

APPENDIX B
Pump Station / Force Main Evaluations

Pump Stations

The City has designed and constructed improvements to replace five (5) of the seven (7) major Pump Stations serving the WCTS. Of these major Pump Stations, the City has completed construction of Pump Station 1 (P Street), Pump Station 3 (Massard), and Pump Station 4 (Sunnymede), and is currently constructing Pump Station 2 (Mill Creek) and Pump Station 13 (Zero Street). The City has scheduled design and construction of improvements to Pump Station 5 (Walnut) and Pump Station 6 (Riverfront) as listed in Appendix E2 of this Consent Decree.

In addition, the City replaced Pump Station 19 (Candlestick) in 2001 and completed replacement of the Force Main serving Pump Station 19 in 2014. The City eliminated Pump Station 7 and Pump Station 14 with the construction of Pump Station 10 (Plum) in 2012. The City is currently designing new Pump Stations to replace Pump Station 15 (Hunter's Point), Pump Station 17 (Edgewater) and Pump Station 23 (104th Street), providing for the elimination of Pump Station 16 (Dallas) by constructing a Gravity Sewer Line to divert the flow to Pump Station 16 to Pump Station 23 (104th Street). The City is currently evaluating the condition of Pump Station 8 (Riverlyn) and has scheduled the design of the replacement for Pump Station 8 in 2015. Pump Station 26 (South Field) and the Gravity Sewer Lines which it serves were constructed in 2004. Pump Station 27 (North Pointe) and the Gravity Sewer Lines it serves were constructed in 2007.

For these fifteen (15) Pump Stations within the WCTS ("Group One"), that have been reconstructed, undergoing major reconstruction, scheduled for construction, or constructed since 2001, the City shall complete an evaluation report and may use information and documentation from engineering reports, contract documents, contract specifications, contract submittals and operations and maintenance manuals and other such existing information for a basis for the Pump Station evaluation and analysis.

For the remaining seven (7) Pump Stations within the WCTS ("Group Two"), the City shall complete an evaluation report to determine what repairs or rehabilitation, if any, or if operational and maintenance changes, if any, may be warranted. The evaluation process will develop information and consider a variety of factors to determine condition, capacity, and/or operating performance. Not all considerations are applicable to each pump station, nor does each consideration apply to each Pump Station in the same manner, since each Pump Station is unique. Thus, the improvements selected for each Pump Station will vary. The evaluation of all twenty-two (22) Pump Stations shall include the following:

- a. Determination of the actual firm capacities of each Pump Station by field measurement;
- b. The adequacy of each Pump Station's firm capacity using the criteria of Paragraph 45 d., i, ii and iii of this Consent Decree; and
- c. The ability of maintenance personnel to take corrective actions within the critical response time calculated for each Pump Station.

Force Mains

The City conducted an evaluation of the Force Main from Pump Station 2 (Mill Creek) as documented in a Technical Memorandum dated August 2012. The City shall conduct an evaluation of the remaining Force Mains within its WCTS based upon direct inspection of the Force Main where possible, or if direct inspection is not practical, with such assessment deduced from the condition and performance of Force Mains or water mains constructed of similar pipe materials within the immediate proximity of the route of the Force Main. The Force Main evaluation shall, to the extent practicable, include an assessment of the Force Main's normal operating pressure, maximum anticipated pressures which could occur due to pump shut-down or failure, valve failure, together with past maintenance records and visually inspecting the ground surface over the entire length of the Force Main.

The City shall prepare an inventory listing each Force Main in the WCTS indicating the pipe material(s), age or installation date, diameter, length, special corrosion protection measures, if any, and typical flow rates and operating pressures. The inventory shall include any redundant or stand-by Force Main(s) and indicate the capacity of the redundant Force Main as a percentage of the Pump Station's discharge and the typical operating mode (i.e., emergency standby, wet weather standby, or other mode).

WCTS Pump Station Listing

Project order and completion dates listed in the following WCTS Pump Station Listing, Group One, are estimates only and may change following the time intervals provided by Paragraphs 19, 20, 22 and 24 of the Consent Decree.

WCTS Pump Station Listing										WCTS Force Main Listing		
Station Identifier		Station Age			Station Standby Power			Force Main Evaluation				
Number	Name	Original	Status/Schedule	New (1)	Status	Type	Date (2)	Last	Schedule (3)			
Group One												
One	"P" Street	1966	Replaced	2012	Present	Dual Circuit	2012	2012	CMOM			
Two	Mill Creek	1966	Construction phase	2017	Absent	On-site generator	2017	2012	CMOM			
Three	Massard	1966	Replaced	2003	Absent	Dual Circuit	2018	2003	CMOM			
Four	Sunnymede	1966	Replaced	2011	Present	Dual Circuit	2011	1966	March 31, 2018			
Five	Walnut	1966	Replacement scheduled	2020	Present	On-site generator	2013	1966	March 31, 2018			
Six	Riverfront	1966	Replacement scheduled	2021	Present	On-site generator	2013	1966	March 31, 2018			
Eight	Riverlyn	1968	Replacement scheduled	2017	Present	On-site generator	2013	1990	March 31, 2018			
Ten	Plum	2012	Constructed	2012	Present	On-site generator	2012	2012	CMOM			
Thirteen	Zero Street	1975	Construction phase	2015	Absent	On-site generator	2015	1975	March 31, 2018			
Fifteen	Hunters Point	1973	Final design phase	2016	Absent	On-site generator	2016	1973	March 31, 2018			
Sixteen	Dallas	1973	To be decommissioned	N/A	N/A	Portable	N/A	N/A	N/A			
Seventeen	Edgewater	1973	Final design phase	2016	Absent	On-site generator	2016	1973	March 31, 2018			
Nineteen	Candlestick	1974	Replaced	2001	Present	On-site generator	2013	2014	CMOM			
Twenty-three	104th Street	1980	Final design phase	2016	Absent	On-site generator	2016	1980	March 31, 2018			
Twenty-six	South Field	2004	Constructed	2004	Present	On-site generator	2013	2004	CMOM			
Twenty-seven	North Pointe	2007	Constructed	2007	Present	On-site generator	2007	2007	CMOM			
Group Two												
			Evaluation Report	Date (4)					Evaluation Report			
Nine	South "I" & 4th	1969	March 31, 2018	2026	Present	On-site generator	2013	1969	March 31, 2018			
Eighteen	Ball Road	1973	March 31, 2018	2026	Present	On-site generator	2013	1973	March 31, 2018			
Twenty	Fort Smith Park	1975	March 31, 2018	2026	Present	On-site generator	1975	1968	March 31, 2018			
Twenty-one	Riverbend	1975	March 31, 2018	2026	Present	On-site generator	2013	1975	March 31, 2018			
Twenty-two	Riley Farms	1998	March 31, 2018	2026	Present	On-site generator	2013	1998	March 31, 2018			
Twenty-four	Canterbury	1979	March 31, 2018	2026	Present	On-site generator	2013	1979	March 31, 2018			
Twenty-five	Lakeview Point	1986	March 31, 2018	2026	Present	On-site generator	2013	1986	March 31, 2018			

Notes:

- (1) Year indicates time of completed pump station replacement or scheduled completion of replacement.
- (2) Year indicates the time standby power was provided or when standby power will be operational.
- (3) CMOM indicates assessment to be conducted with continuing maintenance program.
- (4) Year indicates time of completion of Group 2 pump station and force main improvements and remedial measures.