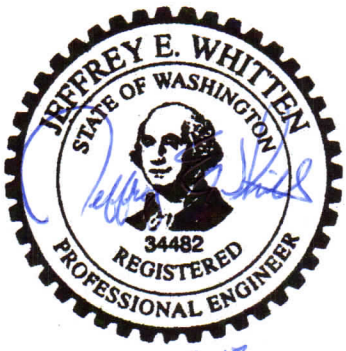
THE WOLFE GROUP, L.L.C.
Land Planning, Consulting, & Civil Engineering

2401 W. Main Street, Suite 210
Battle Ground, WA 98604
(360) 687-2699

"STEPHENS HILLSIDE FARM"

Downstream Sanitary Sewer Capacity Analysis

December 2017



12-18-17

SANITARY SEWER NARRATIVE

The proposed "Stephens Hillside Farm" residential subdivision project comprises approximately 25 acres of developable property and is planned for a total of 85 lots. The project consists of tax parcels 258919-000, 258972-000, 258971-000, 258901-000, & 258922-000. All of these properties lie within sewer drainage basin E as specified on the City of La Center's Sanitary Sewer Collection System Map-2015. The proposed point of connection to the existing city sewer system is at the intersection of Aspen Avenue and E. 18th Street (Sanitary MH E-77). A gravity mainline spreadsheet has been graciously provided by the City of La Center that greatly aides in the analysis of the sanitary sewer system. With this spreadsheet, equivalent residential units (ERU's) can be added at any particular point in the sewer system. The spreadsheet is designed to then carry these added URU's down through the sewer system and compute the estimated flows as well as the flow capacities of each leg of the system. In the spreadsheet analysis, the calculation of the used and remaining pipe capacity is based on each pipe flowing only half full. Furthermore, the estimated flows are peaked with the appropriate peaking factor based on the population of each contributing sewer basin.

The purpose of this study is to analyze the effects that the proposed project will have on the existing sanitary sewer infrastructure downstream of the project. We have also been asked to analyze the effects of possible future upstream development adjacent to the property that may flow through the "Stephens Hillside Farm" project. From studying the surrounding topography, it is estimated that approximately 20 acres lying north of the project site has the potential to sewer to and through the "Stephens Hillside Farm" project. We have conservatively estimated that these 20 acres could contain approximately 70 additional lots in the future. We have also estimated that future development of tax parcel 258906-000 at the northwest corner of the project site could add approximately 8 lots in the future. Therefore, our analysis will not only look at the effects of adding the project's 85 lots but will also examine the downstream effects from adding a possible 78 lots adjacent to the project. The study specifically examines the entire existing downstream sanitary sewer system which comprises Sanitary Sewer Basin E. The downstream sanitary sewer study results are presented on the following page while the relevant spreadsheet printouts are presented in the appendix.

DOWNSTREAM ANALYSIS RESULTS

With the addition of the projected 163 lots (85 lots from "Stephens Hillside Farm + 70 lots from the 20 acres north + 8 lots from parcel 258906-000), the majority of the downstream sanitary sewer legs (pipes) within Basin E are shown to have used from 26%-73% of the "half-full" capacity. There are 7 pipe segments that exceed 73% of "half-full" capacity. These pipe segments that exceed 73% used capacity with the addition of 163 lots are tabulated below. Again, the calculated capacity used is based on the pipe capacity being only half full with the peak flowrates being conveyed.

Pipe Segment:	Upstream MH:	Downstream MH:	Existing Capacity:	Capacity Used w/ Additional 85 lots:	Capacity Used w/ Additional 163 lots:
la-319	E-77	E-62	36.4%	64.0%	88.3%
la-288	E-48	E-47	52.8%	73.0%	91.1%
la-274	E-40	E-39	45.9%	61.3%	75.1%
la-270	E-32	E-31	59.4%	77.1%	92.9%
la-269	E-31	E-25	56.2%	73.0%	88.0%
la-70	E-24	E-23	56.1%	69.3%	81.2%
la-71	E-23	E-21	52.3%	64.5%	75.5%

As can be seen from the table above, the "Stephens Hillside Farm" project does not increase the used capacity of any of the downstream pipe segments above 77.1% (la-270). When additional future lots surrounding the project are added to the project's flows, the increase in flow brings the used capacity of pipe segment la-270 to 92.9%. In either case, there is remaining capacity in the entire downstream Basin E gravity sewer system based on system capacity of only "half-full".

To summarize, the downstream sanitary sewer gravity pipe system (Basin E) is presently operating below its capacity and will continue to do so with the addition of the 85 lots proposed with the "Stephens Hillside Farm" residential subdivision project. Furthermore, even with the addition of 73 potential lots adjacent to the "Stephens Hillside Farm" project, capacity within the downstream sewer system is still not reached. Again, the system capacity is based on the pipe segments operating at only half full.

APPENDIX

Flow Capacity Spreadsheet Printouts
Basin Map
Surrounding Topography Map

SANITARY SEWER COLLECTION SYSTEM
EXISTING FLOWS AND CAPACITIES

MAINLINE E

SEGMENT ID	UP MH	DOWN MH	CONTRIBTING ERU	TOTAL ERU	TOTAL PERSONS PER 1000	PEAK FACTOR	FLOW (GPD)	FLOW (MGD)	PEAK FLOW (MGD)	PIPE LENGTH FEET	PIPE DIAMETER INCHES	HYDRALIC RADIUS FT	I.E. UP FT	I.E. DOWN FT	SLOPE FT/FT	MANNIN G'S N	VELOCITY FPS	PIPE AREA SF	CAPACITY CFS	CAPACITY 50% FULL MGD	CAPACITY AVAILABLE MGD	CAPACITY USED %
la-20	E-1	A-1	11	678	1.831	3.6	146448	0.1464	0.5295	125.00	18	0.375	59.2	55.49	0.030	0.013	10.27	1.77	18.17	5.87	5.34	9.0
la-77	E-5	E-101	122	667	1.801	3.6	144072	0.1441	0.5216	237.00	18	0.375	71.66	59.2	0.053	0.013	13.67	1.77	24.18	7.81	7.29	6.7
la-76	E-7	E-5	149	545	1.472	3.7	117720	0.1177	0.4339	256.00	18	0.375	90.49	71.66	0.074	0.013	16.16	1.77	28.60	9.24	8.81	4.7
la-12	E-8	E-7	4	15	0.041	4.3	3240	0.0032	0.0140	295.00	8	0.167	97.01	90.49	0.022	0.013	5.16	0.35	1.80	0.58	0.57	2.4
la-11	E-9	E-8	6	11	0.030	4.4	2376	0.0024	0.0103	245.00	8	0.167	108.28	97.01	0.046	0.013	7.44	0.35	2.60	0.84	0.83	1.2
la-10	E-10	E-9	5	5	0.014	4.4	1080	0.0011	0.0048	240.00	8	0.167	125.08	108.28	0.070	0.013	9.18	0.35	3.21	1.04	1.03	0.5
la-75	E-12	E-7	9	381	1.029	3.8	82296	0.0823	0.3121	224.16	8	0.167	103.94	90.49	0.060	0.013	8.50	0.35	2.97	0.96	0.65	32.5
la-74	E-14	E-12	23	372	1.004	3.8	80352	0.0804	0.3052	262.02	8	0.167	120	103.94	0.061	0.013	8.59	0.35	3.00	0.97	0.67	31.4
la-73	E-20	E-14	4	349	0.942	3.8	75384	0.0754	0.2877	338.36	8	0.167	143.45	120	0.069	0.013	9.14	0.35	3.19	1.03	0.74	27.9
la-72	E-21	E-20	12	345	0.932	3.8	74520	0.0745	0.2846	201.48	8	0.167	152.48	143.45	0.045	0.013	7.35	0.35	2.57	0.83	0.55	34.3
la-71	E-23	E-21	1	333	0.899	3.8	71928	0.0719	0.2754	205.47	8	0.167	156.18	152.47	0.018	0.013	4.66	0.35	1.63	0.53	0.25	52.3
la-70	E-24	E-23	2	332	0.896	3.8	71712	0.0717	0.2747	184.84	8	0.167	159.06	156.18	0.016	0.013	4.33	0.35	1.51	0.49	0.21	56.1
la-69	E-25	E-24	67	330	0.891	3.8	71280	0.0713	0.2731	117.44	8	0.167	163.18	159.06	0.035	0.013	6.50	0.35	2.27	0.73	0.46	37.2
la-269	E-31	E-25	0	263	0.710	3.9	56808	0.0568	0.2210	196.06	8	0.167	165.98	164.01	0.010	0.013	3.48	0.35	1.22	0.39	0.17	56.2
la-270	E-32	E-31	1	263	0.710	3.9	56808	0.0568	0.2210	207.36	8	0.167	168.05	166.18	0.009	0.013	3.30	0.35	1.15	0.37	0.15	59.4
la-271	E-33	E-32	1	262	0.707	3.9	56592	0.0566	0.2203	42.83	8	0.167	169.05	168.4	0.015	0.013	4.28	0.35	1.49	0.48	0.26	45.6
la-272	E-34	E-33	24	261	0.705	3.9	56376	0.0564	0.2195	102.78	8	0.167	170.63	169.14	0.014	0.013	4.18	0.35	1.46	0.47	0.25	46.5
la-273	E-39	E-34	3	237	0.640	3.9	51192	0.0512	0.2005	158.66	8	0.167	173.22	170.78	0.015	0.013	4.30	0.35	1.50	0.49	0.29	41.2
la-274	E-40	E-39	3	234	0.632	3.9	50544	0.0505	0.1981	103.19	8	0.167	174.61	173.36	0.012	0.013	3.82	0.35	1.34	0.43	0.23	45.9
la-275	E-41	E-40	2	231	0.624	3.9	49896	0.0499	0.1957	227.18	8	0.167	197.96	174.75	0.102	0.013	11.10	0.35	3.88	1.25	1.06	15.6
la-276	E-42	E-41	3	229	0.618	3.9	49464	0.0495	0.1941	295.38	8	0.167	221.22	198.08	0.078	0.013	9.72	0.35	3.40	1.10	0.90	17.7
la-277	E-43	E-42	4	226	0.610	3.9	48816	0.0488	0.1918	295.2	10	0.208	222.67	221.43	0.004	0.013	2.61	0.55	1.43	0.46	0.27	41.6
la-278	E-44	E-43	12	222	0.599	3.9	47952	0.0480	0.1886	312.13	10	0.208	224.24	222.28	0.006	0.013	3.19	0.55	1.74	0.56	0.37	33.5
la-287	E-47	E-44	4	210	0.567	3.9	45360	0.0454	0.1790	177.13	10	0.208	225.12	224.24	0.005	0.013	2.84	0.55	1.55	0.50	0.32	35.7
la-288	E-48	E-47	1	206	0.556	3.9	44496	0.0445	0.1758	105	10	0.208	225.61	225.38	0.002	0.013	1.89	0.55	1.03	0.33	0.16	52.8
la-289	E-49	E-48	1	205	0.554	4.0	44280	0.0443	0.1750	300	10	0.208	227.43	225.79	0.005	0.013	2.98	0.55	1.63	0.53	0.35	33.3
la-290	E-50	E-49	11	204	0.551	4.0	44064	0.0441	0.1742	110	10	0.208	228.21	227.74	0.004	0.013	2.63	0.55	1.44	0.46	0.29	37.5
la-293	E-53	E-50	2	193	0.521	4.0	41688	0.0417	0.1653	125	10	0.208	228.73	228.28	0.004	0.013	2.42	0.55	1.32	0.43	0.26	38.8
la-294	E-54	E-53	29	191	0.516	4.0	41256	0.0413	0.1637	181	10	0.208	229.45	228.8	0.004	0.013	2.41	0.55	1.32	0.43	0.26	38.4
la-302	E-60	E-54	0	162	0.437	4.0	34992	0.0350	0.1401	178	10	0.208	230.51	229.71	0.004	0.013	2.70	0.55	1.47	0.48	0.34	29.4
la-303	E-61	E-60	0	162	0.437	4.0	34992	0.0350	0.1401	385	10	0.208	232.41	230.6	0.005	0.013	2.76	0.55	1.51	0.49	0.35	28.7
la-304	E-62	E-61	57	162	0.437	4.0	34992	0.0350	0.1401	75	10	0.208	233.65	232.45	0.016	0.013	5.10	0.55	2.78	0.90	0.76	15.6
la-319	E-77	E-62	0	105	0.284	4.1	22680	0.0227	0.0927	192	8	0.167	234.09	233.28	0.004	0.013	2.25	0.35	0.79	0.25	0.16	36.4

SANITARY SEWER COLLECTION SYSTEM
[redacted] FLOWS AND CAPACITIES
WITH 85 LOTS ADDED

MAINLINE E

SEGMENT ID	UP MH	DOWN MH	CONTRIBTING ERU	TOTAL ERU	TOTAL PERSONS PER 1000	PEAK FACTOR	FLOW (GPD)	FLOW (MGD)	PEAK FLOW (MGD)	PIPE LENGTH FEET	PIPE DIAMETER INCHES	HYDRALIC RADIUS FT	I.E. UP FT	I.E. DOWN FT	SLOPE FT/FT	MANNIN G'S N	VELOCITY FPS	PIPE AREA SF	CAPACITY CFS	CAPACITY 50% FULL MGD	CAPACITY AVAILABLE MGD	CAPACITY USED %
la-20	E-1	A-1	11	763	2.060	3.6	164808	0.1648	0.5893	125.00	18	0.375	59.2	55.49	0.030	0.013	10.27	1.77	18.17	5.87	5.28	10.0
la-77	E-5	E-101	122	752	2.030	3.6	162432	0.1624	0.5816	237.00	18	0.375	71.66	59.2	0.053	0.013	13.67	1.77	24.18	7.81	7.23	7.4
la-76	E-7	E-5	149	630	1.701	3.6	136080	0.1361	0.4953	256.00	18	0.375	90.49	71.66	0.074	0.013	16.16	1.77	28.60	9.24	8.75	5.4
la-12	E-8	E-7	4	15	0.041	4.3	3240	0.0032	0.0140	295.00	8	0.167	97.01	90.49	0.022	0.013	5.16	0.35	1.80	0.58	0.57	2.4
la-11	E-9	E-8	6	11	0.030	4.4	2376	0.0024	0.0103	245.00	8	0.167	108.28	97.01	0.046	0.013	7.44	0.35	2.60	0.84	0.83	1.2
la-10	E-10	E-9	5	5	0.014	4.4	1080	0.0011	0.0048	240.00	8	0.167	125.08	108.28	0.070	0.013	9.18	0.35	3.21	1.04	1.03	0.5
la-75	E-12	E-7	9	466	1.258	3.7	100656	0.1007	0.3758	224.16	8	0.167	103.94	90.49	0.060	0.013	8.50	0.35	2.97	0.96	0.58	39.1
la-74	E-14	E-12	23	457	1.234	3.7	98712	0.0987	0.3691	262.02	8	0.167	120	103.94	0.061	0.013	8.59	0.35	3.00	0.97	0.60	38.0
la-73	E-20	E-14	4	434	1.172	3.8	93744	0.0937	0.3520	338.36	8	0.167	143.45	120	0.069	0.013	9.14	0.35	3.19	1.03	0.68	34.1
la-72	E-21	E-20	12	430	1.161	3.8	92880	0.0929	0.3490	201.48	8	0.167	152.48	143.45	0.045	0.013	7.35	0.35	2.57	0.83	0.48	42.0
la-71	E-23	E-21	1	418	1.129	3.8	90288	0.0903	0.3400	205.47	8	0.167	156.18	152.47	0.018	0.013	4.66	0.35	1.63	0.53	0.19	64.5
la-70	E-24	E-23	2	417	1.126	3.8	90072	0.0901	0.3392	184.84	8	0.167	159.06	156.18	0.016	0.013	4.33	0.35	1.51	0.49	0.15	69.3
la-69	E-25	E-24	67	415	1.121	3.8	89640	0.0896	0.3377	117.44	8	0.167	163.18	159.06	0.035	0.013	6.50	0.35	2.27	0.73	0.40	46.0
la-269	E-31	E-25	0	348	0.940	3.8	75168	0.0752	0.2869	196.06	8	0.167	165.98	164.01	0.010	0.013	3.48	0.35	1.22	0.39	0.11	73.0
la-270	E-32	E-31	1	348	0.940	3.8	75168	0.0752	0.2869	207.36	8	0.167	168.05	166.18	0.009	0.013	3.30	0.35	1.15	0.37	0.09	77.1
la-271	E-33	E-32	1	347	0.937	3.8	74952	0.0750	0.2862	42.83	8	0.167	169.05	168.4	0.015	0.013	4.28	0.35	1.49	0.48	0.20	59.2
la-272	E-34	E-33	24	346	0.934	3.8	74736	0.0747	0.2854	102.78	8	0.167	170.63	169.14	0.014	0.013	4.18	0.35	1.46	0.47	0.19	60.5
la-273	E-39	E-34	3	322	0.869	3.8	69552	0.0696	0.2670	158.66	8	0.167	173.22	170.78	0.015	0.013	4.30	0.35	1.50	0.49	0.22	54.9
la-274	E-40	E-39	3	319	0.861	3.8	68904	0.0689	0.2647	103.19	8	0.167	174.61	173.36	0.012	0.013	3.82	0.35	1.34	0.43	0.17	61.3
la-275	E-41	E-40	2	316	0.853	3.8	68256	0.0683	0.2623	227.18	8	0.167	197.96	174.75	0.102	0.013	11.10	0.35	3.88	1.25	0.99	20.9
la-276	E-42	E-41	3	314	0.848	3.8	67824	0.0678	0.2608	295.38	8	0.167	221.22	198.08	0.078	0.013	9.72	0.35	3.40	1.10	0.84	23.8
la-277	E-43	E-42	4	311	0.840	3.8	67176	0.0672	0.2585	295.2	10	0.208	222.67	221.43	0.004	0.013	2.61	0.55	1.43	0.46	0.20	56.1
la-278	E-44	E-43	12	307	0.829	3.9	66312	0.0663	0.2554	312.13	10	0.208	224.24	222.28	0.006	0.013	3.19	0.55	1.74	0.56	0.31	45.3
la-287	E-47	E-44	4	295	0.797	3.9	63720	0.0637	0.2461	177.13	10	0.208	225.12	224.24	0.005	0.013	2.84	0.55	1.55	0.50	0.26	49.1
la-288	E-48	E-47	1	291	0.786	3.9	62856	0.0629	0.2429	105	10	0.208	225.61	225.38	0.002	0.013	1.89	0.55	1.03	0.33	0.09	73.0
la-289	E-49	E-48	1	290	0.783	3.9	62640	0.0626	0.2422	300	10	0.208	227.43	225.79	0.005	0.013	2.98	0.55	1.63	0.53	0.28	46.1
la-290	E-50	E-49	11	289	0.780	3.9	62424	0.0624	0.2414	110	10	0.208	228.21	227.74	0.004	0.013	2.63	0.55	1.44	0.46	0.22	51.9
la-293	E-53	E-50	2	278	0.751	3.9	60048	0.0600	0.2328	125	10	0.208	228.73	228.28	0.004	0.013	2.42	0.55	1.32	0.43	0.19	54.6
la-294	E-54	E-53	29	276	0.745	3.9	59616	0.0596	0.2312	181	10	0.208	229.45	228.8	0.004	0.013	2.41	0.55	1.32	0.43	0.19	54.3
la-302	E-60	E-54	0	247	0.667	3.9	53352	0.0534	0.2084	178	10	0.208	230.51	229.71	0.004	0.013	2.70	0.55	1.47	0.48	0.27	43.7
la-303	E-61	E-60	0	247	0.667	3.9	53352	0.0534	0.2084	385	10	0.208	232.41	230.6	0.005	0.013	2.76	0.55	1.51	0.49	0.28	42.8
la-304	E-62	E-61	57	247	0.667	3.9	53352	0.0534	0.2084	75	10	0.208	233.65	232.45	0.016	0.013	5.10	0.55	2.78	0.90	0.69	23.2
la-319	E-77	E-62	85	190	0.513	4.0	41040	0.0410	0.1629	192	8	0.167	234.09	233.28	0.004	0.013	2.25	0.35	0.79	0.25	0.09	64.0

SANITARY SEWER COLLECTION SYSTEM

[redacted] FLOWS AND CAPACITIES

WITH 163 LOTS ADDED

MAINLINE E

SEGMENT ID	UP MH	DOWN MH	CONTRIBTING ERU	TOTAL ERU	TOTAL PERSONS PER 1000	PEAK FACTOR	FLOW (GPD)	FLOW (MGD)	PEAK FLOW (MGD)	PIPE LENGTH FEET	PIPE DIAMETER INCHES	HYDRALIC RADIUS FT	I.E. UP FT	I.E. DOWN FT	SLOPE FT/FT	MANNING'S N	VELOCITY FPS	PIPE AREA SF	CAPACITY CFS	CAPACITY 50% FULL MGD	CAPACITY AVAILABLE MGD	CAPACITY USED %
la-20	E-1	A-1	11	841	2.271	3.5	181656	0.1817	0.6435	125.00	18	0.375	59.2	55.49	0.030	0.013	10.27	1.77	18.17	5.87	5.23	11.0
la-77	E-5	E-101	122	830	2.241	3.5	179280	0.1793	0.6359	237.00	18	0.375	71.66	59.2	0.053	0.013	13.67	1.77	24.18	7.81	7.18	8.1
la-76	E-7	E-5	149	708	1.912	3.6	152928	0.1529	0.5507	256.00	18	0.375	90.49	71.66	0.074	0.013	16.16	1.77	28.60	9.24	8.69	6.0
la-12	E-8	E-7	4	15	0.041	4.3	3240	0.0032	0.0140	295.00	8	0.167	97.01	90.49	0.022	0.013	5.16	0.35	1.80	0.58	0.57	2.4
la-11	E-9	E-8	6	11	0.030	4.4	2376	0.0024	0.0103	245.00	8	0.167	108.28	97.01	0.046	0.013	7.44	0.35	2.60	0.84	0.83	1.2
la-10	E-10	E-9	5	5	0.014	4.4	1080	0.0011	0.0048	240.00	8	0.167	125.08	108.28	0.070	0.013	9.18	0.35	3.21	1.04	1.03	0.5
la-75	E-12	E-7	9	544	1.469	3.7	117504	0.1175	0.4331	224.16	8	0.167	103.94	90.49	0.060	0.013	8.50	0.35	2.97	0.96	0.53	45.1
la-74	E-14	E-12	23	535	1.445	3.7	115560	0.1156	0.4266	262.02	8	0.167	120	103.94	0.061	0.013	8.59	0.35	3.00	0.97	0.54	43.9
la-73	E-20	E-14	4	512	1.382	3.7	110592	0.1106	0.4097	338.36	8	0.167	143.45	120	0.069	0.013	9.14	0.35	3.19	1.03	0.62	39.7
la-72	E-21	E-20	12	508	1.372	3.7	109728	0.1097	0.4068	201.48	8	0.167	152.48	143.45	0.045	0.013	7.35	0.35	2.57	0.83	0.42	49.0
la-71	E-23	E-21	1	496	1.339	3.7	107136	0.1071	0.3980	205.47	8	0.167	156.18	152.47	0.018	0.013	4.66	0.35	1.63	0.53	0.13	75.5
la-70	E-24	E-23	2	495	1.337	3.7	106920	0.1069	0.3972	184.84	8	0.167	159.06	156.18	0.016	0.013	4.33	0.35	1.51	0.49	0.09	81.2
la-69	E-25	E-24	67	493	1.331	3.7	106488	0.1065	0.3958	117.44	8	0.167	163.18	159.06	0.035	0.013	6.50	0.35	2.27	0.73	0.34	53.9
la-269	E-31	E-25	0	426	1.150	3.8	92016	0.0920	0.3460	196.06	8	0.167	165.98	164.01	0.010	0.013	3.48	0.35	1.22	0.39	0.05	88.0
la-270	E-32	E-31	1	426	1.150	3.8	92016	0.0920	0.3460	207.36	8	0.167	168.05	166.18	0.009	0.013	3.30	0.35	1.15	0.37	0.03	92.9
la-271	E-33	E-32	1	425	1.148	3.8	91800	0.0918	0.3452	42.83	8	0.167	169.05	168.4	0.015	0.013	4.28	0.35	1.49	0.48	0.14	71.5
la-272	E-34	E-33	24	424	1.145	3.8	91584	0.0916	0.3445	102.78	8	0.167	170.63	169.14	0.014	0.013	4.18	0.35	1.46	0.47	0.13	73.0
la-273	E-39	E-34	3	400	1.080	3.8	86400	0.0864	0.3264	158.66	8	0.167	173.22	170.78	0.015	0.013	4.30	0.35	1.50	0.49	0.16	67.1
la-274	E-40	E-39	3	397	1.072	3.8	85752	0.0858	0.3242	103.19	8	0.167	174.61	173.36	0.012	0.013	3.82	0.35	1.34	0.43	0.11	75.1
la-275	E-41	E-40	2	394	1.064	3.8	85104	0.0851	0.3219	227.18	8	0.167	197.96	174.75	0.102	0.013	11.10	0.35	3.88	1.25	0.93	25.7
la-276	E-42	E-41	3	392	1.058	3.8	84672	0.0847	0.3204	295.38	8	0.167	221.22	198.08	0.078	0.013	9.72	0.35	3.40	1.10	0.78	29.2
la-277	E-43	E-42	4	389	1.050	3.8	84024	0.0840	0.3181	295.2	10	0.208	222.67	221.43	0.004	0.013	2.61	0.55	1.43	0.46	0.14	69.0
la-278	E-44	E-43	12	385	1.040	3.8	83160	0.0832	0.3151	312.13	10	0.208	224.24	222.28	0.006	0.013	3.19	0.55	1.74	0.56	0.25	55.9
la-287	E-47	E-44	4	373	1.007	3.8	80568	0.0806	0.3060	177.13	10	0.208	225.12	224.24	0.005	0.013	2.84	0.55	1.55	0.50	0.20	61.1
la-288	E-48	E-47	1	369	0.996	3.8	79704	0.0797	0.3030	105	10	0.208	225.61	225.38	0.002	0.013	1.89	0.55	1.03	0.33	0.03	91.1
la-289	E-49	E-48	1	368	0.994	3.8	79488	0.0795	0.3022	300	10	0.208	227.43	225.79	0.005	0.013	2.98	0.55	1.63	0.53	0.22	57.5
la-290	E-50	E-49	11	367	0.991	3.8	79272	0.0793	0.3014	110	10	0.208	228.21	227.74	0.004	0.013	2.63	0.55	1.44	0.46	0.16	64.9
la-293	E-53	E-50	2	356	0.961	3.8	76896	0.0769	0.2931	125	10	0.208	228.73	228.28	0.004	0.013	2.42	0.55	1.32	0.43	0.13	68.7
la-294	E-54	E-53	29	354	0.956	3.8	76464	0.0765	0.2915	181	10	0.208	229.45	228.8	0.004	0.013	2.41	0.55	1.32	0.43	0.13	68.4
la-302	E-60	E-54	0	325	0.878	3.8	70200	0.0702	0.2693	178	10	0.208	230.51	229.71	0.004	0.013	2.70	0.55	1.47	0.48	0.21	56.5
la-303	E-61	E-60	0	325	0.878	3.8	70200	0.0702	0.2693	385	10	0.208	232.41	230.6	0.005	0.013	2.76	0.55	1.51	0.49	0.22	55.2
la-304	E-62	E-61	57	325	0.878	3.8	70200	0.0702	0.2693	75	10	0.208	233.65	232.45	0.016	0.013	5.10	0.55	2.78	0.90	0.63	29.9
la-319	E-77	E-62	163	268	0.724	3.9	57888	0.0579	0.2250	192	8	0.167	234.09	233.28	0.004	0.013	2.25	0.35	0.79	0.25	0.03	88.3

"STEPHENS HILLSIDE FARM"

WETLANDS AREA

SOUTHVIEW WETLANDS AREA

HERITAGE PARK

LEGEND

BASIN	PIPE-MH	BOUNDARY
BASIN A		
BASIN B		
BASIN C		
BASIN D		
BASIN E		
BASIN F		

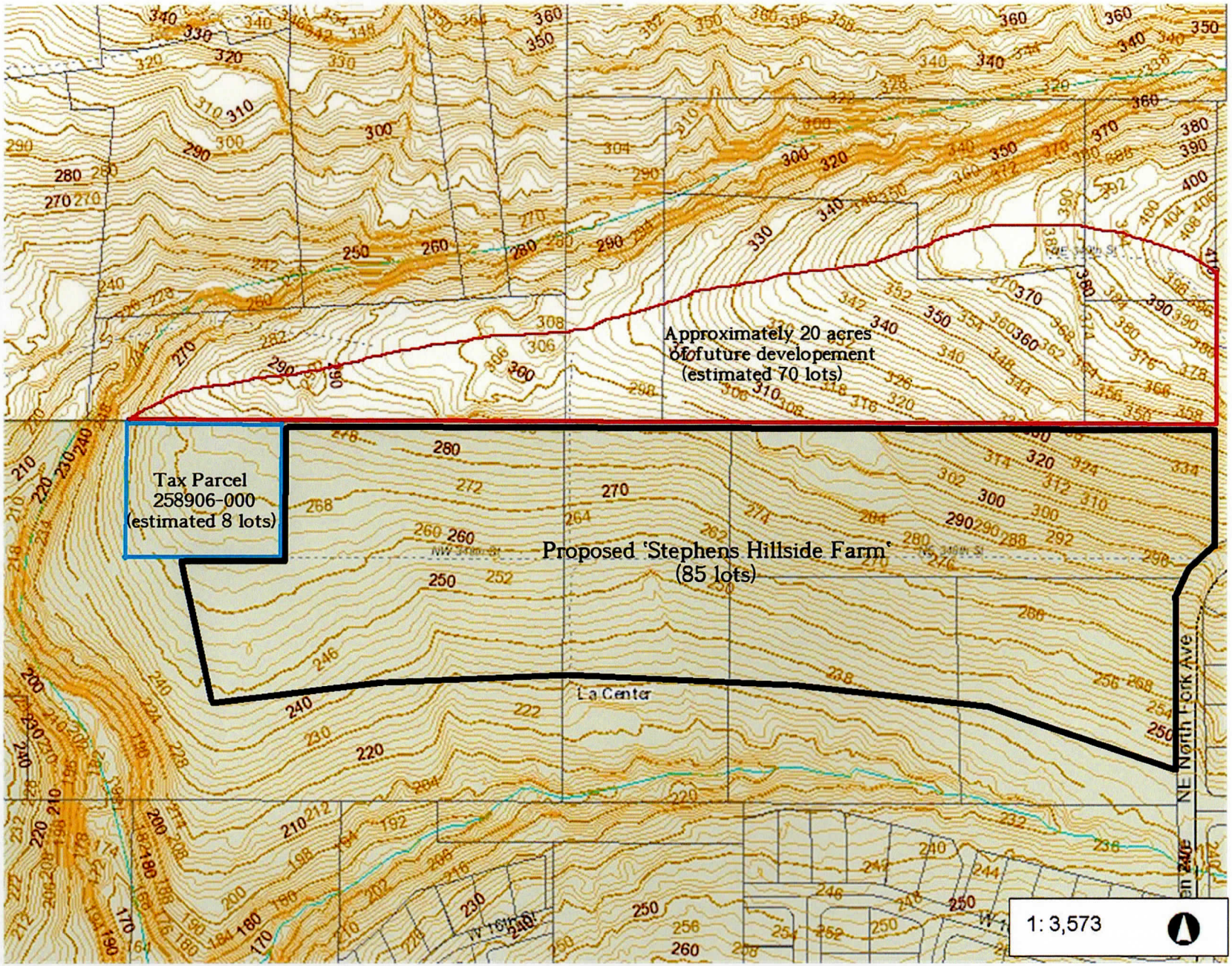
HIGHLIGHTED MAIN LINED IN 2011

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED

SIZE	FSCM NO.	DWG NO.	REV
SCALE		SHEET	

Surrounding Topography



Legend

- Taxlots
- Contour Lines - 2 ft
- Contour Lines - 10 ft
- Cities Boundaries
- Urban Growth Boundaries

Notes:

595.5 0 297.76 595.5Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov