

Hazen and Sawyer
East West Reinforcing Main Routing Study
City of Durham Water Management Department

8/14/2015

Man-hour Projection Task Description	VP	Associate	Project Engineer	Designer /Admin	Kimley-Horn	Hollins Construction	QC	Expenses	Total Hours	Fee Per Task	Task Type	Dollars		Hours		
	\$210	\$165	\$125	\$110	\$175	\$68	\$95					LS	CC	LS	CC	
TASK																
Project Management																
Project Management (10 months)	5	50							55	\$9,300	LS	\$9,300	\$0	55	0	
Total	5	50	0	0	0	0	0	\$0	55	\$9,300		\$9,300	\$0	55	0	
Meetings																
Kick-off Meeting / Preparation	2	10	24		8				44	\$6,470	LS	\$6,470	\$0	44	0	
Project Meetings (10)	10	30	40		10				90	\$13,800	LS	\$13,800	\$0	90	0	
Total	12	40	64	0	18	0	0	\$488	134	\$20,758		\$488	\$0	134	0	
Route Development and Evaluation																
Initial field visits during corridor development		16	16		8	16			56	\$7,128	LS	\$7,128	\$0	56	0	
Interviews of City staff		8	16						24	\$3,320	LS	\$3,320	\$0	24	0	
Data collection for desktop review and screening	4	8	24		8				44	\$6,560	LS	\$6,560	\$0	44	0	
Compilations of available GIS information		2	12		4				18	\$2,530	LS	\$2,530	\$0	18	0	
Assessment of data and screening criteria development	2	8	16				4		30	\$4,120	LS	\$4,120	\$0	30	0	
High level screening of study area / development of initial corridors	2	8	16				4		30	\$4,120	LS	\$4,120	\$0	30	0	
Develop feasible routes within each corridor	2	8	16			16	4		46	\$5,208	LS	\$5,208	\$0	46	0	
Detailed site visits to vet identified routes		24	24		8	24			80	\$9,992	LS	\$9,992	\$0	80	0	
Relative assessment of community impacts	2	8	24		24		4		62	\$9,320	LS	\$9,320	\$0	62	0	
Relative assessment of engineering impacts (excluding modeling activities)	2	12	24		8		4		50	\$7,180	LS	\$7,180	\$0	50	0	
Provide limited SUE Level B at a total of (20) locations*		2	12					\$28,326	14	\$30,156	CC	\$0	\$30,156	0	14	
Provide limited survey services along potential routes**		2	12					\$14,128	14	\$15,958	CC	\$0	\$15,958	0	14	
Provide limited geotechnical investigations at trenchless crossings***		16	8					\$12,810	24	\$16,450	CC	\$0	\$16,450	0	24	
Develop detailed opinions of cost for each route identified		8	24			40	8		80	\$7,800	LS	\$7,800	\$0	80	0	
Assess permitting requirements for proposed main	1	2	8						11	\$1,540	LS	\$1,540	\$0	11	0	
Total	15	132	252	0	60	96	28	\$924	583	\$132,306		\$924	\$69,742	\$62,564	531	52
Ancillary Services to Route Evaluation																
Modeling of proposed route alternatives	2	44							46	\$7,680	LS	\$7,680	\$0	46	0	
Modeling of proposed ATD mains for each route alternative	2	44			4				50	\$8,380	LS	\$8,380	\$0	50	0	
Modeling of existing system to identify possibility to reduce number of railroad crossings	1	18							19	\$3,180	LS	\$3,180	\$0	19	0	
Modeling of existing system to evaluate ability to abandon Ramsuer Street main	1	18							19	\$3,180	LS	\$3,180	\$0	19	0	
Provide direct mail notifications to properties affected by work associated with PER		10		24					34	\$4,290	LS	\$4,290	\$0	34	0	
3rd Party Agency Meetings (17)	13	51	51		24				139	\$21,720	CC	\$0	\$21,720	0	139	
Total	19	185	51	24	28	0	0	\$0	307	\$48,430		\$0	\$21,720	168	139	
Workshops and Deliverables																
Workshops (4)																
Figure preparation		12	32		4				48	\$6,680	LS	\$6,680	\$0	48	0	
Presentation preparation	4	40	60		8				112	\$16,340	LS	\$16,340	\$0	112	0	
Workshop	16	20	20		20	20			96	\$14,020	LS	\$14,020	\$0	96	0	
Draft PER development	8	40	120	16	16	8	8		216	\$29,144	LS	\$29,144	\$0	216	0	
Final PER development	4	20	40	4	8	8	4		88	\$11,904	LS	\$11,904	\$0	88	0	
Total	32	132	272	20	56	36	12	\$1,116	560	\$79,204		\$1,116	\$0	560	0	
Total Hours and Labor Cost	83	539	639	44	162	132	40		1,639	\$289,998		\$205,714	\$84,284	1,448	191	

* SUE effort includes Level B location at 20 sites with 6 utilities, each 200 feet in length
 ** Limited survey services include survey of Level B SUE and right-of-way investigations
 *** Geotechnical effort includes a total of 10 borings, each 20 feet in depth, laboratory services, and an engineering analysis