

CITY OF HALLANDALE BEACH
FY 2018-2019-012 Continuing Professional Architectural and Engineering Services and Other Services
Discipline: Environmental Engineering Services

HAZEN AND SAWYER
WORK AUTHORIZATION No. E2021-001

Water Distribution System Master Plan
Fee Estimate: May 3, 2021

Task	Description	Hazen Labor								Task Totals
		Associate, Engineering	Director, Engineering	Project Manager	Project Engineer	Engineer	Senior CADD Tech Manager	Hours	Fee	
	Hourly Rates:	\$247.00	\$247.00	\$232.00	\$214.00	\$183.00	\$155.00			
Task 1: Water Demand Forecast										\$33,080
1.1	Data Collection	0	0	20	0	20	0	40	\$8,300	
1.2	Population Projections	2	4	4	20	40	0	70	\$14,010	
1.3	Water Demand Forecast	2	8	20	0	20	0	50	\$10,770	
Task 2: Water Distribution System										\$285,556
2.1	Summary of Existing Water Distribution System	2	0	8	16	16	0	42	\$8,702	
2.2	Update Existing Model									
2.2.1	City GIS Data	0	0	0	8	16	0	24	\$4,640	
2.2.2	Spatially Distribute Water Demands Using Billing Records	0	0	0	8	16	0	24	\$4,640	
2.2.3	Pump Curves and Tank Data	0	0	2	8	24	0	34	\$6,568	
2.2.4	Diurnal Demand Curves	2	0	2	8	24	0	36	\$7,062	
2.3	Field Data Collection for Model Calibration	0	0	2	16	60	0	78	\$14,868	
2.4	Calibration	0	0	8	24	200	0	232	\$43,592	
2.5	Model Simulations									
2.5.1	General Network Performance	0	0	16	24	80	10	130	\$25,038	
2.5.2	Fire Flow Availability									
2.5.2.1	System Wide Fire Hydrant Flow Simulation	4	4	4	20	80	10	122	\$23,374	
2.5.2.2	Fire Flow Analysis for Selected Sites	2	2	2	0	0	0	6	\$1,452	
2.5.3	Storage Evaluation									
2.5.3.1	Assess Compliance with Minimum Storage Volume Requirements	4	0	4	8	0	0	16	\$3,628	
2.5.3.2	Assess Addition of New Ground Storage Tank Off-Site	4	2	4	0	20	0	30	\$6,070	
2.5.3.3	Assess Replacement of the Existing 2-MG Water Tank at the WTP	2	2	4	0	20	0	28	\$5,576	
2.5.3.4	Beach Tank Filling Rate Assessment	2	2	4	0	20	0	28	\$5,576	
2.5.4	Network Redundancy	0	2	16	0	80	0	98	\$18,846	
2.5.5	Water Age Modeling									
2.5.5.1	Map Water Age for Existing Operations	0	0	4	8	16	10	38	\$7,118	
2.5.5.2	Storage Tank Water Age	0	0	4	8	16	6	34	\$6,498	
2.5.5.3	Evaluate Methods of Reducing Water Age	0	4	6	16	24	8	58	\$11,436	
2.6	Demand Driven Improvement Needs	0	4	30	30	60	24	148	\$29,068	
2.7	Water Distribution Piping Renewal and Replacement	6	6	16	20	40	36	124	\$23,856	
2.8	Distribution System Regulatory Improvement Needs									
2.8.1	Review Existing Water Quality Data	4	4	8	16	40	0	72	\$14,576	
2.8.2	Review Water Storage Water Quality Data	0	2	4	8	16	0	30	\$6,062	
2.8.3	Future Regulations	0	2	2	16	16	0	36	\$7,310	
Task 3: Master Plan Report										\$103,124
3.1	Opinion of Probable Project Costs	0	0	24	40	40	0	104	\$21,448	
3.2	Master Plan Project Organization	4	8	8	20	20	0	60	\$12,760	
3.3	Capital Improvements Program (CIP) and Prioritization	0	20	20	80	0	0	120	\$26,700	
3.4	Master Plan Report	8	0	20	20	40	16	104	\$20,696	
3.5	Presentation Preparation	0	16	40	0	0	16	72	\$15,712	
3.6	Presentation to Commission	8	8	8	0	0	0	24	\$5,808	

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	Hourly Rates:	\$247.00	\$247.00	\$232.00	\$214.00	\$183.00	\$155.00			
	Total Labor (Lump Sum)	56	100	314	442	1,064	136	2,112	\$421,760	\$421,760