



Master Services Agreement No. 02 – Town of Addison Detailed Stormwater Master Plan/Study Evaluation (Rawhide Creek, Addison Circle, South Addison, Farmers Branch Creek, White Rock Creek, and Hall Branch Watersheds)

Attachment 1: Scope of Services

PROJECT DESCRIPTION

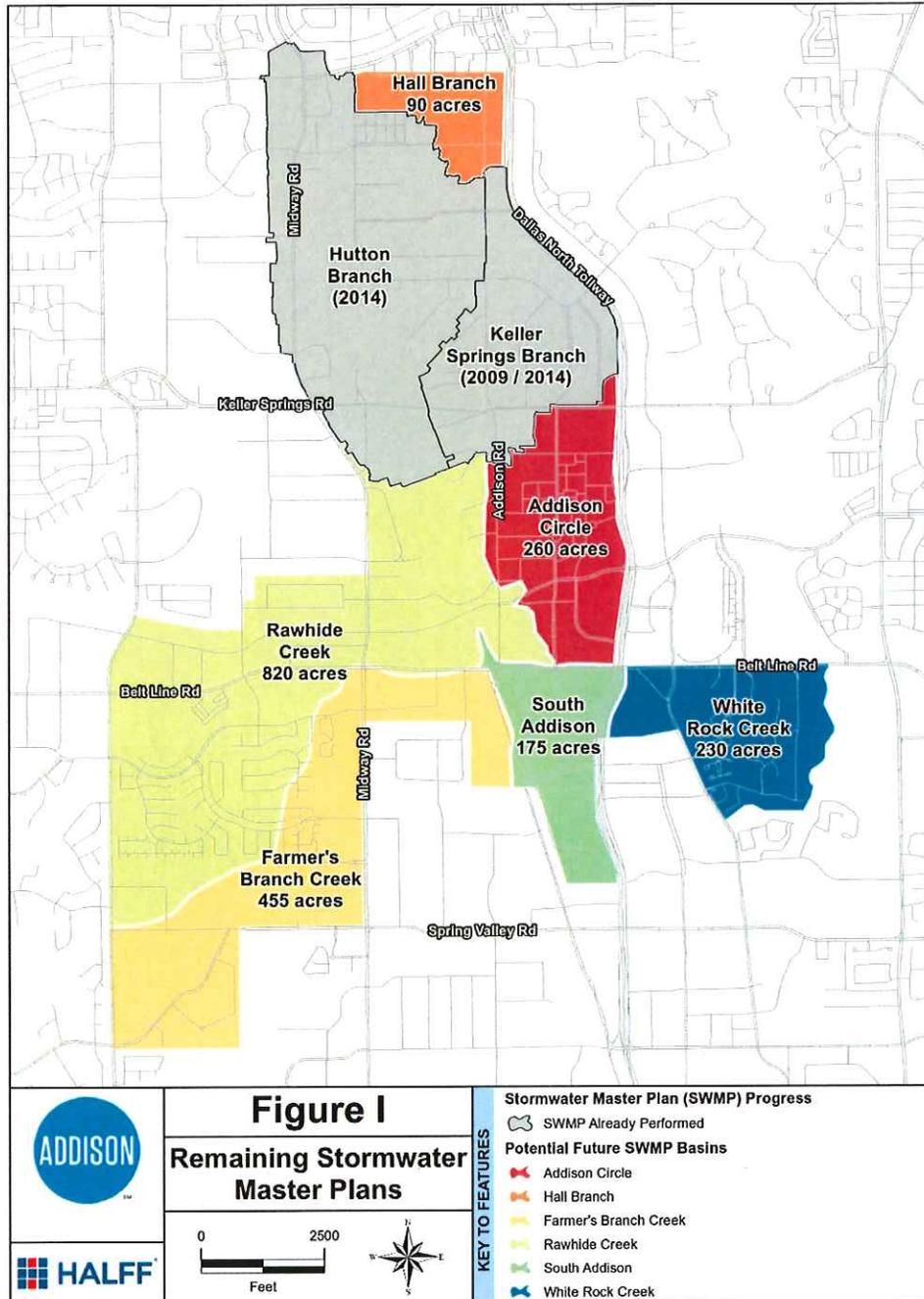
Detailed Stormwater Master Planning is a valuable tool for a community. The modern approach using two-dimensional (2-D) dynamic modeling provides a more realistic definition and evaluation of urban storm conveyance systems than analyses by conventional drainage design methodology. The 2-D dynamic methodology is better able to identify inadequate drainage. It also enables a more precise evaluation of the consequences of inadequate drainage in terms of public safety and damages to private and public facilities. This allows communities to effectively prioritize and phase storm drainage improvements.

The Town of Addison has currently completed a detailed Stormwater Master Plan (SWMP) analysis for the Keller Springs Branch and the Hutton Branch basins, accounting for two (2) of the eight (8) major storm water basins located within the town boundary. The Town of Addison is in the planning stages of prioritizing storm water improvement needs throughout the Town for future funding. The Keller Springs Branch and Hutton Branch SWMP analyses identified significant flooding, generally located in low hazard areas. The advanced 2-D dynamic modeling approach resulted in a reduction of priority drainage relief needs when compared to the generalized, conventional calculations used for the Conceptual SWMP/Drainage Capital Improvement Plan (2012). This prompted the Town of Addison to evaluate the remaining 2,030 acres of drainage basin area within the town boundary using advanced stormwater modeling. The remaining six (6) drainage basins are; Rawhide Creek, Addison Circle, South Addison, Farmers Branch Creek, White Rock Creek, and Hall Branch. The table below shows stormwater quantity/characteristics of each basin. The figure below shows general basin locations.

Table: Basin Stormwater Quantity/Characteristics

Drainage Basin	Basin Area* (acres)	Approx. Storm Sewer Quantity (LF)	Approx. Open Channel Miles (mi)	Estimated Drainage Relief Cost*
Rawhide Creek	820	87,000	0.6	\$17.1 M
Addison Circle	260	36,000	0.8	\$1.9M
South Addison	175	7,000	0.0	\$650K
Farmers Branch Creek	455	30,000	1.6	\$5.6M
White Rock Creek	230	15,000	0.7	\$1.2M
Hall Branch	90	12,000	0.0	\$1.5M
TOTAL	2,030	187,000	3.7	\$30.0M

* Conceptual Stormwater Master Plan/Drainage Capital Improvements Plan (2012)



Development of a Town-wide SWMP is needed and important for the following reasons:

- Beltline Road, Dallas North Tollway, Midway Road, Addison Road, Spring Valley Road, Arapaho Road, and Marsh Lane are high volume traffic thoroughfares which traverse multiple stormwater drainage basins connecting Addison to Dallas, Farmers Branch, and Carrollton, with Beltline Road stormsewer impacting all but the Hall Branch drainage basin. Flooding along these thoroughfares could pose a threat to public safety.

- The stormwater problem areas in these basins need to be identified and characterized for comparison to other known stormwater problem areas in Town of Addison
- The southern portion of the Addison Airport lies within the Rawhide Creek Basin and severe storms occurring in the basin have the potential to flood the main runway, taxiways and developed areas within and adjacent to the airport.
- Incorporate Oaks North 2-dimensional modeling in the White Rock Creek basin.
- **\$30 million in drainage relief needs** have been identified in the Rawhide Creek, Addison Circle, South Addison, Farmers Branch Creek, White Rock Creek, and Hall Branch Conceptual SWMP/Drainage Capital Improvement Plan (2012) developed in conjunction with the establishment of the Stormwater Utility for the Town of Addison.

The scope of work to be performed under this Agreement shall generally consist of the following services:

- Detailed analysis and evaluation of existing drainage systems in each basin using dynamic, 2-dimensional models and methodologies
- Identification of drainage problem areas
- Incorporate Beltline Road study, Oaks North study, Midway Road improvements, recent stormwater improvements near the southern portion of the Addison Airport, and Vitruvian Park stream and stormwater improvements along Farmers Branch Creek.
- Formulation and evaluation of an array of stormwater management alternatives to address drainage problem areas
- Coordinate study results with Town of Addison staff, neighborhood and business associations
- Make Stormwater Management Master Plan recommendations for each basin.
- Green Infrastructure and Low Impact Development (LID) opportunities will be investigated to complement the proposed improvements in the basin. This will be performed in conjunction with redevelopment guidance. Impacts of pending EPA Stormwater Rule changes will be assessed at a conceptual level and the Stormwater Management Plan will incorporate compatible features where technically and financially feasible.
- Prepare Executive Summary Report and Digital Documentation

CONSULTANT shall provide the following services to prepare stormwater management plans, progress reports, executive summary reports, and related documents for the Rawhide Creek, Addison Circle, South Addison, Farmers Branch Creek, White Rock Creek, and Hall Branch basins in Addison Texas in accordance with recognized industry standards which are similar in size, scope, and budget to the Project:

SCOPE OF SERVICES

1. PROJECT INITIATION

- 1.1. **Kick-off Meeting**
- 1.2. **Develop QA/QC Plan & ID Project Design Parameters & Criteria**
- 1.3. **Detailed Project Schedule**
- 1.4. **Obtain and Organize Data from Town of Addison**

- 1.4.1. Updated Geographic Information System (GIS) data for all underground and above ground utilities
- 1.4.2. Best Available topographic mapping in the study area
- 1.4.3. Previous drainage studies
- 1.4.4. Recent as-built paving and drainage drawings in airport and other parts of basin
- 1.4.5. Water and wastewater utility locations
- 1.4.6. Flooding and erosion complaints
- 1.4.7. Future land use or zoning data
- 1.5. Obtain Data from Others**
 - 1.5.1. Federal Emergency Management Agency (FEMA) Dallas County Flood Insurance Study Restudy (Digital Flood Insurance Rate Map (DFIRM) Database including stream centerlines, floodplain boundaries, and base flood elevations
 - 1.5.2. Texas Natural Resources Information System (TNRIS) Dallas County Light Detection and Ranging (LiDAR) elevation data (2010)
 - 1.5.3. Texas Natural Resources Information System (TNRIS) Woolpert Project Light Detection and Ranging (LiDAR) elevation data (2015-if available)

2. TOWN of ADDISON STORMWATER MASTER PLAN – Detailed engineering study, system evaluation, alternative analysis, and recommendations

- 2.1. Initial Phase/Site Reconnaissance/Survey**
 - 2.1.1. Develop basemap for field use
 - 2.1.2. Site reconnaissance with digital photographs
 - 2.1.3. Organize collected data
 - 2.1.4. Surveys for missing as-built plans and open channels
- 2.2. Basin Delineations**
 - 2.2.1. Delineate subcatchments based on topography and storm sewer system
 - 2.2.2. Develop flow paths for time of concentrations based on topography and storm sewer system locations
- 2.3. Hydrologic Basemap Preparation**
 - 2.3.1. Prepare subcatchments basemap
 - 2.3.2. Locate and georeference hydrologic parameters to basemap
- 2.4. Update Interactive Stormwater GIS Database**
 - 2.4.1. Import updated field reconnaissance and new data into existing stormwater GIS
 - 2.4.2. Hyperlink new as-built drawing sets with stormwater GIS
- 2.5. Hydrologic Analysis**
 - 2.5.1. Determine Fully Urbanized land uses
 - 2.5.2. Determine soil types, percent imperviousness, and percent urbanization
 - 2.5.3. Determine hydrologic time of concentrations
 - 2.5.4. Create dynamic stormwater model input for hydrologic computations
 - 2.5.5. Validate hydrologic model results by comparison with historic storm records, if available, and traditional storm sewer hydrologic methodology.
- 2.6. Hydraulic Analysis**

- 2.6.1. Establish boundary conditions on Rawhide Creek, Farmers Branch Creek, Hall Branch, and White Rock Creek
- 2.6.2. Create dynamic stormwater model and run-2-D simulations
- 2.6.3. Validate hydraulic model results with historic storm records, if available, and traditional storm sewer hydraulic methodology
- 2.7. Existing Storm Drainage System Evaluation Based on Future Land Use**
 - 2.7.1. Evaluate capacities of existing storm sewer pipes, inlets, culverts, and open channels
 - 2.7.2. Incorporate Belt Line Road Study
 - 2.7.3. Incorporate Oaks North Study
 - 2.7.4. Incorporate Vitruvian Park stream and stormwater improvements along Farmers Branch Creek.
 - 2.7.5. Delineate flooded areas for surcharged underground systems
 - 2.7.6. Evaluate existing system performance for 100-year storm event
 - 2.7.7. Identify and characterize problem areas based on flood risk to the public and damage potential
 - 2.7.8. Site visits to problem areas
 - 2.7.9. QAQC
- 2.8. Conceptual Alternatives and Cost Estimates**
 - 2.8.1. Formulate Stormwater Management alternatives such as storm sewer enlargement, parallel relief, detention, channel improvements, diversion, and combinations
 - 2.8.2. Develop and incorporate viable Stormwater Management alternatives into existing conditions models to create proposed conditions
 - 2.8.3. Develop anticipated construction cost estimates for viable Stormwater Management alternatives and compare
 - 2.8.4. Prepare for and meet with the Town of Addison staff to discuss and evaluate alternatives
 - 2.8.5. QAQC
- 2.9. Stormwater Quality**
 - 2.9.1. Formulate and Investigate Green Infrastructure (GI) and LID
 - 2.9.2. Investigate impacts of pending EPA Stormwater Rule changes
 - 2.9.3. Incorporate recommendations for compatible GI and LID features where technically feasible.
- 2.10. Master Plan Recommendations**
 - 2.10.1. Document comparison and evaluation of SWM alternatives
 - 2.10.2. Develop Master Plan Recommendations with exhibits
 - 2.10.3. Investigate and recommend other strategies such as funding, phasing, etc.

3. EXECUTIVE SUMMARY AND DETAILED DIGITAL DATA

- 3.1. Compile Executive Summary Report**
 - 3.1.1. General description and information for recommendations
 - 3.1.2. Description of methodologies
- 3.2. Generate and Compile Detailed Digital Data, Including:**
 - 3.2.1. Alternatives and recommendations

- 3.2.2. Annotated site details
 - 3.2.3. Existing and alternative hydrologic and hydraulic results
 - 3.2.4. Cost estimates
 - 3.3. **Quality Assurance / Quality Control**
 - 3.4. **Issue Draft Executive Summary Report and Digital Data for Staff Review**
 - 3.5. **Incorporate Staff Comments and Revisions to Final Deliverable**
 - 3.6. **Deliver Electronic Files of Final Summary Report**
4. **PROJECT COORDINATION AND MANAGEMENT**
- 4.1. **Monthly Status Meetings with Project Team (Internal)**
 - 4.2. **Basin Coordination**
 - 4.3. **Assist with and Attend Council Presentations as needed**
 - 4.4. **Quarterly Coordination Meetings and Reports with/to Town Staff**
5. **ASSUMPTIONS AND EXCEPTIONS**
- 5.1. **Assume all necessary as-built paving and drainage drawings are in Halff archives or are otherwise available from the Town and Airport**
 - 5.2. **Assume all as-built data are sufficiently accurate for analysis**
 - 5.3. **Town will assist with traffic control where mobile GPS recon efforts may take place on public streets if necessary**
 - 5.4. **Detailed design is not included in this work authorization**
 - 5.5. **Assumes that existing available topographic data will be used for this study**
 - 5.6. **Survey budget for storm water infrastructure was set up to five features per watershed (total 30 storm water features). If there is a need to survey more storm water features a new fee will be submitted to the Town for approval.**
 - 5.7. **Software licenses for Town are not included in the fees, however free version of software viewers will be available to access results.**
 - 5.8. **Excludes modeling of storm sewer smaller than 24-inches unless known problems exist or are suspected in analyzed area.**

**Master Services Agreement No. 2 – Town of Addison Detailed
Stormwater Master Plan/Study Evaluation (Rawhide Creek, Addison
Circle, South Addison, Farmers Branch Creek, White Rock Creek,
and Hall Branch Watersheds)**

Attachment 2: Combined Fee Schedule

No.	Task Description	Task Fee	Phase Total
1	PROJECT INITIATION		\$33,500
1.1	Kick-off Meeting	\$3,500	
1.2	Develop QA/QC Plan & ID Design Parameters	\$5,500	
1.3	Detailed Project Schedule	\$4,500	
1.5	Obtain/Organize Data From Addison	\$13,000	
1.6	Obtain Data From Others	\$7,000	
2	ADDISON SWMP		\$633,850
2.1	Initial Phase/Site Reconnaissance/Survey	\$57,600	
2.2	Basin Delineations	\$17,500	
2.3	Hydrologic Basemap Preparation	\$3,750	
2.4	Update Interactive Stormwater GIS Database	\$9,000	
2.5	Hydrologic Analysis	\$49,500	
2.6	Hydraulic Analysis	\$62,500	
2.7	Existing Storm Drainage System Evaluation	\$119,000	
2.8	Conceptual Alternatives and Cost Estimates	\$210,000	
	2.8.1 Formulate Stormwater Management Alternatives	\$61,000	
	2.8.2 Develop and Incorporate Alternatives	\$98,000	
	2.8.3 Develop Cost Estimates	\$30,000	
	2.8.4 Prepare and Meet with Town on Alternatives	\$21,000	
2.9	Stormwater Quality	\$25,000	
2.10	Masterplan Recommendations	\$80,000	
3	EXECUTIVE SUMMARY & DIGITAL DATA		\$168,000
3.1	Compile Executive Summary	\$85,000	

No.		Task Description	Task Fee	Phase Total
	3.2	Generate and Compile Detailed Digital Data	\$22,000	
	3.3	QA/QC	\$22,000	
	3.4	Issue Draft Executive Summary and Digital Data	\$13,500	
	3.5	Incorporate Staff Comments/Revisions	\$16,500	
	3.6	Deliver Electronic Files and Final Summary	\$9,000	
4		PROJECT MANAGEMENT/COORDINATION		\$65,000
	4.1	Status Meetings (Internal)	\$15,000	
	4.2	Basin Coordination	\$25,000	
	4.3	Assist/Attend Council Presentations	\$15,000	
	4.4	Quarterly Coordination Meetings	\$10,000	
		Work Authorization ## Total Fee		\$900,350

Master Services Agreement No. 2 – Town of Addison Detailed Stormwater Master Plan/Study Evaluation (Rawhide Creek, Addison Circle, South Addison, Farmers Branch Creek, White Rock Creek, and Hall Branch Watersheds)

Attachment 3: Fee Schedule by Basin

No.	Task Description	Task Fee	Phase Total
1	PROJECT INITIATION		\$33,500
1.1	Kick-off Meeting	\$3,500	
1.2	Develop QA/QC Plan & ID Design Parameters	\$5,500	
1.3	Detailed Project Schedule	\$4,500	
1.5	Obtain/Organize Data From Addison	\$13,000	
1.6	Obtain Data From Others	\$7,000	
	Project Initiation Total Fee		\$33,500

No.	Task Description	Task Fee	Phase Total
2	RAWHIDE CREEK SWMP		\$264,850
2.1	Initial Phase/Site Reconnaissance/Survey	\$21,600	
2.2	Basin Delineations	\$6,000	
2.3	Hydrologic Basemap Preparation	\$750	
2.4	Update Interactive Stormwater GIS Database	\$3,500	
2.5	Hydrologic Analysis	\$17,000	
2.6	Hydraulic Analysis	\$26,000	
2.7	Existing Storm Drainage System Evaluation	\$58,000	
2.8	Conceptual Alternatives and Cost Estimates	\$92,000	
	2.8.1 Formulate Stormwater Management Alternatives	\$25,000	
	2.8.2 Develop and Incorporate Alternatives	\$47,000	
	2.8.3 Develop Cost Estimates	\$13,000	
	2.8.4 Prepare and Meet with Town on Alternatives	\$7,000	
2.9	Stormwater Quality	\$5,000	

No.		Task Description	Task Fee	Phase Total
	2.10	Masterplan Recommendations	\$35,000	
3		EXECUTIVE SUMMARY & DIGITAL DATA		\$50,800
	3.1	Compile Executive Summary	\$30,000	
	3.2	Generate and Compile Detailed Digital Data	\$7,000	
	3.3	QA/QC	\$4,800	
	3.4	Issue Draft Executive Summary and Digital Data	\$3,500	
	3.5	Incorporate Staff Comments/Revisions	\$3,500	
	3.6	Deliver Electronic Files and Final Summary	\$2,000	
Rawhide Creek Basin SWMP Total Fee				\$315,650

No.		Task Description	Task Fee	Phase Total
2		FARMERS BRANCH SWMP		\$99,250
	2.1	Initial Phase/Site Reconnaissance/Survey	\$6,000	
	2.2	Basin Delineations	\$3,000	
	2.3	Hydrologic Basemap Preparation	\$750	
	2.4	Update Interactive Stormwater GIS Database	\$1,500	
	2.5	Hydrologic Analysis	\$8,000	
	2.6	Hydraulic Analysis	\$8,000	
	2.7	Existing Storm Drainage System Evaluation	\$18,000	
	2.8	Conceptual Alternatives and Cost Estimates	\$34,000	
	2.8.1	Formulate Stormwater Management Alternatives	\$10,000	
	2.8.2	Develop and Incorporate Alternatives	\$15,000	
	2.8.3	Develop Cost Estimates	\$5,000	
	2.8.4	Prepare and Meet with Town on Alternatives	\$4,000	
	2.9	Stormwater Quality	\$5,000	
	2.10	Masterplan Recommendations	\$15,000	
3		EXECUTIVE SUMMARY & DIGITAL DATA		\$32,300

No.	Task Description	Task Fee	Phase Total
3.1	Compile Executive Summary	\$15,000	
3.2	Generate and Compile Detailed Digital Data	\$4,500	
3.3	QA/QC	\$4,800	
3.4	Issue Draft Executive Summary and Digital Data	\$2,500	
3.5	Incorporate Staff Comments/Revisions	\$3,500	
3.6	Deliver Electronic Files and Final Summary	\$2,000	
Farmers Branch Creek Basin SWMP Total Fee			\$131,550

No.	Task Description	Task Fee	Phase Total
2	WHITE ROCK CREEK SWMP		\$93,250
2.1	Initial Phase/Site Reconnaissance/Survey	\$20,000	
2.2	Basin Delineations	\$1,500	
2.3	Hydrologic Basemap Preparation	\$750	
2.4	Update Interactive Stormwater GIS Database	\$1,000	
2.5	Hydrologic Analysis	\$8,500	
2.6	Hydraulic Analysis	\$13,500	
2.7	Existing Storm Drainage System Evaluation	\$10,000	
2.8	Conceptual Alternatives and Cost Estimates	\$25,000	
	2.8.1 Formulate Stormwater Management Alternatives	\$5,000	
	2.8.2 Develop and Incorporate Alternatives	\$15,000	
	2.8.3 Develop Cost Estimates	\$3,000	
	2.8.4 Prepare and Meet with Town on Alternatives	\$2,000	
2.9	Stormwater Quality	\$5,000	
2.10	Masterplan Recommendations	\$8,000	
3	EXECUTIVE SUMMARY & DIGITAL DATA		\$32,300
3.1	Compile Executive Summary	\$15,000	
3.2	Generate and Compile Detailed Digital Data	\$4,500	
3.3	QA/QC	\$4,800	

No.	Task Description	Task Fee	Phase Total
3.4	Issue Draft Executive Summary and Digital Data	\$2,500	
3.5	Incorporate Staff Comments/Revisions	\$3,500	
3.6	Deliver Electronic Files and Final Summary	\$2,000	
White Rock Creek Basin SWMP Total Fee			\$125,550

No.	Task Description	Task Fee	Phase Total
2	ADDISON CIRC/S. ADDISON SWMP		\$125,750
2.1	Initial Phase/Site Reconnaissance/Survey	\$8,000	
2.2	Basin Delineations	\$4,000	
2.3	Hydrologic Basemap Preparation	\$750	
2.4	Update Interactive Stormwater GIS Database	\$1,500	
2.5	Hydrologic Analysis	\$11,000	
2.6	Hydraulic Analysis	\$10,000	
2.7	Existing Storm Drainage System Evaluation	\$25,000	
2.8	Conceptual Alternatives and Cost Estimates	\$45,500	
	2.8.1 Formulate Stormwater Management Alternatives	\$16,000	
	2.8.2 Develop and Incorporate Alternatives	\$16,000	
	2.8.3 Develop Cost Estimates	\$7,500	
	2.8.4 Prepare and Meet with Town on Alternatives	\$6,000	
2.9	Stormwater Quality	\$5,000	
2.10	Masterplan Recommendations	\$15,000	
3	EXECUTIVE SUMMARY & DIGITAL DATA		\$31,300
3.1	Compile Executive Summary	\$15,000	
3.2	Generate and Compile Detailed Digital Data	\$3,500	
3.3	QA/QC	\$4,800	
3.4	Issue Draft Executive Summary and Digital Data	\$2,500	
3.5	Incorporate Staff Comments/Revisions	\$3,500	

No.	Task Description	Task Fee	Phase Total
3.6	Deliver Electronic Files and Final Summary	\$2,000	
Addison Circle/South Addison Basin SWMP Total Fee			\$157,050

No.	Task Description	Task Fee	Phase Total
2	HALL BRANCH SWMP		\$50,750
2.1	Initial Phase/Site Reconnaissance/Survey	\$2,000	
2.2	Basin Delineations	\$3,000	
2.3	Hydrologic Basemap Preparation	\$750	
2.4	Update Interactive Stormwater GIS Database	\$1,500	
2.5	Hydrologic Analysis	\$5,000	
2.6	Hydraulic Analysis	\$5,000	
2.7	Existing Storm Drainage System Evaluation	\$8,000	
2.8	Conceptual Alternatives and Cost Estimates	\$13,500	
2.8.1	Formulate Stormwater Management Alternatives	\$5,000	
2.8.2	Develop and Incorporate Alternatives	\$5,000	
2.8.3	Develop Cost Estimates	\$1,500	
2.8.4	Prepare and Meet with Town on Alternatives	\$2,000	
2.9	Stormwater Quality	\$5,000	
2.10	Masterplan Recommendations	\$7,000	
3	EXECUTIVE SUMMARY & DIGITAL DATA		\$21,300
3.1	Compile Executive Summary	\$10,000	
3.2	Generate and Compile Detailed Digital Data	\$2,500	
3.3	QA/QC	\$2,800	
3.4	Issue Draft Executive Summary and Digital Data	\$2,500	
3.5	Incorporate Staff Comments/Revisions	\$2,500	
3.6	Deliver Electronic Files and Final Summary	\$1,000	
Hall Branch Basin SWMP Total Fee			\$72,050



No.	Task Description	Task Fee	Phase Total
4	PROJECT MANAGEMENT/COORDINATION		\$65,000
4.1	Status Meetings (Internal)	\$15,000	
4.2	Basin Coordination	\$25,000	
4.3	Assist/Attend Council Presentations	\$15,000	
4.4	Quarterly Coordination Meetings	\$10,000	
Project Management Total Fee			\$65,000



Work Authorization No. ## – Town of Addison Detailed Stormwater Master Plan/Study Evaluation (Rawhide Creek, Addison Circle, South Addison, Farmers Branch Creek, White Rock Creek, and Hall Branch Watersheds)

Attachment 3: Estimated Project Schedule

Work Authorization No. ## – Addison Detailed Stormwater Master Plan/Study Evaluation Project Schedule*	Estimated Project Schedule in Months from Notice to Proceed															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. PROJECT INITIATION																
2. ADDISON SWMP																
3. EXECUTIVE SUMMARY AND WEBMAP																
4. PROJECT MANAGEMENT/COORDINATION																

*A detailed project schedule will be developed under task 1.3 which will supersede this estimation