

CITY OF KYLE WASTEWATER HYDRAULIC MODELING
April 2017 Projected Development Update
PROJECT WORK PLAN

This proposed work plan is being presented to the City of Kyle to evaluate the wastewater collection system impact and needs for projected development (see Exhibits A and B). All tasks to be performed by Burgess & Niple (B&N).

Task 1 – Update GIS and SewerGems® Model for All Known Projected Developments

From the data provided for each new development a polygon will be created for each area new development area in the City's GIS. Pipeline projects currently planned, designed or constructed will be updated in the existing GIS including:

- o Moreno Street Wastewater Line (Constructed)
- o Elliott Branch Interceptor (Design)
- o Bunton Creek Interceptor (Design)
- o Southside WW Improvements (Design)
- o Center Street WW Project (Design)
- o Anthem Offsite Wastewater line (Design)
- o Lehman Wastewater Improvements (Design)

Development projections will be evaluated and correlated to development type and city zoning. Future wastewater service, land-use assumptions, L.U.E. densities from the most current and available data (see Exhibits A and B) will be applied.

The City provided current development projections and land-use assumptions as of April 21, 2017 (See Exhibit A).

Projected wastewater flows for new developments based upon LUEs and development type will be generated for dry and wet weather flow conditions. The new development areas and flows will be applied to the existing current SewerGEMS® wastewater model by subcatchments, with model runs performed for 2022 and full build-out scenarios as described in Tasks 2 and 3.

Task 2 – SewerGems® Model Run for 2022 Build-Out Projections

Following the completion of Task 1, dry weather, wet weather and design storm scenario model flows will be generated and model runs performed for 2022 development projections (see Exhibit A). The results from the 2022 development projections model run will be analyzed and compared to the 2016 results. Recommendations for improvements will be developed and presented in Task 4.

Task 3 – SewerGems® Model Run for Full Build-Out Projections

Following the completion of Task 1, dry weather, wet weather and design storm scenario model flows will be generated and model runs performed for full build-out development projections (see Exhibit A). The results from the full build-out development projections model run will be analyzed and compared to the 2016 results. Recommendations for improvements will be developed and presented in Task 4.

Task 4 – Wastewater Hydraulic Model Results and Recommendations

Resultant recommendations from the results of Tasks 2 and 3 will be compiled and CIP recommendations presented in tabular and map format. Wastewater pipelines identified for improvement will be sized based upon existing pipe routes and slopes to accommodate projected flows under non-surcharged conditions. Pipe sizing from model results is for flow conveyance projections in wet weather (not intended for design application), with existing pipeline slopes as included in the model build applied.

Projected costs will be based upon 2016 cost criteria presented in the 2016 Wastewater Hydraulic Model Amendment Report and based upon known information of the site, with assumptions made and stated where necessary. Recommendations for improvements will be based on model results where the established threshold of two feet above the crown for surcharge limit is achieved.

A draft deliverable will be provided to City staff for review and approval. All data and conclusions presented in the draft deliverable will subject to finalization based on comments from City staff. All digital data and hard copy products will be delivered to the City with the final deliverable.

Model results and recommendations are based upon the information provided for the new projected developments and available information on the City of Kyle existing wastewater system. See Exhibits A and B.

Table 1: City of Kyle Wastewater Hydraulic Modeling Update					
Phase	Description of Services	Unit	Quantity	Unit Cost	Cost
Wastewater Hydraulic Modeling April 2017 Projected Development Update					
1	Update GIS and SewerGems Model for All Known Projected Developments	LS	1	\$7,305.00	\$ 7,305.00
2	SewerGems Model Run for 2022 Build-Out Projections	LS	1	\$3,066.00	\$ 3,066.00
3	SewerGems Model Run for 2022 Build-Out Projections	LS	1	\$3,066.00	\$ 3,066.00
4	Wastewater Hydraulic Model Results and Recommendations	LS	1	\$5,190.00	\$ 5,190.00
Total:					\$18,627.00

Exhibit "A"

Table 1.1 – Known Development Properties for City of Kyle Water & Wastewater Systems Flow Projections

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Subdivision	Included in 2015 Model	Units (from Kyle GIS)	Start Date	Projected LUEs ¹ (By 2022)	ADF ² 2022 (MGD)	WWPF ³ 2022 (MGD)	Projected LUEs ¹ (Full Build-Out)	ADF ² Full Build-Out (MGD)	WWPF ³ Full Build-Out (MGD)	Kyle Water Service	Kyle Wastewater Service	Comments
Altus (Hayes Commerce Park)	N	100,000	2018	350	0.09800	N/A	515	0.14420	N/A	Y	Y	LUEs projected based upon 100 GPM limit
Anthem	Y	2200	2017	779	0.21812	0.65	2,060	0.57680	1.73	Y	Y	
Arroyo Ranch	N	120		120	0.03360	0.10	120	0.03360	0.10	Y	Y	
Artec	Y	140	1995	140	0.03920	0.12	150	0.04200	0.13	Y	Y	
Blanco River Ranch	Y	3500	2017	1,026	0.28728	0.86	4,500	1.26000	3.78	Y	Y	500 to be directed to existing system
Blanco RR Retail	Y	50 Acres								Y	Y	
BRI/McCoy	N	8000	2020	500	0.14000	0.42	500	0.14000	0.42	Y	Y	7,500 Directed to South
Brooks R-3-3	N	500	2018	300	0.08400	0.25	500	0.14000	0.42	Y	Y	
Marketplace Hotel/Retail Development	N									Y	Y	
Brooks Retail/Multi-family	N	50 Acres								Y	Y	
Brookside Phase 2	Y	73	2016	220	0.06160	0.18	220	0.06160	0.18	Y	Y	
Creskade Tri Development	N	60 Acres		80			80	0.02240	0.07	Y	Y	
Buntion Creek Remaining Phases	Y	440	2016	440	0.12320	0.37	440	0.12320	0.37	Y	Y	
Center Street Retail	N	18 Acres								Y	Y	
Cool Springs	Y	372	2016	372	0.10416	0.31	372	0.10416	0.31	N	Y	
Cool Springs Adjacent Developments	N						700	0.19600	0.59	Y	Y	
Creskade at Buntion Creek	Y	300	2017	300	0.08400	0.25	300	0.08400	0.25	N	Y	
Creskade Village	Y	280	2016	280	0.07840	0.24	280	0.07840	0.24	Y	Y	
Crosswinds MUD	Y	1750	2016	600	0.16800	0.50	1,750	0.49000	1.47	Y	Y	
Crosswinds/Daisy Area East	N						500	0.14000	0.42	Y	Y	
Cypress Forest	Y	337	2016	247	0.06916	0.21	343	0.09604	0.29	Y	Y	
Daisy Development	N	200 Acres					800	0.22400	0.67	Y	Y	
David/Ried Bird/Quail	N									Y	Y	
Dremer Group (Kyle Ranch)	N	205	2017	205	0.05740	0.17	205	0.05740	0.17	Y	Y	
Fairway Landing Apartments	N	216	2016	200	0.03200	0.10	216	0.03456	0.10	Y	Y	
Hayes Commerce Park	Y	24	2016	20	0.00560	0.02	24	0.00672	0.02	Y	Y	
Hayes Junction Apartments	N	207	2016	207	0.03312	0.10	207	0.03312	0.10	Y	Y	
Sunset Orange	N									Y	Y	
Intermarco/Driskell	N	600	2016	400	0.11200	0.34	600	0.16800	0.50	Y	Y	
Kyle Estates East (Watson) (was Kyle Estate I)	Y	2500	2020	150	0.04200	0.13	1,225	0.34328	1.03	N	Y	
Kyle Estates West (Watson) (was Kyle Estate II)	Y	2600	2020	150	0.04200	0.13	870	0.24360	0.73	Y	Y	
La Salle MUD	Y	10000	2018							Y	Y	Directed to South
La Salle Adjacent Development	N	500	2020	500	0.14000	0.42	500	0.14000	0.42	Y	Y	
Lehman Tract	Y	150	2020	150	0.04200	0.13	150	0.04200	0.13	Y	Y	
Livestock 17	N	108	2019	108	0.03024	0.09	108	0.03024	0.09	Y	Y	
Meadowlands	N	310 septic	2028	310	0.08680	0.26	310	0.08680	0.26	Y	Y	
Moonlight Meadows	N									Y	Y	
Mike's Apartments	N	120 units	2019	120	0.01920	0.06	120	0.01920	0.06	Y	Y	
Nance	N	9000	2022				500	0.14000	0.42	Y	Y	500 to be directed to Old Stage each, remaining to South
Oak on Goforth Apts	Y	204	2016	204	0.03264	0.10	204	0.03264	0.10	Y	Y	
Oaks On Marketplace	N	254	2016	254	0.07112	0.21	254	0.07112	0.21	Y	Y	
Oaks on Marketplace Adjacent Dev. Retail/MF	N		2020							Y	Y	
Quail Meadows (septic)	N	80 septic	2020				80			N	Y	
Pean Woods	N	2600	2018	500	0.14	0.42	2,600	0.7218	2.18	N	Y	
Plum Creek Phase 2	Y	1500	2017	3,065	0.85820	2.57	5,410	1.51480	4.54	Y	Y	
Plum Creek III Apartments (Area)	N	349 units		349	0.0558	0.17	349	0.05584	0.17	Y	Y	
Amberwood Retail	N	11 Acres								Y	Y	
Stagcreek Forest (was Perry Blanton Addition)	Y	235	2018	235	0.06580	0.20	235	0.06580	0.20	Y	Y	
Sunset Hills	Y	210	2016	210	0.05880	0.18	210	0.05880	0.18	N	Y	
Sunrise Dr/Circle												
Sunset Hills Adjacent MF and Retail	N	400	2020	400	0.11200	0.34	400	0.11200	0.34	Y	Y	
Goforth Retail Triangle	N	50 Acres	2020							Y	Y	
The Strand Apartments	Y	160	2016	160	0.02560	0.08	160	0.02560	0.08	Y	Y	
The VUE Apartments	N	180 units	2019	180	0.0288	0.09	180	0.02880	0.09	Y	Y	
Schott Property	N	125 Acres					378	0.06048	0.18	Y	Y	
Trails at Plum Creek Apts	Y	248	2016	248	0.03968	0.12	248	0.03968	0.12	Y	Y	
Twain Creeks	N	400	2016	250	0.07000	0.21	400	0.11200	0.34	N	Y	
Visas at Plum Creek Apts Phase 2	Y	180	2015	180	0.02880	0.09	180	0.02880	0.09	Y	Y	
Sheldon/Tanglewood Multi-family & Retail	N	50 Acres					200	0.03200	0.10	Y	Y	
Woodlands Phases 3-5	N	300	2016	300	0.08400	0.25	300	0.08400	0.25	N	Y	
Totals				14,809			31,254					
				Additions to the previous subdivision development list								
				Changes to previously modeled subdivision developments								
				Subdivision Flow Redirection								
¹ LUE - Living Utility Equivalent												
² ADF - Average Dry Weather Flow												
³ WWPF - Wet Weather Peak Flow												
⁴ Development Projections were updated by the City of Kyle as of April 21, 2017												
												*Multiplier of 3.5 applied to residential LUEs **Multiplier of 2 applied to residential LUEs

Exhibit "B"

Hydraulic Model Boundary Map – Potential Development Areas

