City of Buellton

January 28, 2019

California Regional Water Quality Control Board
Central Coast Region
Attn: Monitoring and Reporting Review Section
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401

Dear Mr. Kolb:

Please find attached the City of Buellton's **2018 Annual Report**:

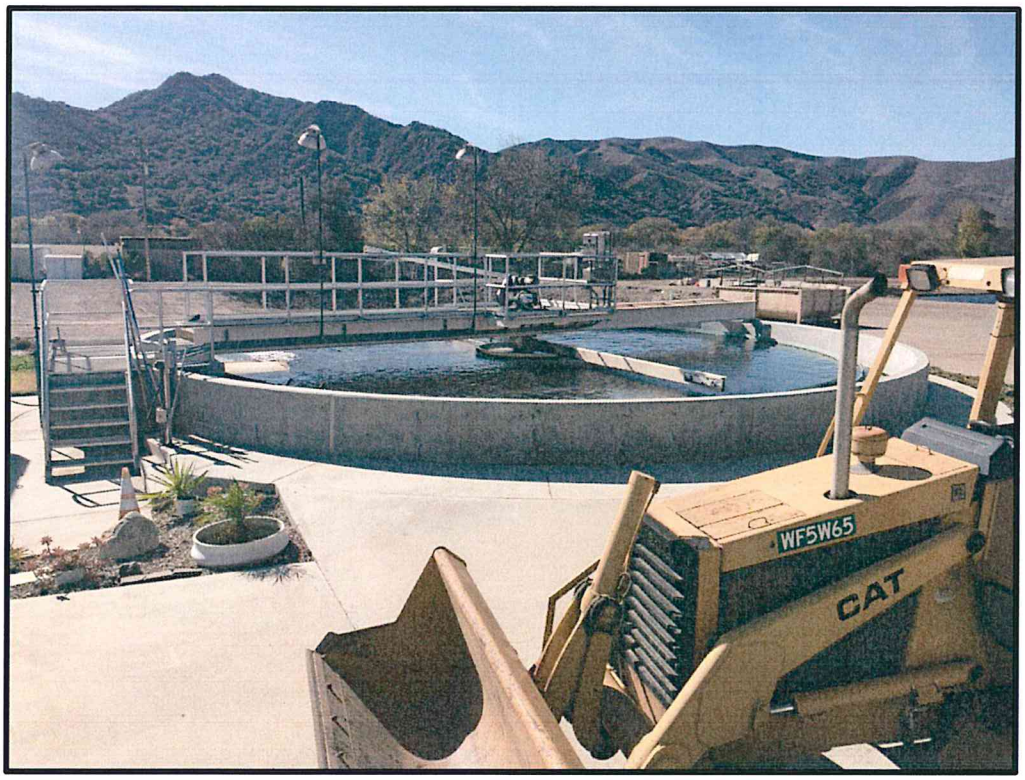
Facility Name:	City of Buellton
Address:	P O Box 1819 107 W. Highway 246 Buellton, CA 93427
Contact Person:	Stuart Stewart
Job Title:	Contract CPO
Phone Number:	805-686-0137
WDR/NPDES Order No.:	99-134
WDID Number:	3 420100001

The report provides a comprehensive summary of the 2018 activities at the city's Wastewater Treatment Plant, including major repairs completed, monitoring data, compliance record and corrective actions. A summary of the City's operations is included and outlines staffing and laboratory, O&M Manual, Pretreatment Program, Biosolids, Groundwater Monitoring, Salt and Nutrient Reduction and Collection System Management.

Please be aware that as of preparation of this report, the City's Chief Plant Operator in 2018, retired in December 2018. The current contract Chief Plant Operator is Stuart Stewart with FRM. If you have any questions regarding the contents of the Report, you may contact myself at roseh@cityofbuellton.com or Bill Callahan with Wallace Group at billc@wallacegroup.us .

Sincerely,

Rose Hess, PE
Director of Public Works
City of Buellton



CITY OF BUELLTON
2018 WWTP Annual Report
January 28, 2019

Prepared by: Wallace Group

Submitted by: Rose Hess, PE, Director of Public Works

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2018 WWTP Projects
The City of Buellton (City) is committed to protecting all waterways through continual effective operation and maintenance of the plant to protect the public health and environment.

The City continued the process of operating and maintaining the Wastewater Treatment Plant in compliance with permitted waste discharge requirements. Projects include:

- Completion of the rehabilitation of the east Secondary Clarifier with plans to re-pipe to allow for the two Secondary Clarifiers to operate in parallel to enhance treatment and allow for increasing RAS flow to the anoxic basin to optimize denitrification.
- Initiation of a Sewer Collection System Master Plan which is anticipated for completion in 2019.
- An update to the City Wastewater Treatment Facilities Plan was initiated in late 2018 and is anticipated for completion in 2019.
- The City continues to maintain and monitor the development of the anoxic zone in the upper basin to reduce the concentration of all forms of nitrogen in the WWTP effluent. This has proven to be a successful strategy and will continue to be reviewed annually.
- Replacement of an influent pump at the WWTP influent lift station.
- Replacement of the auger monster (inline screen and grinder) at the WWTP headworks.

City of Buellton WWTP Monitoring Data:
Attachment A contains the tabular and graphical summary of the 2018 monitoring data.

The City Wastewater Treatment Plant (WWTP) operated within discharge limits with the exception of the two (2) effluent violations discussed in the Compliance Record and Corrective Actions section below.

The City missed the identification of nitrogen data in the July report and has revised the monthly independent report review process to include a private consultant peer review as a corrective action.

Discussion of Compliance Record and Corrective Actions
A discussion of the City WWTP compliance records and corrective actions taken is presented below and organized by date.

<u>May 2018 – One (1) Monitoring and Reporting Violation, *pH*</u>
On May 10, 2018, City staff failed to collect and submit an effluent sample for pH. A notation on the May 2018 Self-Monitoring Report states that a pH sample would be collected in April 2018. Unfortunately, due to operator error, this sample was not collected and submitted to the lab. Historically the WWTP effluent pH has been within permit limits for the three (3) months sampled in 2018 and for the four months sampled in 2016 & 2017.

<u>October 2018 – One (1) Effluent Violation, *Settleable Solids*</u>
On October 25, 2018, effluent Settleable Solids was tested by Abalone Coast Analytical and returned a result of 24 mL/L. The Daily Maximum Effluent Limit for Settleable Solids

is 0.5 mL/L. After reviewing the result of 24mL/L Abalone Coast Analytical issued a memo dated 11/19/18 identifying this result as an "analytical error" and based on historical WWTP data and the extremely high reported value of 24 mL/L identified the result as "invalid" (see letter attached to 2018 October Self-Monitoring Report). Reported values for Settleable Solids in the month of October prior to and after the 25th of October were within permit limits, reported between 0.1 and <0.

Corrective Actions to all Violations and Reporting Issues Above
The City review process has been re-implemented with new operations staff in 2019- and third-party review so that effluent violations are not overlooked again.

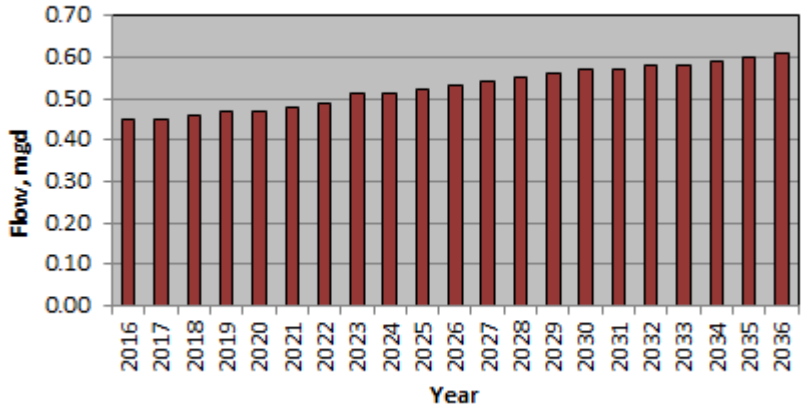
Evaluation of WWTP Flows and Projected Flow Increase
The current WWTP has a rated capacity of 0.65 MGD or 650,000 gpd (dry weather, Average Daily Flow (ADF)). The June 2017 City Wastewater Treatment Plant Master Plan conducted an evaluation of future wastewater characteristics and flow in Chapter 3 and on page 306 surmised the following:

> "The City's current wastewater flow averages approximately 420,000 gpd, based on recent plant flow records. The current estimated population, as discussed in Chapter 2, is 4,957. Based on this information, the following can be surmised:
>
> | | |
> |---|---|
> | Per capita wastewater flow: | 85 gallons per capita per day (gpcd) |
> | Influent BOD_5 (6 month avg.): | 426 mg/L |
> | Influent BOD_5 loading: | 1,492 lb/day (0.30 lb/cap-day) |
> | Influent TSS (6 month avg.): | 441 mg/L |
> | Influent TSS loading: | 1,545 lb/day (0.31 lb/cap-day)" |

From the information above and information in Chapter 2, Land Use and Population, of the June 2017 WWTP Master Plan. The 2010 U.S. Census population for the City of Buellton is 4,828 persons. Wastewater flow projections were based on a rate of population growth of 296 persons between 2016 and 2020 and then by 1538 persons by 2036. The City plan for build-out is expected to increase the population to 7,151 by 2036.

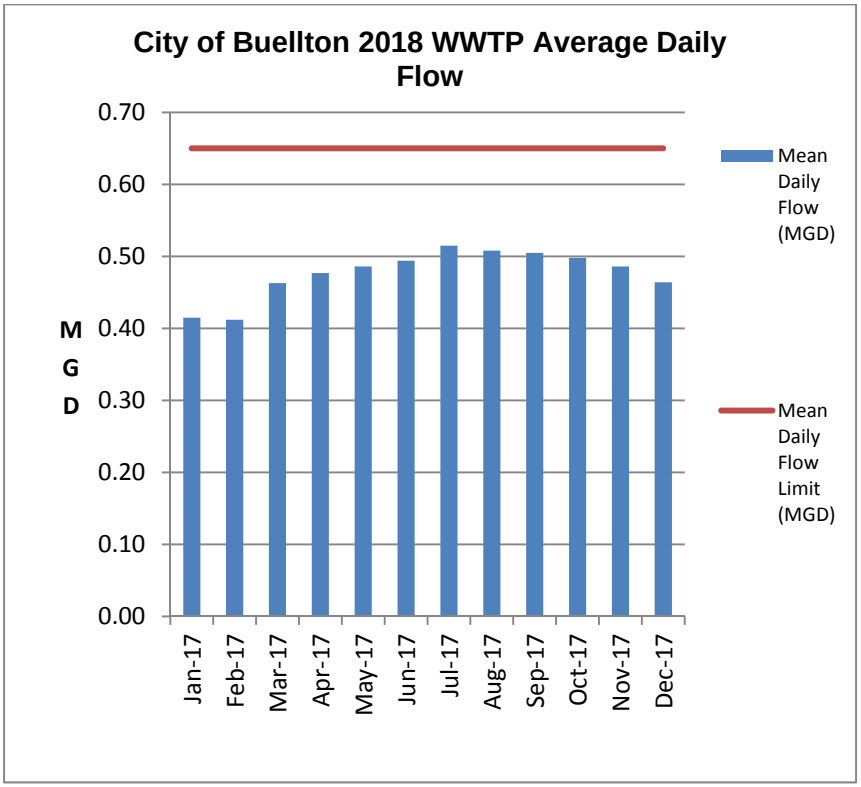
The figure below from Chapter 3 of the June 2017 WWTP Master Plan is the City's evaluation of projected flow rate increases over time and estimates that the ADF will be 0.61 MGD or 610,000 gpd in 2036 which remains below the current facility capacity of 0.65 MGD. The City estimates that facility capacity may be reached sometime after 2036.

Figure 3-8 Future Flow Projection, City of Buellton WWTP



Current Average Daily Flow

2018 Average Daily Flows were 0.480 MGD. This is an increase in flow of approximately 10% when compared to 2017 which had an Average Daily Flow of 0.430 MGD. This flow increase can be attributed to changes in residential population, new commercial development and an increase in industrial facilities located within the City limits. 2018 flow rates appear to reflect anticipated flow projections identified in the 2017 City Wastewater Treatment Plant Master Plan.



Operator Certification and List of Current Operations Personnel
The City requires operators at the WWTP to maintain their operator certification with the State. Licenses are kept current and posted at the WWTP, in the City Environmental Laboratory at the WWTP. Posting the licenses is a requirement of the State Water Resources Control Board, Office of Operator Certification.

Below is a list of the 2018 operating personnel and their certification grade.

Table 1: City of Buellton WWTP Operators

Name	Title	Operator Information
Andrew John Sanchez	Chief Plant Operator (CPO)	Grade III Certification #5779 Exp: 6/30/21
Kurt Greer	Operator II	Grade II Certification #28657 Exp: 6/30/21
Raymond L. Ochoa	Operator II	Grade II Certification #3979 Exp: 6/30/20
Joseph Meehan	Operator II	Grade II Certification #7924 Exp: 12/31/20

Operations and Maintenance Manual
The date of the City of Buellton WWTP Operations and Maintenance (O&M) Manual is May 2016, Revision 2.0. The O&M Manual is complete and valid for the WWTP.

During this second revision, the City added information about “upset” and “bypass” and developed additional emergency operating procedures to demonstrate, that the Contingency Plans as described in section A.27 of the 2013 Central Coast RWQCB Waste Discharge Requirements (WDR) Standard Provisions and Reporting Requirements, are met. The City currently has the following safeguards in place at the WWTP:

- A diesel generator is located at the WWTP to provide back-up power for the influent pumps and other electrical equipment. City Operators maintain a minimum of one half (1/2) tank of fuel at all times. This gives the City a minimum of fifty (50) hours of running time and a fuel supplier maintains a 24-hour hot line for emergencies; and
- The City maintains an “on-call” staff. A City Operator is on-call after City business hours and on weekends and is responsible for responding to events at the WWTP within thirty-five (35) minutes.

City Pretreatment Program
The City is not required to maintain an approved Pretreatment Program under WDR 99-134. However, the City implemented a Pretreatment Program in 2009 in response to an increase in beverage manufacturing (wine, beer, and spirits) and a subsequent increase in organic influent loading of TSS and BOD within the City limits.

An evaluation of possible dischargers, mainly newly developed or modified businesses, is an ongoing process.

The following businesses were included in the 2018 Pretreatment Program:

Table 2: City of Buellton Industrial Users 2018

#	Industrial User	Permit Classification	Nature of Business, SIC Code
1.	Platinum Performance	I	Manufacturing of Horse, Pet, and Human nutritional supplements.
2.	Lucas and Lewellen	I	Winery, 2084
3.	Jonata Winery	I	Winery, 2084
4.	Figueroa Mountain Brewery	I	Brewery, 2084
5.	Dragonette Winery	I	Winery, 2084
6.	Margerum Winery	Zero Discharge	Winery, 2084
7.	Ascendent Spirits	I	Distillery, 2084
8.	Terravant	Zero Discharge	Winery, 2084
9..	Standing Sun	Zero Discharge	Winery, 2084
10.	Global Silicones Inc.	Zero Discharge	Fabricated Rubber Products, 3061
11.	Buellton Wine Center	Zero Discharge	Winery, 2084
12.	Buellton Advanced Materials (aka Lockheed Martin	Non-Significant Categorical Industrial User (NSCIU)	Vacuum metalizing, machining, 3479
13.	Dorwood Distillery	I	Distilling Alcohol, 2084
14.	805 Wine Center (Helix, Buscador, Cholame, Ken Brown, and Sanan Redmond)	Zero Discharge	Winery, 2084
15.	Tilton Engineering	Zero Discharge	Manufacturing of race car parts. Machining, tumbling
16.	Easy Street Wine Collective (Cordon Wines and Rake Winery)	I	Winery, 2084
17.	Central Coast Group Project LLC	TBD	Winery, 2084
18.	Margerum Winery	Zero Discharge	Winery, 2084
19.	Aero Industries	Zero Discharge	Precision metal parts manufacture, 3599

#	Industrial User	Permit Classification	Nature of Business, SIC Code
20.	Sixpoints	Non-Significant Categorical Industrial User (NSCIU)	Semi-Conductor Manufacturer, 3674
21.	Rosenson Wine Creations	Zero Discharge	Winery, 2084
22.	Crawford Winery	I	Winery, 2084
23.	Alebru Vino	I	Winery, 2084
24.	Excelta	I	Precision metal parts manufacture, 3599
25.	Roark Winery	I	Winery, 2084
26.	CS Machining	Zero Discharge	Precision metal parts manufacture, 3599
27.	Material Fabricators	Zero Discharge	Precision metal parts manufacture, 3599
28.	Digital Machine	Zero Discharge	Precision metal parts manufacture, 3599
29.	GP Machining	Zero Discharge	Precision metal parts manufacture, 3599
30.	Waste Management	I	Recycling Center
31.	McKinney Family Vineyards	TBD	Winery, 2084
32.	Tensley Wines	TBD	Winery, 2084
33.	Hollinger Collective	Zero Discharge, Applying for Class I	Winery, 2084
34.	Martelotto Wine Productions	Zero Discharge	Winery, 2084
35.	Figuerloa Labs	Zero Discharge	Manufacturing of Horse, Pet, and Human nutritional supplements.
36.	True Precision Machining	Zero Discharge	Precision metal parts manufacture, 3599

Table 3: 2018 City of Buellton Industrial Users – Moved or No Longer in Business

#	Industrial User	Permit Classification	Nature of Business
1.	Cold Heaven	Zero Discharge	Winery, 2084. Out of business

Laboratory Information

For the record, the following state certified contract labs were used by the City in 2018 to conduct WDR monitoring analyses:

Table 4: State Environmental Laboratory Accreditation Program (ELAP) Labs

Contract Lab	ELAP Certification Number
1. Abalone Coast Analytical, Inc. 141 Suburban Rd., Ste C-1 San Luis Obispo, CA 93401	#2661
2. BSK Analytical Laboratories 1414 Stanislaus Street, Fresno, CA 93706	#4021

Biosolids
The City produced 1788 Cubic Yards of biosolids in 2018. No biosolids were made available to the public during the year. This is an increase in biosolids production of approximately 11% when compared to production in 2017 which was 1588 cubic yards.

All of the biosolids generated in 2018 were processed by composting with Engel and Gray in Santa Maria, CA. Analysis of biosolids constituents were included in the October 2018 self-monitoring report.

Groundwater Monitoring Well Summary
Attachment B contains the tables and graphs summarizing the monitoring results from the City WWTP down gradient Monitoring Wells #1 and #2 and up gradient Monitoring Well #3.

Average down gradient well concentrations for Nitrate (as N), Total Dissolved Solids, Sodium, Chloride, Sulfate, Boron, and Total Nitrogen are presented with a percentage change (if any) of constituent concentration in the down gradient wells versus the up gradient well. A discussion for each specific constituent is presented below.

Nitrate (as N)
Both down gradient wells maintained analytical results below the 10 mg/L limit for nitrate (as N) in the 4 monitoring events conducted in 2018.

The average decrease (improvement) in down gradient well concentration of nitrate (as N) was 32% in 2018.

The concentration of Nitrate (as N) decreased when compared to results from 2017 which showed 3 analytical results above the 10mg/L limit. This can be attributed to the initiation of operational and process changes in May 2017 that have been effective in achieving nitrogen removal via nitrification/de-nitrification.

Total Dissolved Solids (TDS)
The 4 monitoring events in 2018 showed an average decrease (or improvement) in down gradient well quality for TDS of 17%. This is a 7% improvement from 2017.

Sodium
Monitoring events show that during the 4 monitoring events, on average the down gradient well concentration for sodium is on average 48% higher than the up gradient well. This is 11% lower than results from 2017.

Chlorides
Monitoring events show that during the 4 monitoring events, on average the down gradient well concentration for chloride is on average 17% higher than the up gradient well. This is 44% lower than results from 2017.

Sulfate
The four monitoring events show, on average, that the down gradient well concentration for sulfate is 8% less than the up gradient well. This is 7% higher than results from 2017.

Boron
The four monitoring events show, on average, that the down gradient well concentration for boron is 4% higher than the up gradient well. This is 13% lower than results from 2017.

Total Nitrogen
The average decrease (improvement) in down gradient well concentration of Total Nitrogen was 31% in 2018. This is a 44% reduction when compared to results from 2017. The concentration of Total Nitrogen decreased upon initiation of operational changes (creation of anoxic zone in pre-aeration basin) implemented during the Nitrogen Pilot Removal Study in May 2017.

Summary of City Salt and Nutrient Reduction Efforts
Nutrient Reduction:
A nitrogen pilot study for the City of Buellton WWTP was conducted in general conformance to the August 10, 2017 Work Plan submitted to the Regional Water Quality Control Board, to address compliance with the effluent nitrogen limitation stipulated in the City's waste discharge requirements.

Starting in June 2017, the City began this pilot study at the plant, to verify if certain process modifications would be effective at achieving nitrogen removal via nitrification/denitrification. The following process modifications were made at the plant:

- The first aerator on the pre-aeration basin (immediately downstream of the headworks) was turned off to create an anoxic zone;
- The return activated sludge (RAS) return line remained at a steady pumping rate of 200 gpm, returning RAS from the single secondary clarifier in operation, to the upstream end of the pre-aeration basin and anoxic zone. This location is also where raw influent enters the pre-aeration basin from the headworks, thus providing the carbon source needed for nitrification/denitrification.

The results of the Study and associated Work Plan were submitted to the RWQCB in August 2017. The City continued to follow the directives issued in this plan in 2018, primarily through the operation of a anoxic zone in the pre-aeration basin and monitoring of effluent nitrogen to ensure levels remain below the permitted limit of 10mg/L. Monitoring results are included in Attachment A of this 2018 Annual Report showing that the process modifications have continued to result in a reduction of nitrogen in all forms in the WWTP effluent. Based on the successful results in 2018, the City will continue to monitor nitrogen reduction and re-evaluate the need for additional efforts at the end of 2019.

Data used to evaluate total nitrogen reduction based on influent and effluent results was limited in 2018 as influent data was only collected with effluent data in July 2018. Influent sample results were missed from April, January and October 2018. Total nitrogen reduction in July was 87% (Influent result = 94mg/L & Effluent result = 12 mg/L). City staff is aware of the requirement to collect both influent and effluent samples for nitrogen in 2019.

Salt Reduction:
City Ordinance No. 93-07 prohibits the use of regenerating soft water units which discharge waste (salt brine) into the City's sewer collection system. Exchange tanks are permitted.

The City is also an active participant in the Santa Barbara County Integrated Regional Water Management Program (IRWM) which issued a plan of action in 2013 (IRWM Plan 2013) which is available to the public on the County of Santa Barbara website under Public Works.

Summary of Collection System Management Plan
The State Water Resources Control Board (SWRCB) Sanitary Sewer System Waste Discharge Requirements Order No. 2006-0003-DWQ as amended by WQ 2013-0058-EXEC (herein SSSWDR Orders) require the City of Buellton (City) to implement and maintain a Sewer System Management Plan (SSMP).

The City's SSMP Revision 3, is dated June 15, 2016 and contains information about the following programs and plans as required by the above SSSWDR Orders:

1.0 Goals
2.0 Organization
3.0 Legal Authority
4.0 Operation and Maintenance Program
5.0 Design and Performance Provisions
6.0 Overflow Emergency Response Plan
7.0 Fats, Oils, and Grease Control Program
8.0 System Evaluation and Capacity Assurance Plan
9.0 Monitoring, Measurement, and Program Modifications
10.0 Sewer System Management Plan Program Audits
11.0 Communication Program

Attachment A

Tabular & Graphical Summaries
WWTP Influent and Effluent

Influent Summary Table

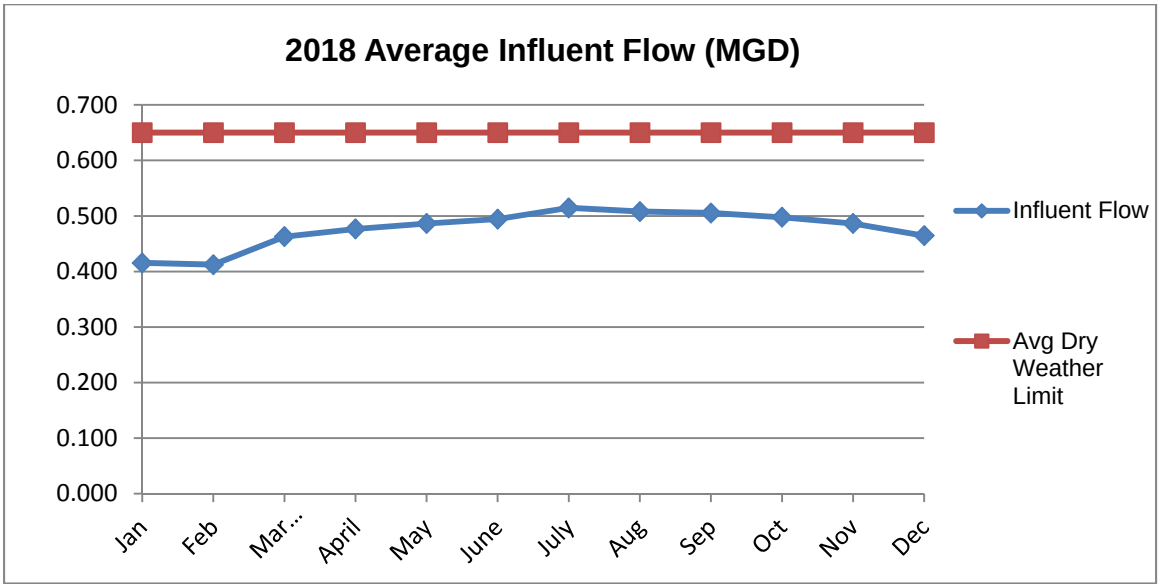
Influent Monitoring								
Consituent and Sample Type	BOD (mg/L)	TSS (mg/L)	TDS (mg/L)	Sodium (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Boron (mg/L)	pH (pH Units)
	24 hr Comp	24 hr Comp	24 hr Comp	Grab	Grab	Grab	Grab	Grab
Date	Annually in October							
10/15/2018								
Lab Result		510	1150	210	73	100	0.47	7.5

- The City did not collect Influent BOD results in 2018 as they are not a permit requirement.

City of Buellton WWTP
2018 Annual Report

Influent Flow		
2018	**Average**	**Avg Dry Weather Limit**
Jan	0.415	0.650
Feb	0.412	0.650
March	0.463	0.650
April	0.477	0.650
May	0.486	0.650
June	0.494	0.650
July	0.515	0.650
Aug	0.508	0.650
Sep	0.505	0.650
Oct	0.498	0.650
Nov	0.486	0.650
Dec	0.464	0.650

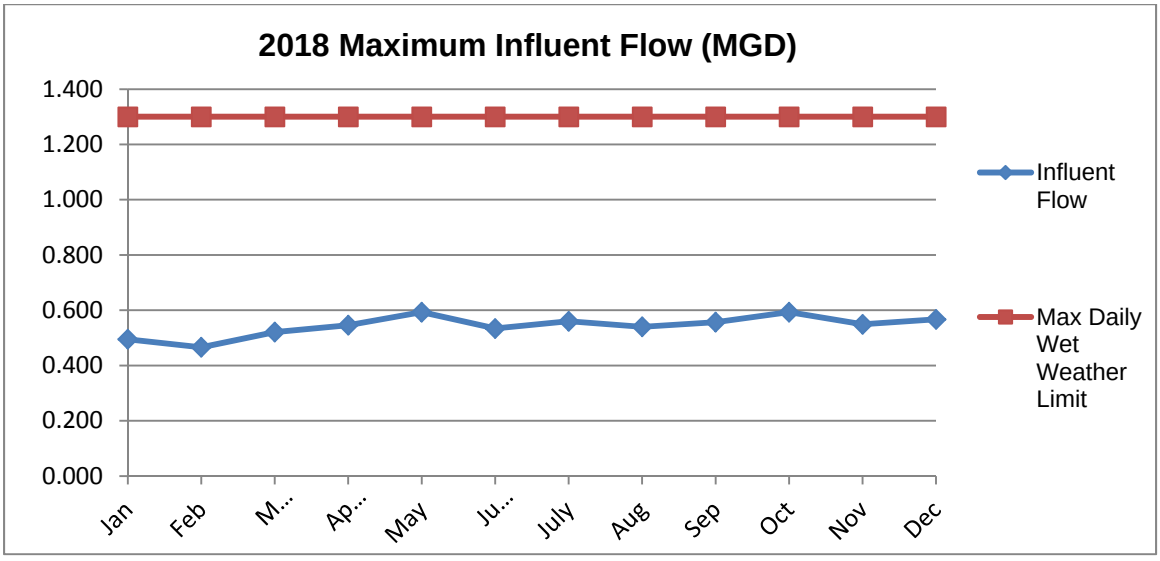
Annual Average Influent Flow: 0.48



- During the course of reviewing influent flow data for the development of the 2018 Annual Report it was discovered that two influent flow entries in the month of June were entered incorrectly due to typographical errors. The WWTP daily log was reviewed and the flow entries for the following dates were corrected in this annual report:
  - June 7, 2018, flow entry was incorrectly entered as 482.000 MGD and corrected as 0.482 MGD
  - June 22, 2018, flow entry was incorrectly entered as 0.848 MGD and corrected as 0.484 MGD

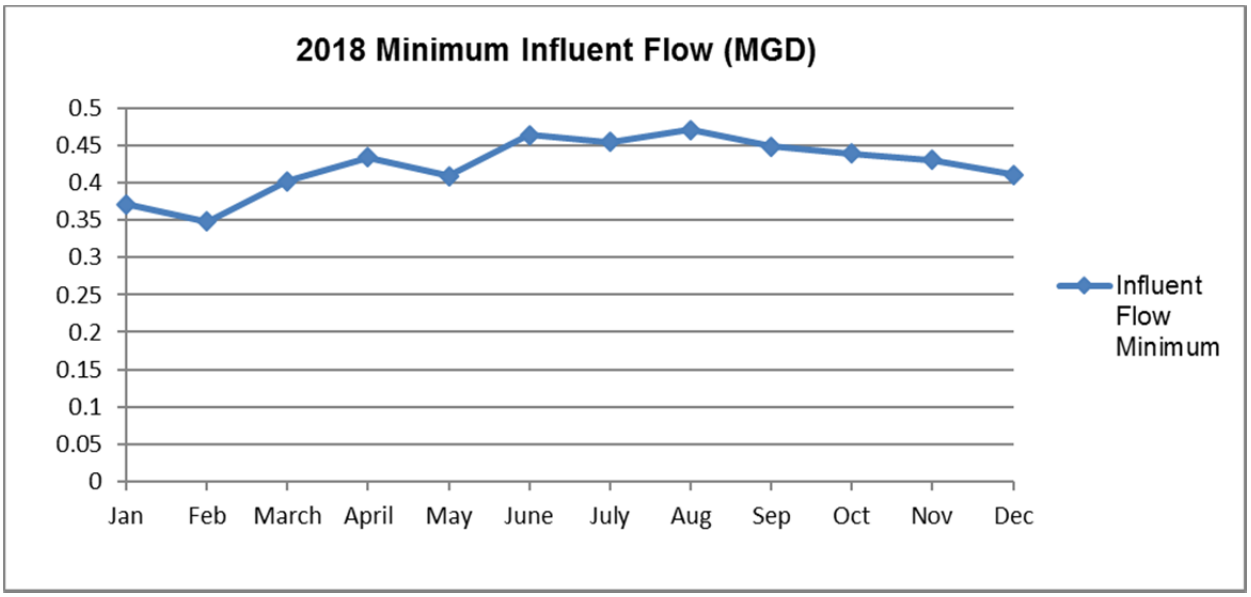
City of Buellton WWTP
2018 Annual Report

Influent Flow		
2018	**Maximum**	**Max Daily Wet Weather Limit**
Jan	0.495	1.30
Feb	0.466	1.30
March	0.521	1.30
April	0.546	1.30
May	0.593	1.30
June	0.534	1.30
July	0.560	1.30
Aug	0.540	1.30
Sep	0.557	1.30
Oct	0.593	1.30
Nov	0.549	1.30
Dec	0.567	1.30



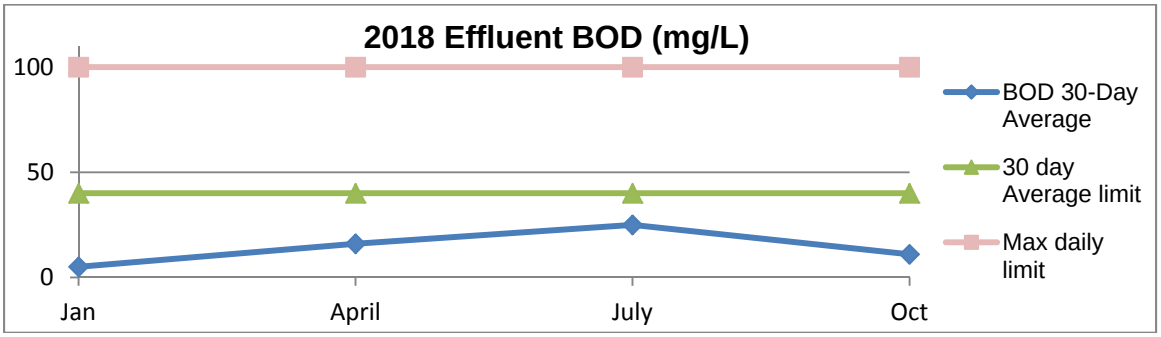
City of Buellton WWTP
2018 Annual Report

Influent Flow		
2018	**Minimum**	
Jan	0.371	**No Limit**
Feb	0.348	
March	0.402	
April	0.434	
May	0.409	
June	0.464	
July	0.454	
Aug	0.471	
Sep	0.448	
Oct	0.439	
Nov	0.43	
Dec	0.411	

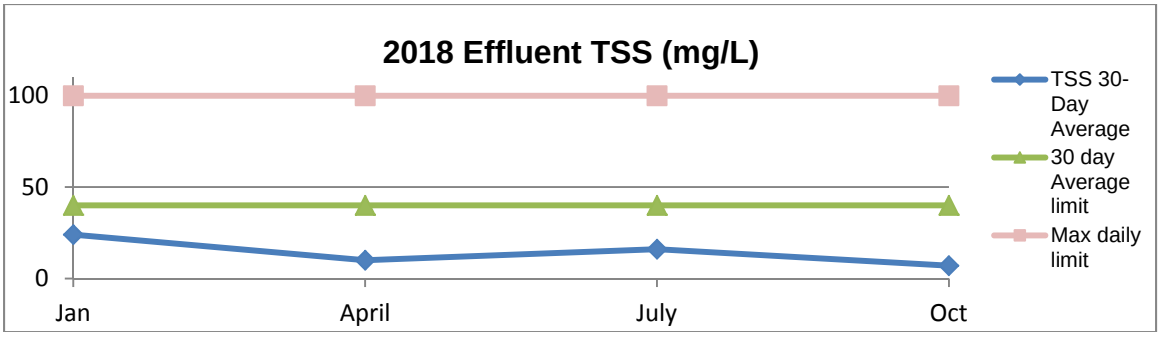


City of Buellton WWTP
2018 Annual Report

Effluent BOD (mg/L)			
2018	Quarterly Result	30-Day Avg Limit	Max daily limit
Jan	5	40	100
April	16	40	100
July	25	40	100
Oct	11	40	100

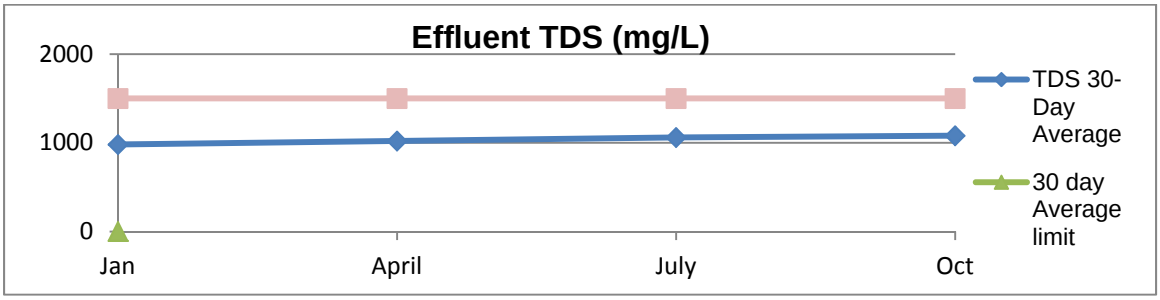


Effluent TSS (mg/L)			
2018	Quarterly Result	30-Day Avg Limit	Max daily limit
Jan	24	40	100
April	10	40	100
July	16	40	100
Oct	7	40	100

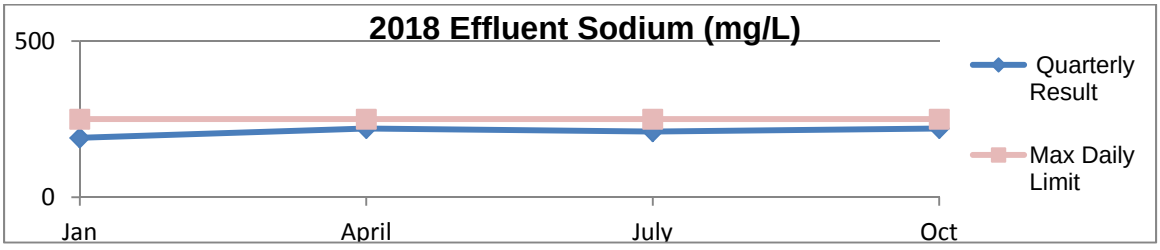


City of Buellton WWTP
2018 Annual Report

Effluent TDS (mg/L)			
2018	**Quarterly Result**	**30-Day Avg Limit**	**Max daily limit**
Jan	980	No Limit	1500
April	1020		1500
July	1060		1500
Oct	1080		1500



Effluent Sodium (mg/L)			
2018	**Quarterly Result**	**30-Day Avg Limit**	**Max Daily Limit**
Jan	190	No Limit	250
April	220		250
July	210		250
Oct	220		250



City of Buellton WWTP
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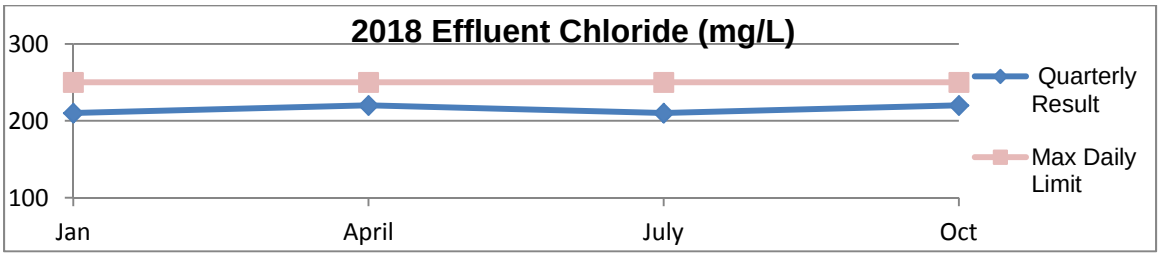
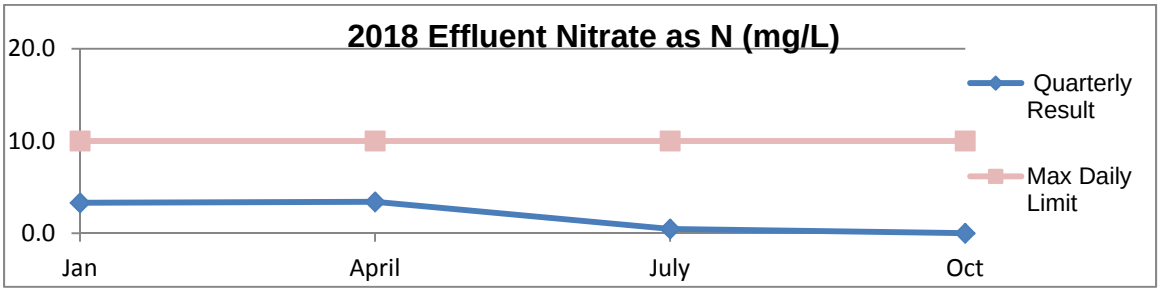
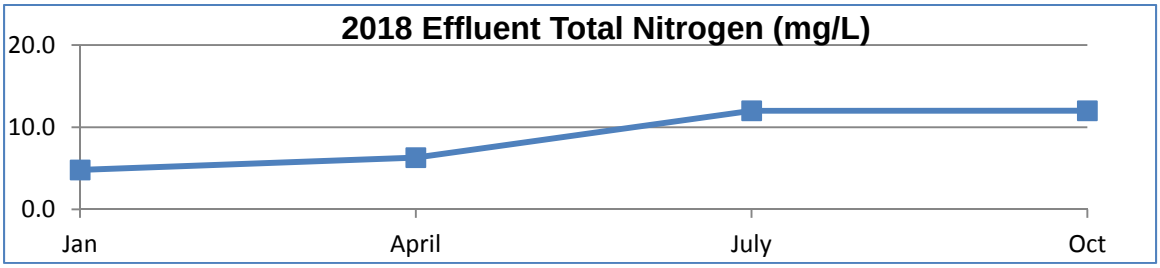
Effluent Chloride (mg/L)			
2018	**Quarterly Result**	**30-Day Avg Limit**	**Max Daily Limit**
Jan	210	No Limit	250
April	220		250
July	210		250
Oct	220		250



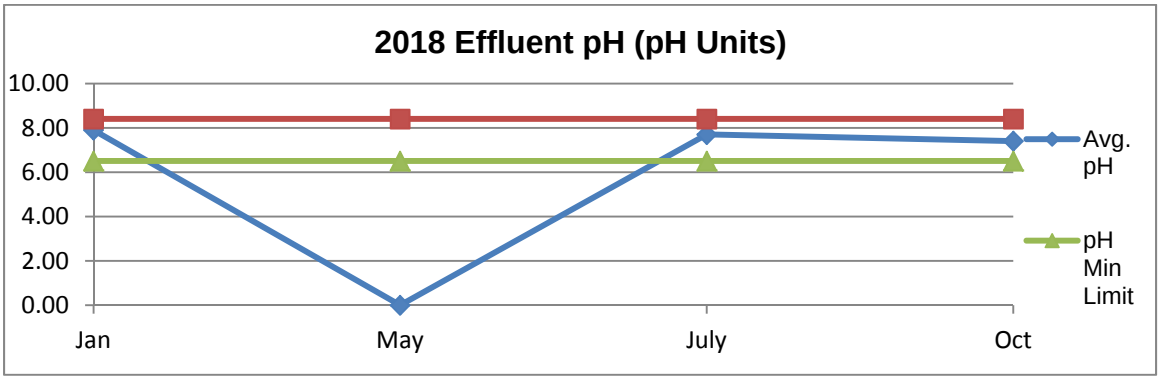
Effluent Nitrate as N (mg/L)			
2018	**Quarterly Result**	**30-Day Avg Limit**	**Max Daily Limit**
Jan	3.3	No Limit	10
April	3.4		10
July	0.5		10
Oct	ND		10



Effluent Total Nitrogen (mg/L)			
2018	Quarterly Result	30-Day Avg Limit	Max Daily Limit
Jan	4.8	No Limit	No Limit
April	6.3		
July	12.0		
Oct	12.0		



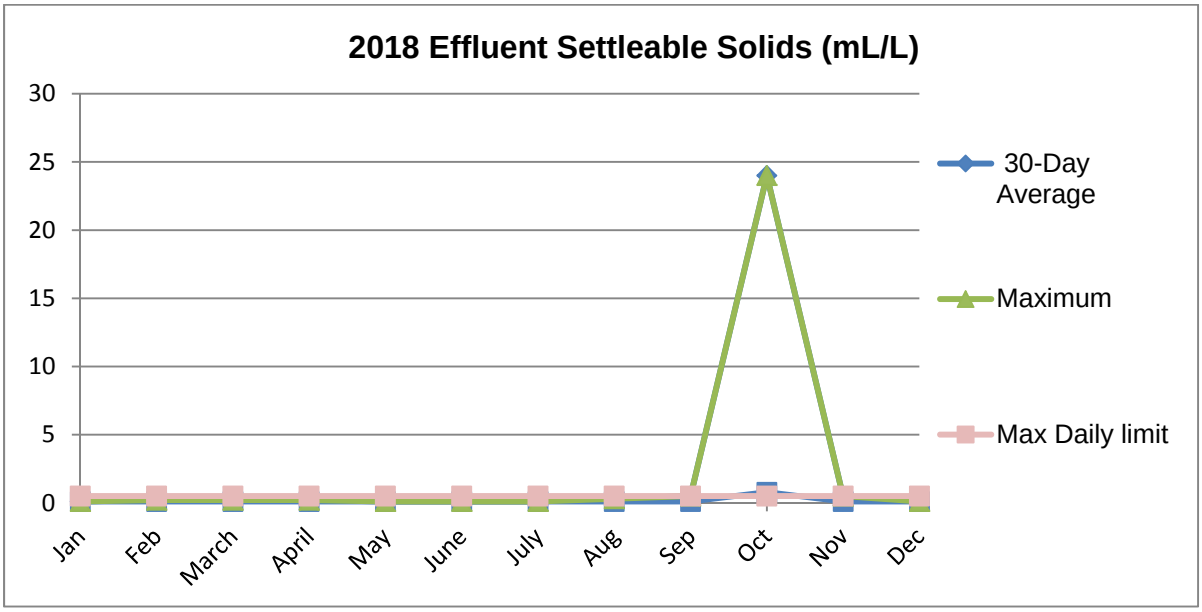
Effluent pH (pH Units)			
2018	Quarterly Result	Limit Min	Limit Max
Jan	7.90	6.5	8.4
May	NA	6.5	8.4
July	7.70	6.5	8.4
Oct	7.40	6.5	8.4



- As discussed in the body of this report, due to operator error a sample was not collected for pH in April/May 2018, which significantly impacts the graph showing typical pH results included above. Notated as "NA" in graph above.

City of Buellton WWTP
2018 Annual Report

Effluent Settleable Solids (mL/L)			
2018	30-Day Average	Maximum	Max Daily limit
Jan	0.1	0.1	0.5
Feb	0.1	0.2	0.5
March	0.1	0.2	0.5
April	0.1	0.2	0.5
May	0.1	0.1	0.5
June	0.1	0.1	0.5
July	0.1	0.1	0.5
Aug	0.1	0.3	0.5
Sep	0.1	0.5	0.5
Oct	0.79	24	0.5
Nov	0.1	0.5	0.5
Dec	0.1	0.1	0.5

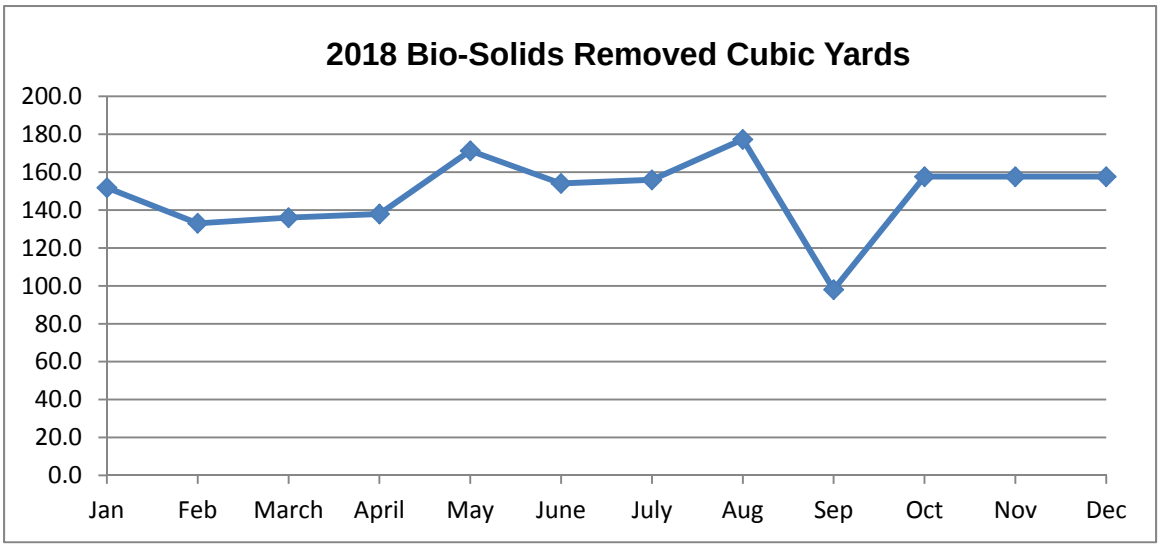


- As discussed in the body of this report, due to an apparent lab error on October 25, 2018, a settleable solids effluent result was reported as 24mL/L which significantly impacts the 30- day average and graph showing typical settleable solids results included above.

City of Buellton WWTP
2018 Annual Report

Bio-Solids 2018	
Month	**Cubic Yards**
Jan	151.8
Feb	133.0
March	136.0
April	137.9
May	171.3
June	154.0
July	155.9
Aug	177.3
Sep	98.0
Oct	157.6
Nov	157.6
Dec	157.6

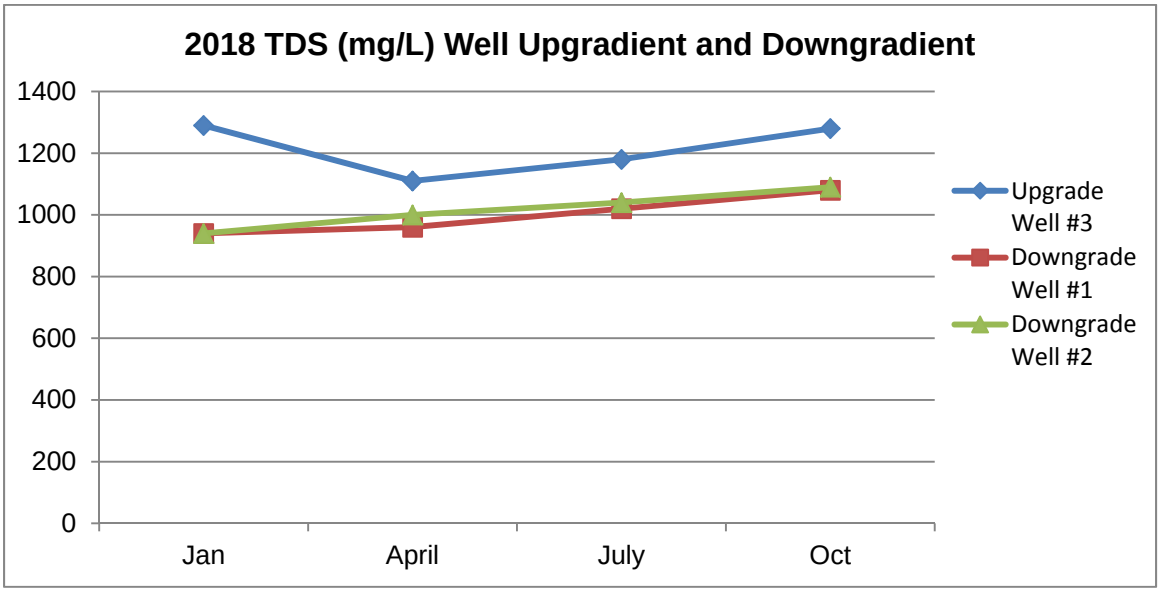
Total Biosolids removed for 2018: 1788 cubic yards



Attachment B

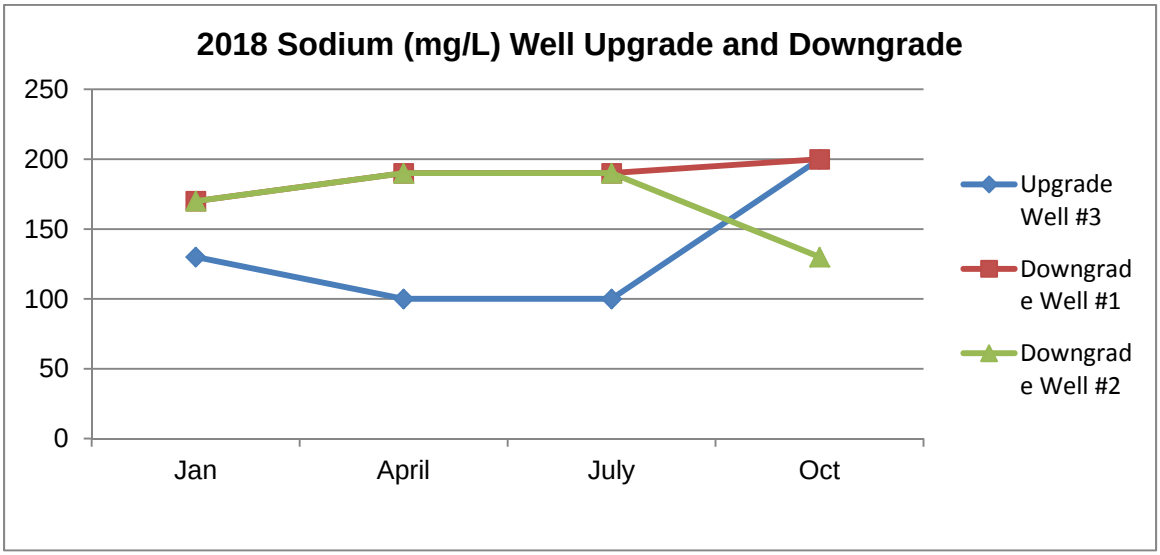
Tabular & Graphical Information
City of Buellton WWTP Monitoring Wells

Upgradient Well and Downgradient Well TDS (mg/L)			
2018	Upgrade Well #3	Downgrade Well #1	Downgrade Well #2
Jan	1290	940	940
April	1110	960	1000
July	1180	1020	1040
Oct	1280	1080	1090
Mean	1215	1000	1017.5
High	1290	1080	1090
Low	1110	940	940



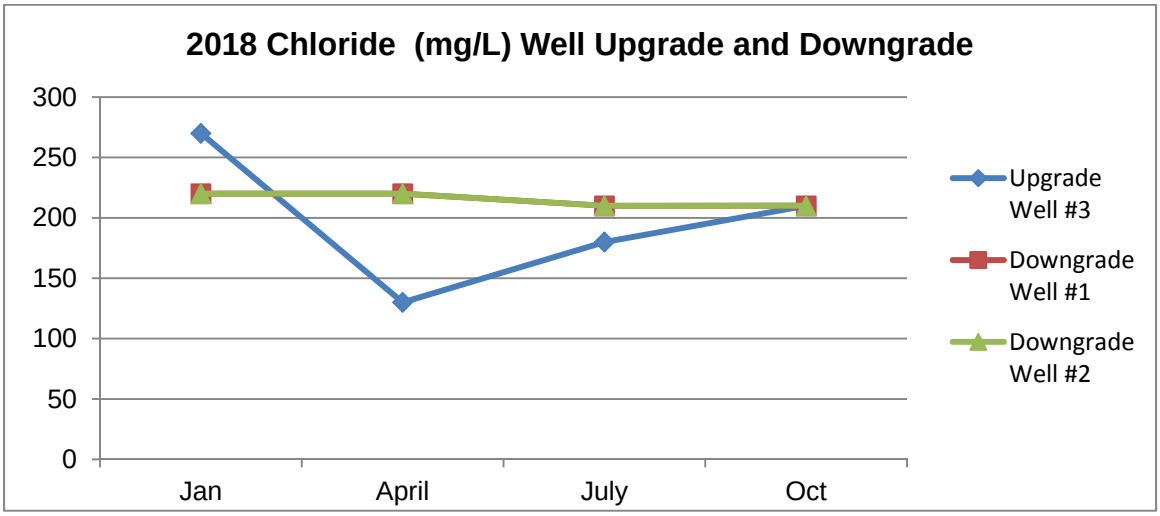
Total Dissolved Solids (mg/L)- Quarterly (January, April, July, October)					
Date	Downgradient Well #1	Downgradient Well #2	Upgradient Well #3	Average Downgradient Well Quality	% Increase in TDS Concentration in Downgradient Wells
1/24/2018	940	940	1290	940	-27%
4/10/2018	960	1000	1110	980	-12%
7/16/2018	1020	1040	1180	1030	-13%
10/11/2018	1080	1090	1280	1085	-15%
				Average:	**-17%**

Upgradient Well and Downgradient Well Sodium			
2018	Upgrade Well #3	Downgrade Well #1	Downgrade Well #2
Jan	130	170	170
April	100	190	190
July	100	190	190
Oct	200	200	130
Mean	132.5	187.5	170
High	200	200	190
Low	100	170	130



Sodium - Quarterly (January, April, July, October)					
Date	Downgradient Well #1	Downgradient Well #2	Upgradient Well #3	Average Downgradient Well Quality	% Increase in Sodium Concentration in Downgradient Wells
1/24/2018	170	170	130	170	31%
4/10/2018	190	190	100	190	90%
7/16/2018	190	190	100	190	90%
10/11/2018	200	130	200	165	-18%
				Average:	48%

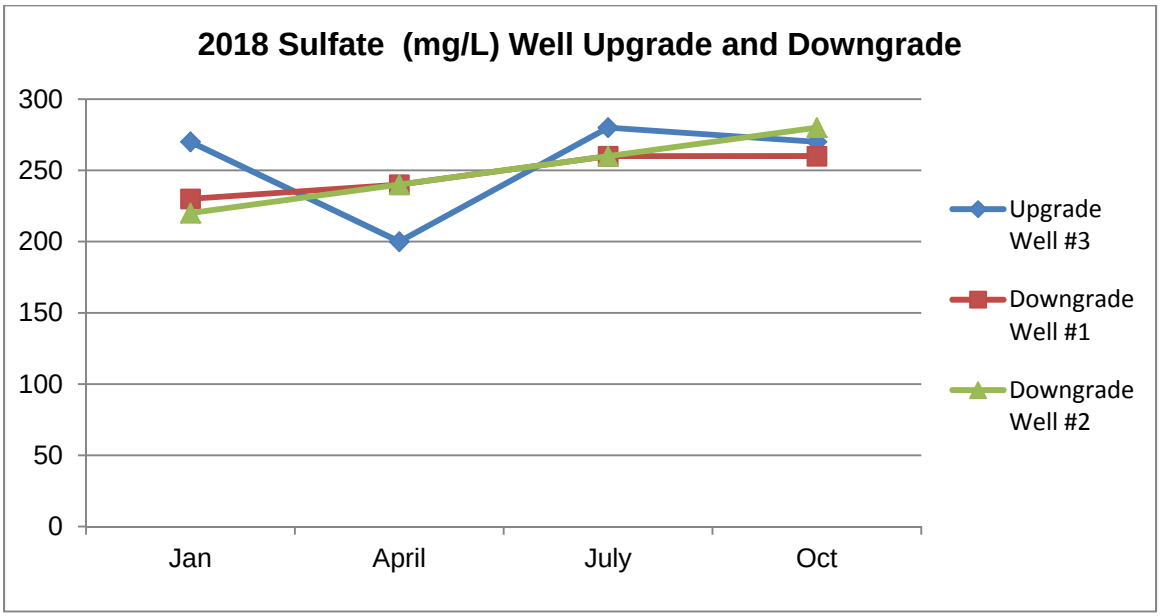
Upgradient Well and Downgradient Well Chloride			
2018	Upgrade Well #3	Downgrade Well #1	Downgrade Well #2
Jan	270	220	220
April	130	220	220
July	180	210	210
Oct	210	210	210
Mean	197.5	215	215
High	270	220	220
Low	130	210	210



Chloride - Quarterly (January, April, July, October)

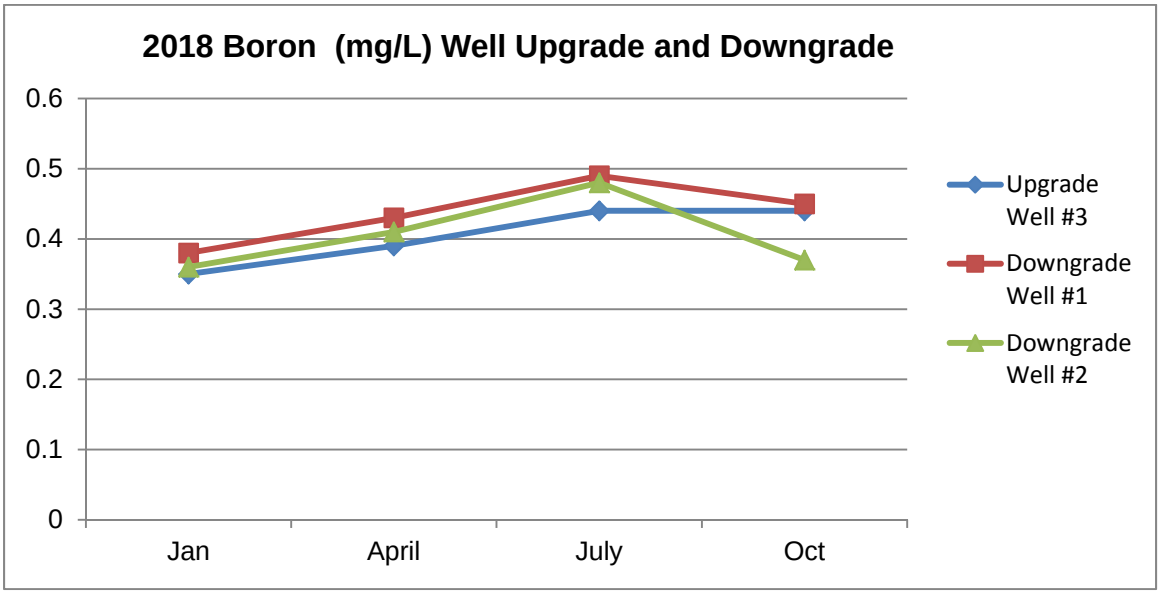
Date	Downgradient Well #1	Downgradient Well #2	Upgradient Well #3	Average Downgradient Well Quality	% Increase in Chloride Concentration in Downgradient Wells
1/24/2018	220	220	270	220	-19%
4/10/2018	220	220	130	220	69%
7/16/2018	210	210	180	210	17%
10/11/2018	210	210	210	210	0%
				Average:	**17%**

Upgradient Well and Downgradient Well Sulfate			
2018	Upgrade Well #3	Downgrade Well #1	Downgrade Well #2
Jan	270	230	220
April	200	240	240
July	280	260	260
Oct	270	260	280
Mean	255	247.5	250
High	280	260	280
Low	200	230	220



Sulfate (as SO4) - Quarterly (January, April, July, October)					
Date	Downgradient Well #1	Downgradient Well #2	Upgradient Well #3	Average Downgradient Well Quality	% Increase in Sulfate Concentration in Downgradient Wells
1/24/2018	230	220	270	225	-17%
4/10/2018	240	240	260	240	-8%
7/16/2018	260	260	280	260	-7%
10/11/2018	260	280	270	270	0%
				Average:	-8%

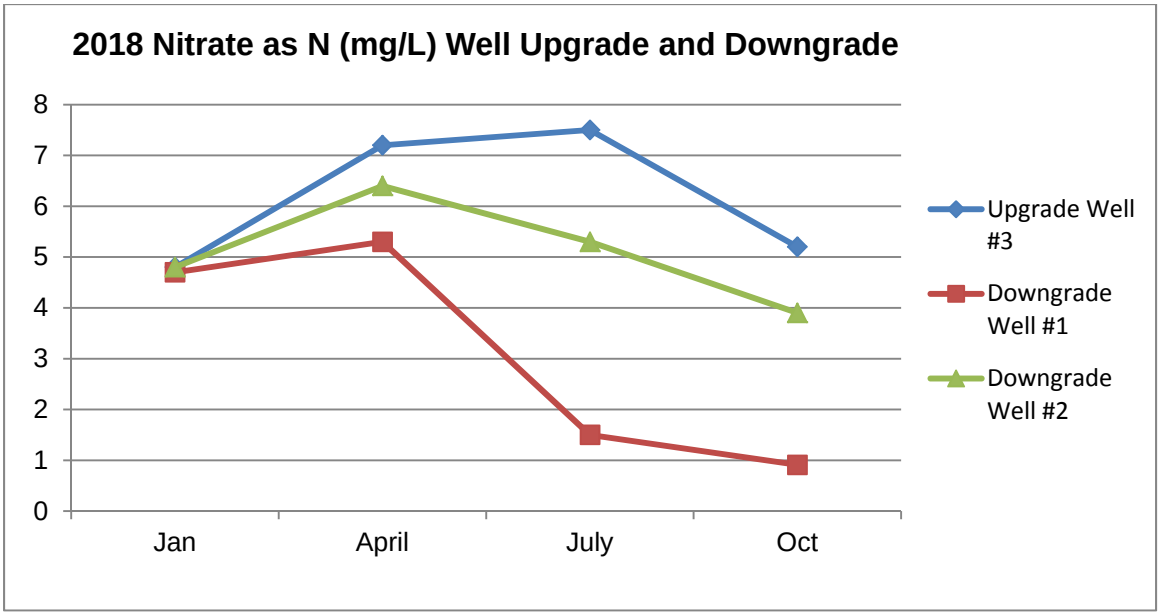
Upgradient Well and Downgradient Well Boron			
2018	Upgrade Well #3	Downgrade Well #1	Downgrade Well #2
Jan	0.35	0.38	0.36
April	0.39	0.43	0.41
July	0.44	0.49	0.48
Oct	0.44	0.45	0.37
Mean	0.41	0.44	0.41
High	0.44	0.49	0.48
Low	0.35	0.38	0.36



Boron - Quarterly (January, April, July, October)

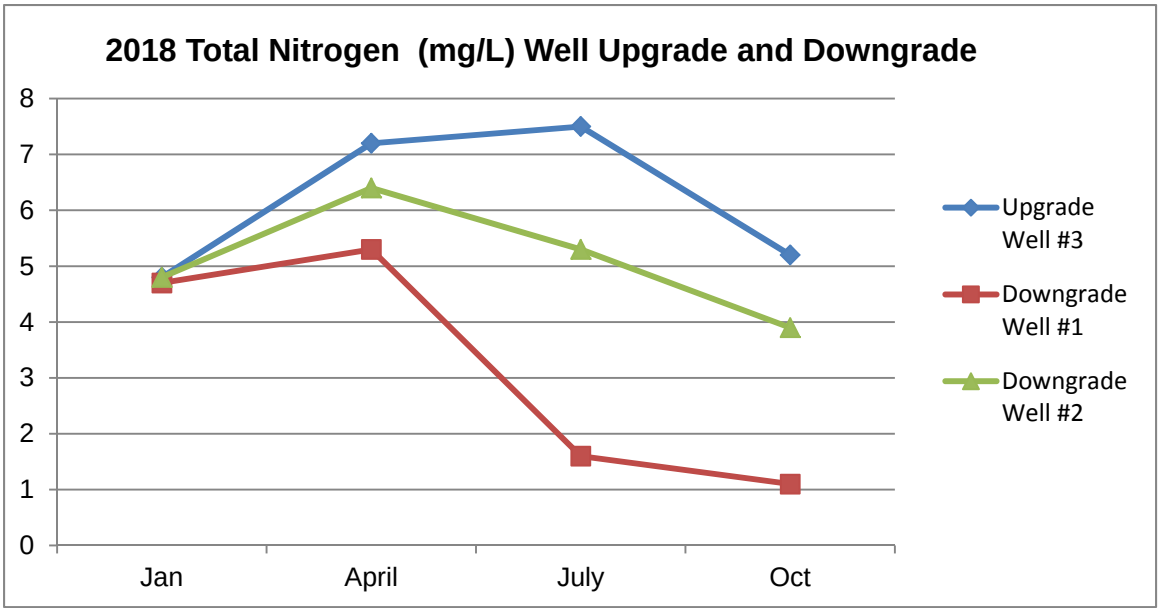
Date	Downgradient Well #1	Downgradient Well #2	Upgradient Well #3	Average Downgradient Well Quality	% Increase in Boron Concentration in Downgradient Wells
1/24/2018	0.38	0.36	0.35	0.37	6%
4/10/2018	0.43	0.41	0.39	0.42	8%
7/16/2018	0.49	0.48	0.44	0.49	10%
10/11/2018	0.45	0.37	0.44	0.41	-7%
				Average:	**4%**

Upgradient Well and Downgradient Well Nitrate as N			
2018	Upgrade Well #3	Downgrade Well #1	Downgrade Well #2
Jan	4.8	4.7	4.8
April	7.2	5.3	6.4
July	7.5	1.5	5.3
Oct	5.2	0.91	3.9
Mean	6.175	3.1025	5.1
High	7.5	5.3	6.4
Low	4.8	0.91	3.9



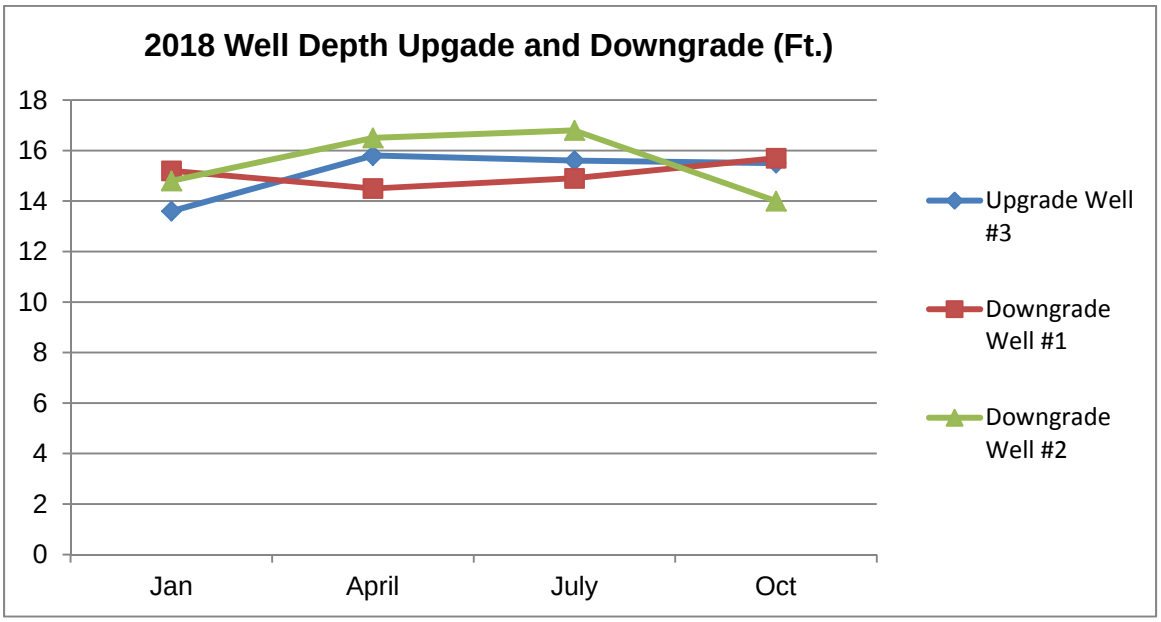
Nitrate (as N) mg/L - Quarterly (January, April, July, October)						
Date	Downgradient Well #1	Downgradient Well #2	Discharge Limit Downgradient Well #1 and #2	Upgradient Well #3	Average Downgradient Well Quality	% Increase in Nitrate (as N) Concentration in Downgradient Wells
1/24/2018	4.7	4.8	10.0	4.8	4.8	-1%
4/10/2018	5.3	6.4	10.0	7.2	5.9	-19%
7/16/2018	1.5	5.3	10.0	7.5	3.4	-55%
10/11/2018	0.9	3.9	10.0	5.2	2.4	-54%
					Average:	**-32%**

Upgradient Well and Downgradient Well Total Nitrogen			
2018	Upgrade Well #3	Downgrade Well #1	Downgrade Well #2
Jan	4.8	4.7	4.8
April	7.2	5.3	6.4
July	7.5	1.6	5.3
Oct	5.2	1.1	3.9
Mean	6.175	3.175	5.1
High	7.5	5.3	6.4
Low	4.8	1.1	3.9



Total Nitrogen (mg/L) - Quarterly (January, April, July, October)					
Date	Downgradient Well #1	Downgradient Well #2	Upgradient Well #3	Average Downgradient Well Quality	% Increase in Total Nitrogen Concentration in Downgradient Wells
1/24/2018	4.7	4.8	4.8	4.8	-1%
4/10/2018	5.3	6.4	7.2	5.9	-19%
7/16/2018	1.6	5.3	7.5	3.5	-54%
10/11/2018	1.1	3.9	5.2	2.5	-52%
				Average:	**-31%**

Upgradient Well and Downgradient Well Depth			
2018	Upgrade Well #3	Downgrade Well #1	Downgrade Well #2
Jan	13.6	15.2	14.8
April	15.8	14.5	16.5
July	15.6	14.9	16.8
Oct	15.5	15.7	14
Mean	15.1	15.1	15.5
High	15.8	15.7	16.8
Low	13.6	14.5	14.0

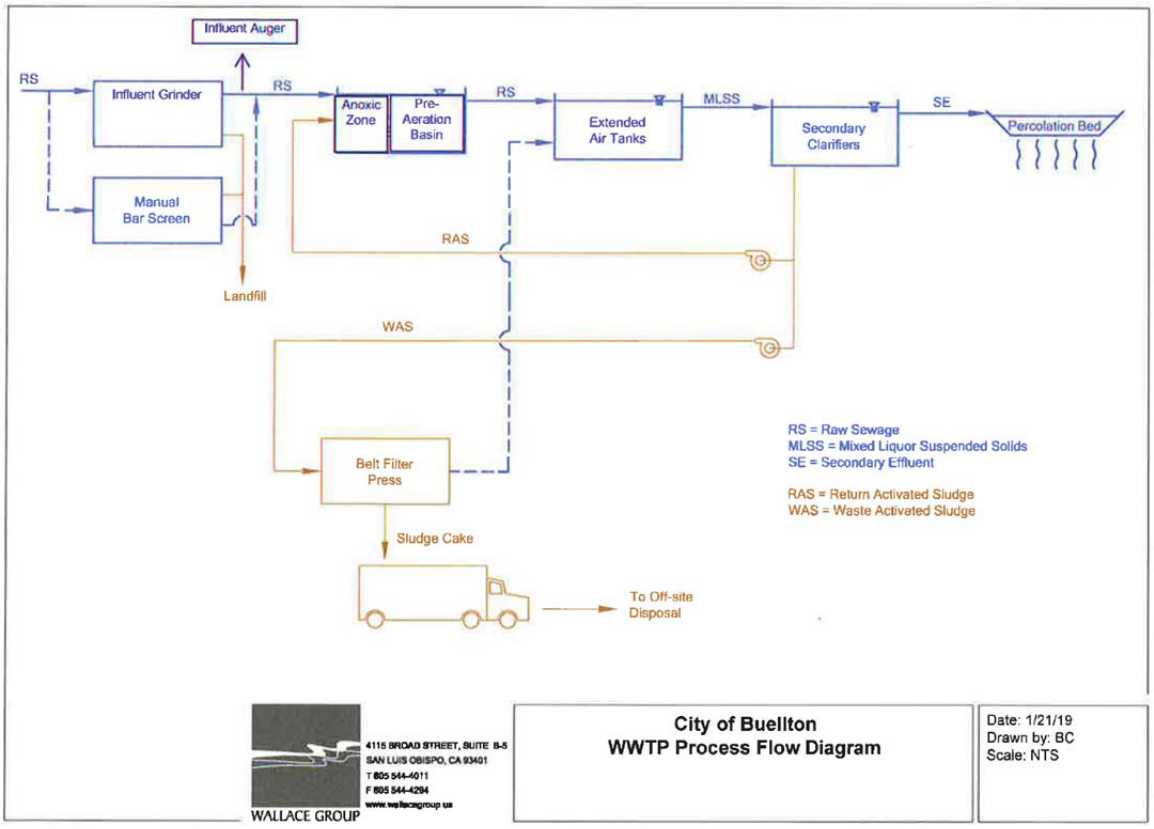


Attachment C

Figures

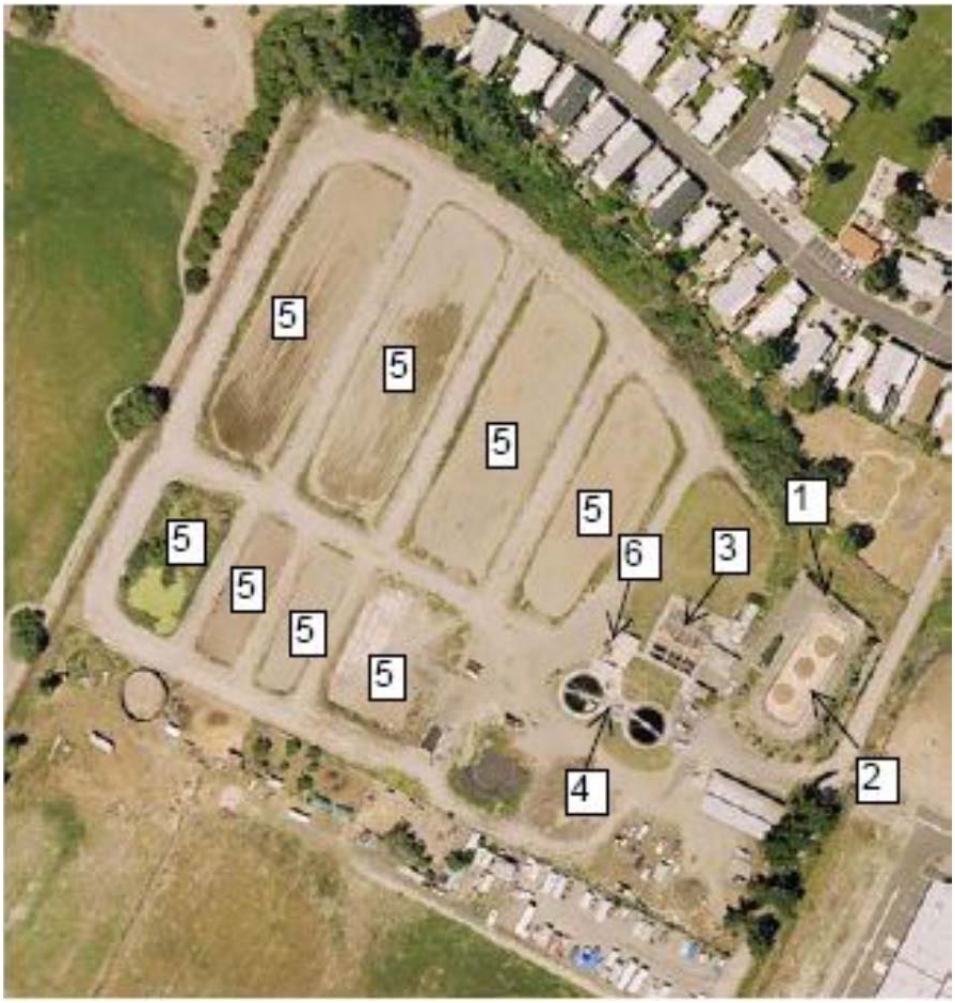
City of Buellton WWTP
2018 Annual Report

Figure 1: Process Flow Diagram



City of Buellton WWTP
2018 Annual Report

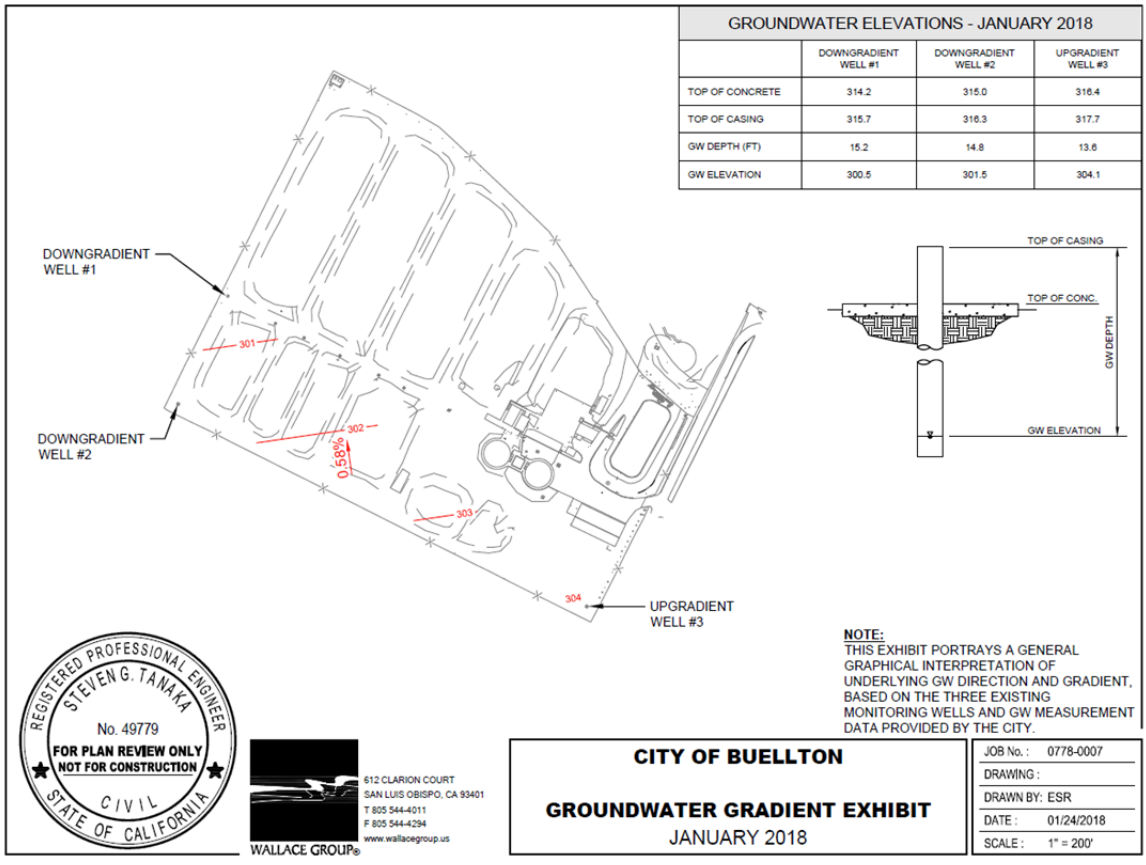
Figure 2: WWTP Facilities Layout



The facility consists of the following unit processes:
* Headworks ①
* Flow Equalization Basin ②
* Extended Aeration Tanks ③
* Secondary Clarifiers ④
* Percolation Ponds ⑤
* Belt Press (Solids Handling) ⑥

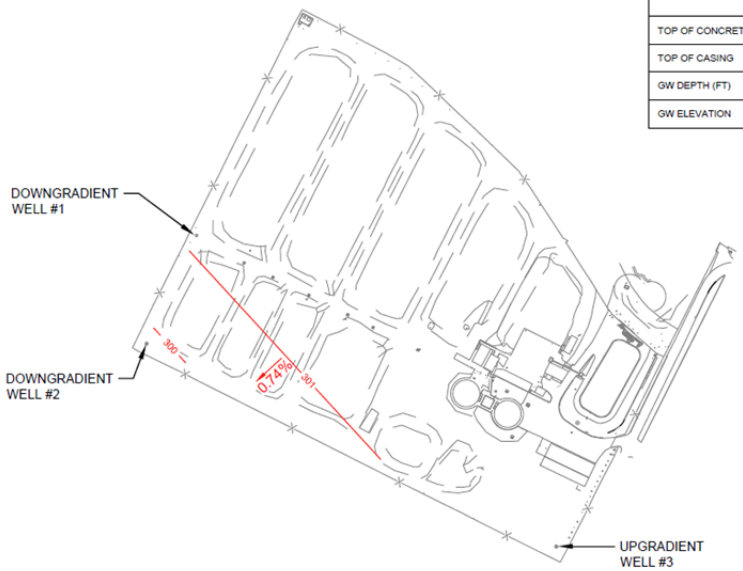
City of Buellton WWTP
2018 Annual Report

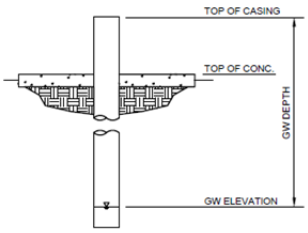
Figure 3: Groundwater Wells and Direction of Groundwater Flow
January/April/July/October



	DOWNGRADIENT WELL #1	DOWNGRADIENT WELL #2	UPGRADIENT WELL #3
TOP OF CONCRETE	314.2	315.0	316.4
TOP OF CASING	315.7	316.3	317.7
GW DEPTH (FT)	15.2	14.8	13.6
GW ELEVATION	300.5	301.5	304.1

GROUNDWATER ELEVATIONS - APRIL 2018			
	DOWNGRADIENT WELL #1	DOWNGRADIENT WELL #2	UPGRADIENT WELL #3
TOP OF CONCRETE	314.2	315.0	316.4
TOP OF CASING	315.7	316.3	317.7
GW DEPTH (FT)	14.5	16.5	15.8
GW ELEVATION	301.2	299.8	301.9





REGISTERED PROFESSIONAL ENGINEER
STEVEN G. TANAKA
No. 49779
FOR PLAN REVIEW ONLY
NOT FOR CONSTRUCTION
CIVIL
STATE OF CALIFORNIA

NOTE:
THIS EXHIBIT PORTRAYS A GENERAL GRAPHICAL INTERPRETATION OF UNDERLYING GW DIRECTION AND GRADIENT, BASED ON THE THREE EXISTING MONITORING WELLS AND GW MEASUREMENT DATA PROVIDED BY THE CITY.

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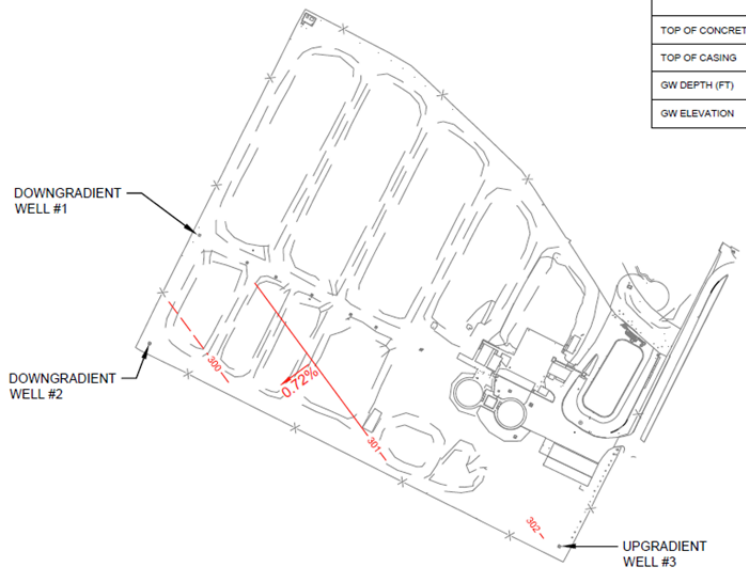
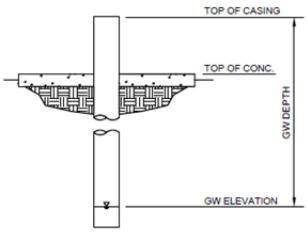
CITY OF BUELLTON

GROUNDWATER GRADIENT EXHIBIT
APRIL 2018

JOB No. :	0778-0007
DRAWING :	
DRAWN BY:	ESR
DATE :	04/10/2018
SCALE :	1" = 200'

GROUNDWATER ELEVATIONS - JULY 2018			
	DOWNGRADIENT WELL #1	DOWNGRADIENT WELL #2	UPGRADIENT WELL #3
TOP OF CONCRETE	314.2	315.0	316.4
TOP OF CASING	315.7	316.3	317.7
GW DEPTH (FT)	14.9	16.8	15.6
GW ELEVATION	300.8	299.5	302.1





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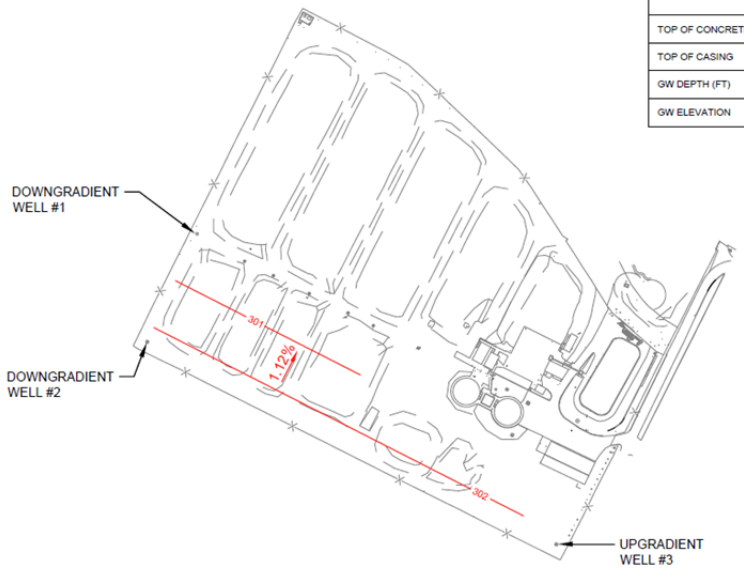
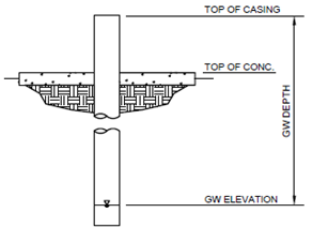
CITY OF BUELLTON

GROUNDWATER GRADIENT EXHIBIT
JULY 2018

JOB No. :	0778-0007
DRAWING :	
DRAWN BY:	ESR
DATE :	07/16/2018
SCALE :	1" = 200'

GROUNDWATER ELEVATIONS - OCTOBER 2018			
	DOWNGRADIENT WELL #1	DOWNGRADIENT WELL #2	UPGRADIENT WELL #3
TOP OF CONCRETE	314.2	315.0	316.4
TOP OF CASING	315.7	316.3	317.7
GW DEPTH (FT)	15.7	14.0	15.5
GW ELEVATION	300.0	302.3	302.2





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GROUNDWATER GRADIENT EXHIBIT
OCTOBER 2018

JOB No. :	0778-0007
DRAWING :	
DRAWN BY:	ESR
DATE :	01/11/2018
SCALE :	1" = 200'