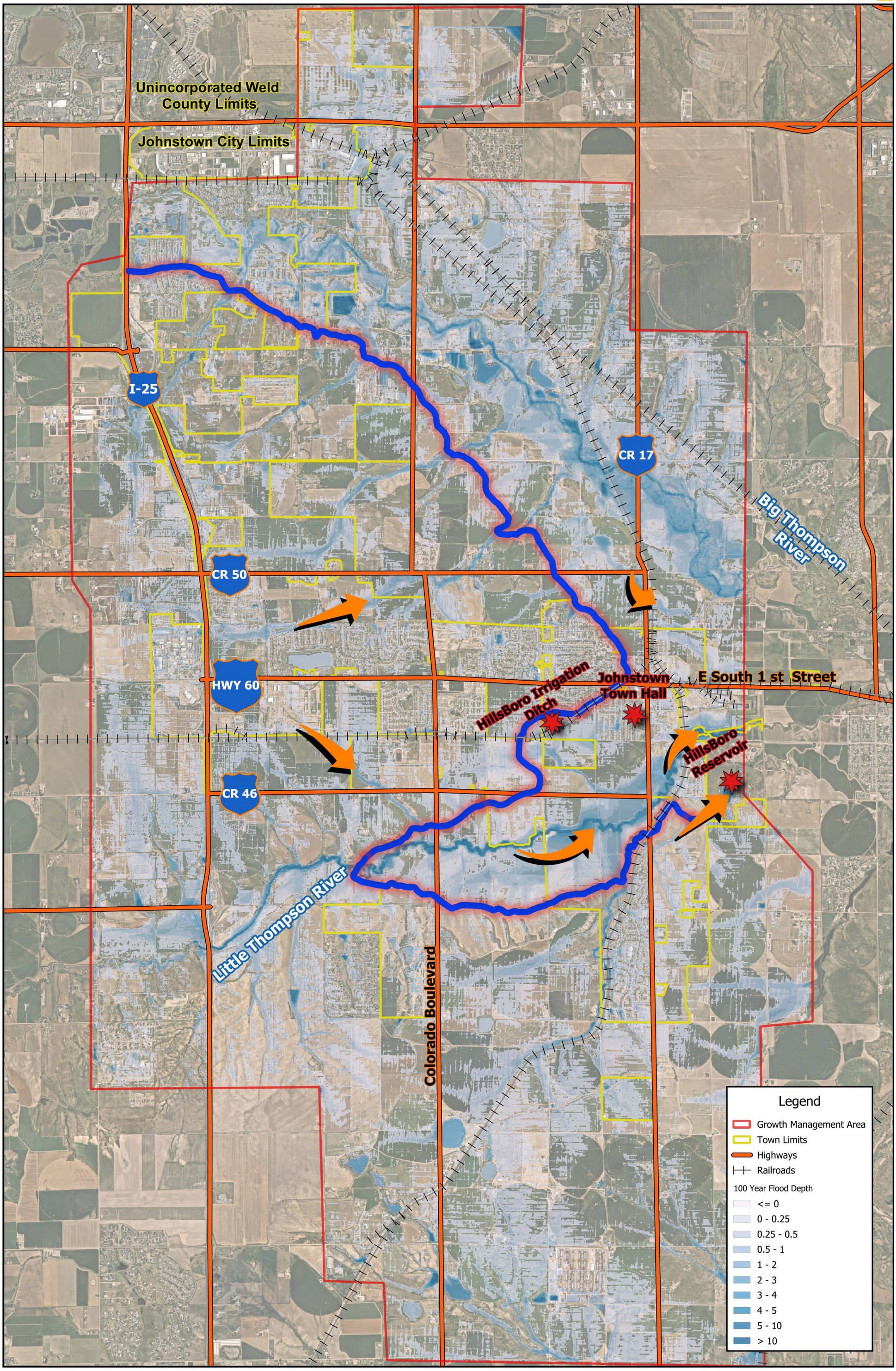


ICON ENGINEERING

Figure 2: Rain on Grid 2D Analysis - Downtown Johnstown

ments will reduce the upstream flow to ditch capacity or to a manageable amount downstream.

Railroad Embankment: The existing railroad tracks are slightly raised, thus backing water up creating a barrier for storm flows. This is seen in the exhibits within this proposal. Not only do the railroad tracks create an above ground barrier, but they also hinder the installation of future storm drainage systems. The master plan should incorporate the railroad alignment into the proposed improvement alternatives, determining ways to reduce upstream ponding against the railroad, while providing a way for the runoff to reach the river.

Proximity to Rivers/Water Quality: The Town is located between two rivers. The Big Thompson and Little Thompson Rivers combine east of the town limits. The rivers can be used as a natural outlet for the storm improvements. However, while utilizing the rivers for stormwater discharge, it's essential to prioritize preserving their ecological integrity and natural functions. This includes minimizing erosion and sedimentation, protecting riparian habitats, and preserving water quality. Implementing best management practices such as vegetated buffers, erosion control measures, and sediment traps can help mitigate potential impacts on river health.

Before discharging stormwater into the rivers, the Town should explore opportunities to enhance water quality through stormwater treatment measures. Incorporating green infrastructure, such as biofiltration swales, constructed wetlands, or vegetated detention basins, can help remove pollutants and improve water quality before discharge. Additionally, implementing erosion control practices and minimizing runoff from impervious surfaces can further protect water quality in the rivers. The master plan provides a great opportunity to also address water quality in the basin.

By carefully balancing stormwater management objectives with river conservation goals, the Town can optimize its use of the Big Thompson and Little Thompson Rivers as discharge locations while safeguarding their ecological integrity and water quality for future generations.

Nature Based Solutions: Proposed projects will also integrate natural systems and natural channel design elements into natural looking drainage areas for storm water infrastructure. A goal will be to look for opportunities to provide a natural channel design and connectivity with ecological processes in the conveyance and treatment of storm water.

DHM's primary role will be to lead the nature-based planning efforts and review the drainage patterns and features within the Town of Johnstown and identify opportunities for natural system designs and green infrastructure improvements.

Our team's depth of experience in achieving key connectivity to natural channel design and ecological process intersection with storm water management planning is how we have been successful in the past for multiple communities. These communities are facing challenges of understanding a new era of storm water management that does not involve pipes and drains solely.

DHM's approach requires utilizing a vegetation matrix to support the design goals from both a physical flood conveyance requirement and a habitat requirement. They will review all types and forms of approaches towards storm water management –even when vegetation seems impractical – we look for ways to incorporate structure and system elements that allow for connected water quality practices and opportunities.

The planning team will look at a combination of techniques to create natural solutions and a resilient floodplain through use of a combination of biological, mechanical, and restorative ecological structures to control erosion and stabilize soil. Bio-engineered treatments can be used as a more comprehensive treatment for streambank, pond edge and floodplain restoration.

Basin Development: The current master plan model, established over two decades ago, reflects standard practices of the time, favoring larger basins with limited integration of storm drainage systems. With the incorporation of GIS into PC SWMM, generating a more intricate model that encompasses the majority of the town's storm drainage infrastructure and detention facilities becomes notably easier. This enhanced model facilitates the identification of drainage issues and the development of corresponding solutions with greater precision. By adding more detail to the model, creating smaller basins and analyzing the existing storm drainage system, the model can be used to analyze the more frequent rain events as well as the more intensive flooding events.

Model Development: The current model will be used as a starting point in model development. Per MHFD standards, CUHP will be used to determine hydrology and basin runoff. The basins will be subdivided and adjusted as needed to represent changes in land use and topography in the area since the previous master plan. The hydrographs created in CUHP will be input into PC SWMM where the flows will be routed through streets, overland flow, storm drainage systems including culverts, pipes and swales, to the nearby river .

Future Conditions: Future growth impacts will be incorporated into a future conditions model. This model will contain recommendations for future development as well as the proposed master plan improvements within the existing Town limits as well as the growth boundary.

Stream Management Corridor Assessment: Within the Town's Growth Management Area, it is imperative to provide adequate space for the stream corridors as development occurs. Following guidelines developed by the Colorado Water Conservation Board and pilot projects developed by the Mile High Flood District, Stream Management Corridors (SMC) will be developed to reflect the general corridors needed to allow stream to function in a way that replicates natural processes to the maximum extent possible. Establishing SMC for each tributary will provide technical and non-technical audiences information that can be translated in initial discussions with developers. The baseline information developed as part of the master plan will be able to be advanced as more information of future developments become available.

Clear Direction: One of the primary objectives of the master plan will be to offer clear and precise guidance regarding proposed improvements within each basin. Previous master plans have often lacked detailed maps with sufficient information readily usable for future planning endeavors. This deficiency can result in misinterpretations of master plans and overlook crucial information vital for community safety.

To address this issue, the master plan will contain exhibits that clearly illustrate proposed improvements, anticipated constraints, existing utilities in the area, and additional information necessary to guide future flood mitigation and storm improvement projects effectively. By providing easily accessible and detailed information, the master plan aims to facilitate informed decision-making, enhance community safety, and ensure the successful implementation of stormwater management initiatives.

10-year Capital Improvement Plan

The primary objective of the master plan is to offer recommendations on projects and improvements that the Town can implement effectively. This includes developing conceptual-level designs of the projects and providing cost estimates to facilitate future planning efforts. The plan will encompass enhancements to the existing storm drainage system as well as the implementation of new storm drainage systems where necessary. Additionally, recommendations for water quality improvements will be integrated into the plan to address environmental concerns and enhance overall water quality within the community. It will be important to create cost effective projects that can be implemented.

To prioritize projects effectively, a scoring system will be developed based on input from the Town and relevant stakeholders. This collaborative approach ensures that project priorities align with community needs and objectives. By employing a systematic scoring system, the master plan aims to allocate resources efficiently and address the most critical stormwater management challenges facing the Town. Ultimately, the master plan serves as a comprehensive roadmap for guiding future stormwater management efforts, promoting community resilience, and enhancing the overall quality of life for residents.

Developing phasing and implementation schedules is a common practice to assist City staff in budgeting and effectively executing stormwater management projects. For instance, a Phasing Plan was previously developed for the 12th Street Outfall in Greeley, as depicted in the North Greeley and Downtown Basin Stormwater Master Plan example ***as seen below***.

As part of the comprehensive roadmap, the stormwater master plan will include a detailed phasing and funding plan. This plan will outline the sequential steps and timelines for implementing proposed projects and improvements, considering factors such as project dependencies, resource availability, and funding sources. By breaking down the implementation process into manageable phases, the plan ensures that projects progress efficiently and are completed in a timely manner.

The success of the stormwater master plan hinges on its ability to translate conceptual recommendations. Into actionable projects that deliver tangible benefits to the community. By incorporating a robust phasing and implementation schedule, the plan becomes more than just a document; it becomes a practical tool for guiding effective decision-making and achieving meaningful outcomes in stormwater management .

Grant Funding Opportunities

ICON has been proficient in securing substantial grant funding for projects in Longmont and Erie, having received over $30 million in grants in 2024 alone. Leveraging this expertise, one of the main focuses for this study will be on aligning proposed design concepts with grant criteria to enhance competitiveness for funding. Through strategic planning, comprehensive grant writing, innovative design strategies, collaborative partnerships, community engagement, and grant management expertise, ICON aims to maximize opportunities for securing grant funding. This approach ensures that proposed improvements not only meet community needs but also have the financial backing necessary for successful implementation, ultimately benefiting the communities of Johnstown.

A phasing plan was developed for the 12th Street Outfall during the master plan. Phase 1 is currently under construction with final design of Phase 2-4 underway

Rate Study

Calibre Engineering has been included on the team to perform a rate study for this project. Acting as a City Engineer representing small and large municipal agencies, Brian spent nearly a decade advancing stormwater management across the Midwest. His experience includes developing utility cost comparisons across agencies and states; developing long-term plans for utility funding; researching and establishing new stormwater user fees; developing programming to fund stormwater improvements; finding and obtaining grant and low-interest finance funding for stormwater capital improvement plans; and writing funding applications. He has managed municipal budgets as large as $25M and established new utility rates for half a dozen communities.

Lessons Learned From Past Rate Studies

PLAN FOR FUTURE RATE INCREASES

Writing future increases into the stormwater enterprise fund language will avoid future conflict and enable the City to increase utility rates as defined in the documentation.

MAXIMIZE COMMUNITY BUY-IN

In order to successfully pass or implement a stormwater utility fee, community buy-in is key. The strategy for community engagement should depend on the needs of the community but could include: emphasis on the need for flood mitigation; reminders of past major storm events; highlights of specific projects and community-benefit; etc.

LEAN-IN TO COMMUNITY SUPPORTERS

Communities are built around diverse groups of people with diverse interests and backgrounds. Because of this, there will inevitably be varying levels of support for a utility fee. It is important to lean on community support as active voices to help engage others and encourage City staff.

BE SPECIFIC AND TRANSPARENT WITH RESEARCH

It is important to research like communities to find a utility rate that will work for Johnstown. Similar communities will provide a strong basis for selecting the appropriate rate and will help garner buy-in from the community.

Deliverables

Models: CUHP and EPA SWMM models will be provided. These models will be set up so that it can be easily modified as development occurs, and proposed projects are implemented. A future conditions model will also be provided to help direct the proposed development and improvement projects.

A Stormwater Capital Improvement Plan: The plan will be provided in a format that will clearly illustrate proposed improvements. We are no longer in the age of lines and arrows used to represent projects. DHM will help produce exhibits that are clear to understand, visually interesting and easily interpreted by the Town, the Council, and other interested stakeholders. *Note: Some of DHM's project samples have been provided at the end of this proposal as part of our Work Samples.*

10-**Year CIP and Rate Study:** As part of the master plan, Calibre will conduct a rate study based on the collaborative CIP plan developed with ICON and the Town. This study will establish a sustainable funding mechanism for implementing stormwater management projects outlined in the CIP.

C: SCHEDULE OF SERVICES

Proposed Schedule

ICON has set a realistic timeline and budget to provide the level of service that the Town of Johnstown's Master Plan merits for this project. ***Our staff will follow the comprehensive, sequential task schedule and our proposed project schedule located on the following pages.*** We anticipate completing the master plan comfortably within 12 to 18 months, with the provided schedule reflecting an 18-month timeline. Adjustments can be made to accommodate the Town's milestones. Our dedicated staff is prepared to commence work on this project promptly, aiming for a successful realization of your comprehensive Stormwater Master Plan document.

PROPOSED PROJECT SCHEDULE

PREPARED BY: JKD
CHECKED BY: CDJ
DATE: February 6th, 2024

Description	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25
	weeks	weeks	weeks	weeks	weeks	weeks	weeks	weeks	weeks	weeks	weeks	weeks	weeks	weeks	weeks	weeks	weeks	weeks	weeks	weeks
1. PROJECT COORDINATION AND DATA GATHERING																				
Project Administration																				
Kick-off Meeting:																				
Progress Meetings																				
Community Engagement Workshops																				
Coordination with Stakeholders																				
Coordination Meetings																				
Information Gathering																				
Conditions Assessment																				
Field Verifications																				
2. GIS DATA REVIEW AND DASHBOARD DEVELOPMENT																				
GIS: Create a GIS compatible dashboard																				
GIS: Evaluate Existing GIS Data and Schema																				
GIS: Update Existing GIS Data and Schema and fill in gaps																				
GIS: Update GIS to include existing storm facilities and storm modeling																				
GIS: Proposed Project integration into the GIS dashboard																				
3. MASTER PLAN DEVELOPMENT																				
Hydrologic Model Development																				
2D Model																				
Ditch Analysis																				
SWMM Development																				
DRAFT Master Plan (30%)																				
Town Review																				
DRAFT Master Plan (60%)																				
Town Review																				
DRAFT Master Plan (90%)																				
Town Review																				
FINAL Master Plan																				
Stormwater Master Plan Presentation																				
4. 10-YEAR CAPITAL IMPROVEMENT PLAN																				
Capital Plan																				
Capital Plan (30%)																				
Town Review																				
Capital Plan (60%)																				
Town Review																				
Capital Plan (90%)																				
Town Review																				
Capital Plan (Final)																				
Capital Plan (Final): BCA																				
Capital Plan (Final): Periodization matrix																				
Capital Plan (Final): 10-year cost analysis																				
Capital Plan (Final): Funding and Design Recommendations																				
5. RATE STUDY																				
Financial Analysis of Stormwater Improvements (10-Years)																				
Alternative Rate Structures (10-Years)																				

SCOPE OF SERVICES

Task 1: Project Coordination and Data Gathering	
a.1	**Project Administration**: Project setup, budgeting, and contract administration
a.2	**Kick-off Meeting:** Prepare agendas, presentation, and meeting minutes
b.1	**Progress Meetings:** Plan review at 30, 60, 90% Milestones with the Town and stakeholders invited by the Town. ICON will prepare agendas, presentations, minutes
c.1	**Community Engagement Workshops:**3 workshops assumed. Coordination with Town and stakeholders to present flooding concerns and master plan concepts
c.2	**Community Engagement:** Create and maintain project page to aid in communication. Project page will have a place for citizens to provide comments and inform team of known flooding issues
d,1	**Coordination with Stakeholders**: ICON will reach out to adjacent communities early on in the process in order to incorporate their input into the Master Plan.
e.1	**Coordination Meetings**: Assumes twice a month between Town and ICON to keep project on schedule and on budget
f.1	**Information Gathering**: Research existing plans and reports, drainage reports, studies, as-built data, review historic data. Information obtained will be incorporated into the GIS database.
f.2	**Information Gathering**: Obtain and review Town storm drainage GIS database and existing information on storm drainage system, meeting with maintenance crew to determine concerns with existing system and typical maintenance practices.
f.3	**Information Gathering**: Review existing master plan and hydrologic and hydraulic modeling into to utilize past information where possible.
f.4	**Information Gathering**: Review Town's utility GIS database, obtain GIS Shapefiles for existing land use, future land use, parcels, jurisdictional boundary and include in the GIS Database
g.1	**Conditions Assessment**: Additional CCTV inspections will be required to fill in any gaps in the system. The team will determine what pipes will need to be inspected and will provide CCTV inspection of those segments.
g.2	**Conditions Assessment**: Review and compile existing bridge inspections, These inspections will be added to the GIS data base.
g.3	**Conditions Assessment**: Review and document existing system material type and condition per the GIS data and CCTV runs. This information will also be included in the GIS database.
g.4	**Conditions Assessment**: Site visits to document existing land use, existing vegetation and verification of drainage areas
h.1	**Field Verifications-** additional survey data and existing site condition verification
Task 2: GIS Data Review and Dashboard Development	
a.1	**GIS:** Create a GIS compatible dashboard for the project to organize and document the Town's assets
a.3	**GIS:** Evaluate Existing GIS Data and Schema
a.3	**GIS:** Update Existing GIS Data and Schema and fill in gaps per the direction of the Town Staff, incorporate as-built plans and information into the GIS database
b.1	**GIS:** Update GIS to include existing storm facilities and storm modeling parameters
c.1	**GIS**: Proposed Project integration into the GIS dashboard

Task 3: Master Plan Development	
a.1	**Hydrologic Model Development:** Regional watershed delineation and basin parameters historic conditions needed to create a Historic Conditions CUHP model.
a.2	**Hydrologic Model Development**: Regional watershed delineation and basin parameters future conditions needed to create a Historic Conditions CUHP model.
a.3	**Hydrologic Model Development**: Local watershed delineation and basin parameter historic conditions needed to create a Historic Conditions CUHP model.
a.4	**Hydrologic Model Development**: Local watershed delineation and basin parameter future conditions needed to create a Future Conditions CUHP model
a.5	**Hydrologic Model Development**: CUHP model creation (2-, 5-, 10-, 25-, 50-, 100-year, 500-yr EX & FUT)
b.1	**2D Model**: Two-Dimensional Inundation modeling to verify flow conditions
c.1	**Ditch Analysis:** 2D dynamic ditch model set up to verify flow spill locations and spill quantities. Surface will be obtained from lidar data and supplemented by field survey.
c.2	**Ditch Analysis:** Ditch inflows and modeling (2-, 5-, 10-, 25-, 50-, 100-year, 500-yr EX & FUT). Inflows from CUHP and SWMM will be input into the model as inflow hydrographs. Spills will be determined and outflow hydrographs will be exported.
c.3	**Ditch Analysis:** Ditch spill location exhibits
d.1	**SWMM Development:** Existing storm conveyance system will be set up in EPA SWMM model to analyze the existing system and drainage facilities.
d.2	**SWMM Development:** Existing detention ponds will be input into the EPA SWMM model per the drainage reports reviewed in above tasks
d.3	**SWMM Development:** Field verification/survey will be required to obtain information that is needed to complete the model as well as to verify the GIS information received for the project. As-built information will be used where possible and simple assumptions will be made to remain cost effective.
d.4	**SWMM Development:** Ditch outflow hydrographs will be input into the model as inflow hydrographs.
d.5	**SWMM Development:** Existing conditions EPA SWMM model troubleshooting
e.1	**DRAFT Master Plan (30%):** Two-Dimensional Inundation Mapping to help assist in proposed improvements and to help review the model for accuracy.
e.2	**DRAFT Master Plan (30%):** Prepare baseline Hydrology & Hydraulics Report section of Master Plan
e.3	**DRAFT Master Plan (30%):** Internal QA/QC
e.4	**DRAFT Master Plan (30%):** 30% submittal
f.1	**DRAFT Master Plan (60%):** Address comments from 30% submittal
f.2	**DRAFT Master Plan (60%):** Revise CUHP/SWMM models and adjust report to reflect comments from the Town.
f.3	**DRAFT Master Plan (60%):** Internal QA/QC
f.4	**DRAFT Master Plan (60%):** 60% submittal
g.1	**DRAFT Master Plan (90%):** Address comments from 60% submittal
g.2	**DRAFT Master Plan (90%):** Revise CUHP/SWMM models and adjust report to reflect comments from the Town.
g.3	**DRAFT Master Plan (90%):** Internal QA/QC
g.4	**DRAFT Master Plan (90%):** 90% submittal
h.1	**FINAL Master Plan:** Address comments from 90% submittal
h.2	**FINAL Master Plan:** Revise models and adjust report
h.3	**FINAL Master Plan**: Internal QA/QC
h.4	**FINAL Master Plan:** 90% submittal
i.1	**Stormwater Master Plan Presentation**
i.2	**Stormwater Master Plan Presentation:** PowerPoint Presentation
i.3	**Stormwater Master Plan Presentation**: Supplemental Materials

Task 4: 10-Year Capital Improvement Plan	
a.1	**Capital Plan:** Identify system deficiencies and provide exhibits that demonstrate the deficiencies.
a.2	**Capital Plan:** Internal QA/QC Reviews
b.1	**Capital Plan (30%)**: Proposed improvements concepts and plan views (initial submittal will not include profiles)
b.2	**Capital Plan (30%)**: Proposed improvements EPA SWMM and ditch modeling based on comments from the Town.
b.3	**Capital Plan (30%)**: Proposed water quality improvements
c.1	**Capital Plan (60%):** Proposed improvements plan and profiles
c.2	**Capital Plan (60%)**: Revise Proposed improvements EPA SWMM and ditch modeling based on comments from Town.
c.3	**Capital Plan (60%)**: Proposed water quality improvements adjustments and CUHP/SWMM modeling adjustments per comments from the Town.
c.4	**Capital Plan (60%)**: Cost estimates of proposed improvements
d.1	**Capital Plan (90%):** Revise proposed improvements and resubmit
d.2	**Capital Plan (90%)**: Revise Proposed improvements EPA SWMM and ditch modeling based on comments from Town
d.3	**Capital Plan (90%)**: Proposed water quality improvements adjustments and CUHP/SWMM modeling adjustments per comments from the Town.
d.4	**Capital Plan (90%)**: Revise cost estimates based on comments from Town
e.1	**Capital Plan (Final):** Revise proposed improvements and resubmit
e.2	**Capital Plan (Final):** Periodization matrix based on project ranking scorecards. Improvements will be ranked based on a comprehensive ranking matrix. The items included in the matrix will be discussed and agreed upon by the team and Town. Example items to include in matrix: cost benefit, Level of service, risk of flooding, resiliency, water quality, and public support. The projects
e.3	**Capital Plan (Final):** 10-year cost analysis to determine ways to fund the projects over 10-years
e.4	**Capital Plan (Final):** Prepared detailed planning level cost estimates for proposed improvement. A sustainable design approach will be used as possible.
e.5	**Capital Plan (Final):** Draft cost benefit analysis of proposed improvements. A simplified cost benefit analysis will be performed to help direct project recommendations and grant funding possibilities.
e.6	**Capital Plan (Final):** GIS integration. The proposed projects will be integrated into the GIS dashboard created for this project.
e.7	**Capital Plan (Final):** Funding and Design Recommendations. Funding options will be explored includes grants, loans and public-private partnerships to fund future projects
Task 5: Rate Study	
a.1	**Rate Study:** Financial Analysis of Stormwater Improvements (10-Years)
a.2	**Rate Study:** Alternative Rate Structures (10-Years)

D: PROJECT MANAGEMENT & COST CONTROLS

Project & Schedule Management

Our general management approach includes having one individual, the Project Manager, responsible for all design activities for all disciplines and for all subconsultants. Project management is accomplished with the use the essential elements of Earned Value Management using project management software. All staff fill out detailed time sheets daily. Hours logged on projects are available in our project management software and therefore progress based on man-hours spent can be determined at any time.

Supplementing our software, we routinely conduct in-house progress meetings, wherein all involved personnel meet with the Project Manager on a weekly or bi-weekly basis. This allows our in-house staff, subconsultants, and the Town's staff to stay current on actual progress. Actual progress is compared to the man-hours allocated for tasks and the number of hours spent to that date. Reasons for variance (if any) between actual and anticipated progress are then determined and adjustments are made as needed.

ICON's staff has established a reputation for consistently completing projects on schedule and within predetermined budgets. Bringing a project in on schedule begins with recognizing that certain milestones of a project are on a critical path and require a systematic approach to keep a project moving forward. Our experience has taught us that if you stay on schedule, that generally correlates with meeting the budget.

Scope & Budget Management

Cost control for our projects starts when we are preparing our proposal to complete the project at hand. Our general approach to any project is to first conduct a detailed review of the client's Request for Proposals (RFP) to obtain full comprehension of what the project entails. Once the RFP has been reviewed, we then walk the project site, taking photographs and noting any potential design constraints, particularly existing improvements, utilities, and geometrical limitations. We then attempt to review past work product, which may have been prepared by others in the general area. This usually means a trip to such agencies as the Client's office, CDOT, DRCOG, the Mile High Flood District, utility owners, and even discussions with some of the local residents in the project area.

We then discuss the project with the Client to make sure that we understand the scope of services, what tasks will be necessary, and what the final deliverables will be. At that point the proposal and fee estimate is thoroughly prepared. We spend a lot of time and effort "up-front" on potential projects, and have found that taking the steps outlined above are a very critical part of our Total Quality Program. The only way we can negotiate a contract for services is if we share the same understanding about a project that our client has. Through this approach, both ICON and our clients gain a full understanding the project scope of services so that there are no surprises or unanticipated additional services during the project.

Regularly scheduled meetings with the Client during the project's design phase are crucial for staying on track and on budget. Open and constant communication ensures transparency regarding our progress, assumptions, and their outcomes. This approach enables the Client to understand the project and its processes fully, facilitating easy adjustments if needed. Should we veer off course, misinterpret information, or overlook critical details, the Client can promptly alert the team without causing delays or scope creep. ICON will foster a team dedicated to excellence who are committed to delivering the best possible project and will promptly address any instances of scope creep by discussing such items with the Town in order to move in a forward direction.

E: AVAILABILITY TO PERFORM WORK

ICON staff has established a reputation for consistently completing projects on schedule and within predetermined budgets. That is always our goal. By setting acceptable and realistic expectations and goals, we can provide the level of service that the Town of Johnstown expects and deserves. Our project management software allows for real-time review of project schedules and staffing commitments. We review this information in detail when making decisions to propose on a project. **From that perspective, we would not propose on this project if our design team was not available and committed to meeting your project needs.** ICON is committed to delivering an exceptional project to the Town of Johnstown.

Key commitments from our key management and technical staff are presented ***on the next page***. Many of these commitments conclude in a few months, just as this master plan will be underway. ***Even with our current commitments, our staff has availability to begin work on this project.***

TEAM MEMBER AVAILABILITY THROUGH PROJECT COMPLETION		
Staff	**Position**	**Availability through project completion**
Jaclyn Michaelsen	Project Manager	20%
Jeremy Deischer	Master Planning	30%
Monica Lovato-Ramirez	Project Engineer	45%
Josie Steffens	Design Engineer	45%
Zenia Romano	GIS Specialist	30%
Mark Wilcox	Landscape Architecture	25%

F: OTHER

Minority-owned Business Enterprises

ICON Engineering makes every effort to prioritize selection of M/WBE firms for our work if they have availability and can provide services at competitive rates. If a subconsultant provides a high-quality service but at a slightly higher rate than another firm, we will take this into consideration as well and may at times present higher priced alternatives to a client. ICON will be working with two M/WBE firms on this Stormwater Master Plan, **105 West, Inc.** for Land Surveying and **NHN Consulting, LLC** for Public Involvement. We have an established working relationship with both firms and are committed to using their services throughout this master plan project.

Stormwater Master Planning Expertise

ICON has been instrumental in both the development of and updates to Stormwater Master Drainage Plans across Colorado's front range. In general, each study involved a wide range of engineering tasks, including but not limited to hydrologic and hydraulic modeling, floodplain delineation, damage assessment, alternatives analysis, economic analysis of benefits vs. costs, conceptual or preliminary design presentation, and report preparation. Our master plans are diverse, ranging from urban watershed planning to stream restoration, and collaborative in stakeholder engagement. Since 2001, ICON has prepared updates on: Fossil Creek, McClellands Creek, Fox Meadows Basins; Buckingham and Lincoln Corridor Master Plans, Stone Creek, West Vine Basin, Dry Creek, and Upper Cooper Slough. In addition, water quality and stream habitat specific master plans were completed for the Fossil Creek, West Vine, McClellands Creek, and Fox Meadows Basins.

Unique to ICON is our advancement of cutting-edge GIS and the development of interactive webmaps in support of our master plans. This approach interfaces technical data and planning information online, enhancing user interaction and easing future updates. ICON has capabilities to create and maintain individual project websites for general project information, highlight upcoming events and meetings, and collect contact information for interested stakeholder groups and individuals.

Stormwater Infrastructure and Local Drainage Design

ICON has established long term contracts with many Front Range municipalities to complete stormwater related design improvements. Our projects have been recognized by regional and national organizations for engineering excellence and creative solutions. ICON's design services include a full range of solutions, including open channel and stabilization improvements, drop structure design, channel rehabilitation, wetlands and stream restoration, conduits and storm sewers, water quality planning and design, green infrastructure, detention ponds, jurisdictional dams, levee improvements, and trenchless installations such as pipe boring/jacking/tunneling improvements.

As an example, for the City of Fort Collins, our stormwater projects have ranged from smaller inlet replacements or replacement projects constructed by City crews to larger capital projects. Regardless of the size of the project, we see our staff as problem solvers with a focus on developing solutions in a simple and understandable manner. Our stormwater design projects can typically include coordination with the client, engineering analyses, advancement of the design from alternatives through design development, and permitting support. ICON also assists with the preparation of construction documents for bidding, grant support, and construction oversight for the City.

As stormwater infrastructure ages, it is often more practical to rehabilitate stormwater facilities as opposed to replacing them. ICON brings experience and expertise in trenchless rehabilitation for drainage culverts and storm sewer systems. Craig Jacobson, ICON's Contract Manager on this project, has personally led several of these projects, including a sliplining repair for nearly 4,000 LF of a primary 120" CMP in Aurora, spincast repair of two failing 72"x110" CMP's crossing major roadways in Broomfield, and evaluation of rehabilitation solutions for subsequent projects in Greeley and Aurora. ICON has also completed several other rehabilitation projects for storm sewers of various sizes. Stormwater rehabilitation projects will often involve hydraulic analysis to confirm continued stormwater function and technology review to identify the best and most cost-effective solution for each project.

Stormwater Project Examples within the past 10 years:

- ✓ 12th Street Outfall – Greeley
- ✓ Garfield and Harrison Outfall - Loveland
- ✓ 7th Avenue Outfall – Greeley
- ✓ Kenny's Run – Golden
- ✓ Big Dry Creek – Highlands Ranch
- ✓ Josephine Storm Sewer – Milliken
- ✓ Sunrise Drainage Improvements – Greeley
- ✓ Sanderson Gulch Outfall – Denver
- ✓ Community Ditch Culvert Rehabilitation - Broomfield
- ✓ Mulberry/Riverside Outfall Design—Fort Collins
- ✓ Drake Levee Recertification Design—Fort Collins
- ✓ 1st Street Outfall Design—Fort Collins
- ✓ Mason & Olive Storm Sewer Design—Fort Collins
- ✓ Clearview Channel Restoration Design—Fort Collins
- ✓ Laporte Ave Storm Sewer Design—Fort Collins

Floodplain Modeling & Mapping Studies

ICON specializes in the completion of challenging floodplain delineation projects and Flood Insurance Study (FIS) updates, including MHFD Flood Hazard Area Delineation Studies (FHADs), Local Community Floodplain Delineations, FEMA Letters of Map Revisions (LOMRs), Conditional Letters of Map Revisions (CLOMRs) and Physical Map Revisions (PMRs). Our staff has worked extensively on FEMA production projects since 2001, including assignments related to FIS updates in all of the FEMA Region VIII states. ICON staff bring experience in 2-dimensional modeling and unsteady flow hydraulics, including the use of 2D models for FEMA map revisions in Eureka, Utah, and the Cities of Boulder and Fort Collins. 2D modeling is often used for analysis of basin wide flooding in urban areas along the Colorado Front Range. Modeling expertise includes the use of HEC-RAS (1D, Unsteady, 2D), FLO-2D, SRH2D, PC-SWMM1D and 2D, among other programs.

Unique to ICON, through a contract with the MHFD and funded through a first-of-its-kind demonstration contract with FEMA, ICON has been performing the services similar to that of FEMA's current Production and Technical Services (PTS) contractor for the past 22-years. ICON's work efforts include the providing technical reviews and processing of all LOMRs and CLOMRs submitted within the six-county boundary of the MHFD. Over 650 map revisions have been completed through this contract. ICON also prepares 10 to 12 submittals for individual LOMR/CLOMR projects per year.

Finally, our staff has had opportunities to interact and assist local floodplain administrators with decisions related to floodplain maps and regulatory changes. Our staff have instructed courses regarding Floodplain 101, and Technical and Administrative Requirements for LOMRs and CLOMRs. These courses focused on the NFIP program and CRS opportunities.

Master Plan/Stormwater Design Partnering with DHM Design

ICON Engineering and DHM Design have formed a strong working partnership over the last 15 years. Project types have ranged from master planning studies to dog parks, including the award-winning 39th Avenue Greenway project in Denver. Below is a list of projects we have successfully worked on together in recent years:

- Dry Creek Selected Plan Update—Fort Collins
- West Vine Basin Master Plan—Fort Collins
- Boulder Creek Restoration Master Plan—Boulder/Boulder County
- Twomile Canyon Creek and Goose Creek Master Plan—Boulder
- Poudre River Vision Plan—Fort Collins
- England Park Design—Westminster
- Upper Coal Creek Restoration Master Plan—Jefferson County
- Upper Coal Creek Restoration Design—Jefferson County
- Johnson Habitat Park—Denver
- Ruston Park—Federal Heights
- Riverdale Park Design—Adams County
- Sanderson Gulch Dog Park and Playground—Denver
- Dome Park Master Plan—Aurora

APPENDIX

CRAIG JACOBSON, PE, CFM

SENIOR PRINCIPAL | CONTRACT MANAGER

YEARS OF EXPERIENCE
26

PROFESSIONAL REGISTRATION
PE | Colorado
CFM | Certified Floodplain Manager

EDUCATION
BS | Civil Engineering
University of Wisconsin, Madison | 1997

CONTACT
cjacobson@iconeng.com
(303) 221-0802

Craig has a strong background in civil and water resource engineering with an emphasis in floodplain management, drainage improvements, hydrologic and hydraulic analyses, and master planning. Craig has managed and designed a large array of stormwater improvements throughout the state of Colorado. Many of these projects have included conduit and pipe systems, channel stabilization and restoration, maintenance, detention, and water quality. Along with his design experience, Craig's projects routinely involve the preparation of specifications and project documents, cost estimating, quantity take-offs, and construction management.

PROJECT EXPERIENCE

Wellington Stormwater Master Plan | Wellington, CO
Principal responsible for the oversight of this stormwater master plan in Wellington. The goal is to identify flood risk and stormwater alternatives from local drainage within the Town's GMA for both short-term and long-term needs. Stormwater improvement and flood reduction opportunities that are being explored include inlet collection and storm sewer improvements, regional detention, drainageways, water quality, and rehabilitation of existing aging infrastructure. Hydrology was developed using CUHP 2.0 and EPA-SWMM.

West Vine Basin Selected Plan | Fort Collins, CO
Principal responsible for completing the Stormwater Master Plan for the West Vine Basin. The completed Selected Plan was submitted as a Draft in July 2022 and is currently awaiting adoption. General goals for the study included: Identification and prioritization of capital projects that reduce flood risk from the 100-year storm to structures and major roadways, opportunities to enhance riparian habitat along stream and river corridors and improve water quality, provide guidance for new and future development, provide valuable input to stormwater basin maps and the City's Stormwater Capital Improvement Program (CIP), and identify opportunities to incorporate natural areas, open space, parks, and recreation into future stormwater CIP projects. Project work included technical evaluations for alternatives, conceptual design, quantity take-offs, and cost estimating. Over $62M in infrastructure improvements were recommended for the West Vine Basin.

Garfield-Harrison Outfall | Loveland, CO
Contract Manager responsible for overseeing improvements to the capacity of the existing storm sewer system and providing the Garfield & Harrison basin with five-year protection. This project includes over 10,000 LF of proposed storm sewer, providing a new storm sewer outfall to the Big Thompson River, addressing nuisance problem drainage areas, improving water quality in the basin area, design of a multiple waterlines, and a few blocks of parallel sanitary sewer. Tasks include hydrologic and hydraulic analysis, value engineering alternatives, public coordination, water quality features, final design, permitting, and construction observation.

Sharktooth Basin Master Plan | Greeley, CO
As Project Manager, Craig was responsible for the development of a storm water master plan for the Sharktooth Bluffs Basin. The seven square mile watershed is located within the City of Greeley, Town of Windsor, and unincorporated Weld County. The basin was in need of a plan to responsibly manage stormwater with the basin expected to grow up to fifty percent in the next 20 years. Baseline hydrologic analysis included over one hundred sub watersheds encompassing the 11 different tributaries. Alternatives were developed to provide guidance on improved roadway crossings with proposed street improvements as the basin develops and eliminating existing flooding hazards on insurable structures. A benefit-cost analysis was performed using FLO-2D inundation for all design return intervals.

ICON ENGINEERING

JACLYN MICHAELSEN, PE, CFM

ASSOCIATE PRINCIPAL | PROJECT MANAGER

Jaclyn's expertise is in hydraulic engineering focusing on master planning and design of large storm sewer projects used for flood mitigation. She specializes in master planning, drainage analysis and design, hydrologic and hydraulic modeling (including 2-D modeling), river analysis, dam design and analysis, floodplain delineation, stream stability, groundwater modeling and analysis, and construction observation. Jaclyn has worked on the design and analysis of high hazard dams, large storm sewer systems, detention facilities, passive and active flood protection measures and channel improvements. She has also been the project engineer for several groundwater mitigation systems involving complex SCADA systems.

YEARS OF EXPERIENCE
23

PROFESSIONAL REGISTRATION
PE | Colorado
CFM | Certified Floodplain Manager

EDUCATION
MS | Civil Engineering
Colorado State University
2009

BS | Civil Engineering
Colorado State University
2001

CONTACT
jmichaelsen@iconeng.com
(970) 310-1547

PROJECT EXPERIENCE

Wellington Stormwater Master Plan | Wellington, CO
A stormwater master plan was developed for the Town of Wellington that encompassed approximately 4 square miles currently within the Town limits and an additional 18 square miles within the Town's Growth Management Area. Baseline hydrology was developed using CUHP 2.0 and EPA-SWMM to establish peak flows through the study area. With input from Town Staff, a community survey, and two-dimensional modeling, existing flooding hazards were identified. Stormwater improvement and flood reduction opportunities that were explored included inlet collection and storm drain improvements, regional detention, drainageways, water quality, and rehabilitation of existing aging infrastructure. Serving as Project Manager, Jackie was responsible for client correspondence, directing technical leads on master plan development tasks, project schedule and budget management, and overall project QA/QC.

Upper Cooper Slough Master Plan Update | Fort Collins, CO
The purpose of the study was to review the changes in hydrology along Cooper Slough, given the inclusion of past master planning solutions and future development potential. Following the hydrology updates, grading concepts and positioning of the proposed C&S/Crumb regional detention basin were refined with this study. New pond grading was developed for the C&S/Crumb pond to reduce the footprint on AB property, maximize the use of City property, and keep the proposed 100-year water surface below existing grades in order to avoid or reduce potential State jurisdictional dam requirements.

Sand Creek Master Plan Update | MHFD, CO
The study involved creating a master plan for the Sand Creek watershed. The project was completed in three phases, (1 Developing baseline hydrology, (2 determining the Flood Hazard Area Delineation (FHAD) through hydraulic analysis and mapping, and (3 alternatives analysis and conceptual design. Jaclyn was responsible for the development of the hydraulic modeling and floodplain mapping for the 11 miles of stream length.

Josephine Storm Water Improvements | Milliken, CO
Project manager responsible for the design of stormwater infrastructure for the Town of Milliken. During the September 2013 flood, the Town of Milliken experienced road closures, impacts to the municipal infrastructure, water and sewer complications, and damages to private property. One aspect of the recovery was development of a Stormwater Master Plan for the Town (ICON Engineering, 2014). The master plan confirmed a significant stormwater infrastructure need along the Lola Tributary. ICON designed a new storm sewer system to reduce flood damages from storm flows that exceeding the limited capacity of what remains of Lola Tributary. Sheet flows, ponding, and dangerous flood conditions affecting public and private property will be reduced with the project.

ICON ENGINEERING

JEREMY DEISCHER, PE, sUAS PILOT

MASTER PLANNING | HYDRAULICS & HYDROLOGY

YEARS OF EXPERIENCE
10

PROFESSIONAL REGISTRATION
PE | Colorado
FAA Certified sUAS Drone Pilot

EDUCATION
MS | Civil Engineering
Hydraulics & Hydrology
University of Colorado, Denver | 2014

BS | Civil Engineering
University of Colorado, Denver | 2012

CONTACT
jdeischer@iconeng.com
(303) 221-0802

Jeremy has an incredible amount of knowledge of floodplain information development and design techniques. His projects have included developing hydrologic and hydraulic models using geo-referenced data, creating the ability to seamlessly transition between the modeling program and a GIS interface. Jeremy knows all the components of master planning studies and has assisted in FEMA LOMC floodplain hydraulic study reviews. In addition to his extensive master planning and hydrology and hydraulic knowledge and expertise, Jeremy also designs large storm drain flood mitigation systems. His in-depth knowledge in the master planning process helps streamline the design process, often saving time and money for our clients. Jeremy is an expert in the use of GIS systems, EPA SWMM 5, FLO-2D, HEC-RAS, and AutoCAD.

PROJECT EXPERIENCE

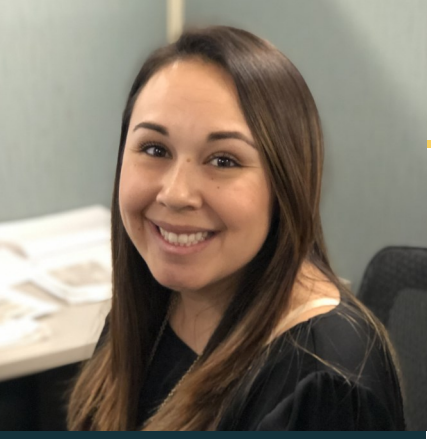
Wellington Stormwater Master Plan | Wellington, CO
A stormwater master plan was developed for the Town of Wellington that encompassed approximately 4 square miles currently within the Town limits and an additional 18 square miles within the Town's Growth Management Area. Baseline hydrology was developed using CUHP 2.0 and EPA-SWMM to establish peak flows through the study area. With input from Town Staff, a community survey, and two-dimensional modeling, existing flooding hazards were identified. Stormwater improvement and flood reduction opportunities that were explored included inlet collection and storm drain improvements, regional detention, drainageways, water quality, and rehabilitation of existing aging infrastructure. Jeremy served as Project Engineer and Master Plan Task Lead for the study, responsible for development of all aspects of the stormwater master plan.

Sharktooth Bluffs Basin Stormwater Master Plan | Greeley, CO
Project Engineer responsible for the development of a storm water master plan for the Sharktooth Bluffs Basin. The seven square mile watershed is located within the City of Greeley, Town of Windsor, and unincorporated Weld County, and was in need of a plan to responsibly manage stormwater with the basin which is expected to grow by up to fifty percent in the next twenty years. Baseline hydrologic analysis included over one hundred subwatersheds encompassing the eleven different tributaries. Alternatives were developed to provide guidance on improved roadway crossings with proposed street improvements as the basin develops and eliminating existing flooding hazards on insurable structures. A benefit-cost analysis was performed using FLO-2D inundation for all design return intervals.

Stormwater Master Plan | Milliken, CO
The Town of Milliken located in Weld County sustained damaged during the September 2013 flooding event. This updated the previous Master Plan (1982), including hydrologic and hydraulic analysis for the watershed contributing to any flows tributary to the Town. Basins were delineated within a GIS interface then georeferenced into the SWMM program. Hydraulic analysis utilizing FLO-2D was conducted to help mitigate the flooding experienced in the event. Jeremy prepared the benefit-cost analysis, HMGP grant application, and added into a GIS environment.

North Greeley and Downtown Storm Drainage Master Plan | Greeley, CO
Jeremy served as the Project Engineer responsible for the preparation of the North Greeley and Downtown Storm Drainage Master Plan. This study involved a wide range of engineering tasks including city-wide watershed delineation accounting for existing drainage infrastructure (inlets and storm sewer capacity, detention and water quality ponds), hydrologic and hydraulic modeling using CUHP/SWMM, two-dimensional hydrodynamic modeling using FLO-2D, HEC-RAS analysis for irrigation ditch flows and lateral spills identification and damage assessment for existing and future flooding problems, alternatives analysis for flood hazard mitigation including proposed conduits, culverts, inlet systems, roadway improvements, detention and stormwater quality enhancement, control of overflow spills from City Ditches, and non-structural methods. Costs for each alternative were estimated and divided into capital costs, property acquisition, contingencies and life-cycle costs. ICON prepared and maintains a project website in addition to completing project outreach and public meetings.

ICON ENGINEERING



MONICA LOVATO-RAMIREZ, PE, ENV-SP

DESIGN ENGINEER | STORMWATER

Monica has advanced skills in storm sewer design, open channel design, drainage analysis, and hydraulic and hydrologic modeling and design. She regularly utilizes HY-8, HEC-RAS, GEO-HecRas, SWMM 5.1, UD-Sewer, and StormCAD software. Monica has working knowledge of the Mile High Flood District's design criteria and has designed projects according to several different local government agencies.

YEARS OF EXPERIENCE
8

PROFESSIONAL REGISTRATION
PE | Professional Engineer
ENV-SP | Envision Specialist

EDUCATION
BS | Civil Engineering
University of Colorado, Denver
2017

CONTACT
mlovato-ramirez@iconeng.com
(303) 221-0802

PROJECT EXPERIENCE

Firestone OSP | Firestone, CO
Serving as project engineer for the Town of Firestone Outfall Systems Plan, Monica was responsible for development of all hydrology and hydraulics including basin delineation, basin parameter development, land use designation, and EPA SWMM model development. The study will update previous modeling efforts in the area to NOAA 14 / CUHP 2.0 to help the Town plan for upcoming development.

North Greeley and Downtown Basin Master Plan Addendum | Greeley, CO
Monica serving as project engineer is responsible for all hydrology and hydraulic development for the master plan addendum. The City of Greeley most recently updated their plan in 2017 and is investigating additional pluvial flooding hazard mitigation alternatives while funding for capital outfall improvements can be secured. The study includes EPA-SWMM modeling, unsteady state HEC-RAS modeling, and FLO-2D for the pluvial flooding risk analysis.

Brighton North Outfall Phase III | Brighton, CO
Brighton North outfall Phase III is a continuation of designing and replacing an existing storm drain that runs along 7th Avenue in Brighton, Colorado. Monica's main responsibilities were to design a storm drain system that consisted of multiple new inlets, pipes, and manholes, using the City of Brighton's storm runoff criteria manual, and MHFD's criteria manual. She used Civil 3D, UD-Inlet, and SWMM for this project design. FLO-2D was used to determine pre and post project pluvial flooding risk for the adjacent neighborhoods.

12th Street Storm Outfall, Phase 1B | Greeley, CO
This project is located on the east side of Greeley and represents a keystone in alleviating drainage problems for the City. The 12th Street Storm Outfall will serve as the primary outfall for storm flows in downtown and the extended watershed to the south. The project requires coordination with multiple consulting disciplines, City Departments and other government agencies including CDOT, FEMA, and the US Army Corps of Engineers. The goals for this phase of the project include the relocation of multiple utilities, construction of initial segments of the outfall pipe system, creation of a regional water quality pond e-coli treatment, construction of an outfall storm system to the Poudre River, and development of this area as a recreational amenity. Monica is serving as a Design Engineer.

Ruston Park | Federal Heights, CO
Monica assisted in preliminary design alternatives for both the West and Northborough Outfalls. This analysis included analyzing the capacity of the current storm sewer network and developing two different options for a proposed storm sewer network. She used programs such as UD-Inlet spreadsheets, Civil 3D, and UD-Sewer for preliminary analysis.

ICON ENGINEERING

JOSIE STEFFENS, EI

DESIGN ENGINEER

Josie brings a strong interest in hydraulics and hydrology to the team. Her projects to date have included developing hydrologic and hydraulic models using geo-referenced data, creating the ability to seamlessly transition between the modeling program and a GIS interface. Josie is familiar with all the components of master planning studies including delineating basins utilizing GIS geoprocessing tools, creating hydrologic and hydraulic models for multiple frequency storms, and designing alternatives to help mitigate flood damage. She regularly employs ArcGIS, AutoCAD Civil 3D, HEC-HMS, HEC-RAS, and other software programs to develop innovative solutions to problems and to deliver detailed designs.

YEARS OF EXPERIENCE
1.5

PROFESSIONAL REGISTRATION
Engineer-in-Training

EDUCATION
BS | Environmental Engineering
Colorado School of Mines
2022

CONTACT
jsteffens@iconeng.com
(303) 221-0802

PROJECT EXPERIENCE

Dry Gulch FHAD | Lakewood/Denver, CO
Josie assisted with the hydrologic analysis and hydraulic development for the Dry Gulch FHAD. The study is building upon previous ICON efforts to update the hydrology and will establish new regulatory floodplains along over five miles through the Cities of Denver and Lakewood. Both 1D and 2D HEC-RAS models will be used to reflect the pluvial and riverine flooding risk throughout the stream corridor.

Letter of Map Revisions (LOMR) Reviews | Denver Metro Area, CO
Josie served as Design Engineer responsible for technical reviews of LOMRs to local flood insurance rate maps under a cooperating technical partner pilot program between the Federal Emergency Management Agency (FEMA) and the Mile High Flood District (MHFD).

Sand Creek FHAD | Denver, CO
Design Engineer for the MDP and FHAD on Sand Creek from the confluence with the South Platte River to upstream of Colfax Avenue. Hydrology along Sand Creek was updated with this study for the first time since 1977, and included incorporating over 10 other MHFD hydrology models, a flood frequency analysis of the stream gage, and a validation of CUHP for watersheds of this size (181 square miles). Similar to the Boulder Creek Restoration Plan, alternatives will be visual in nature focusing on overall stream health and resiliency.

Upper Goose Creek and Twomile Canyon Creek Flood Mitigation | Boulder, CO
Josie served as Design Engineer for a flood mitigation master planning project along Upper Goose Creek and Twomile Canyon Creek. Extensive public input was completed regarding conceptual mitigation options. Alternatives then underwent initial screening, scored based on multiple criteria, and further evaluated including cost estimates and a benefit-cost analysis. Conceptual designs of the recommended mitigation projects were then developed and incorporated into a summary master plan report.

University of Colorado Boulder, 19th Street Pedestrian Bridge LOMR| Boulder, CO
Josie served as Design Engineer for the 19th Street Pedestrian Bridge replacement project which included hydraulic modeling for the replacement to the original 19th Street Bridge that was destroyed in the 2013 floods. The project included extensive hydraulic modeling including non-conventional approaches to modeling the fly-over style bridge deck and floodplain development permit applications through the City of Boulder.

ICON ENGINEERING

ZENIA ROMANO

GIS SPECIALIST

Zenia is a GIS professional with experience in document analysis for the ever-changing geographic information systems industry. Her strength lies in collaborating with a team to ensure she utilizes every source necessary for a well-informed outcome. Zenia is proficient in using a variety of CAD and GIS software, including OpenCities Map and ArcDesktop, and has a proven history in cartography, map making and CAD design .

YEARS OF EXPERIENCE
5

EDUCATION
BS | Geography
University of Colorado,
Denver | 2018

CONTACT
zromano@iconeng.com
(303) 221-0802

PROJECT EXPERIENCE

Town of Columbine Valley On– Call Contract | Columbine, CO
Zenia has been responsible for creating municipal data exhibits and wall maps for the Town of Columbine Valley as part of ICON's municipal engineering contract which manages all municipal civil infrastructure improvements for the Town. Projects include roadway, residential development, floodplain management and stormwater projects.

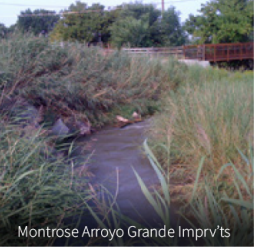
City of Cherry Hills Village On-Call Contract | Cherry Hills Village, CO
Zenia was responsible for creating a topographic exhibit to highlight drainage analysis and evaluation work for the City of Cherry Hills Village as part of ICON's municipal engineering contract. ICON's assignments have included capital improvement planning and design, and the management of subcontracted services for field survey, utility locations, property research and geotechnical investigations.

Willow Creek Tributaries MDP & FHAD | Centennial, CO
The Willow Creek Major Drainageway Plan (MDP) and Flood Hazard Area Delineation (FHAD) studies five tributaries to Willow Creek located upstream of Englewood Dam in Centennial, CO. In general work included updating hydrology, floodplain modeling and delineation, and the production of reports and data deliverables meeting both MHFD and FEMA standards. Zenia was responsible for the GIS data development, including workmap creation, FHAD agreement, GIS databases, and web interfaces to support the project.

LOMC Reviews | Mile High Flood District (MHFD)
This is an ongoing pilot project that began in 2002 and continues today. This venture partners the MHFD with the Federal Emergency Management Agency (FEMA) under FEMA's Cooperating Technical Partners program in order to assess the potential of allowing local jurisdictions, such as MHFD, to review Letters of Map Change (LOMC) for all Flood Insurance Rate Map (FIRM) amendments occurring within the local jurisdiction's boundary. MHFD subcontracted this project to ICON. Zenia's duties include the GIS production for the floodplain mapping exhibits, databases, and agreement with FEMA and MHFD guidelines.

North of Boulder Creek Residence One and Two Floodplain Support, University of Colorado Boulder | Boulder, CO
ICON Engineering served as a sub-consultant to Anderson Mason Dale (AMD) and HDR Architecture Firms to provide floodplain support for the North of Boulder Creek (NBC) Residence One and Two sites. Work included floodplain modeling and permitting support. Zenia assisted in the preparation of GIS exhibits to document the proposed site changes and modifications to the regulatory floodplain for Boulder Creek.

ICON ENGINEERING


Montrose Arroyo Grande Imprv'ts


Jackass Gulch Culvert Repair


Platte River Restoration


Jackass Gulch Channel Stabilization


Englewood OSP Update


Highline Canal Shoring

Brian Stephens-Hotopp

PE, CFM, ENV SP, CPSWQ, CPESC

VP OF ENGINEERING | WATER RESOURCES DIV MGR

As Calibre's Water Resources Division Manager and Vice President of Engineering, Brian excels in quality control, leadership, project execution, and talent development. His supportive approach to leadership fosters collaboration and communication that ultimately enhances the problem-solving process on projects.

Brian is passionate about low-impact development and the responsible transformation of the built environment. This approach is particularly critical for design and construction in and around waterways, which serve a vital role in the health and vitality of a community.

Brian has spent more than 15 years working with local communities on the development of their stormwater program, including stormwater master planning, capital project budgeting and prioritization, and utility and stormwater fee development. Working alongside City finance staff, Brian has been responisble for the full execution of stormwater utility rate research and implementation in a variety of communities across the Midwest. As the City Engineer for the City of Muncie, Brian managed a $25M CIP design and construction budget.

Select Project Experience

City of Indianapolis Stormwater Management Team*:
Sr. Engineer on the City of Indianapolis's stormwater management team. Lead efforts to review reported concerns, perform site assessments, rate drainage concerns, identify potential solutions and associated construction costs, and review and update a city-wide CIP. Created an XP SWMM model for more in-depth and complicated regional drainage problems, including one that interfaced with a stormwater lift station operated by the Army Corps, to provide relief during flooding behind an ACoE maintained levee. The model was used to evaluate the historic flooding in a very populated and commercially dense part of the City that struggled with flooding due to adjoining canals, rivers, and levees adjacent to the area of study. Identified and proposed alternatives to provide a **utility cost comparison** *for the required infrastructure and the recurring storm even frequency that needed to be provided.*

City of Merrillville On-Call Stormwater Services and Long-Term Funding Planning*
Worked with the City of Merrillville to identify areas of concern, frequent flooding, and consistent challenges for operations and maintenance of their storm sewer network. Upon developing mapping for areas of concern, alternatives for project improvements were created for each location along with associated project costs. Working with City staff to develop projects of greatest priority into their CIP and **develop long-term plan for funding** *storm water improvement projects and strom water department finances.*

Education

BS, Environmental Engineering, Chemical Engineering
Univeristy of Colorado, Boulder (2004)

MS, Environmental Engineering
Northwestern University (2010)

Registrations

Professional Engineer, Colorado, 0043369
Also: AL, AZ, DC, FL, IL, IN, KS, MA, MN, MS, MO, MT, NV, NM, NY, NC, OH, OK, SD, TX, UT, VT, VA, WY

Certified Floodplain Manager

Certified Professional in Erosion and Sediment Control

Certified Professional in Stormwater Quality

Envision Sustainability Professional

*completed elsewhere

Calibre

DHM DESIGN

MARK WILCOX

Principal | Studio Manager | Professional Landscape Architect (CO) | ASLA

Mark's contributions to DHM showcase his diverse talents from managing projects to creating beautiful renderings, and understanding the technical aspects of funding and implementing his teams' designs. Mark has been with DHM since 1994, and has a true passion for seeing Colorado's outdoors become each community's greatest asset. He has been involved in a variety of projects; planning and designing green infrastructure, parks, trails, public facilities, streetscapes and more. Mark has a long history providing services related to transportation, streetscape, and infrastructure throughout the West. His current project, the 39th Avenue Greenway, is currently under construction and includes Denver's first shared street.

ABOUT

EDUCATION

B. of Landscape Architecture
Kansas State University, 1994

REGISTRATIONS

Professional Landscape Architect | Colorado
ASLA

SPEAKING ENGAGEMENTS

National Trails Symposium Little Rock Arkansas, 2008
North Carolina Recreation & Park Association, 2012
Colorado Association of Stormwater & Floodplain Managers, 2016

REFERENCES

West Vine and Mulberry
City of Fort Collins - Matt Fater, Special Projects Manager, Fort Collins Utilities (mfater@fcgov.com| 970.221.6775)

Brighton Road
City of Commerce City - Shawn Poe, City Engineer (spoe@c3gov.com| 303.289.8166)

104th Avenue
City of Commerce City - Tony Jaramillo, Parks Planning Supervisor (tjaramillo@c3gov.com| 303.289.8166)

NOTABLE WORK

West Vine Basin | Fort Collins, Colorado

The west vine basin, located in northwest Fort Collins, extends east from Horsetooth Reservoir to the Cache la Poudre River and south from West Vine Drive to Mulberry Street and Laporte Avenue. Throughout the years, development has occurred over the historical flow paths. Most of the basin's drainage facilities are inadequate during any storm event, and as a result, drainage problems have occurred regularly. The goal of this project is to address stormwater quality from rainfall runoff and to identify stream restoration projects that protect the city's watersheds.

Mulberry Riverside Drainage Improvements & Cowan/Myrtle Waterline Replacement | Fort Collins, Colorado

DHM provided support to the Project Engineer for storm drainage improvements installed in Cowan and Myrtle streets near Mulberry Street and Riverside Avenue in Fort Collins, CO. The drainage improvement project provided Low Impact Design (LID) for a new storm sewer and inlets to address localized drainage problems and reduce the effects of flood potential in the area during major storms. Design included an outfall structure near the Poudre River and Springer Natural Area. DHM provided graphic support for for public meetings to show where the existing storm sewers aligned with propsoed rain in the project area.

Brighton Road Reconstruction-Phase I - E. 104th Ave. To E. 112th Ave. | Brighton, Colorado

DHM is currently working with the Civil Engineer on the expansion of Brighton Road at East 104th Avenue to East 112th Avenue. The team is taking the project from conceptual to final design, including construction plans and construction oversight. The typical roadway cross-section for Brighton Road will be planned for one (1) through lanes (one in each direction) with turn lanes at E 104th Avenue and E. 112th Avenue. Additional lanes, drainage improvements, street lighting, and other safety elements will also need to be evaluated and designed.

39th Avenue Greenway | Denver, Colorado

The 39th Avenue Greenway and Park Hill Detention Design/Build project created a mile of vibrant recreational space in east Denver integrated into the urban context of the neighborhoods. In addition to providing flood protection, the design for this $73 million project enhanced multimodal connectivity and improved water quality from an ecological perspective. The team heavily engaged with the community in an inclusive process to improve the aesthetic and visual character of the corridor while respecting its historic industrial context. Through the creation of native natural, active, formal and play zones, the design team created a diverse cadence along the trail. Designed for year-round use, amenities included bridges, low-flow crossings, natural play areas, shade structures, wayfinding, access roads, and specialty areas for events and gatherings. As the first shared street in Denver that integrates pedestrians, bicyclists and vehicles in the same corridor, plazas and urban design features will encourage activation of the greenway as a true multi-use trail. Clusters of active uses are placed at key nodes and intersections and dispersed along the greenway to provide interest and places to rest, with considerations for visibility, safety and connection.

NORA HOSKINS NEUREITER

NHN CONSULTING | PUBLIC OUTREACH

YEARS OF EXPERIENCE

23 years

EDUCATION

MPA, Lyndon B Johnson
School of Public Affairs
University of Texas, Austin
1991

BA, Government
Smith College, Northampton
1989

CONTACT

nora@nhnconsulting.com
(303) 349-9703

CONSULTING, LLC

Nora Neureiter has over 20 years of experience in public policy, communications and constituent relations. Nora is currently working on communications and public outreach for the Shared Street Program Development, Sidewalk Gap Construction, 48th Avenue Outfall Design, and Heron Pond Phase 1b Storm Detention Construction all in Denver. Previous work includes the 13th Avenue Multi-modal Study in Aurora, the Pecos Street Redesign in Adams County, and the Main Street Master Plan in Longmont. All projects combined a multi-phased approach to educate the public on much need improvements early in the process, with ample opportunity for individual property owners, businesses and community members to understand the project at the alternatives and preferred concept design milestones. Previously, Nora was a legislative aide to a Colorado state representative, a Denver City Council aide, and a regulatory officer at the Office of Management and Budget in Washington, D.C. Nora has handled constituent relations, policy research, written communications, and worked with federal, state, and municipal staff, as well as elected officials.

PROJECT EXPERIENCE

Sanderson Gulch Channel Improvements | Denver *(*with ICON)*
Public information strategy for Sanderson Gulch Stormwater Improvement Project, Denver. Included Council briefings, community open house, neighborhood meetings, regular bi-lingual construction updates, and inter-agency communication with adjacent City venues.

27th Street Storm Drain (RiNo and Curtis Park) | Denver
Public information plan for 27th Street Storm Drain in RiNo and Curtis Park in Denver including open houses, neighborhood meeting presentations, an accessible online project page, council relations, business outreach, a broad communication list, and regular community updates.

Jackson Street Storm System—Phase 2 | Denver *(*with ICON)*
Public engagement for the Jackson Street Storm System Design – Phase 2 in a Denver community of digitally savvy residents who have recently experienced heavy stormwater construction related activity and expressed considerable fatigue with road closures and disruption.

Globeville Stormwater Systems Study | Denver
Public involvement for the Globeville Stormwater Systems Study in Denver consisting of outreach to a dual-language population to explain the difference between stormwater and riparian flooding and solicit input on preliminary solutions for both kinds of flood events.

Heron Pond/Carpio-Sanguinette Park Master Plan | Denver
Public engagement for Heron Pond/Carpio-Sanguinette Park Master Plan in Denver's Globeville neighborhood. Sought public input on park design with information on a stormwater facility through open houses and an on-site 'festival', as well as Stakeholder Working Group. Currently supporting public information strategy for the construction of the Heron Pond/Carpio Sanguinette Park Phase 1B stormwater facility.

Colorado State Legislature: Denver, CO | Nov. 2011 - 2015
Legislative Aide to Rep. Beth McCann (D-Denver). Performed research in support of bills sponsored by the Rep. McCann including bills on juvenile and criminal justice, home foreclosure, gun safety and mental health. Met with constituents, interest groups and lobbyists on behalf of the Representative. Drafted articles for local papers, the Representative's e-newsletter as well as her Town Hall events.

STEVEN FOWLER

KINETIC INDUSTRY | CCTV, SUPERINTENDENT OF INFRASTRUCTURE

YEARS OF EXPERIENCE

30+ years

CONTACT

steve.fowler@kineticindustry.com

(303) 880-9921

Steve has over 30 years of experience in the sewer and storm sewer industry. He has overseen field operations for over 20 years of his career including overseeing crews performing CCTV, Vac/Jetting, Repairs, Manhole Lining, CIPPR Repairs, and Lift Stations. Steve has also performs staff management duties, traffic control on site, and managing Kinetic's equipment and safety procedures. He is adept at prioritizing customer needs and ensuring projects are completed to job specifications and deadline requirements.

PROJECT EXPERIENCE

Notable Projects Include:

- **Storm Line Cleaning and Assessment | City of Boulder, CO**
  32,000 LF of 21" - 36" Trunk Line, completed on time and under budget
- **Ralston Trunk Line Cleaning and Inspections | City of Arvada, CO**
  25,000 LF of 24" - 30" Trunk Line, completed on time and under budget
- **North Trunk Line Cleaning and Inspections | City of Arvada, CO**
  180,000 LF of 6" - 48" Storm Sewer, completed on time and under budget through difficult easement access and required heavy traffic control
- **Insituform Large Pipe Preparation for Lining | City of Littleton, CO**

In addition, Kinetic Industries has performed services for the following projects:

- **Sanitary Sewer Cleanings at Fossil Creek | D.R. Horton, Fort Collins, CO**
  Ongoing and multiple sanitary sewer cleanings at this Fossil Creek residential development (sanitary jetting).
- **Culvert Cleanings, Highway 6 | APC Southern, Golden, CO**
  Over 80 culvert cleanings ranging in size from 24" to 36" along Highway 6 in Golden, CO for APC Southern.
- **Culvert Cleanings, Western Slope Area | Clifton, Avon, Silverthorne, CO**
  Multiple culvert cleanings ranging in size from 24" to 36" pipe along the Western Slope of Colorado for United Companies.

KINETIC INDUSTRY

Firm:

105 West, Inc., 13 Years

Years of Experience:

27 Years

Education:

Pennsylvania State University College of Business

Registrations:

Registered Colorado Land Surveyor No. 38189

Richard D. Muntean, PLS Survey Manager

Mr. Muntean has more than twenty six years of surveying experience in boundary, topographic, and right-of-way surveying. He has been with firm for twelve years. His expertise includes right-of-way plans, topographic design surveys, geodetic control networks, ownership maps, data processing and project management. Mr. Muntean is recognized in his profession as a leading software authority. His software expertise includes AutoCAD Civil 3D, MicroStation, OpenRoads, and Trimble Business Center.

Project Experience

Louisville Station & Highway 42, City of Louisville

As the responsible surveyor in charge, Mr. Muntean met and coordinated survey efforts with the appropriate City of Louisville officials. He oversaw survey control, design surveys, utility surveys, communicated permit requirements with the appropriate agencies and ownership mapping for SH 42 from South Boulder Road to Pine Street and the South Street intersection with the BNSF Railroad. Mr. Muntean ensured all surveying services were performed in accordance with the current City of Louisville Survey Requirements.

112th Widening, City and County of Broomfield

As the responsible surveyor in charge, Mr. Muntean met and coordinated survey efforts with the appropriate City and County of Broomfield officials. He oversaw survey control, design surveys, utility surveys, ROW mapping, and final Right-of-Way Plans and separate legal descriptions for BNSF Railroad ROW. Mr. Muntean ensured all surveying services were performed in accordance with the current CDOT Local Agency Survey Requirements.

SH 79 Grade Separation at UPRR, CDOT Region 1

Mr. Muntean met and coordinated survey efforts with the appropriate CDOT officials. He oversaw survey control, design surveys, the survey of subsurface utilities, communicated right-of-entry with the Union Pacific Railroad and private landowners and provided ownership mapping along State Highway 79 and the Union Pacific Railroad bridge. Mr. Muntean ensured all surveying services were performed in accordance with the current CDOT Survey Manual.

Kipling Parkway Underpass - Van Bibber Trail Extension, Arvada, Colorado

Mr. Muntean met and coordinated survey efforts with the appropriate Arvada and CDOT officials. He oversaw survey control, design surveys, the survey of subsurface utilities, communicated permit requirements with the appropriate agencies and provided ownership mapping together with final ROW plans. Mr. Muntean ensured all surveying services were performed in accordance with the current CDOT and Arvada Requirements.

ATTACHMENT A-RFQ SUBMISSION FORM FOR ELECTRONIC SUBMISSION

(Include this form as a PDF with your electronic submission)

Does your offer comply with all the terms and conditions? (YES / NO)
If no, indicate where exceptions can be found in the proposal.

Does your offer meet or exceed all specifications? (YES / NO)
If no, indicate where exceptions can be found in the proposal.

Does your offer intend to comply with the Town's Professional Service Agreement? (YES / NO)
If no, indicate what exceptions you may have to the Agreement template.

Have All Addendums Been Acknowledged? (YES / NO)

(Please Note Addendums by Number/Date)

Addendum 1: 01/03/24, Addendum 2: 01/17/24

Has a Duly Authorized Agent of the Consultant Signed the Cover Letter? (YES / NO)

Has your UEI been included in your Cover Letter? (YES / NO)

Has a W-9 Form Been Included With the Proposal? (YES / NO)

Does Consultant agree to execute contract documents electronically if the Town so requests?

(YES / NO)

Person authorized to execute contract documents:

Printed Name: Craig Jacobson, PE, CFM

Title: Senior Principal | VP of Operations

Email Address: cjacobson@iconeng.com

Date: 02/16/2024

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ **Go to *www.irs.gov/FormW9* for instructions and the latest information.**

Give Form to the requester. Do not send to the IRS.

Print or type. See **Specific Instructions** on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

ICON Engineering, Inc.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☑ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

7000 South Yosemite Street, Suite 120

Requester's name and address (optional)

6 City, state, and ZIP code

Centennial, CO 80112

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN,* later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

8	4	–	1	3	7	7	5	0	8

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here | **Signature of U.S. person ▶** Matthew J. Visetta | **Date ▶** 02-05-2024

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9.*

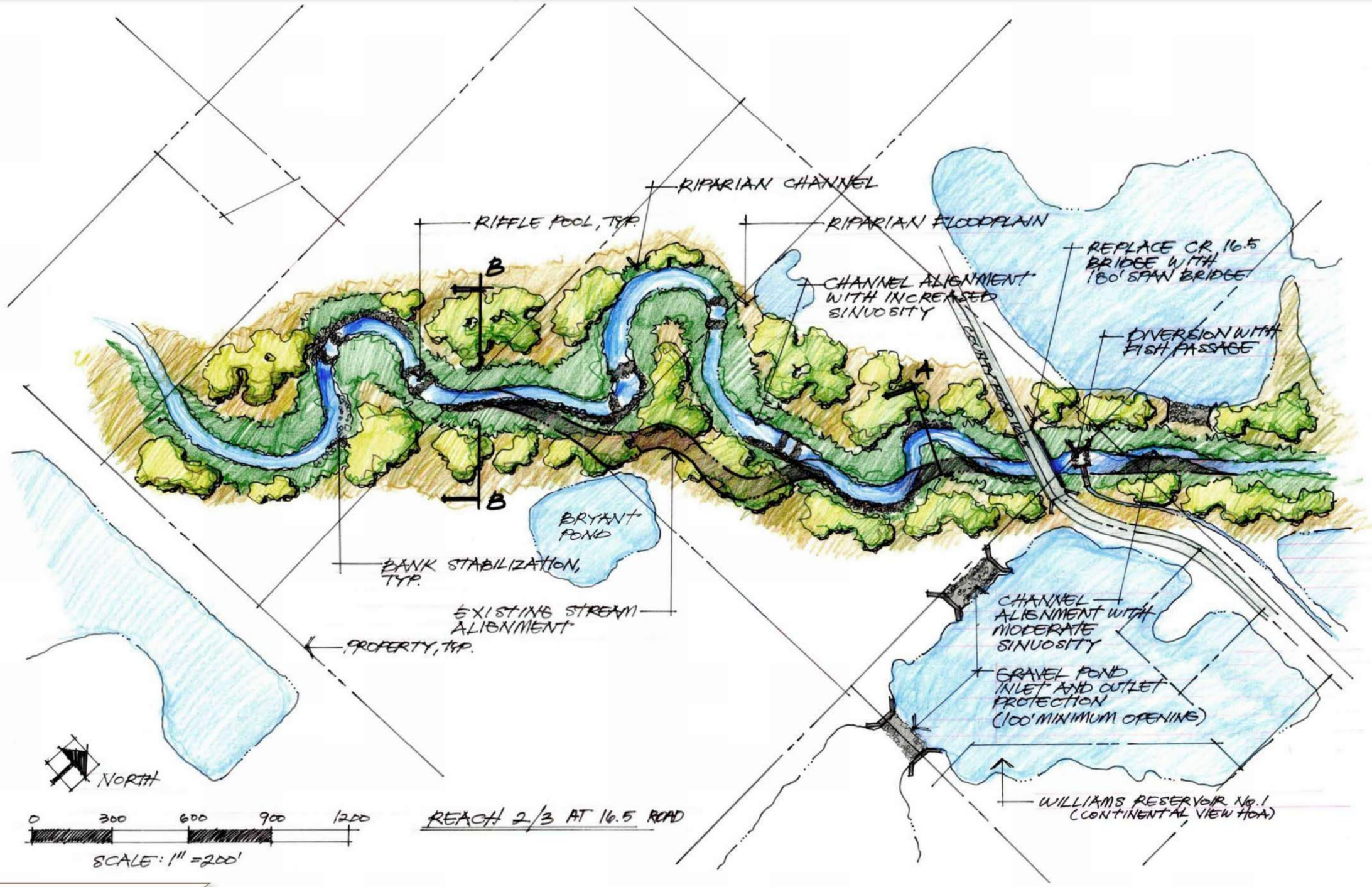
Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

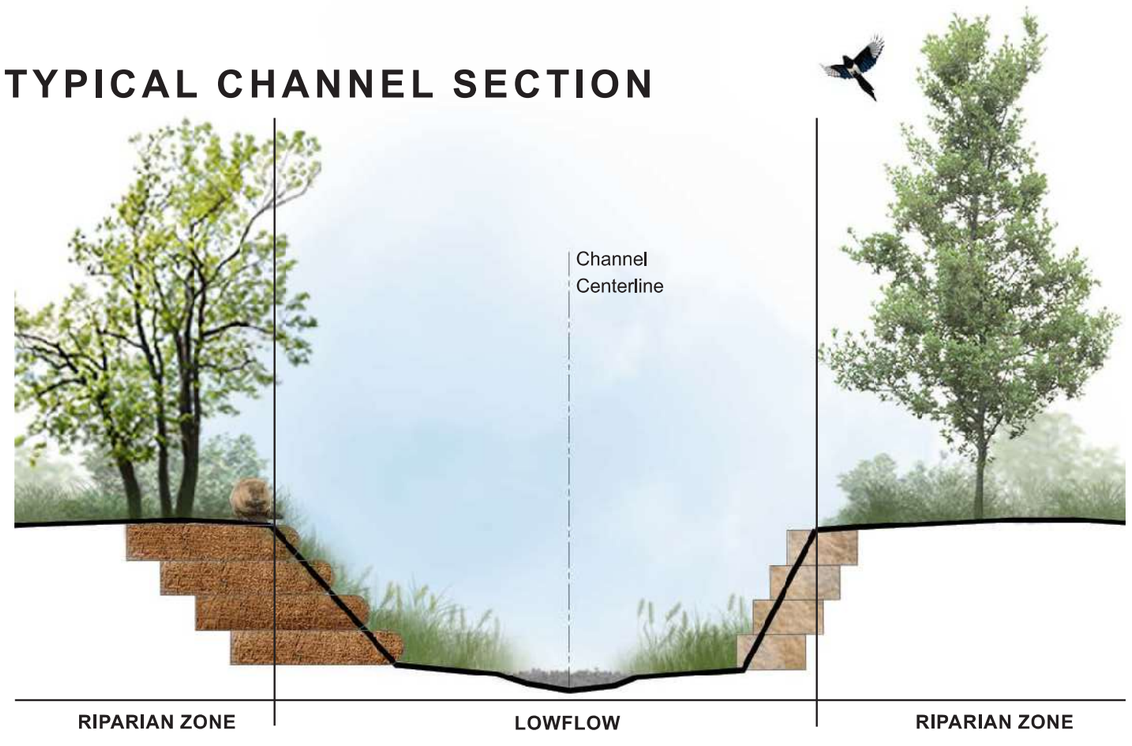
- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*


RIPARIAN CHANNEL
RIFFLE POOL, TYP.
RIPARIAN FLOODPLAIN
REPLACE CR. 16.5 BRIDGE WITH 180' SPAN BRIDGE
CHANNEL ALIGNMENT WITH INCREASED SINUOSITY
DIVERSION WITH FISH PASSAGE
B
A
B
BRYANT POND
BANK STABILIZATION, TYP.
EXISTING STREAM ALIGNMENT
PROPERTY, TYP.
CHANNEL ALIGNMENT WITH MODERATE SINUOSITY
GRAVEL POND INLET AND OUTLET PROTECTION (100' MINIMUM OPENING)
WILLIAMS RESERVOIR NO. 1 (CONTINENTAL VIEW HOA)
NORTH
0 300 600 900 1200
SCALE: 1" = 200'
REACH 2/3 AT 16.5 ROAD

TYPICAL CHANNEL SECTION



NATIVE VEGETATION


Western Cottonwood


Bigtooth Maple


Peachleaf Willow


Wild Plum

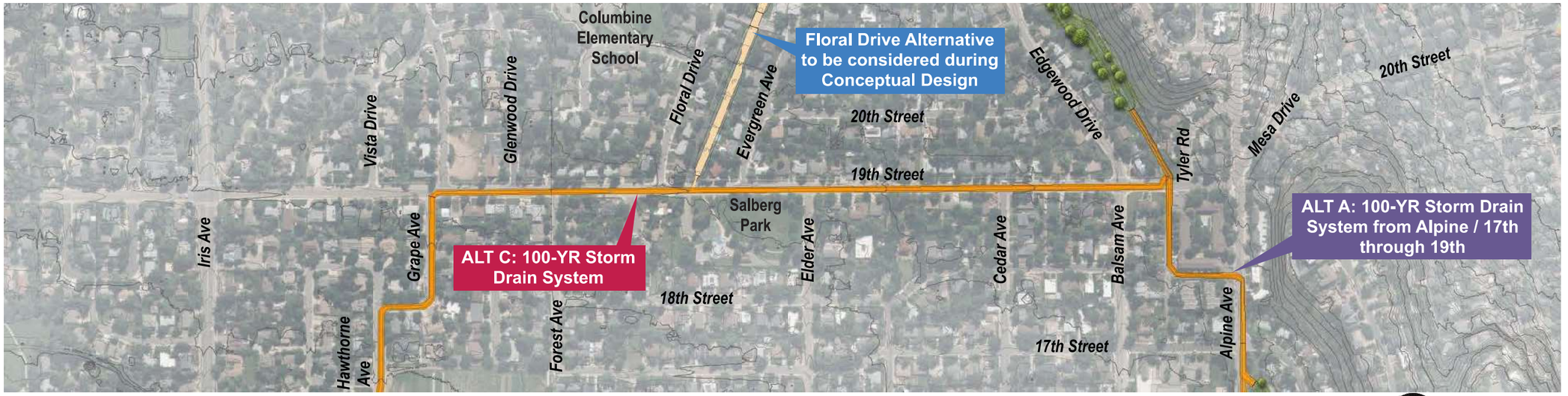

Riparian Mix Grass

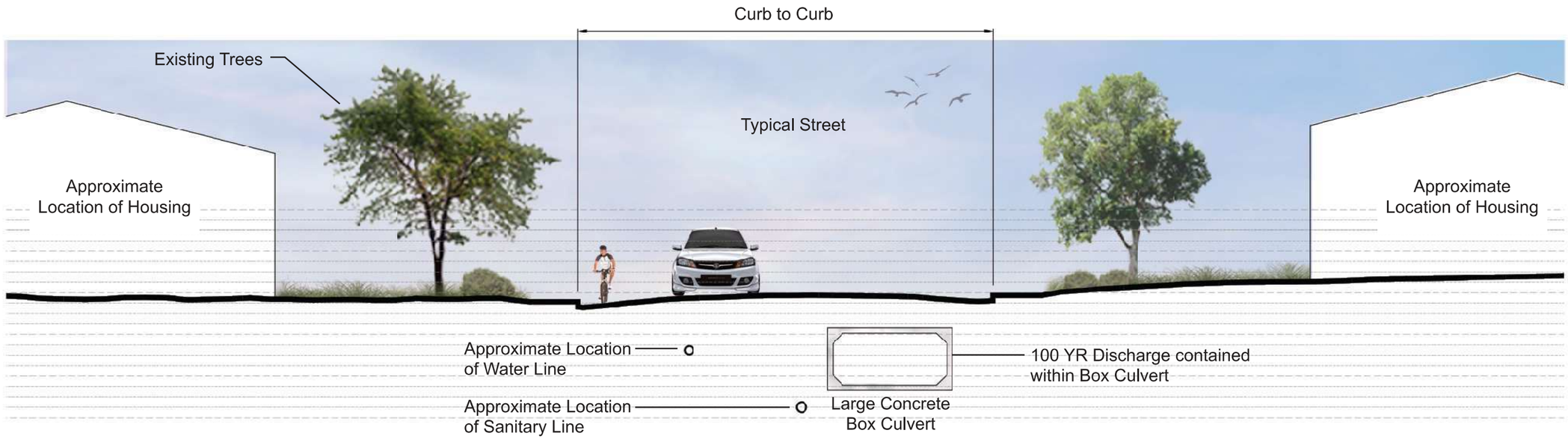

Snowberry


Golden Currant


Yarrow

CONCEPTUAL METHODS AND MATERIALS





*CONCEPTUAL SECTIONS SHOWN FOR GRAPHIC PURPOSES ONLY

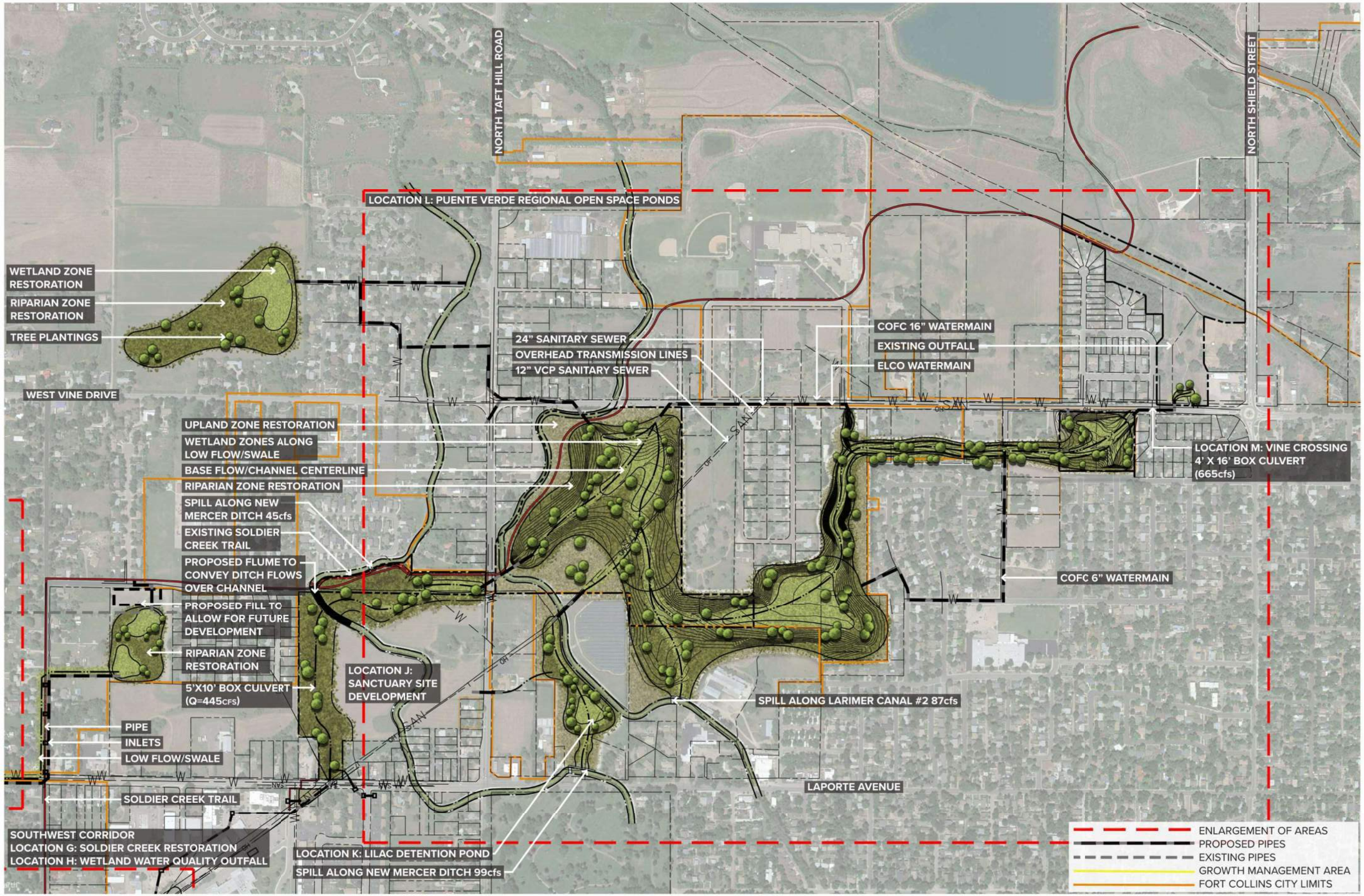
*UTILITIES SHOWN FOR GRAPHIC PURPOSES ONLY FURTHER INVESTIGATION NEEDED TO DETERMINE IMPACT

DHM DESIGN

UPPER GOOSE CREEK AND TWOMILE CANYON CREEK

SECTION 2 - TYPICAL STORM DRAIN SYSTEM UNDER STREETS

FEBRUARY 2023



CENTRAL CORRIDOR - LOCATIONS J, K, L, M: PUENTE VERDE REGIONAL OPEN SPACE PONDS TO VINE CROSSING

MARCH 30, 2021

FORT COLLINS, COLORADO

City of Fort Collins

ICON ENGINEERING, INC.

DHM DESIGN

0 150 600
50 300
SCALE: 1"=300'-0"

2D Rain-on-Grid Analysis

Lake Tunnel Crossings
Proposed Storm Drain
Phase 1
Phase 2
Phase 3
Phase 4
Points of Interest
School
Citizen Complaint
MunicipalBoundary
Ditch Inlet Locations

W EISENHOWER BY
Little Barnes Ditch
W 10TH ST
E 10TH ST
N GARFIELD AVE
N CLEVELAND AVE
N LINCOLN AVE
W 8TH ST
W 7TH ST
E 7TH ST
N TAFT AVE
Lake Loveland Outfall Tunnel
N COLORADO AVE
W 6TH ST
E 6TH ST
ARTIST ALY
PAINTERS ALY
SWEETHEART ALY
W 4TH ST
E 4TH ST
BACK STAGE ALY
OPERA ALY
W 1ST ST
E 1ST ST
Big Thompson River
Rivers Edge Natural Area
Loveland and Greeley Canal

Extend storm drain to capture canal outfall

Adjust storm to avoid parallel sanitary

Proposed parallel sanitary

18" 8 cfs
24" 14 cfs
30" 29 cfs
36" 40 cfs
48" 40 cfs
48" 29 cfs
30" 12 cfs
48" 73 cfs
24" 12 cfs
54" 83 cfs
54" 88 cfs
30" 22 cfs
30" 26 cfs
36" 35 cfs
30" 8 cfs
54" 102 cfs
36" 43 cfs
42" 44 cfs
42" 49 cfs
54" 147 cfs
30" 10 cfs
42" 15 cfs
42" 25 cfs
18" 7 cfs
54" 154 cfs
36" 27 cfs
54" 160 cfs
18" 2 cfs
18" 5 cfs
30" 32 cfs
36" 37 cfs
54" 168 cfs
18" 7 cfs
24" 16 cfs
18" 5 cfs
18" 8 cfs
48" 77 cfs
48" 78 cfs
48" 55 cfs
42" 49 cfs
54" 250 cfs

NORTH GREELEY & DOWNTOWN STORM DRAINAGE MASTER PLAN

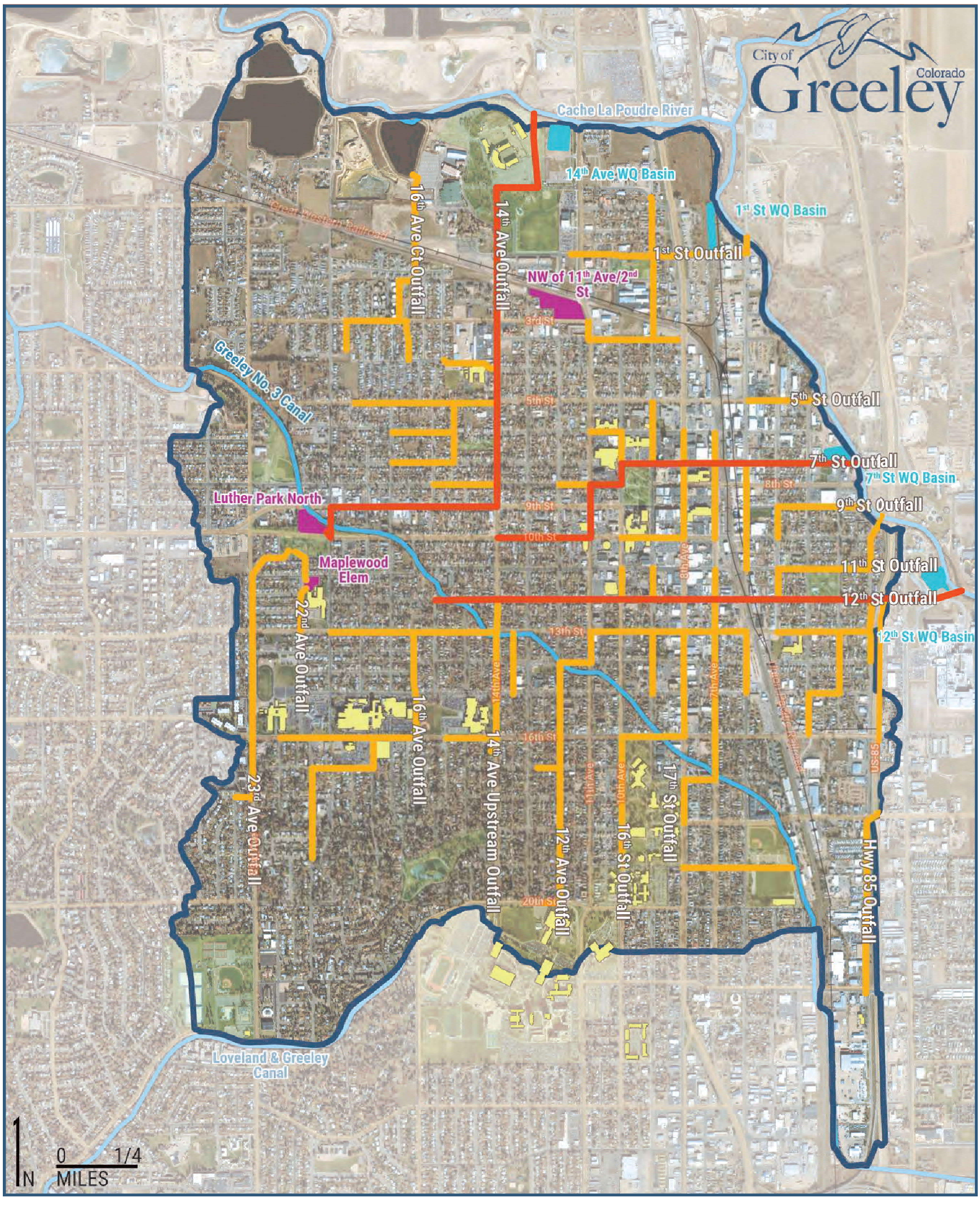
ICONENGINEERING, INC.

FIGURE ES-2 - MASTER PLAN SCHEMATIC
MARCH 2017

- Watershed Boundary
- Park
- Univ. of Northern Colorado
- Important Structure

Location	Outfall	Flood Storage (Ac-ft)	Est. Surface Area (Ac.)
Luther Park North	14th Avenue	4.0	3.0
Maplewood Elementary	22nd Avenue	2.2	1.0
NW of 11th Ave/2nd St	1st Street	12.6	5.2
14th Ave WQ Basin	14th Avenue	8.1	3.4
1st Street WQ Basin	1st Street	5.0	2.3
7th Street WQ Basin	7th Street	5.8	1.9
12th Street WQ Basin	12th Street	6.6	5.8

- Main Trunk
- Lateral
- Detention Basin
- Water Quality Basin



NORTH GREELEY & DOWNTOWN MASTER PLAN

FLO-2D DIVERSION CURVE
AREA 1 - 21ST STREET RD. & 21ST AVE

FLOW DEPTH

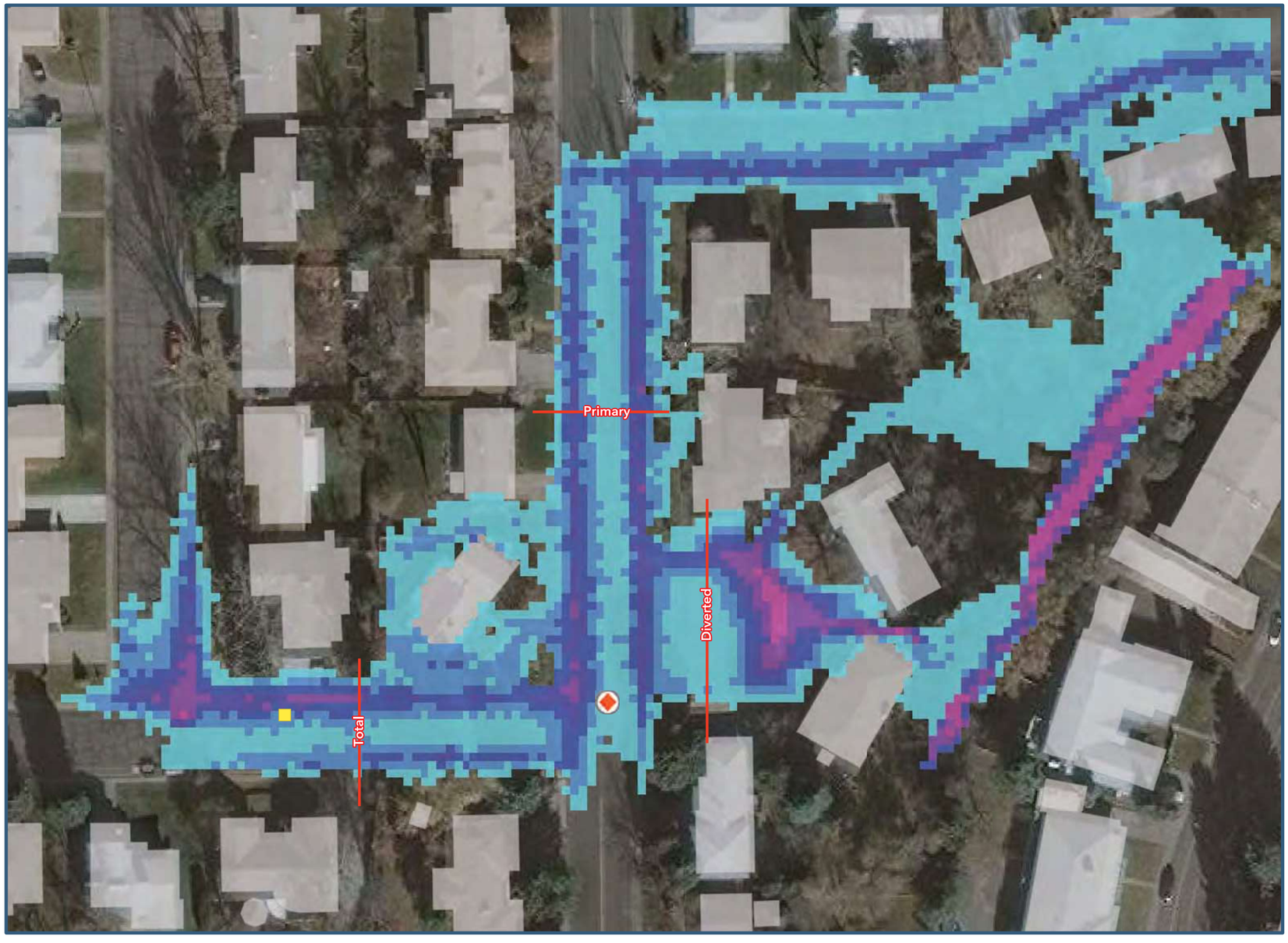
0" 3" 6" 9" 12" 1.5' 3'+

INFLOW POINT
CROSS SECTION
DIVERSION ELEMENT
OUTFLOW

DIVERSION ELEMENT J002.2

100-YR INFLOW: 220 cfs

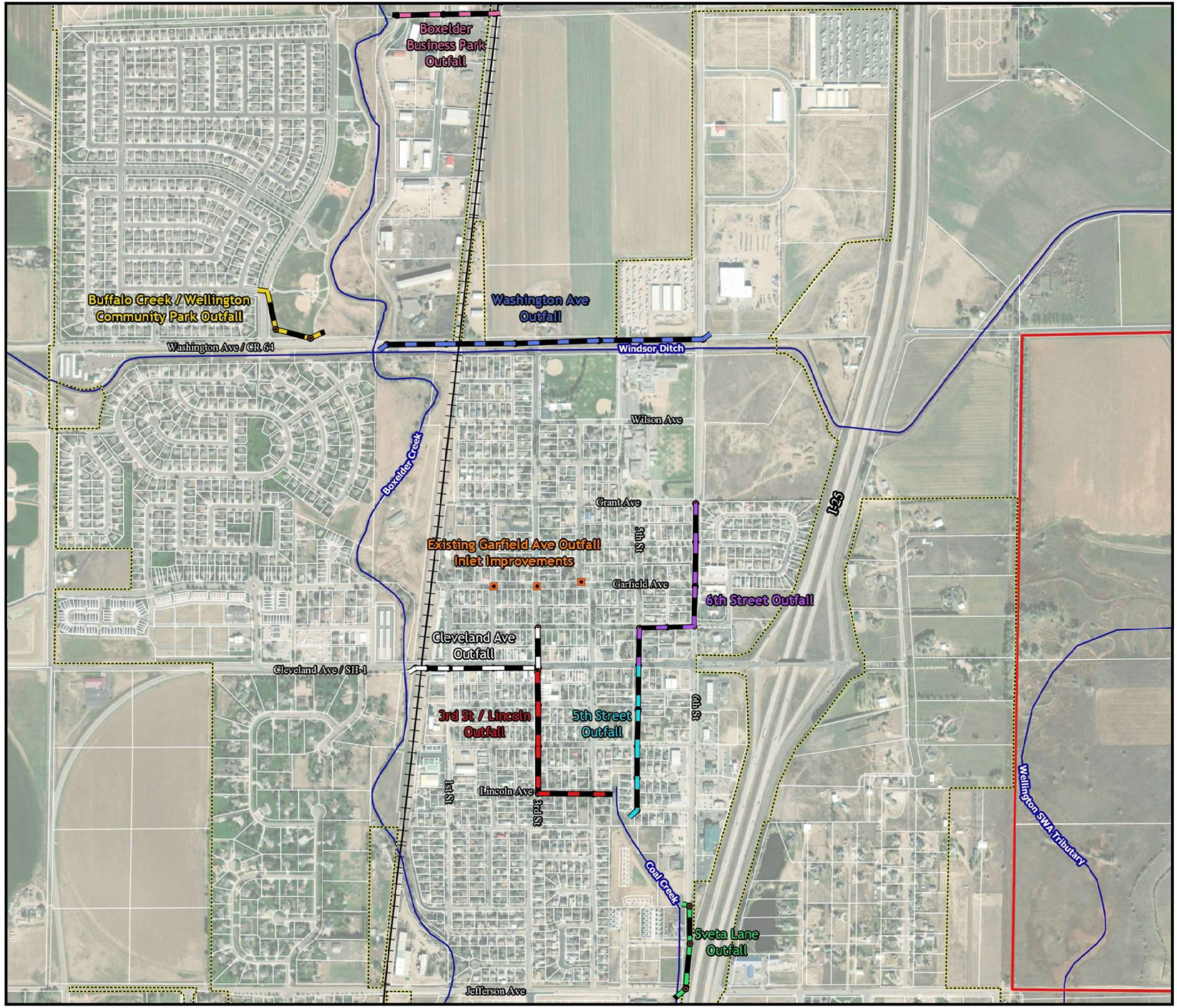
Total Inflow	Diverted Inflow
0	0
25	10
50	29
75	46
100	63
150	95
200	125
250	150



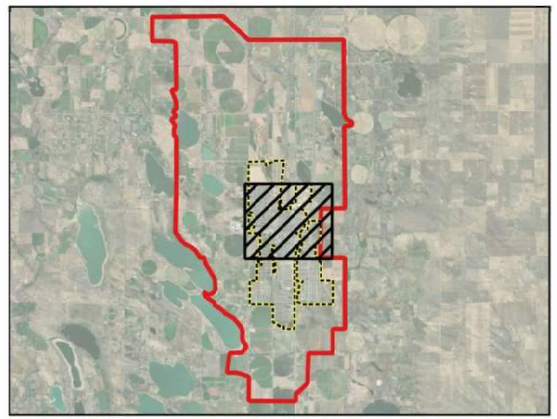
ICON ENGINEERING, INC.

TOWN OF WELLINGTON

Stormwater Master Plan
Figure 6-1
Master Plan
Town Improvements

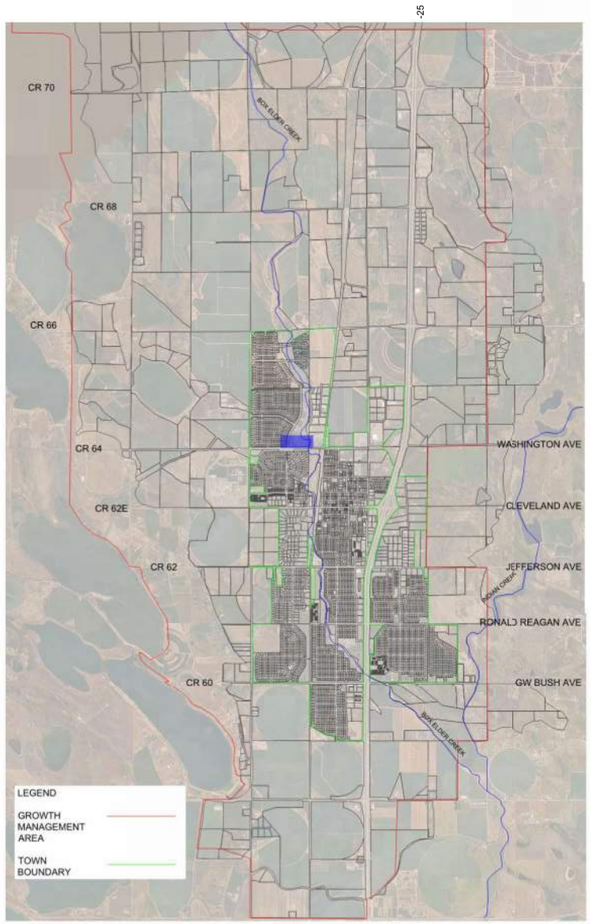


- Buffalo Creek Proposed Storm Pipe
- Sveta Ln Proposed Storm Pipe
- Boxelder Business Park Proposed Storm Pipe
- 3rd St / Lincoln Proposed Storm Pipe
- 5th St Proposed Storm Pipe
- 6th St Proposed Storm Pipe
- Cleveland Ave Proposed Storm Pipe
- Washington Ave Proposed Storm Pipe
- Proposed Manhole
- Proposed Inlets on Existing Storm Outfall
- Existing Drainageway / Canals
- Railroad
- Town Boundary
- Growth Management Area



0 1,000 ft

ICON ENGINEERING



WELLINGTON STORMWATER MASTER PLAN

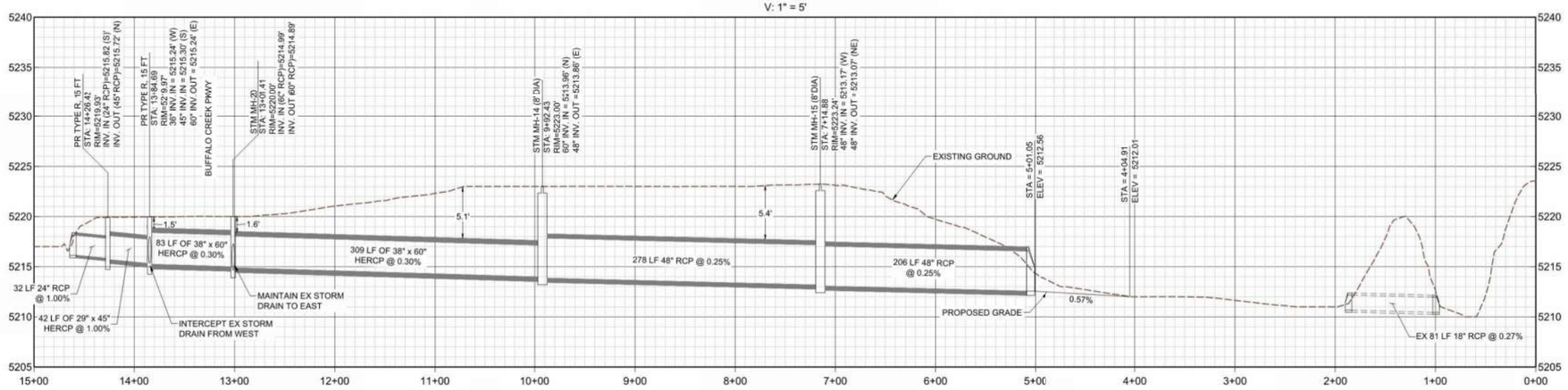
BUFFALO CREEK / WELLINGTON COMMUNITY PARK

CONCEPTUAL DESIGN

TOWN OF WELLINGTON

ICON ENGINEERING

PROFILE OF WELLINGTON COMMUNITY PARK
H: 1" = 50'
V: 1" = 5'



ICONENGINEERING

City of Fort Collins

West Vine Basin
100 - Year Floodplain Workmap

Date: 7/14/2020

N W E S

0 100 200 400 600 800 Feet

- Cross Section
- Stream Centerline
- Canal
- Lateral Structure
- Culvert
- Bridge
- As-Built Channel Grading
- Major Contour - 10'
- Minor Contour - 2'
- NFHL Political Boundary

NFHL Flood Zones

- 100-Year Floodplain
- Floodway
- 500-Year Floodplain

Proposed Flood Zones

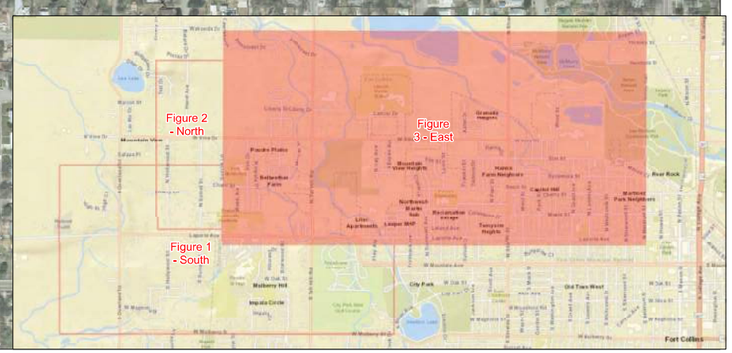
- 0.5' Floodway
- 100-Year Floodplain
- 100-Year Shallow Flooding (1' Depth)

Effective Flood Zones

- 0.5 FOOT FLOODWAY
- 100 YEAR FLOODPLAIN
- <= 1FT

West Vine Outfall Flow Path - Reach 1
West Vine Outfall Flow Path - Reach 2
West Vine Outfall Flow Path - Reach 3
Vine Overflow Flow Path - Reach Split North
Vine Overflow Flow Path - Reach Split South
Vine Overflow Flow Path - Reach Overflow
Northern Flow Path - Reach 1
Northeastern Flow Path - Reach 1
Central Flow Path - Reach 3
Central Flow Path - Reach 2
Central Flow Path - Reach 1
Southern Flow Path - Reach 1
Southeastern Flow Path - Reach 4
Southeastern Flow Path - Reach 3
Southeastern Flow Path - Reach 2
Southeastern Flow Path - Reach 1
Central Flow Path - Reach 5
Southern Flow Path - Reach OT 2
Southern Flow Path - Reach 2
Southeastern Flow Path - Reach 3
24" RCP

N TAFT HILL RD
LANCER DR
AZTEC DR
N SHIELDS ST
W VINE DR
ELM ST
CHERRY ST
LAPORTE AVE
CITY OF FORT COLLINS
LARIMER COUNTY



ICON ENGINEERING
7000 South Yosemite St, Suite 120
Centennial, CO 80112
(303) 221-0802
iconeng.com

Matrix

A Statement of Qualifications for

Comprehensive Stormwater Master Plan

February 16, 2024

Prepared for

Town of Johnstown, Colorado


Matrix

Matrix Design Group, Inc.
707 17th Street, Suite 3150
Denver, CO 80202
O 303.572.0200
F 303.572.0202
matrixdesigngroup.com

February 16, 2024

Town of Johnstown
Jason Elkins, PE
450 S. Parish Avenue
Johnstown, CO 80534

RE: Request for Qualifications for Consulting Services to Develop a Comprehensive Stormwater Master Plan for the Town of Johnstown, Colorado

Dear Mr. Elkins and Evaluation Committee Members,

Matrix Design Group, Inc. enthusiastically presents our proposal for this Stormwater Master Plan, promising not just a plan, but a transformative blueprint for Johnstown's resilience and sustainability. Our legacy in stormwater management and community-focused planning ensures a future where flood risks are minimized, water quality is enhanced, and public well-being is elevated.

Our methodology combines cutting-edge hydrologic analysis with robust community engagement, ensuring that solutions are not only technically sound but also aligned with Johnstown's values and needs. Our track record with municipalities mirrors our commitment to delivering practical, phased strategies that adapt to both current challenges and future growth, maximizing return on investment.

Selecting Matrix means partnering with a team that views stormwater not as a challenge, but as an opportunity for enhancing community resilience, environmental stewardship, and quality of life. We are eager to bring our expertise and innovative solutions to Johnstown, making a tangible difference in the lives of its residents and the health of its ecosystems.

Matrix has reviewed the Eligibility section outlined on page 3 of the RFQ and we agree with all requirements. **UEI Numbers:** Matrix Design Group, Inc. GAJJG2JEJMN9; Logan Simpson REB3J4JAMTE5

Primary Point of Contact
Drew Beck, PE, CFM, PMP
drew.beck@matrixdesigngroup.com
matrix@matrixdesigngroup.com
303.572.0200

We look forward to the opportunity to discuss our proposal in further detail. Thank you for considering Matrix for this critical project. We are excited about the prospect of contributing to the Town of Johnstown's resilience and sustainability goals.

Sincerely,

Drew Beck, PE, CFM, PMP
Officer-in-Charge

Benjamin Liu, PE, CFM
Project Manager

Excellence by Design

Qualifications

Matrix

Qualifications of Firm and of the Project Team

Why Choose Matrix?

Founded in Colorado in 1999, Matrix Design Group, Inc. (Matrix) is an award-winning firm that provides professional water resources engineering, consulting, ecological, environmental, transportation, planning, and program management services for both the public and private sectors. The firm takes its name from its integrated "matrix" structure, which maximizes capacity while supplying a breadth and depth of expertise in each service area. Professional staff members combine advanced technology with proven traditional methods to provide optimal planning and design solutions. This organization means that Matrix can pull from a variety of internal disciplines, as well as external resources, to provide the most holistic and efficient approach possible.

Recognized as an industry leader in water resource analysis and design, Matrix has extensive experience in water resources, stormwater management, stream and channel design, and water/wastewater facilities projects. Our expert staff has a long-established track record of outstanding responsiveness, problem solving, and work product and has been involved in a variety of assignments ranging from watershed management and channel master planning to stormwater master planning and utility design for major cities and districts. Our water resource practice is supported by in-house civil and structural design, GIS, ecological services, economics, and surveying capabilities.

Matrix personnel have developed a reputation for responsiveness, problem-solving and outstanding work product. Our in-house areas of expertise in water resources include:

- Master planning
- Stormwater infrastructure assessment and design
- Infrastructure asset management
- Hydrologic and hydraulic modeling and analysis
- Urban stormwater design
- Stream morphology and channel stability analysis
- Channel design and restoration
- Stream restoration design
- Floodplain mapping
- Water quality analysis, permitting, and BMP design

Matrix brings an integrated in-house team of knowledgeable local engineers, asset managers, and finance experts who have worked together on many stormwater master planning projects. Matrix is an experienced consultant that has completed numerous Mile High Flood District (MHFD) master plans and has a proven track record of providing innovative and comprehensive stormwater and green infrastructure solutions. Our demonstrated past successes from planning projects integrate hydrology, hydraulics, asset management, capital improvement planning, finance development, and green infrastructure elements which will be valuable to the Town of Johnstown (Town).

Our up-to-date knowledge of the relevant municipal and MHFD criteria and programs, hands-on experience, and relationships with stakeholder agencies will ensure that your master planning project will be completed in a timely manner. In order to complete master plans in the most efficient manner while increasing the confidence in the hydrologic and hydraulic (H&H) modeling results and flood risk identification, Matrix utilizes in-house dedicated GIS staff to take advantage of the automated H&H modeling technological advances and mapping resources. Our team will produce clear and accurate maps to communicate issues, alternatives and recommendations to the project team, stakeholders, and the public.

Matrix has helped clients with stormwater related issues for the past 24 years with GIS-based solutions central to our approach. During this time, our GIS Team has amassed an extensive portfolio of successful projects spanning subject areas including stormwater infrastructure master plans, capital improvement projects, MS4 compliance, watershed resiliency, and data collection and analysis. Our experience in applying GIS principles to water resources is enhanced by the services and technologies we can provide.

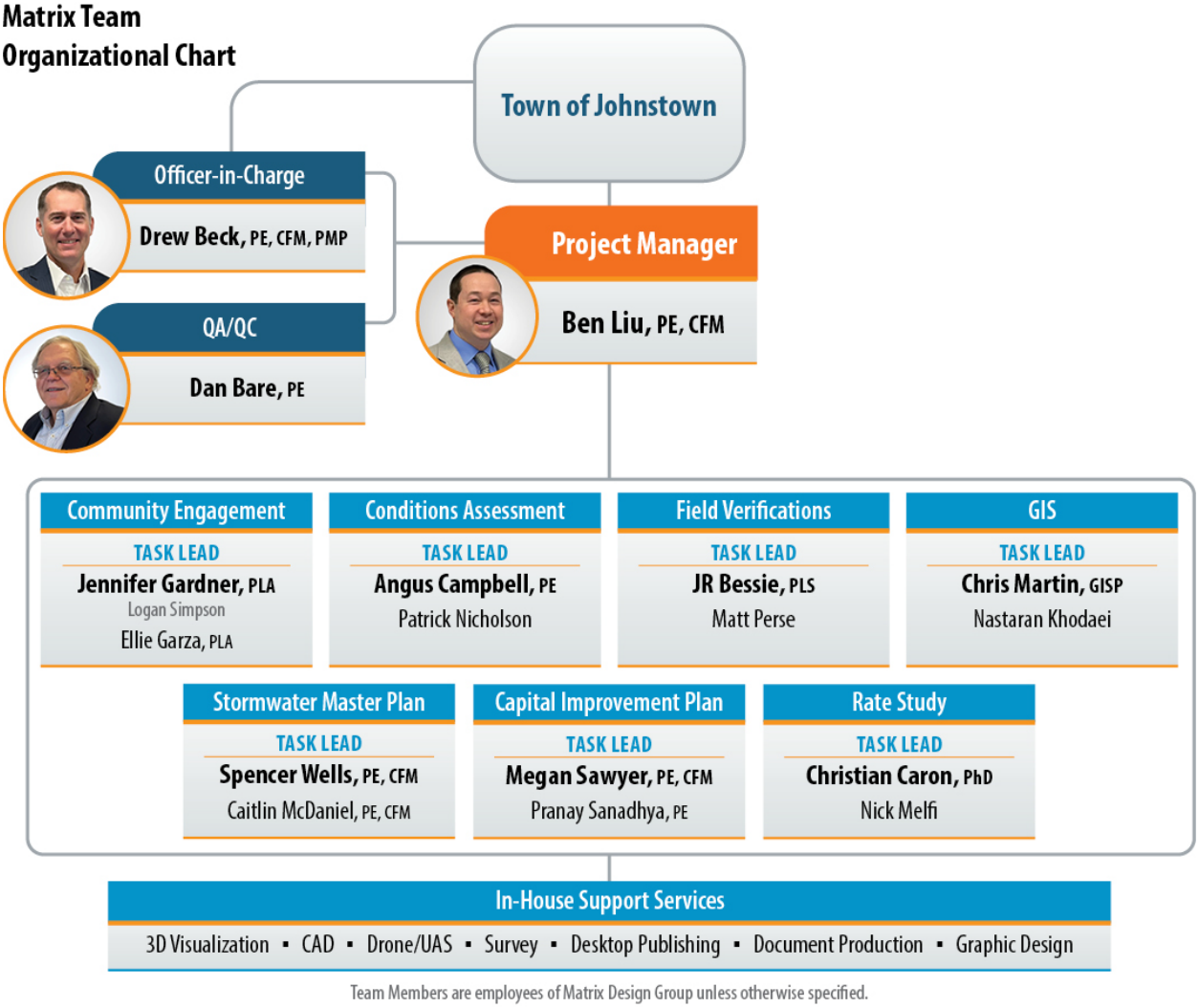
Matrix is a proud, vetted member of the Esri Partner Network. The global market leader in GIS technology, Esri partners exclusively with companies that exemplify excellence in GIS and location technology. Partners are trusted practitioners of GIS who can help you leverage ArcGIS technology. We support clients through our knowledge and expertise, solutions, implementation services, and dynamic content. Matrix is a GIS leader, and we are excited to offer the benefits of this unique partnership to the Town.

esri Partner Network Bronze

Project Team

The team that Matrix proposes for the Comprehensive Stormwater Master Plan project includes an accomplished core group of water resources and technical specialists who have worked together on numerous watershed and master planning projects. This group of seasoned and diverse subject matter experts ensures a well-coordinated approach that incorporates a wealth of experience and up-to-date knowledge of evolving trends and state-of-the-art methods in hydrology, hydraulics, floodplain mapping, financial modeling, and program development. The following organizational chart details the anticipated roles of each of our technical team members.

Matrix Team Organizational Chart

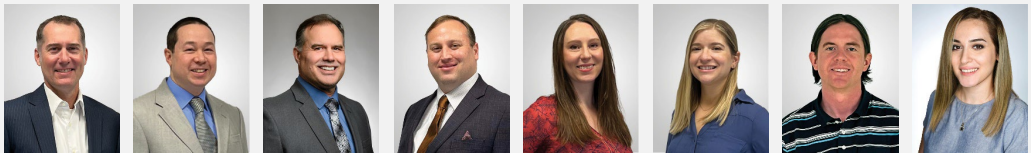


Team Members are employees of Matrix Design Group unless otherwise specified.

Similar Projects of a Regional Nature

Matrix has provided professional engineering, design, survey, and consulting services across the Front Range and throughout Colorado for 24 years. Our firm was founded in Colorado, allowing us a wealth of institutional knowledge about the region, its natural resources, interconnected infrastructure, and interagency relationships, as well as the ability to respond efficiently and effectively to project needs. The following are some of our most recent, relevant projects.

Greeley Comprehensive Drainage Plan Oklahoma and South Basins

Reference	Aaron Stines	970.302.0461	aaron.stines@greeleygov.com
Same Personnel			

This study created a master plan framework for protecting two large drainage basins in the outskirts of Greeley, Colorado, the Oklahoma & South Basins, from expected impacts of future development. Note that the southern part of the Oklahoma Basin falls within the Johnstown Growth Management Area (GMA). Matrix collected and synthesized hydrologic information within the 5-square-mile study area to calculate peak flows and volumes for existing conditions, future fully-developed conditions, and master plan conditions that account for recommended runoff reduction practices. Our team performed geomorphic assessments and created Relative Elevation Models for each of the six major drainageways to help Greeley understand the potential for channel movement over time. Matrix also performed capacity analyses and proposed sizing recommendations for the 13 existing crossing structures.

Matrix defined 17 distinct reaches based on representative characteristics to help focus drainage planning efforts on digestible reaches. We developed multiple alternatives for each reach and included four broad concepts: no action, detention, channel improvements, and low impact development. Working with the City of Greeley to define the relative importance of various criteria, Matrix compiled an alternatives analysis scoring matrix to objectively rank the alternatives.

Drainageway on the western outskirts of Greeley.

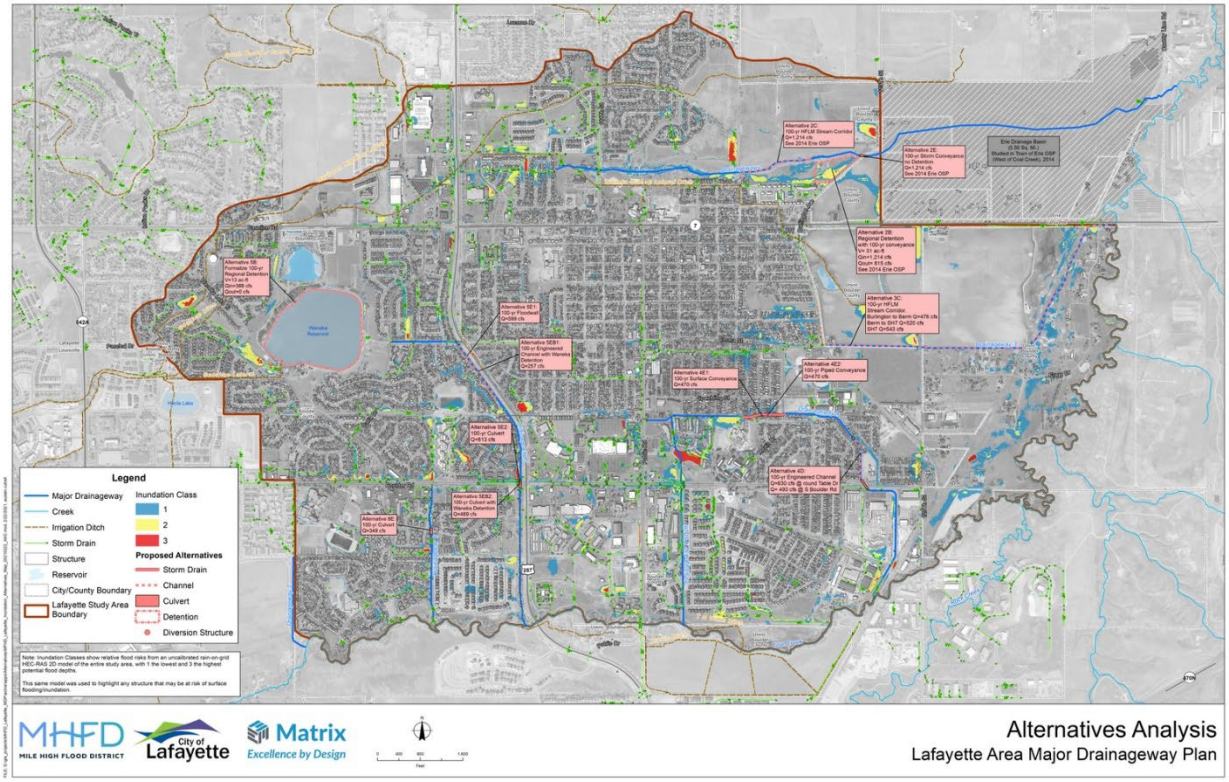
The City of Greeley wanted to explore the green infrastructure option, so Matrix developed a conceptual drainage plan that included a wide suite of low impact development types that would be appropriate for this historically agricultural location and reduce runoff. This included cost estimates to help guide capital planning. Ultimately, the City of Greeley can protect their water quality and preserve floodplains and natural channels to reduce future flood risks through this conceptual drainage plan.

A sample low impact development (LID) guidelines page and alternatives analysis map from this study are provided in the proposal Appendix.

Lafayette Area Master Drainage Plan

Reference	Jim Watt, PE, CFM	303.749.5455	jwatt@mhfd.org
Same Personnel	   		

The City of Lafayette is located along Coal Creek but includes seven unnamed tributaries that are major drainageways to Coal Creek. Matrix worked with the MHFD and the City of Lafayette to develop a comprehensive master plan for each of the major drainageways throughout the City. To augment the typical hydrology and hydraulic analysis, Matrix developed a high-level 2D model to better understand flow splits in very flat portions of the watersheds as well as to better inform residents of the flooding risk even though they are located outside regulatory (FEMA) floodplains. This plan ultimately provided a suite of recommendations ranging from a "Do Nothing" approach to culvert upsizing to High Functioning Low Maintenance (HFLM) open channel designs. The City of Lafayette can now utilize the Master Drainage Plan to develop an informed CIP to partner with MHFD on major infrastructure to alleviate localized urban flooding in addition to developing CIP projects for smaller localized systems.



This Lafayette study had many similarities to the Johnstown area of concern. Both study areas comprise a variety of land uses, including a compact, urban Old Town, single-family residential suburban neighborhoods, and agricultural regions on the outskirts. Both areas lack regulatory floodplains along the interior drainageways and have a history of agricultural modifications that blocked or erased natural flood flowpaths. Lafayette is farther along towards realizing full build-out, and Matrix can use what we learned to provide Johnstown with directly applicable concept recommendations.

A sample 2-D flooding hazard map and guidelines page and alternatives screening matrix from this study are provided in the proposal Appendix.

Goldsmith Gulch Major Drainageway Plan & Flood Hazard Area Delineation

Reference	Kurt Bauer, PE, CFM	303.749.5426	kbauer@mhfd.org
Same Personnel	    		

Matrix completed the Goldsmith Gulch Major Drainageway Plan and Flood Hazard Area Delineation (MDP/FHAD) Reports under contract with the Mile High Flood District (MHFD) on behalf of the project sponsors: the City and County of Denver, the City of Greenwood Village, and Southeast Metro Stormwater Authority (SEMSWA). The project provided watershed delineations, updated hydrologic modeling, detailed new hydraulic modeling, potential flood damage assessments, and recommendations for reducing flood hazards and improving the overall health of the drainageway as a valued neighborhood asset and amenity.

Goldsmith Gulch drop structure.

Matrix prepared hydrology for the 7.74-square-mile urban watershed to identify peak flows and volumes, including analysis and modeling of 10 existing publicly owned flood detention facilities. Detailed hydraulic models were created to study 9.6 linear miles of major drainageway. These hydraulic results were converted to inundation mapping, and Matrix used GIS to identify which existing buildings at risk of flood inundation could benefit from future storm infrastructure projects. We also analyzed existing capacities and calculated recommended upgrades for 63 bridge or culvert crossing structures.

Matrix developed mitigation strategies that would reduce flood risks to structures and infrastructure, then collaborated with project sponsors to select and rank the eight most impactful potential capital improvement projects (CIP). Proposed improvements included modifications to existing detention facilities, creating open channels to replace underground culverts, improving flood conveyance, stabilizing the channel, and enhancing regional water quality. The project sponsors especially valued our proposed detention modifications at Bible Park, which would significantly reduce peak flows in Goldsmith Gulch while having minimal impact to the existing park function. The municipalities can use this study to effectively manage their CIP programs to increase flood resiliency.

A sample concept design summary and cost estimate, concept design map, and concept design profile from this study are provided in the proposal Appendix.

Stormwater Enterprise Financial Planning Tool

Reference	Richard Mulledy, PE	719.200.1466	rmulledy@springsgov.com

Same Personnel



Matrix provided professional consulting services to the City of Colorado Springs' Stormwater Enterprise (City) for the development of a comprehensive financial planning tool. City staff needed to have an easy-to-use financial tool that allows for more effective planning for future operational expenditures, such as staffing, debt financing, and capital improvement investments.

To meet this challenge, Matrix developed a quantitative financial tool that contained four (4) integrated modules. Each module was developed in Microsoft Excel and designed in conjunction with City staff to ensure the tool met the usability requirements set forth by the City. Ultimately, the tool developed gives the City the option for additional modules to be built into the existing framework. Rollup modules such as a Statement of Financial Position (Balance Sheet), Income Statement, a Statement of Cash Flows, and a summary dashboard were developed and integrated into the tool to provide the City with real time (monthly or quarterly) business intelligence on Stormwater Enterprise performance.

A sample cost/revenue model and stormwater enterprise fee projection from this study are provided in the proposal Appendix.

Black Squirrel Creek.

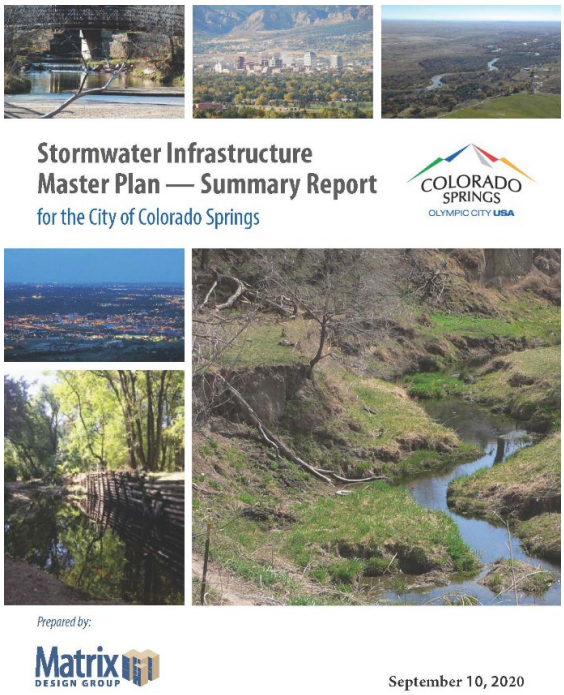
Matrix exceeded our expectations in developing the City's Stormwater Infrastructure Master Plan. They successfully integrated a broad team and demonstrated outstanding problem-solving to deliver this challenging project. I continue to be impressed by their diverse skill sets from infrastructure assessment and design to capital planning and asset management. Their staff are a pleasure to work with and deliver high quality products. The City's Stormwater Enterprise will continue to utilize Matrix as one of our primary consultants.

– Richard Mulledy
City of Colorado Springs
Stormwater Enterprise Program Manager

Colorado Springs Stormwater Infrastructure Master Plan

Reference	Tim Biolchini, PE, PMP	719.385.5612	timothy.biolchini@coloradosprings.gov
Same Personnel	   		

Matrix was tasked with tracking Capital Improvement Plan (CIP) projects from inception through design and construction, including links to the existing City asset management platform to track maintenance and monitoring activities. This complete Capital Planning system is a tremendous tool for the City, allowing the municipality to leverage technological advances to maintain records and create a legacy process to ensure the long-term viability of the City's Stormwater Program. The Stormwater Infrastructure Master Plan (SIMP) methods result in methodical, quantitative, and actionable plans for the City's CIP plan. Furthermore, the SIMP assists the City with long- term compliance and efficiency tools for adhering to its MS4 permit. Broad project goals which were accomplished included:



- Created a comprehensive GIS-based database for stormwater capital projects and stormwater infrastructure.
- Identified and filled gaps in existing stormwater infrastructure.
- Created a stormwater capital projects prioritization framework and budgeting tool.
- Standardized existing and future GIS data.
- Incorporated flexible, consistent costing.
- Created a plan that is modifiable, dynamic and open to communicate with other platforms.
- Established a framework for a Stormwater Channel Assessment Program.
- Developed a BMP inspection tracking system for MS4 compliance.
- Delivered a user-friendly, GIS-based, web application to streamline asset management and project planning.

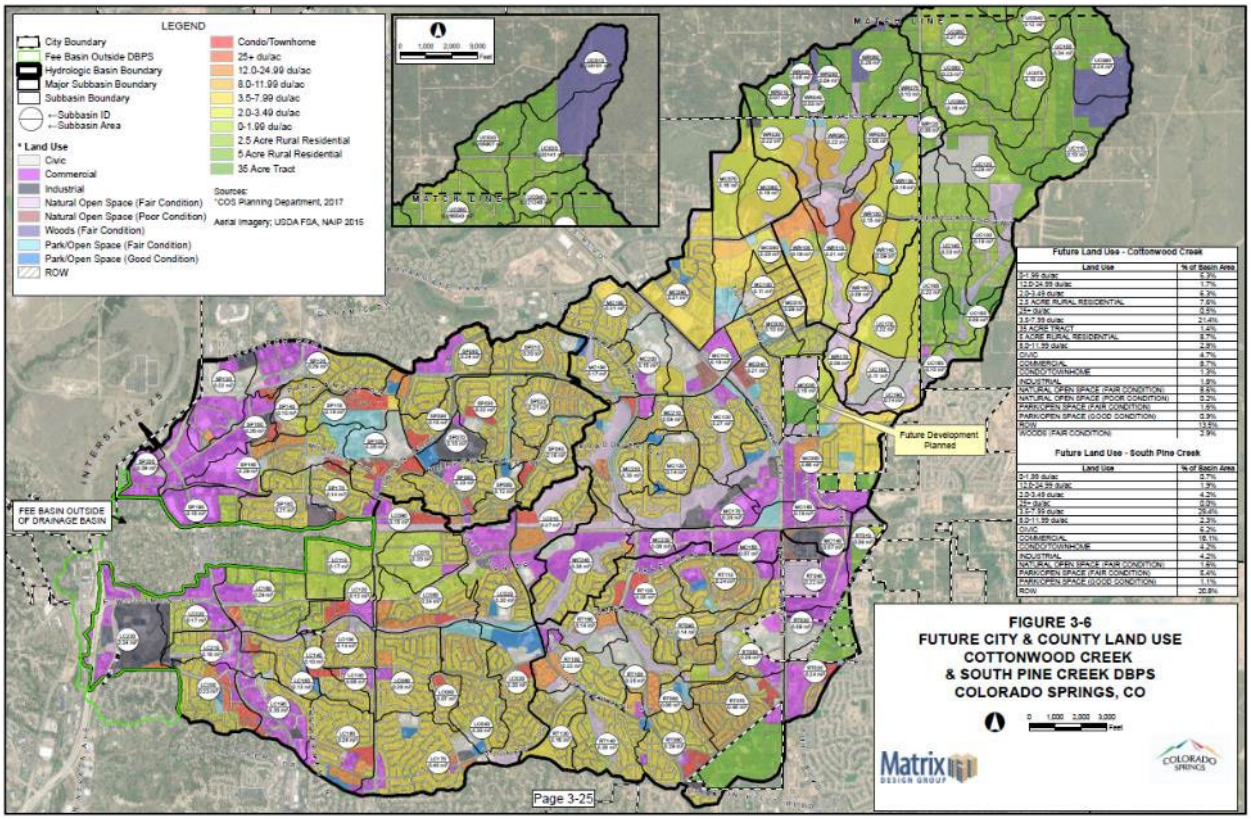
A sample conditions assessment map from this study is provided in the proposal Appendix.

Cottonwood Creek Drainage Basin Planning Study

Reference	Richard Mulledy, PE	719.200.1466	rmulledy@springsgov.com
Same Personnel	  		

Matrix was hired by the City of Colorado Springs to update the Cottonwood Creek Drainage Basin Planning Study (DBPS) due to the watershed's extensive development and numerous stormwater-related issues. With the main stem stretching 12 miles and draining approximately 19 square miles at its confluence with Monument Creek, concerns include increased downstream flows, channel instability, habitat destruction, and water quality issues. The DBPS utilized physically-based modeling techniques, applying four unique hydrologic methods to create a highly accurate model. This involved detailed surveys, regression analysis, impervious cover data analysis, and calibration to accurately represent the watershed's response to rainfall, offering a comprehensive solution to address its challenges.

In the process, Matrix conducted detailed surveys of key cross sections and analyzed impervious cover data collected by the Colorado Springs Stormwater Enterprise. Utilizing GIS technology, we developed discrete grid cell combinations to determine runoff curve numbers (CNs) for existing and future conditions. Additionally, Manning's n values were calculated at multiple locations using flow frequency analysis, guiding the assignment of values throughout the watershed. Calibration involved flow frequency analysis and adjustment of initial abstraction values to ensure the hydrologic model accurately mirrored the watershed's physical response to rainfall. This meticulous approach ensures the accuracy of the model and enhances Matrix's ability to provide effective solutions for managing stormwater in the Cottonwood Creek watershed.



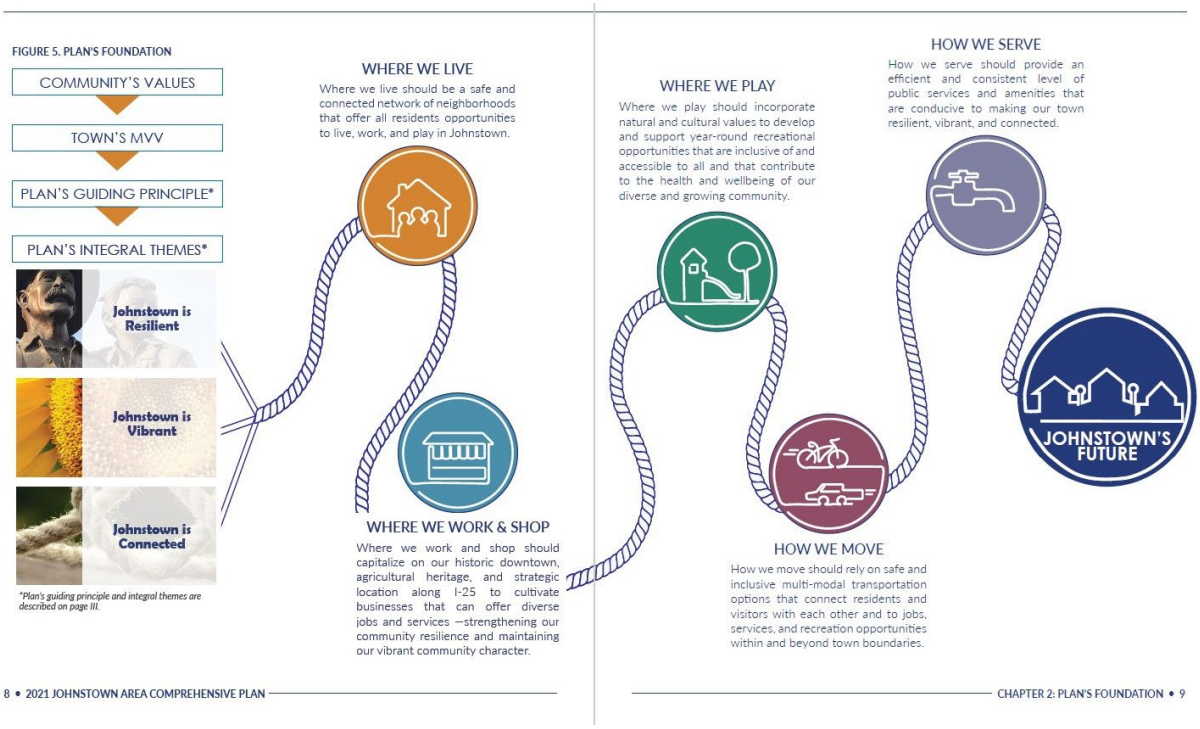
Johnstown Area Comprehensive Plan | Logan Simpson

Reference	Matt LeCerf	970.587.4664	mlecerf@johnstownco.gov
Same Personnel			

As one of the fastest growing municipalities in the Front Range, the Town of Johnstown has seen expansive growth in the last 20 years from approximately 8,900 residents in 2006 – to an estimated 18,000 in 2019. Demographic and economic shifts in the Town have spurred many questions about the town's future growth, connectivity, amenities, emergency preparedness, transportation, and housing. Prior developments within the Town were dominated by residential subdivisions near the Town's traditional core, but recent developments have been dominated by mixed-use, retail and employment projects in the Town's northwest. The updated Plan anticipates and accommodates future growth within the Town's Growth Management Area (GMA) while working to connect and harmonize the traditional and newer areas of the town.

Johnstown has sufficient land to satisfy the high demand for growth, but must balance development pressures with the need to protect green space, existing agricultural land, and natural assets. Additionally, development in the adjacent municipalities of Milliken, Greeley, and Loveland, constrain the Town's growth area and require careful thought about how the community wants to take advantage of opportunities for change. The Comprehensive Plan Update addresses these challenges and opportunities by harnessing the community's values, desires, and character to help guide decision-making and resource allocation over the next 20 years.

Jennifer's role as Project Manager for the Town of Johnstown Comprehensive Plan update, adopted in 2021, underscores her proficiency in community engagement. Her leadership facilitated extensive outreach efforts, ranging from community listening sessions to town hall events, open houses, pop-ups around town, and virtual questionnaires, all amid the challenges posed by the COVID pandemic. As the Community Engagement Task Lead for the Johnstown Stormwater Comprehensive Master Plan, Jennifer's existing relationship with the Town and stakeholders positions her to leverage insights gained from her previous engagement efforts. This background ensures that community input remains at the forefront, benefiting both the Town and stakeholders alike in the development of a comprehensive stormwater management plan.



Project Approach

Matrix understands that Johnstown has been and expects to continue on a rapid growth trajectory. Our team is passionate about stormwater planning, and we would be excited to help the Town prepare a stormwater master plan that comprehensively addresses your existing and future development needs. The current Town limits are not a compact shape, which means that the 13.8 square mile area within Johnstown requires a much larger drainage study to identify and determine flood risks. The 2001 Stormwater Master Plan for the Town of Johnstown (2001 SWMP) analyzed six major basins for a total of 23.7 square miles. Matrix recommends expanding the limits of the study to include all 47.1 square miles of the GMA.

We have performed a preliminary, high-level basin identification exercise analysis to help understand the scope of this project. As shown on the Opportunities and Constraints Map, we mapped the six 2001 SWMP basins, the Big Hollow Gulch Basin (on the western edge of the GMA) studied in 2020, and the Oklahoma Basin (on the northern edge of the GMA) currently being studied by the City of the Greeley on top of the current Town limits and GMA. We then roughly delineated the remaining 15 basins that have not been included in a drainage master plan – most of these are significant basins with visible historic drainage channels, and some are simply unique direct flow areas to the Big Thompson or Little Thompson Rivers that should not be lumped with other basins. ***We recommend that Johnstown establishes a total of 26 drainage basins as the basis for organizing technical analyses, communicating flood risks, and developing regional drainage recommendations.***

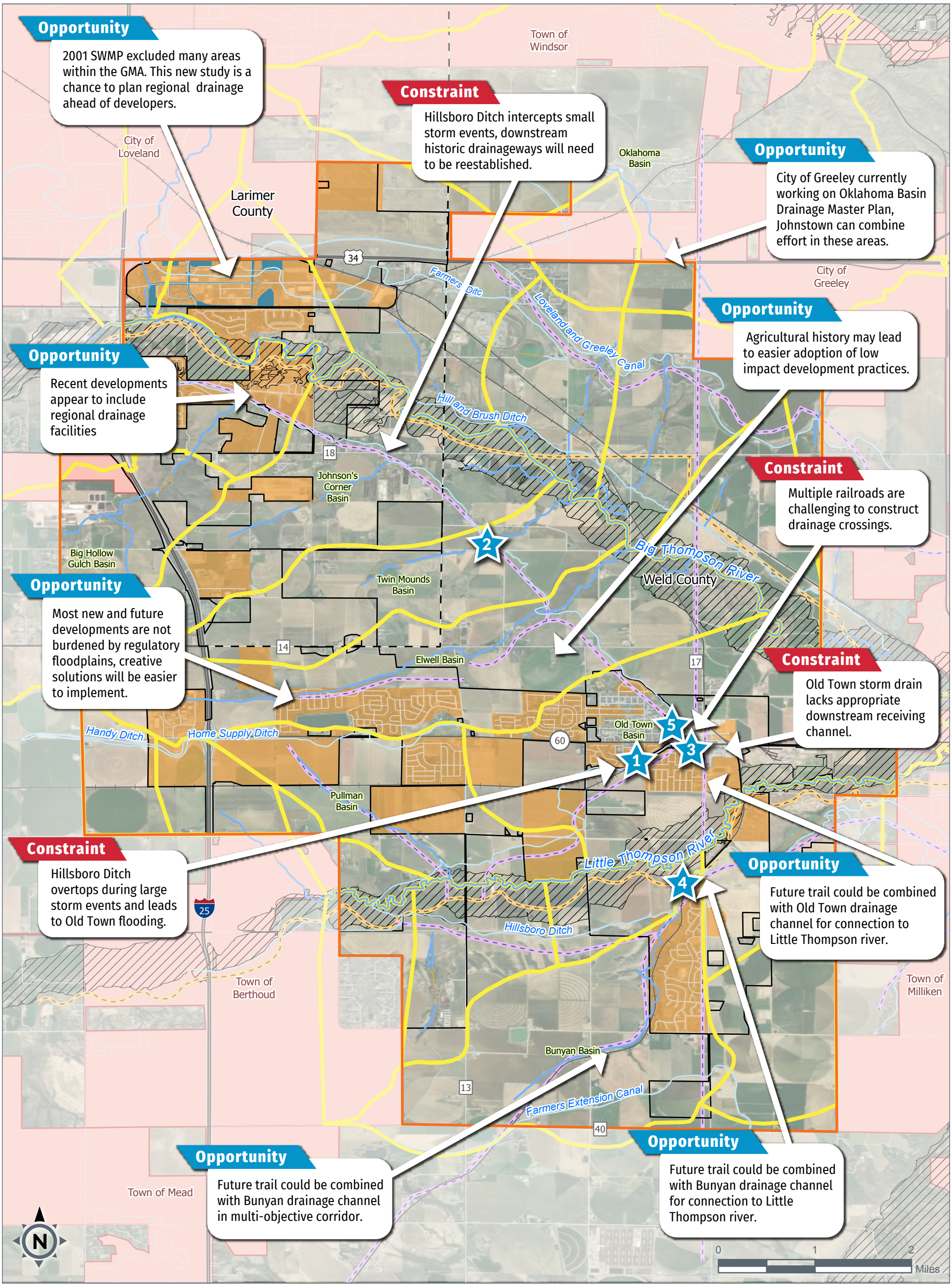
Development patterns that prioritize areas closer to I-25 mean that the upstream portions of many watersheds are being built-out before the downstream sections. This approach could burden downstream properties with additional flooding concerns if not managed carefully. We believe it is important to take an integrated approach to watershed management by looking at the best ultimate condition for the entire basin. Matrix can help Johnstown identify the most appropriate basin-wide improvements and how to equitably share the cost burdens.

Agricultural Fields and Construction Project near I-25

Our approach will be to thoroughly understand all relevant existing stormwater master plans, check whether the previous recommendations are still applicable, then incorporate into a single comprehensive plan that can serve all of the Johnstown GMA. Matrix staff visited various locations within the GMA on February 5, 2024 to better understand existing conditions and stormwater infrastructure that has already been constructed. **Critical Issue:** Although the Town has had a SWMP available since 2001, it is evident that much of Johnstown has been developed with little regard for preserving historic, regional drainage flow patterns. Matrix believes that reestablishing and protecting these historic drainageways is usually the best way to ensure resiliency from flood risks that benefits the entire community.

A key aspect of our management approach will be one of routine collaboration. This means confirming that Town staff and Matrix have a common understanding of project goals and the process required to provide the needed deliverables. It also means checking-in routinely as the project progresses and at key milestones will be an essential way to keep the project on track. We also understand that the project is being funded through a FEMA Hazard Mitigation Assistance Program grant and that project work will need to be in compliance with that grant agreement. Matrix often executes projects funded by grants and does extensive work for various federal agencies and, therefore, will readily integrate these requirements into the project.

Johnstown Stormwater Master Plan Opportunities and Constraints Map



Legend

- Artificial Path
- Canal Ditch
- River or Stream
- Drainage Basin
- FEMA Floodplain
- Johnstown Growth Management Area
- Subdivision
- Town of Johnstown
- Border Municipality
- County Boundary
- Road
- Highway
- Railroad
- ***Future Trail:*** Neighborhood Trail
- ***Future Trail:*** River Corridor Trail
- # 2001 Johnstown Stormwater Master Plan Priority Projects

Matrix

Hillsboro Ditch near Old Town

We understand that the Hillsboro Ditch in particular has an outsize impact on runoff patterns, acting as an interceptor during small storm events and acting as a flooding source during large storm events. Previously completed storm drain infrastructure, particularly in the Old Town area, requires assessment for compliance with flood reduction and design standards. Matrix can help the Town identify, catalog, and evaluate both formal storm infrastructure such as inlets, storm drains, culverts, bridges, and detention basins, and informal storm infrastructure such as irrigation ditches, berms/swales, stock ponds, and roadway conveyance.

We recognize that Johnstown celebrates its small-town heritage built from agricultural roots, and Matrix will work with the Town to develop concept plan improvements that are appropriate for this area. We understand that most existing formal stormwater guidance was developed in either the Denver area through the Mile High Flood District (MHFD) or in the City of Fort Collins. **Alternative Approach:** As experienced partners in stormwater management for these more urban communities, Matrix can help Johnstown pick which policies and Best Management Practices (BMPs) can be adopted with minimal effort, and which policies and BMPs should be modified or reimagined for the unique needs of the Town. We believe that the Town's agricultural history may lead to easier widespread adoption of low impact development (LID), which refers to systems and practices that use or mimic natural processes that result in the infiltration, evapotranspiration, or use of stormwater in order to protect water quality and associated aquatic habitat. Matrix can help the Town select and promote LID practices such as curbless streets, vegetated swales, and tree filters to reduce runoff and protect waterways.

Innovative Ideas, Critical Issues, Alternative Approaches

It is our understanding that the Town is not currently listed as a Co-permittee for a Phase 2 Municipal Separate Storm Sewer System (MS4) through the Colorado Department of Public Health and Environment (CDPHE). We know that several similar sized and nearby municipalities in northern Colorado, such as the City of Evans, Town of Firestone, Town of LaSalle, and Town of Windsor are already included as Phase 2 communities which indicates that it is likely that the Town of Johnstown could be added to this list in the near future. This impending designation will bring forth various regulatory obligations. However, the implementation of a proactive Stormwater Master Plan presents an opportunity for the Town of Johnstown to establish a solid foundation, preparing it to fulfill MS4 program requirements efficiently when mandated. By adopting this proactive stance, the Town will save valuable time and resources compared to reacting once regulations are imposed. Leveraging our experience in assisting other communities with stormwater capital improvement plans, development standards, and operations plans, our approach prioritizes the Town's long-term needs, ultimately enhancing the quality of life for its residents.

Scope of Services

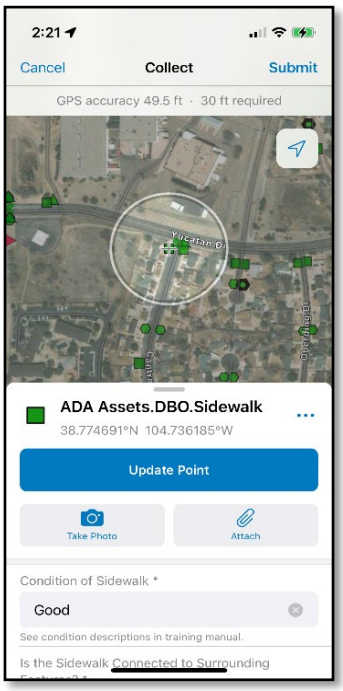
Matrix has reviewed the scope of services outlined in the RFQ and can commit to providing services to complete each of the tasks. There are a variety of means and methods that could be used in those processes, and we do not need to repeat the RFQ scope here. Instead, our proposal below describes critical or novel approaches that will result in the needed technical results efficiently and which will be integrated into the deliverable products of a comprehensive master plan and a framework for a stormwater utility fee structure and initial rates for the various land uses.

Task 1: Project Coordination and Data Gathering

Community and stakeholder engagement will be vital to make sure that this project achieves the long-term goals of the Town. In our experience, the public engagement workshops described in the RFQ scope tend to attract more land developers than individual homeowners. Matrix understands the developer mindset and we welcome their input to create a collaborative relationship that results in stormwater corridors that can also serve as attractive amenities. To reach individual stakeholders that cannot attend the formal workshops, we also propose developing a public-facing website that includes a page to solicit input on stormwater issues that people have identified. We anticipate that the survey would require information on the nature of any flooding, their severity and location, and how frequently it occurs. Matrix will compile the results of the survey and correlate the information with the system assessment for inclusion into the master plan.

Stormwater planning requires a regional approach since runoff does not neatly follow jurisdictional boundaries. Matrix proposes setting up a coordination meeting with each adjacent agency to discuss shared drainage basins and document proposed stormwater planning or construction projects. For example, the Oklahoma Basin starts in the northern reaches of the Johnstown GMA and drains north into the growth management areas of Greeley and Windsor. We know that the City of Greeley is already trying to create an updated stormwater master plan for the entire Oklahoma Basin to get ahead of development pressures, and that the Town of Windsor is exploring the replacement of the Oklahoma mainstem culvert crossing of WCR-17. All parties would benefit from an Oklahoma Basin stormwater master plan, and there may be opportunities to share resources and eliminate duplicate efforts.

Alternative Approach: Matrix will complete the Conditions Assessment as described in the RFQ scope. However, from the perspective of regional drainage functionality we urge the Town to focus on larger structures such as channels, culverts and bridges. Standard inlet and storm drain systems are only designed to convey small storm events, and larger events such as the 100-year storm will result in surface flows, which occur via streets in urban areas. Monitoring and assessing small diameter storm drain may not be the best use of limited funds unless these pipes are specifically protecting a critical location from nuisance flows. As part of our recommended approach of looking at the big picture, Matrix also proposes to perform high-level geomorphic assessments of the natural drainageways within the Johnstown GMA. These assessments help identify whether the channel is stable or likely to shift in the future with increased flows as upstream development occurs. An example of this risk is what occurred in September 2013, where flooding from heavy rainfall created entirely new alignments of the Big Thompson River at multiple locations. Matrix can help Johnstown identify reach stability and plan recommended improvements accordingly.



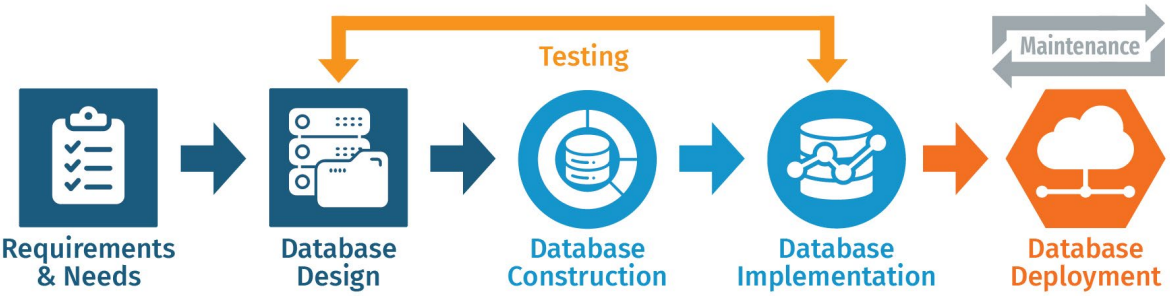
ArcGIS Field Maps

Central to our field verification/data collection approach is our assigned staff. As the GIS Lead and Director of GIS Services at Matrix, Chris Martin, GISP, has 20+ years of experience designing and implementing field data collection processes and analyzing the resulting data. Matrix's stormwater data collection projects have spanned entire counties down to small stream monitoring efforts. Our staff have experience designing, implementing, and providing training for data collection efforts, providing a comprehensive solution to the Town's data collections needs. We are also experts at analyzing the collected data.

Esri is the chosen GIS platform for much of Matrix's data collection and database development projects. ArcGIS Field Maps is the web-based application that has primarily been used in the past because of its efficiency with integrating into the Esri ecosystem. We are adept at connecting high accuracy GPS receivers to any application to ensure accuracy standards are met.

Task 2: GIS Data Review and GIS Dashboard Development

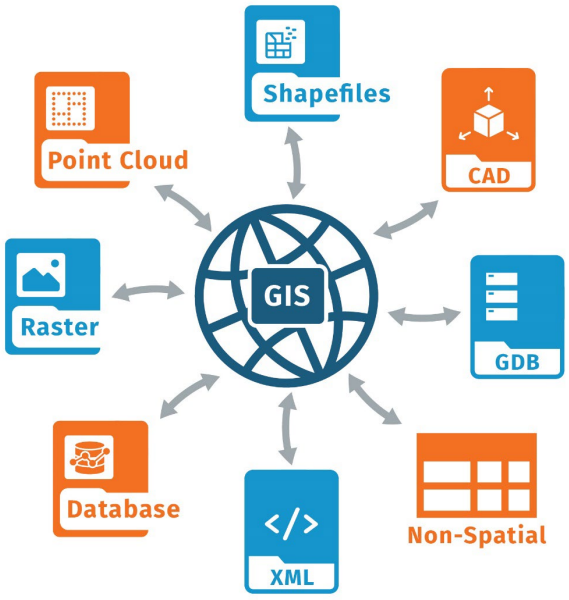
Data management and database development are fundamental to the work performed by the GIS Team and a requirement for the Town to build upon your existing GIS stormwater data. Matrix relies on best-data-management-practices and current Esri data models in the creation, maintenance, and distribution of spatial data. All data are handled and produced with the Town's goals in mind. When developing new datasets, Matrix begins with identifying the requirements and needs of the stormwater data.



Data Interoperability

Critical Issue: Through this process, objects, fields, relationships, and domains are addressed. During database design, data needs meet functionality. The design process is mapped out to ensure that data will be compatible with intended uses and accessible to the Town. Complex data structures require real-world scenario testing to ensure that data use will function as intended. By the time a database is ready to be deployed, scenarios have been rigorously tested and issues have been addressed. Lastly, any comprehensive database requires ongoing maintenance if it is to provide utility to future users at the Town. Matrix provides robust metadata to give context to the Town and clear instruction on how to update datasets. Our data management capabilities also extend to managing existing, complex datasets. Matrix has had experience with maintaining, improving, and analyzing large, enterprise-wide stormwater databases. This project will require the GIS Team to review the structure and records of the database, look for errors and data gaps, propose improvements, and establish protocols to promote efficiency and ease-of-use. We often employ process flowcharting, data validation techniques, and scripting to automate data improvement to the extent possible. Matrix will draw on this experience to assist with the maintenance, growth, and distribution of the Town's stormwater GIS system.

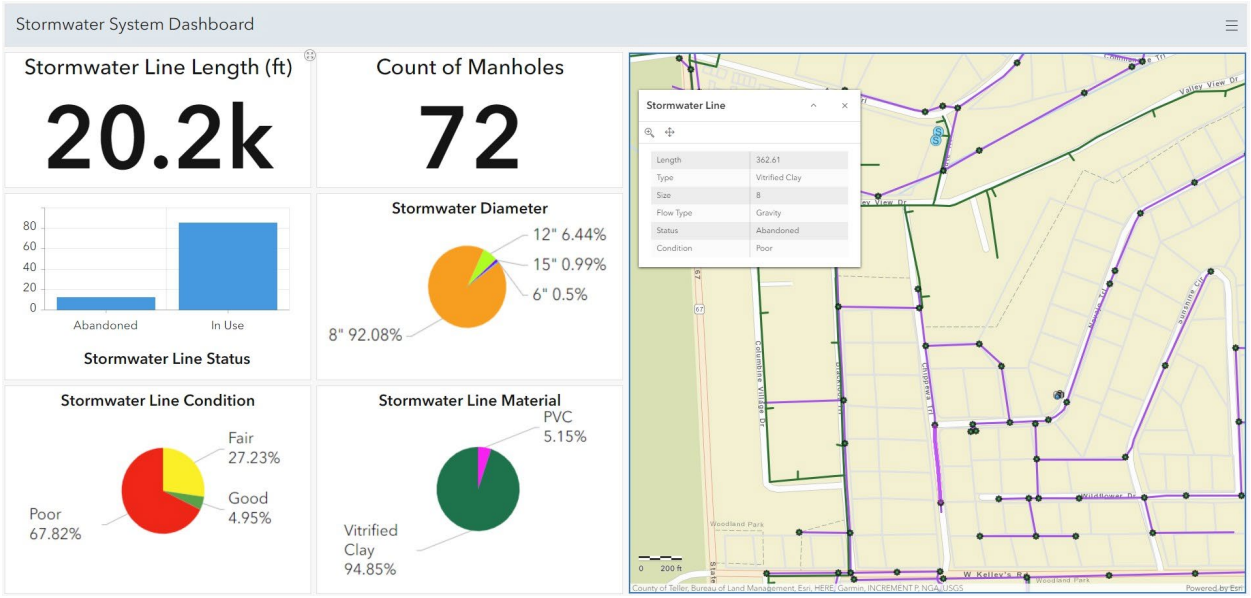
Collaborating closely with our engineering staff, our GIS Team is capable of working with computer-aided design and drafting (CADD) software and handling associated files. The interdisciplinary approach Matrix takes on our projects requires that data are routinely transformed between CADD and GIS formats. Moreover, our team is experienced handling many different data types for many different applications, including non-spatial formats. Thus, we are able to leverage the GIS database as the system of record, allowing diverse datasets to be merged and aggregated in meaningful ways.



ArcGIS Online Dashboards

Gone are the days where GIS professionals are merely expected to produce static maps. The field has evolved to meet the needs of a technologically and data-driven world. Matrix's experienced GIS Team can develop custom tools to provide innovative solutions to the Town. These tools can range from Python scripts to manage and manipulate large stormwater datasets, models to streamline and replicate complex GIS workflows, and ArcGIS Online/Portal dashboards to provide an operational overview of the system. Dashboards have been deployed on past projects to provide visualization for asset management. The application of data filters enhances the functionality of the dashboards and other web-based tools that the Town desires.

Matrix will leverage our custom solutions to streamline and enhance the Town's operations. Dashboards have become a pivotal tool in our GIS asset management toolkit. The Town can utilize dashboards to track maintenance of stormwater infrastructure, analyze condition of assets, document MS4 compliance, or present capital improvement projects to the public. Our team uses Esri's Experience Builder, an ArcGIS Online or Portal tool that allows for tailored online mapping products that can be shared across your organization. In the past, Esri's ModelBuilder has been deployed to assist our stormwater management clients. Further application customization can be achieved by leveraging our experience in JavaScript web development. Our analysts have taken Esri's out-of-the-box applications and modified source code to build tools specific to the project. Matrix will incorporate the Town's stormwater database into a utility network model. Our custom solutions will enhance and build on the Town's existing workflows.



Task 3: Stormwater Master Plan Preparation

Matrix mapped the 2001 SWMP priority projects onto our Opportunities and Constraints Map (shown as numbered red stars) and tried to visit each location. The 2001 SWMP identified 1st Street as a critical storm trunk system to relieve flooding in the Old Town Basin (priority project #3), and our field visit confirmed that there is an existing storm drain system in 1st Street. Quantifying an existing level of service will be a key decision early in the process and helps frame realistic expectations for future levels of service and how this might pair with future development or redevelopment. For example, it is common in many municipalities throughout the Front Range to provide a stormwater system that conveys the 2-year or 5-year storm event in combination with street conveyance for the 100-year storm event. Trunk systems can be identified which provide 100-year capacity and allow for minor systems to connect and deliver the desired level of service. **Critical Issue:** We did not find any evidence of lateral storm drains in cross streets like Estes Avenue or Columbine Avenue to intercept flows upstream of the Hillsboro Ditch (priority project #5). In addition, it was not clear whether the 1st Street storm drain has a suitable downstream conveyance channel that can safely transport runoff from the storm drain outfall to the Little Thompson River. Matrix will further investigate the existing capacity and level of service of existing storm drain then develop new recommendations such as the identification of emergency (overland) overflow paths to supplement piped flows and create greater resilience during future flood events.

The 2001 SWMP suggested that three of the top five stormwater priorities were related to overflows from the Hillsboro Ditch.. Based on our field visit, it appears that some relief structures have been constructed, such as a small detention basin south of Town (priority project #1), but it is likely that this existing relief structure will not be sufficient to protect Johnstown from future flooding. Matrix will investigate the capacity of existing relief structures and develop new recommendations to disconnect the irrigation ditch from severe storm runoff.

Possibly a relief basin adjacent to Hillsboro Ditch

Although Old Town Johnstown and the newly developed areas are not located within regulatory floodplains, we are aware that the Town has experienced flooding issues in 2013, 2018, and 2023. Matrix proposes that our assessment of drainage patterns within the GMA will begin with a rain-on-grid application through HEC-RAS software. This 2-D model combines the generation of runoff rates and volumes with the routing of those flows through farm fields or the urban street network. A big advantage of setting up a 2-D model over a traditional 1-D methods is that we can identify flooding risks throughout the GMA instead of just along established channels. This approach takes advantage of the available digital data. Design storm inputs will be based on standard methods applied within the MHFD. Once the areas of higher flooding potential are identified the next phase of assessment can be based on the existing storm infrastructure in the area, if any, and an estimate of how best to properly drain those areas to avoid flooding insurable structures. Any additional capacity requirements will be based on approximations of system features, such as side ditches, inlets, and storm pipes to reduce surface flooding to acceptable levels.

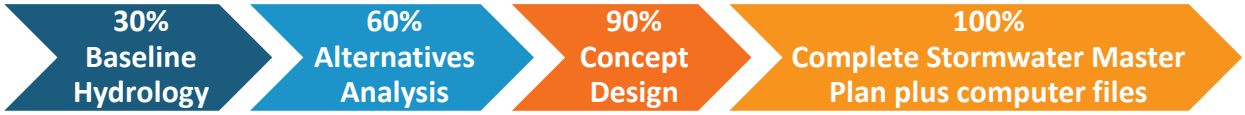
As previously mentioned, most of the drainageways within the Johnstown GMA are not next to FEMA-mapped floodplains. This could be considered an advantage because the lack of federal permitting requirements makes it easier to develop and implement creative solutions. However, this is also a disadvantage because it may make it difficult for the Town to compel regional drainage improvements that benefit the entire drainage basin instead of just the specific developer. As shown in the Opportunities and Constraints Map, our field visit suggest that some of the new developments appear to be constructing drainage facilities that follow current MHFD recommendations. Matrix intimately understands both the developer and the municipality priorities, and will help bridge these positions by drafting a Stormwater Master Plan that clearly identifies the drainageway corridors that should be protected or established, and clearly points out a suite of practical concept improvements that could be selected for implementation within each reach and basin.

Johnstown Reservoir

Detention storage facilities are typically an effective means for reducing peaks flows on major drainageways. Opportunities for detention storage may be in open space areas or micro-ponds along roadways. While it is unlikely that Johnstown Reservoir could be converted to serve a flood control function, Matrix can help identify other opportunities to create multifunction facilities that act as both storm detention and other community uses such as playing fields, parks or open space, and wildlife habitat. Potential storage facilities will be identified where they may provide a reduction in peak flows upstream of potential flooding areas or where water quality treatment may help implement the Town's likely future MS4 permit requirements.

For software models, Matrix's policy is to use publicly available platforms whenever possible. This provides the most compatibility for future users such as Town staff who may not have access to expensive proprietary hydrology and hydraulics software. For hydrologic calculations, we use the Colorado Urban Hydrograph Procedure (CUHP) distributed by the MHFD and Storm Water Management Model (SWMM) distributed by the U.S. Environmental Protection Agency (EPA). For hydraulic calculations, we use HEC-RAS software distributed by the U.S. Army Corps of Engineers and HY-8 software distributed by the Federal Highway Administration (FHWA). For detention routing, we use the UD-Detention worksheets distributed by the MHFD.

The RFQ scope describes (the standard construction document) phases of 30%, 60%, 90%, and 100%. Matrix proposes to slightly tweak those deliverable milestones to match the most efficient workflow for stormwater master planning. We propose to use technical milestones based on the proven process used for similar MHFD studies, as listed below:



Alternative Approach: Instead of refining the same detailed design over time like in construction documents, planning projects like this one require a team that can efficiently develop and document multiple large models and mapping products. The sequencing proposed above allows your project to efficiently tackle each phase and then "stand on the shoulders" of previous phases, minimizing the amount of reworked models and calculations. Alternatives Analysis should not begin until the Baseline Hydrology has been completed and vetted, and an informed Concept Design cannot begin until the Alternatives Analysis has been completed and vetted. Matrix will structure a Stormwater Master Plan document to include all the above phases, with each phase populated at its respective milestone.

Prior to compiling a draft and final version of the Master Plan, Matrix will review an outline of the document with the Town and define the document's organization and content. Matrix will solicit and incorporate review comments into the document before providing a final version. The Master Plan will provide a prioritized list and schedule for implementing needed projects. A presentation to Town Council will present the key aspects of the plan and a proposed process for implementing a new stormwater utility fee.

Matrix can take a project from conceptual design all the way to final construction documents. This "concept to completion" capability gives us the ultimate vision early in a project's life. Having a great hydrologic or hydraulic solution is only half the answer in stormwater engineering and urban flood management. Matrix's extensive experience in construction design documents gives us an understanding of what can practically be constructed in the field that will perform all the necessary

functions. Matrix is familiar with various municipalities' design standards in the Front Range. Our team will leverage this knowledge to think of creative solutions that are also practical, fundable, and constructable.

Our general approach to master storm drainage studies centers around quantifying the overall problem, which is often capacity related, but can be condition driven in some cases. Matrix will meet with Town staff, including operations staff to better understand current system challenges which could be condition driven while also considering potential capacity constraints. In some instances, it may be prudent to extend the life of existing infrastructure through pipelining or a parallel system instead of a complete system replacement. The maintenance requirements of an aging system can include a visual, above-ground inspection and a review of CCTV files. Due to the size of Johnstown we expect to rely on Town staff to convey which portions of the system need attention. Providing a comprehensive assessment would require an extensive effort beyond the project budget. We will compile the known areas in disrepair and assign costs that can be used to develop the stormwater utility fee.

Matrix would look closely for opportunities to pair stormwater improvements with other publicly-owned facilities like roads and trails. This is an efficient use of scarce resources since existing Right-of-Ways can sometimes be leveraged, and it greatly simplifies access for maintenance of drainage channels. **Innovative Idea:** We mapped the future trails from the 2008 Transportation Master Plan onto our Opportunities and Constraints Map (shown as pink and orange dashed lines), which shows that future trails are desired along the Pullman, Elwell, Bunyan, and Old Town Drainageways. Matrix will develop additional recommendations to promote, preserve, and develop these trail/drainageway corridors as a regional amenity. Our engineers work together with landscape architects to develop concepts that serve multiple functions such as recreational use, aesthetic attraction, ecological diversity, safe wildlife corridors, and minimal irrigation (typically through native plantings).

Looking north along WCR-17

Task 4: 10-Year Capital Improvement Plan

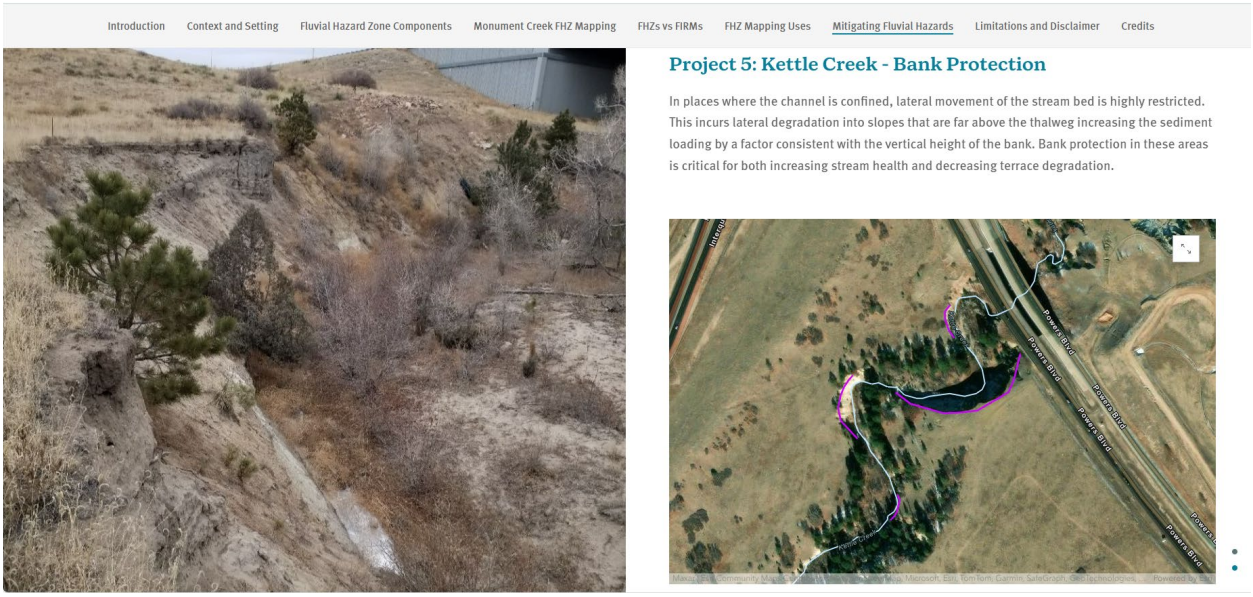
Several key considerations will be important in the development of the plan. A foundational starting point will be the growth projections referenced at every 2-years in the RFP. Our teaming partner, Logan Simpson, developed the comprehensive plan for the Town and will generate these growth and land use progressions which will be key to both the implementation of stormwater improvements as well as to possible revenue generation through a stormwater fee. Funding sources will also be a key consideration as the master plan will identify both capital improvements which may be regional in nature but could also be serving specific development projects. Integrating these different plans alongside the Towns goals will be a focus for us throughout the study.

An important consideration during the CIP development phase includes near-term and long-term maintenance. These commitments will also roll up into the financial analysis required to substantiate a stormwater fee. Our approach will utilize both a bottom-up approach which includes analyzing the total system needs including maintenance and staffing. We will also compare this to a top-down approach by comparing stormwater fee structures to other front range municipalities.

Stakeholder input will drive CIP prioritization. Matrix will lead a discussion concerning the study context statement, core values, and critical issues. The evaluation criteria will then be adjusted as appropriate. A technical scoring approach will be used as a screening tool to limit the total number of projects which are considered high ranking and technical criteria will be based on input from stakeholders and available GIS data which will be used to drive the metrics.

The high-ranking project list will then be prioritized based on the evaluation criteria established by the stakeholders through the use of our spreadsheet tool termed a Decision Matrix. The Decision Matrix displays results as a dynamic prioritized list of projects. Those highest ranked projects will undergo an additional level of evaluation to include design guidelines for project planning and implementation with the stated goal that there has been sufficient due diligence to move directly into project design in the future. Selected projects may undergo further engineering evaluation and field visits to consider additional components. All high-ranking projects will have costs calculated commensurate with the current conceptual level of detail.

Matrix's GIS professionals have a rich history of developing presentation-quality maps and easy-to-use web mapping applications depicting project locations and associated attribute information in a watershed. Matrix will develop high-level mapping products that clearly summarize the recommended stormwater projects in the CIP, allowing City Council members and other City staff to quickly locate and understand the proposed projects.



Monument Creek Conceptual Project Presented in a StoryMap

Innovative Idea: Esri's StoryMaps are an ideal, web-based platform for not only illustrating mapping information but also including videos, photos, charts and graphs, and narrative. StoryMaps provide for an engaging and interactive experience leading to stakeholder buyoff, a powerful tool for grants and other funding mechanisms, and a platform the public can use to discover projects and understand their impact. Additionally, StoryMaps can be harnessed to measure progress. They can be updated throughout the duration of a project to show project lineage and document the great work that is taking place for all stakeholders. An example StoryMap that was produced by Matrix can be seen at the following link Monument Creek Fluvial Hazards.

Task 5: Rate Study

A stormwater fee can be structured in a variety of ways. We understand that the Town desires to establish funding mechanisms for needed capital improvements and for ongoing maintenance of the stormwater system. Key to the formation of a stormwater fee will be the estimation of long-term maintenance costs, including personnel, equipment and routine operations, to ensure that facilities function as intended. In addition, the cost of rehabilitation and repairs should be incorporated into the fee. Costs associated with maintenance require an inventory of facilities, their type, and the specific on-going maintenance requirements. Repair and rehabilitation costs are typically based on a percentage of initial capital costs over the anticipated service life of the facilities. New construction will require a capital improvement cost estimate.

We anticipate that financing the Town's stormwater system will require, at least, a monthly fee with the possibility of the issuance of bonds. The amount of the monthly rate can be determined by what is considered an acceptable rate and what portion of the monthly can be used to support bonding. This consideration will be part of the alternatives assessment to develop a fee recommendation.

Alternative Approach: Another aspect of a rate structure is how the fee is distributed amongst properties. At the simplest end of the spectrum would be a fixed amount to each property. Setting the fee based on acreage could be another approach to fee distribution. These simple methods are easily implemented, and require limited data management, but may not be considered equitable. Another common, yet more detailed, metric is to use the impervious area of each property to provide a more equitable distribution of costs but requires additional access to data and additional administrative costs. Developing a stormwater fee based on imperviousness can be based on a land use designation (with generalized assignments of imperviousness) or on a lot-by-lot calculation of imperviousness. This decision will depend on the degree of public understanding and acceptance, the availability of data, and the level of ongoing maintenance of the database that the Town wants to commit to.

A stormwater fee will likely have a component for ongoing maintenance and a component for system upgrades. During the assessment phase, Matrix will identify needed work for these components and incorporate them into a proposed initial fee. The distribution of monthly bills is also a key aspect of implementing a new utility. As the Town currently provides services and distributes bills for water, sanitary sewer and waste collection, modifying the administrative process to include a stormwater fee should be a relatively straight-forward effort.

Deliverables

- A comprehensive Stormwater Master Plan per the outlined scope of services herein which will include:
  - Existing stormwater infrastructure assessment as a stand-alone document.
    - 30%, 60%, 90% and 100% phase Town-wide growth area Stormwater Master Plan.
    - Each phase submittal (30/60/90/100) shall include an electronic progress copy of the Stormwater Master Plan.
    - Ten (10) hard copies professionally bound of the Stormwater Master Plan at 100% phase.
    - Hydrologic and Hydraulic Models with digital copies of input and output files, analyzing existing and proposed improvements and stormwater systems.
- A comprehensive Stormwater Capital Improvement Plan per the outlined scope of services herein which will include:
  - Recommendations for new and upgraded stormwater infrastructure, inclusive of planning level cost estimates as well as conceptual alignment for planning/ budgeting purposes.
  - Prioritization of capital improvements project based on level of service, risk of flooding, resiliency, water quality/quantity and public support, summarized and presented using a comprehensive matrix with project scorecards included. The CIP shall be presented as a stand-alone document.

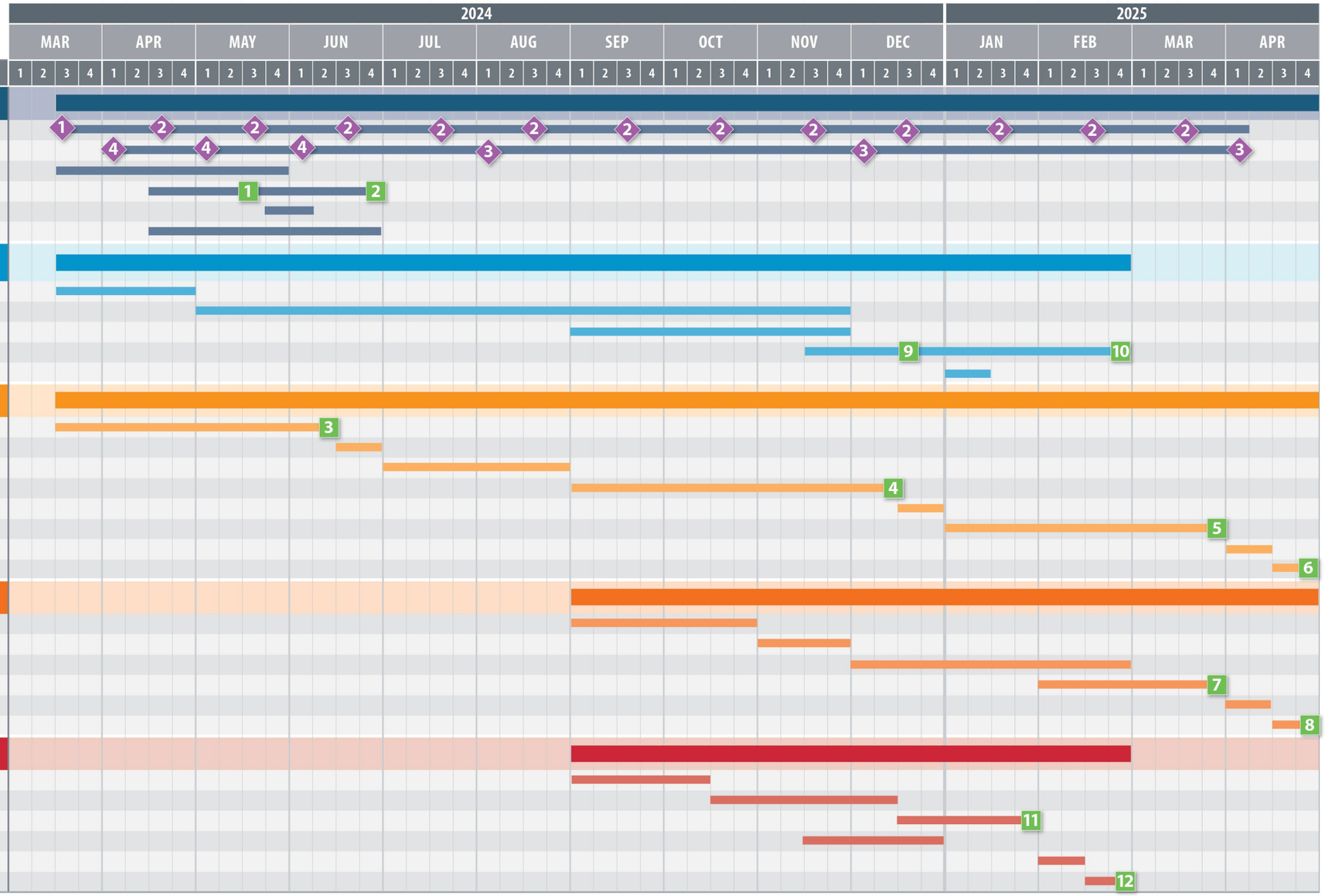
- A complete GIS compatible dashboard of existing and future system, with components alpha-numerically identified in a comprehensive manner for incorporation into the Town's existing GIS system.
- A 10-year financial planning model based on the financial analysis/rate study per the outlined scope of services herein.

Schedule of Services

Matrix's approach to meet the established schedule will be to create parallel paths for completing tasks such that each can roll up into the overall master plan deliverable. However, we recommend that each sequential phase of the project (baseline hydrology, alternatives analysis, concept design) is fully reviewed and revised before moving on to the next phase to minimize rework. As mentioned previously, we can divide the project geographically using drainage basins, and we have the capacity to dedicate multiple teams working on different basins concurrently as required to meet schedule demands. Matrix has used similar approaches on master planning projects in the past and have learned that active engagement from the project sponsor and any key stakeholders will be critical to ensure timely decision making and drive the project to completion. Please refer to our proposed schedule below.

Critical Issue: We anticipate that obtaining permission to access parcels that border identified drainageways will be a schedule risk due to long lead times. Matrix prefers to walk all of the drainageways within a study area to perform preliminary geomorphic assessments and document on-the-ground conditions. In past project experiences within Weld County, we have encountered landowners who are either non-responsive or even oppositional towards municipal projects. Recognizing the need to be patient when obtaining parcel access, we will use GIS to identify all the parcels that could be impacted by drainageway improvements at the very start of the project so that the property access team can get started right away.

Johnstown SWMP Notional Schedule



TASK AND DESCRIPTION	DURATION
1 Project Coordination and Data Gathering	**54 weeks**
1.1 Kick-Off and Progress Meetings	51 weeks
1.2 Community and Stakeholder Engagement	51 weeks
1.3 Information Gathering	10 weeks
1.4 Conditions Assessment	10 weeks
Town Review	2 weeks
1.5 Field Verifications	10 weeks
2 GIS Data Review and GIS Dashboard Development	**46 weeks**
2.1 Data Gap Analysis	6 weeks
2.2 Database Design and Development	28 weeks
2.3 Utility Network Creation	12 weeks
2.4 Dashboard Development	14 weeks
Town Review	2 weeks
3 Stormwater Master Plan Preparation	**54 weeks**
3.1 Baseline Hydrology	12 weeks
30% Review	2 weeks
3.2 Existing Facility Capacity Analyses	8 weeks
3.3 Alternatives Analysis	14 weeks
60% Review and Selection Plan	2 weeks
3.4 Conceptual Design	12 weeks
90% Review	2 weeks
3.5 100% Document Production	2 weeks
4 10-Year Capital Improvement Plan	**32 weeks**
4.1 Identify System Deficiencies	8 weeks
4.2 Cost Estimates	4 weeks
4.3 Prioritization Matrix and Project Scorecards	12 weeks
4.4 Evaluate Alternative Funding Options	8 weeks
Town Review	2 weeks
4.5 Final CIP Production	2 weeks
5 RATE STUDY	**24 weeks**
5.1 Revenue Analysis	8 weeks
5.2 Operations and Maintenance Analysis	8 weeks
5.3 Statement of Cash Flow	6 weeks
5.4 Capital Financing Study	8 weeks
Town Review	2 weeks
5.5 Final Rate Study Production	2 weeks

Meetings and Presentations:

1. Kick-Off
2. Progress Meeting
3. Community Engagement Workshop
4. Stakeholder Workshop

Deliverables:

1. Draft Existing Stormwater Infrastructure Assessment
2. Final Existing Stormwater Infrastructure Assessment
3. Draft Baseline Hydrology Report
4. Draft Alternatives Analysis Report
5. Draft Conceptual Design Report
6. Final Stormwater Master Plan
7. Draft Stormwater Capital Improvement Plan
8. Final Stormwater Capital Improvement Plan
9. Draft GIS Dashboard
10. Final GIS Dashboard
11. Draft 10-Yr Financial Planning Model
12. Final 10-Yr Financial Planning Model

Project Management and Cost Controls

For scheduling and deliverable tracking Matrix uses Smartsheet. This platform allows for an interactive schedule and task list to be created that can be shared in real time with the client and project stakeholders. Tasks are organized consistent with the project scope, and attachments such as design plans, meeting notes, etc. can be made available to all staff involved with the project. This method of schedule tracking has worked very well on the current Cottonwood Creek Channel Rehabilitation and Design Services project.

Matrix uses Unanet Online Time and Billing Software to manage project charges and budget. Our staff enter their time each day into this system which gives our project managers real time project budget information. The project managers can customize the tasks as needed by the project's demands for cost control. Ben has used Unanet software since 2021 and is familiar with the various budget tracking elements inherent to the software. Automatic email notices are generated that inform Ben when project tasks have reach budget milestones (e.g., 50% budget remaining, 20% budget remaining, etc.). In the event scope trends and begins to exceed budget, Ben will communicate immediately with the Town project manager to discuss any issues and agree on a way forward to meet the project objectives.

We recognize that this project is primarily funded through the State of Colorado's Hazard Mitigation Grant Program (HMGP), which has stipulations about procurement, reporting and audit documentation. Matrix typically bills monthly, so we do not expect that any invoice would exceed the $100,000 threshold for requiring advance approval by the State of Colorado (State). We will provide draft quarterly progress reports summarizing project accomplishments that could be forwarded to the State.

Availability to Perform Work

Matrix is committed to the assurance of high-quality deliverables and exceeding our client's expectations. For this Comprehensive Stormwater Master Plan, Matrix projects a 15-month period of performance which is detailed in the **Schedule of Services** section of this proposal. Completing a study of this size takes time to properly execute and review, but our proposed schedule finishes three months ahead of when the State grant expires (August 5, 2025) to provide a time contingency for unforeseen delays. We have reliably served numerous private and governmental agencies in Colorado and around the country under similar consulting roles.

Based on our assessment of current and future staffing requirements, we are confident that we have the resources necessary to complete the requirements of this contract. We have the reach-back capabilities needed to quickly mobilize subject matter experts, support staff, and other resources to address unforeseen challenges, surge needs, or a redirect of efforts as our clients require. Our approach, in which we commit only what we can achieve and achieve all that we commit, ensures that our clients have the support they need when they need it.

The Matrix team regularly reviews staffing and workloads to make sure that all upcoming deliverables are on schedule and that projects are always moving forward. As needed, we can shift personnel if additional effort is required without affecting deliverables. Because only a small portion of Matrix's total staff is proposed for this contract, we have a large pool of talent to draw on if additional assistance is required. To limit conflicts, we incorporate project schedules in our project plan with existing workload and project expectations in mind.

Matrix routinely engages in the development and completion of multiple projects simultaneously. We have staff capabilities to accomplish multiple concurrent projects, the expertise to integrate our staff, and the experience to optimize staff resources. Matrix has a 100% success rate in the completion of our projects, based largely on our approach to developing project teams within our staff. Project teams are based on qualifications and workloads, allowing us to balance the need for knowledgeable and appropriate staff on existing and new projects, as they are initiated.

Team member's anticipated time dedicated to the work during the course of the study is included on their individual resumes.

Other Considerations

While Matrix has all the resources and expertise needed for the City of Johnstown Stormwater Master Plan project, we intentionally partnered with Logan Simpson. Why? Matrix has completed many similar stormwater master plans, and we understand that the greatest challenges are usually not technical in nature, but often tied to properly defining and meeting stakeholder needs. This move isn't just about ticking boxes; it's about recognizing the value of diverse perspectives and connections in delivering the best results for our clients and communities.

Our commitment to diversity, equity, and inclusion isn't just lip service - it's ingrained in our DNA. That's why we've established a dedicated Diversity, Equity, and Inclusion Committee. By investing in this committee, we're not just investing in our team; we're investing in the sustainability of our firm and the communities we serve. Because at Matrix, we understand that true success isn't just measured by numbers on a balance sheet - it's measured by the positive impact we have on the world around us.

RFQ Submission Form and W-9

Matrix

ATTACHMENT A-RFQ SUBMISSION FORM FOR ELECTRONIC SUBMISSION

(Include this form as a PDF with your electronic submission)

Does your offer comply with all the terms and conditions? (YES / NO)
If no, indicate where exceptions can be found in the proposal.

Does your offer meet or exceed all specifications? (YES / NO)
If no, indicate where exceptions can be found in the proposal.

Does your offer intend to comply with the Town's Professional Service Agreement? (YES / NO)
If no, indicate what exceptions you may have to the Agreement template.

Have All Addendums Been Acknowledged? Addendum No. 1 01/03/2024 Addendum No. 2 01/17/2024 (YES/NO)

(Please Note Addendums by Number/Date)

Has a Duly Authorized Agent of the Consultant Signed the Cover Letter? (YES / NO)

Has your UEI been included in your Cover Letter? (YES / NO)

Has a W-9 Form Been Included With the Proposal? (YES / NO)

Does Consultant agree to execute contract documents electronically if the Town so requests?

(YES / NO)

Person authorized to execute contract documents:

Printed Name: Drew Beck, PE, CFM, PMP

Title: Vice President, Director of Water Resources

Email Address: matrix@matrixdesigngroup.com

Date: 02/16/2024

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ Go to *www.irs.gov/FormW9* for instructions and the latest information.

Give Form to the requester. Do not send to the IRS.

Print or type. See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.
Matrix Design Group, Inc.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☑ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.
2435 Research Parkway, Suite 300

Requester's name and address (optional)

6 City, state, and ZIP code
Colorado Springs, Colorado 80920

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number
[ ][ ][ ] - [ ][ ] - [ ][ ][ ][ ]

or

Employer identification number
8 4 - 1 5 1 5 7 6 7

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here Signature of U.S. person ▶ Carissa A Cipoletti Date ▶ 02/08/24

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9*.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

Appendix: Resumes

Matrix

Drew Beck
PE, CFM, PMP

Officer-in-Charge

Drew has more than 20 years of engineering experience with a wide range of engineering abilities, including storm drainage modeling/hydraulic analysis, preparation of drainage reports and construction documents, stormwater management planning, and urban water quality modeling that encompasses best management practices and low-impact development analysis. He also has experience on complex integrated projects requiring multidiscipline solutions on local and regional scales. Paramount in his analysis is understanding the integrated approach that is necessary to solve watershed scale drainage and water quality problems. Drew is Board Chair of the Colorado Association of Stormwater and Floodplain Managers and is in constant contact with his colleagues on the latest in drainage, water quality, and floodplain news.

Percent of Availability

15%

Education

M.S. Hydrology,
Colorado School of Mines, 2014

B.S. Civil Engineering,
Santa Clara University, 2000

Professional Registrations/Affiliations

Professional Engineer: Arizona #66479, California #66037, Colorado #48153, Guam #2189

NCEES #54800

Certified Floodplain Manager (CFM), #US-09-04545

Project Management Professional (PMP)

Colorado Association of Stormwater and Floodplain Managers (CASFM), Board Chair

American Society of Civil Engineers (ASCE), and Journal Peer Reviewer

RELEVANT EXPERIENCE

City and County of Denver Storm Metrics Study | DENVER, COLORADO

After the success of the water quality scorecard approach, Drew was asked to lead an effort to prioritize over $1.5 billion in Capital Improvement Plan storm drain needs. As Project Manager, Drew led a team to develop a quantifiable and defensible method to prioritize projects that had been identified in the 2014 Storm Drain Master Plan. This multiple-benefit approach incorporated both engineering and non-engineering elements to truly capture the total benefit of drainage-related projects. The final product was a roadmap to assist City personnel in refining a six-year capital plan while providing the City with necessary tools to update the analysis as new/updated data becomes available.

Stormwater Infrastructure Master Plan (SIMP) | COLORADO SPRINGS, COLORADO

Drew was Project Manager for assembling and prioritizing a stormwater infrastructure program for the City of Colorado Springs. The project entailed assembling identified infrastructure needs from multiple sources and differing criteria. Creating an equal cost comparison was essential to the project so the City's annual capital budgeting process can be planned accurately. In addition, an extensive field assessment was completed of more than 160 miles of open channels within the City. The assessments help prioritize previously identified projects for CIP implementation.

Sloan's Lake Major Drainageway Plan/Flood Hazard Area Delineation | DENVER, COLORADO

Drew was Project Manager for the complex Sloan's Lake Major Drainageway Plan/Flood Hazard Area Delineation (MDP/FHAD), which included four stakeholders in addition to the Mile High Flood District (MHFD). The watershed problems and solutions are quite unique in this urban watershed since Sloan's Lake does not have a natural outlet. Master plan improvements aimed to reduce potential flooding impacts and address water quality issues in the lake. Paramount to the process was considering the multipurpose cost efficiencies regarding flood hazard mitigation simultaneously with water quality improvement objectives and recreation benefits/impacts.

Denver General Storm Program – Mexico/Oneida and 41st/Osceola | DENVER, COLORADO

Drew was Project Manager and managed multiple subconsultants on the urban drainage final design solutions. The City and County of Denver's on-call contract was utilized to contract with Matrix to solve neighborhood-scale localized drainage issues at two intersections. A combination solution involving additional inlets, curb and gutter replacement, and pipe upsizing successfully mitigated the localized flooding issues. Potential utility conflicts and right-of-way constraints were key considerations, which the team navigated with mitigation solutions.

Matrix

Benjamin Liu
PE, CFM

Project Manager

Ben is a highly experienced water resources engineer with over 15 years of experience delivering a wide spectrum of projects, including land development and various municipal, county, and state clients. His expertise in water resources encompasses a broad range of critical areas, including floodplain management, stream restoration, corridor planning studies, design-build oversight, and the intricacies of hydrology and hydraulics modeling. He brings a wealth of knowledge to the table in the field of drainage infrastructure design, making him an invaluable asset to any project aiming to navigate the complexities of water management and engineering.

Percent of Availability

40%

Education

M.S. Environmental Engineering (Soil and Water Concentration), Cornell University, 2008

B.S. Civil Engineering, Colorado School of Mines, 2001

Professional Registrations/Affiliations

Professional Engineer: Colorado #50470
Arizona #52398,

Certified Floodplain Manager (CFM), #US-07-02737

Technical Skills

HEC-RAS

FLO-2D

SWMM

CUHP

StormCAD

HY-8

ArcGIS

Civil 3D

Inroads

RELEVANT EXPERIENCE

Greeley Comprehensive Drainage Plan Oklahoma and South Basins | GREELEY, COLORADO

Matrix completed a storm drainage master plan for an approximately five-square-mile watershed. As Project Manager, Ben was responsible for project communications, public meetings, data collection and field visits, baseline hydrology and hydraulics, alternatives analysis, and conceptual design. His team analyzed and determined suitability and sizing for Do Nothing, Detention, Channel Improvement, and LID alternatives along approximately nine linear miles of major drainageway. Matrix helped Greeley develop a suite of viable green infrastructure concepts that could reduce the size of standard regional drainage infrastructure through distributed runoff reduction.

Lafayette Area Major Drainage Plan | LAFAYETTE, COLORADO

Ben served as a Project Engineer and technical reviewer. He created 1-D HEC-RAS models to show flood impacts of existing infrastructure and multiple alternatives; and reviewed the 2-D HEC-RAS model to identify hydrologic flow splits and areas at risk of shallow flooding. The resultant plan provided the City with a roadmap of capital projects to improve drainage and resiliency.

Goldsmith Gulch Major Drainageway Plan (MDP) and Flood Hazard Area Delineation (FHAD) | DENVER, COLORADO

This study identified flood risks and developing master plan improvements for eight miles of stream corridor in Denver, Aurora, Greenwood Village, and Arapahoe County. Ben prepared and reviewed HEC-RAS modeling for floodplain mapping, used UD-Detention worksheets and EPA SWMM to analyze potential detention improvements to reduce peak flows, and generated cost estimates of alternatives.

Fairfax Tributaries Outfall Systems Plan | COMMERCE CITY, COLORADO

Ben served as an initial Project Manager and technical reviewer. He helped create the scope and workplan, then led the kick-off meeting for this MHFD watershed planning project. He later stayed involved by reviewing basin delineations and hydrologic models.

National Western Center Campus Placemaking Study | DENVER, COLORADO

Ben was responsible for storm drain design and floodplain modeling of this urban redevelopment project, including an alternatives analysis, preliminary design, and flood modeling of the South Platte River. The multiple landowners, major utility conflicts, and historical significance within and adjacent to the site required innovative designs to achieve the desired flood protection.

The Aurora Highlands North Area A Site Plan | AURORA, COLORADO

Ben was responsible for the overall drainage design for the 205-acre site. This included collaborating with neighboring developments and updating regional CUHP and SWMM models, WQ/EURV and peak shaving detention design, Rational Method hydrology, and open channel hydraulics. Ben reviewed drainage plans and produced a preliminary drainage report.

Matrix

Dan Bare PE

QA/QC

Dan has more than 45 years of water resources experience, spanning both the public and private sectors. His extensive career has involved working with various jurisdictions, agencies, and private developers. Serving as the Town Engineer for Castle Rock and lending his expertise as a consultant within multiple esteemed firms, Dan has been instrumental in crafting stormwater master plans, alternatives evaluations, capital programming, basin fee programs, permitting and floodplain management. These projects require meticulous assessments of system deficiencies and capacities, cost estimating and improvement scheduling.

Dan's contributions to the field extend to conducting in-depth analyses of storm drain systems, channel stabilization and floodplain delineation, Dan has demonstrated exceptional leadership by guiding teams in the development of stormwater drainage criteria manuals for the City of Colorado Springs and the Fountain Creek Watershed Flood Control and Greenway District. These manuals establish crucial policies and design guidelines that promote the creation of effective drainage systems, natural channels and incorporating riparian vegetation into stabilization practices. Dan's wealth of experience and unwavering dedication continue to shape the landscape of water resources management.

Percent of Availability

10%

Education

M.S. Civil Engineering, Water Resources
University of Colorado at Denver,1990

B.S. Civil Engineering,
University of Colorado at Denver, 1984

B.S. Engineering Technology,
Louisiana State University, 1976

Professional Registrations/Affiliations

Professional Engineer: Colorado #22205

Colorado Association of Stormwater and Floodplain Managers (CASFM)

RELEVANT EXPERIENCE

Cottonwood Creek Drainage Basin Planning Study | COLORADO SPRINGS, COLORADO

Dan was Project Manager and Technical Lead this project involved the development of hydrologic (HEC-HMS) and hydraulic models (HEC-RAS) for the 19.2-square-mile, 85% developed watershed in northeastern Colorado Springs. A hydraulic assessment of major structures and drainageways was completed to identify deficiencies and propose needed improvements.

Stormwater Management Assessment | COLORADO SPRINGS, COLORADO

As Project Manager for the City of Colorado Springs, Dan worked with a consultant team to evaluate stormwater management policies and practices to develop a new Drainage Criteria Manual. An extensive process of stakeholder involvement resulted in broad community support and the manual was later adopted by City Council with favorable support.

Jimmy Camp Creek Drainage Basin Planning Study | COLORADO SPRINGS, COLORADO

Dan worked with the developer's consultant, El Paso County, and the City of Fountain to evaluate alternatives and complete a basin plan that is estimated to reduce overall drainage costs in the basin by 20%. The analysis resulted in the introduction of a new methodology for designing and placing detention storage ponds and adjustments to rainfall and basin parameters resulting in more realistic estimates of rainfall runoff.

Fountain Creek Watershed Flood Control and Greenway District Design Manual | COLORADO

Dan led a team of consultants to create the first Design Manual for the FCWD to apply to its projects and to evaluate projects proposed by others in the watershed. The manual includes the application of new NOAA Atlas 14 rainfall depths and distributions and guidance for assigning runoff parameters for areas affected by wildfires.

Colorado Springs Drainage Basin Fee Program Assessment | COLORADO SPRINGS, COLORADO

Dan led the effort to document and report on the city's drainage basin fee program which was not able to reimburse developers for completed regional projects. The project involved an extensive accounting of the city's records, extensive meetings with developers and city staff and resulted in recommendations to bring the fee basins into balance over a 5-year period.

Matrix

JENNIFER GARDNER, PLA | Community Engagement Task Lead 10% Availability

Since 2000, Jennifer has been dedicated to the planning and design of spaces small and large. Her tireless passion for connecting the natural and built environments has led to an extensive resume of projects spanning both public and private sector. Jennifer is experienced with planning and entitlement, project coordination, public outreach, land use codes and comprehensive plans, landscape design, irrigation design, site design, park and open space design, streetscape design, and construction administration. Much of her project work is focused on sustainable building practices such as efficient stormwater management, taking into consideration both the municipal needs and the desire of the community. Through years of entitlement work, she has gained much insight into the opportunities and challenges that communities face throughout the Rocky Mountain region and is dedicated to building the framework to help each community achieve their ultimate development goals.

EDUCATION

B.S., Landscape Architecture, Colorado State University, 2000 (ASLA Student Merit Award)

PROFESSIONAL REGISTRATIONS/ACCREDITATIONS

Professional Landscape Architect, Colorado #714, Wyoming #LA-0136C, Oregon #LA1009
Colorado ASLA North Area Director
CSU Alumni Advisory Board for Landscape Architecture Department
Member American Society of Landscape Architects

SELECTED PROJECT EXPERIENCE

- Johnstown Area Comprehensive Plan. CO
- Larimer County Comprehensive Plan and Mountain Resilience Plan. CO
- Wellington Comprehensive Plan and Land Use Code Update. CO
- Wellington Waterwise Landscape and Irrigation Standards. CO
- Elbert County Water Master Plan. CO
- Elbert County 1041 Application Review. CO
- Alamosa County 1041 Application Review. CO
- Department of Local Affairs (DOLA) Outreach and Technical Assistance. CO
- Summit County Code Audit for Affordable Housing. CO
- Jefferson County Plan and Regulation Update. CO
- Pagosa Springs Land Use Development Code Update. CO
- Manitou Springs Zoning and Subdivision Rewrite. CO
- Integrating Sustainability Practices into the Land Development Code. Westminster, CO
- Milliken Town Planner. Milliken, CO
- Land Use Code Update. Loveland, CO
- Star South of the River Subarea Plan. Star, ID
- Teton County Land Development Code Update. ID
- Salt Lake City Sustainable Code Review. UT
- Zoning and Subdivision Code Update. North Ogden, UT
- Ogden Unified Development Ordinance. Wasatch Front Range Council. UT
- Millcreek Full Code Update. UT
- Meadowbrook District and Town Center Form Based Codes. Millcreek, UT
- Bozeman Unified Development Code Update. MT

Angus Campbell PE

Conditions Assessment Task Lead

Angus is a native of Colorado and has extensive knowledge of engineering issues that arise along the Front Range and the concerns of regional stakeholders. Angus has bridge design experience ranging from multi-span vehicular bridges to long-span pedestrian structures. He also has in-depth knowledge of structural walls and drainage structures including flexible and rigid culverts, and potable water storage tanks. Angus is an NHI-certified bridge inspector and team leader and has inspected over 140 structures varying in size and complexity. He regularly provides detailed maintenance recommendations, conditions assessments, cost estimates, and construction administration services for design and inspection projects.

Percent of Availability

25%

Education

M.S. Civil Engineering, Colorado School of Mines, 2018

B.S. Civil Engineering, Colorado School of Mines, 2017

Professional Registrations/Affiliations

Professional Engineer: Colorado #60257

NHI Certified Bridge Inspector

Structural Engineers Association of Colorado (SEAC)

American Society of Civil Engineers (ASCE)

Technical Skills

LEAP Bridge

AASHTOWare

MIDAS Civil

AutoCAD Civil 3D

RISA 3D

RELEVANT EXPERIENCE

Venetucci Boulevard Bridge | FOUNTAIN, COLORADO

Angus played a key role in the design and construction administration for this 123-foot-long design-build vehicular bridge across Fisher's Creek. His efforts on this project included girder, abutment, drilled shaft, deck, and bearing design, as well as girder fabrication quality control.

Silverthorne Outlets Pedestrian Bridge Inspection | SILVERTHORNE, COLORADO

Angus provided the inspection and condition assessment of this single-span pedestrian bridge. His role on this project included detailed inspection and documentation, as well as providing a comprehensive cost estimate and repair recommendations.

True North Pedestrian Bridge | COLORADO SPRINGS, COLORADO

Angus provided structural design and construction administration on all aspects of this iconic pedestrian bridge connecting the Air Force Academy Visitor's Center and Hotel. Acting as a new gateway to the Academy, this 206-foot-long pedestrian bridge couples the Air Force's uniformity with stunning architectural design of a voided central pier.

Sterling Gulch Stormwater Design | STERLING RANCH, COLORADO

Angus led the structural design and construction services for this multi-phase stormwater master plan, which included multiple regional ponds requiring numerous outlet structures, stilling basins, forebays, box culverts, wingwalls, and custom trash racks. Angus provided stakeholder coordination and detailed submittal review to ensure the highest quality final product for the client.

Preble Creek | BROOMFIELD, COLORADO

Angus designed and aided with the construction administration of a 102-foot uniquely shaped outlet structure that integrates seamlessly with the surrounding landscaping. He also provided design and feasibility consulting for two box culverts, one of which crosses under State Highway 7. To accompany the culverts, Angus provided designs for multiple trash racks, headwalls, and wingwalls.

Central Park Boulevard Bridge Phase 2 | DENVER, COLORADO

Angus provided construction administration and design for this 803-foot, seven-span major arterial bridge and the Central Park neighborhood of Denver. The widening of this bridge, originally constructed in 2008, allowed for the necessary movement between the rapidly expanding Northfield and Central Park communities.

Sloans Stormwater Vault Inspection | DENVER, COLORADO

Angus led and managed the inspection and structural remediation of two private underground stormwater vaults. This included providing detailed inspection reports and recommendations, as well as coordinating with multiple stakeholders and helping facilitate the bid process for precast product warranty.

Matrix

JR Bessie PLS

Field Verifications Task Lead

JR has over 28 years of experience as a land surveyor with extensive experience in both construction and entitlement. JR's experience includes processing/utilizing existing conditions data in support of engineering design projects, which includes the preparation of topographical, control, and cross section surveys. JR also prepares land survey plats, easements/legal descriptions, and other professional land surveying service documents. JR has over 10 years of project management experience, managing projects from initial contact until successful conclusion. JR's responsibilities include directing the overall operations of Surveying Services, managing high profile clients/projects, managing a team of project managers, who are responsible for scheduling and coordination of all field activity, plan review, field support calculations, budget review, and invoicing.

Percent of Availability

20%

Professional Registrations/Affiliations

Professional Land Surveyor: Colorado #38576, Kansas #1556

National Society of Professional Surveyors (NSPS)

Professional Land Surveyors of Colorado

Kansas Society of Land Surveyors

RELEVANT EXPERIENCE

Baseline North Park Metropolitan District | COLORADO

JR and the Matrix Survey Team serves as the Managing Surveyors for these projects, overseeing data acquisition and processing and field coordination. The Baseline Metropolitan District projects incorporate all major elements of modern engineering design, civil development, and construction. Matrix performed the design services on most of these projects. The surveying services provided include engineering design support, survey document preparation for entitlement issues, and construction staking. JR has overseen the field calculations for utilities, boundary corners, roads, sidewalks, and other construction features. He has prepared many exhibits for the platting and re-platting process. All these projects have Storm Water design surveys, construction staking, and grade certifications. The projects range in variety from single-family residential design support and construction to creek redesign support and grade staking. Notable projects are:

- West Sheridan Residential
- Sheridan Parkway Redesign
- W. 160th Avenue and Sheridan Parkway Redesign
- Huron Street Redesign
- Preble Creek Redesign
- Preble Creek Sanitary Extension

Park Vista | COLORADO SPRINGS, COLORADO

JR has overseen the design survey of a large waterway channel for Water Resources to create an improvement design. Matrix team has prepared many exhibits for this process, which included the same deliverable to be presented in a few different horizontal and vertical datums to be shared across many partners. This project has Storm Water design surveys, construction staking, and grade certifications.

Aspen Ranch Residential | FOUNTAIN, COLORADO

Matrix designed the infrastructure to support the 217-lot Aspen Ranch residential development for Colorado Land Acquisition (COLA). Matrix has prepared design plans for several COLA projects, and the Matrix Survey Team supported the majority of them. The Matrix Survey Team provided the initial survey for design for the stormwater plan and detention ponds, after Matrix Survey provided the construction staking and grade verifications.

Dearmin/Swink Community Master Plan | ERIE, COLORADO

This project is a Community Master Plan for future development in the Town of Erie. JR has overseen the preparation of ALTA surveys, zoning and easement documentation, annexation plats, land survey plats, and topographic design support for the various parcels, district, zoning, real property, and stormwater design and construction

Matrix

Chris Martin GISP

GIS Task Lead

Chris has 21 years of professional experience in the GIS field and has been with Matrix 18 years. He is a passionate advocate for and a technical leader in GIS applications for storm drainage master plans and water resource planning. His projects have included asset management, field data collection, floodplain modeling, financial analysis, water quality opportunities siting, capital planning, environmental monitoring, implementing drone technology to gather remotely sensed data, GIS data improvement, custom application design, web-based map products for soliciting stakeholder feedback, database development, and production of visually appealing and informative maps.

Percent of Availability

25%

Education

M.S. Geographic Information Science, University of Denver, 2006

B.A. Geography, University of Denver, 2003

B.S. Environmental Science, University of Denver, 2003

Professional Registrations/Affiliations

Geographic Information Systems Professional (GISP), #91306

Technical Skills

GIS Software: Esri ArcGIS Suite

CAD Software: AutoCAD

GPS Units: Trimble's Line of Products

Programming: VB.NET, VBA, HTML, Python, JavaScript, and SQL

Databases: SQL Server, Oracle, MySQL, and Microsoft Access

Reporting Software: Crystal Reports

RELEVANT EXPERIENCE

Mile High Flood District | COLORADO

Chris has supported hydrologic and hydraulic modeling efforts for various projects sponsored by the Mile High Flood District (MHFD). Responsibilities included all GIS data analysis and mapping for Major Drainageway Plans (MDP) and Flood Hazard Area Delineations (FHAD). Chris also served as the GIS Manager for a project which delineated Stream Management Corridors throughout the MHFD using Arc Hydro delineated catchments and streams and the Colorado Water Conservation Board's Fluvial Hazard Zones protocol. Projects to date include:

- Sloan's Lake MDP & FHAD
- Lafayette Area MDP
- Goldsmith Gulch MDP & FHAD
- Fairfax Tributaries Outfall Systems Plan
- Third Creek MDP & FHAD
- Upper Sand Creek FHAD
- Westerly Creek FHAD
- Harvard Gulch and Dry Gulch MDP & FHAD
- Sanderson Gulch MDP and FHAD
- Cherry Creek Stabilization Plan Update & FHAD
- Upper Second Creek MDP & FHAD
- Hidden Lake/Bates Lake MDP
- Pleasant View South Tributary at Quaker Street Alternatives Analysis

Stormwater Infrastructure Master Plan | COLORADO SPRINGS, COLORADO

Chris was responsible for compiling, delineating, and synthesizing hundreds of stormwater improvement projects identified by historic Drainage Basin Planning Studies (DBPS) and Master Development Drainage Plans (MDDP). Associated project costs were updated into today's dollars, and each project was prioritized to develop a capital improvement list. Dynamic project cut sheets were created in Crystal Reports, detailing the costs of each project and other applicable information. Additionally, approximately 258 miles of open channel were field assessed for natural/improved conditions and factored into the project identification/prioritization process. A GIS-based web application was developed to serve as the basis for CIP management for future DBPSs.

Greeley Comprehensive Drainage Plan Oklahoma and South Basins | GREELEY, COLORADO

Matrix is completing a storm drainage master plan for an approximately five-square-mile watershed. Chris is responsible for all GIS deliverables, as the GIS Lead, including during data collection and field visits, and the baseline hydrology and hydraulics, alternatives analysis, and conceptual design phases. His team supported the analysis and assisted with determining suitability and sizing for Do Nothing, Detention, Channel Improvement, and LID alternatives along approximately nine linear miles of major drainageway.

City and County of Denver Storm Drainage Master Plan | DENVER, COLORADO

Chris was the GIS Analyst for the citywide GIS-based master plan. Matrix analyzed 155 square miles of urban development for necessary drainage infrastructure upgrades and improvements. As part of this master planning effort, a GIS-linked cost model was developed to estimate capital costs associated with proposed storm drainage infrastructure improvements. This allowed for accurate and efficient cost estimating as the GIS data were modified, ultimately facilitating the assessment of a variety of storm drainage scenarios.

Matrix

Spencer Wells

PE, CFM

Stormwater Master Plan Task Lead

Spencer has nearly 10 years of experience, specializing in the analysis, design, and modeling of projects centered on stormwater management, hydrology, flood control, and stream design. His portfolio boasts a multitude of successful undertakings, demonstrating his proficiency in working with municipalities to analyze and designing stormwater infrastructure to replace aging systems and increase flood conveyance. This work has not only increased the functionality of stormwater systems by restoring and increasing capacity within the system but can allow for opportunity to provide educational and recreational access for all to enjoy.

Spencer's skill set extends to the effective utilization of diverse software tools, enabling him to tackle intricate modeling tasks with ease. His expertise spans various domains, including hydrology, 1-Dimensional and 2-Dimensional stream hydraulics, floodplain analysis, as well as the design and optimization of culvert and storm drain systems. His multifaceted capabilities make him an invaluable asset in the realm of flood control and stream management projects.

Percent of Availability

35%

Education

B.S. Civil Engineering,
Colorado School of Mines, 2014

Professional Registrations/Affiliations

Professional Engineer: Colorado #56157, California #93021

Certified Floodplain Manager (CFM) #US-22-12411

Association of State Floodplain Managers (ASFPM)

Colorado Association of Stormwater and Floodplain Managers (CASFM)

RELEVANT EXPERIENCE

North Dry Gulch Outfall Systems Plan | LAKEWOOD, COLORADO

Spencer served as Design Engineer on a master plan for a two-mile stretch of North Dry Gulch in Lakewood, Colorado. The pre-project condition relied on an undersized storm sewer system that caused frequent flooding of commercial and residential properties along the reach. The master plan incorporated open channel and culvert alternatives along a heavily developed 2-mile reach of North Dry Gulch. Spencer completed a detailed hydrologic analysis of the drainage basin to update flow rates and inform channel sizing, culvert sizing, and floodplain limits.

McMurdo Gulch Watershed Assessment | CASTLE ROCK, COLORADO

Spencer worked with Town of Castle Rock for over five years to analyze and provide recommendations on proactive implementation of channel stabilization measures as the McMurdo Gulch watershed was being developed. He served as part of the team that provided recommendations on channel improvements and completed cost/benefit analysis to assist the Town of Castle Rock in prioritizing areas of concern. After the prioritization was completed, the team designed channel stabilization measures started with high priority areas.

Wood Valley Ditch and Frost Focus Areas | COLORADO

Spencer served as the hydraulic engineer on two feasibility studies on Fountain Creek between Colorado Springs and Pueblo. The goal of these studies was to produce a cost benefit analyses for various proposed projects on Fountain Creek. Spencer led an extensive hydraulic modeling effort to analyze the benefit in sediment load reduction and peak flow reduction by implementing side detention, channel improvements, improve floodplain engagement, and/or enhance wetlands.

Cherry Creek Quebec to Iliff, Mile High Flood District | DENVER, COLORADO

Spencer served as a critical member of a multi-disciplinary team to restore a one-mile reach of Cherry Creek through Denver and Arapahoe Counties in Colorado. Worked on a team to restore the existing degraded channel and implement channel stabilization measures including sculpted concreted drop structures, riffle drop structures, bank protection, and vegetation over a one-mile reach of channel. Pedestrian access was enhanced by providing over two miles of concrete and soft surface trails and two low flow trail crossings. Led the effort to model the creek utilizing both 1D and 2D hydraulic models to inform trail and crossing locations, rock sizing, and vegetation types.

Bale Ditch Diversion, Triview Metropolitan District | SALIDA, COLORADO

Spencer served as the Project Manager for an alternatives analysis and conceptual design for Triview Metropolitan District to replace an existing diversion on the South Arkansas River. Triview Metropolitan District obtained a portion of the water right for Bale Ditch 1 and 2, and now require a new augmentation system to divert, measure, and return flows to the South Arkansas River.

Matrix

Megan Sawyer
PE, CFM

Capital Improvement Plan Task Lead

Megan is a water resources engineer with 10 years of experience including producing master drainage plans, designing stormwater infrastructure for new development, and replacing and retrofitting existing infrastructure for municipal clients. Her focus is on storm sewer and detention facility design, which includes analysis of existing drainage reports, production of drainage and GESC/SWMP plans and reports, hydrologic and hydraulic modeling, production of detailed construction plans, and construction administration. Her skills include AutoCAD Civil 3D, Hydraflow, StormCAD, CUHP, SWMM, HY-8, and HEC-RAS.

Percent of Availability

20%

Education

M.S. Civil Engineering, Water Resources, University of Colorado at Boulder, 2013

B.S. Civil Engineering, Water Resources, University of Colorado at Boulder, 2012

International Certificate of Engineering in Spanish

Professional Registrations/Affiliations

Professional Engineer: Colorado #53256

Certified Floodplain Manager (CFM), #US-14-07979

Technical Skills

AutoCAD Civil 3D

SWMM/CUHP

MHFD Spreadsheets

HEC-RAS

StormCAD

HY-8

Hydraflow

RELEVANT EXPERIENCE

City of Lafayette Major Drainageway Plan | LAFAYETTE, COLORADO

Megan was Project Engineer for the City of Lafayette Major Drainageway Plan which included the City of Lafayette as well as the Mile High Flood District. The watershed problems and solutions were quite unique in this suburban watershed, which is tributary to Coal Creek. Master plan improvements aimed to reduce potential suburban flooding impacts while addressing nuisance flooding in the older parts of the city. Megan applied a unique rain-on-mesh approach to help identify sub-watershed flow splits, as well as identify areas of the City which were at risk of urban flooding even though they were located outside the regulatory floodplain. The resultant plan provided the City with a roadmap of capital projects to improve drainage and resiliency.

Greeley Comprehensive Drainage Plan Oklahoma and South Basins | GREELEY, COLORADO

Matrix completed a storm drainage master plan for an approximately five-square-mile watershed. Megan assisted with the baseline hydrology and hydraulics and alternatives analysis. The analysis included determining suitability and sizing for Do Nothing, Detention, Channel Improvement, and LID alternatives along approximately nine linear miles of major drainageway. Megan assisted with QA/QC and further evaluation of the selected alternative, which included developing a suite of viable green infrastructure concepts that could reduce the size and maintenance needs of standard regional drainage infrastructure through distributed runoff reduction.

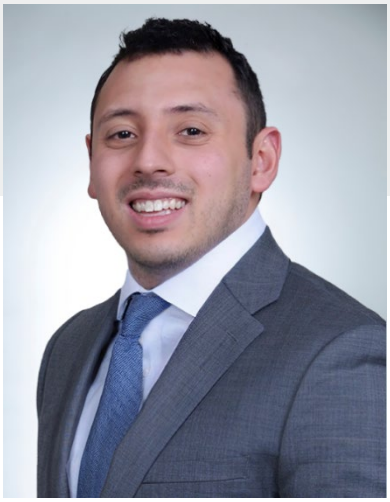
Sterling Ranch Master Drainage Plan Update | DOUGLAS COUNTY, COLORADO

Megan has worked on various drainage aspects of Sterling Ranch Development. This includes the Sterling Gulch Detention Alternatives Analysis and Sterling Ranch Master Drainage Plan Update, which included identifying 4,013 tributary acres, hydrologic calculations, conveyance paths, water quality and detention requirements, and master drainage plan detention alternatives.

She was the lead designer for the Peak Shaving Facility within Sterling Gulch; Waterton Pond on the Unnamed Tributary; and conveyance under Moore Road for the East Tributary and associated EURV Pond. This included over-detention analysis for Sterling Gulch using SWMM hydrographs. Megan also assisted with the hydrology and detention alternatives for the East Willow Creek CLOMR. This included evaluating the effects of offline detention alternatives on the required culvert crossing size for Waterton Road. She is currently working on hydrology and detention alternatives for the 847 acres tributary to Rampart Gulch, Unnamed Tributary 3, and Highline Canal – West, and designs for the detention and conveyance facilities for Unnamed Tributary 3 and East Willow Creek.

- Heron Pond Water Quality Facility Water Quality Calculations and Conceptual Design
- Pleasant View South Tributary at Quaker Street Alternatives Analysis
- Coal Creek at Superior Town Center - Element Pond
- Greeley Woodbriar Park Stormwater and Park Improvements
- Otero Tributary and Holly Street Headwalls
- Nobles Inlet Alternatives and Design
- Quince Street Flood Conditions Alternatives Analysis and Construction Drawings

Matrix



Christian Caron
PhD

Rate Study Task Lead

Dr. Caron is the Senior Research Analyst in Matrix's Government Consulting Services group. He holds a PhD in Political Science from UNC Chapel Hill, where he specialized in state and local government, public policy, and econometrics. He has authored numerous peer-reviewed studies in distinguished scholarly journals and economic and housing analyses on behalf of government clients. His experience spans multiple regions throughout the country, providing him with an intricate understanding of fiscal and land use policy. A quantitative social scientist by training, he is careful to ensure that his analyses and recommendations are grounded in high-quality empirical data.

Percent of Availability

20%

Education

Ph.D. Political Science, University of North Carolina at Chapel Hill

B.A. Political Science, University of Connecticut

Professional Registrations/Affiliations

National Association for Business Economics (NABE)

National Housing Conference

RELEVANT EXPERIENCE

Westminster Housing Needs Assessment | WESTMINSTER, COLORADO

As project manager and lead researcher, Dr. Caron is finalizing a study that quantifies demand for various housing types in Westminster; identifies the city's land use, zoning, and regulatory challenges; and proposes solutions. The report features a demographic and economic profile, commute pattern analysis, and projections of housing need by price point and type.

PuebloPlex Construction Economic Impact Analysis | PUEBLO COUNTY, COLORADO

Dr. Caron served as lead economic analyst for a planning project based in Pueblo County, Colorado. His primary task was to estimate the jobs and income that 2.5 million square feet of new industrial and manufacturing development would generate over a thirty-year period. His findings helped build stakeholder support for the proposed development.

Housing Inventory and Affordability Analyses | ARIZONA

Dr. Caron completed four separate housing analyses on behalf of Surprise, Peoria, Tempe, and Scottsdale, Arizona. Each report features a demographic and economic profile, a housing stock and market analysis, and a supply-demand gap analysis that estimates the housing deficit or surplus at various affordability tiers. To further contextualize the findings, each study compares the city of interest to several "peer" communities. The results culminated in a series of implementable recommendations for each city.

South Puget Sound Housing Study | TACOMA, WASHINGTON

Dr. Caron recently completed a study evaluating the off-base housing market surrounding Joint Base Lewis-McChord. After presenting a demographic overview of the region's military population that leverages American Community Survey microdata, the study analyzes the region's rental and for-sale inventories and markets, highlights low-crime neighborhoods with sufficient attainable housing, and identifies existing and future gaps in the inventory. In collaboration with Matrix's Planning team, he developed recommendations related to zoning and other aspects of housing policy.

Affordable Housing Opportunities for Florida's Military Installations | FLORIDA

Dr. Caron served as the lead researcher on a project evaluating housing policy in Florida's defense communities. The purpose of the study was to recommend reforms to improve affordability and availability. The research process entailed conducting an analysis of local Florida housing markets, with the goal of identifying the regions where the crisis was most acute; coordinating with local officials to obtain information about the current state of policy; and investigating best practices.

Florida Defense Support Task Force 2024 Economic Impact Analysis | FLORIDA

In his capacity as Economic Analysis, Simulation, and Modeling Task Lead, Dr. Caron estimated the economic impacts of Florida's defense industry for this recently completed effort. After collecting the necessary data, he produced statewide and county-level estimates of direct, indirect, and induced impacts using IMPLAN. In an effort to provide the most comprehensive picture possible, the models account for the effects of spousal employment and other often overlooked factors. He worked with the project team to compile the results into a report and factbook.

Matrix

Ellie Garza PLA

Community Engagement

Ellie is a professional landscape architect with over eight years of consulting experience in the State of Colorado. Her background in open space and river corridor planning allows her to effectively manage a team of experts, stakeholders, and general public in plan development and facilitate a successful master plan effort. She has supported and led the successful completion of multiple projects focused on park and open space assessment and planning, ecological restoration, and park and trail design.

Her designs and planning efforts offer resilient solutions using sustainable materials and practices, while meeting and exceeding client goals. Her project focus has considered efforts towards creating outdoor spaces that preserve and enhance our natural environment, while augmenting the quality of life of the surrounding community.

Percent of Availability

15%

Education

B.L.A. Landscape Architecture, minor in Urban and Regional Planning, Texas A&M University, 2014

Professional Registrations/Affiliations

Professional Landscape Architect: Colorado #1305

FAA Part 107 Certified Remote Pilot, Small Unmanned Aircraft System (sUAS), #4076098

American Society of Landscape Architects (ASLA)

RELEVANT EXPERIENCE

Chatfield Storage Reallocation Project, Offsite Mitigation – Sandstone Ranch | DOUGLAS COUNTY, COLORADO

The Chatfield Storage Reallocation Project incurred impacts to existing federally regulated natural resources from the reservoir expansion to accommodate additional space for water storage. To mitigate these impacts, Ellie was a member of the ecological consultant team that provided ecological guidance and mitigation property monitoring for the project. Included in these ecological consulting services were vegetation mapping and surveys, ecological functional unit calculations for offsite mitigation, documenting baseline conditions, creating a management and monitoring plan for the protected areas of offsite properties, and annual monitoring to ensure baseline conditions have not changed due to maintenance practices. Ellie's role included conducting annual monitoring on offsite properties.

South Platte River Visioning and Implementation Plan | ADAMS COUNTY, COLORADO

As part of a large team made up of engineers, landscape architects, and ecologists, Ellie aided in a conditions assessment of the South Platte River and the riparian corridor in Adams County. The team worked with a large stakeholder group including the County, municipalities, and Mile High Flood District to assess the current hydrologic, geomorphic, and ecological conditions along 17 miles of the river corridor. Ellie's role included conducting vegetation assessments to support the project efforts.

Open Space Management Plan and Landscape Typology Implementation | ERIE, COLORADO

In support of the Town of Erie's Open Space Management Plan, Ellie was a member of the ecological consultant team that developed site-specific capital improvement plans to promote the implementation of the planning effort. Ellie supported this effort by developing GIS figures and associated information write-ups that exemplified the maintenance and management activities that need to be implemented in order to maintain, enhance, preserve, or restore the ecological quality and function of identified project sites within the Town's open space portfolio.

Big Thompson River Corridor Master and Maintenance Plan | LOVELAND, COLORADO

Ellie was a lead landscape architect for the Big Thompson River Corridor Master Plan and successive maintenance plan. The overall vision for the master plan was to promote a fully connected corridor including a network of interconnected greenways, parks, open space, and natural areas that provides the public with opportunities for recreation and interaction with the river and nature, while at the same time providing a healthy river and riparian ecosystem for aquatic and terrestrial wildlife and reducing flood hazards.

Matrix

Patrick Nicholson

Conditions Assessment

Patrick is a GIS Analyst with three years of professional experience in the GIS field. His experience includes the application of geospatial science within the fields of environmental science and natural resource management. He is committed to practicing sound stewardship of our natural resources to produce beneficial social and environmental outcomes while incorporating GIS science and technology. He has experience providing GIS solutions in the private sector and in both state and local government roles in Colorado. Patrick's expertise encompasses spatial analysis, cartographic design, and data depiction and interpretation.

Some of the GIS support he has provided includes stream and watershed assessments, geologic hazard mitigation, utilizing geoprocessing tools in the creation of GIS products, web maps, StoryMaps, and utilizing mobile GIS for use in the operations and maintenance of stormwater infrastructure and environmental field data collection. He has developed map products involving water quality control measures, floodplain analysis, water rights mater plans, debris flow probability modeling, post-flood analysis, wetland delineations, and post-fire stream and watershed assessments. Patrick is passionate about utilizing the power of GIS to address the complex challenges relating to the field of water resources.

Percent of Availability

30%

Education

M.A. Applied Geography and Geospatial Science, University of Colorado Denver, expected completion 2024

B.S. Land Use (Environment & Resources), Metropolitan State University of Denver, 2014

Professional Registrations/Affiliations

Geographic Information Systems Certificate – University of Colorado Denver, expected completion 2024

RELEVANT EXPERIENCE

City of Golden Public Works Stormwater Mapping | GOLDEN, COLORADO

Patrick maintained GIS data for asset management of the City's stormwater distribution system to meet MS4 compliance. He utilized the asset management software Cartegraph OMS and Esri GIS software for stormwater infrastructure operations and maintenance, mobile GIS deployment, and for writing task-based automations. Mobile GIS was utilized in unison with GPS devices in the field to accurately map components of the City's stormwater infrastructure. Construction drawings and as-builts were converted from paper documents to digital format through georeferencing to incorporate this data into the City's GIS database.

East Troublesome Fire Post-Fire Assessment | GRAND COUNTY, COLORADO

Patrick has offered GIS support in the ongoing post-fire assessment occurring in response to the East Troublesome Fire. Desktop GIS analyses were used to identify characteristics of streams such as entrenchment ratios, slope, width to depth ratios, sinuosity values, and soil erodibility. Pre- and post-fire stream typing was calculated along with watershed restoration assessments, and these were used along with field collected data to calculate bank erosion hazard indices and near bank stress values. Field data collection was performed using mobile GIS applications developed by Patrick. The results will be used to inform decisions about post-fire stream and watershed management practices, contributing to increased stream and watershed health.

Colorado Springs Geomorphology Mitigation Study | COLORADO SPRINGS, COLORADO

This study looks at how land use changes in Colorado Springs have impacted streams within the Fountain Creek Watershed. Continued development in the watershed has led to the degradation of stream health, necessitating this study. Using GIS, Pat has ranked reaches within the study area based on bank erosion rates and bank instability. Mobile GIS was deployed for field data collection and a custom Python script was used to process the field collected data, allowing for the prioritization of streams based on bank erosion rates and hazards. The results of this GIS analysis were published to a custom data viewer configured in Esri's Experience Builder application.

Matrix

Matt Perse

Field Verifications

Matt has 12 years of experience and brings a comprehensive background in survey project management to the table, positioning him as an invaluable asset for meeting the requirements and objectives outlined in your RFP. His extensive expertise in planning, organizing, and executing survey projects from inception to completion ensures the delivery of high-quality, reliable project outcomes within stipulated timelines and budget constraints.

Matt's proficiency in industry-leading surveying software is a cornerstone of his technical skillset. His adeptness with AutoCAD allows for the production of highly accurate survey drawings, while his experience with Trimble Business Center facilitates superior field data management. Additionally, his capability in utilizing ArcGIS ensures advanced mapping and geographic analysis, supporting the precision and quality control required for outstanding project outcomes.

A critical component of Matt's expertise lies in his data analysis skills. He possesses the ability to process, analyze, and interpret survey data meticulously, producing detailed reports, maps, and other deliverables that not only adhere to but exceed industry standards and client expectations. This analytical prowess ensures that all data-driven aspects of the project are handled with the utmost accuracy and professionalism.

Percent of Availability

20%

Education

United States Marine Corps

Engineering and Land Survey School

RELEVANT EXPERIENCE

Broadway Station & I-25 Construction | DENVER, COLORADO

As the Survey Project Manager for the Broadway Station & I-25 roadway design/redesign project, Matt oversees all aspects of modern engineering design, civil development, and construction. This comprehensive project encompasses a wide array of elements, necessitating precise surveying services including engineering design support and construction staking. Matt's responsibilities have involved conducting meticulous calculations for utilities, roads, curb and gutter, along with overseeing the design of two major bridges for a new entrance ramp to I-25, ensuring the project progresses smoothly and meets all requirements.

Amazon Warehouse Construction | BROOMFIELD, COLORADO

In his role as Survey Project Manager, Matt spearheaded the construction of a new 200,864 square foot Amazon warehouse situated on a 53.60-acre site in Broomfield. His responsibilities encompassed a range of surveying services crucial to the project's success, including establishing a Control Network, defining the site's overall boundary, setting the building grid layout, helical pier layout for the foundation, and conducting 26,000 linear feet of curb and gutter staking. Matt's meticulous attention to detail and expert management ensured the precise execution of these critical tasks, contributing to the seamless realization of the warehouse project.

Colorado Pathways | COLORADO

As Survey Project Manager for the Xcel Energy Colorado Pathways Project, Matt played a pivotal role in overseeing the development of a comprehensive nearly 600-mile transmission line network in eastern Colorado. His duties included establishing a robust control network, defining boundaries for all parcels traversed by the line, and creating a 150-foot permanent easement for the line, complete with detailed easement descriptions for each parcel involved. Matt's expertise and meticulous approach ensured the precise delineation and documentation necessary for the successful implementation of this extensive transmission line infrastructure project.

Matrix

Nastaran Khodaei

GIS

Nastaran is a seasoned GIS Analyst and Planner, with more than seven years of expertise in the field. Her comprehensive background in civil engineering and urban planning, combined with her mastery of GIS technology and sustainability practices, positions her as a capable problem solver for environmental challenges. Throughout her academic and professional journey, Nastaran has held diverse roles as a planner, project manager, researcher, and GIS analyst. Her portfolio encompasses a wide spectrum of projects, including general plans, land use plans, visioning initiatives, community engagement plans, spatial analysis, and database management. Jane's professional repertoire also extends to projects involving remote sensing of the environment, green infrastructure resiliency, stormwater management, and the design and enhancement of public transportation accessibility.

Nastaran has contributed her expertise in GIS and planning to a wide range of projects, including compatibility use studies, joint land use studies, and floodplain and stream management initiatives. She has played a crucial role in leveraging mapping tools for several Matrix's projects, drawing upon her extensive knowledge and experience in urban and regional planning as well as environmental planning. Nastaran's skills have proven invaluable in facilitating effective decision-making and project management across various domains.

Percent of Availability

30%

Education

M.S. Civil Engineering, University of Colorado, Boulder, 2021

M.S. Urban and Regional Planning, Allameh Tabataba'i University, Tehran, Iran, 2015

B.S. Urban Studies (Planning and Design), University of Mazandaran, Babolsar, Iran, 2012

Professional Registrations/Affiliations

American Planning Association (APA)

Graduate Global Engineering, Certification, University of Colorado Boulder, 2020

Technical Skills

GIS Software: Esri ArcGIS Suite

CAD Software: AutoCAD

GPS Units: Trimble's Line of Products

Programming: VB.NET, VBA, HTML, Python, JavaScript, and SQL

Databases: SQL Server, Oracle, MySQL, and Microsoft Access

Reporting Software: Crystal Reports

RELEVANT EXPERIENCE

Urban Heat Islands | DENVER, COLORADO

As the Research and GIS Analyst, Nastaran conducted an urban heat islands and air and surface temperature change analysis using GIS and remote sensing methods. The study explored Land Surface Temperature (LST) trends, timelines, and Surface Urban Heat Islands (SUHI) during extreme heat events using high-resolution Landsat imagery, which is particularly appropriate for local or small-scale studies. For this project, Nastaran monitored LST time series and analyzed extreme events. The result of this project shows LST and SUHI maps featuring focal neighborhoods of Denver during extreme heat events happening in industrial, commercial, and high residential land uses.

Goldsmith Gulch Major Drainageway Plan (MDP) and Flood Hazard Area Delineation (FHAD) | DENVER, COLORADO

The purpose of this project is to identify flood risks and develop a master plan improvement of stream corridor for eight miles. Nastaran provided GIS support to prepare flood hazard area delineation and concept design of potential improvements.

West Traverse Mountain Compatible Area Study | UTAH

Nastaran provided GIS analysis for the West Traverse Mountain Study. Her role included providing land use and zoning maps, creating large format maps for public meetings, and drafting maps for the final general plan report. She also helped build and update metadata for datasets during the course of the project.

Comprehensive Drainage Master Plan | GREELEY, COLORADO

The Greeley Drainage Master Plan envisions the use of a combination of improvements to convey stormwater safely and efficiently. For this study, Nastaran provided interactive conceptual design alternative maps for the channels and improvement of the stream corridor to reduce future conditions runoff within the major drainageways.

Jefferson County Open Space Invasive Weed Survey | COLORADO

The invasive weed project objective is to survey and identify types of invasive species surveying two targeted areas using drone imagery. Nastaran helped process and calibrate data to create Ortho mosaic, NDVI, and NDRE maps. Nastaran also worked on supervised classification using GIS and deep learning methods and tools to classify grass, trees, and bare and developed land.

Matrix

Caitlin McDaniel
PE, CFM

Stormwater Master Plan

Caitlin has seven years of water resources engineering experience, during which she has primarily focused on hydraulic and hydrologic modeling for floodplain management. Caitlin has successfully completed numerous FEMA map revisions throughout the United States and has also supported master planning efforts within the Denver Metropolitan area. In addition to her modeling expertise, Caitlin also has substantial geographic information system (GIS) experience in data-processing and map production.

Percent of Availability

35%

Education

M.S. Water Resources Engineering, University of Wisconsin, Madison

M.S. Water Resources Management, University of Wisconsin, Madison

B.S. Civil Engineering, Valparaiso University

Professional Registrations/Affiliations

Professional Engineer, Colorado #58293

Certified Floodplain Manager (CFM), #US-21-11903

Colorado Association of Stormwater and Floodplain Managers (CASFM)

RELEVANT EXPERIENCE

Crooked Run Master Drainage Plan & Flood Hazard Area Delineation Study | ADAMS COUNTY AND AURORA, COLORADO

Caitlin acted as a supporting project engineer on the Crooked Run Master Drainage Plan (MDP) and Flood Hazard Area Delineation (FHAD) baseline hydrology analysis for the Mile High Flood District (MHFD). Specifically, Caitlin assisted in developing the CUHP-SWMM model for the watershed, which quantified the current flooding concerns within the site. Additionally, she presented preliminary results to stakeholder and collected feedback to tailor the alternative improvement plans to be analyzed for the proposed conditions analysis of the study.

Coal Creek Drainageway A-1 Conditional Letter of Map Revision | LOUISVILLE, COLORADO

Caitlin served as the Lead Hydraulic Modeler for the Coal Creek Drainageway A-1 Conditional Letter of Map Revision (CLOMR), which will replace the undersized culvert crossing for Coal Creek Drainageway A-1 at Garfield Avenue in the City of Louisville, Colorado. To assess the current flooding conditions and establish the split flow hydrology resulting from the undersized culvert, a two-dimensional hydraulic model was developed using HEC-RAS. A one-dimensional model was then developed to map the existing and proposed floodplains, ultimately highlighting the flood reduction associated with the capital improvement project. In addition to her engineering responsibilities, Caitlin also led the subsequent mapping efforts associated with the revision.

Parklands Master Plan | AURORA, COLORADO

As the Project Engineer, Caitlin prepared master planning documents on behalf of a local developer who planned to convert approximately 2,000 acres of land in Aurora, Colorado within the Coal Creek watershed to primarily single-family residential use. A hydrologic model was created to assess and mitigate the impacts associated with the development within the watershed. Using the results of the hydrologic analysis, Caitlin subsequently assisted in the design of the stormwater infrastructure to be constructed as a part of the development.

Pike Solar Two-Dimensional Scour Analysis | EL PASO COUNTY, COLORADO

As the Lead Water Resources Engineer, Caitlin developed a two-dimensional rain-on-grid hydrologic and hydraulic model using HEC-RAS to determine scour potential throughout a 175-MW solar project site located in eastern El Paso County, Colorado. Results from the hydraulic analysis were used to inform the layout of the solar panel farm and subsequently manage erosion concerns associated with the project.

Fairfax Tributaries Outfall Systems Plan | COMMERCE CITY, COLORADO

Caitlin served as the supporting Project Engineer for hydrology on the Fairfax Tributaries Outfall Systems Plan. A coupled runoff-routing model was developed using CUHP-SWMM for the project area to identify shortcomings of the current system and propose future improvement projects within the contributing jurisdictional areas. Caitlin specifically developed the EPA SWMM hydrologic routing model, which analyses the existing closed conduits, regional detention facilities, engineered channels, and overflow conveyance paths of the system.

Matrix

Pranay Sanadhya PE

Capital Improvement Plan

Pranay is a collaborative civil engineer with 10-plus years of progressive experience in environmental and water supply planning and management projects with an emphasis on computer applications. Pranay has worked with various water providers and municipalities in Colorado, including the City of Fort Collins, Northern Water, Denver Water, Aurora Water, Castle Pines North Municipal District, and Colorado Springs Utilities, on environmental impact statements, water availability studies, and water master plans. In the process, Pranay worked with their finance departments to learn about their capital expenditure (CAPEX) and operating (OPEX) budgets for planning and prioritizing projects and developing effective capital improvement plans (CIPs). Pranay has a track record of providing quality client service with on-time and on-budget project deliverables.

Percent of Availability

30%

Education

M.S. Hydrologic Science and Engineering/Civil Engineering, Colorado State University, 2010

B.S. Civil Engineering, Pune University, 2006

Professional Registrations/Affiliations

Professional Engineer: Colorado #58236

RELEVANT EXPERIENCE

Colorado Springs Stormwater Program | COLORADO SPRINGS, COLORADO

Pranay performed a review of existing best management practices for new and recent developments in Colorado Springs and was involved in the preparation of the City's response to the U.S. Environmental Protection Agency's concerns over its stormwater program. Pranay efficiently communicated with the City's stormwater engineers and engineering inspector and used the City's web applications, like Subdivision Document Viewer, SpringsView, and Design Plan Index, for the review.

Fairfax Tributaries Outfall Systems Plan | COMMERCE CITY, COLORADO

Pranay is currently working as a Project Manager on this Outfall Systems Plan (OSP) project for MHFD. He is involved with hydrologic modeling and analysis to identify existing drainage and flooding issues in the project area. The drainageways are identified to be undersized piped systems, resulting in surface flooding during large storm events. Pranay is currently working on developing multiple alternatives to mitigate drainage issues and improve flooding risks.

Strategic Renewable Water Implementation Program | CASTLE PINES, COLORADO

Pranay prepared a MODSIM model for the Castle Pines North Municipal District in Colorado to support a renewable water implementation program. He applied the model to investigate water supply alternatives that would maximize the use of renewable water to meet future demands. The preferred alternatives were also evaluated based on cost-effectiveness, regulatory requirements, and useful life for prioritization purposes in a 5-year CIP.

Halligan-Seaman Water Management Environmental Impact Statement | FORT COLLINS, COLORADO

Pranay served as Project Engineer for this Halligan-Seaman Water Management project designed to investigate Environmental Impact Statement (EIS) alternatives for the City of Fort Collins. He used GIS tools such as Spatial Analyst for hydraulics-related analysis of proposed pipeline alignments for the EIS alternatives and assisted in cost estimation of the alternatives and their prioritization in the CIP.

Aurora Integrated Water Master Plan | AURORA, COLORADO

Pranay was responsible for updating the transmission and distribution and the non-potable water master plans for the project. He was involved in evaluating historical irrigation and reuse demands for the City of Aurora's reuse water system. He used a GIS database to create spatial and attributes-based queries for analysis purposes.

Arkansas Valley Conduit Environmental Impact Statement | ARKANSAS VALLEY, COLORADO

Pranay performed water quality modeling (salinity, selenium) and hydrologic analysis for the Arkansas Valley Conduit and Long-Term Excess Capacity Master Contract Environmental Impact Statement using the Geographic Information System-based decision support system GeoDSS, for the U.S. Bureau of Reclamation. He developed hydrologic and water quality input datasets for the modeling work and was responsible for GIS-related work involved in the project.

Matrix

Nick Melfi

Rate Study

Nick is an Army veteran with a distinguished active-duty career leading diverse teams and managing large, complex projects, and he continues to serve in the Army Reserve. Nick served in multiple echelons of leadership in the 82nd Airborne Division, the 4th Infantry Division, and the Infantry School. He most recently served as a Company Commander at Fort Carson, Colorado, where he led the top performing team in his unit.

While an instructor at Fort Benning, he earned his MBA from Emory University with a concentration in finance. His academic performance earned him the Art Dietz Faculty Award for Excellence in Finance.

Percent of Availability

20%

Education

MBA Emory University

B.S. Mathematics and Economics, American University

B.A. Political Science, American University

Professional Registrations/Affiliations

DoD Secret Clearance

RELEVANT EXPERIENCE

Florida Defense Economic Impact Study | FLORIDA

Nick co-led the effort for the 2024 update to the Florida Defense Support Task Force's Defense Economic Impact Study. For this project, he and his fellow researcher compiled data on direct defense spending from multiple sources and conducted the analysis to determine the total direct, indirect, and induced impacts on Florida's economy.

Fire and Emergency Services Asset Management Plan | NATIONWIDE

Nick spearheads the effort to develop an asset management plan for fire and emergency services (F&ES) within the U.S. Air Force, for the Air Force Installation and Mission Support Center (AFIMSC). He has analyzed thousands of budgetary and expenditure data points to identify patterns and streamline allocation and approval processes for F&ES leadership. His work resulted in actionable recommendations that will significantly increase efficiencies for the AFIMSC and the Air Force.

South Mississippi Defense Strategy | MISSISSIPPI

Nick supported numerous engagements for the South Mississippi Defense Strategy Mission Attraction Study, in which he interviewed numerous installation, local government, and industry stakeholders to identify actionable steps the state can take to protect and grow its military missions. Additionally, Nick conducted economic analysis of proposed actions to determine which would be most impactful.

Growing the Military Mission in Virgina | VIRGINIA

Nick supported numerous engagements for the latest Strategy to Action initiative, in which he facilitied discussions between and recorded feedback from installation and community stakeholders for use in developing actionable steps to protect and grow the Commonwealth's military missions.

Company Commander | FORT CARSON, COLORADO

In the Army, Nick led 105 soldiers and was responsible for their training, development, and administration; their welfare and the welfare of their families; and more than $65 million worth of equipment. Nick meticulously designed their training glidepath while harnessing invaluable contributions from his teammates, which resulted in his company earning recognition as the top performer in multiple culminating assessments.

Battle Captain | BAGHDAD, IRAQ

Nick led a team of operations soldiers, intelligence analysts, and communications specialists to provide timely and accurate information to senior Iraqi Army leadership so they could protect against physical threats to Baghdad. He facilitated interagency and international efforts to identify and integrate best practices to counter explosive threats across Iraq and to communicate these procedures throughout the entire security enterprise.

Matrix

Appendix: Work Samples

Matrix

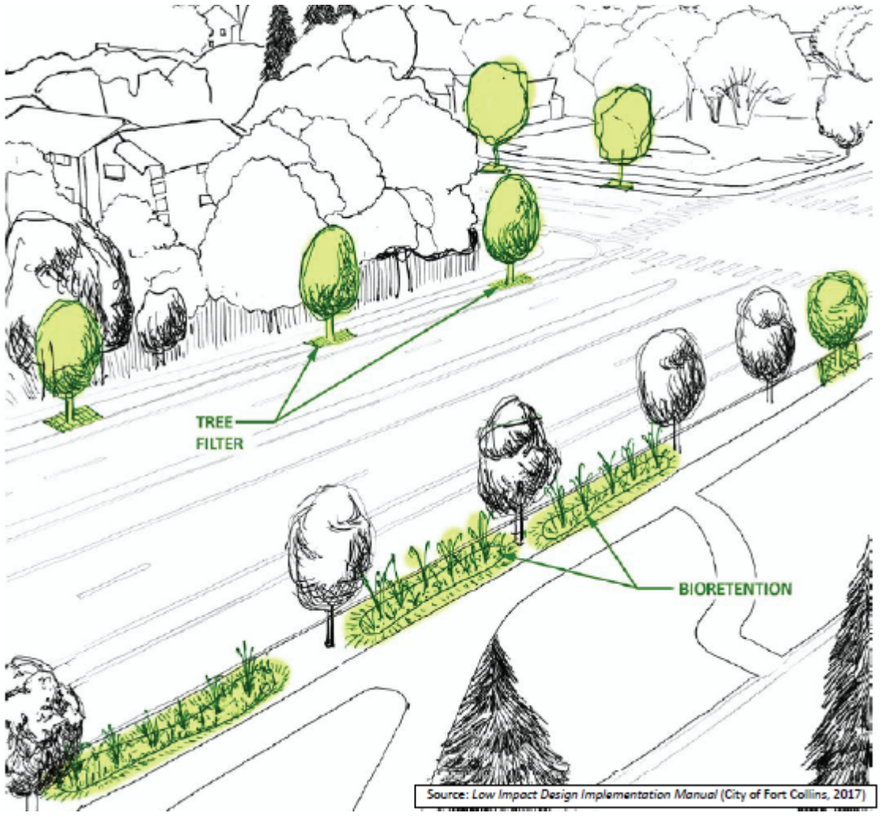


Figure 4-2 LID Street Right of Way Example

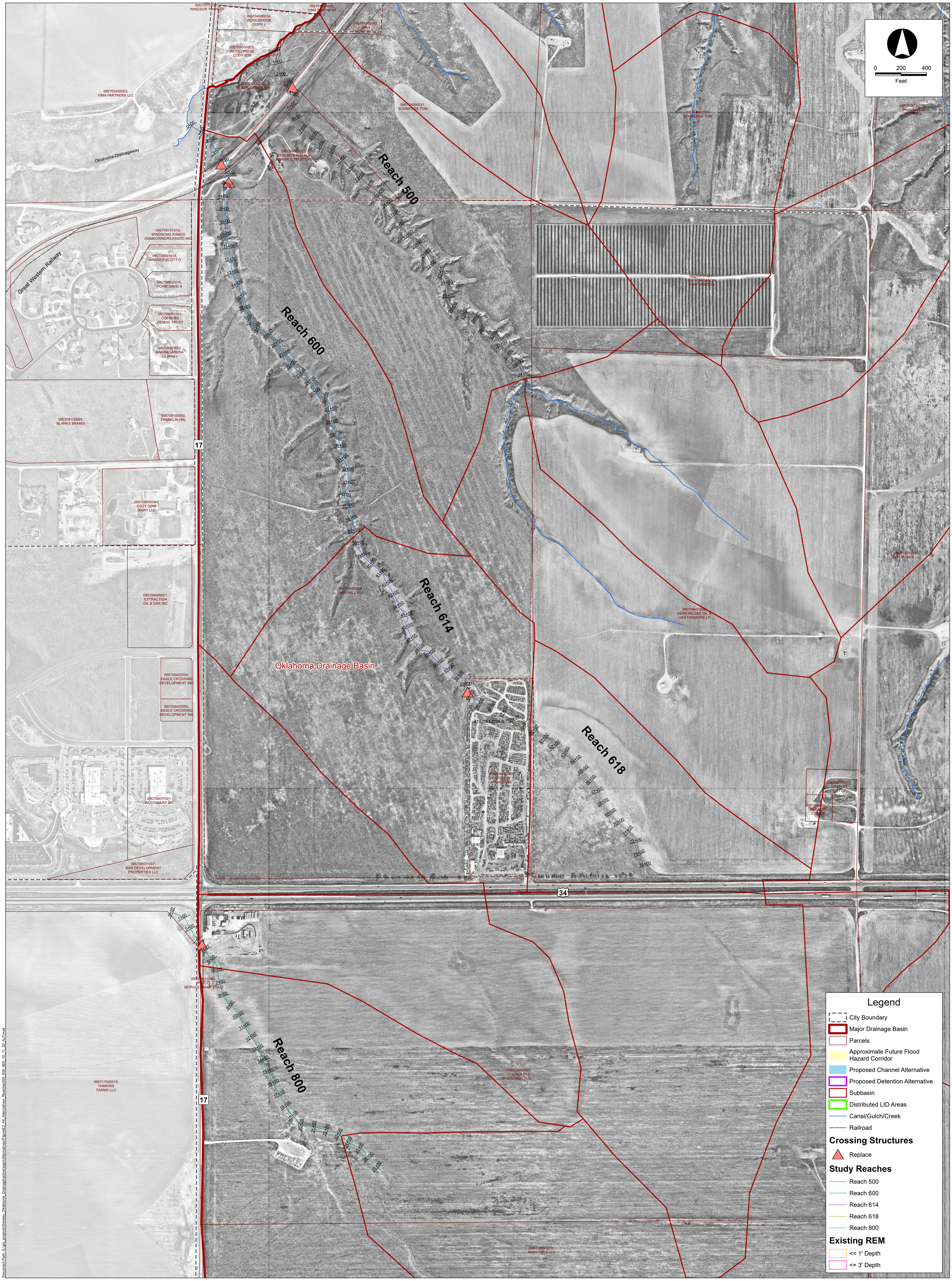
The following LID elements are regionally accepted and recommended for use within the Oklahoma and South Basins:

- **Vegetated buffer:** Areas of natural or established vegetation used to improve stormwater runoff quality by slowing down runoff velocity, promoting infiltration, and catching sediment.
- **Vegetated swale:** Ditches or channels that are densely planted with trees, shrubs, or grasses. It's designed to gather any runoff from impervious surfaces, slowing the velocity of the flow as well as filtering sediment that passes through.
- **Curb cut / no-curb:** Openings in a curb that allows stormwater runoff from impervious surfaces, like roads, to enter areas with infiltration.
- **Trench drain:** A gutter like drainage system that is placed into the ground and covered with a grate. They are used to control any excess surface water and direct it to a more desirable location.
- **Bioretention:** A treatment method, which also goes by the name rain garden or porous landscape design, that uses soil and vegetation to remove sedimentation and contaminants and reduce the volume of stormwater runoff.
- **Rain barrel:** Involves storing rain that lands on a roof in a barrel, decreasing runoff and conserving water to later be used for lawns, gardens, or indoor plants.
- **Green roof:** Involves partially or completely covering a roof with vegetation. This can decrease imperviousness and storm runoff.
- **Green alley:** Alleys that use sustainable materials, such as permeable pavement. This allows stormwater filtering to reduce runoff and improve water quality.
- **Permeable pavement:** Porous, or open space material used in the pavement mix that allows stormwater to flow though, decreasing runoff and improving water quality.
- **Greenway corridor:** Corridor of undeveloped land, used for recreational use as well as environmental protection. Helps protect important habitants as well as improving water quality.
- **Sand filter:** A type of filtration basin featuring a clean sand bed, used to treat stormwater.
- **Tree filter:** A concrete box that is placed around a tree root, allowing the soil and roots to filter stormwater and reduce runoff.
- **Retention ponds/ constructed wetland ponds:** A permanent pond that is designed for additional storage capacity for storm events. It helps treat stormwater though sedimentation and biological processes.

LID Guidelines

1. Each development should employ several and varying LID elements to increase water quality improvement potential and community appeal.
2. Operations and maintenance should be an essential element of the planning and design phase.
3. Performance and maintenance criteria should allow for some LID elements to look less "manicured", such as by allowing areas to remain unmowed or allowing standing dead vegetation material to remain overwinter, to allow for important ecosystem processes to take place and to support the cultural acceptance of this landscape appeal.
4. Point sources of stormwater found within a development, such as at rain gutter outlets or storm drain inlets, should be focused on to capitalize on this water source.
5. Utilize a mix of Colorado and North American native plant species that will tolerate both periodic flooding and drought. Nonnative plants generally will not survive without irrigation. See Figure 4-3 for an example.
6. Establish minimal distance from adjacent structures, provide a barrier, or amend in situ soils where soils with moderate to high swelling potential are present.

Matrix example of developing LID guidance for specific watershed



Document Path: G:\gis_projects\Greeley_Oklahoma_Drainage\active\apps\Alternatives\FigureE3_All_Alternatives_Reaches500_600_800_10_11_22_AJT.mxd

Interactive Figures (Select from Below)

Option 1: Do Nothing

Option 2: Detention

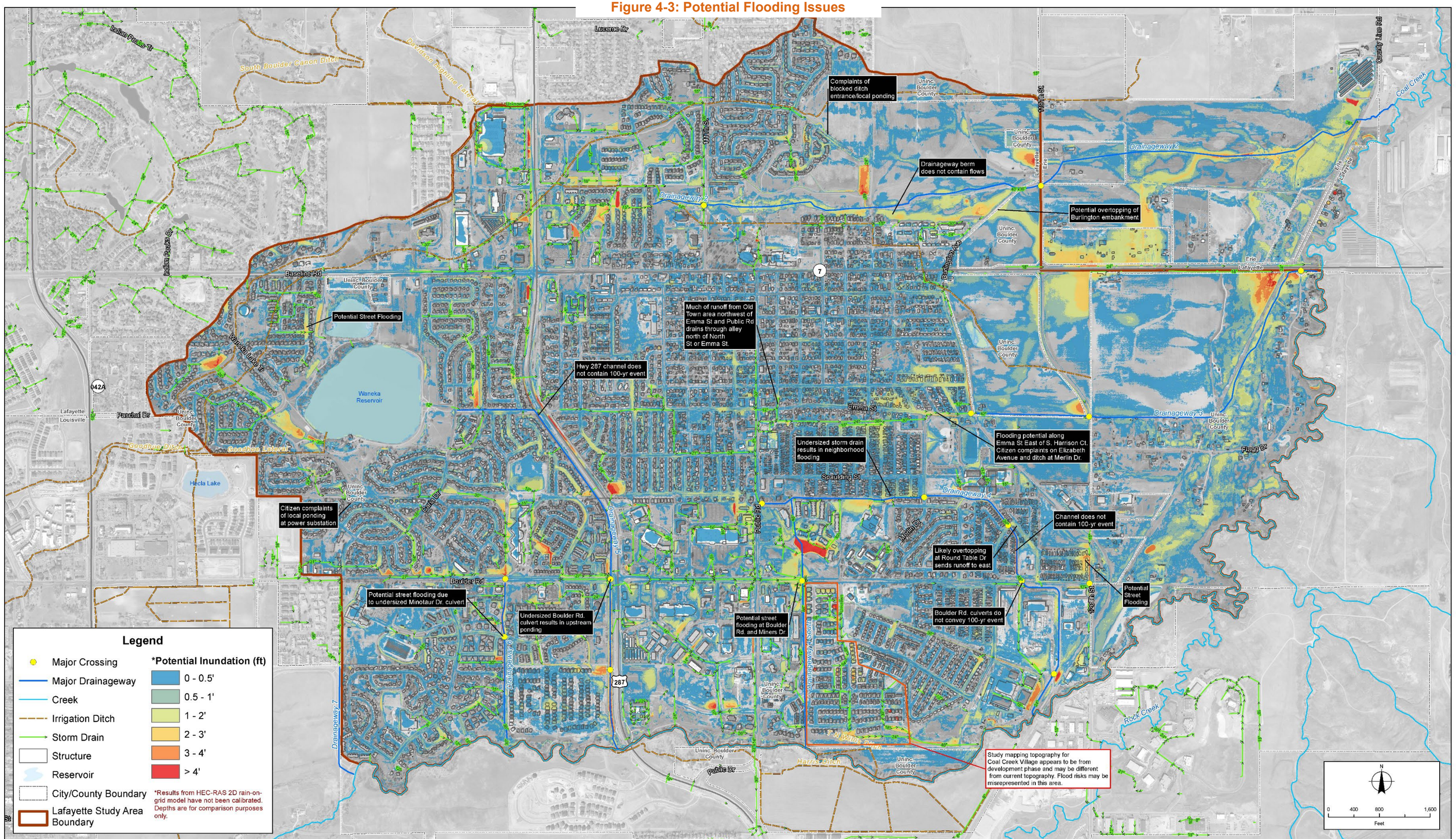
Option 3: Channel Improvements Only

Option 4: LID

Figure E-3: Major Drainageway 500-800 Alternatives Map (December 2022) Oklahoma & South Drainage Basins

Matrix example of alternatives analysis interactive map in undeveloped area

Figure 4-3: Potential Flooding Issues



Legend

- Major Crossing
- Major Drainageway
- Creek
- Irrigation Ditch
- Storm Drain
- Structure
- Reservoir
- City/County Boundary
- Lafayette Study Area Boundary

***Potential Inundation (ft)**

- 0 - 0.5'
- 0.5 - 1'
- 1 - 2'
- 2 - 3'
- 3 - 4'
- > 4'

*Results from HEC-RAS 2D rain-on-grid model have not been calibrated. Depths are for comparison purposes only.

No.	DATE	DESRIPTION	APPR.

Matrix Excellence by Design

designed by:
drawn by: AC
checked by: DB
project no.: 19.155.041
date: 07/27/2021

MHFD MILE HIGH FLOOD DISTRICT

City of Lafayette

MAJOR DRAINAGEWAY PLAN
LAFAYETTE AREA

POTENTIAL FLOODING ISSUES

FIGURE 4-3

Matrix example of using 2-D model to identify local flooding hazards over large area

FILE: G:\gis_projects\MHFD_Lafayette_MDP\active\apps\Alternatives\MHFD_Lafayette_Inundation_Issues_Map_Layout2_20220107_AKC.mxd, 1/7/2022, austan.cutrell

Table 5-6: Alternative Screening Matrix

		Constructability	Maintenance	Implementation with Planned Improvements	Regional Trail Connectivity	Multi-Use Facility	Water Quality	Public Safety	Habitat and Environment	Aesthetics	Compliance UDFCD Criteria	Agency Acceptance	Public Acceptance	TOTAL WEIGHTED AVERAGE
		Weighting												Score
Drainageway	Options	*20%*	*5%*	*10%*	*5%*	*5%*	*5%*	*10%*	*5%*	*5%*	*10%*	*10%*	*10%*	*100%*
Drainageway 2	Do Nothing	3	2	2	3	3	2	2	2	2	1	1	3	2.20
	Alt 2B: Detention	This study's recommendations are consistent with the 2014 Erie OSP Recommended Plan and are shown on the Alternatives Map for clarity												0.00
	Alt 2C: HFLM													0.00
	Alt 2E: 100-year Culvert													0.00
Drainageway 3	Do Nothing	3	1	1	1	1	2	2	1	1	1	2	2	1.75
	Alt 3C: HFLM	2	3	3	3	3	2	2	3	3	3	2	2	2.45
	Alt 3D: 100-yr Engineered Channel	3	1	2	1	1	1	1	1	1	2	2	2	1.80
	Alt 3 E: 100-yr Culvert	3	1	2	1	1	1	1	1	1	2	2	2	1.80
Drainageway 4	Do Nothing	3	1	1	1	2	1	1	1	1	1	2	2	1.65
	Alt 4B: Restore Diversion	3	3	3	1	2	2	2	2	2	2	2	2	2.30
	Alt 4E1: Engineered Channel	2	2	2	1	2	2	2	2	2	2	2	2	1.95
	Alt 4E2: 100-yr Culvert	3	1	2	1	1	1	1	1	1	2	2	2	1.80
	Alt 4D: Engineered Channel	2	2	2	1	2	2	2	2	2	2	2	3	2.05
Drainageway 4S	Do Nothing	3	1	2	1	1	1	2	1	1	1	2	2	1.80
	Alt 4A: Maintenance only	3	3	3	1	1	2	2	1	2	2	2	2	2.20
Drainageway 5	Do Nothing	3	1	1	1	1	1	1	1	1	1	2	2	1.60
	Alt 5B: Detention	3	2	3	2	3	3	1	3	3	3	2	3	2.60
	Alt 5E1: Floodwall	1	1	1	1	1	1	2	1	1	1	1	1	1.10
	Alt 5E1B1: Engineered Channel w Detention	2	2	2	1	1	1	2	1	2	2	2	2	1.80
	Alt 5E2: 100-yr Culvert	1	1	1	1	1	1	1	1	1	2	2	2	1.30
Drainageway 6	Do Nothing	3	1	1	1	2	1	1	1	1	1	2	2	1.65
	Alt 6E: 100-year Culvert	2	2	3	3	2	1	2	1	1	2	2	3	2.10

Scoring: yellow highlighting indicates recommended alternatives

1 - minimal opportunity
2 - average opportunity
3 - high opportunity

Matrix example of weighted screening matrix used to rank alternatives

Reach GG-6 – Yosemite Street to West Tributary Confluence

Reach GG-6 of Goldsmith Gulch is 0.5 miles in length from Yosemite Street to the confluence with the West Tributary and is entirely within Greenwood Village. Existing Goldsmith Gulch Reach GG-6 is a relatively wide and more natural greenbelt that generally contains the 100-year flood. Recommended solutions for this reach cost $1,260,000 in capital projects and $39,000 in annual operations and maintenance.

Two pedestrian crossings near the Inn at Greenwood Village retirement community are recommended to be upgraded to larger foot bridges.

The low-flow channel between S. Yosemite Street and E. Berry Avenue is experiencing degradation causing steep vertical banks. An existing utility manhole within the low flow channel also causes split flows. Realignment of 100 LF of low flow channel is recommended to avoid the utility manhole, and 2 small drop structures are recommended to stabilize the channel slope. 400 LF of low flow channel bank protection should be added to prevent lateral erosion (station 301+00 to 305+00).

The existing roadway crossing culvert at E. Berry Avenue does not have full 100-year capacity, however, the resulting roadway overtopping is less than 0.5-inches. A culvert replacement at this location is recommended primarily to reduce flood hazards to an existing residential building. Proposed improvements replace the E. Berry Avenue culvert with twin 11.5' x 6' CBC, 61 LF. The resulting lower flood elevations through this reach removes the structure from the Special Flood Hazard Area.

Bank erosion is also evident near the existing drop structure south of E. Berry Ave. 250 LF of low flow channel bank protection is recommended at this location (Station 307+50 to 310+00).

Orchard Hills detention facility spillway is recommended to be enhanced to make the structure more appealing. The existing spillway consists of a concrete wall, a pedestrian trail that loops around the pond, and exposed riprap on the downstream side of the spillway. The riprap is recommended to be buried, topped with 6 inches of topsoil, and seeded with native grasses and other vegetation. Because the spillway serves as the pond's only volume control mechanism, caution should be taken to assure that a concentrated flow path on the spillway is created so that the topsoil and vegetation is not washed away frequently.

CLICK HERE TO VIEW REACH GG-6 MAP

CLICK HERE TO VIEW REACH GG-6 PROFILE

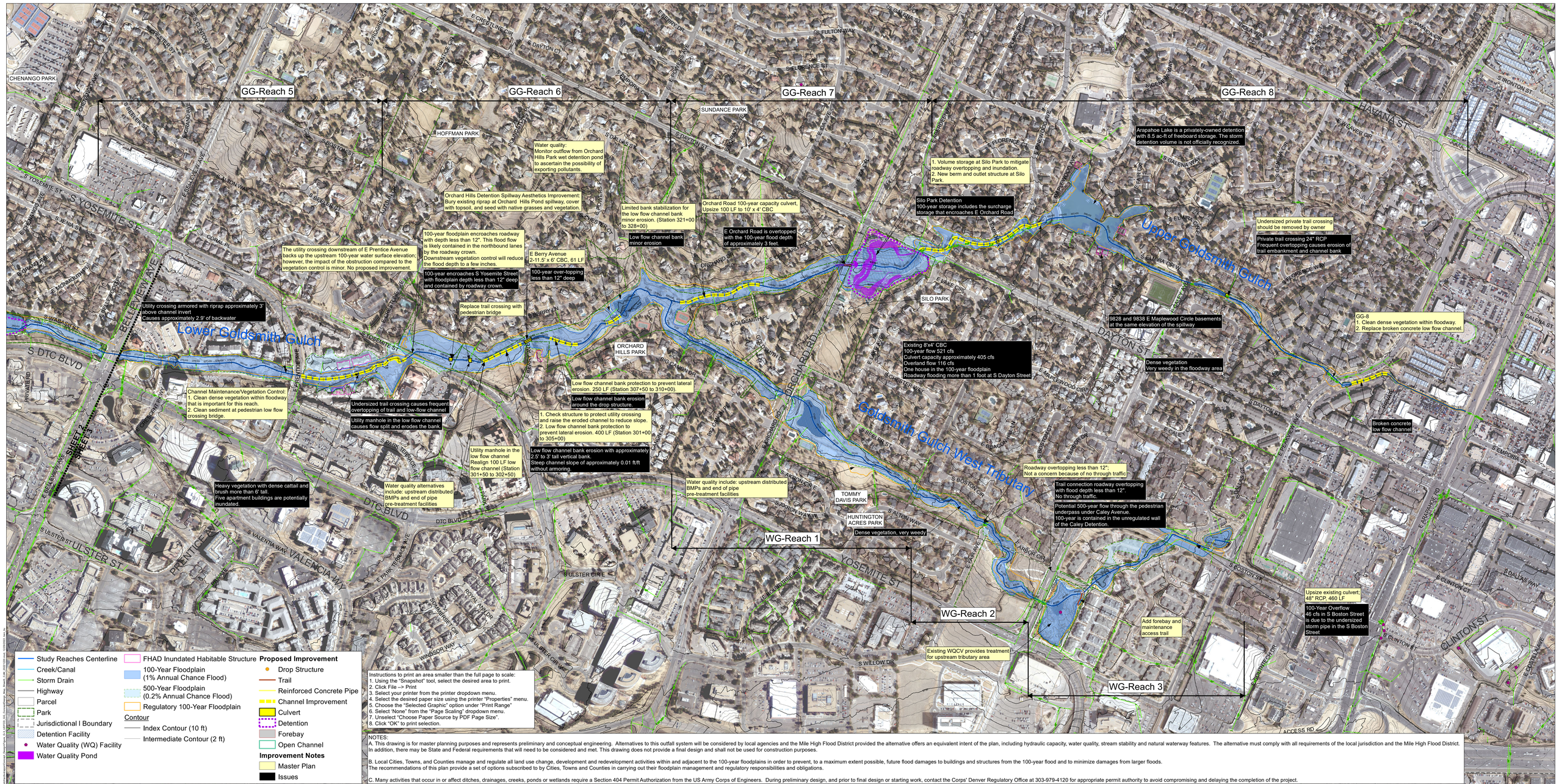
Table 7-9 Cost Estimates for Reach GG-6

DESCRIPTION			QUANTITY	UNIT	UNIT COST	TOTAL COST
Concrete Box Culverts						
Box Culvert Pipe						
Individual Box Span (ft)	**Box Height (ft)**	**No. of Barrels**	**Length (ft)**			
12	6	1	61	L.F.	$1,959.71	$119,542.00
11	6	1	61	L.F.	$1,816.31	$110,795.00
Headwall and Toewalls						
Individual Box Span (ft)	**No. of Barrels**	**Total Span (ft)**				
12	1	14.00	2	EA	$1,968.75	$3,938.00
11	1	13.00	2	EA	$1,843.73	$3,687.00
Wingwalls (includes wingwalls on either side of channel and concrete apron)						
Individual Box Span (ft)	**Box Rise (ft)**	**No. of Barrels**				
12	6	1	2	EA	$20,371.18	$40,742.40
11	6	1	2	EA	$19,997.26	$39,994.50
Hydraulic Structures						
Sloping Drop Structures						
Height (ft)	**Bottom Width (ft)**	**Yn (ft)**				
1.5	5	2.5	2	EA	$47,116.42	$94,233.00
Channel Improvements						
Excavation, Low Range			46	C.Y.	$18.00	$828.00
Soil Riprap, Type L			288	C.Y.	$100.00	$28,800.00
Soil Riprap, Type L			180	C.Y.	$100.00	$18,000.00
Removals						
Removal of culvert pipe (D>84")			60	L.F.	$126.00	$7,610.00
Special Items (User Defined)						
Orchard Hills Pond spillway bury existing riprap	**<----User Defined Items**		943	CY	$200.00	$188,600.00
Pedestrian Bridge	**<----User Defined Items**		96	S.F.	$180.00	$17,280.00
Pedestrian Bridge	**<----User Defined Items**		360	S.F.	$180.00	$64,800.00

Master Plan Capital Improvement Cost Summary			
Capital Improvement Costs			
Pipe Culverts and Storm Drains			$0.00
Concrete Box Culverts			$318,699.00
Hydraulic Structures			$94,233.00
Channel Improvements			$47,628.00
Detention/Water Quality Facilities			$0.00
Removals			$7,610.00
Landscaping and Maintenance Improvements			$0.00
Special Items (User Defined)			$270,680.00
Subtotal Capital Improvement Costs			**$738,850.00**
Additional Capital Improvement Costs			
Dewatering		L.S.	$0.00
Mobilization	5%		$36,943.00
Traffic Control		L.S.	$0.00
Utility Coordination/Relocation		L.S.	$0.00
Stormwater Management/Erosion Control	5%		$36,943.00
Subtotal Additional Capital Improvement Costs			**$73,886.00**
Land Acquisition Costs			
ROW/Easements			$0.00
Subtotal Land Acquisition Costs			**$0.00**
Other Costs (percentage of Capital Improvement Costs)			
Engineering	15%		$121,910.00
Legal/Administrative	5%		$40,637.00
Contract Admin/Construction Management	10%		$81,274.00
Contingency	25%		$203,184.00
Subtotal Other Costs			**$447,005.00**
Total Capital Improvement Costs			**$1,259,741.00**

Master Plan Operation and Maintenance Cost Summary				
Description	**Quantity**	**Unit**	**Unit Cost**	**Total Annual Cost**
Culvert Maintenance (e.g. sediment & debris removal, erosion at entrance/exit, structural repairs	272	L.F.	$2.00	$544.00
Hydraulic Structure Maintenance (e.g. debris removal, erosion, structural repairs, etc.)	8	EA	$837.00	$6,696.00
Channel Maintenance (e.g. sediment & debris removal, erosion, tree & weed removal, etc.)	2550	L.F.	$3.00	$7,650.00
Detention/WQ Maintenance (e.g. sediment & debris removal, mucking out, tree & weed removal,	0.9	ACRE	$2,512.00	$2,261.00
Mowing (e.g. channels, ponds, etc.)	4.7	ACRE	$84.00	$1,184.00
Trail Maintenance (e.g. structural repairs, crusher fines, etc.)	2550	L.F.	$8.00	$20,400.00
Total Annual Operation and Maintenance Cost				**$38,735.00**

Matrix example of one page concept design summary and cost estimate



NOTES:

A. This drawing is for master planning purposes and represents preliminary and conceptual engineering. Alternatives to this outfall system will be considered by local agencies and the Mile High Flood District provided the alternative offers an equivalent intent of the plan, including hydraulic capacity, water quality, stream stability and natural waterway features. The alternative must comply with all requirements of the local jurisdiction and the Mile High Flood District. In addition, there may be State and Federal requirements that will need to be considered and met. This drawing does not provide a final design and shall not be used for construction purposes.

B. Local Cities, Towns, and Counties manage and regulate all land use change, development and redevelopment activities within and adjacent to the 100-year floodplains in order to prevent, to a maximum extent possible, future flood damages to buildings and structures from the 100-year flood and to minimize damages from larger floods. The recommendations of this plan provide a set of options subscribed to by Cities, Towns and Counties in carrying out their floodplain management and regulatory responsibilities and obligations.

C. Many activities that occur in or affect ditches, drainages, creeks, ponds or wetlands require a Section 404 Permit Authorization from the US Army Corps of Engineers. During preliminary design, and prior to final design or starting work, contact the Corps' Denver Regulatory Office at 303-979-4120 for appropriate permit authority to avoid compromising and delaying the completion of the project.

MILE HIGH FLOOD DISTRICT
DENVER PUBLIC WORKS
GREENWOOD VILLAGE COLORADO
Southeast Metro Stormwater Authority
Matrix Excellence by Design

Sheet 3 of 3
Figure G-3: Concept Design - October 2022
Goldsmith Gulch Major Drainageway Plan and Flood Hazard Area Delineation

Matrix example of concept design map in fully developed, urban area

CONCEPTUAL DESIGN PROFILE
GOLDSMITH GULCH

MAJOR DRAINAGEWAY PLAN
FEBRUARY 2023
FIGURE H-1

THIS DRAWING IS FOR MASTER PLANNING PURPOSES AND REPRESENTS PRELIMINARY AND CONCEPTUAL ENGINEERING. ALTERNATIVES TO THIS OUTFALL SYSTEM WILL BE CONSIDERED BY LOCAL AGENCIES AND MILE HIGH FLOOD DISTRICT PROVIDED THE ALTERNATIVE OFFERS AN EQUIVALENT INTENT OF THE PLAN, INCLUDING HYDRAULIC CAPACITY, WATER QUALITY, STREAM STABILITY AND NATURAL WATERWAY FEATURES. THE ALTERNATIVE MUST COMPLY WITH ALL REQUIREMENTS OF THE LOCAL JURISDICTION AND MILE HIGH FLOOD DISTRICT. IN ADDITION, THERE MAY BE STATE AND FEDERAL REQUIREMENTS THAT WILL NEED TO BE CONSIDERED AND MET. THIS DRAWING DOES NOT PROVIDE A FINAL DESIGN AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES.

LOCAL CITIES, TOWNS, AND COUNTIES MANAGE AND REGULATE ALL LAND USE CHANGE, DEVELOPMENT AND REDEVELOPMENT ACTIVITIES WITHIN AND ADJACENT TO THE 100-YEAR FLOODPLAINS IN ORDER TO PREVENT, TO A MAXIMUM EXTENT POSSIBLE, FUTURE FLOOD DAMAGES TO BUILDINGS AND STRUCTURES FROM THE 100-YEAR FLOOD AND TO MINIMIZE DAMAGES FROM LARGER FLOODS. THE RECOMMENDATIONS OF THIS PLAN PROVIDE A SET OF OPTIONS SUBSCRIBED TO BY CITIES, TOWNS AND COUNTIES IN CARRYING OUT THEIR FLOODPLAIN MANAGEMENT AND REGULATORY RESPONSIBILITIES AND OBLIGATIONS.

MANY ACTIVITIES THAT OCCUR IN OR AFFECT DITCHES, DRAINAGES, CREEKS, PONDS OR WETLANDS REQUIRE A SECTION 404 PERMIT AUTHORIZATION FROM THE US ARMY CORPS OF ENGINEERS. DURING PRELIMINARY DESIGN, AND PRIOR TO FINAL DESIGN OR STARTING WORK, CONTACT THE CORPS' DENVER REGULATORY OFFICE AT 303-979-4120 FOR APPROPRIATE PERMIT AUTHORITY TO AVOID COMPROMISING AND DELAYING THE COMPLETION OF THE PROJECT.

TOPOGRAPHIC MAPPING METHOD:	LIDAR
TOPOGRAPHIC MAPPING BY:	USGS
TOPOGRAPHIC MAPPING DATE:	2014
HORIZONTAL DATUM:	NAD 83
VERTICAL DATUM:	NAVD 88
CONTOUR INTERVAL:	1 FOOT

INSTRUCTION TO PRINT AN AREA SMALLER THAN THE FULL PAGE TO SCALE:

1. USING THE "SNAPSHOT" TOOL, SELECT THE DESIRED AREA TO PRINT.
2. CLICK FILE>PRINT...
3. SELECT YOUR PRINTER FROM THE PRINTER DROPDOWN MENU.
4. SET THE DESIRED PAPER SIZE USING THE PRINTER "PROPERTIES" MENU.
5. CHOOSE THE "SELECTED GRAPHIC" OPTION UNDER "PRINT RANGE".
6. SELECT 'NONE' FROM THE "PAGE SCALING" DROPDOWN MENU.
7. UNSELECT "CHOOSE PAPER SOURCE BY PDF SIZE".
8. CLICK "OK" TO PRINT SELECTION.

GOLDSMITH GULCH MDP

Matrix
Excellence by Design
707 17TH STREET, SUITE 3150
DENVER, CO 80202
PHONE: (303) 572-0200

\\poseidon\Projects\18.155.035 (Goldsmith Gulch)\Dwg\Conceptual Plan
GG Conceptual Design Profile

CONCEPTUAL DESIGN PROFILE

FEBRUARY 2023

FIG. H-1

City of Colorado Springs Stormwater Enterprise
Cost / Revenue Module

Sources of Funds/Revenues	Growth Rate Assumptions	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Residential Fees		$ 18,222,683	$ 22,072,055	$ 23,976,564	$ 24,865,453	$ 25,085,669	$ 25,307,855	$ 25,532,030	$ 25,758,212	$ 25,986,419	$ 26,216,669
Development Review Fees		$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000
Erosion Control Permits		$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000
Reimbursement from Other Funds		$ 68,876	$ 68,876	$ 68,876	$ 68,876	$ 68,876	$ 68,876	$ 68,876	$ 68,876	$ 68,876	$ 68,876
Miscellaneous (interest earnings, sale of assets, CSU reimb)		$ 33,100	$ 33,100	$ 33,100	$ 33,100	$ 33,100	$ 33,100	$ 33,100	$ 33,100	$ 33,100	$ 33,100
Total		**$ 18,874,659**	**$ 22,724,031**	**$ 24,628,540**	**$ 25,517,429**	**$ 25,737,645**	**$ 25,959,831**	**$ 26,184,006**	**$ 26,410,188**	**$ 26,638,395**	**$ 26,868,645**

Operational Expenditures	Assumptions	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Salary/Benefits	3.5%	$ 3,214,564	$ 3,327,073	$ 3,443,521	$ 3,564,044	$ 3,688,786	$ 3,817,893	$ 3,951,519	$ 4,089,823	$ 4,232,966	$ 4,381,120
Operating	3.5%	$ 2,199,253	$ 2,276,227	$ 2,355,895	$ 2,438,352	$ 2,523,694	$ 2,612,023	$ 2,703,444	$ 2,798,065	$ 2,895,997	$ 2,997,357
O&M Contract/Service Level Agreement	3.5%	$ 3,340,842	$ 3,457,771	$ 3,578,793	$ 3,704,051	$ 3,833,693	$ 3,967,872	$ 4,106,748	$ 4,250,484	$ 4,399,251	$ 4,553,225
SW Locates	3.5%	$ 255,375	$ 264,313	$ 273,564	$ 283,139	$ 293,049	$ 303,305	$ 313,921	$ 324,908	$ 336,280	$ 348,050
Capital Outlay (vehicles, equipment, furniture)		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sub-total		**$ 9,012,055**	**$ 9,325,385**	**$ 9,651,774**	**$ 9,989,586**	**$ 10,339,221**	**$ 10,701,094**	**$ 11,075,632**	**$ 11,463,279**	**$ 11,864,494**	**$ 12,279,751**

Injunctive Relief Expenditures	Assumptions	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Injunctive Relief (classes & software)	5.0%	$ 123,500	$ 113,400	$ 119,070	$ 125,024	$ 131,275	$ 137,838	$ 144,730	$ 151,967	$ 159,565	$ 167,543
EX CM Verif		$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ -	$ -	$ -
Ex CM Repair		$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000
New CM		$ 940,000	$ 940,000	$ 940,000	$ 940,000	$ 1,253,333	$ 1,253,333	$ 2,253,333	$ 2,253,333	$ 2,253,333	$ 2,253,333
3rd-Party Audits		$ -	$ 154,400	$ 76,000	$ 76,000	$ 76,000	$ -	$ -	$ -	$ -	$ -
Mitigation											
Studies		$ 200,000	$ 200,000	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projects		$ -	$ -	$ -	$ 3,500,000	$ 3,500,000	$ 3,500,000	$ -	$ -	$ -	$ -
Sub-total		**$ 1,565,521**	**$ 1,709,822**	**$ 1,535,070**	**$ 4,941,024**	**$ 5,260,608**	**$ 5,191,172**	**$ 2,698,064**	**$ 2,655,300**	**$ 2,662,899**	**$ 2,670,877**

Debt Service	Assumptions	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Project #1		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Project #2		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Project #3		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Project #4		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Project #5		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Project #6		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sub-total		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Net Cash Flow (Surplus Capital Budget)		**$ 8,297,083**	**$ 11,688,823**	**$ 13,441,697**	**$ 10,586,820**	**$ 10,137,815**	**$ 10,067,565**	**$ 12,410,310**	**$ 12,291,609**	**$ 12,111,002**	**$ 11,918,017**
Net Cash Flow (with Bonding)		**$ 8,297,083**	**$ 11,688,823**	**$ 13,441,697**	**$ 10,586,820**	**$ 10,137,815**	**$ 10,067,565**	**$ 12,410,310**	**$ 12,291,609**	**$ 12,111,002**	**$ 11,918,017**

Matrix example excerpt from stormwater enterprise cost/revenue model

City of Colorado Springs Stormwater Enterprise
Fee Projections - Proposed Fee Increases (Scenario 3)

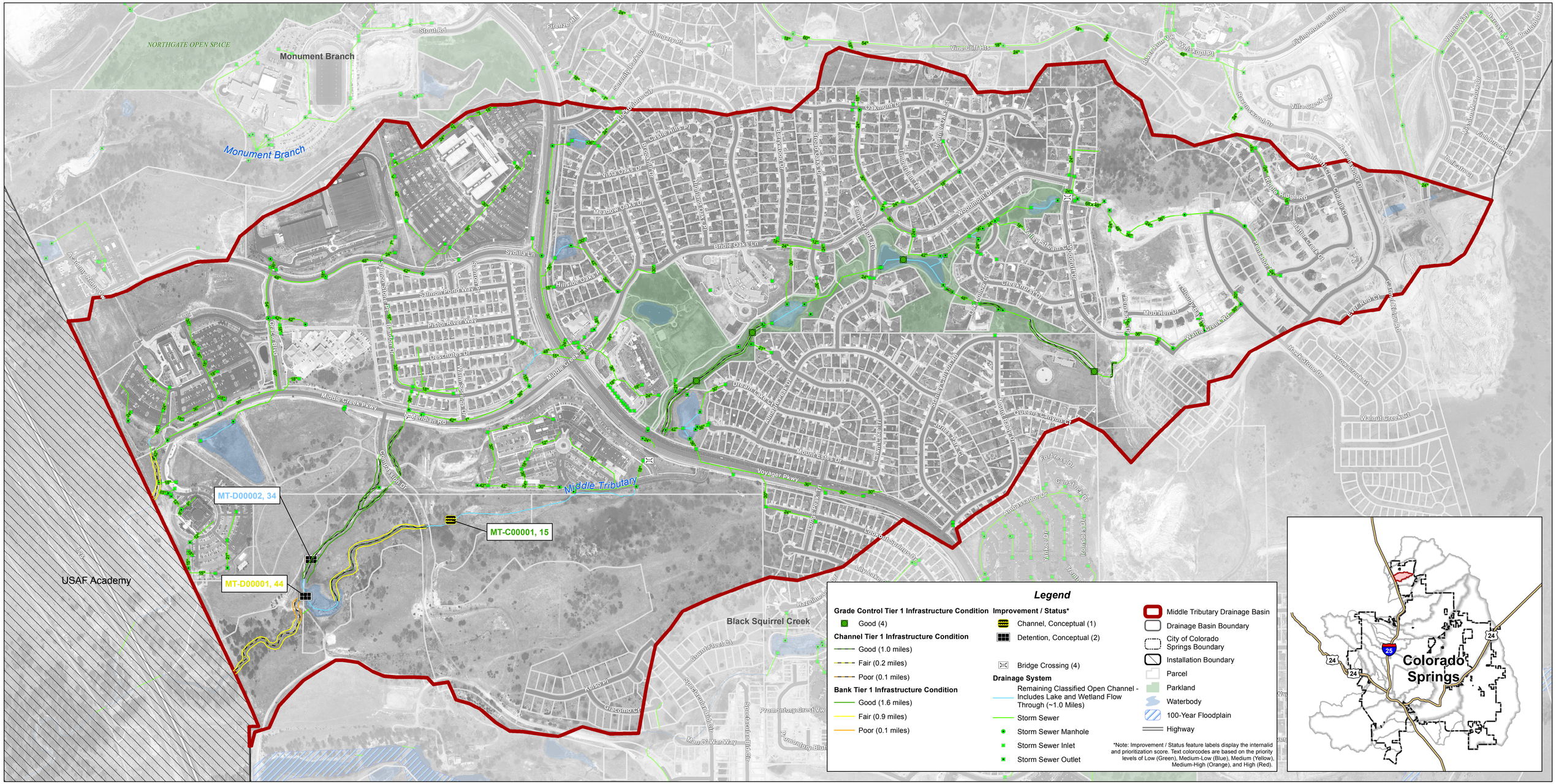
SWENT Projections	Assumption	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Non-residential Acres		21,284	21,710	22,144	22,587	23,039	23,500	23,970	24,449	24,938	25,437
Residential Units		147,212	148,979	150,766	152,575	154,406	156,259	158,134	160,032	161,952	163,896
Non-residential Fee ($/acre/month) (Jan-Jun)		$30.0	$38.0	$43.0	$45.0	$45.0	$45.0	$45.0	$45.0	$45.0	$45.0
Non-residential Fee ($/acre/month) (Jul-Dec)		$38.0	$43.0	$45.0	$45.0	$45.0	$45.0	$45.0	$45.0	$45.0	$45.0
Residential Fee (Jan-Jun)		$5.0	$7.0	$7.5	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0
Residential Fee (Jul-Dec)		$7.0	$7.5	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0
Non-residential Fee (&/acre/month) (Full Yr Avg)		$34.0	$40.5	$44.0	$45.0	$45.0	$45.0	$45.0	$45.0	$45.0	$45.0
Residential Fee (Full Yr Avg)		$6.0	$7.3	$7.8	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0
Non-residential Revenue		$ 8,683,998	$ 10,551,058	$ 11,692,136	$ 12,197,023	$ 12,440,964	$ 12,689,783	$ 12,943,579	$ 13,202,450	$ 13,466,499	$ 13,735,829
Residential Revenue		$ 10,599,264	$ 12,961,133	$ 14,021,265	$ 14,647,246	$ 14,823,013	$ 15,000,889	$ 15,180,900	$ 15,363,071	$ 15,547,428	$ 15,733,997
Gross Collections		$ 19,283,262	$ 23,512,191	$ 25,713,400	$ 26,844,269	$ 27,263,977	$ 27,690,672	$ 28,124,479	$ 28,565,521	$ 29,013,927	$ 29,469,826
Net Collections (Adjusted for Frictional Loss)	**94.5%**	**$ 18,222,683**	**$ 22,219,021**	**$ 24,299,163**	**$ 25,367,835**	**$ 25,764,458**	**$ 26,167,685**	**$ 26,577,632**	**$ 26,994,417**	**$ 27,418,161**	**$ 27,848,986**

Matrix Projections	Assumption	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Non-residential Acres		21,284	21,451	21,620	21,789	21,960	22,132	22,306	22,481	22,657	22,835
Residential Units		147,212	148,636	150,074	151,526	152,992	154,473	155,967	157,476	159,000	160,538
Non-residential Fee ($/acre/month) (Jan-Jun)		$30.0	$38.0	$43.0	$45.0	$45.0	$45.0	$45.0	$45.0	$45.0	$45.0
Non-residential Fee ($/acre/month) (Jul-Dec)		$38.0	$43.0	$45.0	$45.0	$45.0	$45.0	$45.0	$45.0	$45.0	$45.0
Residential Fee (Jan-Jun)		$5.0	$7.0	$7.5	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0
Residential Fee (Jul-Dec)		$7.0	$7.5	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0
Non-residential Fee (&/acre/month) (Full Yr Avg)		$34.0	$40.5	$44.0	$45.0	$45.0	$45.0	$45.0	$45.0	$45.0	$45.0
Residential Fee (Full Yr Avg)		$6.0	$7.3	$7.8	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0	$8.0
Non-residential Revenue		$ 8,683,998	$ 10,425,314	$ 11,415,110	$ 11,766,118	$ 11,858,411	$ 11,951,428	$ 12,045,174	$ 12,139,656	$ 12,234,879	$ 12,330,849
Residential Revenue		$ 10,599,264	$ 12,931,358	$ 13,956,916	$ 14,546,530	$ 14,687,270	$ 14,829,371	$ 14,972,847	$ 15,117,711	$ 15,263,977	$ 15,411,658
Gross Collections		$ 19,283,262	$ 23,356,671	$ 25,372,026	$ 26,312,649	$ 26,545,681	$ 26,780,799	$ 27,018,021	$ 27,257,367	$ 27,498,856	$ 27,742,507
Net Collections (Adjusted for Frictional Loss)	**94.5%**	**$ 18,222,683**	**$ 22,072,055**	**$ 23,976,564**	**$ 24,865,453**	**$ 25,085,669**	**$ 25,307,855**	**$ 25,532,030**	**$ 25,758,212**	**$ 25,986,419**	**$ 26,216,669**

Delta		**$0**	**($146,966)**	**($322,599)**	**($502,382)**	**($678,790)**	**($859,830)**	**($1,045,602)**	**($1,236,205)**	**($1,431,742)**	**($1,632,317)**
Cumulative Delta		**$0**	**($146,966)**	**($469,565)**	**($971,947)**	**($1,650,736)**	**($2,510,567)**	**($3,556,169)**	**($4,792,374)**	**($6,224,116)**	**($7,856,433)**

Growth Rate Assumptions	SWENT	Matrix	Delta
Non-Residential Growth	2.0%	0.78%	-1.22%
Residential Growth	1.2%	0.97%	-0.23%

Matrix example excerpt from stormwater enterprise fee projection model



SIMP Project Overview and SCAP – Open Channel Field Inspection/Assessment
Middle Tributary

Stormwater Infrastructure Master Plan
City of Colorado Springs, Colorado

0 400 800 1,600
Feet

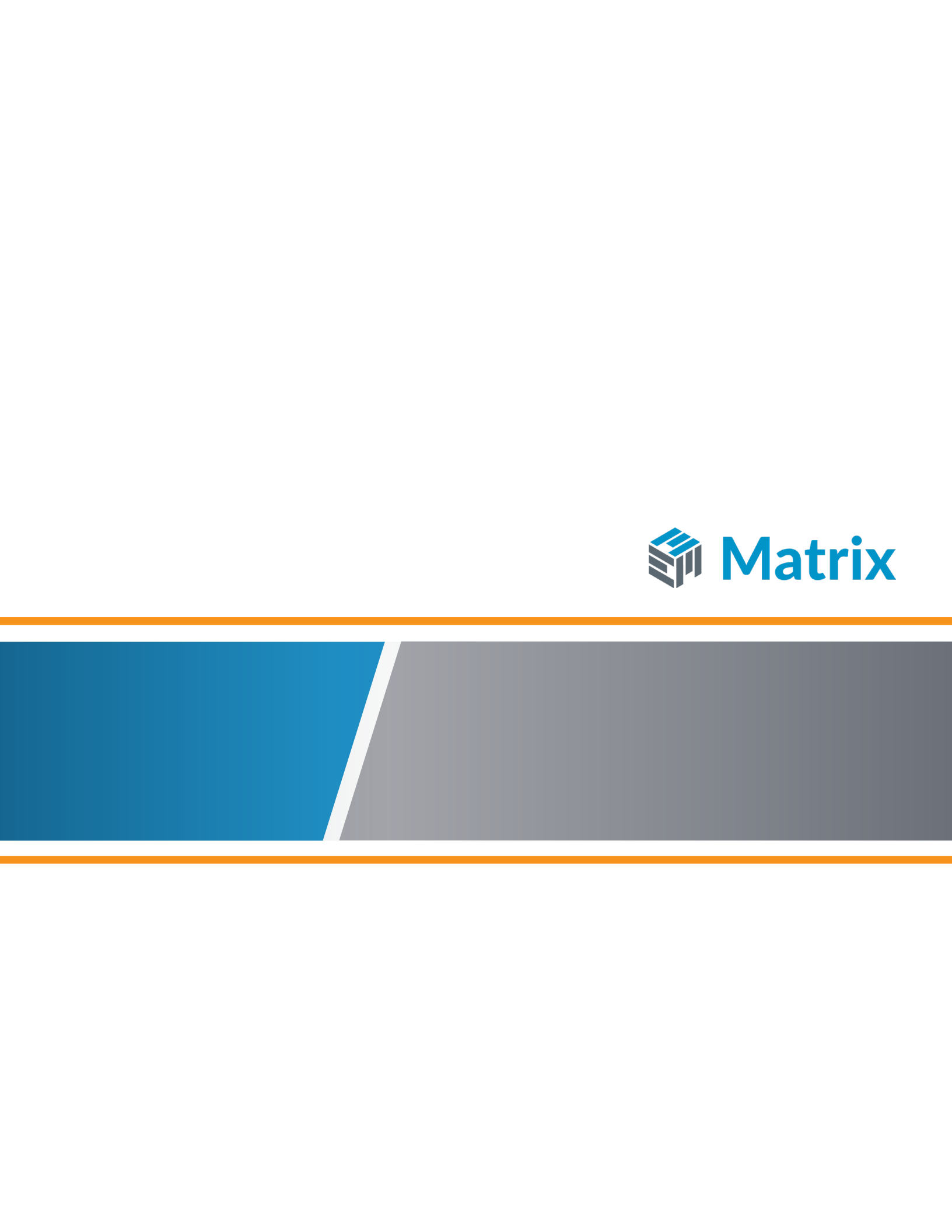
1 inch = 400 feet

N

Aerial Imagery: Colorado Springs, 2016
Date Printed: 3/19/2019

FILE: G:\gis_projects\CS_SIMPactive\apps\Basin_Maps\Basin_MiddleTributary_20x31.mxd, 3/19/2019, chris_martin

Matrix example of conditions assessment visual documentation


Matrix

Matrix

Anniston, AL
Atlanta, GA
Colorado Springs, CO
Denver, CO
Lone Tree, CO
Niceville, FL
Phoenix, AZ
San Antonio, TX
Tamuning, GU
Texarkana, TX
Washington, DC