
EXHIBIT C. UPDATE OF I&I ANALYSIS

2018 Sewer System Inflow & Infiltration Analysis

Summary to File

11/13/2019

By: Kristin Hemenway, P.E., Construction Engineer

Executive Summary:

While information gathered for the District's previous Sewer Comp Plans has indicated that the District's I&I issues are within the EPA's limits, the District recognizes that I&I is an ongoing, costly issue and the District continues to search for and repair sources of I&I. Since the District pays to treat each gallon of wastewater it sends to the City of Bellingham's wastewater treatment plant, the District is using I&I flow estimates to calculate the cost of the issue. The District estimates that treating I&I cost approximately \$200,000 in 2018 and I&I accounts annually for roughly 30% of the District's wastewater volume. If the current I&I rate sustains over 5 years, this would cost the District an estimated \$1,000,000.

With system-wide smoke testing complete, as well as ongoing video inspection a typical part of the District's I&I evaluation efforts during the wet season, the District continues to look for I&I but is now focusing efforts to locate I&I within sewer basins that are costing the District the most money.

The District's Systematic Approach Evaluating the Cost of I&I:

The District has implemented a systematic approach to locate, identify and repair sources of I&I. The District is utilizing the five wastewater flowmeters located at collection points to the City of Bellingham, where the wastewater is then treated by the City at their wastewater treatment plant. This flowmeter data, in conjunction with system SCADA data, is used to "back into" finding the sources of I&I. The system SCADA data for each pump station is exported to iHistorian to determine actual pump run times and flowmeter information. These values are calculated within Excel spreadsheets for each basin, looking at daily and monthly flows for a complete year. The final numbers provide an estimation of wastewater flows throughout the District so staff can detect prominent I&I areas.

Once these I&I flows are estimated for each area we assign each area a cost that is calculated at the unit cost paid to the City of Bellingham for wastewater treatment. In 2018, this cost was \$0.002248/gallon. The 2019 rate is \$0.002318/gal. The 2020 rate will increase per the CPI and the Interlocal Agreement between the District and the City of Bellingham.

Table C.1, attached, summarizes the estimated I&I throughout the District's system in 2018. This table is grouped into areas, North Shore and South Shore. The South Shore is further divided into basins that flow to the different City of Bellingham flowmeters (Cable Street, Lakeway, Euclid and Millwheel). As shown on "line pp" of Table C.1, the District annually conveys an estimated 88,394,126 gallons of wastewater that is estimated I&I, at an estimated cost of \$198,710. Understanding the high cost of I&I helps motivate I&I evaluation efforts and puts repair project costs in perspective.

A breakdown of I&I estimated through each flowmeter is summarized in the following Table:

Table C.2 – Summary of Estimated I&I (Gallons) at District Flowmeter Collection Points to the City

Location	Estimated I&I (Gal)	Estimated Cost of I&I
North Shore Flowmeter	8,154,373	\$18,331
Cable St. Flowmeter	31,955,553	\$71,836
Lakeway Flowmeter	42,004,060	\$94,425
Euclid Flowmeter	2,695,625	\$6,060
Millwheel Flowmeter	3,584,515	\$8,058
Total	88,394,126	\$198,710

This information in Table C.1 was further analyzed using pump station run times to locate I&I closer to its source. When reviewing the data it is important to recognize how flows move through the District's system. Some pump stations pump in series. For example, any I&I that is into the Tomb Pump Station gravity basin will fully pass through Marina, North Point and Cable Street pump stations. Similarly Flat Car sewage is fully pumped again through Beaver Pump Station. This type of flow pathway not only adds wear on equipment and consumes additional power and labor when treating I&I but it also requires careful evaluation of the data.

As you can see from Table C.1, the sewer basins with the highest estimated I&I issues are:

- 1) Flat Car gravity basin - estimated 2018 cost was \$28,371 (Table C.1 line gg)
- 2) Cable Street gravity basin - estimated 2018 cost was \$26,670 (Table C.1 line u)
- 3) Sudden Valley Pump Station gravity basin - estimated 2018 cost was \$25,650 (Table C.1 line dd)

The combined total estimated cost of I&I for the Flat Car, Cable Street and Sudden Valley basins was \$80,691. These basins account for approximately 41% of the District's I&I.

With the District paying approximately \$679,000 to the City of Bellingham for 2018 wastewater treatment costs, as determined by reviewing and summarizing monthly sewer bills, you can see that ***the District's I&I comprises roughly 30% of the District's total wastewater volume.***

Please note that the estimated cost of I&I falls short of the actual cost of I&I. The actual cost contains many other factors, most of which are difficult to quantify, including but not limited to: additional power to run the pumps and stations, added wear and tear on the equipment which shortens the life of an asset, additional pumping costs through multiple pump stations, District labor to respond to I&I events (often at overtime rates), additional fuel costs for equipment to maintain the stations, overhead, etc. Rather, the costs are shown to provide an order of magnitude cost for comparing the different basins and stations and to provide a basis to determine the basins and stations impacted most by the I&I and therefore giving us an area to focus for finding I&I sources for repair.

The Rubber Meets the Road – 2019 I&I Detection Efforts in Action:

For 2019, the District used the 2018 I&I evaluation information to target the Operation and Maintenance Department's video inspections starting with the Flat Car and Cable Street gravity sewer basin. ArcGIS was used for mapping and analysis of the mains. Sewer mains located along creeks or

other low-lying topographic areas were prioritized for video inspections. Sewer mains that join a large number of mains were also identified for video inspection. Exhibit C.3 shows a portion of the Flat Car basin mains that were targeted for first-round video inspections.

Cartegraph tasks were created for the District's Operations and Maintenance staff to inspect over 190 sewer mains. To date, nearly all of the targeted mains in the Flat Car basin have been inspected and approximately 20% of the mains in the Cable Street basin have been inspected. Many defects were found through the video inspections (roots through pipe, offset joints, poorly constructed sewer lateral connections, etc.). Issues were logged into itPipes (the District's video inspection software and database) as well as in Cartegraph.

The District is maintaining a list for prioritizing these repairs using Cured in Place Pipe (CIPP) trenchless rehabilitation methods through an outside contractor. We expect to complete a group of priority repairs in 2020. At varying up-front costs, the repairs can have long-term benefits and cost savings to the District (see Case Study within this report).

In 2019 the District purchased a portable weir for fitting inside 8-inch sewer mains. The weir is a Thel-Mar volumetric weir that can be used to analyze changes in flowrates comparing dry weather flows to flows during rain events. One location the District intends to use the weir is at the entrance to Gate 13, Western Lane and Lake Louise Road, where the abandoned Sudden Valley Campground sewer mains enter the District's Sudden Valley Community gravity system. Earlier in the year, during the Operations and Maintenance staff video inspections, staff observed significant I&I issues within this main. The issues were technically classified as "infiltration gushers". The District is in a conundrum regarding the solution for the issue as the pipeline is in need of complete and costly lining (CIPP) but does not currently serve any customers. The conundrum is to either 1) pay to maintain and salvage the pipeline for a potential future customer, 2) isolate the main from the existing system in a way that would allow a future reconnection of the main, or 3) fully abandon the campground mains. Since no other customers connect to this main, using the volumetric weir during a rain event will allow the District to put a cost on I&I issues (estimated annual gpm X cost/gallon to treat at City of Bellingham's wastewater treatment plant) directly attributed to these issues and we can use the estimated cost of I&I to dictate the repair path.

Case Study. Camp Firwood I&I Repairs & Evaluating the Monthly Pump Station Flow Estimates:

In November, 2018, the District hired ProVac to repair several pump station wetwells (Ranch House, North Point and Camp Firwood Pump Stations) where Operations and Maintenance staff had observed infiltration during their pump runs. To make the repairs, ProVac injected a chemical pressure grout which cost the District \$2,270 for the 3 pump station repairs. Camp Firwood is a small pump station serving a youth camp during the summer and only a caretaker's house during the winter months, making the results of the repair easy to see. Before the repairs, the monthly December flows were 180,635 gallons (2016) and 147,071 gallons (2017). In December 2018, the month after the repairs, monthly flows were reduced to 39,615 gallons and annual flows are down approximately 840,000 gallons. This reduction results in a nearly \$2,000 savings in 2019. The repair cost (\$2,270 for 3 pump station wetwells) was easily recouped within the first year following the repair.

I&I Reduction Efforts Continue:

Ongoing attention to I&I issues is vital to staying on top of repairs and achieving the long term goal to reduce I&I costs. To meet this goal, the District is committed to maintaining the following efforts:

- 2019 results will be analyzed in January 2020 to evaluate improvements, trends and new issues.
- Implement 6-month, seasonal observations with a January through June 2020 assessment in the Summer of 2020.
- Flowmeters. The District will focus on calibrating flowmeters within the system. Most flowmeters have not been calibrated since installation and some flowmeters are not tracking in iHistorian. Flat Car, Beaver and the Lakeway flowmeters are not consistent.
- Continue using the Thel-Mar volumetric weir.
- iHistorian. Finding the use of iHistorian both advantageous and effective for analyzing I&I, the District will continue to integrate SCADA tags into the iHistorian database to improve flow estimating efforts.
- Continue O&M staff video inspection concentrating on basins with costly I&I issues.
- Continue reviewing the backlog of video inspections that need to be reviewed, notated in itPipes and create tasks for issues that are found.
- Continue asset assessment through the asset management program and prioritizing needed repairs.
- Disconnect roof drain connections to the sewer system that were found during system smoke testing.
- Evaluate portable, electronic flowmeter options to assist in quantifying I&I flows.
- Continue tracking I&I during significant rain events.
- Assign realistic I&I repair budgets that will allow the District to achieve savings by reducing wastewater sent to the City of Bellingham for treatment.
- Continue program to install manhole dishes in locations where sheet flow or topography may contribute to inflow.

TABLE C.1 - 2019 SEWER COMP PLAN - SEWER SYSTEM I&I ANALYSIS SUMMARY

line	LOCATION	ESTIMATED WASTEWATER FLOWS (GALLONS)												TOTAL	DRY MONTH (GAL)	WET MONTH (GAL)	ESTIMATED I&I (GAL)	COST OF I&I
		JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC					
a	NORTH SHORE																	
b	AGATE PS GRAVITY	964,483	924,525	896,408	881,358	847,245	773,733	789,542	756,058	663,833	651,233	796,388	761,250	9,706,058	651,233	964,483	1,891,258	\$4,252
c	DELLESTA PS GRAVITY	150,083	105,600	92,767	116,296	83,550	91,700	96,233	94,706	96,517	87,333	135,483	123,883	1,274,153	83,550	150,083	271,553	\$610
d	EDGEWATER PS GRAVITY	273,133	161,050	145,217	149,950	134,323	125,700	132,733	116,450	115,250	114,200	157,550	126,850	1,752,407	114,200	273,133	382,007	\$859
e	NORTH SHORE GRAVITY *	1,355,603	1,225,621	1,325,620	1,031,432	1,148,351	782,920	738,640	1,018,284	742,310	709,308	482,525	839,244	11,399,859	482,525	1,355,603	5,609,555	\$12,610
f	NORTH SHORE FLOW METER	2,743,303	2,416,796	2,460,011	2,179,037	2,213,469	1,774,054	1,757,149	1,985,499	1,617,910	1,562,075	1,571,946	1,851,227	-	-	-	-	-
g	TOTAL													24,132,476			8,154,373	\$18,331
SOUTH SHORE VIA LAKE WHATCOM BLVD																		
h	PAR PS GRAVITY	122,850	120,433	100,850	149,483	129,650	111,050	115,933	117,467	103,520	105,250	107,517	210,425	1,494,428	100,850	210,425	284,228	\$639
i	TOMB PS GRAVITY	958,704	837,312	715,800	801,778	580,777	526,272	534,096	435,013	476,101	540,744	1,004,440	1,222,344	8,633,381	435,013	1,222,344	3,413,223	\$7,673
j	MARINA PS GRAVITY	1,601,700	1,326,900	1,384,440	1,446,916	1,055,836	955,260	1,010,820	903,309	861,928	985,260	1,680,842	1,713,870	14,927,082	861,928	1,713,870	4,583,945	\$10,305
k	NORTH POINT PS GRAVITY	1,771,308	1,585,004	1,557,219	1,538,925	1,224,792	1,146,224	1,224,277	1,114,640	1,093,436	1,179,073	1,763,897	1,793,460	16,992,254	1,093,436	1,793,460	3,871,028	\$8,702
l	LAKEWOOD PS GRAVITY	92,050	57,000	78,539	130,950	94,500	107,550	116,650	32,300	30,400	19,200	27,602	30,650	817,391	19,200	130,950	586,991	\$1,320
m	AIRPORT PS GRAVITY	273,133	161,050	145,217	149,950	134,323	125,700	132,733	116,450	115,250	114,200	157,550	126,850	1,752,407	114,200	273,133	382,007	\$859
n	PLUM PS GRAVITY	250,690	188,950	154,037	170,365	184,697	89,824	86,056	106,250	129,093	285,995	206,946	201,492	2,054,393	86,056	285,995	1,021,725	\$2,297
o	ROCKY RIDGE PS GRAVITY	52,250	40,817	40,054	39,917	41,417	33,483	37,150	28,650	23,333	21,483	26,833	22,800	408,188	21,483	52,250	150,388	\$338
p	BOULEVARD PS GRAVITY	180,278	159,466	151,991	158,505	167,532	220,189	249,221	181,432	110,188	104,625	116,568	124,193	1,924,186	104,625	249,221	668,689	\$1,503
q	STRAWBERRY POINT PS GRAVITY	266,523	204,948	201,772	241,083	172,613	187,720	195,823	186,296	184,617	212,576	278,787	253,493	2,586,249	172,613	278,787	514,892	\$1,157
r	GENEVA PS GRAVITY	454,550	387,133	346,317	384,486	308,930	279,883	278,233	284,916	253,272	254,067	363,723	425,767	4,021,276	253,272	454,550	982,016	\$2,208
s	LOWE PS GRAVITY	166,400	149,617	111,458	124,882	77,083	72,575	51,208	170,867	50,245	54,750	84,159	114,433	1,227,678	50,245	170,867	624,733	\$1,404
t	EUCLID PS GRAVITY	1,233,517	1,055,653	917,677	1,004,346	627,950	565,182	539,780	528,828	536,623	544,273	833,551	966,551	9,353,932	528,828	1,233,517	3,007,992	\$6,762
u	CABLE ST GRAVITY	4,671,267	4,228,560	4,265,707	2,427,470	4,223,654	2,084,185	1,730,073	2,569,050	1,608,420	1,530,978	102,618	1,722,759	31,164,742	1,608,420	4,671,267	11,863,697	\$26,670
v	CABLE FLOWMETER	12,095,219	10,502,841	10,171,077	8,769,055	9,023,754	6,505,096	6,302,053	6,775,468	5,576,426	5,952,475	6,755,032	8,929,087	-	-	-	-	-
w	SUBTOTAL													97,357,586			31,955,553	\$71,836
SOUTH SHORE VIA LAKE LOUISE ROAD INTERCEPTOR																		
x	CAMP FIRWOOD PS GRAVITY	404,738	173,765	148,391	165,326	97,233	100,312	134,718	117,682	31,409	21,249	37,221	39,615	1,471,658	21,249	404,738	1,216,676	\$2,735
y	AFTERNOON BEACH PS GRAVITY	3,398,414	3,047,007	3,015,777	2,880,941	2,777,369	2,328,864	2,261,276	2,199,791	2,187,833	2,389,771	3,477,256	3,106,982	33,071,282	2,187,833	3,477,256	6,817,286	\$15,325
z	LOUISE PS GRAVITY	1,908,742	1,917,058	1,222,931	1,396,447	867,493	835,525	921,683	893,738	774,647	819,556	1,466,904	1,487,206	14,511,929	774,647	1,917,058	5,216,159	\$11,726
aa	RANCH HOUSE GRAVITY *	319,808	503,890	555,529	583,767	362,150	465,017	568,211	544,413	544,299	549,829	698,040	595,156	6,290,109	319,808	698,040	2,452,414	\$5,513
bb	RANCH HOUSE PS	6,031,701	5,641,720	4,942,627	5,026,481	4,104,246	3,729,719	3,885,888	3,755,624	3,538,189	3,780,404	5,679,420	5,228,959	-	-	-	-	-
cc	AUSTIN PS GRAVITY	284,170	270,650	178,400	188,076	133,910	139,250	147,320	135,390	137,812	137,520	259,251	252,460	2,264,209	133,910	284,170	657,289	\$1,478
dd	SUDDEN VALLEY PS GRAVITY *	3,677,279	3,486,780	2,777,373	2,906,126	1,954,013	1,600,931	1,650,742	1,519,642	1,657,095	1,853,476	3,334,352	3,227,881	29,645,688	1,519,642	3,677,279	11,409,987	\$25,650
ee	SUDDEN VALLEY PS	9,993,150	9,399,150	7,898,400	8,120,682	6,192,169	5,469,900	5,683,950	5,410,656	5,333,095	5,771,400	9,273,023	8,709,300	87,254,875	-	-	-	-
ff	STRAWBERRY CANYON PS GRAVITY	542,742	453,972	426,845	452,956	309,684	260,486	238,680	229,132	260,975	268,502	445,820	473,708	4,363,501	229,132	542,742	1,613,919	\$3,628
gg	FLAT CAR GRAVITY *	6,415,358	4,776,545	4,187,660	4,635,505	3,227,147	3,069,614	3,095,906	3,031,962	3,110,730	3,582,298	4,198,157	5,672,992	49,003,874	3,031,962	6,415,358	12,620,330	\$28,371
jj	LAKEWAY GRAVITY (5 CONNECTIONS)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
kk	LAKEWAY METER (City Meter Read)	16,951,250	14,629,667	12,512,905	13,209,143	9,729,000	8,800,000	9,018,536	8,671,750	8,704,800	9,622,200	13,917,000	14,856,000	140,622,250	-	-	-	-
ll	SUBTOTAL													140,622,250			42,004,060	\$94,425
OTHER GRAVITY																		
mm	EUCLID FLOWMETER	1,291,687	1,129,151	1,091,642	945,806	958,781	782,161	656,780	752,688	675,762	695,983	707,864	888,686	10,576,991	656,780	1,291,687	2,695,625	\$6,060
nn	MILLWHEEL FLOWMETER	1,030,445	877,327	1,024,058	878,291	828,996	547,942	468,971	470,809	384,870	442,553	525,567	723,129	8,202,959	384,870	1,030,445	3,584,515	\$8,058
oo	SUBTOTAL													18,779,950			6,280,140	\$14,118
pp	GRAND TOTAL FLOWMETERS TO CITY	34,111,904	29,555,782	27,259,693	25,981,332	22,754,000	18,409,253	18,203,489	18,656,213	16,959,769	18,275,287	23,477,410	27,248,129	280,892,262			88,394,126	\$198,710

NOTES

1. GRAVITY CALCULATED FROM FLOWMETER OR PUMP STATION LESS OTHER ESTIMATED FLOWS
2. PER CITY OF BELLINGHAM INTERLOCAL AGREEMENT, WASTEWATER TREATMENT COST IS \$.002073 PER GALLON (2014) AND ADJUSTED ANNUALLY PER CPI.
3. TREATMENT COST 2018 = \$.002248 / GAL
4. DATA IN RED FONT DOES NOT ADD TO THE TOTAL.
5. THE DRY MONTH FOR CABLE ST. GRAVITY IS ASSUMED AS SEPTEMBER EVEN THOUGH THE DATA SHOWS THE DRY MONTH AS NOVEMBER.

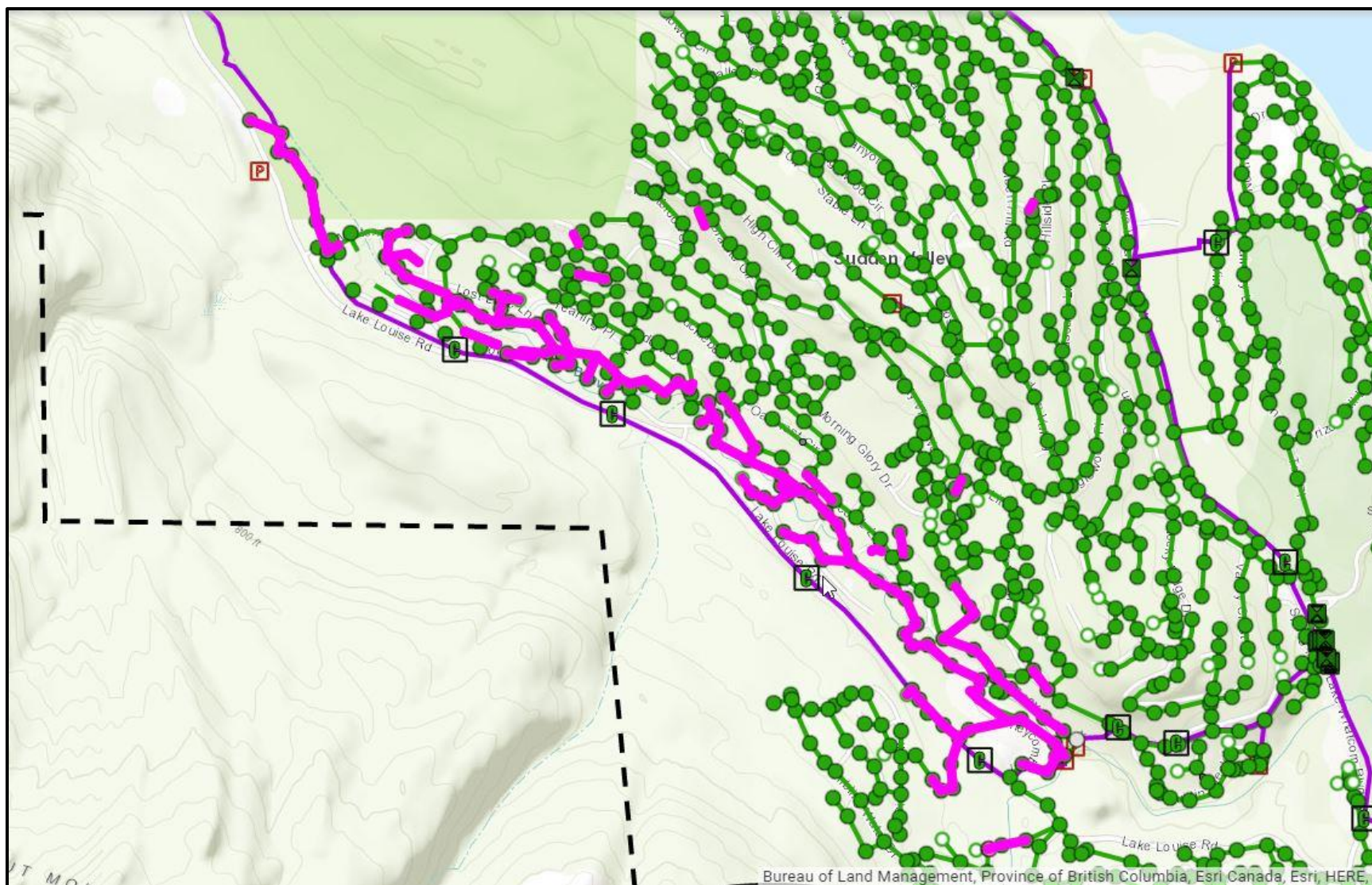
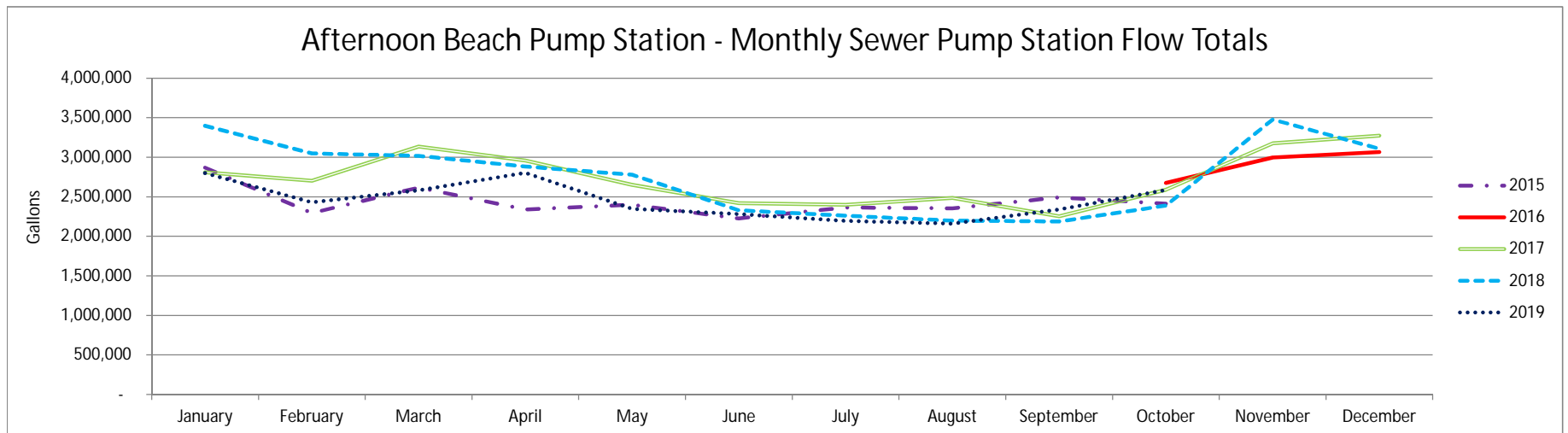


Exhibit C.3 – Flat Car Basin Sewer Mains (Pink) Selected for 2019 I&I Analysis

SEWER PUMP STATION FLOW ANALYSIS
Afternoon Beach Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	2,867,938	3.06		1.81	2,810,045	4.88	3,398,414	3.78	2,798,125
February	28	2.48	2,295,661	5.61		2.89	2,704,276	4.33	3,047,007	1.15	2,431,113
March	31	4.58	2,615,111	3.83		5.89	3,133,384	3.26	3,015,777	1.08	2,583,261
April	30	0.73	2,338,636	2.44		2.73	2,959,614	3.20	2,880,941	4.02	2,801,173
May	31	0.41	2,399,225	1.06		0.39	2,650,002	0.12	2,777,369	1.20	2,346,223
June	30	0.26	2,227,166	0.92		1.04	2,419,035	0.84	2,328,864	1.20	2,282,574
July	31	0.67	2,363,572	0.61		0.08	2,399,070	0.21	2,261,276	0.73	2,194,199
August	31	0.62	2,355,167	0.06		0.09	2,484,630	0.27	2,199,791	0.90	2,159,822
September	30	2.76	2,491,330	1.78		1.15	2,252,276	2.37	2,187,833	4.73	2,340,800
October	31	3.11	2,411,051	6.87	2,674,809	5.60	2,590,341	3.16	2,389,771	4.53	2,583,931
November	30	5.04		7.96	2,996,030	5.61	3,176,869	5.56	3,477,256		
December	31	6.11		3.34	3,064,925	6.69	3,273,348	3.88	3,106,982		
TOTAL		32.29		37.54		33.97	32,852,891	32.08	33,071,282	23.32	24,521,221



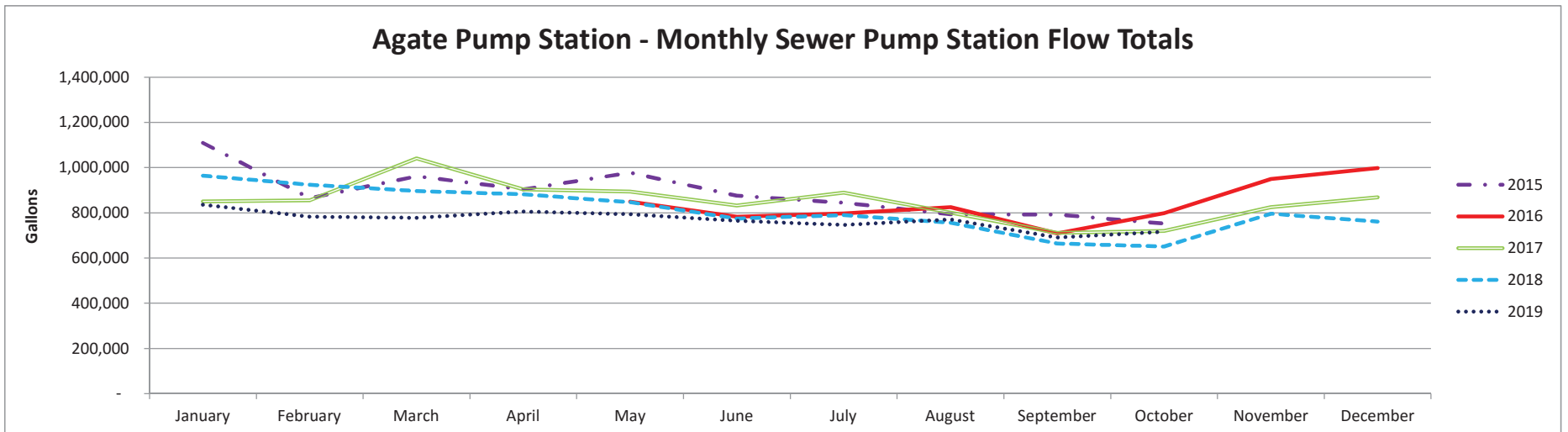
Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS

Agate Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	1,109,779	3.06		1.81	850,675	4.88	964,483	3.78	835,698
February	28	2.48	864,442	5.61		2.89	855,258	4.33	924,525	1.15	782,367
March	31	4.58	961,452	3.83	1,177,072	5.89	1,040,400	3.26	896,408	1.08	777,892
April	30	0.73	903,233	2.44		2.73	903,517	3.20	881,358	4.02	805,392
May	31	0.41	976,908	1.06	849,625	0.39	894,308	0.12	847,245	1.20	793,952
June	30	0.26	875,642	0.92	782,192	1.04	832,290	0.84	773,733	1.20	764,059
July	31	0.67	843,792	0.61	797,650	0.08	888,942	0.21	789,542	0.73	746,728
August	31	0.62	793,920	0.06	824,898	0.09	800,683	0.27	756,058	0.90	770,875
September	30	2.76	792,050	1.78	709,124	1.15	710,867	2.37	663,833	4.73	690,958
October	31	3.11	752,073	6.87	798,968	5.60	719,367	3.16	651,233	4.53	716,275
November	30	5.04		7.96	949,834	5.61	824,892	5.56	796,388		
December	31	6.11		3.34	998,433	6.69	867,942	3.88	761,250		
TOTAL		32.29		37.54		33.97	10,189,139	32.08	9,706,058	23.32	7,684,195



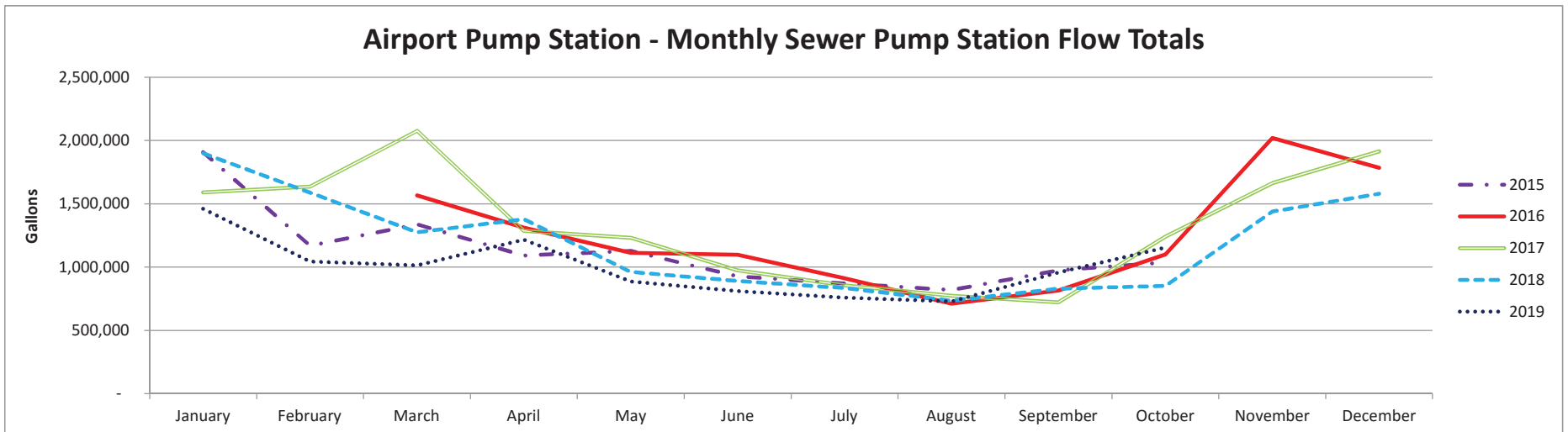
Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS

Airport Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	1,907,949	3.06		1.81	1,589,625	4.88	1,898,975	3.78	1,459,618
February	28	2.48	1,168,088	5.61		2.89	1,634,625	4.33	1,588,550	1.15	1,042,825
March	31	4.58	1,337,427	3.83	1,565,443	5.89	2,076,020	3.26	1,274,175	1.08	1,013,408
April	30	0.73	1,090,113	2.44	1,310,582	2.73	1,285,553	3.20	1,378,636	4.02	1,216,120
May	31	0.41	1,126,613	1.06	1,112,429	0.39	1,230,625	0.12	960,960	1.20	884,823
June	30	0.26	926,350	0.92	1,096,325	1.04	973,387	0.84	890,625	1.20	809,142
July	31	0.67	871,125	0.61	911,408	0.08	855,450	0.21	834,125	0.73	758,086
August	31	0.62	818,291	0.06	711,147	0.09	773,617	0.27	734,358	0.90	728,313
September	30	2.76	973,713	1.78	813,775	1.15	721,364	2.37	830,528	4.73	957,588
October	31	3.11	1,036,821	6.87	1,100,531	5.60	1,240,525	3.16	850,800	4.53	1,153,763
November	30	5.04		7.96	2,020,398	5.61	1,662,338	5.56	1,438,562		
December	31	6.11		3.34	1,783,913	6.69	1,912,938	3.88	1,577,988		
TOTAL		32.29		37.54		33.97	15,956,065	32.08	14,258,281	23.32	10,023,685

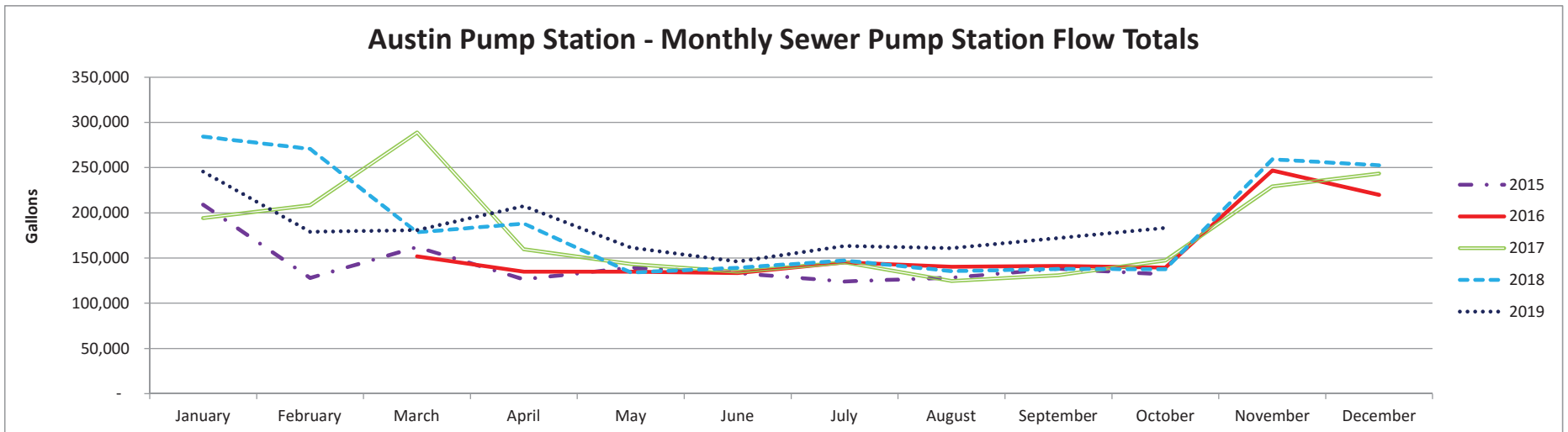


Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Austin Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	208,978	3.06		1.81	194,130	4.88	284,170	3.78	245,590
February	28	2.48	127,900	5.61		2.89	208,254	4.33	270,650	1.15	178,910
March	31	4.58	162,187	3.83	151,799	5.89	288,766	3.26	178,400	1.08	180,747
April	30	0.73	126,460	2.44	134,899	2.73	159,742	3.20	188,076	4.02	207,394
May	31	0.41	139,420	1.06	135,021	0.39	143,220	0.12	133,910	1.20	161,380
June	30	0.26	133,440	0.92	133,350	1.04	134,737	0.84	139,250	1.20	146,208
July	31	0.67	123,890	0.61	145,302	0.08	145,270	0.21	147,320	0.73	163,339
August	31	0.62	128,108	0.06	140,226	0.09	124,470	0.27	135,390	0.90	161,010
September	30	2.76	138,240	1.78	141,150	1.15	130,931	2.37	137,812	4.73	172,030
October	31	3.11	131,851	6.87	139,439	5.60	147,210	3.16	137,520	4.53	183,220
November	30	5.04		7.96	246,760	5.61	229,340	5.56	259,251		
December	31	6.11		3.34	219,960	6.69	243,420	3.88	252,460		
TOTAL		32.29		37.54		33.97	2,149,490	32.08	2,264,209	23.32	1,799,829



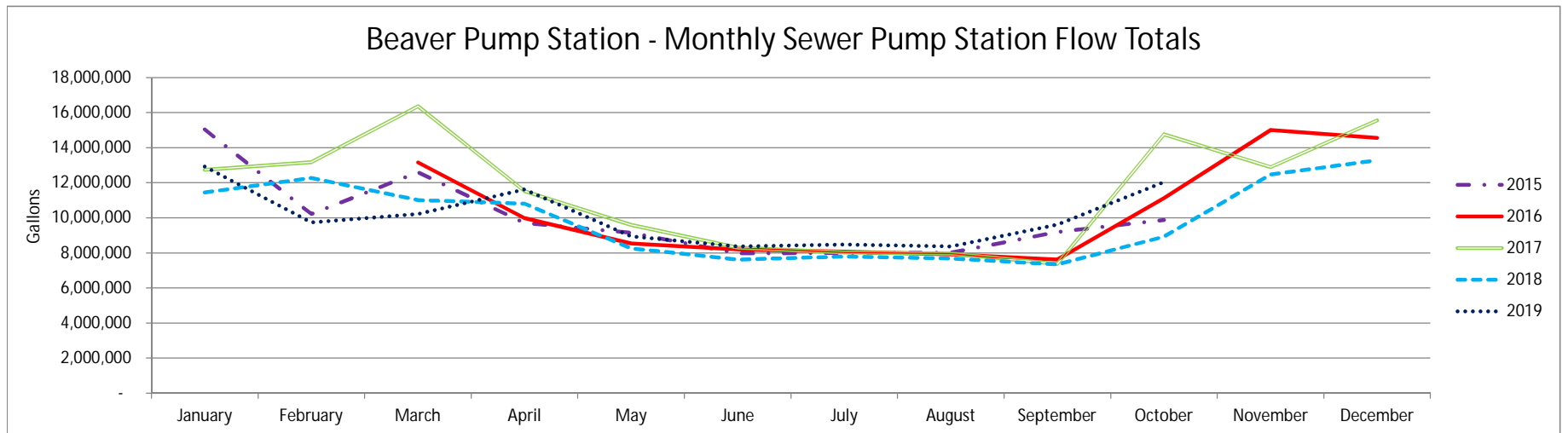
Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS

Beaver Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	15,034,000	3.06		1.81	12,738,000	4.88	11,441,903	3.78	12,923,000
February	28	2.48	10,219,000	5.61		2.89	13,176,000	4.33	12,263,556	1.15	9,739,000
March	31	4.58	12,596,000	3.83	13,160,000	5.89	16,356,000	3.26	11,007,833	1.08	10,224,000
April	30	0.73	9,702,000	2.44	9,992,000	2.73	11,522,000	3.20	10,810,262	4.02	11,620,000
May	31	0.41	9,143,000	1.06	8,534,000	0.39	9,602,000	0.12	8,255,857	1.20	8,941,000
June	30	0.26	7,983,000	0.92	8,189,000	1.04	8,301,000	0.84	7,614,429	1.20	8,365,000
July	31	0.67	8,000,000	0.61	8,074,000	0.08	8,021,000	0.21	7,796,911	0.73	8,470,000
August	31	0.62	8,006,000	0.06	7,910,000	0.09	7,958,000	0.27	7,678,708	0.90	8,367,000
September	30	2.76	9,195,000	1.78	7,622,000	1.15	7,373,000	2.37	7,346,467	4.73	9,613,000
October	31	3.11	9,870,000	6.87	11,117,000	5.60	14,765,000	3.16	8,921,200	4.53	12,037,000
November	30	5.04		7.96	15,007,000	5.61	12,894,000	5.56	12,466,500		
December	31	6.11		3.34	14,549,000	6.69	15,555,000	3.88	13,275,071		
TOTAL		32.29		37.54		33.97	138,261,000	32.08	118,878,696	23.32	100,299,000

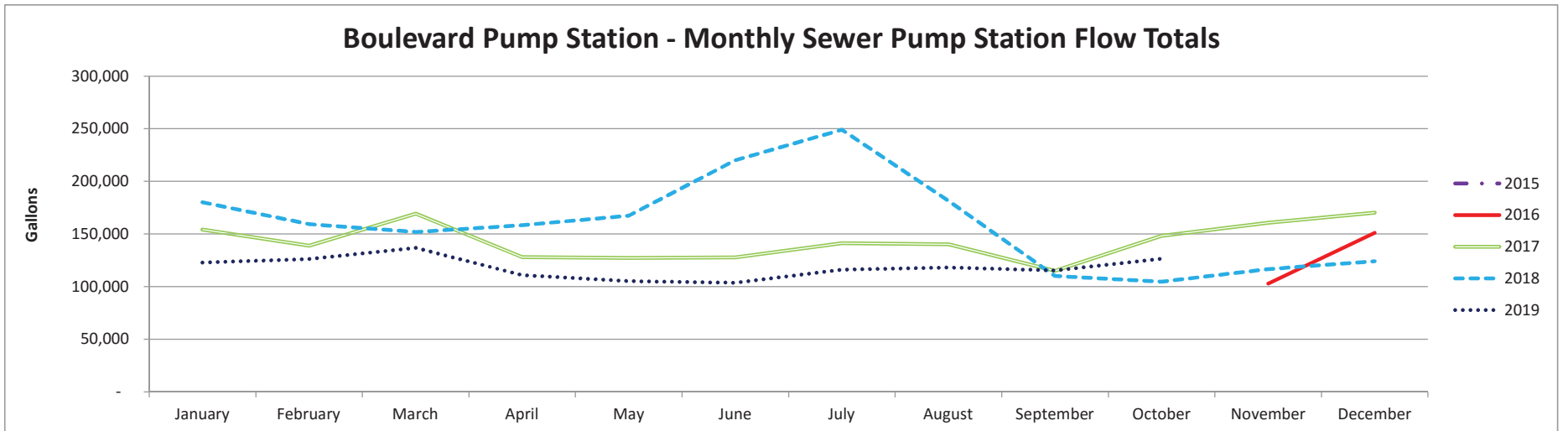


Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Boulevard Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52		3.06		1.81	154,347	4.88	180,278	3.78	122,857
February	28	2.48		5.61		2.89	138,894	4.33	159,466	1.15	126,168
March	31	4.58		3.83		5.89	169,280	3.26	151,991	1.08	136,987
April	30	0.73		2.44		2.73	128,052	3.20	158,505	4.02	110,885
May	31	0.41		1.06		0.39	127,208	0.12	167,532	1.20	105,378
June	30	0.26		0.92		1.04	127,842	0.84	220,189	1.20	103,570
July	31	0.67		0.61		0.08	141,163	0.21	249,221	0.73	116,012
August	31	0.62		0.06		0.09	140,266	0.27	181,432	0.90	118,287
September	30	2.76		1.78		1.15	115,032	2.37	110,188	4.73	115,444
October	31	3.11		6.87		5.60	148,350	3.16	104,625	4.53	126,469
November	30	5.04		7.96	102,788	5.61	160,713	5.56	116,568		
December	31	6.11		3.34	151,112	6.69	170,359	3.88	124,193		
TOTAL		32.29		37.54		33.97	1,721,505	32.08	1,924,186	23.32	1,182,056

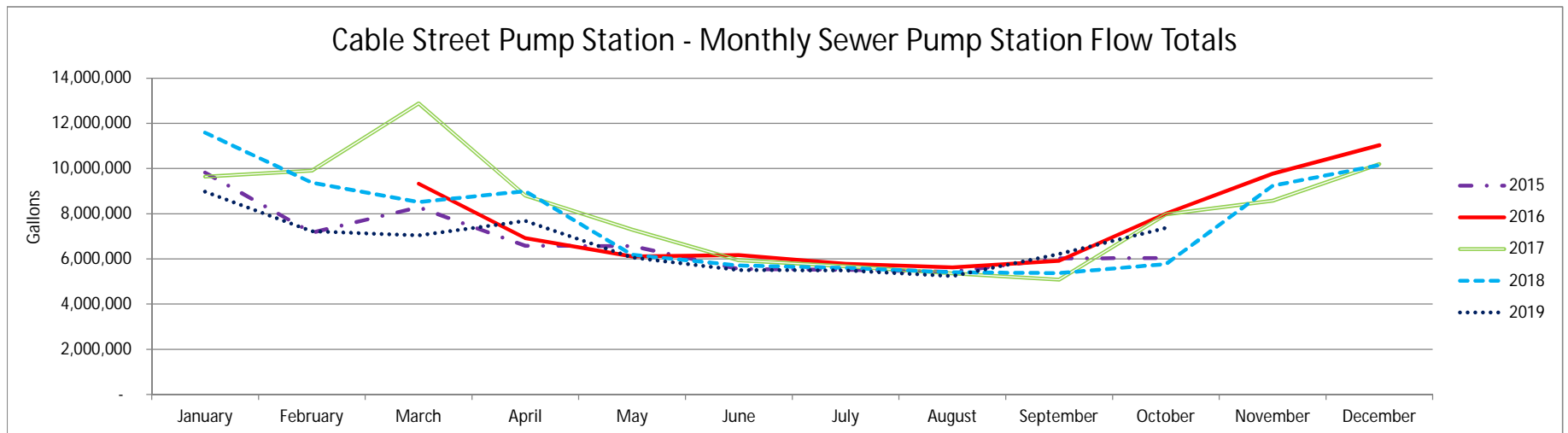


Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Cable Street Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	9,827,210	3.06		1.81	9,637,690	4.88	11,582,565	3.78	8,978,800
February	28	2.48	7,162,734	5.61		2.89	9,909,152	4.33	9,374,663	1.15	7,216,124
March	31	4.58	8,284,241	3.83	9,322,239	5.89	12,883,031	3.26	8,514,558	1.08	7,041,260
April	30	0.73	6,581,942	2.44	6,925,266	2.73	8,807,815	3.20	8,997,736	4.02	7,677,103
May	31	0.41	6,564,138	1.06	6,111,139	0.39	7,298,516	0.12	6,186,002	1.20	6,060,455
June	30	0.26	5,549,338	0.92	6,163,766	1.04	5,943,193	0.84	5,713,281	1.20	5,503,360
July	31	0.67	5,518,587	0.61	5,783,052	0.08	5,669,409	0.21	5,596,772	0.73	5,492,887
August	31	0.62	5,435,796	0.06	5,627,927	0.09	5,358,824	0.27	5,407,480	0.90	5,241,869
September	30	2.76	6,019,326	1.78	5,909,858	1.15	5,080,575	2.37	5,376,517	4.73	6,217,018
October	31	3.11	6,042,139	6.87	8,007,725	5.60	7,975,935	3.16	5,768,399	4.53	7,364,049
November	30	5.04		7.96	9,774,958	5.61	8,581,944	5.56	9,238,979		
December	31	6.11		3.34	11,034,840	6.69	10,191,853	3.88	10,144,095		
TOTAL		32.29		37.54		33.97	97,337,936	32.08	91,901,046	23.32	66,792,925

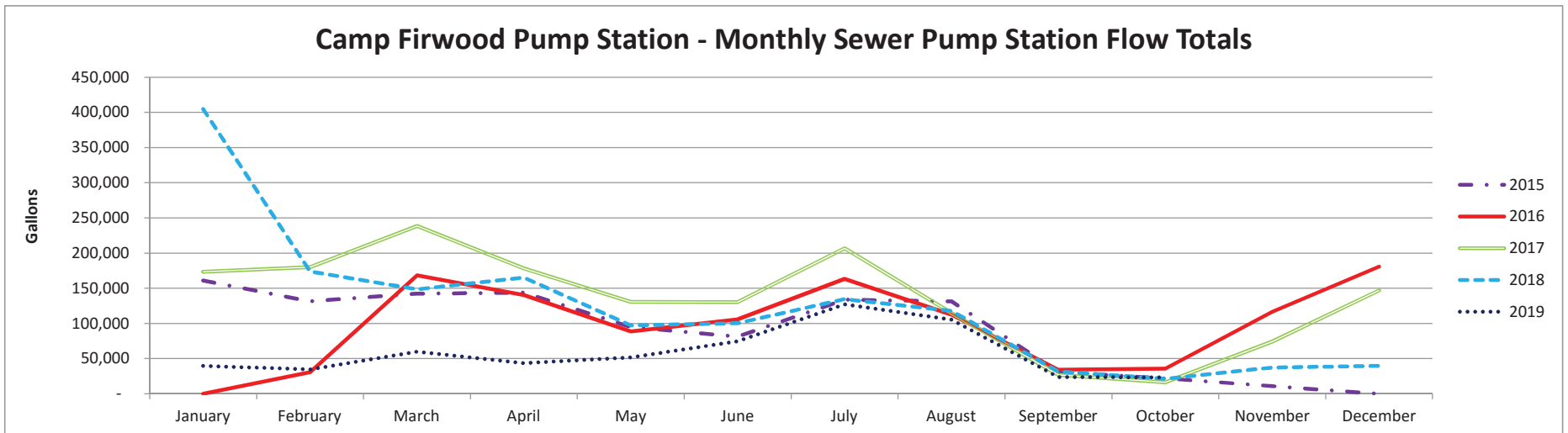


Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Camp Firwood Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	161,176	3.06	-	1.81	173,461	4.88	404,738	3.78	39,509
February	28	2.48	131,465	5.61	30,920	2.89	180,094	4.33	173,765	1.15	34,701
March	31	4.58	142,191	3.83	168,198	5.89	238,230	3.26	148,391	1.08	59,999
April	30	0.73	143,962	2.44	140,451	2.73	178,008	3.20	165,326	4.02	43,756
May	31	0.41	95,004	1.06	88,498	0.39	130,691	0.12	97,233	1.20	51,934
June	30	0.26	81,126	0.92	105,727	1.04	130,388	0.84	100,312	1.20	74,559
July	31	0.67	133,634	0.61	163,462	0.08	206,919	0.21	134,718	0.73	127,316
August	31	0.62	131,252	0.06	112,274	0.09	114,797	0.27	117,682	0.90	105,469
September	30	2.76	31,304	1.78	34,216	1.15	26,769	2.37	31,409	4.73	23,584
October	31	3.11	21,886	6.87	35,824	5.60	16,380	3.16	21,249	4.53	23,433
November	30	5.04	10,799	7.96	116,619	5.61	74,393	5.56	37,221		
December	31	6.11	-	3.34	180,635	6.69	147,071	3.88	39,615		
TOTAL		32.29		37.54		33.97	1,617,200	32.08	1,471,658	23.32	584,261

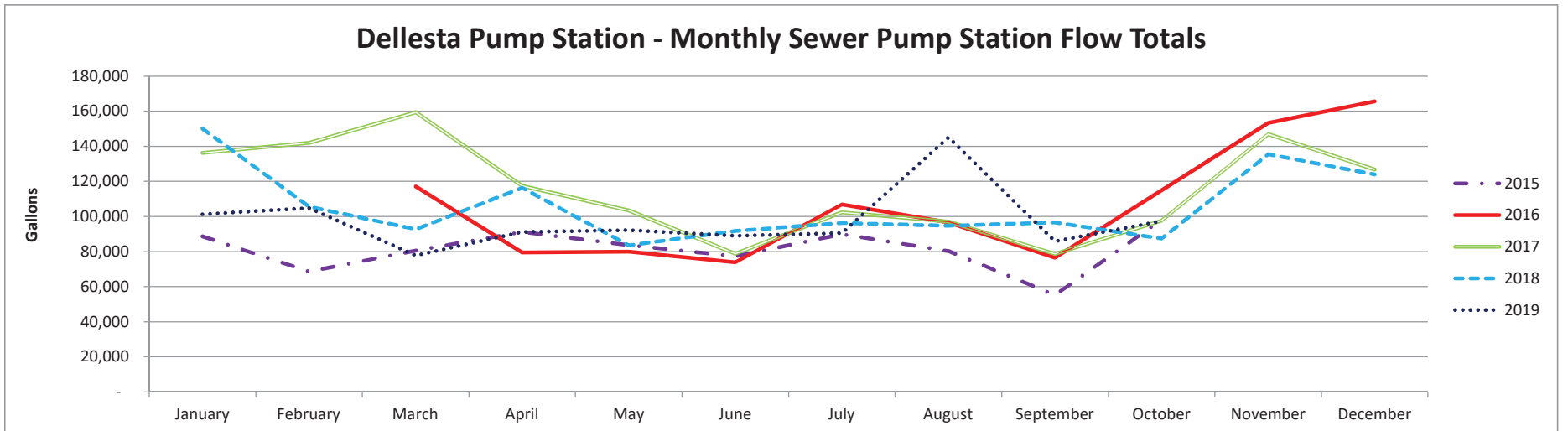


Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Dellesta Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	88,583	3.06		1.81	136,233	4.88	150,083	3.78	101,216
February	28	2.48	68,550	5.61		2.89	142,028	4.33	105,600	1.15	104,783
March	31	4.58	80,627	3.83	117,133	5.89	159,379	3.26	92,767	1.08	77,813
April	30	0.73	91,117	2.44	79,467	2.73	117,491	3.20	116,296	4.02	91,133
May	31	0.41	83,717	1.06	79,900	0.39	103,400	0.12	83,550	1.20	92,250
June	30	0.26	77,267	0.92	73,900	1.04	78,648	0.84	91,700	1.20	88,940
July	31	0.67	89,950	0.61	106,829	0.08	102,300	0.21	96,233	0.73	90,466
August	31	0.62	80,250	0.06	96,512	0.09	97,017	0.27	94,706	0.90	145,167
September	30	2.76	55,283	1.78	76,550	1.15	78,666	2.37	96,517	4.73	85,800
October	31	3.11	98,196	6.87	114,906	5.60	97,617	3.16	87,333	4.53	97,283
November	30	5.04		7.96	153,401	5.61	146,900	5.56	135,483		
December	31	6.11		3.34	165,700	6.69	126,767	3.88	123,883		
TOTAL		32.29		37.54		33.97	1,386,446	32.08	1,274,153	23.32	974,851

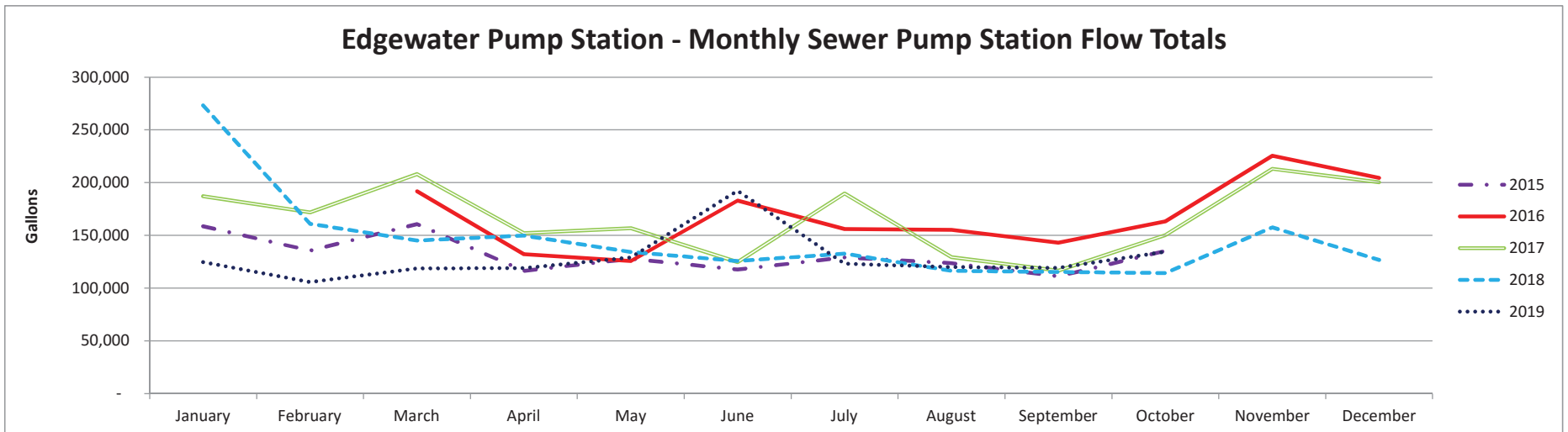


Notes:

- Blank cells in the monthly flow column represents bad or missing data.
- Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Edgewater Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	158,623	3.06		1.81	187,067	4.88	273,133	3.78	124,733
February	28	2.48	135,583	5.61		2.89	171,783	4.33	161,050	1.15	105,683
March	31	4.58	160,678	3.83	191,891	5.89	208,139	3.26	145,217	1.08	118,653
April	30	0.73	116,417	2.44	132,299	2.73	152,283	3.20	149,950	4.02	119,100
May	31	0.41	127,683	1.06	125,650	0.39	156,900	0.12	134,323	1.20	129,217
June	30	0.26	117,733	0.92	183,050	1.04	124,567	0.84	125,700	1.20	192,283
July	31	0.67	129,083	0.61	156,033	0.08	189,733	0.21	132,733	0.73	123,037
August	31	0.62	123,604	0.06	155,206	0.09	129,433	0.27	116,450	0.90	119,950
September	30	2.76	111,150	1.78	143,135	1.15	116,643	2.37	115,250	4.73	119,200
October	31	3.11	135,381	6.87	163,245	5.60	150,217	3.16	114,200	4.53	134,500
November	30	5.04		7.96	225,416	5.61	213,150	5.56	157,550		
December	31	6.11		3.34	204,433	6.69	200,433	3.88	126,850		
TOTAL		32.29		37.54		33.97	2,000,348	32.08	1,752,407	23.32	1,286,357

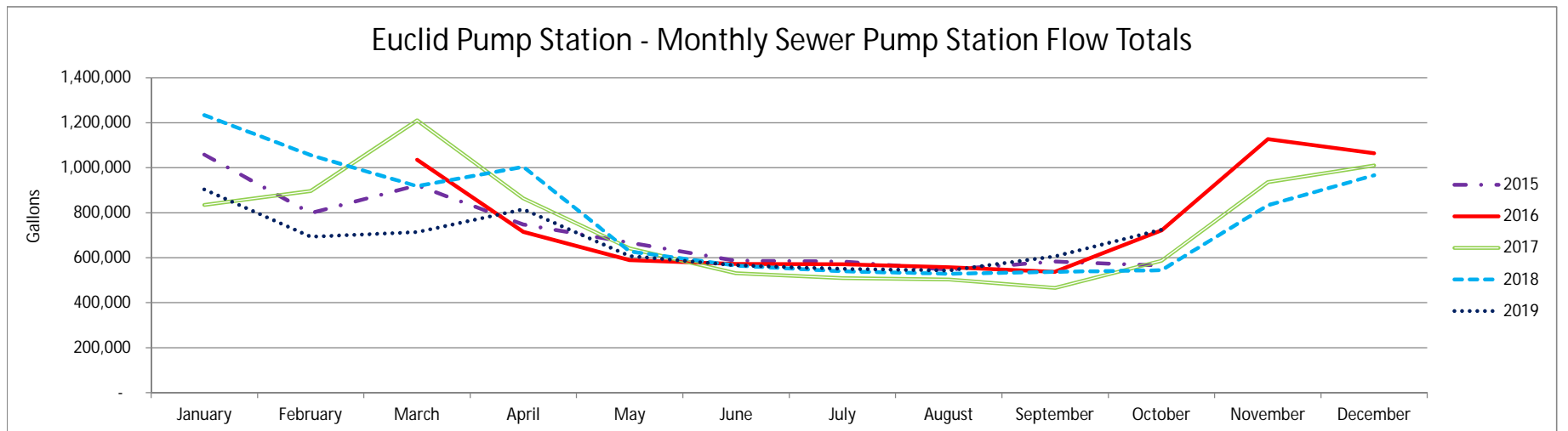


Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Euclid Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	1,058,064	3.06		1.81	835,168	4.88	1,233,517	3.78	903,057
February	28	2.48	798,875	5.61		2.89	896,221	4.33	1,055,653	1.15	692,593
March	31	4.58	922,168	3.83	1,035,812	5.89	1,210,440	3.26	917,677	1.08	713,638
April	30	0.73	747,415	2.44	715,320	2.73	863,406	3.20	1,004,346	4.02	815,624
May	31	0.41	666,366	1.06	588,774	0.39	640,559	0.12	627,950	1.20	607,418
June	30	0.26	587,225	0.92	571,657	1.04	531,109	0.84	565,182	1.20	565,729
July	31	0.67	583,615	0.61	570,731	0.08	508,735	0.21	539,780	0.73	550,801
August	31	0.62	547,252	0.06	557,318	0.09	502,766	0.27	528,828	0.90	542,890
September	30	2.76	583,490	1.78	537,310	1.15	465,169	2.37	536,623	4.73	605,930
October	31	3.11	565,319	6.87	721,035	5.60	586,546	3.16	544,273	4.53	724,269
November	30	5.04		7.96	1,127,089	5.61	936,492	5.56	833,551		
December	31	6.11		3.34	1,064,578	6.69	1,010,364	3.88	966,551		
TOTAL		32.29		37.54		33.97	8,986,975	32.08	9,353,932	23.32	6,721,949

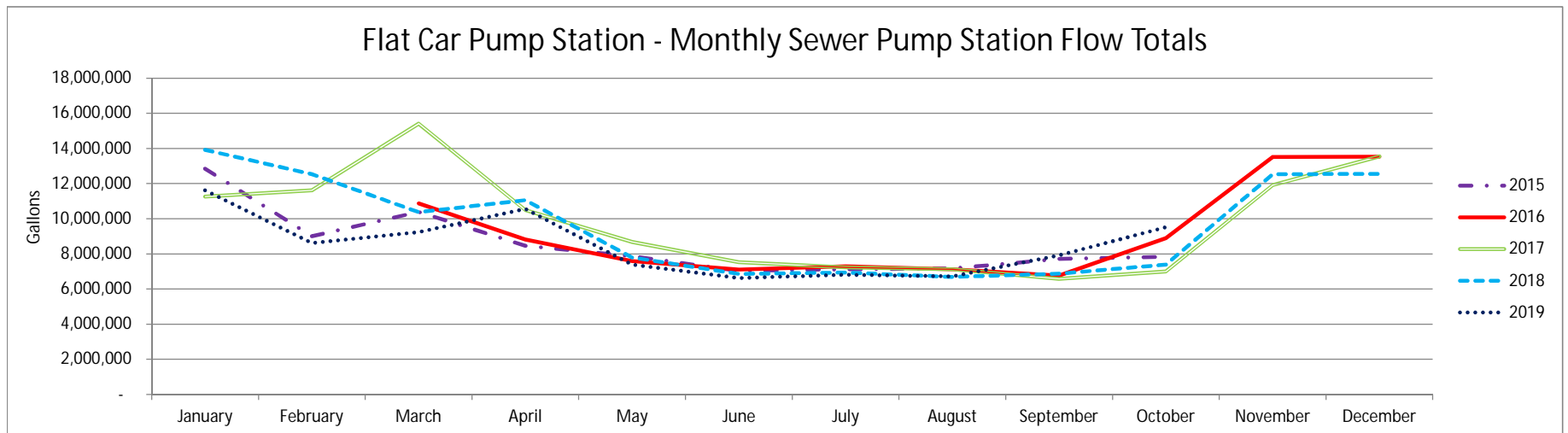


Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Flat Car Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	12,841,245	3.06		1.81	11,253,043	4.88	13,912,310	3.78	11,619,254
February	28	2.48	8,999,797	5.61		2.89	11,611,103	4.33	12,534,721	1.15	8,618,808
March	31	4.58	10,386,381	3.83	10,872,042	5.89	15,412,655	3.26	10,381,174	1.08	9,243,856
April	30	0.73	8,460,097	2.44	8,819,167	2.73	10,491,907	3.20	11,050,272	4.02	10,554,243
May	31	0.41	7,869,340	1.06	7,592,952	0.39	8,679,818	0.12	7,788,568	1.20	7,390,679
June	30	0.26	7,030,663	0.92	7,105,192	1.04	7,529,449	0.84	6,865,735	1.20	6,633,279
July	31	0.67	7,123,012	0.61	7,298,223	0.08	7,240,197	0.21	6,931,525	0.73	6,805,108
August	31	0.62	7,168,032	0.06	7,128,609	0.09	7,125,462	0.27	6,693,418	0.90	6,718,211
September	30	2.76	7,710,685	1.78	6,770,749	1.15	6,585,880	2.37	6,876,740	4.73	7,919,968
October	31	3.11	7,838,082	6.87	8,902,928	5.60	6,993,415	3.16	7,391,055	4.53	9,521,877
November	30	5.04		7.96	13,522,450	5.61	11,912,092	5.56	12,539,421		
December	31	6.11		3.34	13,537,606	6.69	13,540,788	3.88	12,557,263		
TOTAL		32.29		37.54		33.97	118,375,811	32.08	115,522,203	23.32	85,025,282

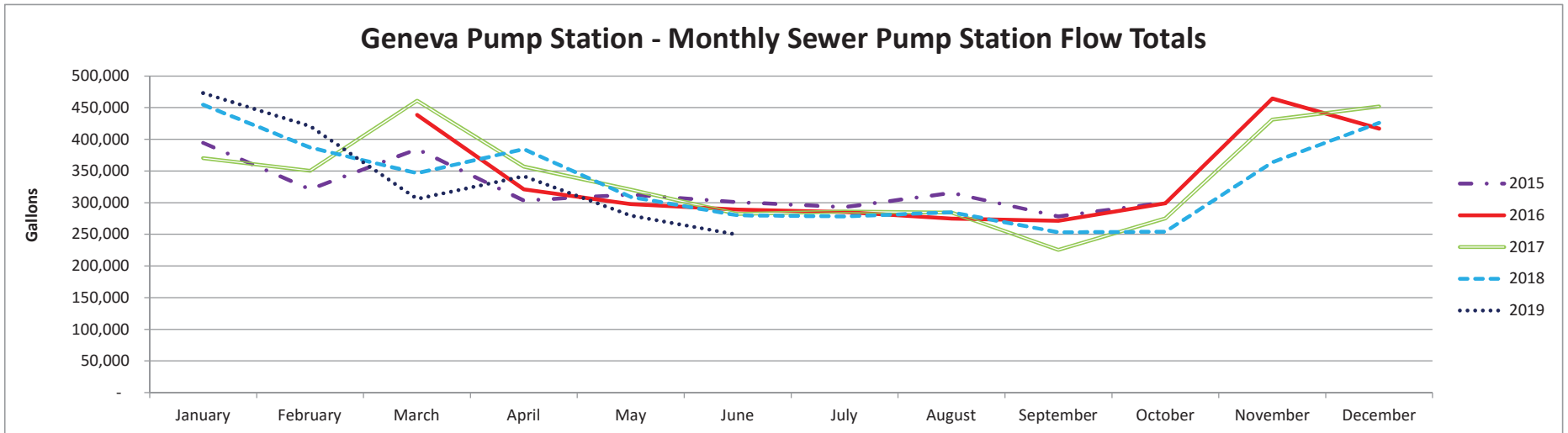


Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Geneva Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	394,418	3.06		1.81	370,067	4.88	454,550	3.78	473,108
February	28	2.48	320,950	5.61		2.89	350,464	4.33	387,133	1.15	420,883
March	31	4.58	384,467	3.83	438,631	5.89	461,048	3.26	346,317	1.08	305,873
April	30	0.73	303,217	2.44	321,069	2.73	356,760	3.20	384,486	4.02	341,559
May	31	0.41	312,650	1.06	297,551	0.39	320,400	0.12	308,930	1.20	279,546
June	30	0.26	300,533	0.92	288,850	1.04	281,960	0.84	279,883	1.20	249,319
July	31	0.67	292,850	0.61	285,234	0.08	286,067	0.21	278,233	0.73	
August	31	0.62	315,313	0.06	274,965	0.09	284,367	0.27	284,916	0.90	
September	30	2.76	278,217	1.78	271,311	1.15	225,343	2.37	253,272	4.73	
October	31	3.11	300,220	6.87	298,805	5.60	275,300	3.16	254,067	4.53	220,300
November	30	5.04		7.96	464,283	5.61	430,950	5.56	363,723		
December	31	6.11		3.34	416,700	6.69	452,033	3.88	425,767		
TOTAL		32.29		37.54		33.97	4,094,758	32.08	4,021,276	23.32	2,290,589

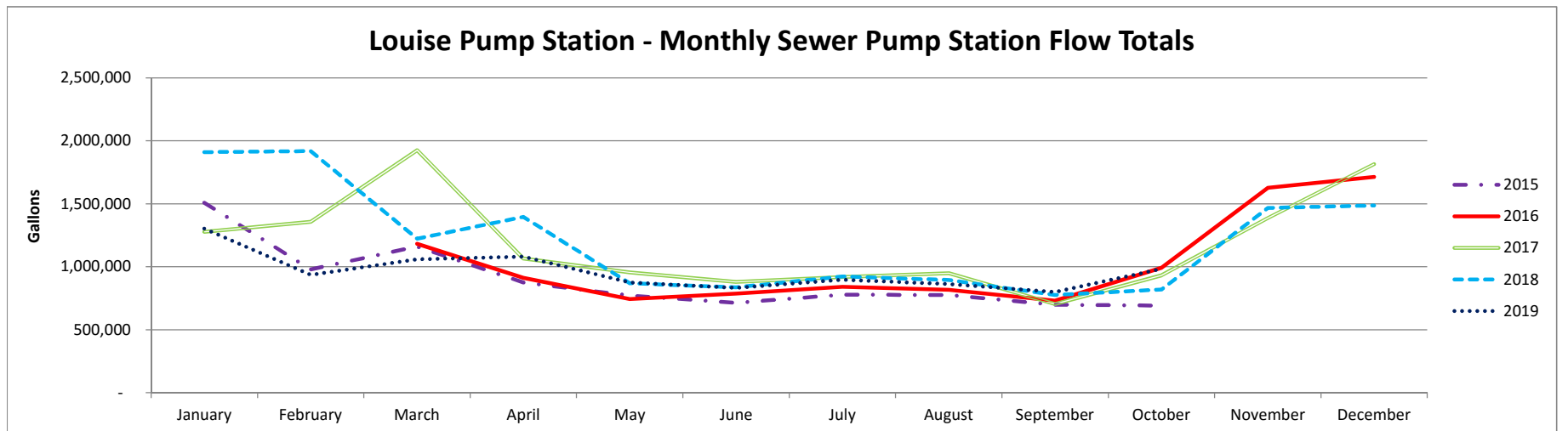


Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Louise Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	1,507,482	3.06		1.81	1,277,517	4.88	1,908,742	3.78	1,303,572
February	28	2.48	977,531	5.61		2.89	1,355,861	4.33	1,917,058	1.15	935,158
March	31	4.58	1,160,167	3.83	1,180,808	5.89	1,924,219	3.26	1,222,931	1.08	1,058,577
April	30	0.73	875,475	2.44	911,238	2.73	1,065,246	3.20	1,396,447	4.02	1,080,701
May	31	0.41	770,631	1.06	743,480	0.39	953,942	0.12	867,493	1.20	874,960
June	30	0.26	713,506	0.92	787,153	1.04	878,605	0.84	835,525	1.20	831,667
July	31	0.67	776,956	0.61	840,772	0.08	918,578	0.21	921,683	0.73	896,407
August	31	0.62	776,125	0.06	815,680	0.09	948,292	0.27	893,738	0.90	861,447
September	30	2.76	698,456	1.78	730,547	1.15	703,502	2.37	774,647	4.73	799,494
October	31	3.11	691,310	6.87	992,051	5.60	930,767	3.16	819,556	4.53	983,811
November	30	5.04		7.96	1,626,593	5.61	1,387,683	5.56	1,466,904		
December	31	6.11		3.34	1,712,578	6.69	1,814,022	3.88	1,487,206		
TOTAL		32.29		37.54		33.97	14,158,234	32.08	14,511,929	23.32	9,625,796

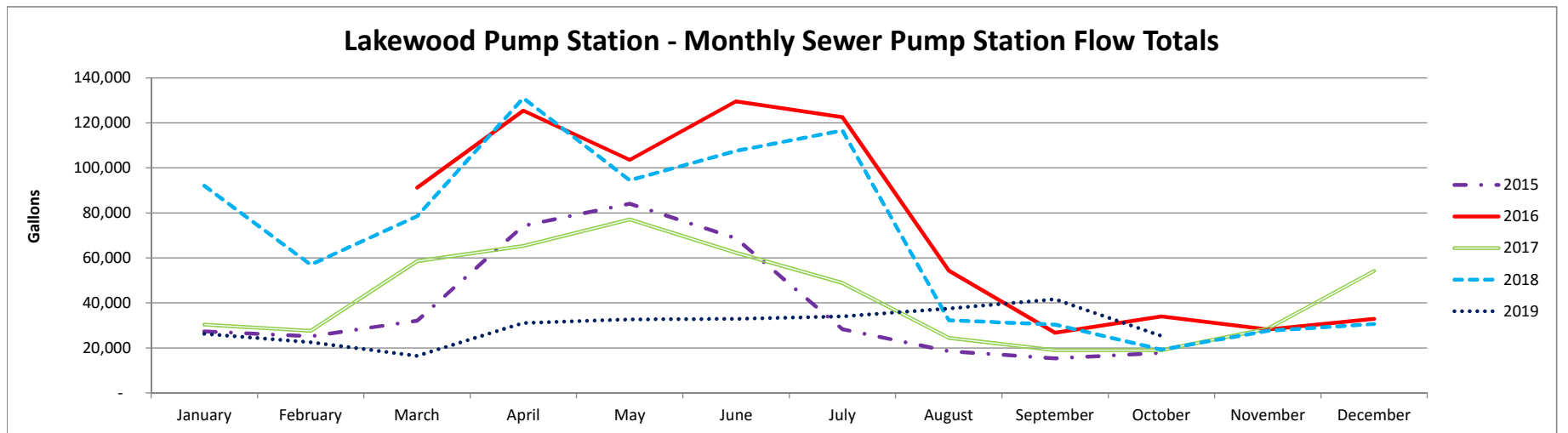


Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Lakewood Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	27,383	3.06		1.81	30,400	4.88	92,050	3.78	26,198
February	28	2.48	25,217	5.61		2.89	27,613	4.33	57,000	1.15	22,500
March	31	4.58	32,105	3.83	91,191	5.89	58,570	3.26	78,539	1.08	16,450
April	30	0.73	74,250	2.44	125,433	2.73	65,350	3.20	130,950	4.02	31,100
May	31	0.41	84,017	1.06	103,517	0.39	77,100	0.12	94,500	1.20	32,721
June	30	0.26	68,750	0.92	129,550	1.04	62,320	0.84	107,550	1.20	32,900
July	31	0.67	28,267	0.61	122,500	0.08	48,900	0.21	116,650	0.73	34,050
August	31	0.62	18,467	0.06	54,333	0.09	24,400	0.27	32,300	0.90	37,450
September	30	2.76	15,367	1.78	26,768	1.15	18,967	2.37	30,400	4.73	41,600
October	31	3.11	17,733	6.87	33,949	5.60	19,000	3.16	19,200	4.53	25,250
November	30	5.04		7.96	28,150	5.61	28,550	5.56	27,602		
December	31	6.11		3.34	32,900	6.69	54,150	3.88	30,650		
TOTAL		32.29		37.54		33.97	515,320	32.08	817,391	23.32	300,219

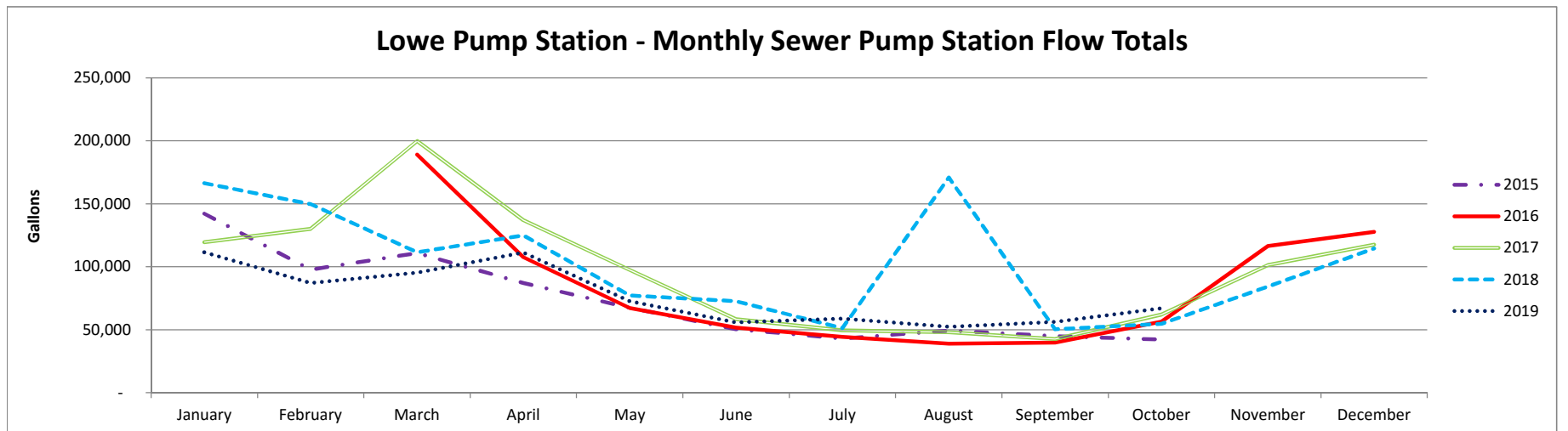


Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Low Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	142,094	3.06		1.81	119,517	4.88	166,400	3.78	111,363
February	28	2.48	97,683	5.61		2.89	129,939	4.33	149,617	1.15	87,067
March	31	4.58	110,744	3.83	189,089	5.89	199,850	3.26	111,458	1.08	95,371
April	30	0.73	87,000	2.44	107,489	2.73	137,007	3.20	124,882	4.02	111,169
May	31	0.41	67,400	1.06	67,083	0.39	97,450	0.12	77,083	1.20	72,558
June	30	0.26	50,417	0.92	51,600	1.04	58,325	0.84	72,575	1.20	55,683
July	31	0.67	42,950	0.61	44,267	0.08	49,500	0.21	51,208	0.73	58,763
August	31	0.62	49,198	0.06	38,832	0.09	47,883	0.27	170,867	0.90	52,200
September	30	2.76	44,867	1.78	39,767	1.15	42,497	2.37	50,245	4.73	56,200
October	31	3.11	42,050	6.87	56,367	5.60	61,983	3.16	54,750	4.53	67,067
November	30	5.04		7.96	116,377	5.61	101,275	5.56	84,159		
December	31	6.11		3.34	127,667	6.69	117,550	3.88	114,433		
TOTAL		32.29		37.54		33.97	1,162,776	32.08	1,227,678	23.32	767,440

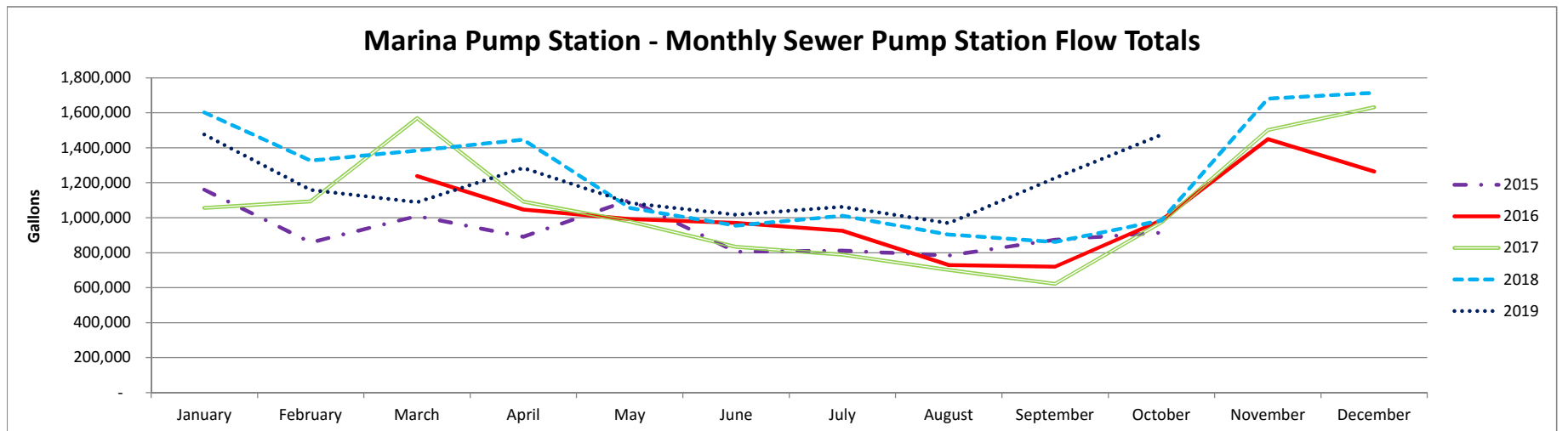


Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Marina Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	1,160,744	3.06		1.81	1,056,090	4.88	1,601,700	3.78	1,476,541
February	28	2.48	859,260	5.61		2.89	1,093,852	4.33	1,326,900	1.15	1,159,350
March	31	4.58	1,008,992	3.83	1,237,235	5.89	1,569,417	3.26	1,384,440	1.08	1,088,524
April	30	0.73	891,360	2.44	1,046,398	2.73	1,092,007	3.20	1,446,916	4.02	1,284,773
May	31	0.41	1,101,150	1.06	991,564	0.39	978,660	0.12	1,055,836	1.20	1,083,849
June	30	0.26	805,380	0.92	971,190	1.04	834,213	0.84	955,260	1.20	1,017,694
July	31	0.67	811,740	0.61	925,531	0.08	789,060	0.21	1,010,820	0.73	1,062,886
August	31	0.62	783,291	0.06	729,763	0.09	702,000	0.27	903,309	0.90	968,790
September	30	2.76	874,530	1.78	720,710	1.15	622,881	2.37	861,928	4.73	1,227,330
October	31	3.11	913,894	6.87	985,299	5.60	973,860	3.16	985,260	4.53	1,475,100
November	30	5.04		7.96	1,449,371	5.61	1,500,090	5.56	1,680,842		
December	31	6.11		3.34	1,263,900	6.69	1,631,820	3.88	1,713,870		
TOTAL		32.29		37.54		33.97	12,843,950	32.08	14,927,082	23.32	11,844,837

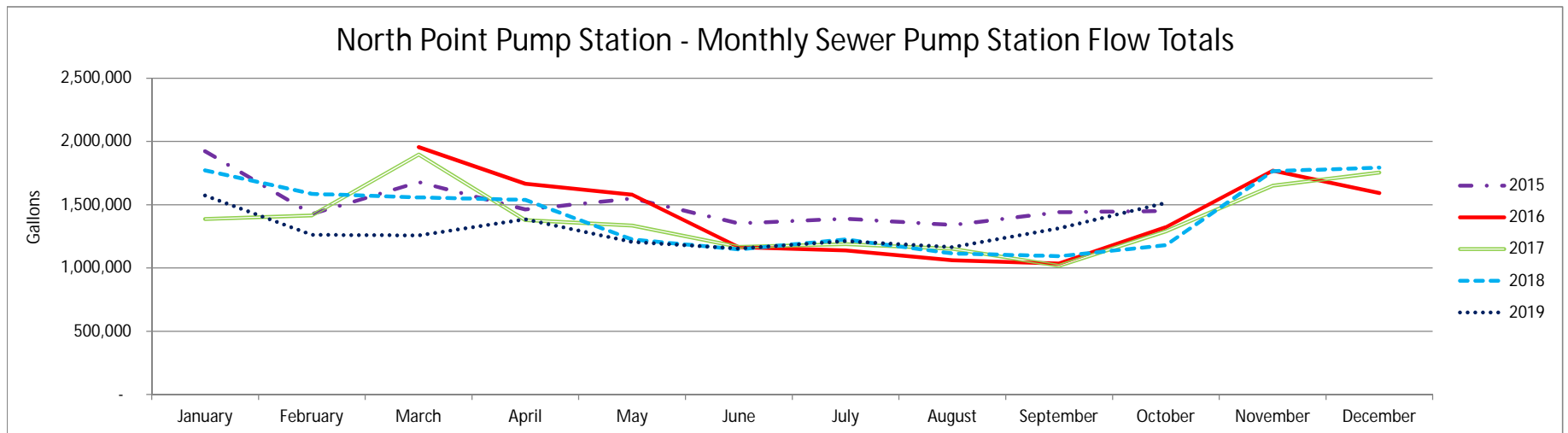


Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
North Point Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	1,922,661	3.06		1.81	1,387,624	4.88	1,771,308	3.78	1,571,714
February	28	2.48	1,425,065	5.61		2.89	1,413,926	4.33	1,585,004	1.15	1,261,055
March	31	4.58	1,678,462	3.83	1,955,429	5.89	1,896,023	3.26	1,557,219	1.08	1,257,310
April	30	0.73	1,462,979	2.44	1,665,931	2.73	1,378,842	3.20	1,538,925	4.02	1,384,643
May	31	0.41	1,548,794	1.06	1,579,627	0.39	1,334,847	0.12	1,224,792	1.20	1,204,353
June	30	0.26	1,352,787	0.92	1,165,157	1.04	1,166,253	0.84	1,146,224	1.20	1,153,391
July	31	0.67	1,389,754	0.61	1,137,473	0.08	1,188,303	0.21	1,224,277	0.73	1,211,357
August	31	0.62	1,340,331	0.06	1,061,126	0.09	1,150,626	0.27	1,114,640	0.90	1,164,116
September	30	2.76	1,440,827	1.78	1,034,824	1.15	1,017,795	2.37	1,093,436	4.73	1,313,311
October	31	3.11	1,449,810	6.87	1,322,207	5.60	1,290,496	3.16	1,179,073	4.53	1,514,004
November	30	5.04		7.96	1,768,857	5.61	1,651,318	5.56	1,763,897		
December	31	6.11		3.34	1,592,151	6.69	1,754,126	3.88	1,793,460		
TOTAL		32.29		37.54		33.97	16,630,180	32.08	16,992,254	23.32	13,035,253

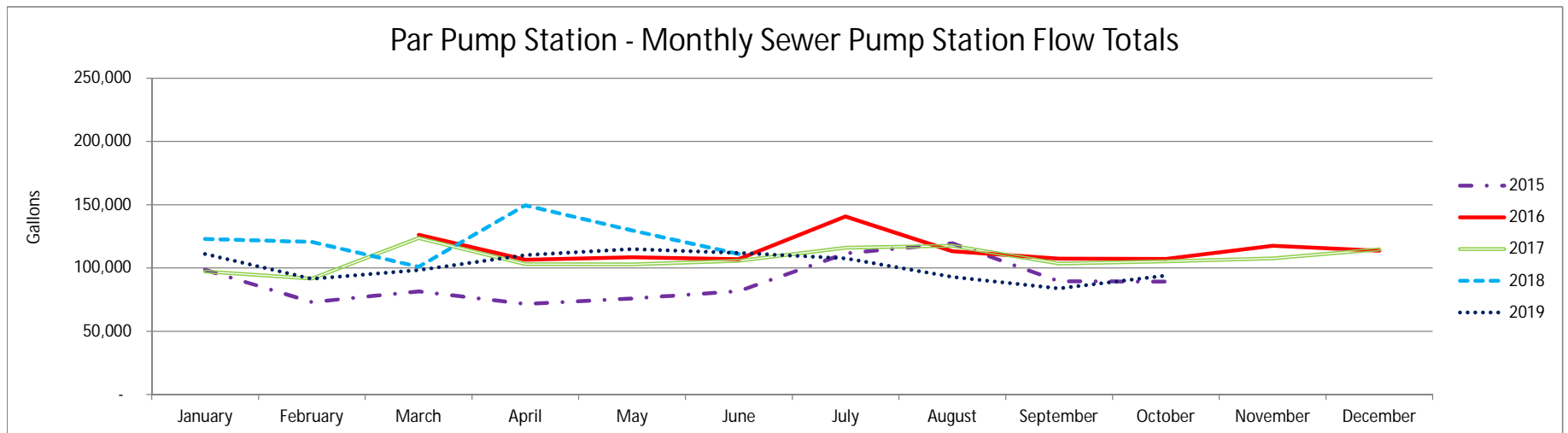


Notes:

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- Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Par Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	98,400	3.06		1.81	97,183	4.88	122,850	3.78	110,958
February	28	2.48	73,050	5.61		2.89	91,493	4.33	120,433	1.15	91,388
March	31	4.58	81,510	3.83	126,190	5.89	123,481	3.26	100,850	1.08	98,226
April	30	0.73	71,533	2.44	106,572	2.73	103,117	3.20	149,483	4.02	110,175
May	31	0.41	75,750	1.06	108,517	0.39	102,767	0.12	129,650	1.20	114,890
June	30	0.26	81,650	0.92	107,000	1.04	105,594	0.84	111,050	1.20	111,868
July	31	0.67	111,467	0.61	140,624	0.08	115,933	0.21		0.73	107,499
August	31	0.62	119,552	0.06	113,171	0.09	117,467	0.27		0.90	92,884
September	30	2.76	89,517	1.78	107,356	1.15	103,520	2.37		4.73	83,884
October	31	3.11	89,114	6.87	107,067	5.60	105,250	3.16		4.53	93,934
November	30	5.04		7.96	117,594	5.61	107,517	5.56			
December	31	6.11	-	3.34	113,583	6.69	114,800	3.88	210,425		
TOTAL		32.29		37.54		33.97	1,288,122	32.08	944,741	23.32	1,015,706

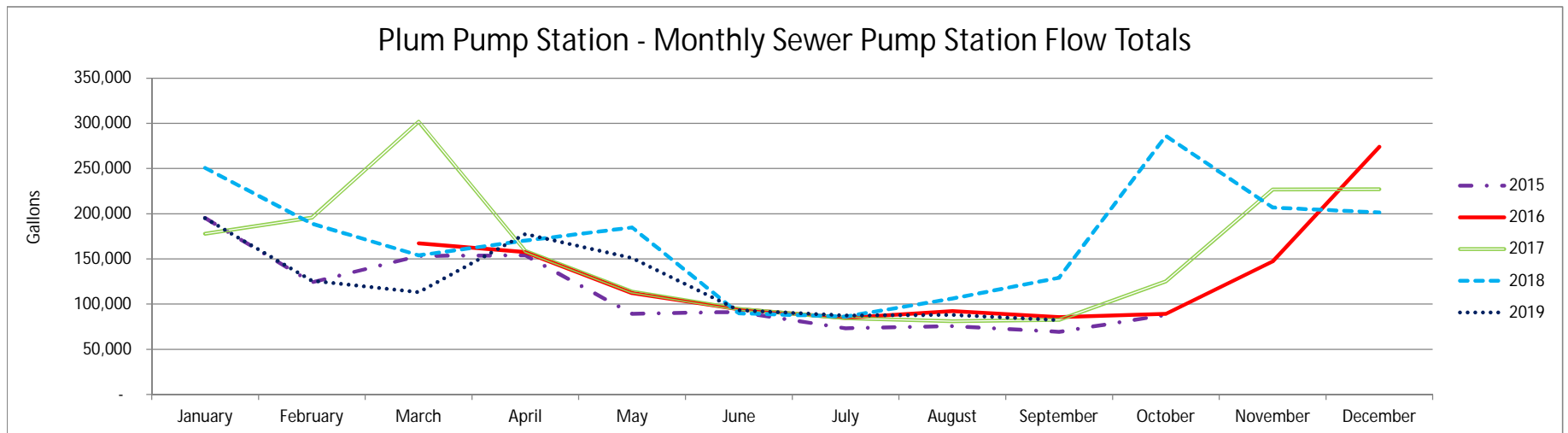


Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Plum Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	195,299	3.06		1.81	177,861	4.88	250,690	3.78	195,129
February	28	2.48	123,949	5.61		2.89	195,773	4.33	188,950	1.15	125,911
March	31	4.58	153,270	3.83	167,146	5.89	301,740	3.26	154,037	1.08	113,037
April	30	0.73	153,847	2.44	157,705	2.73	158,669	3.20	170,365	4.02	177,671
May	31	0.41	89,107	1.06	112,209	0.39	113,651	0.12	184,697	1.20	150,784
June	30	0.26	91,447	0.92	94,271	1.04	94,734	0.84	89,824	1.20	93,164
July	31	0.67	73,193	0.61	84,584	0.08	84,443	0.21	86,056	0.73	87,450
August	31	0.62	75,514	0.06	92,196	0.09	81,196	0.27	106,250	0.90	88,007
September	30	2.76	69,280	1.78	85,601	1.15	82,445	2.37	129,093	4.73	82,378
October	31	3.11	88,079	6.87	89,289	5.60	125,331	3.16	285,995		
November	30	5.04		7.96	147,314	5.61	226,846	5.56	206,946		
December	31	6.11		3.34	273,853	6.69	227,101	3.88	201,492		
TOTAL		32.29		37.54		33.97	1,869,790	32.08	2,054,393	18.79	1,113,531

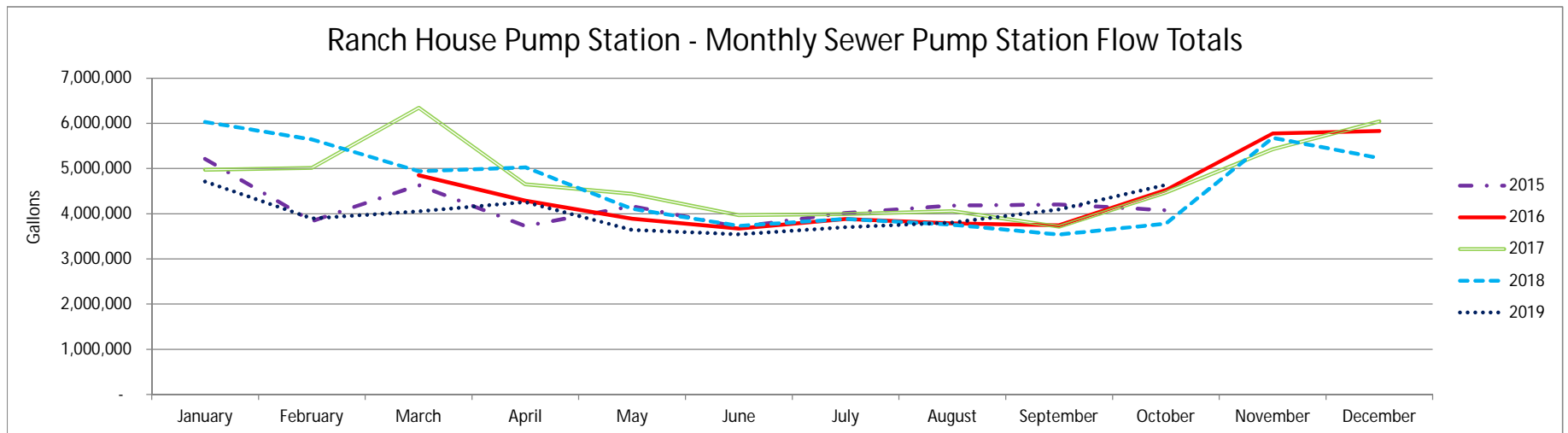


Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Ranch House Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	5,213,787	3.06		1.81	4,972,723	4.88	6,031,701	3.78	4,712,886
February	28	2.48	3,835,271	5.61		2.89	5,016,706	4.33	5,641,720	1.15	3,896,452
March	31	4.58	4,631,173	3.83	4,848,721	5.89	6,342,599	3.26	4,942,627	1.08	4,052,121
April	30	0.73	3,724,476	2.44	4,286,697	2.73	4,651,456	3.20	5,026,481	4.02	4,255,627
May	31	0.41	4,169,900	1.06	3,889,935	0.39	4,436,423	0.12	4,104,246	1.20	3,641,296
June	30	0.26	3,706,101	0.92	3,672,356	1.04	3,966,613	0.84	3,729,719	1.20	3,545,837
July	31	0.67	4,015,346	0.61	3,882,770	0.08	3,993,381	0.21	3,885,888	0.73	3,701,042
August	31	0.62	4,180,392	0.06	3,785,458	0.09	4,055,575	0.27	3,755,624	0.90	3,801,714
September	30	2.76	4,202,839	1.78	3,741,911	1.15	3,710,736	2.37	3,538,189	4.73	4,091,806
October	31	3.11	4,073,732	6.87	4,521,989	5.60	4,467,875	3.16	3,780,404	4.53	4,636,471
November	30	5.04		7.96	5,778,176	5.61	5,423,838	5.56	5,679,420		
December	31	6.11		3.34	5,830,092	6.69	6,041,642	3.88	5,228,959		
TOTAL		32.29		37.54		33.97	57,079,566	32.08	55,344,978	23.32	40,335,253

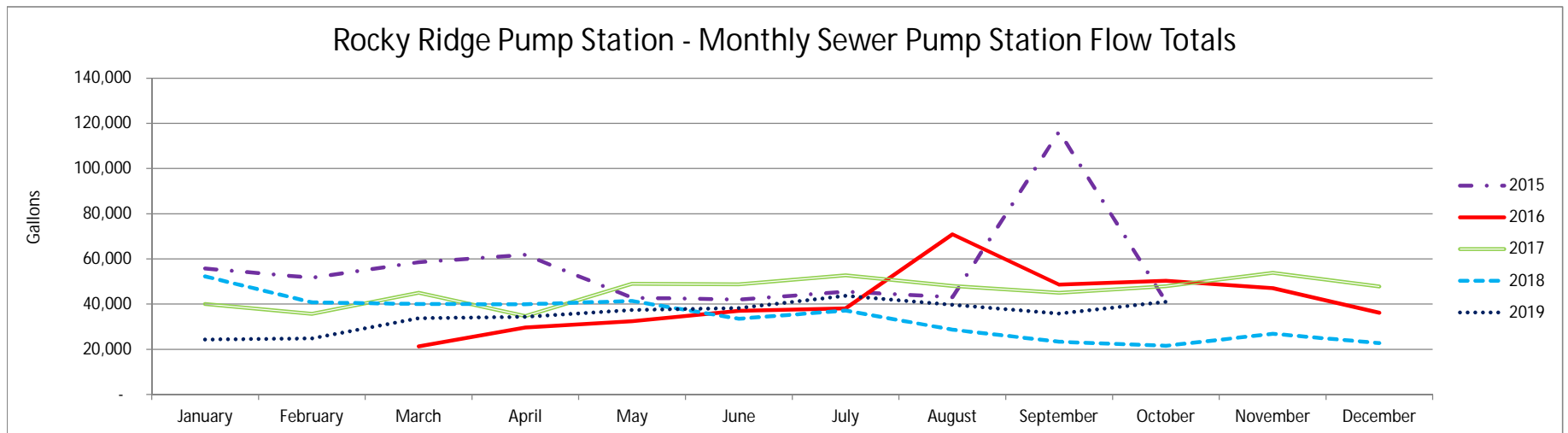


Notes:

1. Blank cells in the monthly flow column represents bad or missing data.
2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Rocky Ridge Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	55,808	3.06		1.81	40,100	4.88	52,250	3.78	24,262
February	28	2.48	51,633	5.61		2.89	35,733	4.33	40,817	1.15	24,833
March	31	4.58	58,577	3.83	21,250	5.89	44,967	3.26	40,054	1.08	33,723
April	30	0.73	61,850	2.44	29,604	2.73	34,700	3.20	39,917	4.02	34,333
May	31	0.41	42,767	1.06	32,388	0.39	48,983	0.12	41,417	1.20	37,410
June	30	0.26	42,017	0.92	36,967	1.04	48,808	0.84	33,483	1.20	38,267
July	31	0.67	45,517	0.61	38,140	0.08	52,767	0.21	37,150	0.73	43,711
August	31	0.62	43,034	0.06	70,839	0.09	48,017	0.27	28,650	0.90	39,717
September	30	2.76	116,367	1.78	48,687	1.15	44,996	2.37	23,333	4.73	35,833
October	31	3.11	41,187	6.87	50,333	5.60	47,967	3.16	21,483	4.53	41,050
November	30	5.04		7.96	47,070	5.61	53,850	5.56	26,833		
December	31	6.11	-	3.34	36,133	6.69	47,783	3.88	22,800		
TOTAL		32.29		37.54		33.97	548,671	32.08	408,188	23.32	353,139

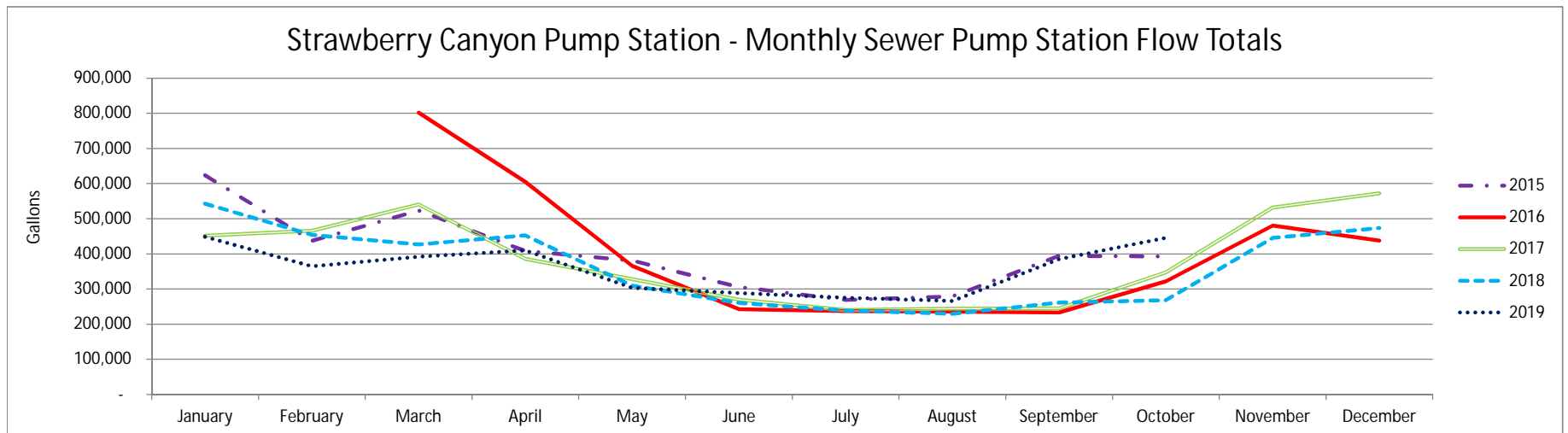


Notes:

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2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Strawberry Canyon Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	623,914	3.06		1.81	451,768	4.88	542,742	3.78	448,388
February	28	2.48	436,810	5.61		2.89	466,155	4.33	453,972	1.15	365,079
March	31	4.58	523,546	3.83	801,796	5.89	540,763	3.26	426,845	1.08	391,673
April	30	0.73	408,609	2.44	604,780	2.73	385,885	3.20	452,956	4.02	409,733
May	31	0.41	380,916	1.06	365,477	0.39	328,242	0.12	309,684	1.20	303,353
June	30	0.26	305,291	0.92	242,387	1.04	269,709	0.84	260,486	1.20	288,712
July	31	0.67	269,459	0.61	237,033	0.08	240,412	0.21	238,680	0.73	275,022
August	31	0.62	279,021	0.06	235,564	0.09	244,233	0.27	229,132	0.90	265,680
September	30	2.76	394,378	1.78	233,533	1.15	244,850	2.37	260,975	4.73	384,932
October	31	3.11	393,024	6.87	321,697	5.60	347,840	3.16	268,502	4.53	445,663
November	30	5.04		7.96	480,618	5.61	532,012	5.56	445,820		
December	31	6.11		3.34	437,946	6.69	572,172	3.88	473,708		
TOTAL		32.29		37.54		33.97	4,624,041	32.08	4,363,501	23.32	3,578,234

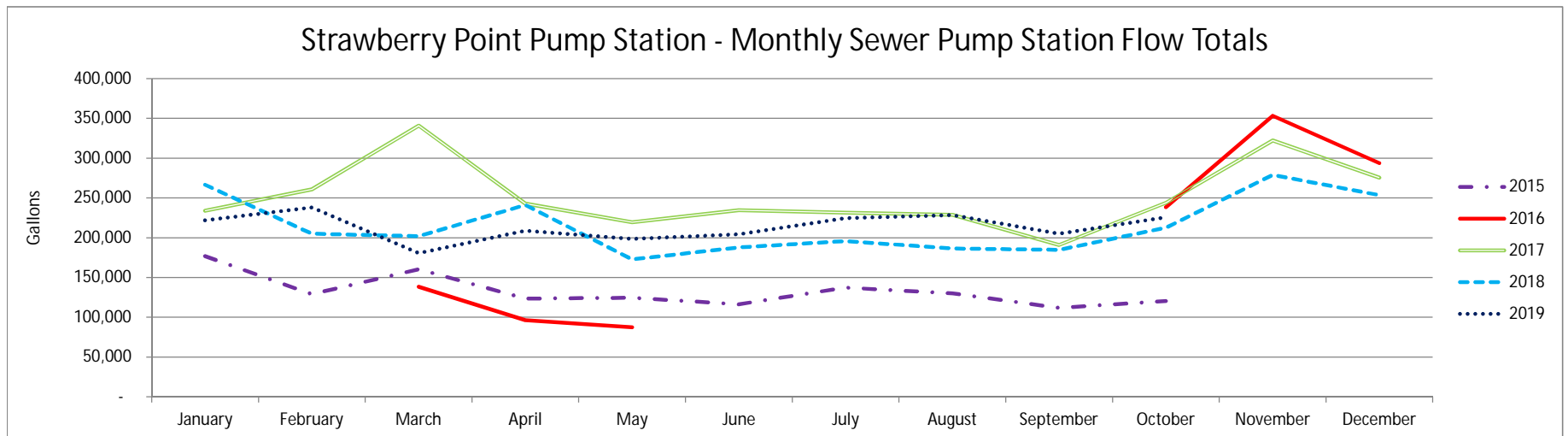


Notes:

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2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Strawberry Point Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	176,700	3.06		1.81	233,800	4.88	266,523	3.78	221,795
February	28	2.48	129,050	5.61		2.89	260,800	4.33	204,948	1.15	238,035
March	31	4.58	160,463	3.83	138,398	5.89	340,680	3.26	201,772	1.08	180,699
April	30	0.73	123,700	2.44	96,473	2.73	242,720	3.20	241,083	4.02	208,740
May	31	0.41	124,600	1.06	87,443	0.39	219,360	0.12	172,613	1.20	198,601
June	30	0.26	116,300	0.92		1.04	234,520	0.84	187,720	1.20	204,180
July	31	0.67	137,200	0.61		0.08	231,640	0.21	195,823	0.73	224,507
August	31	0.62	129,918	0.06		0.09	228,680	0.27	186,296	0.90	228,480
September	30	2.76	111,750	1.78		1.15	190,864	2.37	184,617	4.73	204,931
October	31	3.11	120,413	6.87	238,251	5.60	244,000	3.16	212,576	4.53	225,505
November	30	5.04		7.96	353,048	5.61	322,120	5.56	278,787		
December	31	6.11		3.34	293,765	6.69	275,440	3.88	253,493		
TOTAL		32.29		37.54		33.97	3,024,624	32.08	2,586,249	23.32	2,135,474

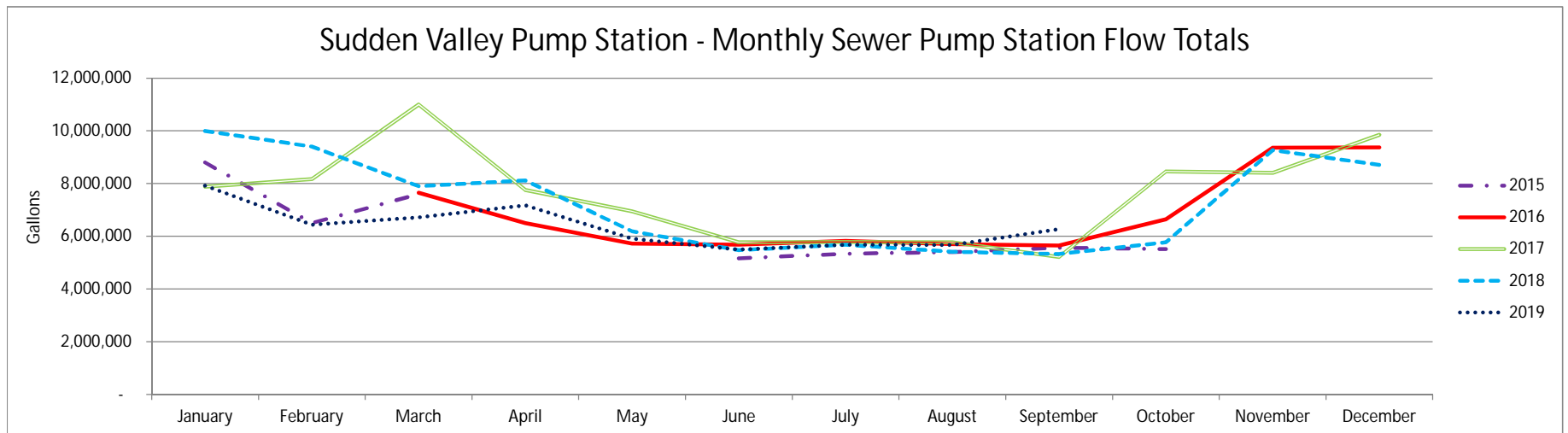


Notes:

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2. Rainfall source is wunderground.com at Bellingham International Airport (KBLI).

SEWER PUMP STATION FLOW ANALYSIS
Sudden Valley Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	8,801,480	3.06		1.81	7,876,050	4.88	9,993,150	3.78	7,926,014
February	28	2.48	6,504,300	5.61		2.89	8,170,005	4.33	9,399,150	1.15	6,438,600
March	31	4.58	7,596,044	3.83	7,656,299	5.89	11,004,260	3.26	7,898,400	1.08	6,720,361
April	30	0.73		2.44	6,497,022	2.73	7,757,534	3.20	8,120,682	4.02	7,170,393
May	31	0.41		1.06	5,721,314	0.39	6,943,500	0.12	6,192,169	1.20	5,911,649
June	30	0.26	5,166,150	0.92	5,686,800	1.04	5,771,762	0.84	5,469,900	1.20	5,495,841
July	31	0.67	5,340,750	0.61	5,829,287	0.08	5,789,250	0.21	5,683,950	0.73	5,684,849
August	31	0.62	5,402,953	0.06	5,706,050	0.09	5,770,950	0.27	5,410,656	0.90	5,674,350
September	30	2.76	5,572,350	1.78	5,656,030	1.15	5,219,994	2.37	5,333,095	4.73	6,278,100
October	31	3.11	5,516,394	6.87	6,650,670	5.60	8,455,800	3.16	5,771,400		
November	30	5.04		7.96	9,360,310	5.61	8,406,900	5.56	9,273,023		
December	31	6.11	-	3.34	9,376,500	6.69	9,852,000	3.88	8,709,300		
TOTAL		32.29		37.54		33.97	91,018,006	32.08	87,254,875	18.79	57,300,157

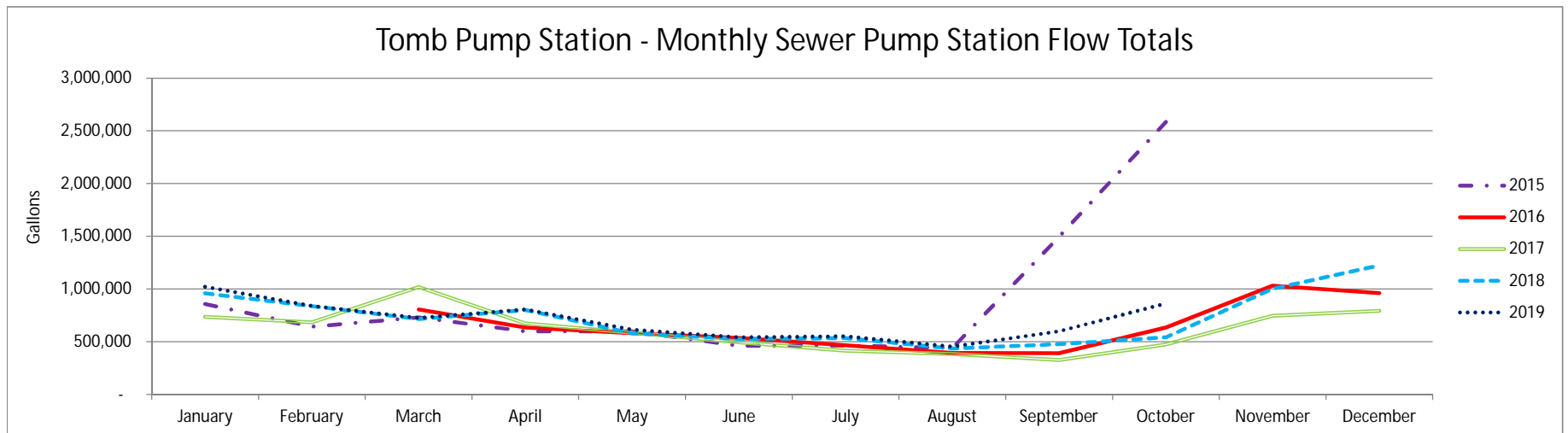


Notes:

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SEWER PUMP STATION FLOW ANALYSIS
Tomb Pump Station

MONTH	# DAYS	RAINFALL & MONTHLY FLOW									
		2015		2016		2017		2018		2019	
		Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)	Rainfall (In)	Flow (Gal)
January	31	5.52	858,669	3.06		1.81	736,776	4.88	958,704	3.78	1,022,277
February	28	2.48	642,721	5.61		2.89	685,425	4.33	837,312	1.15	840,857
March	31	4.58	731,978	3.83	806,486	5.89	1,018,266	3.26	715,800	1.08	726,612
April	30	0.73	599,649	2.44	634,585	2.73	673,212	3.20	801,778	4.02	805,240
May	31	0.41	597,810	1.06	581,904	0.39	585,335	0.12	580,777	1.20	615,369
June	30	0.26	460,878	0.92	537,014	1.04	495,275	0.84	526,272	1.20	541,490
July	31	0.67	463,437	0.61	467,629	0.08	414,938	0.21	534,096	0.73	553,190
August	31	0.62	441,366	0.06	393,773	0.09	383,616	0.27	435,013	0.90	453,209
September	30	2.76	1,496,108	1.78	391,192	1.15	326,479	2.37	476,101	4.73	597,964
October	31	3.11	2,584,879	6.87	634,562	5.60	473,258	3.16	540,744	4.53	863,985
November	30	5.04		7.96	1,031,853	5.61	745,975	5.56	1,004,440		
December	31	6.11		3.34	960,680	6.69	794,099	3.88	1,222,344		
TOTAL		32.29		37.54		33.97	7,332,653	32.08	8,633,381	23.32	7,020,194



Notes:

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