TREATMENT PLANT BYPASS WORKPLAN

City of Placerville

Prepared: May 19, 2017

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1. Background and Introduction

City of Placerville Hangtown Creek Water Reclamation Facility (WRF)

The City of Placerville (City) operates and discharges treated effluent from its Hangtown Creek Water Reclamation Facility (WRF), as regulated by the Waste Discharge Requirements (WDRs) set forth by Order R5-2014-0015-01 adopted by the Central Valley Regional Water Quality Control Board (CVRWQCB). These WDRs also serve as a National Pollutant Discharge Elimination System (NPDES) Permit, No. CA 0078956, as authorized by the Clean Water Act. In addition to the aforementioned WDRs, the City's WRF is also operating under a Cease and Desist Order (CDO), CVRWQCB Order No. R5-2015-009.

City of Placerville Sewer Collection System

The City's sewer collection system is regulated by State Water Resources Control Board Order No. 2006-003-DWQ, as amended by Order WQ-2013-0058-EXEC, General Waste Discharge Requirements for Sanitary Sewer Systems, also identified as the Sanitary Sewer Overflow (SSO) General Order (General SSO Order).

The purpose of this Treatment Plant Bypass Workplan (Workplan) is to quantify and identify means and methods to prevent future capacity related issues, and maintain compliance with the WDRs and with the General SSO Order. On April 17, 2017, the City received a Notice of Violation (Attachment 9) for a partially-treated wastewater release and SSOs associated with the WRF and the City's sewer collection system, respectively. As one of the actions required of the City by the CVRWQCB, the City has timely prepared this Workplan.

The circumstances identified in the Notice occurred under conditions associated with the intense rainfall that was experienced within the City and surrounding region in January and February of 2017. The series of storm events within those two consecutive months had a 45-day, 195-year return frequency. The following violations were identified in the Notice of Violation:

Relevant Provisions of WDRs of the WRF

1. Discharge Prohibition III.A states, in part, *"Discharge of wastewater at a location or in a manner different from that described in this Order is prohibited."*
2. Discharge Prohibition III.B states, in part, *"The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Federal Standard Provisions I.G. and I.H. (Attachment D)."*

Summary of SSO Events

1. Per report CAL-OES 17-0247: A private sewer lateral connected at the City sewer main separated due to a storm surge in the collection system, resulting in release of 23,500 gallons of sewage to Hangtown Creek from the dates of January 10th to January 11th, 2017.
2. Per report CAL-OES 17-1087: The collection system experienced partial failure due to a storm surge and waste blockage that impacted a collection system structure, releasing 602,900 gallons of sewage to Hangtown Creek occurring from the dates February 6th through February 11th, 2017.

3. Per report CAL-OES 17-1129: The collection system experienced a storm surge that impacted the systems effectiveness to convey as design (inflow was greater than capacity), resulting in release of approximately 46,800 gallons of sewage to Hangtown Creek on February 7th, 2017.
4. Per report CAL-OES 17-1525: A manhole within the collection system experienced a substantial blockage, preventing conveyance through the system, ultimately leading the system's relief of pressure through the top of a manhole. This discharge resulted in the release of approximately 582,000 gallons of sewage to Hangtown Creek occurring on and around February 20th, 2017.

The City is in receipt of a Notice of Violation (Notice) related to partially-treated wastewater spill and sanitary sewer overflows (SSO) for the WRF and City collection system as summarized above. As an action required and stated in the Notice to the Discharger (City), the City is providing the following information with section reference:

- *If the Discharger believes the treatment plant bypasses met the exceptions of Discharge Prohibition III.B, then explain how and why:* **Please see section A. Bypass Prohibition Exception below.**
- *Identify the peak wet weather design flow for the Facility and the largest corresponding rainfall event that will not cause a bypass or other reduced treatment:* **Please see section titled 3. Treatment Plant Design Flow.**
- *Provide the past two years of records of bypassing any treatment process at the Facility due to high I/I:* **Please see section titled 4. Bypass Information for Treatment Process**
- *Provide actual rainfall data from the storm events and include verified rain gauge data used to determine the intensity:* **Please see section titled 2. Effective Rainfall and Storm Data.**
- *Discuss problem areas in the collection system with known I/I problems and what the Discharger has done in the past two years to reduce I/I in the system:* **Please see section titled 6. Collection System Evaluation, subsection A.**
- *Provide the past two years of maintenance records for the collection system:* **Please see Attachment 2: City Sewer System Maintenance Records 2015 – 2017.**
- *Describe measure the Discharger has taken, and will take, to reduce I/I in the collection system and prevent future treatment process bypass at the Facility:* **Please see section titled 6. Collection System Evaluation, subsection B. Inflow and Infiltration Reduction Efforts.**
- *Document how much I/I reduction is necessary so bypass of any treatment process does not occur in the future:* **Please see section titled 6. Collection System Evaluation, subsection B.e.**
- *Evaluate if Facility upgrades are needed to provide adequate capacity:* **Please see section titled 5. Treatment Plant Facility Upgrades.**
- *Provide a time schedule for identified specific collection system I/I improvement:* **Please see section 6.B.iv and Attachment 8: Measure H/L Draft CIP List.** This Workplan has

been prepared under the supervision of a California registered engineer as required by the Notice, but due to the budgetary commitments presented that exceed the authority of City staff and requiring action by the City Council, this Workplan shall be acknowledged and accepted by the Council as the governing body of the City of Placerville.

A. Bypass Prohibition Exception

Under the WDRs, Discharge Prohibition III.B addresses the bypass of treatment systems prior to discharge. Discharge Prohibition III.B indicates that bypass is prohibited except as allowed by Federal Standard Provisions I.G. and I.H. (Attachment D of the WDRs), which are based on the Code of Federal Regulations (particularly 40 CFR § 122.41).

Standard Provision I.G. indicates that the bypass is prohibited, and enforcement may be taken unless:

- The bypass was unavoidable to prevent severe property damage (i.e. severe damage to the treatment facility);
- There were no feasible alternatives to the bypass; and
- The permittee submitted notices as required.

Standard Provision I.H. indicates that the bypass is prohibited unless:

- An upset to the treatment process occurred and the Discharger can identify the cause as an exceptional incident;
- The permitted facility was being properly operated at the time;
- The Discharger submitted required notice; and
- The Discharger took all reasonable steps to mitigate the discharge

The bypasses at the WRF Flow Equalization Basin in January and February 2017 met those conditions. Further, in January 2017, CVRWQCB staff recognized that bypasses of the Flow Equalization Basin to Hangtown Creek were preferable to severe damage to and uncontrollable discharges from the Flow Equalization Basin Please see *Attachment 1: email from CVRWQCB staff.*

2. Effective Rainfall and Storm Data

Information regarding actual rainfall data is provided herein to establish the conditions contributing to the events described in the Notice. This information includes verified rain gauge data that supports intensity, duration, and frequency of the storms experienced in January and February of 2017 with the discharges occurred.

A. Verified Rain/Precipitation Gauge Data

Table 1 below describes the precipitation gages located within and near the WRF vicinity. These include:

- Two (2) National Oceanic and Atmospheric Administration (NOAA) Stations (one at the WRF and the other approximately 8 miles to the east); and
- Two City of Placerville gages (both at the WRF).

Table 1. Precipitation/Rainfall Gage Data in and near WRF Vicinity

Gage	Type	Location	Available Records*	Comments
NOAA Station 04-6956-02 (Placerville DISP Plant)	Automated	South end of WRFWRFWRF site on roof of old operations building	Monthly 1/2017 and 2/2017	Data collected by NOAA for climate purposes, (not to determine daily totals)
			Hourly 6/1/163 through 12/22/13	Data collected by NOAAQ. Basis for NOAA point precipitation frequency estimates
NOAA Station 04-6961-02 (Placerville 3NE) at Lava Cap Winery	Manual	Approximately 8 miles east of WRF	Monthly 1/2017 and 2/2017	Data collected by winery employee
Placerville weather station	Automated	North end of WRFWRF site adjacent to FEB	Continuous1/1/17 through 2/28/17	Data collected by WRFWRF SCADA system. Periodic recording problems. Appears to record low.
Placerville manual gage	Manual	Center of WRFWRF site on top of aeration basins	Daily 1/1/17 through 2/28/17	Data collected by plant staff when conducting daily rounds

*Monthly precipitation data is available from the two NOAA Stations. Daily precipitation data is only available from the Placerville manual gage and weather station.

Precipitation Records

Table 2A and 2B present the precipitation data collected at the four gauges for 1/1/17 through 2/28/17, when the impactful storms caused the bypass discharges to Hangtown Creek and SSOs.

- January 2017 Storm(s): Per Table 2.A, the monthly totals for the two NOAA stations and the Placerville manual gage ranged from 18.01 to 21.06 inches. The average for the 3 gages is

approximately 19.5 inches. The total for the Placerville automated weather station was only 13.20 inches (approximately 33% lower than the average for the other 3 gages), however, it's noted that HCWRF staff indicated this automated weather station traditionally reads low and has data collection problems.

- February 2017 Storm(s): Per Table 2.B, the monthly totals for the two NOAA stations and the Placerville manual gage ranged from 16.83 to 21.07 inches. The average for the 3 gages is approximately 18.9 inches. Again, the total for the Placerville automated weather station was much lower, only 10.58 inches or approximately 44% lower than the average for the other 3 gages.

Table 2.A WRFWRF Precipitation Data January 2017

Date	WRF Weather Condition	Precipitation (inches)			
		NOAA Placerville DISP Plant Automated Gage (Station 04-6956-02)	Placerville WRF Manual Gage	Placerville WRF Automated Weather Station	NOAA Lava Cap Winery Manual Gage (NOAA Station 04-6961-02)
1/1/17	Rain		0.0	0.0	
1/2/17	Rain		0.30	0.16	
1/3/17	Rain		0.50	0.75	
1/4/17	Rain		1.75	1.68	
1/5/17	Cloudy		1.60	0.04	
1/6/17	Cloudy		0.0	0.0	
1/7/17	Rain		0.30	0.58	
1/8/17	Rain		1.30	2.17	
1/9/17	Rain		3.00	0.48	
1/10/17	Rain		1.50	2.69	
1/11/17	Rain		3.50	0.56	
1/12/17	Cloudy		0.75	0.17	
1/13/17	Cloudy		0.25	0.01	
1/14/17	Sun		0.0	0.0	
1/15/17	Cloudy		0.0	0.0	
1/16/17	Fog		0.0	0.0	
1/17/17	Cloudy		0.0	0.0	
1/18/17	Rain		0.25	0.64	
1/19/17	Cloudy		1.33	0.99	
1/20/17	Rain		1.50	0.67	
1/21/17	Rain		0.80	0.28	
1/22/17	Rain		0.70	0.90	
1/23/17	Rain		1.40	0.42	
1/24/17	Cloudy		0.33	0.0	
1/25/17	Cloudy		0.0	0.0	
1/26/17	Sun		0.0	0.0	
1/27/17	Sun		0.0	0.0	
1/28/17	Sun		0.0	0.0	
1/29/17	Sun		0.0	0.0	
1/30/17	Sun		0.0	0.0	
1/31/17	Sun		0.0	0.0	
January 2017		19.32	21.06	13.20	18.01

Table 2.B WRF Precipitation Data February 2017

Date	WRF Weather Condition	Precipitation (inches)			
		NOAA Placerville DISP Plant Automated Gage (Station 04-6956-02)	Placerville WRF Manual Gage	Placerville WRF Automated Weather Station	NOAA Lava Cap Winery Manual Gage (NOAA Station 04-6961-02)
2/1/17	Rain		0.80		
2/2/17	Rain		0.0		
2/3/17	Rain		1.00	1.39	
2/4/17	Rain		3.00	0.83	
2/5/17	Rain		2.00	0.98	
2/6/17	Cloudy		0.25	1.01	
2/7/17	Rain		3.33	1.33	
2/8/17	Cloudy		0.0	0.0	
2/9/17	Sun		0.1	0.0	
2/10/17	Cloudy		0.0	0.0	
2/11/17	Sun		0.0	0.0	
2/12/17	Cloudy		0.25	0.00	
2/13/17	Rain		no data	0.22	
2/14/17	Rain		0.50	0.41	
2/15/17	Rain		0.30	0.16	
2/16/17	Sun		0.10	0.06	
2/17/17	Rain		1.25	2.48	
2/18/17	Rain		1.70	1.68	
2/19/17	Cloudy		0.5	0.01	
2/20/17	Cloudy		0.25	0.02	
2/21/17	Cloudy		0.0	0.0	
2/22/17	Cloudy		0.0	0.0	
2/23/17	Sun		0.0	0.0	
2/24/17	Cloudy		0.0	0.0	
2/25/17	Cloudy		0.0	0.09	
2/26/17	Sun		0.0	0.0	
2/27/17	Cloudy		0.0	0.0	
2/28/17	Sun		0.0	0.0	
February 2017		18.69	15.33	10.58	21.07

Comparison of Precipitation and Influent, Creek and Bypass Flows – January and February 2017

Table 3A and 3B provides comparison of the precipitation data and the WRF influent and bypass flows as well as the flows within Hangtown Creek at the permitted data collection point of RSW-001 for January 2017 and February 2017, respectively.

Table 3.A WRF Precipitation, Influent and Creek Flow Data January 2017

Date	WRF Weather Condition	Precipitation (inches)			WRF Influent Flow mgd	Hangtown Creek Depth at RSW-001 feet	Hangtown Creek Flow at RSW-001 mgd	Estimated Bypass Flow mgd
		NOAA Placerville DISP Plant Automated Gage (Station 04-6956-02)	Placerville WRF Manual Gage	NOAA Lava Cap Winery Manual Gage (NOAA Station 04-6961-02)				
1/1/17	Rain		0.0		0.91	0.82	0.55	0.00
1/2/17	Rain		0.30		1.02	1.23	2.05	0.00
1/3/17	Rain		0.50		1.33	2.18	13.26	0.00
1/4/17	Rain		1.75		3.54	3.43	**58.02**	0.00
1/5/17	Cloudy		1.60		2.62	1.97	9.53	0.00
1/6/17	Cloudy		0.0		1.75	1.62	5.04	0.00
1/7/17	Rain		0.30		1.87	2.59	**23.24**	0.00
1/8/17	Rain		1.30		**4.31**	4.30	**121.16**	0.00
1/9/17	Rain		3.00		**4.02**	3.15	**43.96**	0.00
1/10/17	Rain		1.50		**5.64**	5.07	**207.20**	**0.65**
1/11/17	Rain		3.50		**4.55**	2.89	**33.21**	**1.30**
1/12/17	Cloudy		0.75		2.70	2.04	10.68	**0.16**
1/13/17	Cloudy		0.25		2.05	1.69	5.78	0.00
1/14/17	Sun		0.0		1.78	1.52	4.10	0.00
1/15/17	Cloudy		0.0		1.60	1.40	3.13	0.00
1/16/17	Fog		0.0		1.49	1.31	2.52	0.00
1/17/17	Cloudy		0.0		1.40	1.22	2.00	0.00
1/18/17	Rain		0.25		1.54	1.97	9.53	0.00
1/19/17	Cloudy		1.33		2.80	2.93	34.73	0.00
1/20/17	Rain		1.50		3.29	2.77	28.92	0.00
1/21/17	Rain		0.80		2.87	2.32	16.24	0.00
1/22/17	Rain		0.70		3.02	3.19	45.81	0.00
1/23/17	Rain		1.40		3.28	2.50	20.71	0.00
1/24/17	Cloudy		0.33		2.44	1.98	9.69	0.00
1/25/17	Cloudy		0.0		1.98	1.73	6.24	0.00
1/26/17	Sun		0.0		1.71	1.56	4.46	0.00
1/27/17	Sun		0.0		1.57	1.44	3.43	0.00

Table 3.A WRF Precipitation, Influent and Creek Flow Data January 2017

Date	WRF Weather Condition	Precipitation (inches)			WRF Influent Flow mgd	Hangtown Creek Depth at RSW-001 feet	Hangtown Creek Flow at RSW-001 mgd	Estimated Bypass Flow mgd
		NOAA Placerville DISP Plant Automated Gage (Station 04-6956-02)	Placerville WRF Manual Gage	NOAA Lava Cap Winery Manual Gage (NOAA Station 04-				
1/28/17	Sun		0.0		1.45	1.35	2.78	0.00
1/29/17	Sun		0.0		1.32	1.29	2.40	0.00
1/30/17	Sun		0.0		1.24	1.22	2.00	0.00
1/31/17	Sun		0.0		1.21	1.19	1.85	0.00
January 2017		19.32	21.06	18.01				**2.11**

Table 3.B WRF Precipitation, Influent and Creek Flow Data February 2017

Date	WRF Weather Condition	Precipitation (inches)			WRF Influent Flow mgd	Hangtown Creek Depth at RSW-001 feet	Hangtown Creek Flow at RSW-001 mgd	Estimated Bypass Flow mgd
		NOAA Placerville DISP Plant Automated Gage (Station 04-6956-02)	Placerville WRF Manual Gage	NOAA Lava Cap Winery Manual Gage (NOAA Station 04-6961-02)				
2/1/17	Cloudy		0.25		1.19	1.08	1.35	0.00
2/2/17	Cloudy		0.0		1.19	1.19	1.85	0.00
2/3/17	Rain		1.25		1.51	1.88	8.18	0.00
2/4/17	Rain		0.80		1.79	1.46	3.59	0.00
2/5/17	Rain		0.0		1.56	1.77	6.72	0.00
2/6/17	Rain		1.00		3.11	3.65	**71.04**	0.00
2/7/17	Rain		3.00		**4.51**	3.49	**61.39**	**0.13**
2/8/17	Rain		2.00		**6.44**	3.35	**53.73**	**1.65**
2/9/17	Cloudy		0.25		**7.53**	3.73	**76.24**	**5.53**
2/10/17	Rain		3.33		**4.95**	1.47		**2.26**
2/11/17	Cloudy		0.0		2.97	0.00		**0.29**
2/12/17	Sun		0.1		2.19	0.00		0.00
2/13/17	Cloudy		0.0		2.00	0.00		0.00
2/14/17	Sun		0.0		1.81	0.00		0.00
2/15/17	Cloudy		0.25		1.82	0.00		0.00
2/16/17	Rain				1.78	0.00		0.00
2/17/17	Rain		0.50		1.86	0.00		0.00
2/18/17	Rain		0.30		1.69	0.00		0.00
2/19/17	Sun		0.10		1.61	0.00		0.00

Table 3.B WRF Precipitation, Influent and Creek Flow Data February 2017

Date	WRF Weather Condition	Precipitation (inches)			WRF Influent Flow mgd	Hangtown Creek Depth at RSW-001 feet	Hangtown Creek Flow at RSW-001 mgd	Estimated Bypass Flow mgd
		NOAA Placerville DISP Plant Automated Gage (Station	Placerville WRF Manual Gage	NOAA Lava Cap Winery Manual Gage (NOAA				
2/20/17	Rain		1.25		2.37	0.00		0.00
2/21/17	Rain		1.70		1.18	0.00		0.00
2/22/17	Cloudy		0.5		2.76	0.00		0.00
2/23/17	Cloudy		0.25		2.35	0.00		0.00
2/24/17	Cloudy		0.0		1.98	0.00		0.00
2/25/17	Cloudy		0.0		1.75	0.00		0.00
2/26/17	Sun		0.0		1.81	0.00		0.00
2/27/17	Cloudy		0.0		1.58	0.00		0.00
2/28/17	Sun		0.0		1.45	0.00		0.00
February 2017		18.69	16.83	21.07				**9.86**

Note: Flow metering equipment in Hangtown Creek at RSW-001 failed on 2/10/17 due to storm creek flow damage

Based on data provided in Tables 3.A and 3.B above, we conclude that the bypasses did not occur except under the following conditions:

- Extended extreme periods of wet weather causing Hangtown Creek flows to exceed 40 MGD for several successive days; and
- Sustained influent flows of 4.0 MGD or greater were received at the WRF.

Based on this data and conclusion, the high WRF influent flows and resulting bypasses were not caused by a single storm event, but rather by an exceptional series of successive storm events that all occurred within the two-month January through February 2017 period.

B. Storm Intensity, Duration and Frequency

NOAA Atlas 14 Volume 6 provides point precipitation frequency estimates for NOAA Station Station 04-6956-02 (Placerville Disp Plant). The estimates can be found at the following web site:

http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html

Table 4 shows the return frequencies for the storms that impacted the WRF in January and February 2017.

Table 4. Return Frequencies for January and February 2017 Storm Events

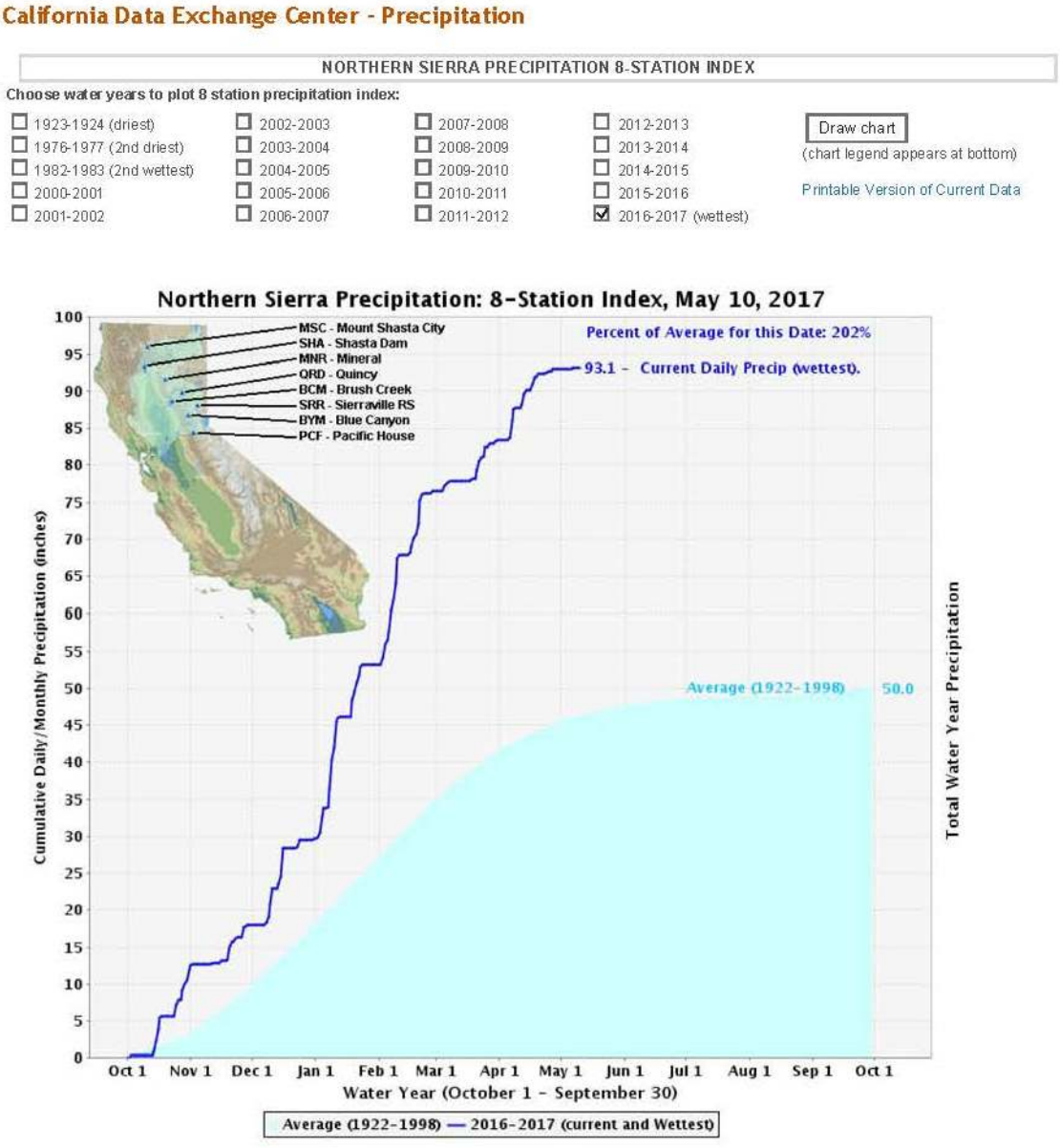
Date(s)	Duration	Depth (inches)	Average Recurrence Interval	Source of Precipitation Data
1/11/17	24-hours	3.5	1 to 2 years	WRF Manual Gage
1/11 - 1/12/17 and 2/7 - 2/8/17	2-day	5.0	2 to 5 years	WRF Manual Gage
1/9 - 1/11/7	3-day	8.0	25 years	WRF Manual Gage
1/8 – 1/22/17	4-day	9.3	32 years	WRF Manual Gage
1/2 - 1/31/17	30-day	21.06	23 years	WRF Manual Gage
1/4 – 2/17/17	45-day	32.99	**195 years**	WRF Manual Gage
1/1 – 3/1/17	60-day	38.01	**160 years**	NOAA Placerville Disp Plant

Based on the recurrence intervals shown in Table 4, both the 45-day duration storm events (195-year recurrence interval) and the 60-day duration storm events (160-year recurrence interval) that were experienced at the WRF in January and February 2017 were unusual, exceptional and extremely severe.

In addition, to further illustrate the severity of the 2016-17 wet season, we provide Figure 1 below, the Northern Sierra Precipitation 8-Station Index. The figure is shown on the California Department of Water Resources web site. The graph within the figure shows the Northern Sierra Precipitation - 8 Station Index for 2016-17 as the wettest year on record since 1922 (last 95 years). The 8-Station index is based on the precipitation at 8 rain gages extending from Mt Shasta City in the north to Pacific House, which is located along Highway 50 near Fresh Pond, in the south. This graph can be accessed at:

https://cdec.water.ca.gov/cdecapp/precipapp/get8SIPrecipIndex.action

Figure 1: Northern Sierra Precipitation 8-Station Index



3. Treatment Plant Design Flow

Per the design of the WRF, peak wet weather flow for the facility is 5.7 MGD. The peak sustainable flow for the facility based on plant design and history of treatment is 4.0 MGD. If the influent flow exceeds 4.0 mgd for an extended period, the Flow Equalization Basin (FEB) will fill and begin to overflow uncontrollably. The average dry weather influent volume is 2.3 MGD. The peak influent flows experienced during the January and February 2017 storm events exceeded 7 MGD and 9.9 MGD respectively.

4. Bypass Information for Treatment Process

Since the completion of the WRF Improvement Project in 2009, there have been no bypasses from the facility to Hangtown Creek until the recent bypasses that occurred in January and February 2017. Based on WRF operations records, the last previous bypass occurred in December 2005.

5. Treatment Plant Facility Upgrades

Based on treatment plant data, the WRF is capable of accepting and treating what the sewer collection system captures and transfers to the facility absent the substantial additional inflow and infiltration that results from extreme sequential wet weather such as experienced in January and February 2017. With the severity of the storms experienced in January and February, some of the process facilities are currently in need of maintenance and/or repair/replacement. These items have been identified and the City is proceeding with the necessary corrective work.

6. Collection System Evaluation

A. Sources of Inflow and Infiltration (I&I)

The City of Placerville was established in 1854, making it the 15th oldest city in California. The City's first established sewer collection systems were constructed in the late 1920's and early 1930's. A common pipe material of that time period consisted of Orangeburg pipe, constructed of wood mulch and pitch. Many of the collection system components also included privately-owned sewer mains and laterals that ultimately connected to the City's mains throughout town. Additionally, due to the topography and the cost of construction when installed, many City-owned mains and interceptors are located within or adjacent to Hangtown Creek. Some mains and interceptors become fully submerged and operate under pressure when the creek flow levels rise substantially during periods of exceptional wet weather as experienced in January and February 2017.

In 1999, the City performed a sewer smoke test on the public and private systems to determine sources of inflow and infiltration (I&I). A total of 207 collection/observation points were included in the report. Of that total, 144 of the areas where pipe partial or complete failure had occurred and I&I were likely, were noted as within privately owned mains and laterals. Based on this study, the City suspects that the various private systems in the City account for approximately 70% of the I&I within the overall City collection system.

The City's Public Works Division receives service and maintenance calls and often, it is determined these calls are tied to private lateral sewer lines. In the interest of public health and safety, if it is found that a SSO is commencing, regardless of ownership, City staff will remove the cause for the overflow. Through a work order process, Public Works has the mechanism to track and bill the owners of a private system when this has occurred.

Another potential source for I&I are City-owned mains located within or adjacent to Hangtown Creek as mentioned previously. The City performs regular visual inspections on these lines and is in the process of funding design and construction of Capital Improvement Projects (CIP) that address removal and/or replacement of these collection system components.

B. Inflow and Infiltration Reduction Efforts

As required within this Workplan, and per the Notice, the past two years of maintenance records are provided as *Attachment 2: City Sewer System Maintenance Records 2015 – 2017*. Maintenance is one of the many ways the City is taking active steps to reduce I&I. Other efforts are also summarized below:

i. **Code Enforcement:** The City has been actively pursuing the use of code enforcement to address damaged and otherwise compromised private sewer systems for several years when repair or replacement is needed. In October of 2015, the City developed a standardized form/letter that identified location, condition of concern, and City code language with enforcement action cited. This code enforcement letter and logging of its issuance by staff have been very effective in pursuing private lateral enforcement when a problem has been identified. When repairs are made by a licensed contractor as required, inspections of the installation are performed by City staff. **City staff is also evaluating and developing potential revisions to the current code language that will provide greater protection to the City and stricter enforcement to offending parties when a private lateral is determined to be in a state of needing repair.** The potential code language may include inspections and obtaining of a Certificate of Compliance for private sewer laterals upon title transfer/property sales. This could also be implemented when a property undergoes a change in use as well. Inspections would be performed using closed circuit television (CCTV) by a licensed contractor/plumber and provided to the City for review.

ii. **System Maintenance:** The City has focused substantial attention and efforts towards maintenance of the collection system by identifying and repairing substandard segments as they are discovered. Examples of this effort include:
   a. Purchase of a CCTV track camera at the price of $45,000 and converting a retired ambulance into a mobile camera vehicle for system inspections.
   b. Purchase of Pipeline Assessment and Certification Program (PACP) software at the price of $28,000 to evaluate conditions of inspected mains and laterals.
   c. City dedicated funding of a 2-year PACP outsourcing program at the price of $8,000 to assist in condition assessment and rating of approximately 32,000 linear feet of sewer mains and laterals within the system. The outsourcing of this evaluation will assist in rating existing video backlog into the PACP system. Anticipated efforts will yield that within 2 years, the City will have completed the evaluation of nearly 85,000 linear feet of sewer mains and laterals. **It is the City's goal to have completed a full evaluation of the nearly 50 miles of**

collection system and have it PACP rated within eight years or less. This would be the most thorough evaluation of the Placerville collection system in its history. Additionally, outsourcing this effort will allow staff to focus on routine flushing and necessary repairs of the system.

d. City Public Works Division has increased its inventory of spare and specialty parts to assist in more efficient and timely repairs of the system. Additionally, the City has standing working relationships with local contractors to assist in emergency situations inclusive of staffing and equipment resources when needed.

e. Work order, service requests, and repairs are top priority even with the limited staffing and resources of the City. **Based on the information compiled by the City, work orders and repairs related to private laterals and mains account for nearly double the work orders tied to the public collection system.** These work and maintenance orders are provided in their entirety as Attachments 4 through Attachment 6. The previous 2 years of efforts by City staff (based on number of work orders) are summarized as follows:

- April 2015 to Dec. 2015: Private Laterals/Mains – 49, Public Laterals/Mains – 30
- Jan. 2016 to Dec. 2016: Private Laterals/Mains – 64, Public Laterals/Mains – 38
- Jan. 2017 to April 2017: Private Laterals/Mains – 33, Public Laterals/Mains – 15

f. System flushing is also part of the necessary system maintenance focused on SSO prevention. *Attachment 7: Sewer Collection System Flushing Records* is provided for reference. On-going efforts were particularly challenged in 2016 with staffing shortages, with a nearly 40% vacancy in Public Works personnel. New staff has been hired to help bridge that resource disconnection, but training and skill set development takes time to reestablish. Primary focus of the limited staff was directed towards immediate needs addressing public health and safety of all facets of the City's infrastructure. Below is a summary of the previous 2 years of collection system flushing efforts:

- 2015: 77,206 linear feet of flushing, 30,391 linear feet of CCTV inspections.
- 2016: 7,901 linear feet of flushing, 470 linear feet of CCTV (see information above regarding staffing constraints).
- Jan. 2017 to April 2017: 11,598 linear feet of flushing.

iii. **Completed Capital Improvement Projects:** The City Engineering Division has been working diligently on first securing funding and then manifesting delivery of several Capital Improvement Projects (CIPs) over the last 2 years. **The City has appropriated over $1.1 million dollars towards improvements of the City's sewer collection system over the past 2 years with many more projects planned for delivery.** These efforts include, but are not limited to the following:

1) Main Street Phase 1B Project: Cast-In-Place-Pipe Sewer Main Lining, total cost of project completion was approximately $145,000.
2) Main Street Phase 2 Project: Replacement of substandard sewer service connections, specifically tied to the public restroom facility located on Main Street adjacent to the County courthouse and Hangtown Creek. Total cost of delivery was approximately $33,000.
3) Blairs Lane Bridge Replacement Project – Sewer Main Installation: Replacement of over 1,600 feet of public sewer main and private service

connections previously located in Hangtown Creek to new location within the City right-of-way on Broadway. Total cost of delivery was approximately $788,000.

4) Sewer Main Replacement on School Street: Replacement of section of failed main, total cost of delivery was approximately $89,000.
5) Sewer Main Replacement on Upper Main Street: Replacement of section of failed main, total cost of delivery was approximately $25,000.
6) Sewer Main Replacement on Grandview Street: Replacement of section of failed main, total cost of delivery was approximately $25,000.
7) Sewer Main Replacement on Monica Way: Replacement of section of failed main, total cost of delivery was approximately $22,000.
8) In addition, the City participated as a partner to the State Department of Transportation (Caltrans) Highway 50 Operational Improvements Project in the Lower Main Street vicinity that removed nearly a mile of sewer interceptor main previously located within Hangtown Creek and installed new sewer interceptor lines in locations outside of the creek. Following the completion of this work, the wet weather influent flows to the WRF dropped substantially.

iv. **Planned and Future I&I Reduction:** In addition to the aforementioned efforts, the City is dedicated to complete the following:

a. Staffing: The 2017/2018 fiscal year budget has outlined two new positions within the Public Works Division to assist in O&M efforts related to City infrastructure. **Upon completion of the sewer system rate study, additional staff will be funded to ensure adequate and stable staffing resources are available to continue flushing and inspection efforts.**
b. Training: In addition to on-going training efforts related the various City permits, installation practices, codes, and regulations, staff has also completed training related to the recently purchased track camera. This training effort will also continue for the annual training session scheduled for this month (May 2017). Additionally, training new staff on installation requirements such as trench safety and competent person training has also been completed for majority of the Public Works staff and will include new personnel as well.
c. Operations and Maintenance: **Outsourcing of flushing and video data collection of the system focused on the main trunk lines will supplement the limited resources and is directly related to the City's commitment of identifying all significant sources of potential I/I related to the storm impacts from January and February of 2017.** Access to these truck mains has been restricted by Hangtown Creek water surface elevation levels. Some areas may require debris removal to access the sewer for inspections and repair work if needed. Public Works is also in the process of purchasing additional materials for the larger trunk lines for repair/replacement needs identified.
d. Planned Capital Improvement Projects: *Attachment 8: Measure H/L 5-year Draft CIP List* provides a summary of planned projects and funding dedicated towards improvements of the collection system and their time schedule delivery by fiscal year.

Of the 19 proposed/planned funded future projects as scheduled, 13 (over 68%) of the City's planned CIPs are directly related to the sewer collection system improvements only, valued at nearly $5.9 million dollars, further demonstrating the City's commitment towards I&I reduction.

e. I&I Reduction Needed to Prevent Bypass Discharge: Barring another series of exceptional successive storms as experienced in January and February 2017, additional bypass discharges from the treatment plant are not anticipated. This is supported by City records indicating that the recent bypasses are the first of their kind to occur since the WRF upgrades were completed in 2008/2009. The amount of I&I reduction needed WRF is any amount in excess of the instantaneous peak wet weather flow of 5.7 MGD for momentary intensity and any amount in excess of the sustained flow of 4.0 MGD for any extended number of days.

7. City Funding Sources

A. Measure H: Measure H is 0.25% add-on sales tax that was approved by Voters on November 2, 2010, and is dedicated to reducing wastewater and/or water rates and paying for wastewater and/or water debt and the replacement of sewer and water infrastructure. The Measure H sales tax became effective April 1, 2011 and currently generates approximately $1 million annually. Of the $1 million in annual revenues, approximately $500,000 is being used to pay debt service through a sewer charge discount to ratepayers. The remaining $500,000 is being used to fund sewer and water capital improvement projects. Between April 1, 2011 and June 30, 2016, the Measure H sales tax has funded $2.1 million in sewer and water capital projects. The Measures H/L Sales Tax Committee provides oversite of Measure H revenues and expenditures and makes recommendations to the City Council at least annually.

B. Measure L: On November 8, 2016, Measure L, the 0.50% add-on sales tax that is dedicated to repairing and improving the City's aged streets, storm drains, sewer lines, and water lines, was approved by voters. Measure L became effective April 1, 2017, and is forecasted to generate approximately $2 million annually. The Measures H/L Sales Tax Committee provides oversite of Measure L revenues and expenditures and makes recommendations to the City Council at least annually.

C. Sewer Connections:

i. **Capital Improvement Charges:** The City charges a Capital Improvement Charge (CIC) for each new connection to its sewer system. The amount of the CIC is determined by the type of sewer the new connection will be discharging. Customers who discharge higher strength sewer pay a higher CIC than those who discharge lower strength sewer. For example, the City's current sewer CIC for a single-family residential home is $7,350 compared to a restaurant which has a CIC of $14,718.

ii. **Sewer Service Rates:** The City collects bi-monthly sewer charges comprised of a base charge and a commodity charge, which is determined by the associated water consumption. The commodity charges for Single-family residential accounts are based on the water consumption between December and February of the previous fiscal year. The commodity charges for commercial accounts are based on the water consumption during the current billing period. The current bi-monthly base charge and commodity charge are $162.11 and $7.51 per cf over the first 750 cf respectively.

iii. **Sewer Rate Study:** The City has contracted with Bartle Wells Associates to perform a sewer and water rate study. The new sewer and water rates are anticipated to be implemented this fall. The City also plans on performing a study of its sewer CICs shortly after the new sewer rates are implemented.

Attachment 1: Written permission to discharge from CVRWQCB staff.

Attachment 2: City Sewer System Maintenance Records 2015 – 2017

Attachment 3: 2015 Sewer Calls for the Sewer Collection System

Attachment 4: 2016 Sewer Calls for the Sewer Collection System

Attachment 5: 2017 Sewer Calls for the Sewer Collection System

Attachment 6: Sewer Collection System Flushing Records

Attachment 7: Measure H/L 5-year Draft CIP List