Pierson-Greenhaven Storm Drainage Improvements

Selected Alternative
(Alternative #1)

November 12, 2013

Map SA-1

Charlotte-Mecklenburg STORM WATER Services

PARSONS BRINCKERHOFF

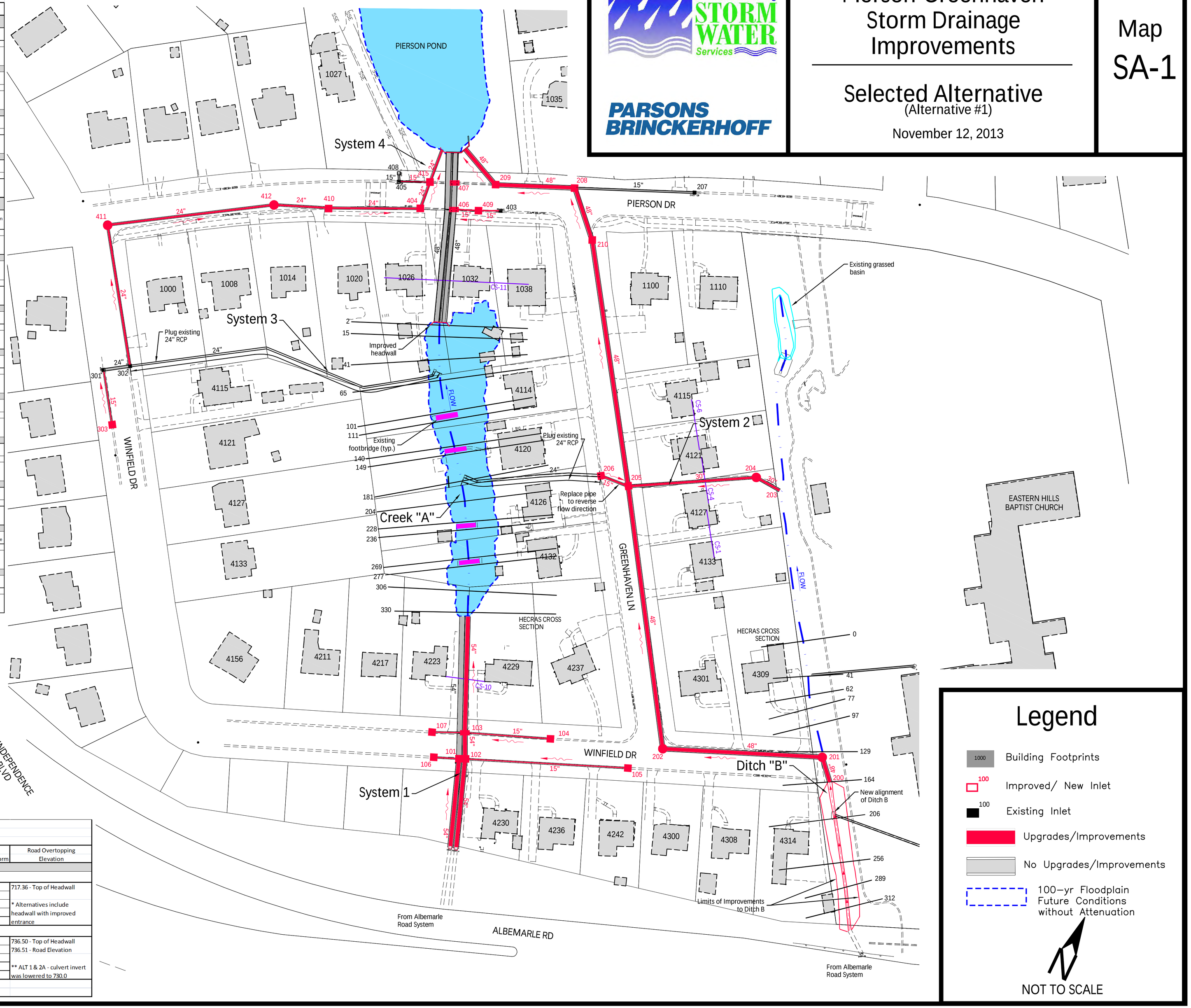
Property Impacts - Structure Flooding - Alternatives Analysis

Location	RS or CS	Alternative	Land Use	Flood Elevation 2	10	25	50	100	Building Elevation		Comments
OPEN SYSTEM - HEC-RAS MODEL											
4114 Greenhaven Ln	RS 306	ECA	Existing	714.76	715.92	716.64	717.80	718.21	FFE	722.97	50 Yr storm water level reaches LAG.
			Future	714.85	716.04	717.38	718.00	718.40	VENT	721.97	
		CDS	Future	715.09	715.80	716.46	716.75	716.79	C.S.	719.95	No structure flooding
		ALT 1	Future	714.72	715.90	715.98	716.05	716.25	HVAC	719.05	
		ALT 2A	Future	715.73	715.90	715.98	716.06	716.33	LAG	717.75	No structure flooding
		ALT 2B	Future	714.73	715.90	715.98	716.06	716.33			
4120 Greenhaven Ln	RS 376	ECA	Existing	715.35	716.16	716.80	717.85	718.39	FFE	725.22	25 Yr storm water level reaches LAG.
			Future	715.40	716.39	717.62	718.20	718.60	VENT	723.80	
		CDS	Future	715.75	716.86	717.24	717.49	717.67	C.S.	719.94	No structure flooding
		ALT 1	Future	715.27	716.11	716.27	716.41	716.60	HVAC	722.82	
		ALT 2A	Future	715.29	716.11	716.28	716.41	716.67	LAG	719.11	No structure flooding
		ALT 2B	Future	715.29	716.11	716.28	716.41	716.67			
4126 Greenhaven Ln	RS 431	ECA	Existing	715.75	716.82	717.29	718.03	718.53	FFE	726.37	Water level does not reach LAG.
			Future	715.96	716.95	718.03	718.56	718.94	VENT	724.32	
		CDS	Future	716.21	717.39	717.75	717.99	718.19	HVAC	723.22	No structure flooding
		ALT 1	Future	715.86	716.83	716.99	717.23	717.45	C.S.	722.59	
		ALT 2A	Future	715.88	716.83	717.01	717.25	717.48	LAG	720.90	No structure flooding
		ALT 2B	Future	715.88	716.83	717.01	717.25	717.48			
4132 Greenhaven Ln	RS 472	ECA	Existing	715.92	717.16	717.72	718.31	718.69	FFE	727.74	Water level does not reach LAG.
			Future	716.08	717.33	718.43	718.92	719.27	VENT	726.30	
		CDS	Future	716.29	717.66	718.05	718.28	718.48	HVAC	725.53	No structure flooding
		ALT 1	Future	716.01	717.19	717.49	717.78	718.01	C.S.	724.85	
		ALT 2A	Future	716.03	717.20	717.51	717.80	718.04	LAG	721.89	No structure flooding
		ALT 2B	Future	716.03	717.20	717.51	717.80	718.04			
CLOSED SYSTEM - CRITICAL SECTIONS											
4115 Greenhaven Ln	CS 6	ECA	Existing	727.07	727.27	727.31	727.33	727.35	FFE	728.56	2 Yr storm water level reaches LAG and crawl space. 25 Yr storm water level reaches HVAC.
									VENT	727.54	
		CDS	Future	Piped	Piped	Piped	Piped	Piped	HVAC	727.30	No structure flooding
		ALT 1	Future	Piped	Piped	Piped	Piped	Piped	C.S.	726.05	
		ALT 2A	Future	Piped	Piped	Piped	Piped	Piped	LAG	725.51	No structure flooding
		ALT 2B	Future	Piped	Piped	Piped	Piped	Piped			
4121 Greenhaven Ln	CS 4	ECA	Existing	728.79	729.00	729.05	729.08	729.11	FFE	729.88	2 Yr storm water level reaches LAG, crawl space, HVAC and vents.
									VENT	728.78	
		CDS	Future	Piped	Piped	Piped	Piped	Piped	HVAC	727.46	No structure flooding
		ALT 1	Future	Piped	Piped	Piped	Piped	Piped	C.S.	727.33	
		ALT 2A	Future	Piped	Piped	Piped	Piped	Piped	LAG	726.61	No structure flooding
		ALT 2B	Future	Piped	Piped	Piped	Piped	Piped			
4127 Greenhaven Ln	CS 1	ECA	Existing	730.17	730.42	730.47	730.50	730.52	FFE	732.08	2 Yr storm water level reaches LAG, crawl space and HVAC.
									VENT	730.95	
		CDS	Future	Piped	Piped	Piped	Piped	Piped	HVAC	729.12	No structure flooding
		ALT 1	Future	Piped	Piped	Piped	Piped	Piped	C.S.	728.50	
		ALT 2A	Future	Piped	Piped	Piped	Piped	Piped	LAG	728.14	No structure flooding
		ALT 2B	Future	Piped	Piped	Piped	Piped	Piped			
4133 Greenhaven Ln	CS 1	ECA	Existing	726.38	726.59	726.62	726.64	726.66	FFE	733.74	No structure flooding
									VENT	732.23	
		CDS	Future	Piped	Piped	Piped	Piped	Piped	HVAC	731.07	No structure flooding
		ALT 1	Future	Piped	Piped	Piped	Piped	Piped	C.S.	730.99	
		ALT 2A	Future	Piped	Piped	Piped	Piped	Piped	LAG	729.96	No structure flooding
		ALT 2B	Future	Piped	Piped	Piped	Piped	Piped			
1026 Pierson Dr	CS-11	ECA	Existing	-	-	-	717.14	717.56	FFE	720.82	100 Yr water level reaches LAG.
									HVAC	718.99	
		CDS	Future	Piped	Piped	Piped	Piped	Piped	VENT	719.27	No structure flooding
		ALT 1	Future	Piped	Piped	Piped	Piped	Piped	C.S.	717.81	
		ALT 2A	Future	Piped	Piped	Piped	Piped	Piped	LAG	717.46	No structure flooding
		ALT 2B	Future	Piped	Piped	Piped	Piped	Piped			
1032 Pierson Dr	CS-11	ECA	Existing	-	-	-	717.14	717.56	FFE	719.48	50 Yr storm water level reaches LAG, HVAC and crawl space.
									HVAC	717.09	
		CDS	Future	Piped	Piped	Piped	Piped	Piped	VENT	718.51	No structure flooding
		ALT 1	Future	Piped	Piped	Piped	Piped	Piped	C.S.	717.00	
		ALT 2A	Future	Piped	Piped	Piped	Piped	Piped	LAG	716.48	No structure flooding
		ALT 2B	Future	Piped	Piped	Piped	Piped	Piped			
1038 Pierson Dr	CS-11	ECA	Existing	-	-	-	717.14	717.56	FFE	720.81	100 Yr storm water level reaches LAG.
									HVAC	718.52	
		CDS	Future	Piped	Piped	Piped	Piped	Piped	VENT	719.87	No structure flooding
		ALT 1	Future	Piped	Piped	Piped	Piped	Piped	C.S.	718.46	
		ALT 2A	Future	Piped	Piped	Piped	Piped	Piped	LAG	717.26	No structure flooding
		ALT 2B	Future	Piped	Piped	Piped	Piped	Piped			
4223 Winfield Dr	CS-10	ECA	Existing	721.39	721.54	721.73	721.83	721.91	FFE	724.33	2 Yr storm water level reaches LAG and HVAC *Crawl space inaccessible
									HVAC	720.93	
		CDS	Future	Piped	Piped	Piped	Piped	Piped	VENT	722.48	No structure flooding
		ALT 1	Future	Piped	Piped	Piped	Piped	Piped	C.S.		
		ALT 2A	Future	Piped	Piped	Piped	Piped	Piped	LAG	720.45	No structure flooding
		ALT 2B	Future	Piped	Piped	Piped	Piped	Piped			
4229 Winfield Dr	CS-10	ECA	Existing	721.39	721.54	721.73	721.83	721.91	FFE	725.31	25 Yr storm water level reaches LAG.
									HVAC	723.61	
		CDS	Future	Piped	Piped	Piped	Piped	Piped	VENT	724.24	No structure flooding
		ALT 1	Future	Piped	Piped	Piped	Piped	Piped	C.S.	722.89	
		ALT 2A	Future	Piped	Piped	Piped	Piped	Piped	LAG	721.64	No structure flooding
		ALT 2B	Future	Piped	Piped	Piped	Piped	Piped			

Potential Roadway/Culvert Street Flooding

Location	Land Use Condition	Bridge/Culvert	Design Storm	Analysis Method	Flood Elevation 2 Yr	10 Yr	25 Yr	50 Yr	100 Yr	HW/D Design Storm	Road Overtopping Elevation
Creek A											
1032 and 1026 Pierson Dr	ECA	48" and 54" RCP	25-YR	HEC-RAS	713.15	715.26	717.17	717.84	718.25	1.52	717.36 - Top of Headwall
	CDS	12' x 4' RCBC			712.49	714.18	714.98	715.66	716.38	1.15	
	ALT 1*	48" and 54" RCP			712.73	714.12	714.77	715.37	716.05	1.15	* Alternatives include headwall with improved entrance
	ALT 2A*	48" and 54" RCP			712.75	714.15	714.78	715.37	716.15	1.15	
	ALT 2B*	48" and 54" RCP			712.75	714.15	714.78	715.37	716.15	1.15	
Ditch B											
4309 and 4314 Winfield Dr	ECA	48" RCP	25-YR	HEC-RAS	734.85	736.48	736.76	736.93	737.05	1.23	736.50 - Top of Headwall
	CDS	2 - 42" RCP			733.15	733.82	735.23	735.64	736.05	1.18	736.51 - Road Elevation
	ALT 1**	48" RCP			731.81	733.06	734.19	735.50	736.25	1.04	
	ALT 2A	48" RCP			731.81	733.06	734.19	735.50	736.25	1.04	** ALT 1 & 2A - culvert invert was lowered to 730.0
	ALT 2B	N/A			-	-	-	-	-	-	

* Shading indicates Street Flooding



Legend

- Building Footprints
- Improved/ New Inlet
- Existing Inlet
- Upgrades/Improvements
- No Upgrades/Improvements
- 100–yr Floodplain Future Conditions without Attenuation

NOT TO SCALE