Heber Public Utility District

Report to the Board of Directors

Date: June 18, 2020

From: Laura Fischer, General Manager

Subject: General Manager's Report to Board of Directors

HPUD EVENTS

At this time we are still planning the Fall Fiesta 2020. Hopefully the state will be open for business and large group activities will be allowed. If the Imperial County COVID numbers are still high at the July meeting, we should consider canceling the event. Usually we start working on the event in July so we will need to have a decision by then. I'll include this item on the July Board meeting.

Ice Cream Social was cancelled and all movie nights and water slide events will be cancelled over the summer.

The Annual Consumer Confidence Report is due July 1, 2020 and staff is working on it and will have it reviewed by the State and ready to print and mail by the deadline.

HPUD OPERATIONS

Board Elections in December 2020

I have attached the letter from the County elections department with the deadlines and dates for elections in November. The terms for Directors Martin Nolasco, Jr., and Pompeyo Tabarez, Jr. expired this December. Please plan on pulling papers for reelection.

Construction Customer Border Wall/Fence. We have the documents and approvals from LAFCO to sell water to the company constructing the border wall in Campo area. They are currently pulling water from Jacumba, but may need additional water from HPUD. They are not pulling water at this time.

I am working to design some **"Thank you" banners** to medical professionals, first responders and HPUD employees. They will be from the HPUD Board and I'll let you know when they are ready and up.

Return to Work Practices. Staff were all given the return to work procedures and are following them. We take our temperature in the office every time we come in. We wear face masks, keep our distance from each other, and sanitize our work station and the office or shared work area daily. To date, we do not have anyone in the HPUD family sick or impacted by COVID.

Response to State Water Board Sanitary Survey at Water Treatment Plant. Staff prepared a response within 30 days to the State Water Board and this week we submitted the second response within the required 60 day time period. It is attached for your review.

HPUD PROJECTS

Children's Park

Lexandra, Juny, Jeorge and I attended a conference ca;; regarding the Statewide Park Grant projects regarding the project requirements.

On the agenda for the 18th you have a request to hire The Holt Group as the design, bidding and Construction Management for the Children's park project. Should that action be approved, we can start working on the pre-construction portion of the project. I will have updates on the Board agenda under reports until this project is completed.

The conference call was very informative as we were walked through the grant administrative hand book. We asked if construction management is considered a construction cost or pre-construction. They stated construction. The State mentioned that they may get an extension for the project completion date. This may help HPUD as the total park project must be completed by March 2022. The Parks program administrators would like for this extension to pass as there have been some delays due to COVID and parks staff working from home. We should know within a couple of weeks.

Recreation Center

I have provided a report on the agenda for this project.

DEVELOPER UPDATES

Del Sol Apartments (Pitzer and Desert Sunrise) are moving forward with planning and permitting. HPUD is working to ensure they have sufficient deposits to cover our services and that they will pay the appropriate impact and capacity fees.

Heberwood 5a is moving quickly through construction and the remaining phases are in the final stage of approval by HPUD for waters, sewer, lighting, fire hydrants, and retention basin construction. Staff is working to ensure they are up to date with deposits and fees.

Family Dollar the consultant working with Family Dollar needs to issue a response and acceptance of the conditions placed on the development. After that HPUD can approve the plans and it would be up to the County to issue the permits.

I got a call from a developer for Dollar General. He was asking about property in Heber for a possible site. He is in the beginning of the process and performing his due diligence.

REGISTRAR OF VOTERS
Debra Porter
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Ph: (442) 265-1060 Fax: (442) 265-1062
www.co.imperial.ca.us

RECEIVED
NOV 18 2020
H.P.U.D

DATE: May 12, 2020

TO: Cities, Special Districts and School Districts

FROM: Debra Porter, Registrar of Voters

SUBJECT: November 3, 2020 Election Information

* *

The deadline for calling an election for a measure on the November 3, 2020 Presidential General Election is August 7, 2020. If your board is planning to place a measure on the November 3, 2020 ballot, you must file a resolution that does all the following:

1. Orders the election;
2. Requests the Imperial County Elections Department to conduct the election; and
3. Consolidates the election with any other jurisdiction holding an election on November 3, 2020.

Attached are documents to assist you with this process.

- Administrative Calendar
- How to Place a Measure on the Ballot
- Sample Resolution of the Election Order for Special Districts & Cities – Due by August 7
- Notice of Election for Special Districts and Cities – Due by July 01
- Sample Resolution of the Election Order for School Districts – Due by July 3 for governing board elections; Due by August 7 for measures
- Quick calendar

In order to meet the August 7, 2020 deadline for filing your resolution calling your election, we recommend that you start this process no later than your May/June 2020 meeting.

Covid-19: Impact on the November 3, 2020 Election

Election officials in California are working closely with the Secretary of State Office to identify how best to conduct the November 3, 2020 Presidential Election to ensure the health and safety of our voters, election workers and staff.

As you know the situation changes daily, and we continue to learn more about how this virus is impacting our communities.

In the meantime, please follow the public health guidelines to wash your hands often, clean frequently touched surfaces, practice social distancing, cover your cough or sneeze, wear a mask in public and stay home if you are sick. Stay safe & healthy.

November 3, 2020 Quick Calendar

May/June 2020	Suggested time for jurisdictions holding elections in November to pass a Resolution that 1) Orders the election; 2) Requests the Imperial County Elections Department to conduct the election, and 3) Consolidates the election with any other jurisdiction holding an election on that same day.
August 7, 2020	Last day to call an election or file for office. If the incumbent does not file, filing is extended for 5 calendar days for anyone other than the incumbent.
August 7, 2020	Deadline for filing tax rate statement for bond measures. Last day to file Tax Rate Statement for any bond measure appearing on the November ballot.
August 14, 2020	Deadline for filing arguments for or against local ballot measures. Deadline for filing analyses of local ballot measures.
August 21, 2020	Deadline for filing rebuttals.
September 4, 2020	First day to mail ballots to military and overseas voters.
October 5, 2020	First day to mail ballots to vote-by-mail voters.
October 19, 2020	Last day to register to vote in November 2018 election.
Oct 31 & Nov 1	Weekend voting – open 9 am to 3 pm at Imperial County Elections Department.
November 3, 2020	Election Day – polls open at 7 am and close at 8 pm.

The Holt Group, Inc.
Engineering Department

Municipal Design ■ Infrastructure Engineering ■ Construction Management ■ Land Surveying

June 16, 2020

Mr. Sean Sterchi, P.E.
San Diego District Engineer
State of California Water Resources Control Board
Division of Drinking Water
San Diego Field Office
1350 Front Street, Room 2050
San Diego, CA 92101

RE: Heber Public Utility District, System No. 1310007
2019 Sanitary Survey –
Response to Action Items

Dear Mr. Sterchi,

The Heber Public Utility District (HPUD) is preparing this correspondence in response to action items required of the 2019 Sanitary Survey dated April 17, 2020. There are various deficiencies noted in the 2019 Sanitary Survey. The deficiencies require action items to be addressed by HPUD. This letter is a response to action items that allowed for a 60 day response. The action items that required immediate and 30 day response were addressed in the letter dated May 15, 2020 and are not as a part of this correspondence.

Action Item No. 2: Within 60 days of this letter, Heber PUD must obtain a level indicator for the ferric sulfate storage tank at the RWCF and submit photo documentation to the Division.
Response to Action Item No. 2: HPUD has installed the level indicator for the storage tank. Please see attached photo labeled Action Item No. 2.

Action Item No. 3: Within 60 days of this letter, Heber PUD must obtain a level indicator for the ferric sulfate storage tank at the RWPS and submit photo documentation to the Division.
Response to Action Item No. 3: HPUD has installed the level indicator for the storage tank. Please see attached photo labeled Action Item No. 3.

Action Item No. 4: Within 60 days of this letter, Heber PUD must obtain a level indicator for the polymer storage tank at the RWPS and submit photo documentation to the Division.
Response to Action Item No. 4: HPUD is of the opinion that the liquid level of the polymer is relatively visible inside of the storage tank, and request for a waiver to install a level indicator. Please see attached photo labeled Action Item No. 4.

1601 North Imperial Avenue ■ El Centro, CA 92243 ■ 760/337-3883 ■ Fax 760/337-5997

Action Item No. 7: Within 60 days of this letter, Heber PUD must revise their operations plan to include procedures and a schedule for inspecting filter media and begin maintaining filter inspection reports.
Response to Action Item No. 7: HPUD has revised the Operations Plan to include procedures and a schedule for inspecting the filter media. See Section 3.6 on page 40 of the attached Operations Plan for specifics.

Action Item No. 9: Begin using the revised CT calculation spreadsheet, which is included as **Enclosure 5**. The revised spreadsheet no longer requires increased inactivation based on raw water E. coli concentration with the monthly Surface Water Treatment Rule Report. Within 60 days of this letter, submitted a revised Operations Plan to more accurately reflect these new CT requirements i.e. omit the increased inactivation requirements.
Response to Action Item No. 9: HPUD has revised the Operations Plan to accurately reflect the new CT requirements. See Section 4.4's last paragraph and table on pages 45 and 46 of the attached Operations Plan for specifics. The CT calculation spreadsheet included as Appendix E has also been revised.

Please contact me or Francisco Rodriguez with any questions, comments or further coordination.

Respectfully,

Juny Marmolejo
Juny Marmolejo
Project Engineer
The Holt Group, Inc., HPUD Engineers

Cc: Joseph Guzman, Division, Sanitary Engineer
Jeff Lamoure, Deputy Director – Imperial County Division of Environmental Health
Laura Fischer, HPUD, General Manager
Francisco Rodriguez, HPUD, Chief Operator
James G. "Jack" Holt, P.E., The Holt Group, Principal Engineer

HPUD 2019 SS Action Item 2:
For the RWCF, a liquid level indicator has been placed in service for the Ferric Sulfate Storage Tank.

HPUD 2019 SS Action Item 3:
For the RWPS, a liquid level indicator has been placed in service for the Ferric Sulfate Storage Tank.

HPUD 2019 SS Action Item 4:
For the RWPS, the Polymer Storage Tank has a clear indication of the tank level, which is not deemed necessary to install a level indicator.

OPERATIONS PLAN

Heber Public Utility District
Heber, California

Public Water System ID No. 1310007
Permit Number 05-14-17P-012
Community Water System

LICENSED OPERATION By:
Chief Operator
Francisco Rodriguez
Operator's License Grade T4 - # 23563

FACILITY LOCATION:
1085 Ingram Ave.
Heber, California 92249
Contact: Francisco Rodriguez
Phone: 760-353-0457 (Emergency On-Call Operator)
Phone: 760-482-2440 (HPUD Office)
Cell Phone: 760-427-4685 (Chief Operator Cell Phone)

OPERATIONS PLAN PREPARED BY:
The Holt Group, HPUD Consulting Engineers
1601 North Imperial Avenue
El Centro, CA 92243
Phone: 760-337-3883

DATE:
June 12, 2020

DRAFT

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Appendix P - Filter Media Inspection Record Form

1. Overview of Operational Plan

1.1. Background

The **Heber Public Utility District's** (HPUD) Water Treatment Plant (WTP) is located in Heber, California. The water treatment plant is located at 1085 Ingram Avenue, Heber, CA 92249 (APN No. 054-230-61), and covers an area of approximately 8.5 acres. This facility provides potable water supply to the residents and businesses of Heber town.

The facilities consisting of Class III conventional water treatment plant having an approved capacity of 2 Million Gallons per Day (MGD) and a Class III water distribution system, which are owned and operated by Heber Public Utility District. The Water System is a small community water system that currently provides potable water to approximately 1,600 metered service connections, and serves a town population of approximately 6,500 people. The Water System operates 24 hours daily on system demand.

HPUD Water Distribution Plan is attached in Appendix A.

The WTP operates under regulation by the California State Water Resources Control Board, Division of Drinking Water, San Diego District (Division). HPUD supplies potable water under Water Permit Number 05-14-17P-012 issued on December 8, 2017. The Division is the managing agency for the treated water.

This Operation Plan has been prepared on completion of WTP's expansion project. This improvement will add additional treatment processes and capacity to the existing WTP. The first phase completed in September 2017, increased the capacity of the WTP from 2 MGD to 4 MGD.

This Operations Plan is submitted to the Division on completion of the expansion project for review and approval.

1.2. Operations Plan Content and Format

The Operation Plan is intended to be of assistance to those whom are responsible for the day

to day operation of the WTP. The contents of this manual provide an excellent basis for the basic reference guide for the existing operator and training of new operators.

The use of this Manual starts with a reference Table of Contents; go through the table of contents in order to understand how the manual is arranged, in order to find a particular answer to a question. If your particular question requires greater detail refer to the accompanying detailed Operation and Maintenance Manual for each individual unit and its components.

The intent of the Table of Contents is to enable you to quickly locate the topic in which you are interested. It was, therefore, prepared to be comprehensive and detailed. You should be able to easily locate the specific topic of interest.

A good way to use the manual is to first look through the Table of Contents, then:

- Check the Table of Contents for the information you are looking for, and identify the specific topic where it can be found.
- Turn to the section in the Table of Contents and review your topic.
- If there are references made to the unit process manual, refer to the Operation and Maintenance manual for that the unit process and research the topic of interest.

1.3. Operation and Managerial Responsibility

It is important that every person involved with plant operation and maintenance, or its supervision, have a clear understanding of their duties and responsibilities. This Operation and Maintenance manual will provide an understanding of the overall objectives of plant operation, namely, achievement of a specific water quality level. It will also assist staff in defining a chain of responsibility. Refer to the listed items below for a general outline of the scope of responsibility of the personnel operating the Water Treatment Plant.

1.3.1. Operational Personnel's Responsibilities

The following is a suggested list of the operational personnel's responsibilities:

A. Know proper operational procedures.
B. Operate and maintain the water treatment plant effectively.
C. Maintain an accurate and organized system of operational and maintenance records. Evaluate the results of the records.

D. Be aware of safety hazards connected with water treatment.
E. Know expected efficiencies of all unit operations and processes in the treatment system and how to monitor these units.
F. Use sound judgment in the expenditure of operating funds.

G. Keep management advised of potential major problems in operation and maintenance of the system.
H. Be prepared to discuss plant operation with plant visitors and members of the community.
I. Keep continuously informed of the best operating and maintenance practices.
J. Participate in short courses and schools when available.
K. Subscribe to and regularly read several of the periodicals related to municipal water treatment.

1.3.2. Management's Responsibilities

The following is a suggested list of management's responsibilities:

A. Maintain efficient plant operation and maintenance.
B. Maintain adequate water treatment system operational and management records.
C. Establish staff requirements, prepare job descriptions, develop organizational charts and assign personnel.
D. Establish and enforce ordinances related to the water treatment and supply.
E. Assist in providing good working conditions, safety equipment and proper tools for the operational personnel.
F. Establish a harmonious relationship with operational personnel.
G. Provide operational personnel with job security and career ladder.
H. Establish operator training program.
I. Provide incentives for employees.
J. Motivate personnel to achieve maximum efficiency of operation.
K. Make operators aware of importance of proper plant performance.
L. Make periodic inspections of the treatment system to discuss mutual problems with the operational personnel and to observe operational practices.
M. Create an atmosphere that will make operational personnel feel that they can bring special problems to management's attention.
N. Maintain good public relations.
O. Prepare budgets and reports.
P. Plan for future facility expansion and requirements.
Q. Maintain a dialogue with the California State Water Resources Control Board Division of Drinking Water. Identify future water requirements which may impact

the WTP.

2. Water Treatment Plant Operations and Systems Description

2.1. Overview of Water Treatment Plant Operations

Raw water for the treatment process is drawn from a surface water source (Colorado River) via canal located south of the WTP. The water is treated by the following processes:

- Flash Mixing, Flocculation, Coagulation, and Sedimentation
- Filtration and Backwash
- Chlorination and Disinfection
- Post-chlorination

The treated water is fed to HPUD Distribution System via new and existing pipelines.

HPUD Water Treatment Plant Layout Plan is attached in Appendix – B.

HPUD's WTP flow diagram is attached in Appendix – C.

2.2. Raw Water Service

Raw water for the HPUD water treatment plant is provided from the Colorado River water via the Central Main Canal and the Dogwood Canal, irrigation canals that are a part of the Imperial Irrigation District's (IID) water network in the Imperial Valley. The IID is responsible for the monitoring of the water flow in the canal. The Central Main Canal gate is H1. The Dogwood Canal gate is 37A.

Raw water from the Central Main Canal flows to the Water Treatment Plant by gravity through a 36-inch diameter HDPE pipe. The 36-inch diameter pipeline runs easterly from the south end of the Water Treatment Plant for approximately 9,800 feet southeast to the Central Main Canal.

Raw water from the Dogwood Canal flows to the Water Treatment Plant by gravity through an 18-inch diameter PVC pipe. The 18-inch diameter pipeline runs westerly from the south end of the Water Treatment Plant for approximately 330 feet west to the Dogwood Canal.

2.3. Raw Water Conditioning Facility/ Static Mixer Facility and Raw Water Storage Basins

2.3.1. Flow Process

The new Raw Water Conditioning Facility / Static Mixer Facility (RWCF) receives raw water from the IID's Dogwood Canal and/or Central Main Canal. The RWCF is located on the south-east corner of the Water Treatment Plant. At the new RWCF raw water is flash mixed and coagulated. Water is then conveyed to the existing three (3) downstream Raw Water Storage Basins from the RWCF via gravity pipelines, wherein flocculation and sedimentation of raw water occurs.

2.3.2. System Description

The new RWCF consists of two in-line Static Mixers within a vault and a Chemical Feed System with chemical storage tanks. A coagulant (polyferric sulphate) is added to the incoming raw water at the two static mixers, using one of the two "Encore 700" diaphragm metering chemical-feed pump. The raw water is blended and mixed in the inline static mixers. The Static Mixer Facility has two (2) 18-inch diameter inline static mixers; each mixer capable of blending coagulants into the raw IID water for flows from 1 to 4 MGD. The water then flows to the Raw Water Storage Ponds.

A sample of the raw water entering the RWCF is pumped, via a dedicated pipeline to the Electrical Room Analytical Station (ERAS) for turbidity analysis.

After the sample point, the raw water is blended with Backwash Basin return flow conveyed by 4-inch and 6-inch return pipelines. The blended water then is dosed with NSF 60 certified ferric sulfate by one of the RWCF's two metering pumps. The ferric sulfate is stored at the RWCF in a double walled 250-gallon day tank and a 1,550-gallon bulk storage tank. After coagulant injection, the flow passes through two parallel 18-inch static mixers. Pressure gauges are installed on the influent and effluent of the static mixers to assist in determining if the mixers are blocked by waterborne debris.

The turbidity of the incoming raw water at the Static Mixer Facility is continuously monitored with a Hach "Surface Scatter 7 sc Turbidimeter". The pH and temperature of the incoming raw water at the Static Mixer Facility is continuously monitored with a Hach "DPD1P1" pH and temperature sensor.

After exiting the RWCF, a 36-inch pipe carries the conditioned water to the raw water storage basins. HPUD has three raw water storage basins that are typically operated in series but are plumbed to be operated in parallel as well in order to remove individual ponds from service. The raw water storage basins have a total combined storage volume of 7.27 MG. Under normal operation, flow from the RWCF enters the southeastern corner of the eastern 2.28 MG (7.0 acre-feet) storage basin, Raw Pond 1. The water flows via gravity from Raw Pond 1 into the 2.21 MG (6.78 acre-feet) middle pond, Raw Pond 2. The water passes into Raw Pond 2 at one of two 24-inch transfer pipes located at ¼ and ¾ of the length of shared wall between Pond 1 and Pond 2. The water flows via gravity from Raw Pond 2 into the 2.78 MG (8.56 acre-feet) western pond, Raw Pond 3. The water passes into Raw Pond 3 at one of two 24-inch transfer pipes located at ¼ and ¾ of the length of shared wall between Pond 2 and Pond 3. Each of the three ponds has a 24-inch effluent pipe, located on the northern end of the pond, where the water is conveyed to the Raw Water Pump Station.

Detention time allows the formation of floc masses which attract and gather debris present in the source raw water. The detention time here allows large particles to settle by gravity in the storage basins. Most of the particulate matter that was present in the raw water is captured by the floc particles and is removed by gravity in the raw water storage basins, however, during normal operations, some floc passes from the settling tanks to the Raw Water Pump Station.

2.3.3. Controls Description

The flow of raw water from the IID's Dogwood Canal and/or Central Main Canal is controlled by manually adjusting the IID's gate valve. The operators adjust the valve to ensure continuous adequate supply of raw water to the treatment plant. The inflow of raw water to the water plant is in the range of 700 to 1,400 gpm depending on the consumption of water.

The operation mode of each static mixer is done manually by opening and closing isolation valves.

The two chemical metering pumps shall have local controls that allow the operators to turn the pumps on or off. In auto mode the chemical pumps will run all the time.

The dosage of coagulant (polyferric sulphate) injected at the Static Mixer is manually adjusted by the operators. The dosage will be adjusted periodically depending on the

turbidity of incoming raw water.

2.3.4. Design Capacity

Static Mixers

No. of Static Mixers	2 in-line static mixers
Diameter:	18-INCH
Capacity of Mixer:	2-4 MGD EACH
Headloss:	0.10 PSI @ 1 MGD - MIN
	1.60 PSI @ 4 MGD - MAX

Chemical Feed System Related

Type of chemical:	Polyferric Sulphate (50% Solution)
No. of Pumps:	2 (1 Duty and 1 Standby)
Id Tag:	YA-331 (Pump 1) and YA-332 (Pump 2)
Pump:	Encore 700 metering pump, size 2; simplex
Pump Model:	E7B1PACDCA1
Pump Type:	Positive Displacement Diaphragm Pump
Feed Rate of Each Pump:	2.5 GPH – MIN
	6.5 GPH - MAX
Dose:	15 PPM – AVE
	25 PPM - MAX
Controls of Pumps:	Constant Speed
Storage Capacity:	1,800 Gallons
	(1- 1,550 Gallon Tank and 1- 250 Gallon Tank)

Raw Water Storage Basins

No. of Basins:	3
Capacity of Basin No. 1:	2.28 MG
Capacity of Basin No. 2:	2.21 MG
Capacity of Basin No. 3:	2.78 MG
Total Capacity of Basins:	7.27 MG

2.4. Raw Water Pump Station

2.4.1. Flow Process

At the Raw Water Pump Station (RWPS), raw water is drawn into the wet well from the storage ponds via gravity pipeline by vertical turbine pumps, actuated on demand. Water is conveyed to the new and existing Clarifier/Filter Treatment Units from the RWPS via new forcemain pipelines.

2.4.2. System Description

The new RWPS consists of a wet well and three (3) variable speed vertical turbine pumps. Two pumps are duty pumps capable of pumping up to 4 MGD to the Clarifier/Filter Treatment Units and one pump is a standby variable speed pump. Each pump has a capacity of 2 MGD. The 22.3 hp, 1400 gpm vertical turbine pumps, are actuated on demand, to draw raw water from the storage ponds through new 24-inch diameter PVC pipeline. Water is conveyed to the new and existing Clarifier/Filter Treatment Units from the RWPS via new forcemain pipelines.

The raw water wet well is 12.8 feet in depth, trapezoidal in shape with an area of 196 square feet. The wet well is capable of housing four (4) pumps. There are three pumps with a provision for fourth pump.

Before coagulant injection, a sample of the flow is routed via a dedicated pipeline to the ERAS for turbidity analysis. The turbidity of the incoming raw water at the Raw Water Pump Station is continuously monitored with a Hach “1720E Low Range Turbidimeter”. The pH and temperature of the incoming raw water at the Raw Water Pump Station is continuously monitored with a Hach “DPD1P1” pH and temperature sensor.

2.4.3. Controls Description

The vertical turbine pumps shall turn on and off based on a signal from the Clarifier/Filter unit to start/stop pumping raw water to the Clarifier/Filter unit.

There are three pumps with provisions for a fourth. The operation mode of each raw water pump is selected by a “Hand/Off/Auto” selector switch located at each starter of

the raw water pump. When in "Hand" position the operation of raw water pump is controlled by the corresponding VFD system. When in "Auto" the three pumps if ready shall automatically alternate LEAD1-LEAD2-LAG positioning. The pumps will alternate when the lead pumps are turned off as 1-2-3, 2-3-1 and 3-1-2 as LEAD1-LEAD2-LAG respectively.

The raw water level in the wet well is monitored with an ultrasonic level transducer installed at the top of the wet well. Should the level of raw water in the wet well rise above high level (set at SCADA), an alarm condition is generated and operator is notified. Should the level of raw water in the wet well fall below low level (set at SCADA), an alarm condition is generated and operator is notified.

2.4.4. Design Capacity

Raw Water Wet Well

Depth:	12.83 Feet
Area:	196 Square Feet
Capacity:	18,800 Gal Storage

Raw Water Pumps

No. of Pumps:	3 (2 Duty and 1 Standby)
Id Tag:	P-101A (Pump 1); P-101B (Pump 2) and P-101C (Pump 3)
Pump Model:	Peerless Vertical – 10HH 2 Stages, Type L4
Pump Type:	Vertical Turbine Pump
Power:	25 HP
Capacity:	1,400 GPM
Total Dynamic Head:	50 FT
High Water Level (ft- MSL):	989
Low Water Level (ft- MSL):	983

2.5. Rapid Mix/Coagulation

2.5.1. Flow Process

After the RWPS lifts the raw water, polyferric sulfate is injected, and the flow passes through an 18-inch static mixing device (Komax TA-68576). The water is then conveyed through an 18-inch pipe and is dosed with a NSF 60 certified cationic polymer filter aid immediately before entering the contact clarifier.

The polyferric and polymer chemicals and feed equipment are both sited on the east side of clarifier/filter units. The two chemical storage areas are separate from each other, and each has 6-inch containment walls surrounding the storage area and pumps.

2.5.2. System Description

A coagulant (polyferric sulphate) is injected prior to entering the Clarifier/Filter unit, using one of the two "Encore 700" diaphragm metering chemical-feed pumps of the Chemical Feed System. Coagulants are flash mixed using an in-line static mixer located 6 inches past the coagulant injection point on the water pipeline downstream of Raw Water Pump Station, upstream of the Clarifier/Filter units. The Chemical Feed System consists of two chemical metering pumps and two storage tanks.

A flocculant (T-floc 1417 cationic polymer) is injected prior to entering the Clarifier/Filter unit, using one of the three "Seepex MD 003-12" chemical feed pumps of the Polymer Chemical Feed System. The Polymer Chemical Feed System consists of a mixer in a storage tank and three chemical metering pumps.

2.5.3. Controls Description

The operation of the chemical feed system is controlled by the clarifier/filter unit system's control panel.

The operation of the polymer chemical feed system is controlled by the clarifier/filter unit system's control panel.

2.5.4. Design Capacity

<u>In-line Static Mixer</u>

No. of Static Mixer	1 in-line static mixer
Diameter:	18-INCH
Capacity of Mixer:	1-4 MGD
Headloss:	0.10 PSI @ 1 MGD - MIN
	1.20 PSI @ 4 MGD - MAX

<u>Chemical Feed System Related</u>

Type of chemical:	Polyferric Sulphate (50% Solution)
No. of Pumps:	2 (1 Duty and 1 Standby)

Id Tag:	YA-331 (Pump 1) and YA-332 (Pump 2)
Pump:	Encore 700 metering pump, size 2 simplex
Pump Model:	E7B1PACDCA1
Pump Type:	Positive Displacement Diaphragm Pump
Feed Rate of Each Pump:	2.5 GPH – MIN 6.5 GPH - MAX
Dose:	10 to 15 PPM – AVE
Controls of Pumps:	Constant Speed
Storage Capacity:	1,800 Gallons (1- 1,550 Gallon Tank and 1- 250 Gallon Tank)
What determines the dose?:	Jar tests, experience, performance & Aquaritrol III PLC

Polymer Chemical Feed System Related

Type of chemical:	T-floc 1417 Polymer Aid
Pump:	Seepex variable-speed
No. of Pumps:	3
Id Tag:	YY-302 (Pump 1); YY-303 (Pump 2); and YY-304 (Pump 3)
Pump Model:	Seepex "MD 003-12"
Pump Type:	Progressive cavity pump
Feed Rate of Each Pump:	5 GPH – MAX
Dose:	3 to 5 PPM – AVE
Storage Capacity:	550 Gallon Tank
What determines the dose?:	Jar tests, experience & performance

2.6. Filtration and Backwash

2.6.1. Flow Process

Raw Water is conveyed from the RWPS to the new/existing Clarifier/Filter Treatment unit via forcemain pipeline. The "Microfloc Trident TR-840A" unit is designed to clarify, filter and disinfect water in accordance with California Code of Regulation Title 22 standards. The new and existing units are self-contained, complete with treatment units including clarifier flush and filter backwash piping, valves and controls.

Treated water is conveyed to the Finish Water Pump Station (FWPS) via new gravity pipelines.

Filter backwash water, clarifier flush water and accumulated floc from the Clarifier/Filter units is directed to the existing Backwash Settling Basins via the Backwash Pump Station.

2.6.2. System Description

A pressure transducer located at the top of 3.0 MG water tank (Tank #3) sends a signal to the start or stop the Clarifier/Filter unit.

Raw Water is conveyed from the RWPS to the new/existing Clarifier/Filter Treatment unit via forcemain pipeline.

A Siemens "Sitrans F M MAG 5100 W" flowmeter on the inlet piping to the Clarifier/Filter Units monitors the flow of the raw water to the Clarifier/Filter units.

HPUD has three Microfloc Trident TR-840 package treatment plants, each rated to produce 2 MGD. Two units will normally operate, with one in standby. The units consist of an upflow contactor and multimedia filter. Units 1 & 2 were installed in 2004, and Unit 3 was installed in 2017.

The Trident treatment plant is a Division of Drinking Water approved "alternative filtration technology "under the "contact clarifier" category. The Trident unit is credited with 2.5-log Giardia cyst / 2-log viruses removal capability, provided that the combined effluent turbidity can meet a monthly standard of 0.2 NTU 95% of the time. Each TR-840 unit is rated with a maximum filter loading rate of 6.0 GPM/sq. ft. and filtration rate of 1,440 GPM.

Water flows into one of the three 2 MGD Clarifier/Filter Treatment Units from the Raw Water Pump Station. Water flows up through the clarifier at a maximum rate of 5 gpm/ft^2.

a. The clarifier media is composed of irregularly shaped particles of chemically inert material. This material is less dense than water, so it floats at the surface
b. A stainless steel retaining assembly at the top of the clarifier holds back the 4ft. bed of clarification media.

Clarified water then overflows into the Mixed Media Filter. The mixed media filter bed is composed of the following materials:

a. 24" top layer of anthracite coal (0.8 to 0.9mm).
b. 18" middle of #20 silica filter sand. (0.4 to 0.5mm).
c. 9" bottom layer of garnet high density sand (0.20 to 0.32 mm).

Individual and combined filter effluent turbidities are continuously monitored by Hach 1720 E Turbidimeters.

Treated water is conveyed to the Finish Water Transfer Pump Station via new gravity pipelines. Filter backwash and clarifier flush water is conveyed by gravity to the existing Backwash Settling Basins.

Filter backwash water and accumulated floc from the Clarifier/Filter units is directed to the existing Backwash Settling Basins via the Backwash Pump Station.

2.6.3. Controls Description

A pressure transducer located at the top of 3.0 MG water tank (Tank #3) sends a signal to the start or stop the Clarifier/Filter unit.

The Clarifier/Filter unit then sends a signal to the vertical turbine pumps at the Raw Water Pump Station to commence conveying Raw Water to the Clarifier/Filter unit.

A flow meter and butterfly valve is installed at the influent to each unit to throttle the flow from the RWPS, and reduce the individual filter loading rates. The call for water for RWPS and filters is controlled by high and low set points of 1,009 Ft. and 1,012 Ft. (MSL), respectively, in the 0.75 MG (LIT-500) or 3.0 Reservoir (LIT-100). Under normal operating conditions the 3.0 MG Tank controls the call for water. In case 3.0 MG Tank level transducer is down/or tank is removed from service, then 0.75 MG Tank level transmitter will control the call. The Aquaritrol III programmable logic controller (PLC) can utilize raw (AI-200) and effluent (AI-353, AI-453, AI-321, AI-406A) turbidity, flow rate (FE-120, FE-220, FE-320), and streaming current measurements, or manual set points, to modify polyferric sulfate dosing rates at the RWPS.

Contact Clarifier - The upflow contactor contains a buoyant proprietary high-density polyethylene (HDPE) media that is covered with a stainless steel mesh screen. The upflow contactor portion of the unit is backwashed and air scoured independent of the filter. The Aquaritrol III PLC is programmed to automatically initiate a clarifier flush cycle every 300 minutes (5 hours). The PLC will automatically start a clarifier flush if a clarifier headloss of 1.5 psi (4 Ft.) or greater is detected. A 7.5 hp air blower provides air at a rate of 150 scfm for the air scour cycle.

Filtration - Flow enters the multimedia filter portion of the unit by a trough flowing through a break in a double wall air gap between the filter and the upflow contactor. Filter effluent flows via gravity into an 18-inch steel pipe to the FWPS.

The filters are backwashed when the turbidimeters show the effluent turbidity to exceed 0.3 NTU for more than ten-minutes, or if the filter headloss reaches 4 psi (8 feet). The filters are backwashed one at a time; with the effluent of the 3.0 MG Reservoir used as the source of water used for backwash water. The length of backwash cycle varies as set by the Operator from 23-minutes to 43-minutes. The exact length is determined by the duration of the filter to waste portion of the backwash cycle, which is set by the Operator. After treatment at the Filter Backwash Basin, the backwash decant is pumped to the RWCF at the head of the treatment plant.

2.6.4. Design Capacity

Clarifier/Filter Units

PARAMETER	UNITS	VALUE
Number	-	3
Make	Microfloc	
Model	Trident TR-840	
Manufacturer	2-Units Installed 2004	US Filter
	1-Unit Installed 2017	Westech
CLARIFIER		
Size	Ft	8’-9” (L) x 11’-11” (W)
Area	Sf	140
Filtration Rate	GPM/Sf	10
	GPM	1400
Air Scour Rate	scfm/sf	4
	scfm	280
Backwash Rate	GPM/Sf	10
	GPM	700

HPDE Chip Rate	inches	48
Specific Gravity	<	1.0
Chip Effective Size	Mm	2-4
FILTER		
Size	Ft	26’-6” (L) x 11’-11” (W)
Area	Sf	280
Filtration Rate	GPM/Sf	6
	GPM	1400
Air Scour Rate	scfm/sf	4
	scfm	280
Backwash Rate	GPM/Sf	15-18
	GPM	1400

Filtration Media Specifications

PARAMETER	UNITS	VALUE
Anthracite		
Depth	Inches	18
Effective Size	Mm	1.0-1.2
Uniformity Coefficient		≤670
Specific Gravity		1.6
Silica Sand		
Depth	Inches	19
Effective Size	Mm	0.4-0.5
Uniformity Coefficient		≤1.4
Specific Gravity		2.6
Garnet		
Depth	Inches	3
Effective Size	Mm	0.20-0.32
Uniformity Coefficient		≤2.2
Specific Gravity		4.0

Turbidity Analysis Equipment

Location	**Filter 1 IFE**	**Filter 2 IFE**	**Filter 3 IFE**	**CFE**
Id Tag	AI-453	AI-353	AI-321	AI-406A
Sample Point	Post Filter 1	Post Filter 2	Post Filter 3	Post FWPS
Sample Conveyance	Gravity	Gravity	Gravity	Gravity
Flow Rate (gpm)	8	8	8	8
Time of Travel (seconds)	3	3	3	5
Make/Model	Hach 1720 E	Hach 1720 E	Hach 1720 E	Hach 1720 E
Equipment Range	0.001-100	0.001-100	0.001-100	0.001-100
Operating Range	0-0.20	0-0.20	0-0.20	0-0.20

2.7. Finish Water Transfer Pump Station

2.7.1. Flow Process

Finish Water Transfer Pump Station (FWPS) consists of three 1, 400 GPM vertical turbine pumps. Two of the pumps were installed in the 2004 water treatment plant upgrade. In 2017 the third pump was installed in an existing empty pump opening. Sodium hypochlorite is injected post pump effluent for chlorine inactivation, and then a sample of the flow is routed via a dedicated pipeline to the ERAS FWPS chlorine analyzer (AI-406) for sodium hypochlorite process monitoring. See 2.8 Disinfection/Chlorination for details of chlorine inactivation.

Water is conveyed to the three (3) existing ground storage reservoirs from the FWPS via new 18-inch diameter PVC pipeline. For normal operation, all the discharge will be directed to the 0.75 MG reservoir.

2.7.2. System Description

The FWPS consists of one (1) new and two (2) existing constant speed vertical turbine pumps. Each pump has a capacity of two (2) MGD. One (1) constant speed pump normally operates while two constant speed pumps are on standby.

The treated water is pumped by one of three vertical turbine pumps into one of the three above ground steel storage tanks.

2.7.3. Controls Description

The vertical turbine pump shall turn on and off based on the level of the treated water in the FWPS.

There are three finish water pumps. The operation mode of each finish water pump is selected by a “Hand/Off/Auto” selector switch located at each starter of the pump. When in “Hand” position the operation of finish water pump is controlled by the corresponding “Start/Stop” push button located at the starter. When in “Auto” the three pumps if ready shall automatically alternate LEAD1-LAG1-LAG2 positioning. The pumps will alternate when the lead pumps are turned off as 1-2-3, 2-3-1 and 3-1-2 as LEAD1-LAG1-LAG2 respectively.

The finish water level in the wet well is monitored with an ultrasonic level transducer installed at the top of the finish water wet well. Should the level of finish water in the wet well rise above high level (set at SCADA), an alarm condition is generated and operator is notified.

A Hach CL17 chlorine analyzer continuously monitors chlorine residual downstream of the FWPS before water is transferred to water storage tanks, which is described in 2.8 Disinfection/Chlorination; and 2.13 Electrical Room Analytical Station (ERAS).

2.7.4. Design Capacity

<u>Finish Water Wet Well</u>

Depth:	9.16 Feet
Area:	135 Square Feet
Capacity:	9,250 Gal Storage
	6,270 Gal at High Water Level

Finish Water Pumps

No. of Pumps:	3 (1 New and 2 Existing)
Id Tag:	P-102A (Pump 1); P-102B (Pump 2); and P-102C (Pump 3)
Pump Type:	Vertical Turbine Pump
Pump Model:	New: Peerless Vertical - 10HH; 2 Stage; Type L4 Existing: Simflo – 2 Stage; Model 11714 Existing: Prime Pump – 2 Stage; Model 8J140
Power:	25 HP
Capacity:	1,400 GPM
Total Dynamic Head:	50 FT
High Water Level (Ft. – MSL):	988
Low Water Level (Ft. – MSL):	984

2.8. Disinfection/Chlorination

2.8.1. Flow Process

Primary disinfection (primary chlorination) occurs following filtration, immediately upstream from the FWPS. Chlorine is injected in the finished water force main. Primary chlorination disinfects the filtered water, ensuring that any potentially pathogenic organisms that may remain after sedimentation and filtration are rendered harmless prior to distribution to consumers. Consistent disinfection is ensured by continuous monitoring of the chlorine residual in the treated water transferring to the storage tanks and leaving the facility.

Secondary disinfection (secondary chlorination) if required occurs just downstream of the Water Distribution Pump Station. If the residual chlorine drops below a set level, then sodium hypochlorite from the Disinfection System Facility is injected into water main just downstream of the Distribution Pump Station.

2.8.2. System Description

The sodium hypochlorite generation facility consists of: One (1) 540-gallon brine tank; two (2) water softeners; one (1) brine transfer pump; one (1) five cell sodium hypochlorite generation unit; two (2) 2,500 gallon sodium hypochlorite double-walled polyethylene storage tanks; two (2) primary chlorination chemical metering pumps; two (2) secondary chlorination chemical metering pumps; and two (2)hydrogen gas blowers. High-grade NSF

60 certified vacuum-dried sodium chloride is delivered at the salt unloading station and stored in the 540 Gallon brine tank. Within the brine tank, softened water dissolves the salt crystals and creates a brine solution. This brine solution is pumped via a gear pump, to a stream of softened water and diluted to approximately 3% salt concentration (a 10:1 ratio of softened water to concentrated brine), with a maximum pumping capacity of 83 gph. The pumps transfer the brine solution to a five-cell "Microclor MC-200" sodium hypochlorite generator. Electricity from the rectifier then is fed into the brine solution within the sodium hypochlorite generators, forming a 0.8 percent sodium hypochlorite solution and hydrogen gas. The sodium hypochlorite generator has a production capacity of 200 lb/day and feed rate of 3 pounds of brine per equivalent pound chlorine produced. The sodium hypochlorite and the hydrogen gas are transferred to the facilities storage tanks. At the storage tanks, the hydrogen gas is diluted to below the lower explosive limit (LEL; 4 percent by volume) before discharge to the atmosphere. Ambient air blows into the tanks at 150 actual cubic feet per minute (ACFM), which will safely dilute the maximum possible hydrogen production. The exhaust from each tank discharges to the atmosphere. The 0.8-percent sodium hypochlorite solution is transferred from the storage tanks to the finish water pump station for chlorine inactivation and the water distribution pump station for distribution system residual maintenance by four metering pumps.

2.8.3. Controls Description

The two chemical metering pumps at the primary chlorination system are flow controlled to inject sodium chlorite when the finish water pumps operate. In hand mode the chemical pumps will run all the time. The dosage of sodium hypochlorite injected is manually adjusted by the operators.

A Hach CL17 chlorine analyzer continuously monitors chlorine residual just upstream of the sodium hypochlorite injection point before it is sent out to the above ground steel storage tanks. If the residual chlorine drops below a safe level, the pumping of filtered water to the storage tanks is automatically interrupted at the FWPS, and an operator is notified to correct the problem.

If the residual chlorine drops below a set level, then sodium hypochlorite from the Disinfection System Facility is injected into water main just downstream of the Distribution Pump Station. The sodium chlorite is injected using one of the two "Encore 700, series 4" adjustable chemical-feed metering pumps to dose at approximately 1 to 2 ppm.

A Hach CL17 chlorine analyzer continuously monitors chlorine residual immediately upstream of the booster pump station before water is sent out to the distribution system.

2.8.4. Design Capacity

A) Brine Pump:

No. of Pumps:	1
Id Tag:	YC-601
Purpose	Transfer Brine to SHC Generator
Pump:	Micropump Series GJ; 21
Pump Type:	Cavity Gear Pump
Feed Rate of Each Pump:	8.9 GPH - MAX
What determines the dose?:	SHC Storage Tank 2

B) Sodium Hypochlorite Generating System:

Number of Generation Cell:	5
Capacity of disinfection system:	200 Gallon
Storage Capacity:	5,000 Gal (2 Tanks – 2,500 Gal each)

C) Primary Chlorination (sodium hypochlorite):

No. of Pumps:	2 (1 Duty and 1 Standby)
Id Tag:	YY-600 (Pump 1); and YY-701 (Pump 2)
Metering Pump:	Encore 700 metering pump, size 5 duplex
Pump Type:	Positive Displacement Diaphragm Pump
Feed Rate of Each Pump:	180 GPH - MAX
Dose:	3 to 5 PPM – AVE
What determines the dose?:	SHC PLC & Post 1.7 MG Reservoir Chlorine Analyzer

D) Secondary Chlorination (Sodium hypochlorite at Water Distribution Pump Station):

No. of Pumps:	2 (1 Duty and 1 Standby)
Id Tag:	YY-400 (Pump 1); and YY-500 (Pump 2)
Metering Pump:	Encore 700 metering pump, size 4 duplex
Pump Type:	Positive Displacement Diaphragm Pump
Feed Rate of Each Pump:	77 GPH - MAX
Dose:	As required - 1 to 5 PPM – AVE
What determines the dose?:	HSPS Chlorine Analyzer, experience & performance

2.9. Water Storage

2.9.1. Flow Process

The treated water is stored in three (3) existing above ground storage tanks/reservoirs with a combined storage capacity of 5.45 MG. The three tanks are designed and piped to be used in series or isolation or parallel. For normal operations the tanks are to be used in series. The treated water is pumped to Tank No. 1 (0.75 MG welded steel tank) then flows to Tank No.2 (1.70 MG welded steel tank), and finally flows to Tank No. 3 (3.0 MG concrete tank). From the Tank No. 3 treated water is directed the distribution system via the Water Distribution Pump Station.

2.9.2. System Description

The three water tanks are piped to be operated in series or parallel or isolation.

The first tank (Tank No. 1) is a 0.75 MG (66 foot diameter by 30 feet tall) welded steel tank that is equipped with baffles, is located on the east side of the Clarifier/Filter units. The 0.75 Mg Tank acts as a Chlorine Contact Time and storage tank. A full depth baffling system is installed in the 0.75 MG finished water reservoir to provide serpentine plug flow through the tank to achieve improved C*T performance. The 0.75 Mg Tank acts as a Chlorine Contact Time and storage tank. There are four (4) baffling curtains that increase the linear flow path from 65 feet to approximately 380 feet. The 0.75 MG tank's inlet is a riser pipe with four (4) effluent valves to evenly spread the influent flow vertically, and reduce the horizontal velocity to approximately 2.856 feet per second. The 0.75 MG tank has an 18-inch diameter bottom outlet (located opposite of the inlet).

The second tank (Tank No. 2) is a 1.70 MG (100 foot diameter by 30 feet tall) welded steel tank. The 1.7 MG tank's inlet and outlet pipeline are opposite side of the tank at the bottom of the tank. This tank is used as a combination storage and CT basin.

The third tank (Tank No. 3) is a 3.0 MG (134 foot diameter by 30 feet tall) concrete tank. The 3.0 MG tank's inlet and outlet pipeline are opposite side of the tank at the bottom of the tank. In 2017, the Tank No. 3 was converted from a combination storage and CT basin to a combination storage and In-Tank Spray Stripping (ITSS) TTHM removal system. The TTHM removal system is discussed in details under 2.10 - TTHM Treatment.

The Reservoir Data Sheets for the HPUD Water Treatment Plant is attached in Appendix – D.

2.9.3. Controls Description

The flow of water from Tank No. 1 to Tank No. 2 to Tank No. 3 is controlled manually with valves on the finish water pipeline. The water level in all the three tanks is maintained at the same level by hydrostatic pressure and monitored with the pressure transducer located at the top of 3.0 MG water tank and a pressure transmitter located at the 0.75 MG water tank.

2.9.4. Design Capacity

Finished Water Storage Tanks

Tank No.	Tank Capacity (MG)	Year Installed	Height (ft)	Overflow Elevation (ft)	Construction Type
1	0.75	1979	30	27	Welded Steel
2	1.70	1996	30	29	Welded Steel
3	3.00	2008	32	29	Concrete

2.10. TTHM Treatment

2.10.1. Flow Process

In 2017, the 3.0 MG Reservoir (Tank No. 3) was converted from a combination storage and CT basin to a combination storage and In-Tank Spray Stripping (ITSS) Total Trihalomethanes (TTHM) removal system. The pre-stressed concrete tank has a 134-foot diameter and a height of 32-feet. The inlet and outlet pipes are separated by 180°and are at equal elevation at the bottom. The ITSS consists of four spray aerators (SN 15), two air blowers, and two submersible mixers (GS-12). The 3.0 MG Reservoir (Tank No. 3) receives flow from the 1.7 MG Reservoir (Tank No. 2). From Tank No. 3 treated water is directed to the distribution system via the Water Distribution Pump Station.

2.10.2. System Description

As flow enters the 3.0 MG Reservoir, toroidal forces pull the flow vertically upward and towards the aerator SN 15 units. Each SN 15 unit is rated at 700 GPM, and each unit is rated to treat 1.0 MGD through it. As an additional safety factor against the flow bypassing the SN 15 units, two GS-12 submersible mixers are operated all times. The mixers are seated adjacent to the tank inlet. Each GS-12 unit is designed for continuous operation at 700 GPM, for a total pumping capacity of 2.0 MGD. The GS-12 units have a 37-inch length, a 10-inch width, and a tubular shape. Water is pulled to the ends of the tube and pushed up vertically as a blade towards the reservoir surface.

The ITSS blowers are on the outer southeastern edge of the 3.0 MG Reservoir. The two blowers, operating with one on duty and one on standby, each can provide 3,000 cubic feet per minute (CFM) of positive air flow into the reservoir. Currently HPUD swap the operation of the two blowers on a weekly basis. The air travels from the blowers up a 12-inch steel pipe mounted to the reservoir wall, thru a downward facing U-bend into the roof, and then cascade onto the water surface. The air interacts with the water droplets produced by the spray nozzles, stripping out volatile organic compounds. The air then exits through the four 20-inch gravity vents on the roof of the reservoir.

Each of the four SN 15 units consists of five parts:
1) Two guidewires, each attached to the ceiling rafters of the reservoir and a submerged 30 lbs. pendulum weight
2) Four stabilizing foam float arms that allow the system to float on the water surface, rising and falling vertically between the guidewires. The spray unit is 120 inches in diameter and 60 inches tall
3) A flexible 16-inch diameter intake hose and intake assembly
4) A submersible 15 HP pump and motor
5) Three downward facing clog-free spray nozzles

The SN15 unit is designed to circulate and treat water by bringing water radially inward at the lower portion of the water column along the floor. The water that remains at the bottom of the reservoir is drawn into an intake structure from a horizontal layer within 18 inches of the 3.0 MG Reservoir's floor. The flow is then pulled up a flexible hose by a submersible pump and discharges radially through three downward facing nozzles on the floating spray unit. From the nozzle, the surface flow is pushed down and toward the reservoir wall. As the water descends the side wall, it is drawn radially inward from below. The SN 15 and GS-12 units are spaced based on computation fluid dynamic modeling to support complete mixing of the reservoir and prevent thermal stratification.

The SN 15 design uses Henry's Law constants as the principle for calculating the removal of volatile organic compounds (TTHMs) from the system's potable water via aeration. The ITSS aeration system creates micro-droplets of water, measured in micrometers or microns (µm), which are surrounded by air circulated by a blower. The TTHMs flow from the higher concentration in the water droplet to the low to nonexistent concentration in the fresh air blown into the reservoir.

2.10.3. Controls Description

Currently HPUD operates various number of aerators at different time of the year.

Both the GS-12 submersible mixers are operated all times. The two blowers are operating with one on duty and one on standby. Currently HPUD swap the operation of the two blowers on a weekly basis.

The operation of the aerators, mixers and blowers is controlled on the SCADA by the operators with alarm capability.

2.10.4. Design Capacity

<u>ITSS Equipment: Aeration</u>

Location	**Aerator 1**	**Aerator 2**	**Aerator 3**	**Aerator 4**
Id Tag	YI-903A	YI-904A	YI-905A	YI-906A
Make	Medora GridBee SN 15			
Motor	15 HP			
Design Capacity	1 MGD / 700 GPM per unit			

ITSS Equipment: Blower and Mixers

Location	Blower 1	Blower 2	Mixer 1	Mixer 2
Id Tag	YI-901A	YI-904A	YI-907	YI-908
Make	Sukup CF-78562	Sukup CF-78562	Medora GS-12	Medora GS-12
Motor	3.0 HP	3.0 HP	0.5 HP	0.5 HP
Design Capacity	3,000 cfm	3,000 cfm	700 gpm	700 gpm

2.11. High Service Pump Station/Water Distribution Booster Pump Station

2.11.1. Flow Process

The finished water flows from the 3.00 MG Tank via hydrostatic pressure to the new High Service Pump Station (HSPS)/ high pressure water distribution booster pump station. At the HSPS the finished water is pumped into the distribution system at a pre-set pressure (40 psi) with the aid of four (4) variable speed centrifugal pumps.

2.11.2. System Description

The HSPS consists of four (4) variable speed centrifugal pumps. Each pump is capable of pumping 1,800 gpm at 80 psi. Up to two (2) pumps normally operate to supply up to 3,000 gpm to the distribution system with two pumps remaining on reserve for additional peak flow demand and redundancy purposes. The new HSPS is connected to the HPUD Distribution System via new and existing pipelines.

A Hach CL17 chlorine analyzer continuously monitors chlorine residual immediately upstream of the HSPS before water is sent out to the distribution system, which is described in 2.13 Electrical Room Analytical Station (ERAS).

If the residual chlorine drops below a set level, then sodium hypochlorite from the Disinfection System Facility is injected into water main just downstream of the HSPS. The sodium chlorite is injected using one of the two “Encore 700, series 4” adjustable chemical-feed metering pumps to a dose as required to maintain operation goal.

An in-line flowmeter “Impeller Series 200” at the outlet piping of the HSPS monitors the

flow of the treated water into the distribution system.

2.11.3. Controls Description

The booster pumps are designed to commence pumping treated water into the distribution system at fixed header pressure. The HSPS is a standalone packaged system that is controlled by a vendor PLC. All pumps have Variable Frequency Drives (VFD's) for modulating control.

Up to two (2) pumps normally operate to supply up to 3,000 gpm to the distribution system with two pumps remaining on reserve for additional peak flow demand and redundancy purposes.

2.11.4. Design Capacity

Booster/High Service Pumps

No. of Pumps:	4
Id Tag:	YR-101 (Pump 1); YR-102 (Pump 2); YR-103 (Pump 3); and YR-104 (Pump 4)
Pump Make/Model:	Paco/ LC 60157
Pump Type:	Centrifugal; End Suction Pump
Power:	100 HP
Capacity:	1,800 GPM
Head:	150 FT
Year Installed:	2017

2.12. Process Waste Residuals Management

2.12.1. Flow Process

Filter backwash water, accumulated floc, and flush water from the Clarifier/Filter units is directed from the relocated Backwash Pump Station to the existing Backwash Settling Basins wherein accumulated floc is allowed to settle. The new Backwash Decant Pump Station manages the clarified flush water. The effluent is pumped to the new static mixer and chemical feed facility at the point where raw water is received from the IID canals.

2.12.2. System Description

Filter backwash water, accumulated floc, and flush water from the Clarifier/Filter units is directed from the relocated Backwash Pump Station to the existing Backwash Settling Basins wherein accumulated floc is allowed to settle. Backwash Pump Station (BWPS) consists of two 50 H.P., 5,600 GPM centrifugal pumps. The pumps were originally installed in the 2004 water treatment plant upgrade and were relocated to the new backwash pump station wet well in 2016. The 3.0 MG Reservoir's finished water effluent pipeline supplies flow to the BWPS.

Backwash Recovery consists of two components: the Backwash Recovery Basin installed in 2004, and a Decant Pump Station, installed in 2017. Approximately 0.15 MGD of backwash water gravity flows via a 24-inch pipe from the package filter units to the two cell Backwash Recovery Basin. The water is retained in one of the two backwash recovery basins for approximately 17 hours, where it decants, clarifies, and is batch released. The clarified water effluent flow rate is controlled by manually operated valves. The clarified water exits the recovery basin through a perforated stainless steel weir wall and flows by gravity through a 6-inch PVC pipeline to the Decant Pump Station.

The new Backwash Decant Pump Station manages the clarified flush water. The effluent is pumped to the new static mixer and chemical feed facility at the point where raw water is received from the IID canals.

Backwash Decant Pump Station consist of two variable speed (VFD) submersible pumps, 4 and 6-inch return pipelines, a turbidimeter (AIT-110), and a magnetic flow meter (FIT-110).

The turbidity of the recycle water pumped back to the Static Mixer is continuously monitored at the Backwash Decant Pump Station with a Hach "1720E Low Range Turbidimeter (AIT-110)". The pH and temperature of the recycle water is continuously monitored at the Backwash Decant Pump Station with a Hach "DPD1P1" pH and temperature sensor.

A Siemens "Sitrans F M MAG 5100 W (FIT-110)" flowmeter at the outlet piping of the Backwash Decant Pump Station monitors the flow of the recycle water.

The sludge collected at the backwash basin is disposed to a land fill.

2.12.3. Controls Description

Each backwash pump is started/stopped by the Clarifier/Filter unit at pre-set time. The upflow clarifier and mixed media filter backwash cycles are automatically controlled by the Aquaritrol III PLC, and are set to backwash and flush automatically at nonoverlapping times. Backwash initiation set points and cycle durations are adjustable. Both the upflow clarifiers and the mixed media filters are designed to air scour during flushing and backwash cycles.

The two Backwash Decant pumps and two return pipelines are operated to allow a variable recycled backwash water pumping range of 100 to 300 GPM. The flow rate of the VFD pumps is adjusted based on operator set flow rate and two operational goals:
1) The recycled water volume, as measured by FIT-110 at the Decant Pump Station, does not exceed 10% of the volume of water entering the plant from the IID canals, as measured by FIT-330 at the RWCF.
2) The Decant Pump Station effluent turbidity does not exceed 2.0 NTU, as measured by AIT-110 at the Decant Pump Station.

2.12.4. Design Capacity

<u>Backwash Pumps</u>

No. of Pumps:	2
Id Tag:	YI-315 (Pump 1) and YI-316 (Pump (2)
Pump Model:	Aurora 411 A1
Pump Type:	Horizontal Split Case Centrifugal Pump
Power:	50 HP
Capacity:	5,600 GPM
TDH:	27 Feet
Installation Date:	2004

<u>Backwash Settling Basin</u>

No. of Basins	2
Depth:	8’-0” total depth with 2’-0” freeboard
Area:	106’-0” (L) x 19’-6” (W)
Capacity:	123,690 Gallons Storage
	92,767 Gallons at High Water Level

Backwash Decant Fiberglass Wet Well Basin

Depth:	12.83 Feet
Diameter:	5 Feet

Backwash Decant Pumps

No. of Pumps:	2
Id Tag:	YI-800A (Pump 1) and YI-800B (Pump (2)
Pump Model:	Barnes 3SHMP30N4
Pump Type:	Submersible Pump
Power:	3 HP
Capacity:	241 GPM
TDH:	13 Feet

2.13. Electrical Room Analytical Station (ERAS)

2.13.1. Description

Electrical Room Analytical Station (ERAS) is located in an air conditioned High Service Pump Station (HSPS) control room, adjacent to the pump room. As part of the 2017 water treatment plant upgrades, HPUD installed several turbidimeters and chlorine analyzers in the air conditioned building to reduce heat related equipment errors.

Dedicated sample lines are installed from Raw Water Conditioning Facility (RWCF), Backwash Decant Pump Station, and Raw Water Pump Station (RWPS) transfer samples to turbidimeters located at the ERAS for analysis.

Dedicated sample lines are installed from the effluent of the Finished Water Pump Station (FWPS), the 1.7 MG Reservoir Effluent CT Compliance point, and the effluent of the HSPS/Distribution System Inlet transfer samples to chlorine analyzers located at the ERAS for analysis.

2.13.2. ERAS Equipment Details

Turbidity Analysis Equipment

Location	**RWCF**	**RWPS**	**DECANT PUMP STATION**
Id Tag	AI-330	AI-200	AI-110
Sample Point	Inlet RWCF	Raw Water Pump Station Effluent	Backwash Decant Pump Station Effluent
Device Location	ERAS	ERAS	ERAS
Sample Conveyance	Goulds Centrifugal Pump GT 07	Pressure driven – No pump	Goulds Centrifugal Pump GT 07
Flow Rate (gpm)	15	13	15
Time of Travel (seconds)	115	55	69
Make	Hach	Hach	Hach
Model	Surface Scatter 7sc	1720E	1720E
Equipment Range	0-9,999	0.001-100	0.001-100
Operating Range	5-20	4-12	5-15

Chlorine Analysis Equipment

Location	**FWPS**	**1.70 MG Tank Effluent**	**HSPS**
Id Tag	AI-406	AI-100	AI-120
Sample Point	FWPS Effluent	1.70 MG Tank Effluent	HSPS Effluent
Device Location	ERAS	ERAS	ERAS
Sample Conveyance	Pressure driven – No pump	Pressure driven – No pump	Pressure driven – No pump
Flow Rate (gpm)	13	15	30
Time of Travel (seconds)	34	57	4
Make	Hach	Hach	Hach
Model	CL17	CL17	CL17
Equipment Range	0-5	0-5	0-5
Operating Range	3.0-4.5	1.5-2.8	1.2-1.75

2.14. Standby Emergency Generator

A new 1,000 KW standby diesel generator has been installed to maintain power to the Water Treatment Plant during a total loss of electric power. The generator is connected to the existing Automatic Transfer Switch connected to the Motor Control Center located in the Operations Building to ensure automatic power switch in case of power outage.

3. Water Plant Operating Procedures

3.1. Criteria for Length of Filter Run Process

With an average water demand of approximately 1.0 mgd, and a peak demand of 1.50 mgd, the anticipated run time for one/two of the three 2 MGD Clarifier/Filter Treatment Units is approximately ten to twelve hours per day for seven days a week (factoring in clarifier flush and filter backwash cycles). Typically one filter unit is sufficient at current demand requirements, but if needed two filter units will be in operations with the third unit as standby.

3.2. Criteria for Length of Filter Backwash Process

The mixed media filter controls are set to automatically backwash every 1400 minutes (24.0 hours) and will also initiate a backwash if one of the following conditions occurs:

1. Effluent filter turbidity measured in excess of 0.3 NTU for more than 10 minutes.
2. Terminal headloss in excess of 8 feet is reached.

Length of backwash cycle varies from twenty three minutes to forty three minutes. The exact length is determined by the duration of the filter to waste portion of the backwash cycle. The duration of the filter to waste portion of the backwash cycle is dependent on the measured turbidity of the filter unit during the cycle.

3.3. Automatic Flush/Backwash Procedures

The upflow clarifier and mixed filter units are automatically controlled by a programmable logic controller and set to backwash and flush automatically at individual non-overlapping times. Backwash initiation set points and cycle durations are adjustable. Both the upflow clarifiers and the mixed media filters are designed to air scour during flushing and backwash cycles.

3.3.1. Automatic Rinse Procedure for Upflow Clarifiers

The clarifier/filter unit's programmable logic controller has been programmed to automatically initiate a clarifier flush cycle every 300 minutes (5 hours). In addition, the PLC will automatically actuate a clarifier flush if a clarifier headloss of 1.5 psi (4ft) or greater is detected. As a safety measure a second pressure switch will automatically shut the plant down if terminal headloss of 2.5 psi (6ft) is detected. Flush cycle initiation set points and duration are adjustable. A 7.5 hp air blower mounted on the plant sidewall provides air at a rate of 150 scfm for the air scour cycle. The upflow clarifiers can be manually flushed and air scoured as a fail-safe alternative.

3.3.2. Automatic Backwash Procedure for Mixed Media Filters

The clarifier/filter unit's programmable logic controller has been programmed to automatically initiate a filter backwash cycle every 1,400 minutes (24.0 hours). In addition, the PLC will automatically actuate a backwash if the filter effluent turbidity exceeds 0.25 NTU after 10 minutes or a filter headloss in the excess of 3.5 psi (8ft) is detected. As a safety measure a second high turbidity set point will automatically shut the plant down if a filter effluent turbidity of 0.30 NTU after 10 minutes is detected. Backwash cycle initiation set points and duration are adjustable. Treated water from the ground storage tanks are pumped by one of two 50hp, 5,600gpm pumps to provide a backwash flow rate of 20 gpm/ft^2. The mixed media filters can be manually backwashed and air scoured as a fail-safe alternative. The filters are equipped with flow meters and electrically actuated valves with manual throttling capabilities to regulate the flow rates. Upon completion of the backwash procedures the filter units will enter a filter to waste cycle before returning to service. The filter to waste cycle duration is based on the measured turbidity within the filter units. The duration time ranges from a minimum of five minutes to a maximum of 20 minutes. If no turbidity is present the filter units will return to normal service with no filter to waste cycle.

3.4. Manual Flush and Backwash Procedures

The upflow clarifiers and mixed media filters can be manually flushed and air scoured as a fail-safe alternative.

3.4.1. Manual Flush Procedure for the Upflow Clarifiers

a) Standing in front of the filter control unit, turn "plant #" selector switch to the desired plant setting.
b) Simultaneously press and hold down both the "plant #" selector switch and "flush initiate" buttons. This will automatically shut down the raw water pump, actuate (close) the inlet valve, and activate the blower for the air scour cycle.
c) The clarifier flush will automatically advance through the air scour - (2 minutes) and rinse (4 minutes) cycles.
d) Before returning to service, the system will open the filter bypass valve and waste for approximately 7 minutes.
e) Upon completion, the plant will now either return to normal service, or remain in stand-by mode until the tank level indicators call for plant start-up.

3.4.2. Manual Backwash Procedure for the Mixed Media Filters

a) Standing in front of the filter control unit, turn "plant #" selector switch to the desired plant setting.
b) Simultaneously press and hold down both the "plant #" selector switch and "backwash initiate" buttons. This will automatically shut down the raw water pump, while continuing to operate the filter effluent pump for 6 minutes in order to adequately drain-down the unit.
c) Upon reaching the appropriate level, approximately 9" above the media surface, the filter will automatically advance through air scour (2 minutes) and water-wash (7 minutes) cycles.
d) Before returning to service, the system will automatically run filter-to-waste for approximately 5 to 20 minutes depending on the turbidity within the mixed media filters. If no turbidity is present the filter units will return to normal service with no filter to waste cycle.
e) The system will now either return to normal service, or remain in stand-by mode until the tank level indicators call for plant start-up.

3.5. Start-up and Shutdown Procedures for the Clarifier/Filter Units

3.5.1. To Start the Clarifier/Filter Unit

a) Assure storage tank and water distribution mains are flushed and disinfected.
b) Thoroughly inspect Plant:
   i. Check chemical feed pumps and chemical storage tanks.
   ii. Check backwash/distribution pumps.
   iii. Inspect plumbing, tubing and wiring.
c) Assure there is adequate raw supply water.
d) Prime chemical feed pumps.
e) Turn plant control system ON.
f) Adjust flocculent and chlorine chemical feed pumps to predetermined settings.
g) Distribution pump station can be turned on **after** adequate storage tank treated water level is available for pump priming.

Note: Dual media filter and clarifier are to be pre-backwashed and pre-rinsed with chlorinated potable water before re-installation.

3.5.2. To Shut down the Clarifier/Filter Unit

a) Turn off water plant control system OFF.

3.5.3. Long Term Shut down of Clarifier/Filter Unit

a) Flush the upflow clarifiers.
b) Backwash the Mixed Media filters.
c) Turn off water plant control system OFF.
d) Drain water from the treated-water turbidimeter chambers and wipe clean with dry cloth; reinstall covers.

3.6. Inspection of Filter Media

HPUD shall conduct routine visual inspections and detailed inspections sample inspections of the Mixed Media Filter. Any deficiencies and corrective actions given to staff are logged in the water treatment operator logbook.

Detailed inspections of each Filter's Mixed Media are to be performed on annual basis for each filter. The depth of the three (3) mixed media is to be verified at two separate and randomly selected, by operator, locations within the filter bed. The mixed media filter is to be checked after it has been backwashed and drained. The depth for each of the two measured media depths are to be averaged.

A minimum of 2-inch diameter clear sample core is to be used to verify the depth. If unable to insert the core for the full 30-inch depth of mixed media filter bed, then each media is to be cored in sequential order from top to bottom. The first core shall be inserted through the anthracite to a depth just below the silica sands interface. Within an adjacent location, the anthracite depth shall be excavated to expose the surface level of the silica sand to attain a core. The second core shall be inserted through the silica sand to a depth just below the garnet interface. Within an adjacent location, the silica sand depth shall be excavated to expose the surface level of the garnet sand to attain a core. The third and final core shall be inserted through the garnet to the bottom of the filter bed.

The anthracite is to be 18 inches in depth with a plus or minus tolerance of 1". The silica sand is to be 9 inches in depth with a plus or minus tolerance of 1". The garnet is to be 3 inches in depth with a plus or minus tolerance of 1/2". The entire filter bed depth shall have a tolerance of 1".

If the Filter Media is not within specified dimensions, the filter is to be taken off line until the media is adjusted to be within the specified depths.

Inspection of the Mixed Media Filter shall be recorded in the attached Appendix P.

4. Sampling, Analysis Program and Compliance Monitoring

4.1. Constituents Continuously Monitored

Constituent	Monitoring Method	Location
1. Incoming Raw Water Turbidity	Continuous Turbidimeter w/ Chart Recorder	Upstream of Static Mixer Facility
2. Raw Water Turbidity at Raw Water PS	Continuous Turbidimeter w/ Chart Recorder	Downstream of Raw Water PS
3. Individual Filter Turbidities	Continuous Turbidimeter w/ Chart Recorder	Effluent side of Clarifier/Filter Units 1, 2 and 3
4. Combined Filter Effluent Turbidity	Continuous Turbidimeter w/ Chart Recorder	Downstream of Clarifier/Filter Units
5. Backwash recycle water Turbidity	Continuous Turbidimeter w/ Chart Recorder	Outlet side of Backwash Decant PS
6. Incoming Raw Water pH and temperature	pH and Temperature Sensor w/ Chart Recorder	Upstream of Static Mixer Facility
7. pH and temperature at Raw Water PS	pH and Temperature Sensor w/ Chart Recorder	Downstream of Raw Water PS
8. Finish Water Chlorine	Continuous Chlorine Analyzer w/ Chart Recorder	Upstream of Finish Water PS
9. Water Storage Chlorine	Continuous Chlorine Analyzer w/ Chart Recorder	Outlet side of 1.70 MG Water Tank
10. Distribution System Chlorine	Continuous Chlorine Analyzer w/ Chart Recorder	Pipe Leading to Distribution System at HSPS
11. Raw Water Flows	Flow Meter w/ Chart Recorder	Upstream of Filter Units
12. Recycle Water Flow	Flow Meter w/ Chart Recorder	Outlet side of Backwash Decant PS
13. Distribution System Flows	Flow Meter w/ Chart Recorder	High Service/Distribution PS

4.2. Other Monitoring (performed regularly by operator)

Constituent	Monitoring Method	Location	Frequency
1. Raw Water pH	Grab sample	Pond Outlet	Daily
2. Treated Water pH	Grab sample	Finished Water Storage Tanks and Tap in Operations Bldg.	Daily
3. Water Temperature	Grab sample	Finished Water Storage Tanks and Tap in Operations Bldg.	Daily
4. E. Coli Bacteria	Grab sample taken to Certified Lab	Canal Influent. Before first pond prior to any chemicals	No less than once per month
5. Free Chlorine Residual	Grab sample	Finished Water Storage Tanks and Tap in Operations Bldg.	Daily
6. Raw Water Turbidity	Grab sample	Pond Outlet	Daily

4.3. Alarm and Automatic Shutdown Capabilities

Plant automated monitoring devices will trigger an alarm condition if certain water quality parameters are not maintained. Under an alarm condition the plant has the ability to:

1. Actuate visual (beacon) and audio (horn) alarms and auto-dialer.
2. Shutdown the Clarifier/Filter Units (stops plant from treating water)

NOTE: The automated monitoring equipment alarm features are exercised and recorded monthly to insure reliable operation. Details of Alarms are noted in 7.5 Water Treatment Plant Alarms and Appendix K.

Below is a summary of the Plant alarm set-points and resulting actions:

a) Individual Filter Turbidity (>0.24NTU) ..... Conditions 1 & 2.
b) Combined Filter Effluent Turbidity (>0.24 NTU) Conditions 1 & 2.
c) Distribution System Chlorine Residual (<1.0 ppm) Condition 1.
d) Clarifier Headloss (>1.5psi) ..... Conditions 1 & 2.
e) Filter Headloss (>3.5) ..... Conditions 1 & 2.
f) Low Tank Level (<20)..... Condition 1.

4.4. Chlorine Inactivation

In addition to HPUD's filter removal credit, minimally an additional 0.5-log Giardia and 2-log virus inactivation are achieved with sodium hypochlorite and contact time within HPUD's series operated 0.75 and 1.7 MG storage reservoirs. The 0.75 MG Reservoir was installed in 1979, and modified with baffling in 2016. The welded steel tank has a 66-foot diameter and a height of 30-feet. The influent flow from the FWPS is routed through an 18-inch vertical riser and dispersed through five uniformly spaced 10-inch "duck bill" valves. The influent water slug travels past four uniformly spaced full depth geomembrane baffles, which provide a serpentine 380-foot linear flow path. The baffle curtains are suspended from pipes attached to the tank roof and stabilized by connections welded to angle bracket on the steel floor and walls of the tank. The baffling curtain extends to 75% of the tank diameter on the first and last channels, and 85% of diameter in the two middle channels. The effluent pipe of the reservoir is 180-degrees from the inlet, and is at the bottom of the tank. Under normal operating conditions the tanks are operated in series, with the effluent of the 0.75 Reservoir flowing into the 1.7 MG Reservoir.

The chlorine contact time (CT) within the 0.75 Reservoir is calculated based the assigned baffling factor and the time of travel (TOT) in the reservoir. On December 16, 2016, the Division assigned an interim baffling factor to the 0.75 MG Reservoir of 0.35. The calculation of the volume of the 0.75 MG Reservoir is as follows:

$$\text{Area} = \frac{\pi d^2}{4} = \frac{\pi * 66^2}{4} = 3{,}421.194 \text{ sq.ft.}$$

Volume (cu. ft) = Area * depth (1 ft) = 3,421.194 cu.ft.

$$\text{Volume (gallons)} = 3{,}421.194 \text{ cu.ft} * \frac{7.48 \text{ gallon}}{1 \text{ cu.ft}} = 25{,}590.53 \text{ gal/ft}$$

Using this volume per foot of tank elevation value, the TOT within the 0.75 MG Reservoir is calculated as follows:

$$\text{TOT (minutes)} = \frac{\text{WSE (ft)} * 25{,}590.53 \text{ (gal/ft)}}{\text{DailyPeakFlow (gpm)}}$$

Where,
WSE = Water surface elevation within the reservoirs (feet) (LIT-500)

TOT = Time of travel (minutes), residence time within reservoir

The following equation shows the CT achieved (mg-min) in the 0.75 MG segment of the contact basin. The CT achieved and is calculated based on the TOT, the effluent chlorine residual analyzer (AIT-100), and the assigned baffling factor.

$$\text{CTachieved\_0.75 MG} = \frac{\text{WSE (ft)} * 25{,}590.53\ \text{(gal/ft)}}{\text{DailyPeakFlow (gpm)}} * \text{Free Cl Conc.} * 0.35$$

The 1.7 MG Reservoir was installed in 1996 and is unbaffled. The welded steel tank has a 101-foot diameter and a height of 30 feet. The inlet and outlet pipes are separated by 180° and are at equal elevation at the bottom of the tank. The effluent of the 1.7 MG Reservoirs flows into the 3.0 MG Reservoir. After leaving the 1.7 MG Reservoir a sample of the flow is transferred in a dedicated pipe to 1.7 MG Reservoir effluent chlorine residual analyzer (AIT 100) located at the ERAS. The CT achieved within the 1.7 Reservoir segment is calculated based on Division's assigned baffling factor of 0.03 and the following equations:

$$\text{Area} = \frac{\pi d\text{^}2}{4} = \frac{\pi * 101\text{^}2}{4} = 8{,}011.847\ \text{sq.ft.}$$

$$\text{Volume (cu. ft)} = \text{Area} * \text{depth (1 ft)} = 8{,}011.847\ \text{cu.ft.}$$

$$\text{Volume (gallons)} = 8{,}011.847\ \text{cu.ft} * \frac{7.48\ \text{gallon}}{1\ \text{cu.ft}} = 59{,}928.61\ \text{gal/ft}$$

$$\text{CTachieved\_1.70 MG} = \frac{\text{WSE (ft)} * 59{,}928.61\ \text{(gal/ft)}}{\text{DailyPeakFlow (gpm)}} * \text{Free Cl Conc.} * 0.03$$

WSE = Water surface elevation within the reservoirs (feet)

The level of inactivation required in the CT basins is determined based on the water's pH and temperature (ºC), as well as the bacteriological raw water quality. HPUD takes raw bacteriological samples at the RWCF water turbidity monitoring location. The laboratory E. coli analysis results are checked against Tables 1 and 2 below, to determine if increased inactivation through chlorination is required.

Table 4.4.1: Giardia Inactivation Requirements

E. Coli MPN/100mL	Increased Log Reduction Required	Total Log Reduction Required	Credited Log Removal from Filtration	Total Log Inactivation Required from Disinfection
< 20	0	3	2.5 (conventional)	0.5
≥ 20	0.5	3.5		1.0
≥ 40	1	4		1.5
≥ 100	1.5	4.5		2.0
≥ 200	2	5		2.5

Table 4.4.2: Virus Inactivation Requirements

E. Coli MPN/100mL	Increased Log Reduction Required	Total Log Reduction Required	Credited Log Removal from Filtration	Total Log Inactivation Required from Disinfection
< 20	0	4	2.0 (conventional)	2
≥ 20	0.5	4.5		2.5
≥ 40	1	5		3
≥ 100	1.5	5.5		3.5
≥ 200	2	6		4

As noted in the 2019 Sanitary Survey, The San Diego District has re-evaluated increased inactivation requirements and will no longer have the requirements based on the most recent results. The median and 90th percentile of E. coli concentrations from 2015 to precent are 7.5 and 55.3 MPN/100 mL, respectively (See Table 4.4.3 below). Based on the relatively low E. coli median and 90th percentile values, Heber PUD will not be required to provide increased inactivation per Tables 4.4.1 and 4.4.2 above, effective immediately.

Table 4.4.3: Raw Water Total Coliform and E. Coli Summary

Value	Total Coliform (MPN/100 mL)	E. Coli (MPN/100 mL)
Minimum	108.1	0
Maximum	15, 150	310
Average	1,975.9	23.82
Median	1,483.4	7.5
90th Percentile	2,419.6	55.3

For Temperatures < 12.5°C

CTrequired =

(0.353*LogInact) * (12.006 + e^ (2.46 – 0.073*Temperature + 0.125*C + 0.389*pH))

For Temperatures >12.5°C

CTrequired =

(0.361*LogInact) * (-2.261 + e^ (2.69 – 0.065*Temperature + 0.111*C + 0.361*pH))

For Temperatures >25°C, Temperature = 25°C

CTrequired =

(0.361*LogInact) * (-2.261 + e^ (2.69 – 0.065*25 + 0.111*C + 0.361*pH))

Where,

- LogInact = Log Inactivation Giardia Required per **Table 4.4.2**, above
- e = the base of the natural logarithm, 2.7183
- C = chlorine residual concentration (mg/L)

The equation for evaluating the log removal for *Giardia lamblia* is as follows:

$$\text{Log Reduction} = \frac{\text{CTachieved}}{0.2828*(\text{pH})^{2.69}*(\text{C})^{0.15}*0.933^{(\text{Temperature}-5)}}$$

The equations for evaluating log removal for *Virus* are as follow:

For pH between 6 to 9

$$\text{Log Reduction} = \frac{\text{CTachieved} * e^{(0.071*\text{Temperature})}] - 0.42}{2.94}$$

For pH of 10

$$\text{Log Reduction} = \frac{\text{CTachieved} * e^{(0.071*\text{Temperature})}] - 0.21}{22.37}$$

Chlorine Inactivation: 0.75 MG Reservoir Out of Service

In the event the 0.75 MG Reservoir is removed from service for scheduled or unscheduled maintenance, HPUD makes operational changes in order to achieve 0.5-log Giardia and 2-log virus inactivation with sodium hypochlorite and CT.

The 1.7 MG Reservoir cannot achieve adequate inactivation at the water treatment plant permitted design capacity, 4.0 MGD or 2,800 GPM. After making the necessary changes to the valve position adjustments to isolate the 0.75 MG Reservoir and route flow directly to the 1.7 MG Reservoir, HPUD will do one of the following:

1) Calculate CT based on 1.7 MG and 3.0 MG Reservoirs operating in series

a. Turn off the 3.0 MG Reservoir TTHM removal system (SN 15) and submersible mixers (GS 12) just prior to taking 0.75 MG Reservoir out of service.

b. Review the most recent raw laboratory E. coli analysis results against **Tables 4.4.1** and **4.4.2**, above. If E. coli analysis results are ≥ 200 MPN, then reduce the water production capacity from 2,800 GPM to 1,400 GPM.

c. Review the "1.7 & 3.0 Reservoirs in Series" CT calculation sheet, provided in **Appendix E**, to determine required sodium hypochlorite dosage and adjust the metering pumps as necessary. The CT achieved within the 1.7 MG & 3.0 MG Reservoirs segment is calculated based the assigned baffling factor of 0.03 and the following equations:

HPUD's 3.0 MG reservoir is 167-feet in diameter and the volume per foot of tank elevation is calculated as follows:

$$\text{Area} = \frac{\pi d^2}{4} = \frac{\pi * 167^2}{4} = 21{,}893 \text{ sq.ft.}$$

Volume (cu. ft) = Area * depth (1 ft) = 21,893 cu.ft.

$$\text{Volume (gallons)} = 21{,}893 \text{ cu.ft} * \frac{7.48 \text{ gallon}}{1 \text{ cu.ft}} = 163{,}759 \text{ gal/ft}$$

TotalStorage (gallons) = 163,759 gal/ft *WSE = gallons

$$\text{CTachieved\_1.70 \& 3.0 MG} = \frac{\text{WSE (ft)} * 223{,}657 \text{ (gal/ft)}}{\text{DailyPeakFlow (gpm)}} * C * 0.03$$

WSE = Water surface elevation within the reservoir (feet)

d. Review the chlorine residual alarm set points, summarized above in **Table 7.5.2**, and adjust alarms set points to avoid triggered shutdowns.

Under this scenario the HSPS Effluent Chlorine Residual AIT-120 must be used for determining CT Compliance, and the 1.7 MG Effluent Chlorine Residual AIT-100 would be used as a process data point for adjusting sodium hypochlorite dosage.

2) Calculate CT achieved only in the 1.7 MG Reservoir, with TTHM removal system active in the 3.0 MG Reservoir (0.03 CT credit).

a. Reduce the water production capacity to 700 GPM prior to taking 3.0 MG out of service.

b. Review the most recent raw laboratory E. coli analysis results against **Tables 4.4.1** and 4.4.**2** above.

c. Review the "1.7 Reservoir for all CT" CT calculation sheet, provided in **Appendix E**, to determine required sodium hypochlorite dosage and adjust the metering pumps as necessary. During emergencies the chlorine Maximum Residual Daily Limit can temporarily exceed 4 mg/L. The CT achieved within the 1.7 Reservoir segment is calculated based the assigned baffling factor of 0.03 and the following equation:

$$\text{CTachieved\_1.70 MG} = \frac{\text{WSE (ft)} * 59{,}898 \text{ (gal/ft)}}{\text{DailyPeakFlow (gpm)}} * \text{Free Cl Conc.} * 0.03$$

WSE = Water surface elevation within the reservoirs (feet)

C = chlorine residual concentration (mg/L)

d. Review the chlorine residual alarm set points, summarized above in **Table 7.5.2**, and adjust alarms set points to avoid triggered shutdowns.

4.5. Total Trihalomethane (TTHM) Removal System

In 2017, the 3.0 MG Reservoir (Tank No. 3) was converted from a combination storage and CT basin to a combination storage and In-Tank Spray Stripping (ITSS) Total Trihalomethanes (TTHM) removal system.

The ITSS consists of four spray aerators (SN 15), two air blowers, and two submersible mixers (GS-12).

Currently HPUD operates the aerators as per the following schedule:

- January through April: One (1) Aerator in Operation
- May: Two (2) Aerators in Operation
- June: Three (3) Aerators in Operation
- July through August: Four (4) Aerators in Operation
- September: Two (2) Aerators in Operation
- October through December: One (1) Aerator in Operation

Note:
The operational number of aerators is subject to change as per the following.

Heber can increase the number of devices based on triggering monthly results at any time.

If any results were over 80 ppb in the same month of the previous year, then regardless of the most recent TTHM results Heber should not decrease the number of aerators online below the number that were online in a previous year to treat the elevated TTHMs. Heber should not reduce the number of aerators online, without Division consultation and approval.

In the future, if there is subsequent data to justify the request, Heber may submit a request to operate fewer units than required per the Operations Plan. Some facts to considering in such a request could be influent & effluent TOC, logs on coagulant use, plant performance, raw water quality indicators, TTHM treatment reservoir volume (air to water ratio), etc.

Both the GS-12 submersible mixers are operated all times. The two blowers are operating with one on duty and one on standby. Currently HPUD swap the operation of the two blowers on a weekly basis.

4.5.1. TTHM Quality Parameters

The Maximum Contaminant Level (MCL) of TTHM for the LRAA is 0.080 mg/L (80 ppb - parts per billion)

4.5.2. TTHM Testing Locations

There are three (3) locations of samples for testing of TTHM concentration levels. One location is the discharge of the Tank No. 3. Two (2) locations are within the water distribution system. The current locations within the water distribution system are Littlefield Way Sample Location and McCabe Cove Road Sample Location. Division reserves the right to change the water distribution system sample and testing locations and deemed fit.

4.5.3. TTHM Evaluation

Operational Evaluation Level (OEL) and Locational Running Annual Average (LRAA) are utilized to evaluate the TTHM Maximum Contaminant Level (MCL) for HPUD Water Distribution System.

If OEL exceeds the TTHM MCL, system must conduct an operational evaluation and submit a report to Division no later than 90 days after being notified of the analytical result that caused the OEL exceedance. If LRAA exceeds the TTHM MCL, HPUD must conduct public notification.

If any individual sample result will cause the LRAA to exceed the TTHM MCL, the system is out of compliance at the end of that month.

4.5.4. TTHM Testing Frequency

The TTHM concentration is checked by testing water samples into and out of the water

tanks and in the distribution system.

HPUD continues to sample, test and report for TTHM concentration levels on a monthly basis. Based on approval from TTHM monthly test's results, Division of Drinking Water has allowed the Aerator Operating Schedule listed on section 4.5.

4.6. Testing/Sampling Frequency

a) State certified operators check and monitor the plant on a daily (7 days a week) basis.

b) Individual and combined filter effluent turbidimeters alarm-out after 15 minutes above 0.24 NTU.

c) Combined filter effluent and distribution system chlorine analyzers continuously monitor free chlorine residuals at filter effluent.

d) Coliform and E. Coli Bacteria Samples of treated water is collected and tested regularly as required in the "Bacteriological Sample Siting Plan". See Appendix F.

   Test results are submitted to Division by no later than the tenth day of each month, along with the Surface Water Treatment Rule's monthly report.

e) Raw water turbidity, pH and stored water temperature are checked daily by the operator(s), in addition to continuous monitoring.

f) Treated water storage tanks are inspected annually and serviced as needed.

g) Raw water E. Coli density analysis is performed no less than once per month.

h) Total Trihalomethane (TTHM) Testing is to be performed monthly. The following tests are to be performed monthly. The results are to be submitted via Electronic Data Transfer (EDT).
   i. TTHM Effluent Treatment Effluent (PS Code 1310007-004).
   ii. Stage 2 Sample Site at McCabe Cove (PS Code 1310007-900)
   iii. Stage 2 Sample Site at 184 Littlefield Road (PS Code 1310007-901)

   The Disinfection Byproduct Rule (DBPR) for TTHM Reporting Form is to be used and submitted on a monthly basis. The DBPR for TTHM Form is attached as Appendix O.

4.7. Reservoir Inspection Program

HPUD's reservoir inspection program includes routine inspections and detailed inspections. Routine inspections are performed daily and include verification that security access controls are intact and operational; a general condition assessment of the reservoirs, facilities, and grounds. All deficiencies and corrective action instructions given to staff are logged in the water treatment operator logbook. Any security breach is immediately reported to the chief operator and would then entail a full inspection of all hatches, vents, and other access points.

Detailed inspections of each reservoir are performed minimally quarterly. The detailed inspections include the following in addition to the items performed as part of the routine inspection: verification of the security and operability of access hatches; visual water quality inspection; and inspection of the condition of ventilation screens, the condition of overflow flappers, and the general reservoir condition including corrosion.

HPUD maintains a proactive tank cleaning program to prevent sedimentation build up and pass through. The stated HPUD's reservoir cleaning/inspection frequency is every 3 to 5 years.

4.8. Water Plant and Distribution System Requirements

a) Heber Water Treatment Plant is classified as A State of California T3 Treatment Classification per the new permit issued by State Water Resources Control Board, Division of Drinking Water in December 2017.

b) The minimum certification of the Chief Operator at the Heber Water Treatment Plant is T3 (State of California Grade Operator).

c) The minimum certification of Shift Operator at the Heber Water Treatment Plant is T2 (State of California Grade Operator).

d) Heber Water Distribution System is classified as A State of California D2 Treatment Classification per the new permit issued by Division in December 2017.

e) The minimum certification of the Chief Operator for the Heber Water Distribution System is D2 (State of California Grade Operator).

f) The minimum certification of Shift Operator for the Heber Water Distribution System is D1 (State of California Grade Operator).

g) Plant shall be operated in accordance with this Operations Plan as approved by the Division.

h) Water delivered to the distribution system shall be free from coliform bacteria at all times.

i) All water supplied by HPUD for domestic purposes shall meet all the Maximum Contamination Levels (MCLs) established by Division.

j) Chlorine residual shall be maintained between 1.0 and 2 mg/L at all times, with appropriate low and high alarm settings on Continuous Chlorine Analyzers.

k) The turbidity level of the filtered water shall be as follows:

i. Design goal of 0.2 NTU.
ii. Equal to or less than 0.25 NTU in 95% of measurements taken each month.
iii. Shall not exceed 1.49 NTU at any time.
iv. Maximum acceptable turbidity for normal operations is 0.3 NTU.
v. The free chlorine residual of the treated water shall be equal to or greater than 0.8 mg/L at all times.
vi. The Imperial Irrigation District, as a part of their joint monitoring program, tests raw water quality for chemical constituents. This data will verify that the water meets drinking water standards for chemical constituents. HPUD participates in this joint monitoring program in order to receive copies of these reports, and to be notified in the event that the water does not meet drinking water standards for chemical constituents.

l) HPUD shall exercise and maintain the water valves in the distribution system and water plant per the written valve exercising plan. Copy of the valve exercising plan is included in Appendix G.

m) HPUD shall flush water mains as needed to appropriately prevent rusty, stagnant, discolored, or odorous water in the distribution system. Records shall be maintained of water main flushing, including the dates of flushing, the portions of distribution system flushed, and the appearance of the flushed water. Copy of the flushing plan is included in Appendix H.

4.9. Instrument Calibration Schedule

Chlorine Analyzer, Turbidimeters and pH/Temperature sensors, (continuous and manual), are to be calibrated according to manufacturer's specifications, which are specified in the owner's manual.

Other calibrations will be conducted on a quarterly basis and recorded in the plant log book.

4.10. Chemical Dosage Rates

4.10.1. Chemical Feed Rate Procedures

Concentration for coagulants:

a) Liquid polyferric sulfate is to be dosed at approximately 10 to 15 ppm.
b) Cationic polymer is to be dosed at approximately 3 to 5 ppm.

The following dosage calculations were completed to determine proper chemical solution ratios:

Chlorine Injection (Sodium Hypochlorite)

- Combined Filter Effluent residual 1 to 2 ppm
- Distribution Pump Station residual 1 to 1.5 ppm (0.8 minimum)
- Dosage Calculation

$$\frac{\text{Pump (gal/hr) X \%Speed X \%Stroke X \% Solution X 1,000,000}}{\text{60(min/hr) X Plant Flow (gal/min)}}$$

Coagulant (Liquid Polyferric Sulfate)

- Dosage 10 to 15 ppm (dependent on finished turbidity)
- Turbidity design goal Less than 0.25 NTU
- Dosage Calculation

$$\frac{\text{Pump (gal/hr) X \%Speed X \%Stroke X \% Solution X 1,000,000}}{\text{60(min/hr) X Plant Flow (gal/min)}}$$

4.10.2. Water Quality Parameters

a) Raw water from canal turbidity ..... 1.0 to 10 NTU (raw-water)

b) Turbidity after sedimentation basins.....0.5 to 2.0 NTU (maximum)

c) pH .....7.5 to 8.5 (7.6 typical avg.)

d) Temperature. ..... 13 to 25 degrees Celsius

e) Chlorine ..... 1.0 – 1.5 mg/L.

f) Treated water turbidity..... Below 0.25 NTU (treated-water design goal)

4.10.3. List of Chemicals Used

a) 0.8% solution of Sodium Hypochlorite produced on site.

b) Liquid Polyferric Sulfate solution.

c) Cationic Polymer (T-floc 1417).

4.11. Records and Reporting System

4.11.1. Monitoring Results

a) Bacteriological samples (Bac-T), are taken according to the schedule dictated by **Bacteriological Sample Siting Plan** (See Appendix F)**.**

b) A sample **Surface water treatment regulations monthly monitoring summary report** is attached in Appendix I.

c) A sample **Daily Monitoring Log** of the water plants activity and performance is attached in Appendix J.

d) A Disinfection Byproduct Rule (DBPR) reporting form for Total Trihalomethane (TTHMs) is attached in Appendix O.

4.11.2. Records, Rates and Logs

a) Daily monitoring records are maintained and stored in the Operations Building of the Water Treatment Plant.

b) Monthly monitoring reports are maintained and stored in the Operations Building of the Water Treatment Plant.

c) Continuous chart recordings of raw and finished water turbidities are printed and stored in the Operations Building of the Water Treatment Plant.

d) Continuous chart recordings of distribution chlorine residual levels are maintained and stored in the Operations Building of the Water Treatment Plant.

e) Monthly monitoring reports shall be submitted to State Water Resources Control Board, Division of Drinking Water.

5. Emergency Disinfection Plan

PLAN SHALL BE POSTED READILY ACCESSIBLE TO PLANT OPERATOR

In compliance with the *Surface Water Treatment Rule*, the Emergency Disinfection Plan (EDP) is to be implemented to prevent delivery of undisinfected or inadequately disinfected water. Failure of the Disinfection System can result from low free chlorine residual or from high turbidity in the water for distribution.

If the Plant fails to meet drinking water standards for chemical constituents, or in case of any plant malfunction, the employee at the facility shall be instructed to respond to the plant alarm by notifying by telephone the water plant chief operator or the general manager as listed in this Operations Plan.

Non-potable signs shall be readily available to be posted at all drinking and hand washing locations.

Copies of the Water Quality Emergency Notification Plan Form, Customer Information Form, and IID Emergency Notification memorandum are available from HPUD upon request.

HPUD Emergency Notification Plan is attached in Appendix – K.

The draft copy of Customer Information Letter for Emergency/Violation is attached in Appendix – L.

The draft copy of Boil Water Order Form is attached in Appendix – M.

Below are listed various potential conditions that could affect the safe operation of the Plant and their required remedial action.

5.1. Watershed Contamination

1. California Department of Water Resources will notify the supplier, IID.
2. If the water is compromised, IID will close the gate leading to their aqueduct.
3. IID will notify all users, including HPUD, according to the attached "Customer Information" sheet.
4. As needed, the HPUD will suspend treatment plant operation.
5. Water supply will continue from storage as long as possible.

5.2. Detection of Coliform Bacteria

In the event of a total coliform or fecal coliform positive sample, the following actions shall be taken:

Total Coliform Positive Sample:

1. Within 24 hours, collect **three** repeat samples. One sample from the original routine sample point, and one each from upstream and downstream of the original sample point. If no upstream or downstream points are available, all three samples may be collected from the original sample point. If unable to collect the repeat samples, notify the Department within 24 hours.

2. Notify the Department immediately for further instructions.

3. **Five** routine samples must be collected the following month. If no upstream or downstream points are available, all five samples may be collected from the original sample point.

4. If any repeat sample is **Coliform or E.Coli** positive, immediately contact the Department.

Fecal coliform positive or E. Coli positive sample:
Immediately contact the Division of Drinking Water Department. The **MCL** is violated when: 1) more than one routine sample is total coliform-positive 2) Any repeat sample is fecal coliform-positive or E. Coli-positive or 3) Any repeat sample following a fecal coliform-positive or E. Coli-positive routine sample is total coliform-positive.

Complete and submit the monthly summary of bacteriological monitoring by the tenth day of the following month in which the samples were collected.

5.3. Water Treatment Plant Malfunction

1. Check distribution water for substandard quality.
2. Take Plant off-line (if required).
3. Pinpoint and rectify problem.
4. Be certain water is safe for customer consumption prior to returning plant to service by manually testing raw and finished water turbidity and chlorine levels.

5.4. Emergency Chlorination Procedures

1. The "action levels" for free chlorine residuals in domestic water prior to delivery to the distribution system is 0.90 mg/L. The action level may be higher to insure a CT ratio greater than 0.90.
    a) If chlorine residual is less than 0.90 mg/L.:
        i. Increase rate of application until residual is 1.0 to 1.5 mg/L.
    b) If chlorine residual is higher than 1.5 mg/L.:
        i. Decrease rate of application until residual is 1.0 to 1.5 mg/L.
2. In the event the chlorine application system fails:
    a) Immediately make necessary repairs or replace damaged/defected component
    b) If repair/replace is not available:
        i. For short periods of time the plant can be operated manually by feeding 12.5% liquid chlorine solution directly into the storage tanks.
        ii. Manually dose according to volume of water in clearwell with 12.5% liquid chlorine at 1.0 to 1.5 mg/L.
3. The treated water "action level" for turbidity is as shown below:
    a) The design goal is 0.25 NTU.
    b) Turbidity must be equal to or less than 0.25 NTU in 95% of measurements taken each month.
    c) Turbidity shall not exceed 1.49 NTU at any time or 1.0 NTU for more than eight consecutive hours while the plant is in operation.
4. Appropriate disinfection to a chlorine residual loss or high turbidity in the finished water must be determined based upon the following:
    a) The magnitude of the problem
    b) The time needed for repairs

5.5. Water Treatment Plant Failure

In the event the operator is unable to bring turbidity or chlorine levels into compliance by the procedures mentioned above, and the system fails to maintain a minimum free chlorine residual of 0.2 mg/L to the distribution system, then the following procedures are to be implemented in order:

1. The plant operator or the owner's representative shall notify:

    State Water Resources Control Board, San Diego District
    Division of Drinking Water
    1350 Front Street
    San Diego, CA. 92101
    Phone: 619-525-4497 or 619-525-4159 or 619-559-8999

HPUD's chief operator or General Manager will give the following information to the Division of Drinking Water:

a) The minimum free chlorine residual measured.
b) Time and duration of loss of disinfection.
c) Type of pretreatment.
d) An explanation why the Emergency Disinfection Plan (EDP) did not prevent the problem.

2. At the direction of the Division, water plant operators shall notify the public of the contamination to the water system.

3. At the direction of the Division, the employees and residents shall be instructed not to use the water for drinking or hand washing until a certified operator has corrected the alarm condition.

4. At the direction of the Division, issue an order to truck in potable water for temporary operation.

5. At direction of the Division shut down the water system.

6. Operating Personnel and Emergency Contacts

Water Treatment Plant Address

1076 Ingram Avenue,
Heber, CA 92249
Phone: (760) 427-4685

Chief Operator

Francisco Rodriguez
Certificate Issuing Agency:
State of California State Water Resources Control Board Division of Drinking Water
California Licensed Water Treatment Operator Grade T4 # 23563
California Licensed Distribution Operator Grade D4 # 18581
Phone: (760) 427-4685
frodriguez@heber.ca.gov

Lead Plant Operator

Guillermo Verdugo
Certificate Issuing Agency:
State of California State Water Resources Control Board Division of Drinking Water
California Licensed Water Treatment Operator Grade T3 # 22702
California Licensed Distribution Operator Grade D2 # 18612
Phone: (760) 460-2056
gverdugo@heber.ca.gov

Water Treatment Plant Operator(s)

Edoardo Gonzalez
Certificate Issuing Agency:
State of California State Water Resources Control Board Division of Drinking Water
California Licensed Water Treatment Operator Grade T3 # 27998
California Licensed Distribution Operator Grade D2 # 38456
Phone: (760) 562-5013

Matt Hughes
Certificate Issuing Agency:
State of California State Water Resources Control Board Division of Drinking Water
California Licensed Water Treatment Operator Grade T3 # 37099
California Licensed Distribution Operator Grade D2 # 49623
Phone: (760) 427-4459

Heber Public Utility District Office

Laura Fischer, General Manager
1078 Dogwood Road, Suite 103
Heber, CA 92249
Phone: (760) 482-2440
lfischer@heber.ca.gov

State Water Resources Control Board, Division of Drinking Water, San Diego District
Sean Sterchi, P.E.
District Engineer
1350 Front Street, Suite 2050
San Diego, CA 92101
Phone: 619-525-4497
Sean.Sterchi@waterboards.ca.gov

Joseph Guzman, P.E.
Water Resources Control Engineer
1350 Front Street, Suite 2050
San Diego, CA 92101
Phone: 619-525-4772
Joseph.Guzman@waterboards.ca.gov

County of Imperial Office of Emergency Services

Phone: (760) 482-2400

Imperial County Fire/Paramedics

Phone: (760) 482-2420
Phone: 911

Imperial Irrigation District
Tom Bellamy
Phone: 760-455-2692
Henry Dollente
Phone: 760-482-9811

Brenntag Pacific Chemical
Chemical Provider
Polyferric Sulfate Polymer
Phone: 760 352-5300
Moises Ortega: 760-427-3816

Thatcher Company of California
Cationic T-Floc 1417 Chemical Provider
Phone: 562-803-0563
Pam: 562-803-0563

7. *Safety and Alarms*

7.1. General

Proper safety procedures are to be established and followed by all water treatment plant operators and visitors. Increased hazards are created by improper safety practices. Treatment system efficiency is reduced when these hazards result in accidents or injuries.

Water treatment plant operators and visitors are to be aware of all possible hazards, and should be protected from them as much as possible. First aid training is to be provided for operators so immediate action is taken in the event of an accident.

7.2. Safety Program

A safety program should be established and implemented in addition to the existing WTP safety program. The safety program is to provide for the discussion and explanation of safe procedures and conditions during meetings, in addition to making employees aware of safe working procedures. The following items are recommended with regard to safety meetings:

A. Hold meetings once every 7 to 10 days.
B. Meetings should not be longer than 10 to 20 minutes.

C. Confine each meeting to a single topic.
D. Invite police and fire department personnel to participate in the safety meetings from time to time. Participation of Police and Fire Officials at the safety meetings allows these entities become more familiar with the safety aspects of the Water Treatment Plant.
E. Reserve one meeting a month to review any accidents that may have occurred. Determine the cause of the accident. Determine what is to be done to prevent a recurrence. Do not use the meeting to fix blame.

All operators are to be instructed in the use of the safety devices available at the water treatment plant. The operators shall be familiarized with the types of protective clothing to be used for performing various jobs. It is especially important that each employee be aware of the potential hazards that exist regarding any given work tasks. A safety manual and first aid manual for the WTP is to be available to the operators.

Safety posters and signs placed at strategic locations serve as effective safety reminders. Safety Warning Signs are to be placed where there are potential safety hazards.

7.3. Safety Equipment

It is a requirement that management and personnel review the conditions at their water treatment plant, and determine a program for the use of protective clothing which will fit the needs of that water treatment system. Following is a general list of protective clothing that is to be worn as a safety measure while working at the water treatment plant. Included is a brief description of the conditions which require the use of the various types of clothing:

A. Safety Helmets: These provide head protection from impact, of falling or flying objects. Use while working in stormwater manholes, or construction areas.

B. Boots: In area around air equipment, and heavy equipment, special foot protection with metal foot guards is necessary. Rubber boots are required for use in all wet or damp areas. For areas where there is danger of explosion, provide non-sparking footwear.

C. Ear Protectors: These are to be worn in areas of high noise levels to prevent damage to ears.

D. Goggles: Use to provide eye protection when working with air tools, during grinding operations, and while welding. Also use in areas where corrosive chemicals are used, and any other place that injury to eyes could possibly occur.

E. Gloves: Hands are to be protected at all times with gloves. Use the appropriate type of glove for the material being handled, such as rubber gloves and sleeve guards for handling water or sludge.

F. Miscellaneous clothing: It is advisable to protect and keep clothing dry, wear rubber aprons, coats, frocks, and coveralls. Personnel are to protect knees with kneepads if extended kneeling is required.

It is also up to the water operators to study the conditions at the water treatment plant and determine a program of for the use of safety devices which will fit the needs of that water treatment system. The following is a general list of safety devices that should be utilized as a safety measure while working at the water treatment plant. Included is a brief description of the conditions which require the use of the various types of safety devices:

A. Tools: Proper tools should be available and in good repair at all times, as required by OSHA standards. (This includes tools owned by employees which are used for work at the water treatment plant.)

B. Fire Extinguishers: UL approved fire extinguishers are required in areas where potential fire hazards exist. The extinguishers must be tested and recharged at least once a year. Secure assistance from the local fire department in selecting the types of extinguishers needed.

C. Respiratory-Protective Apparatus: Masks provide protection under many circumstances; however, it is important to know the limitations of the various types of masks and to be thoroughly familiar with their use.

D. Safety Harness: A safety harness consisting of a body belt with buckle and shoulder harness is required for use in areas with a hazardous atmosphere. The belt should be made of harness leather and be equipped with tested hardware. The life line should be at least ¾-inch manila rope and should be a minimum of 50 feet long.

E. Portable Air Blower: A gas or electric motor driven unit must be provided for ventilating an enclosed area. The Air Blower should be furnished with a vapor-proof, totally enclosed motor with non-sparking gas engines. The use of such equipment is to take into account the depth and size of the enclosure or manhole, and the number of openings to an uncontaminated atmosphere.

F. Warning Signs: Warning signs are to be placed in prominent places by hazardous or potentially hazardous areas. Danger signs should be red, black, and white. Caution signs warn against potential hazards or against unsafe practices. Caution signs should be yellow and black. In addition, exits, fire extinguishers, and first aid equipment are to be clearly marked.

G. Accident Prevention Tags: Accident prevention tags serve as a temporary warning and are to be placed on a piece of equipment, while maintenance or repair work is being completed.

H. First Aid Kits: First aid kits are to be provided in all buildings, enclosures, vehicles, etc. Signs indicating the location of these kits should be posted conspicuously.

7.4. Electrical Hazards

Contact with electricity can cause bodily injury ranging from loss of muscle control to complete paralysis of the central nervous system, and of course, may result in death. The degree of injury depends on the voltage. All voltages above 12V should be considered dangerous.

The Water Treatment Plant operates at voltages from 120 to 480. All electricity should be treated with extreme caution without guessing as to the nature of the circuit.

The following are general precautions that should be taken around electrical equipment:

A. Clearly mark all electrical controls.
B. Keep electrical controls accessible.
C. Keep a rubber mat on the floor in front of electrical panels, and keep edges of the mat trimmed so it does not become a tripping hazard.
D. Never use metal ladders or metal tape measures around electrical equipment.
E. Ground all electrical equipment.
F. Equip portable power tools with ground wires, and special outlet and plug.
G. Designate only authorized personnel to work on electrical equipment and repairs. Allow only those individuals to perform electrical work.

CAUTION: Unless you are a qualified electrician, stay out of the inside of all electrical panels. If you do not know, or are not familiar with the equipment, LEAVE IT ALONE.

H. Work in pairs around electrical equipment.

I. Avoid water, pipes, and drains when working near electricity.

J. Do NOT pass tools to or otherwise touch a person who is grounded.

K. Keep wires for portable electrical equipment from becoming a tripping hazard.

L. Do NOT use any part of your body to test a circuit.

M. Handle breaker wires as though they were "live" wires.

N. Always work from a firm base so that you don't lose your balance and fall on energized parts.

O. When working over an energized part, cover it with a good electrical insulator, such as a rubber blanket.

P. Do NOT make any safety device inoperative unless it is absolutely necessary for repair or maintenance purposes. Before proceeding, alert all personnel.

Q. If there is a question regarding any electrical hazard, ask about it before exposing yourself to it. Be continually aware of the hazard.

The general rule is to work in pairs around electrical equipment. This is especially critical around equipment that operates at or above 440V. The advantages of working in pairs include the following:

A. One can double check the other.

B. One is available to de-energize circuits.

C. One can apply first aid or summon assistance in the event of a mishap.

The following procedures for holding and locking out electrical and mechanical equipment should be established:

A. Turn the unit off by means of a pushbutton lockout for momentary stoppage.

B. For major adjustments and repairs, turn off, lock out, and tag the main circuit breaker.

   i. Fasten the tag securely to breaker handle.
   ii. The tag should read something like:
   "DANGER ... Do NOT Start ... Man Working On Equipment."

iii. Note the time and date the unit was turned off, as well as the reason it was turned off.
iv. The tag should be signed by the man who turned the unit off. NOTE: Your local safety equipment supplier can obtain these tags for you.

C. No one should turn on the main breaker and start the unit until the tag has been removed by the person who placed it there, or until he has specific instructions from the person who tagged the breaker.

Electrical shock can paralyze the breathing center in the victim's brain, and/or cause unconsciousness. Steps for first aid treatment of electrical shock are as follows:

A. Free the victim from the live conductor promptly. Use a dry stick or other non-conductor, never use bare hands.
B. Give the victim artificial respiration.
C. Keeps the victim lying down and absolutely still.
D. Cover the victim only enough to prevent loss of body heat.
E. Obtain medical help immediately.

7.5. Water Treatment Plant Alarms

Warning and alarm devices serve to warn not only of an existing emergency condition, but can also serve to warn of conditions which may lead to an emergency situation. There are many individual types of devices available, but generally they can be classified as follows:

A. Alarms - audio and visual.

B. Indicating lights – tell the operators which equipment is required to run, the equipment which is currently running, power on and off, etc.

C. Indicators – mechanical (gauges, electrical counters, indicators, recorders) or electro-mechanical (flow and or pressure recorders).

The Water Treatment Plant automated monitoring devices will trigger alarm conditions if certain parameters are not maintained within the predefined limits.

The comprehensive Alarms List with ID tag, set point, delay and triggered action is attached in **Appendix N.**

The turbidity alarm set points and chlorine alarm set points for the Water Plant are summarized below in Table **7.5.1 and Table 7.5.2.**

Table 7.5.1 - Turbidity Alarm Set Points

	Alarm	**Set Point**	**Time Delay Seconds**	**Action**
Decant Pump Station Turbidimeter AIT-110	High	15 mg/L	900	Call Out
RWPS Effluent Turbidimeter AIT-200	High	15 mg/L	900	Call Out
RWCF Influent Turbidimeter AIT-330	High	20 mg/L	900	Call Out
IFE Turbidity Filter 1: AI-453 Filter 2: AI-353 Filter 3: AI-321	Post-Backwash High	0.20 NTU	0	Call Out/ Initiate Backwash. Post-Backwash if alarm triggered, then shut down.
	High	≥ 0.20 NTU	600	Call Out
	High-High	≥ 0.24 NTU	840	Call Out/Shutdown
CFE Turbidity FWPS AI-406A	High	≥ 0.20 NTU	600	Call Out
	High-High	≥ 0.24 NTU	840	Call Out/shutdown

Table 7.5.2 - Chlorine Alarm Set Points

	Alarm	Set Point mg/L	Time Delay Seconds	Action
HSPS Effluent Chlorine Residual AIT-120	Low-Low	1.0	900	Call Out
	Low	1.1	180	Call Out
	High	2.0	180	Call Out/ Shutdown SHC Metering Pump 3 & 4
FWPS Effluent Chlorine Residual AIT-406	Low-Low	1.8	120	Call Out/ Plant Shutdown
	Low	2.0	120	Call Out
	High	3.8	120	Call Out
	High-High	4.0	120	Call Out/ Plant Shutdown
1.70 MG Effluent Chlorine Residual (CT Compliance Point) AIT-100	Low-Low	1.0	120	Call Out/ Plant Shutdown
	Low	1.2	120	Call Out
	High	2.8	120	Call Out
	High-High	3.0	120	Call Out/ Plant Shutdown

8. Maintenance

8.1. General

It is the HPUD's responsibility to perform all scheduled maintenance of the water treatment plant. Routine service and preventative maintenance are to be completed by HPUD's operations and maintenance staff. Emergency parts and equipment are to be kept on site at all times to ensure prompt repairs.

A sound maintenance program is essential to insure that a water treatment system operates smoothly and efficiently. The ultimate goal of the operation and maintenance program is to meet the required potable water standards, while keeping the cost of operating the WTP at a minimum. An effective maintenance program is a key factor in meeting this goal.

Equipment is to be kept in good operating condition to maintain required treatment system performance, and to prevent major equipment breakdowns. Repair costs for poorly maintained equipment far exceed the cost of maintenance. Management and personnel are to be fully aware of the importance of maintenance.

The maintenance program is set forth to keep equipment in good operating condition and to anticipate and prevent major breakdowns of equipment.

8.2. Maintenance Record System

A record is to be maintained for the service requirements of the major WTP equipment. An accurate and comprehensive recordkeeping system is required for equipment data and the maintenance requirements. The system shall provide permanent records for advance scheduling and for preventive maintenance. To be efficient, the system is to contain the following:

A. Preventive Maintenance Records. Keep a record for each item or equipment component that requires periodic maintenance. List all requirements, including the frequency and estimated time needed to perform each duty.

B. Preventive Maintenance Schedule. Provide a card or sheet for each piece of equipment. List the equipment number and other key information, including a specific day for the performance of each maintenance item. Provide a space to record the data and type of work performed.

C. Major Equipment Specifications. For each major piece of equipment provide a specification card which includes nameplate data, the name of the supplier, and a source for spare parts. This card also may be used to show the type of lubricant required along with the nature of any special service requirements.

D. Spare Parts Inventory. Keep a record of all spare parts in stock and provide a means of recording which parts are used.

E. Corrective Maintenance Records. Records are to be kept in a manner similar to that for preventive maintenance.

F. Operation and Maintenance Instructions. A file should be established which contains operation and maintenance literature and catalogs provided by the equipment manufacturers. The maintenance literature and catalogs include part lists, dimension drawings, and other relevant information.

G. A record of all maintenance costs are to be kept.

H. A complete set of As-Built drawings are to be prepared and kept at the WTP. All changes in piping, equipment, and electrical circuitry in the future are to be recorded on the As-Built plans. It is essential that the As-built plans be up-dated on a periodic basis in the future as additional components are added to the WTP.

The maintenance program record system must be kept complete and up-to-date. As equipment ages and flow rates increase, the service requirements should be modified. Record all information.

8.3. Diagnosing Operation Problems of Equipment

Water treatment units are affected by several factors, including normal operation wear associated with all treatment units. Common operational problems, the possible causes and solutions for each of the facilities are described within the Equipment Manufacturer's Operation and Maintenance manuals. The Equipment Manufacturer's Operation and Maintenance Manuals for the new equipment have been prepared. The Equipment Manufacturer's Operation and Maintenance Manuals have been forwarded to the WTP. For further information with regard to operational problems and diagnosing of these problems see the Equipment Manufacturer's Operation and Maintenance Manuals.

8.4. Maintenance Records

A precise record keeping system is required to insure that accurate maintenance records are maintained. The maintenance records are to be kept up-to-date on a daily basis and not left to memory. Equipment service and service record cards are easy to prepare with minimal effort.

The equipment service card is to log what should be completed and when it should be completed. Each item of equipment is to have an equipment service card which is filed either alphabetically or by equipment number. The equipment service card is to include the following information:

A. Name and location of equipment or structure.

B. Name of manufacturer or equipment supplier.

C. Equipment original cost and installation date.

D. Type, style, and model of equipment.

E. Capacity, size, and rating of equipment.

F. Serial and code numbers of equipment.

G. Proper lubricants and coatings of equipment.

H. Nature and frequency of maintenance of equipment.

   i. List each required maintenance service with an item number.

   ii. List maintenance services in order of frequency of performance. For instance, show daily service at items 1, 2, and 3 on the card; weekly items as 4 and 5; monthly items as 6, 7, 8, 9, and so on.

   iii. Describe each type of service to be accomplished.

It is important that all required services and inspections are accounted for. Reference data for equipment is to be included with the equipment files. Manufacturer's information is to list sections or pages and paragraph numbers from the mechanical maintenance catalogs. The

manufacturer's frequency of service recommendations are to be observed. The month or day of equipment service that is to be performed shall be recorded.

The service record card represents a record of what was accomplished and the date or time period it was accomplished. The service record card is to include the following:

A. Date the work is performed.

B. Name or initials of person whom accomplished the work.

C. Type of work which was accomplished.

D. Corrective maintenance tasks to be accomplished.

An equipment service record card is to be maintained for each equipment item. The service record card is to be placed in the equipment record file. As service record cards are completed, the cards are to be filed for future reference to insure a complete record is maintained.

8.5. Lubrication

Lubrication is an important function of a maintenance program. If possible, lubrication is to be the responsibility of one or two person(s). The best quality of oils and greases are to be used. Special care must be exercised to avoid over lubrication, since over lubrication often results in motor failure. Manufacturer's recommendations are to be studied and carefully followed. A lubrication program is to include gathering of basic lubrication data, lubrication specifications, and record keeping. It is recommended that a local supplier be engaged to obtain the required lubricants.

8.6. Warranty Provisions

The Water Treatment Plant Improvements includes a one year guarantee period. During this period, it is the contractor's responsibility to repair, correct, or replace any equipment or material that fails to perform in accordance with the terms and provisions of the contract.

Any alteration of equipment, without the knowledge or consent of the manufacturer and contractor, may result in the refusal of these parties to accept responsibility for subsequent problems and associated repair work. The fact that a guarantee is in effect should not be cause to allow improper maintenance or operation of equipment.

8.7. Basic Maintenance for Major Equipment

1) Pumping Equipment

All pumps and mechanical equipment should be inspected for the following on a daily basis:

A. Bearings – noise and heat.

B. Motors -- operating speed.

C. Control equipment – cleanliness and condition.

D. Pump operation -- vibration and noise.

E. Seals – Excessive leakage.

Pump bearings are to be lubricated according to the manufacturer's instructions. Special care is to be exercised to avoid over greasing, since this can cause as much damage as lack of lubrication.

When bearings do not require lubrication daily, or when damage can result from over lubrication, it is preferable to leave a pressure type fitting in place. It is preferable to use a plug which can be replaced with a fitting when the bearing requires lubrication. The plug at the underside of the bearing serves as a relief vent, which should be opened while the bearing is being lubricated. The bearing is to be operated for a few minutes with the plug out, to allow excessive grease to work its way out of the bearing.

2) Mechanical Equipment

Mechanical equipment is to be maintained in excellent working condition. Moving parts are to be lubricated regularly. Pipes and air lines are to be kept open and free from obstructions or accumulations of any kind. Where there are two units, or where it is possible to shut down a unit without seriously interfering with the treatment process, a complete cleaning of the units is to be accomplished at regular intervals.

3) Electrical Equipment

No facility operates for a long period of time without a maintenance program to keep all

electrical units functioning efficiently. Motor failures often occur for the following reasons:

A. Dirt – eliminate by a routine cleaning program.

B. Moisture – take anti-moisture precautions.

C. Friction – eliminate with proper oil and greasing.

D. Vibration – make daily inspections to check for vibration.

Electrical control equipment should be checked regularly for:

A. Tightness.

B. Firm contact pressures.

C. Unfrayed shunts.

D. Free moving parts.

Controls should be checked to see that they are operating at the proper amperages and voltages. Contacts and wiring connections are to be checked to insure the connections are corrosion free, clean, tight and dry.

Each starter is to be checked every six months to make sure the tripping element is free to offer protection to the motor. Tips are to be replaced of filed smooth, if the contact points are pitted or corroded. If a starter trips out, the cause is to be identified before it is started again. Dirty contacts are to be cleaned. The Electrical Enclosure is to be cleaned with a blower or vacuum type cleaner when appropriate.

8.8. Basic Maintenance for Water Storage Tanks, clearwells and wet wells

The following list describes mandatory routine maintenance for the water storage tanks; clearwell of the Clarifier/Filter units and wet wells for Raw Water Pump Station and Finish Water Pump Station

- Storage tanks are to be inspected annually and serviced as needed.
    a) Two methods to clean clearwell:
        i. Tank cleaning off-line:

a) Isolate tank(s)
b) Drain, clean and flush tank interior.(s).
c) Disinfect with 12.5% liquid chlorine at 1.5 to 2 mg/L. (approximately 0.5 liter of 12.5% solution in 5,000 gallons.)

ii. Clearwell(s) cleaning on-line:
a) Contract tank service company specializing in dive inspection and cleaning of storage tanks.

- Water Storage Tanks Inspection for 0.75 MG Tank:
  a) Quarterly inspection shall be conducted of the baffle curtains as visually inspected from the top of the tank's access hatch.
  b) Internal diving inspections of the tank and baffle curtains are to be conducted every 2 to 3 years. Diving records shall be conducted to meet AWWA recommendations.
  c) The cathodic protection of the cathodic protection system shall be inspected and reviewed every year.
  d) After any seismic event, a visual inspection of the baffle curtains, cathodic protection, and ancillary equipment is to be conducted.

- Water Storage Tanks Inspection for 1.70 MG Tank:
  a) Internal diving inspections of the tank and baffle curtains are to be conducted every 2 to 3 years. Diving records shall be conducted to meet AWWA recommendations.
  b) The cathodic protection of the cathodic protection system shall be inspected and reviewed every year.
  c) After any seismic event, a visual inspection of the cathodic protection, and ancillary equipment is to be conducted.

- Water Storage Tanks Inspection for 3.0 MG Tank:
  a) Internal diving inspections of the tank and baffle curtains are to be conducted every 2 to 3 years. Diving records shall be conducted to meet AWWA recommendations.
  b) The mixers and sprayers of the THM removal system shall be inspected and reviewed every year per the THM Removal System equipment.
  c) After any seismic event, a visual inspection of the THM removal system, and ancillary equipment is to be conducted.

9. EQUIPMENT MAINTENANCE PROGRAM

Specific maintenance recommendations for all equipment are provided by the manufacturer's operation and maintenance manuals. A list of manufacturer's names and contact information is provided in the Equipment Manufacturer's Operation and Maintenance Manuals and noted below.

9.1. Equipment Suppliers for Static Mixer Facility

1. Static Mixers

   Komax Static Mixer
   Komax Model MS -68364

   Manufacturer:
   Komax Systems, Inc.
   15301 Graham Street
   Huntington Beach, CA 92649
   Phone: (310) 830-4320
   Fax: (310) 830-9826
   Website: www.komax.com

   Local Representative:
   Misco Water
   27101 Burbank, Suite B
   Foothill Ranch, CA 92610
   Phone: (949) 458-5555
   Fax: (949) 458-5500
   Website: www.miscowater.com

2. Polyethylene Tanks (1150 Gallon and 250 Gallon) for Polyferric Sulfate System

   Manufacturer:
   PolyProcessing
   P.O. Box 4150 (71211)
   2201 Old Sterlington Road
   Monroe, Louisiana 71203
   Phone: (866) 590-6845

Fax: (318) 343-8795
Website: www.polyprocessing.com

3. Polyferric Sulfate Metering Pump System Skid

Manufacturer:
UGSI Chemical Feed, Inc.
1901 W. Garden Rd.
Vineland, NJ 08360
Phone: (856) 896-2198
Fax: (856) 457-5920
Website: www.ugsichemicalfeed.com

Local Representative/Agent:
Process Solutions, Inc.
Contact – Terry Castelli
1077 Dell Avenue, Suite A
Campbell, CA 95008
Phone: (408) 370-6540
Fax: (408) 866-4660
Website: www.4psi.net

9.2. Equipment Suppliers for Raw Water Pump Station

1. Raw Water Vertical Turbine Pumps
   Peerless Vertical- 10HH 2-Stage

Manufacturer:
Peerless Pump Company
2005 Dr. Martin Luther King Jr. Street
Indiana, Indiana 46202
Phone: (317) 924-7316
Fax: (317) 924-7396
Website: www.grundfos.com

Local Representative:
Barrett Engineered Pumps
Contact – Martin Trim
1695 National Avenue
San Diego, CA 92113
Phone: (619) 232-7867
Fax: (619) 232-3029
Website: www.barrettpump.com

2. In-line Static Mixer

Komax Static Mixer
Komax Model TA -68576

Manufacturer:
Komax Systems, Inc.
15301 Graham Street
Huntington Beach, CA 92649
Phone: (310) 830-4320
Fax: (310) 830-9826
Website: www.komax.com

Local Representative:
Misco Water
27101 Burbank, Suite B
Foothill Ranch, CA 92610
Phone: (949) 458-5555
Fax: (949) 458-5500
Website: www.miscowater.com

3. Flow-meter

Komax Static Mixer
Komax Model TA -68576

Manufacturer:
Komax Systems, Inc.
15301 Graham Street
Huntington Beach, CA 92649
Phone: (310) 830-4320

Fax: (310) 830-9826
Website: www.komax.com

Local Representative:
Misco Water
27101 Burbank, Suite B
Foothill Ranch, CA 92610
Phone: (949) 458-5555
Fax: (949) 458-5500
Website: www.miscowater.com

9.3. Equipment Suppliers for Clarifier/Filter Units

1. Clarifier/Filter Units

Trident 1/2TR-840A Unit; Westech Model TR412A

Manufacturer:
WesTech Engineering, Inc.
600 Arrasmith Trail
Ames, Iowa 50010
Phone: (515) 268-8400
Fax: (515) 268-8500
24 Hour Emergency Assistance: (801) 265-1000
Email: parts@westech-inc.com
Website: www.westech-inc.com

WesTech Agent:
Local Representative:
Misco Water
Contact – Tom Robertson
27101 Burbank, Suite B
Foothill Ranch, CA 92610
Phone: (949) 458-5555
Fax: (949) 458-5500
Website: www.miscowater.com
Email: TROBERTSON@miscowater.com

2. Polyethylene Tanks (1150 Gallon and 250 Gallon) for Polyferric Sulfate System

Manufacturer:
PolyProcessing
P.O. Box 4150 (71211)
2201 Old Sterlington Road
Monroe, Louisiana 71203
Phone: (866) 590-6845
Fax: (318) 343-8795
Website: www.polyprocessing.com

3. Polyferric Sulfate Metering Pump System Skid

Manufacturer:
UGSI Chemical Feed, Inc.
1901 W. Garden Rd.
Vineland, NJ 08360
Phone: (856) 896-2198
Fax: (856) 457-5920
Website: www.ugsichemicalfeed.com

Local Representative/Agent:
Process Solutions, Inc.
Contact – Terry Castelli
1077 Dell Avenue, Suite A
Campbell, CA 95008
Phone: (408) 370-6540
Fax: (408) 866-4660
Website: www.4psi.net

4. Polymer Mixing and Feeding System Skid
PolyBlend M601-P5AA Polymer Feed System

Manufacturer:
UGSI Chemical Feed, Inc.
1901 W. Garden Rd.
Vineland, NJ 08360
Phone: (856) 896-2198

Fax: (856) 457-5920
Website: www.ugsichemicalfeed.com

Local Representative/Agent:
Process Solutions, Inc.
Contact – Terry Castelli
1077 Dell Avenue, Suite A
Campbell, CA 95008
Phone: (408) 370-6540
Fax: (408) 866-4660
Website: www.4psi.net

9.4. Equipment Suppliers for Finish Water Pump Station

1. New Finish Water Vertical Turbine Pump
   Peerless Vertical- 10HH 2-Stage

   Manufacturer:
   Peerless Pump Company
   2005 Dr. Martin Luther King Jr. Street
   Indiana, Indiana 46202
   Phone: (317) 924-7316
   Fax: (317) 924-7396
   Website: www.grundfos.com

   Local Representative:
   Barrett Engineered Pumps
   Contact – Martin Trim
   1695 National Avenue
   San Diego, CA 92113
   Phone: (619) 232-7867
   Fax: (619) 232-3029
   Website: www.barrettpump.com

9.5. Equipment Suppliers for Disinfection Systems

1. Sodium Hypochlorite Generating System

   Microclor MC-200 On-site Hypochlorite Generation System

   Manufacturer:
   Process Solutions, Inc.
   1077 Dell Avenue, Suite A
   Campbell, California 95008
   Phone: (408) 370-6540
   Fax: (408) 866-4660
   Website: www.4psi.net

2. Polyethylene Tanks (2500 Gallon – 2 Tanks) for Sodium Hypochlorite

   Manufacturer:
   PolyProcessing
   P.O. Box 4150 (71211)
   2201 Old Sterlington Road
   Monroe, Louisiana 71203
   Phone: (866) 590-6845
   Fax: (318) 343-8795
   Website: www.polyprocessing.com

3. Brine Maker

   Brine Tank Manufacturer:
   PolyProcessing
   P.O. Box 4150 (71211)
   2201 Old Sterlington Road
   Monroe, Louisiana 71203
   Phone: (866) 590-6845
   Fax: (318) 343-8795
   Website: www.polyprocessing.com

Brine Maker:
Brinemaker, Inc.
3300 E. 19th Street
Signal Hill, California 90755
Phone: (800) 998-7345
Fax: (562) 986-5246
Website: www.brinemaker.com

4. Hypochlorite Dosing Pump System Skid

Manufacturer:
UGSI Chemical Feed, Inc.
1901 W. Garden Rd.
Vineland, NJ 08360
Phone: (856) 896-2198
Fax: (856) 457-5920
Website: www.ugsichemicalfeed.com

Local Representative/Agent:
Process Solutions, Inc.
Contact – Terry Castelli
1077 Dell Avenue, Suite A
Campbell, CA 95008
Phone: (408) 370-6540
Fax: (408) 866-4660
Website: www.4psi.net

5. Water Chiller

Manufacturer:
G&D Chillers, Inc.
3498 West First, Suite 1
Eugene, OR 97402
Phone: (800) 555-0973
Website: www.gdchillers.com

Local Representative/Agent:
Process Solutions, Inc.
Contact – Terry Castelli
1077 Dell Avenue, Suite A
Campbell, CA 95008
Phone: (408) 370-6540
Fax: (408) 866-4660
Website: www.4psi.net

6. Water Softener

Manufacturer:
Kinetico water systems
10845 Kinsman Road
Newbury, Ohio 44065
Phone: (800) 944-9283
Website: www.kinetico.com

Local Representative/Agent:
Kinetico by Southwest Water Treatment
643 E. 18th Place
Yuma, Arizona 85364
Phone: (800) 245-8677
Fax: (928) 314-4886
Website: www.yumawatertreatment.com

9.6. Equipment Suppliers for High Service Pump Station

1. High Service Pump Station Skid

Manufacturer:
Grundfos Engineered Systems
Grundfos CBS Inc.
902 Koomey Road
US-Brookshire, Texas 77423
Phone: (281) 994-2700
Website: www.grundfos.com

Local Representative:
Barrett Engineered Pumps
Contact – Martin Trim
1695 National Avenue
San Diego, CA 92113
Phone: (619) 232-7867
Fax: (619) 232-3029
Website: www.barrettpump.com

9.7. Equipment Suppliers for Backwash Decant Pump Station

1. Backwash Pumps

Manufacturer:
Barnes Pumps
Crane Pumps & Systems
420 Third Street
Piqua, Ohio 45356
Phone: (937) 778-8947
Fax: (937) 773-7157
Website: www.cranepumps.com

Local Representative:
Gierlich-Mitchell, Inc.
10533 Progress Way, Suite A
Cypress, California 90630
Phone: (714) 236-6070
Fax: (714) 236-6080
Website: www.gierlich-mitchell.com

2. Precast Fiberglass Basin

Manufacturer:
AK Industries, Inc.
2055 Pidco Drive
Plymouth, Indiana 46563
Phone: (574) 936-6022
Fax: (574) 936-5811
Website: www.akindustries.com

Local Representative:
Gierlich-Mitchell, Inc.
10533 Progress Way, Suite A
Cypress, California 90630
Phone: (714) 236-6070
Fax: (714) 236-6080
Website: www.gierlich-mitchell.com

9.8. Equipment Suppliers for TTHM Removal System

1. TTHM Removal System including Blowers, Mixer and Sprayer

Manufacturer:
Medora Corporation
GridBee
3225 Hwy 22
Dickinson, North Dakota 58601
Phone: (701) 225-4495
Fax: (701) 225-0002
Website: www.medoraco.com

9.9. Suppliers for Water Testing Equipment

1. Chlorine Analyzer

Type – Hach Model "CL-17 Free Chlorine Analyzer"

Manufacturer:
HACH CO.
P.O. Box 389
Loveland, Coloroda 80539
Phone: 800-227-4224
Phone: (970) 669-3050
Fax: (970) 669-2932
Website: www.hach.com

Local Representative:
Charles P. Crowley Company
15861 Business Center Drive
Irwindale, California 91706
Phone: (626) 856-5656
Fax: (626) 856-5658
Website: www.cpcrowley.com

2. Turbidity Analyzer

Types – 1) Hach Model "1720E Low Range Turbidimeter"
2) Hach Model "Surface Scatter 7 sc Turbidimeter"

Manufacturer:
HACH CO.
P.O. Box 389
Loveland, Coloroda 80539
Phone: 800-227-4224
Phone: (970) 669-3050
Website: www.hach.com

Local Representative:
Charles P. Crowley Company
15861 Business Center Drive
Irwindale, California 91706
Phone: (626) 856-5656
Website: www.cpcrowley.com

3. Temperature and pH Sensor

Type – Hach Model "DPD1P1 pH and ORP Sensor"

Manufacturer:
HACH CO.
P.O. Box 389
Loveland, Coloroda 80539
Phone: 800-227-4224
Phone: (970) 669-3050
Fax: (970) 669-2932
Website: www.hach.com

Local Representative:
Charles P. Crowley Company
15861 Business Center Drive
Irwindale, California 91706
Phone: (626) 856-5656
Fax: (626) 856-5658
Website: www.cpcrowley.com

4. Universal Display Module for water testing equipment

Type – Hach Model "sc1000 Multi-Parameter Universal Controller"

Manufacturer:
HACH CO.
P.O. Box 389
Loveland, Coloroda 80539
Phone: 800-227-4224
Phone: (970) 669-3050
Fax: (970) 669-2932
Website: www.hach.com

Local Representative:
Charles P. Crowley Company
15861 Business Center Drive
Irwindale, California 91706
Phone: (626) 856-5656
Fax: (626) 856-5658
Website: www.cpcrowley.com

9.10. Equipment Suppliers for Stormwater Pump Station

1. Stormwater Pumps

Manufacturer:
Barnes Pumps
Crane Pumps & Systems
420 Third Street
Piqua, Ohio 45356
Phone: (937) 778-8947
Fax: (937) 773-7157
Website: www.cranepumps.com

Local Representative:
Gierlich-Mitchell, Inc.
10533 Progress Way, Suite A
Cypress, California 90630
Phone: (714) 236-6070
Fax: (714) 236-6080
Website: www.gierlich-mitchell.com

2. Precast Fiberglass Basin

Manufacturer:
AK Industries, Inc.
2055 Pidco Drive
Plymouth, Indiana 46563
Phone: (574) 936-6022
Website: www.akindustries.com

Local Representative:
Gierlich-Mitchell, Inc.
10533 Progress Way, Suite A
Cypress, California 90630
Phone: (714) 236-6070
Website: www.gierlich-mitchell.com

9.11. Equipment Suppliers for Standby Emergency Generator

1. Generator

Manufacturer:
Caterpillar Inc.
Electric Power North America
501 Southwest Jefferson Avenue
Peoria, Illinois 61630
Phone: (800) 447-4986
Website: www.caterpillar.com

Local Representative/Dealer:
Empire Power Systems
840 North 43rd Avenue
Phoenix, Arizona 85009
Phone: (480) 633-4000
Website: www.empire-cat.com

10. Attachments

Appendix A
HPUD Water Distribution Plan

LEGEND

- EXISTING 36 INCH PIPE
- EXISTING 20 INCH PIPE
- EXISTING 18 INCH PIPE
- EXISTING 12 INCH PIPE
- EXISTING 10 INCH PIPE
- EXISTING 8 INCH PIPE OR SMALLER
- SPHERE OF INFLUENCE

The Holt Group, Inc.
· ENGINEERING · PLANNING · SURVEYING

1601 NORTH IMPERIAL AVENUE EL CENTRO, CALIFORNIA 92243

760-337-3883

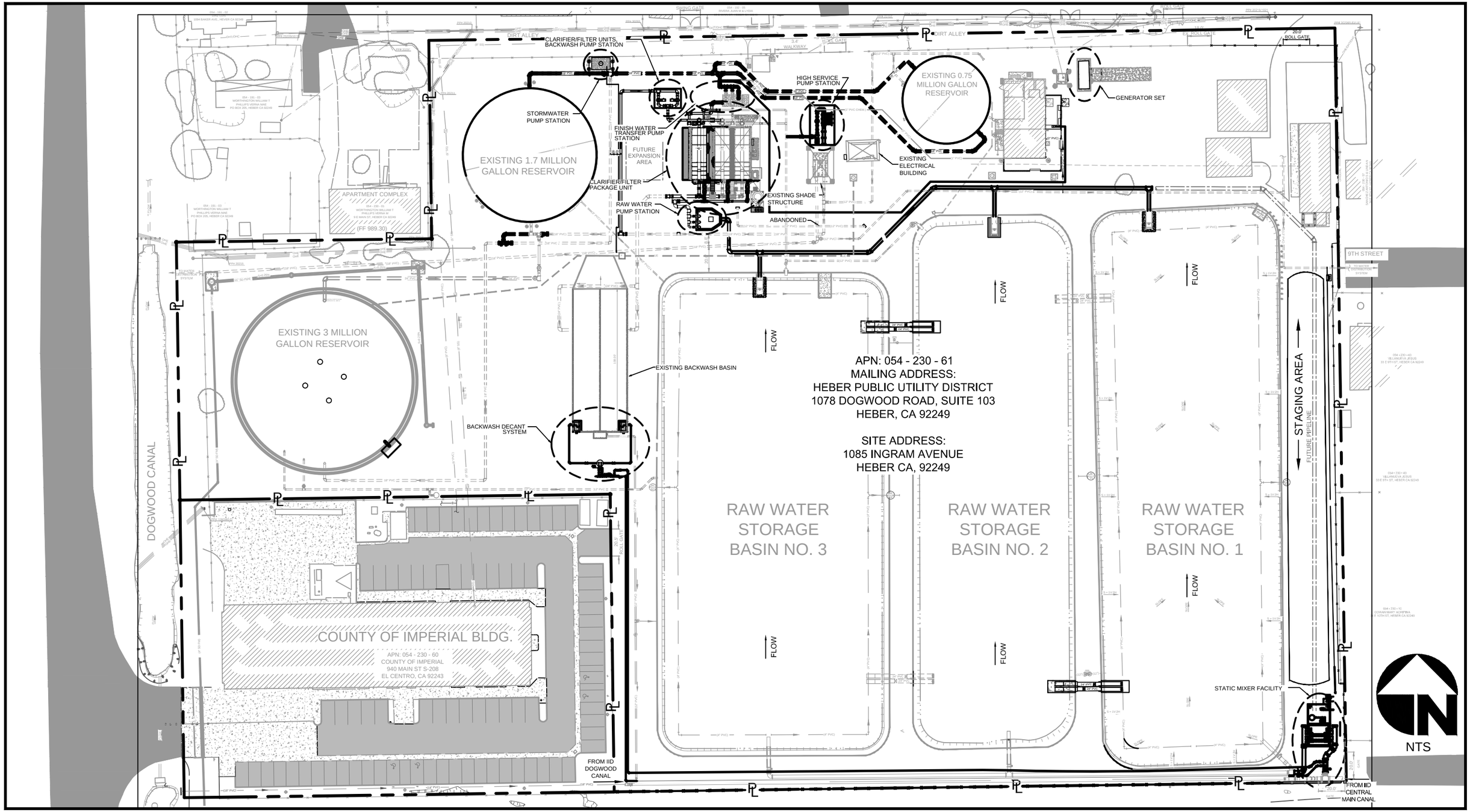
NOT TO SCALE

HEBER PUBLIC UTILITY DISTRICT
WATER DISTRIBUTION SYSTEM

DATE:
06-07-2018

Appendix B

HPUD Water Treatment Plant Layout Plan



The Holt Group, Inc.

ENGINEERING * SURVEYING * CONSTRUCTION MANAGEMENT * PLANNING

1601 N. IMPERIAL AVENUE
EL CENTRO, CA 92243
PHONE : (760) 337-3883
FAX : (760) 337-5997

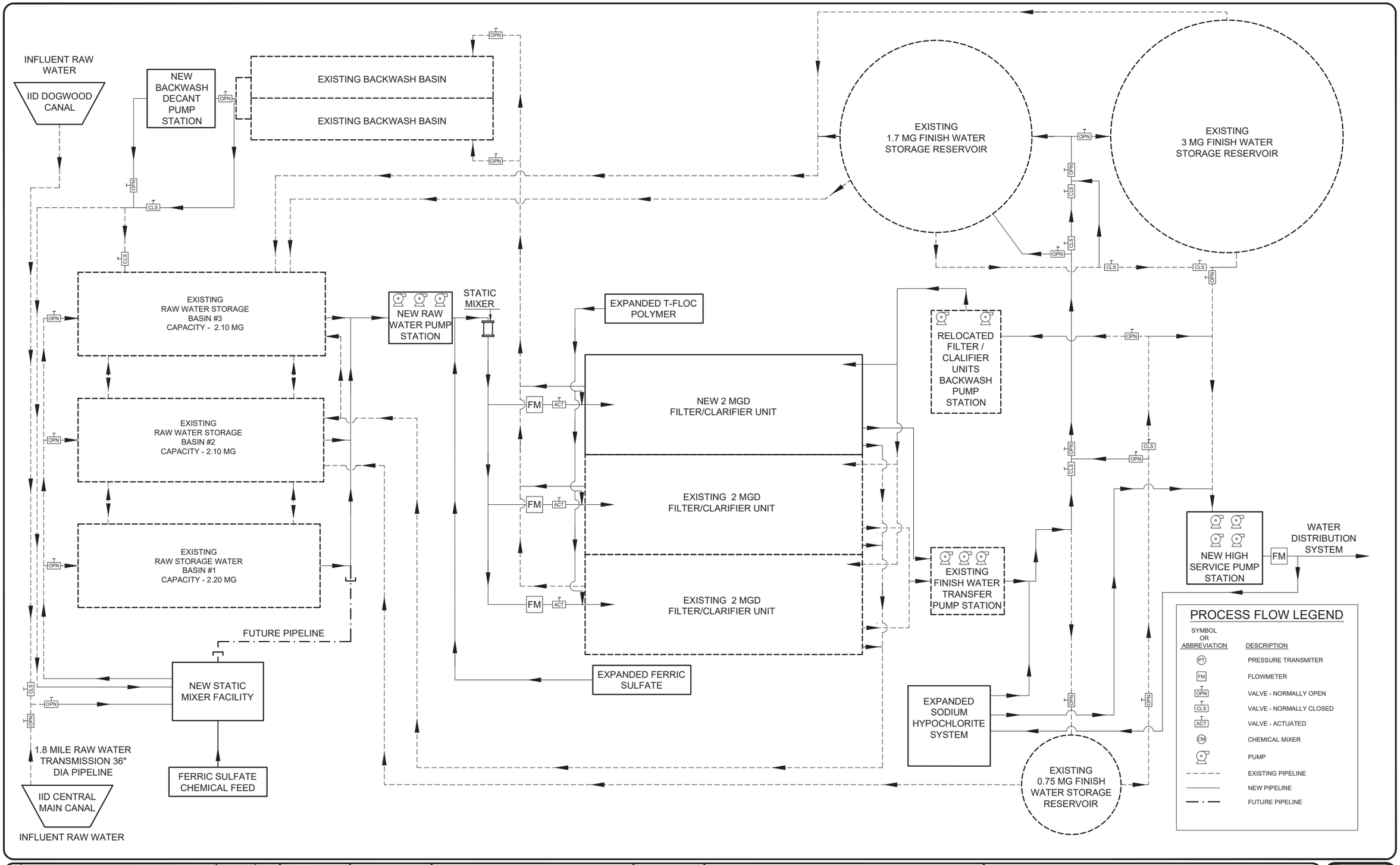
201 E. HOBSONWAY
BLYTHE, CA 92225
PHONE : (760) 922-4658
FAX : (760) 922-4660

EXHIBIT:

HPUD WATER TREATMENT PLANT LAYOUT PLAN

DATE: 6/7/2018

Appendix C
WTP Process Flow Diagram



No.	REVISION	APPROVED	DATE

UNAUTHORIZED CHANGES AND USES: The engineer preparing these plans will not be responsible for, or liable for, unauthorized changes to or uses of these plans. All changes to these plans must be in writing and must be approved by the preparer of these plans.

DESIGNED BY: JM | DRAWN BY: HS
SCALE: PER PLAN | CHECKED BY: FHG, JGH
BENCH MARK No. | ELEV.:
SEE TEMPORARY BENCHMARK LEGEND ON SHEET 5.

PREPARED UNDER THE DIRECT SUPERVISION OF:

JAMES G. "JACK" HOLT, P.E. — 31773 R.C.E. No.

07/08/2015 DATE — 12-31-16 REG. EXP.

REGISTERED PROFESSIONAL ENGINEER JAMES G. HOLT No. 31773 Exp. 12-31-16 CIVIL STATE OF CALIFORNIA

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PROJECT TITLE : HEBER PUBLIC UTILITY DISTRICT WATER TREATMENT PLANT EXPANSION

PROJECT NUMBER : 744.055E

SHEET CONTENT : PROCESS FLOW DIAGRAM

Appendix D
Water Reservoir Data Sheets

RESERVOIR DATA

State of California
Division of Drinking Water

State Water Resources Control Board
San Diego District

System Name:	Heber PUD	System No.: 1310007
Source of Information:	District Personnel	
Collected By:	Scott Ketcham	Date: May 2017

Number or Name	0.75 MG Reservoir
Date Constructed	1979
Refurbished	recoated in 2003; recoated, 5 baffles and inlet strucure installed in 2016
Purpose (storage, sand trap, etc)	Storage, CT Basin
Dimensions	D-66' H-30'
Type	Steel
Capacity (Million Gallons)	0.75
Location	
Specific Location (Cross Streets, etc)	Treatment Plant
Thomas Brothers Map Coordinates	
Latitude / Longitude	
Neighborhood	Residential
Size of Lot	
Fencing	Chain link
Construction Materials:	
Sides	Steel
Floor	Steel
Cover or Roof	Steel
Interior Coating Type	epoxy coating 2016
Tank Bottom Elevation, (feet)	988.79
Height of Tank, (feet)	30
Height Top of Tank Above Ground, (feet)	1018.79
Surface Drainage to Reservoir Possible?	No
Ventilation Location	Center of roof
Screened / Insect Proof ? (Y/N)	Yes
Screen Condition	Good
Inlet/Outlet Description	
Inlet Location / Size	12" pipe southeast side of tank
Distance Above Bottom, (feet)	25' riser with 5 evenly spaced 10" duckbill inlet nozzles
Receives Water From	Treatment plant
Outlet Location / Size	10" pipe south side of tank
Distance From Inlet, (feet)	25'
Distance Above Bottom, (feet)	8"
Delivers Water To	Distribution System
Pressure Zone Served	
Drain Location	Southwest side of tank 2.5" blind flange
Distance Above Floor, (feet)	6"
Discharges to	
Overflow Location	6" East side of tank
Overflow Elevation, (feet)	27'
Distance Above Bottom, (feet)	
Discharges to	Pond 2
Screen / Insect Proof ?	No
Sewer or Other Hazardous Connection(s)	None
Defects and Remarks:	

RESERVOIR DATA

State of California
Division of Drinking Water

State Water Resources Control Board
San Diego District

System Name:	Heber PUD	System No.: 1310007
Source of Information:	District Personnel	
Collected By:	Scott Ketcham	Date: May 2017

Number or Name	Reservoir No. 3
Date Constructed	1996
Refurbished	2016, floor repair
Purpose (storage, sand trap, etc)	Storage, CT Basin
Dimensions	D-101' H-30'
Type	Steel
Capacity (Million Gallons)	1.7
Location	
Specific Location (Cross Streets, etc)	Treatment Plant
Thomas Brothers Map Coordinates	
Latitude / Longitude	
Neighborhood	Residential
Size of Lot	
Fencing	Chain link
Construction Materials:	
Sides	Steel
Floor	Steel
Cover or Roof	Steel
Interior Coating Type	epoxy coating 2016
Tank Bottom Elevation, (feet)	988.94
Height of Tank, (feet)	30
Height Top of Tank Above Ground, (feet)	1018.94
Surface Drainage to Reservoir Possible?	No
Ventilation Location	Center of roof
Screened / Insect Proof ? (Y/N)	Yes
Screen Condition	Good
Inlet/Outlet Description	
Inlet Location / Size	18" pipe north side of tank
Distance Above Bottom, (feet)	3'
Receives Water From	0.75 MG Reservoir
Outlet Location / Size	18" pipe south side of tank
Distance From Inlet, (feet)	101
Distance Above Bottom, (feet)	3'
Delivers Water To	3.0 MG Reservoir
Pressure Zone Served	
Drain Location	4" blind flanged
Distance Above Floor, (feet)	3'
Discharges to	
Overflow Location	Southeast side of tank
Overflow Elevation, (feet)	29
Distance Above Bottom, (feet)	27
Discharges to	Pond 3
Screen / Insect Proof ?	No
Sewer or Other Hazardous Connection(s)	None
Defects and Remarks:	

RESERVOIR DATA

State of California
Division of Drinking Water

State Water Resources Control Board
San Diego District

System Name:	Heber PUD	System No.: 1310007
Source of Information:	District Personnel	
Collected By:	Scott Ketcham	Date: May 2017

Number or Name	3.0 MG Reservoir
Date Constructed	2008
Refurbished	2016, TTHM treatment installed
Purpose (storage, sand trap, etc)	Storage, TTHM Treatment
Dimensions	D-134' H-32'
Type	Reinforced concrete
Capacity (Million Gallons)	3.0
Location	
Specific Location (Cross Streets, etc)	Treatment Plant
Thomas Brothers Map Coordinates	
Latitude / Longitude	
Neighborhood	Residential
Size of Lot	
Fencing	Chain link
Construction Materials:	
Sides	Concrete
Floor	Concrete
Cover or Roof	Concrete
Interior Coating Type	Epoxy
Tank Bottom Elevation, (feet)	988.87
Height of Tank, (feet)	32
Height Top of Tank Above Ground, (feet)	1020.87
Surface Drainage to Reservoir Possible?	No
Ventilation Location	4-20 inch gravity vents evenly spaced around center of roof
Screened / Insect Proof ? (Y/N)	Yes
Screen Condition	Good
Inlet/Outlet Description	
Inlet Location / Size	18" PVC pipe south side of tank
Distance Above Bottom, (feet)	3'
Receives Water From	Treatment plant
Outlet Location / Size	24" PVC pipe north side of tank
Distance From Inlet, (feet)	134'
Distance Above Bottom, (feet)	3'
Delivers Water To	High Rate PS
Pressure Zone Served	Main
Drain Location	South side
Distance Above Floor, (feet)	3'
Discharges to	12" PVC to Pond 3
Overflow Location	south side of tank
Overflow Elevation, (feet)	29
Distance Above Bottom, (feet)	27
Discharges to	12" PVC to Pond 3
Screen / Insect Proof ?	No
Sewer or Other Hazardous Connection(s)	None
Defects and Remarks:	

Appendix E
CT Calculation Sheets

Heber PUD 1310007 Inactivation

0.75 & 1.7 Reservoirs in Series

Filtration Giardia Removal Credit 2.5
Filtration Virus Removal Credit 2

	Value	Corresponding CT Ratio
Max Q	2800	0.50
Min Volume	383,858	2.00
Min Residual	0.4	0.50
Avg CT Ratio	4.00	
Min CT Ratio	1.35	

Date	Time	residual ppm	pH	Temp (c)	Q gpm	WSE	1.7 Reservoir Volume (gal)	1.7 Reservoir T10	0.75 Reservoir Volume (gal)	0.75 Reservoir T10	**CT actual**	CT Required	Log G Innactivation Rqd	Log V Innactivation Rqd	CT (G) Ratio	Log G Innactivation Achieved	Log V Innactivation Achieved	Met Standard
		0.71	8.8	13	2800	15	898,929	0.03	383,858	0.35	**40.9**	29.2	0.5	2	1.40	3.3	34.9	Yes
		0.4	7.8	12	2800	18.4	1,102,686	0.03	470,866	0.35	**28.3**	20.9	0.5	2	1.35	3.2	22.4	Yes
		0.8	7.8	12	2800	16.4	982,829	0.03	419,685	0.35	**50.4**	21.9	0.5	2	2.30	3.7	40.0	Yes
		0.8	7.8	12	2800	15.7	940,879	0.03	401,771	0.35	**48.2**	21.9	0.5	2	2.20	3.6	38.3	Yes
		0.8	7.8	12	2800	17.8	1,066,729	0.03	455,511	0.35	**54.7**	21.9	0.5	2	2.50	3.8	43.5	Yes
		0.8	7.9	12	2800	18.1	1,084,708	0.03	463,189	0.35	**55.6**	22.7	0.5	2	2.45	3.8	44.2	Yes
		1.2	7.9	12	2800	16.3	976,836	0.03	417,126	0.35	**75.1**	23.7	0.5	2	3.17	4.1	59.8	Yes
		1.2	7.8	12	2800	17.9	1,072,722	0.03	458,070	0.35	**82.5**	22.9	0.5	2	3.60	4.3	65.6	Yes
		1.2	7.8	12	2800	17.8	1,066,729	0.03	455,511	0.35	**82.0**	22.9	0.5	2	3.58	4.3	65.3	Yes
		1.2	7.8	12	2800	16.7	1,000,808	0.03	427,362	0.35	**77.0**	22.9	0.5	2	3.36	4.2	61.2	Yes
		1.2	7.8	12	2800	17.4	1,042,758	0.03	445,275	0.35	**80.2**	22.9	0.5	2	3.50	4.3	63.8	Yes
		1.2	7.8	12	2800	18.5	1,108,679	0.03	473,425	0.35	**85.3**	22.9	0.5	2	3.72	4.4	67.8	Yes
		1.2	7.8	12	2800	16.5	988,822	0.03	422,244	0.35	**76.0**	22.9	0.5	2	3.32	4.2	60.5	Yes
		1.5	7.8	12	2800	17.8	1,066,729	0.03	455,511	0.35	**102.6**	23.7	0.5	2	4.33	4.7	81.6	Yes
		1.5	7.8	12	2800	17.3	1,036,765	0.03	442,716	0.35	**99.7**	23.7	0.5	2	4.21	4.6	79.3	Yes
		1.5	7.8	12	2800	17.9	1,072,722	0.03	458,070	0.35	**103.1**	23.7	0.5	2	4.35	4.7	82.1	Yes
		1.7	7.8	12	2800	15.4	922,901	0.03	394,094	0.35	**100.6**	24.2	0.5	2	4.15	4.6	80.0	Yes
		1.6	7.8	12	2800	17.6	1,054,744	0.03	450,393	0.35	**108.2**	24.0	0.5	2	4.51	4.8	86.1	Yes
		1.6	7.8	12	2800	17.1	1,024,779	0.03	437,598	0.35	**105.1**	24.0	0.5	2	4.39	4.7	83.7	Yes
		1.6	7.8	12	2800	17.1	1,024,779	0.03	437,598	0.35	**105.1**	24.0	0.5	2	4.39	4.7	83.7	Yes
		1.6	7.8	12	2800	17.3	1,036,765	0.03	442,716	0.35	**106.3**	24.0	0.5	2	4.44	4.8	84.6	Yes
		1.6	7.8	12	2800	17.4	1,042,758	0.03	445,275	0.35	**106.9**	24.0	0.5	2	4.46	4.8	85.1	Yes
		1.6	7.8	12	2800	18.2	1,090,701	0.03	465,748	0.35	**111.8**	24.0	0.5	2	4.67	4.9	89.0	Yes
		2.3	7.8	12	2800	15.6	934,886	0.03	399,212	0.35	**137.8**	26.0	0.5	2	5.31	5.3	109.7	Yes
		2	7.8	12	2800	17.6	1,054,744	0.03	450,393	0.35	**135.2**	25.1	0.5	2	5.39	5.3	107.7	Yes
		2	7.8	12	2800	17.1	1,024,779	0.03	437,598	0.35	**131.4**	25.1	0.5	2	5.24	5.2	104.6	Yes
		2	7.8	12	2800	17.6	1,054,744	0.03	450,393	0.35	**135.2**	25.1	0.5	2	5.39	5.3	107.7	Yes
		2.3	7.8	12	2800	15.6	934,886	0.03	399,212	0.35	**137.8**	26.0	0.5	2	5.31	5.3	109.7	Yes
		2	7.8	12	2800	18.4	1,102,686	0.03	470,866	0.35	**141.3**	25.1	0.5	2	5.64	5.4	112.6	Yes
		2.3	7.8	12	2800	16.5	988,822	0.03	422,244	0.35	**145.8**	26.0	0.5	2	5.62	5.4	116.1	Yes
		2.3	7.8	12	2800	16.5	988,822	0.03	422,244	0.35	**145.8**	26.0	0.5	2	5.62	5.4	116.1	Yes

Heber PUD 1310007 Inactivation

0.75 Reservoir for all CT

Filtration Giardia Removal Credit	2.5
Filtration Virus Removal Credit	2

	Value	Corresponding CT Ratio
Max Q	2800	1.19
Min Volume	394,094	4.22
Min Residual	0.5	1.19
Avg CT Ratio	4.09	
Min CT Ratio	1.19	

Date	Time	residual ppm	pH	Temp (c)	Q gpm	WSE	Reservoir Volume (gal)	Reservoir T10	**CT actual**	CT Required	Log G Innactivation Rqd	Log V Innactivation Rqd	CT (G) Ratio	Log G Innactivation Achieved	Log V Innactivation Achieved	Met Standard
		0.5	7.8	12	2800	15.7	401,771	0.35	**25.1**	21.2	0.5	2	1.19	3.1	19.9	Yes
		0.5	7.8	12	2800	18.4	470,866	0.35	**29.4**	21.2	0.5	2	1.39	3.2	23.3	Yes
		1	7.8	12	2800	16.4	419,685	0.35	**52.5**	22.4	0.5	2	2.34	3.7	41.7	Yes
		1	7.8	12	2800	15.7	401,771	0.35	**50.2**	22.4	0.5	2	2.24	3.6	39.9	Yes
		1	7.8	12	2800	17.8	455,511	0.35	**56.9**	22.4	0.5	2	2.54	3.8	45.3	Yes
		1	7.9	12	2800	18.1	463,189	0.35	**57.9**	23.2	0.5	2	2.50	3.8	46.0	Yes
		1.5	7.9	12	2800	16.3	417,126	0.35	**78.2**	24.5	0.5	2	3.19	4.1	62.2	Yes
		1.5	7.8	12	2800	17.9	458,070	0.35	**85.9**	23.7	0.5	2	3.63	4.3	68.3	Yes
		1.5	7.8	12	2800	17.8	455,511	0.35	**85.4**	23.7	0.5	2	3.61	4.3	68.0	Yes
		1.5	7.8	12	2800	16.7	427,362	0.35	**80.1**	23.7	0.5	2	3.38	4.2	63.8	Yes
		1.5	7.8	12	2800	17.4	445,275	0.35	**83.5**	23.7	0.5	2	3.52	4.3	66.4	Yes
		1.5	7.8	12	2800	18.5	473,425	0.35	**88.8**	23.7	0.5	2	3.75	4.4	70.6	Yes
		1.5	7.8	12	2800	16.5	422,244	0.35	**79.2**	23.7	0.5	2	3.34	4.2	63.0	Yes
		2	7.8	12	2800	17.8	455,511	0.35	**113.9**	25.1	0.5	2	4.54	4.8	90.7	Yes
		1.9	7.8	12	2800	17.3	442,716	0.35	**105.1**	24.8	0.5	2	4.24	4.7	83.7	Yes
		2	7.8	12	2800	17.9	458,070	0.35	**114.5**	25.1	0.5	2	4.57	4.9	91.2	Yes
		2.2	7.8	12	2800	15.4	394,094	0.35	**108.4**	25.7	0.5	2	4.22	4.7	86.3	Yes
		2	7.8	12	2800	17.6	450,393	0.35	**112.6**	25.1	0.5	2	4.49	4.8	89.6	Yes
		2	7.8	12	2800	17.1	437,598	0.35	**109.4**	25.1	0.5	2	4.36	4.8	87.1	Yes
		2	7.8	12	2800	17.1	437,598	0.35	**109.4**	25.1	0.5	2	4.36	4.8	87.1	Yes
		2	7.8	12	2800	17.3	442,716	0.35	**110.7**	25.1	0.5	2	4.41	4.8	88.1	Yes
		2	7.8	12	2800	17.4	445,275	0.35	**111.3**	25.1	0.5	2	4.44	4.8	88.6	Yes
		2	7.8	12	2800	18.2	465,748	0.35	**116.4**	25.1	0.5	2	4.64	4.9	92.7	Yes
		3	7.8	12	2800	15.6	399,212	0.35	**149.7**	28.1	0.5	2	5.32	5.4	119.2	Yes
		3	7.8	12	2800	17.6	450,393	0.35	**168.9**	28.1	0.5	2	6.00	5.8	134.5	Yes
		3	7.8	12	2800	17.1	437,598	0.35	**164.1**	28.1	0.5	2	5.83	5.7	130.7	Yes
		3	7.8	12	2800	17.6	450,393	0.35	**168.9**	28.1	0.5	2	6.00	5.8	134.5	Yes
		3	7.8	12	2800	15.6	399,212	0.35	**149.7**	28.1	0.5	2	5.32	5.4	119.2	Yes
		3	7.8	12	2800	18.4	470,866	0.35	**176.6**	28.1	0.5	2	6.28	5.9	140.7	Yes
		3	7.8	12	2800	16.5	422,244	0.35	**158.3**	28.1	0.5	2	5.63	5.6	126.1	Yes
		3	7.8	12	2800	16.5	422,244	0.35	**158.3**	28.1	0.5	2	5.63	5.6	126.1	Yes

Heber PUD 1310007 Inactivation

1.7 Reservoir for all CT

		Value	Corresponding CT Ratio
Max Q		700	4.30
Min Volume		922,901	4.22
Min Residual		2	3.36
Avg CT Ratio		4.49	
Min CT Ratio		3.22	
Filtration Giardia Removal Credit	2.5		
Filtration Virus Removal Credit	2		

Date	Time	residual ppm	pH	Temp (c)	Q gpm	WSE	Reservoir Volume (gal)	Reservoir T10	**CT actual**	CT Required	Log G Innactivation Rqd	Log V Innactivation Rqd	CT (G) Ratio	Log G Innactivation Achieved	Log V Innactivation Achieved	Met Standard
		3	7.8	12	700	15.7	940,879	0.03	**121.0**	28.1	0.5	2	4.30	4.8	96.3	Yes
		3	7.8	12	700	18.4	1,102,686	0.03	**141.8**	28.1	0.5	2	5.04	5.3	112.9	Yes
		2	7.8	12	700	16.4	982,829	0.03	**84.2**	25.1	0.5	2	3.36	4.2	67.0	Yes
		2	7.8	12	700	15.7	940,879	0.03	**80.6**	25.1	0.5	2	3.22	4.2	64.2	Yes
		2	7.8	12	700	17.8	1,066,729	0.03	**91.4**	25.1	0.5	2	3.65	4.4	72.8	Yes
		2	7.9	12	700	18.1	1,084,708	0.03	**93.0**	26.0	0.5	2	3.58	4.4	74.0	Yes
		2	7.9	12	700	16.3	976,836	0.03	**83.7**	26.0	0.5	2	3.22	4.2	66.6	Yes
		2	7.8	12	700	17.9	1,072,722	0.03	**91.9**	25.1	0.5	2	3.67	4.4	73.2	Yes
		2	7.8	12	700	17.8	1,066,729	0.03	**91.4**	25.1	0.5	2	3.65	4.4	72.8	Yes
		2	7.8	12	700	16.7	1,000,808	0.03	**85.8**	25.1	0.5	2	3.42	4.3	68.3	Yes
		2	7.8	12	700	17.4	1,042,758	0.03	**89.4**	25.1	0.5	2	3.56	4.3	71.1	Yes
		2	7.8	12	700	18.5	1,108,679	0.03	**95.0**	25.1	0.5	2	3.79	4.5	75.6	Yes
		2	7.8	12	700	16.5	988,822	0.03	**84.8**	25.1	0.5	2	3.38	4.2	67.4	Yes
		3	7.8	12	700	17.8	1,066,729	0.03	**137.2**	28.1	0.5	2	4.87	5.2	109.2	Yes
		3	7.8	12	700	17.3	1,036,765	0.03	**133.3**	28.1	0.5	2	4.74	5.1	106.1	Yes
		3	7.8	12	700	17.9	1,072,722	0.03	**137.9**	28.1	0.5	2	4.90	5.2	109.8	Yes
		3	7.8	12	700	15.4	922,901	0.03	**118.7**	28.1	0.5	2	4.22	4.8	94.5	Yes
		3	7.8	12	700	17.6	1,054,744	0.03	**135.6**	28.1	0.5	2	4.82	5.1	108.0	Yes
		3	7.8	12	700	17.1	1,024,779	0.03	**131.8**	28.1	0.5	2	4.68	5.1	104.9	Yes
		3	7.8	12	700	17.1	1,024,779	0.03	**131.8**	28.1	0.5	2	4.68	5.1	104.9	Yes
		3	7.8	12	700	17.3	1,036,765	0.03	**133.3**	28.1	0.5	2	4.74	5.1	106.1	Yes
		3	7.8	12	700	17.4	1,042,758	0.03	**134.1**	28.1	0.5	2	4.76	5.1	106.8	Yes
		3	7.8	12	700	18.2	1,090,701	0.03	**140.2**	28.1	0.5	2	4.98	5.2	111.7	Yes
		4	7.8	12	700	15.6	934,886	0.03	**160.3**	31.6	0.5	2	5.07	5.5	127.7	Yes
		4	7.8	12	700	17.6	1,054,744	0.03	**180.8**	31.6	0.5	2	5.72	5.9	144.0	Yes
		4	7.8	12	700	17.1	1,024,779	0.03	**175.7**	31.6	0.5	2	5.56	5.8	139.9	Yes
		4	7.8	12	700	17.6	1,054,744	0.03	**180.8**	31.6	0.5	2	5.72	5.9	144.0	Yes
		4	7.8	12	700	15.6	934,886	0.03	**160.3**	31.6	0.5	2	5.07	5.5	127.7	Yes
		4	7.8	12	700	18.4	1,102,686	0.03	**189.0**	31.6	0.5	2	5.98	6.0	150.6	Yes
		4	7.8	12	700	16.5	988,822	0.03	**169.5**	31.6	0.5	2	5.36	5.7	135.0	Yes
		4	7.8	12	700	16.5	988,822	0.03	**169.5**	31.6	0.5	2	5.36	5.7	135.0	Yes

Heber PUD 1310007 Inactivation

1.7 & 3.0 Reservoirs in Series

		Value	Corresponding CT Ratio
Max Q		1400	0.50
Min Volume		2,521,889	0.50
Min Residu		0.6	0.50
Avg CT Rat		7.75	
Min CT Rat		2.11	

Filtration Giardia Removal Credit	2.5
Filtration Virus Removal Credit	2

Date	Time	residual ppm	pH	Temp (c)	Q gpm	WSE	1.7 Reservoir Volume (gal)	1.7 Reservoir T10	3.0 Reservoir Volume (gal)	3.0 Reservoir T10	**CT actual**	CT Required	Log G Innactivation Rqd	Log V Innactivation Rqd	CT (G) Ratio	Log G Innactivation Achieved	Log V Innactivation Achieved	Met Standard
		0.6	7.8	12	1400	15.7	940,879	0.03	2,571,016	0.03	**45.2**	21.4	0.5	2	2.11	3.6	35.9	Yes
		0.6	7.8	12	1400	18.4	1,102,686	0.03	3,013,166	0.03	**52.9**	21.4	0.5	2	2.47	3.8	42.1	Yes
		1.2	7.8	12	1400	16.4	982,829	0.03	2,685,648	0.03	**94.3**	22.9	0.5	2	4.12	4.6	75.1	Yes
		1.5	7.8	12	1400	15.7	940,879	0.03	2,571,016	0.03	**112.9**	23.7	0.5	2	4.77	4.9	89.9	Yes
		1.5	7.8	12	1400	17.8	1,066,729	0.03	2,914,910	0.03	**128.0**	23.7	0.5	2	5.40	5.3	101.9	Yes
		1.5	7.9	12	1400	18.1	1,084,708	0.03	2,964,038	0.03	**130.1**	24.5	0.5	2	5.30	5.2	103.6	Yes
		2.2	7.9	12	1400	16.3	976,836	0.03	2,669,272	0.03	**171.9**	26.6	0.5	2	6.46	5.9	136.9	Yes
		1.8	7.8	12	1400	17.9	1,072,722	0.03	2,931,286	0.03	**154.4**	24.5	0.5	2	6.30	5.7	123.0	Yes
		1.8	7.8	12	1400	17.8	1,066,729	0.03	2,914,910	0.03	**153.6**	24.5	0.5	2	6.27	5.7	122.3	Yes
		2	7.8	12	1400	16.7	1,000,808	0.03	2,734,775	0.03	**160.1**	25.1	0.5	2	6.38	5.8	127.5	Yes
		2	7.8	12	1400	17.4	1,042,758	0.03	2,849,407	0.03	**166.8**	25.1	0.5	2	6.65	5.9	132.9	Yes
		2	7.8	12	1400	18.5	1,108,679	0.03	3,029,542	0.03	**177.4**	25.1	0.5	2	7.07	6.2	141.3	Yes
		2	7.8	12	1400	16.5	988,822	0.03	2,702,024	0.03	**158.2**	25.1	0.5	2	6.31	5.8	126.0	Yes
		3	7.8	12	1400	17.8	1,066,729	0.03	2,914,910	0.03	**256.0**	28.1	0.5	2	9.10	7.5	204.0	Yes
		3	7.8	12	1400	17.3	1,036,765	0.03	2,833,031	0.03	**248.8**	28.1	0.5	2	8.84	7.3	198.2	Yes
		3	7.8	12	1400	17.9	1,072,722	0.03	2,931,286	0.03	**257.4**	28.1	0.5	2	9.15	7.5	205.1	Yes
		3.2	7.8	12	1400	15.4	922,901	0.03	2,521,889	0.03	**236.2**	28.8	0.5	2	8.20	7.0	188.2	Yes
		3	7.8	12	1400	17.6	1,054,744	0.03	2,882,158	0.03	**253.1**	28.1	0.5	2	8.99	7.4	201.7	Yes
		3	7.8	12	1400	17.1	1,024,779	0.03	2,800,279	0.03	**245.9**	28.1	0.5	2	8.74	7.3	195.9	Yes
		3	7.8	12	1400	17.1	1,024,779	0.03	2,800,279	0.03	**245.9**	28.1	0.5	2	8.74	7.3	195.9	Yes
		3	7.8	12	1400	17.3	1,036,765	0.03	2,833,031	0.03	**248.8**	28.1	0.5	2	8.84	7.3	198.2	Yes
		3	7.8	12	1400	17.4	1,042,758	0.03	2,849,407	0.03	**250.2**	28.1	0.5	2	8.89	7.4	199.4	Yes
		3	7.8	12	1400	18.2	1,090,701	0.03	2,980,414	0.03	**261.7**	28.1	0.5	2	9.30	7.6	208.5	Yes
		4	7.8	12	1400	15.6	934,886	0.03	2,554,640	0.03	**299.1**	31.6	0.5	2	9.46	8.1	238.4	Yes
		4	7.8	12	1400	17.6	1,054,744	0.03	2,882,158	0.03	**337.4**	31.6	0.5	2	10.68	8.8	268.9	Yes
		4	7.8	12	1400	17.1	1,024,779	0.03	2,800,279	0.03	**327.9**	31.6	0.5	2	10.37	8.6	261.3	Yes
		4	7.8	12	1400	17.6	1,054,744	0.03	2,882,158	0.03	**337.4**	31.6	0.5	2	10.68	8.8	268.9	Yes
		4	7.8	12	1400	15.6	934,886	0.03	2,554,640	0.03	**299.1**	31.6	0.5	2	9.46	8.1	238.4	Yes
		4	7.8	12	1400	18.4	1,102,686	0.03	3,013,166	0.03	**352.8**	31.6	0.5	2	11.16	9.1	281.2	Yes
		4	7.8	12	1400	16.5	988,822	0.03	2,702,024	0.03	**316.4**	31.6	0.5	2	10.01	8.4	252.1	Yes
		4	7.8	12	1400	16.5	988,822	0.03	2,702,024	0.03	**316.4**	31.6	0.5	2	10.01	8.4	252.1	Yes

CT Required

For T < 12.5°C $CT_{required}=(0.353\times I)\times(12.006+e^{(2.46-(0.073\times T)+(0.125\times C)+(0.389\times pH))})$

For 12.5°C ≤ T < 25°C $CT_{required}=(0.361\times I)\times(-2.261+e^{(2.46-(0.065\times T)+(0.111\times C)+(0.361\times pH))})$

For T ≥ 25°C $CT_{required}=(0.361\times I)\times(-2.261+e^{(2.46-(0.065\times 25)+(0.111\times C)+(0.361\times pH))})$

Where

I = Log Inactivation Required

e = 2.7183, the base of the natural logarithm

T = temperature in °C

C = chlorine residual concentration (mg/L)

CT Actual

$CT_{segment}=(V_{segment}/Q_{segment})\times(bf_{segment})\times(C)$

Where

$V_{segment}$ = Volume of CT segment

$Q_{segment}$ = Flow through the CT segment

$bf_{segment}$ = Baffling factor of the CT segment

C = chlorine residual concentration

$CT_{actual}=\sum CT_{segments}$

Log Giardia Inactivation

For T < 25°C $I=CT_{actual}/(0.2828\times pH^{2.69}\times C^{0.15}\times 0.933^{(T-5)})$

For T ≥ 25°C

$I=CT_{actual}/(0.2828\times pH^{2.69}\times C^{0.15}\times 0.933^{(25-5)})$

Log Giardia Inactivation

For pH < 10°C $I=((CT_{actual}*e^{(0.071*T)}-0.42)/2.94)$

For pH ≥ 10°C $I=((CT_{actual}*e^{(0.071*T)}-0.21)/22.37)$

Tank 1 CT	Area = $(\pi \times D^2)/4 = (\pi \times (66\ ft)^2)/4 = 3{,}421.194\ ft^2$	3421.1944
	Volume per foot of water = $3{,}421.194\ ft^2 \times (7.48\ gal/1\ ft^3) = 25{,}590.53$ gal/ft	25590.53411
	$V_{Tank\ 1}$ = WSE × 25,590.53 gal/ft	
	$CT_{Tank\ 1}=(V_{Tank\ 1}/Q_{Peak})\times(bf_{Tank\ 1})\times(C)$	
	$CT_{Tank\ 1}=($ (WSE × 25,590.53 gal/ft) / Q_{peak}) × 0.35 × C	
Tank 2 CT	Area = $(\pi \times D^2)/4 = (\pi \times (101\ ft)^2)/4 = 8{,}011.847\ ft^2$	8011.846665
	Volume per foot of water = $8{,}011.847\ ft^2 \times (7.48\ gal/1\ ft^3) = 59{,}928.61$ gal/ft	59928.61305
	$V_{Tank\ 2}$ = WSE × 59,928.61 gal/ft	
	$CT_{Tank\ 2}=(V_{Tank\ 2}/Q_{Peak})\times(bf_{Tank\ 2})\times(C)$	
	$CT_{Tank\ 2}=($ (WSE × 59,928.61 gal/ft) / Q_{peak}) × 0.03 × C	
Tank 3 CT	Area = $(\pi \times D^2)/4 = (\pi \times (167\ ft)^2)/4 = 21{,}903.969\ ft^2$	21903.96938
	Volume per foot of water = $8{,}011.847\ ft^2 \times (7.48\ gal/1\ ft^3) = 163{,}841.691$ gal/ft	163841.691
	$V_{Tank\ 3}$ = WSE × 163,841 gal/ft	
	$CT_{Tank\ 3}=(V_{Tank\ 3}/Q_{Peak})\times(bf_{Tank\ 3})\times(C)$	
	$CT_{Tank\ 3}=($ (WSE × 163,841.691 gal/ft) / Q_{peak}) × 0.03 × C	
Tank 2 + Tank 3 CT	$CT_{Tank\ 2}$ + $CT_{Tank\ 3}=($ (WSE × 59,928.61 gal/ft) / Q_{peak}) × 0.03 × C + ((WSE × 163,841.691 g	223770.304
	$CT_{Tank\ 2}$ + $CT_{Tank\ 3}=($ (WSE × (163,841.691 gal/ft + 59,928.61 gal/ft) / Q_{peak}) × 0.03 × C	
	$CT_{Tank\ 2}$ + $CT_{Tank\ 3}=($ (WSE × (223,769.61 gal/ft) / Q_{peak}) × 0.03 × C	

Appendix F
HPUD Bacteriological Sample Siting Plan

HEBER PUD BACTERIOLOGICAL SAMPLE SITING PLAN

System Information:

Name of Facility: Heber Public Utility District Water Treatment Plant System Number: 1310007
Street Address: 1085 Ingram Avenue Ph. No.: (760) 482-2440
Mailing Address: Heber, Ca 92249 P.O. Box H Fax: (760) 353-9951
Service Connections: 1618 Population Served: 6326 Sampling Frequency: 7 samples per month

Sample Collection:

All water samples will be collected by: Certified Operator

Name of Laboratory: Imperial County Public Health Laboratory

Mailing Address: 935 Broadway, El Centro, Ca 92243

State Lab Code: 1773 Phone #: (760) 482-4437 Fax #: (760) 353-9736

The Laboratory was sent a copy of this plan on: 6/26/13

Raw Water Sampling:

Is water continuously treated with chlorine? ☐ YES ☐ NO

Systems which provide continuous chlorine treatment are required to take samples of water prior to the addition of chlorine (raw water samples) on a quarterly basis. Please list below the sources which are continuously treated and the months when raw water samples will be taken:

1._____ Months sampled:_____

2._____ Months sampled:_____

Map of System:

A map of the distribution system showing the source (well, spring, etc.), storage tanks, treatment facilities, distribution piping, routine sample locations, and follow-up (repeat) sample locations is required. Have you enclosed this map? ☐ YES ☐ NO

Report Prepared by: Francisco Rodriguez

Signature and Title: Chief Operator **Date:** 6/27/13

Note: Heber Public Utility District (HPUD) has a total of 14 Distribution Bacteriological Sampling Sites and one Raw Water Site. HPUD will be alternating sites 1 thru 7 and sites 8 thru 14 every other month, sampling only 7 Distribution sites and 1 Raw water site per month.

Date Last Revised: 10/15/15

BACTERIOLOGICAL SAMPLE SITING PLAN (cont.)

Sample Locations:

The following describes each routine sample location, what weeks the location will be sampled, and where follow-up (repeat) samples will be taken in the event of a "positive" routine sample:

Routine Sample Location:

1. 23 West Sparrow
(location name or address)

Water samples will be collected from this location during the weeks of (circle):

1st Week:	Mon.	Tue.	Wed.	Thu.	Fri.
2nd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
3rd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
4th Week:	Mon.	Tue.	Wed.	Thu.	Fri.

Description: Hose bib
(hose bib, sink faucet, etc.)

Follow-up (repeat) Sample Location:

1. 23 West Sparrow
(routine sample location name or address)
2. 1158 Maple Ave
(location name or address up-stream)
3. 25 West Sparrow
(location name or address down-stream)
4. Distribution System
(source)

Routine Sample Location: (if required)

2. Heber Elementary School
(location name or address)

Water samples will be collected from this location during the weeks of (circle):

1st Week:	Mon.	Tue.	Wed.	Thu.	Fri.
2nd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
3rd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
4th Week:	Mon.	Tue.	Wed.	Thu.	Fri.

Description: Hose bib
(hose bib, sink faucet, etc.)

Follow-up (repeat) Sample Location:

1. Heber Elementary School
(routine sample location name or address)
2. 76 11th Street
(location name or address up-stream)
3. 64 11th Street
(location name or address down-stream)
4. Distribution System
(source)

Routine Sample Location: (if required)

3. 19 Hawk Street
(location name or address)

Water samples will be collected from this location during the weeks of (circle):

1st Week:	Mon.	Tue.	Wed.	Thu.	Fri.
2nd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
3rd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
4th Week:	Mon.	Tue.	Wed.	Thu.	Fri.

Description: Hose bib
(hose bib, sink faucet, etc.)

Follow-up (repeat) Sample Location:

1. 19 Hawk Street
(routine sample location name or address)
2. 20 Pheasant Court
(location name or address up-stream)
3. 17 Hawk Street
(location name or address down-stream)
4. Distribution System
(source)

BACTERIOLOGICAL SAMPLE SITING PLAN (cont.)

Sample Locations:

The following describes each routine sample location, what weeks the location will be sampled, and where follow-up (repeat) samples will be taken in the event of a "positive" routine sample:

Routine Sample Location:

4. 189 Gill Road
(location name or address)

Water samples will be collected from this location during the weeks of (circle):

1st Week:	Mon.	Tue.	Wed.	Thu.	Fri.
2nd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
3rd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
4th Week:	Mon.	Tue.	Wed.	Thu.	Fri.

Description: Hose bib
(hose bib, sink faucet, etc.)

Follow-up (repeat) Sample Location:

1. 189 Gill Road
(routine sample location name or address)
2. 1078 Pitzer Road
(location name or address up-stream)
3. 187 Gill Road
(location name or address down-stream)
4. Distribution System
(source)

Routine Sample Location: (if required)

5. Kennedy's Market
(location name or address)

Water samples will be collected from this location during the weeks of (circle):

1st Week:	Mon.	Tue.	Wed.	Thu.	Fri.
2nd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
3rd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
4th Week:	Mon.	Tue.	Wed.	Thu.	Fri.

Description: Sink faucet
(hose bib, sink faucet, etc.)

Follow-up (repeat) Sample Location:

1. Kennedy's Market
(routine sample location name or address)
2. 1090 Parkyn's Ave
(location name or address up-stream)
3. 79 Main Street
(location name or address down-stream)
4. Distribution System
(source)

Routine Sample Location: (if required)

6. Ormat Geothermal
(location name or address)

Water samples will be collected from this location during the weeks of (circle):

1st Week:	Mon.	Tue.	Wed.	Thu.	Fri.
2nd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
3rd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
4th Week:	Mon.	Tue.	Wed.	Thu.	Fri.

Description: Hose bib
(hose bib, sink faucet, etc.)

Follow-up (repeat) Sample Location:

1. Ormat Geothermal
(routine sample location name or address)
2. 20 Fawcett Road
(location name or address up-stream)
3. 839 Dogwood Road
(location name or address down-stream)
4. Distribution System
(source)

BACTERIOLOGICAL SAMPLE SITING PLAN (cont.)

Sample Locations:

The following describes each routine sample location, what weeks the location will be sampled, and where follow-up (repeat) samples will be taken in the event of a "positive" routine sample:

Routine Sample Location:

7. Gibson & Schaeffer
(location name or address)

Water samples will be collected from this location during the weeks of (circle):

1st Week:	Mon.	Tue.	Wed.	Thu.	Fri.
2nd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
3rd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
4th Week:	Mon.	Tue.	Wed.	Thu.	Fri.

Description: Hose bib
(hose bib, sink faucet, etc.)

Follow-up (repeat) Sample Location:

1. Gibson & Schaeffer
(routine sample location name or address)
2. 1118 Rockwood Road
(location name or address up-stream)
3. 1184 Rockwood Road
(location name or address down-stream)
4. Distribuiton System
(source)

Routine Sample Location: (if required)

8. Heber Jr. High School
(location name or address)

Water samples will be collected from this location during the weeks of (circle):

1st Week:	Mon.	Tue.	Wed.	Thu.	Fri.
2nd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
3rd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
4th Week:	Mon.	Tue.	Wed.	Thu.	Fri.

Description: Hose bib
(hose bib, sink faucet, etc.)

Follow-up (repeat) Sample Location:

1. Heber Jr. High School
(routine sample location name or address)
2. 1042 Heber Avenue
(location name or address up-stream)
3. 51 14th Street
(location name or address down-stream)
4. Distribution System
(source)

Routine Sample Location: (if required)

9. Heber Village Apartments
(location name or address)

Water samples will be collected from this location during the weeks of (circle):

1st Week:	Mon.	Tue.	Wed.	Thu.	Fri.
2nd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
3rd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
4th Week:	Mon.	Tue.	Wed.	Thu.	Fri.

Description: Hose bib
(hose bib, sink faucet, etc.)

Follow-up (repeat) Sample Location:

1. Heber Village Apartments
(routine sample location name or address)
2. 1136 Heber Avenue
(location name or address up-stream)
3. 49 Niki Street
(location name or address down-stream)
4. Distribution System
(source)

BACTERIOLOGICAL SAMPLE SITING PLAN (cont.)

Sample Locations:

The following describes each routine sample location, what weeks the location will be sampled, and where follow-up (repeat) samples will be taken in the event of a "positive" routine sample:

Routine Sample Location:

10. 112 Main Street
(location name or address)

Water samples will be collected from this location during the weeks of (circle):

1st Week:	Mon.	Tue.	Wed.	Thu.	Fri.
2nd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
3rd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
4th Week:	Mon.	Tue.	Wed.	Thu.	Fri.

Description: Hose bib
(hose bib, sink faucet, etc.)

Follow-up (repeat) Sample Location:

1. 112 Main Street
(routine sample location name or address)
2. 1108 Rockwood Road
(location name or address up-stream)
3. 118 Main Street
(location name or address down-stream)
4. Distribution System
(source)

Routine Sample Location: **(if required)**

11. 55 Black Horse Drive
(location name or address)

Water samples will be collected from this location during the weeks of (circle):

1st Week:	Mon.	Tue.	Wed.	Thu.	Fri.
2nd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
3rd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
4th Week:	Mon.	Tue.	Wed.	Thu.	Fri.

Description: Hose bib
(hose bib, sink faucet, etc.)

Follow-up (repeat) Sample Location:

1. 55 Black Horse Drive
(routine sample location name or address)
2. 53 Black Horse Drive
(location name or address up-stream)
3. 57 Black Horse Drive
(location name or address down-stream)
4. Distribution System
(source)

Routine Sample Location: **(if required)**

12. 71 Mc Cabe Road
(location name or address)

Water samples will be collected from this location during the weeks of (circle):

1st Week:	Mon.	Tue.	Wed.	Thu.	Fri.
2nd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
3rd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
4th Week:	Mon.	Tue.	Wed.	Thu.	Fri.

Description: Hose bib
(hose bib, sink faucet, etc.)

Follow-up (repeat) Sample Location:

1. 71 Mc Cabe Road
(routine sample location name or address)
2. 77 Mc Cabe Road
(location name or address up-stream)
3. 65 Mc Cabe Road
(location name or address down-stream)
4. Distribution System
(source)

BACTERIOLOGICAL SAMPLE SITING PLAN (cont.)

Sample Locations:

The following describes each routine sample location, what weeks the location will be sampled, and where follow-up (repeat) samples will be taken in the event of a "positive" routine sample:

Routine Sample Location:

13. 57 West Mallard Street
(location name or address)

Water samples will be collected from this location during the weeks of (circle):

1st Week:	Mon.	Tue.	Wed.	Thu.	Fri.
2nd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
3rd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
4th Week:	Mon.	Tue.	Wed.	Thu.	Fri.

Description: Hose bib
(hose bib, sink faucet, etc.)

Follow-up (repeat) Sample Location:

1. 57 West Mallard Street
(routine sample location name or address)
2. 55 West Mallard Street
(location name or address up-stream)
3. 59 West Mallard Street
(location name or address down-stream)
4. Distribution System
(source)

Routine Sample Location: (if required)

14. 1156 Harmony Way
(location name or address)

Water samples will be collected from this location during the weeks of (circle):

1st Week:	Mon.	Tue.	Wed.	Thu.	Fri.
2nd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
3rd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
4th Week:	Mon.	Tue.	Wed.	Thu.	Fri.

Description: Hose bib
(hose bib, sink faucet, etc.)

Follow-up (repeat) Sample Location:

1. 1156 Harmony Way
(routine sample location name or address)
2. 1154 Harmony Way
(location name or address up-stream)
3. 1158 Harmony Way
(location name or address down-stream)
4. Distribution System
(source)

Routine Sample Location: (if required)

15. Raw Water Pond Inlet
(location name or address)

Water samples will be collected from this location during the weeks of (circle):

1st Week:	Mon.	Tue.	Wed.	Thu.	Fri.
2nd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
3rd Week:	Mon.	Tue.	Wed.	Thu.	Fri.
4th Week:	Mon.	Tue.	Wed.	Thu.	Fri.

Description: Raw Water Pond Inlet
(hose bib, sink faucet, etc.)

Follow-up (repeat) Sample Location:

1. Raw Water Pond Inlet
(routine sample location name or address)
2. N/A
(location name or address up-stream)
3. N/A
(location name or address down-stream)
4. Raw Water
(source)

Appendix G
HPUD Valve Exercising Plan

WATER DISTRIBUTION SYSTEM
VALVE EXERCISING PLAN
FOR
HEBER PUBLIC UTILITY DISTRICT

1.1. Goals

In 2012, a water distribution system map was created for HPUD, including the location of all known valves. There are a total of 697 distribution valves. The goal of this Valve Exercising Plan is to exercise 349 valves annually, 50 percent of the total.

1.2. Valve Exercising Procedure

The Valve Exercising Procedure is as follows:

1. Locate valve.
2. Notify affected property owners of water pressure loss (as required).
3. Record the condition of the valve riser and concrete collar.
4. Check the area for potential hazards and implement needed controls.
5. Establish traffic control as necessary.
6. Pull cover.
7. Clean riser as necessary to inspect valve.
8. Exercise valve:
    a. Verify the direction for turning the valve to the ***Closed*** and ***Open*** positions.
    b. Assume valve is in the full ***Open*** position.
    c. Begin ***Closing Valve Slowly***, increasing torque strength as necessary to achieve movement.
    d. Count the number of turns necessary to achieve the full ***Closed Position***.
    e. Begin ***Opening Valve Slowly***, increasing torque strength as necessary to achieve movement.
    f. Count the number of turns necessary to achieve the full ***Open Position***.
    g. Repeat the Close/Open cycle a minimum of three (3) times, or until the number of

turns necessary to open or close the valve does not change.

h. Record the number of Turns and Cycle.

9. Record the valve dimensions, condition of the valve, and other pertinent information on the Valve Exercise and Maintenance Form.
10. Replace cover.
11. Prior to departing, evaluate the location for hazards to people, property, or environment, record findings.
12. Mitigate any hazards discovered and initiate the actions necessary to eliminate those hazards.

1.3. Critical Valve Identification and Valve Maintenance

Critical valves in the distribution system shall be identified for exercising on a regular basis. Potential water quality and isolation concerns shall be recognized. Typical immediate maintenance items include replacing covers, installing valve inserts and repairing asphalt. Scheduled maintenance items like replacing valve nuts, replacing valve packing, repairing valve box or replacing valves will be scheduled for the next appropriate capital improvement project.

1.4. Valve Exercise and Maintenance Tracking

The results of the valve exercising program are to be tracked annually via the recorded Valve Exercise and Maintenance Forms and goals set to reduce the percent of inoperable valves. If the goals are not attained, HPUD will work to address potential issues with scheduling, necessary valve maintenance and repair, operating procedure, etc.

VALVE EXERCISE AND MAINTENANCE FORM

Operator:

Date	Valve No.	Location	Size	# of Turns	Cycles	Direction of Closing	Remarks/Maintenance/Deficiencies

SHEET OF SHEETS

Appendix H
HPUD Flushing Plan

WATER DISTRIBUTION SYSTEM
FLUSHING PROGRAM
FOR
HEBER PUBLIC UTILITY DISTRICT

I. Goal

The purpose of the flushing program is to provide a safe high quality water supply to the customers of the HPUD. Sediment can enter and accumulate in a water distribution system. Disinfectant residuals can deplete due to low usage and disinfectants may combine with materials in the system to form undesirable byproducts. Each of these situations may be corrected by an adequate flushing program.

II. Plan of Action

1. A systematic flushing of the entire distribution system will be conducted annually or more often if required to maintain water quality. Individual sites will be flushed as needed. The flushing program will ensure that:
    a. Dead end and low usage mains are flushed periodically
    b. Drinking water standards are met
    c. Sediment and air are removed
    d. The required free chlorine residual is maintained

2. In some instances specific areas of the distribution system may need to be flushed more frequently to correct problems. These problems may include but are not limited to the following:
    a. Air in the lines
    b. Sediment in the lines
    c. Maintaining the free chlorine residual
    d. Taste, odor or color problems

3. Flushing will be performed by water system personnel and local firemen.

4. Following line repairs, main lines will be flushed to remove air and sediment from the repaired section of line. If disinfection is necessary to comply with the district's Leak Repair SOP, the line will be flushed to remove the high chlorine content. During flushing, water containing high chlorine concentrations will be flushed on relatively flat ground so as not to contaminate a receiving stream or body of water.

5. Flushing should continue until the following conditions are met:
    a. The free chlorine residual reaches a minimum of 0.2 mg/l (ppm).
    b. No air is detected
    c. Water is clear with no visible sediment
    d. No objectionable taste or odor remains

6. Flushing will be performed so as to ensure a minimum velocity of 2 fps to adequately scour the interior of the main.

IV. Record Keeping

Records of each flushing will be maintained by HPUD. These records will include the following:

a. Date
b. Time
c. Location
d. Persons responsible
e. Length of flushing
f. The free chlorine residual before and after flushing dead end mains
g. Other information deemed as useful to HPUD

HEBER PUBLIC UTILITY DISTRICT – WATER DISTRIBUTION SYSTEM
FLUSHING REPORT

HYD RANT NO.					
DATE					
LOCATION					
START TIME					
STOP TIME					
TOTAL, MIN.					
METER READ BEFORE, GAL.					
METER READ AFTER, GAL.					
STATIC PRESSURE, P.S.I.					
CL2 RESIDUAL BEFORE, PPM					
Cl_2 RESIDUAL AFTER, PPM					
WATER APPEARANCE/ COMMENTS					
INITIALS					

Appendix I
Sample Surface Water Monthly Monitoring Report

MONTHLY SUMMARY OF MONITORING
FOR SURFACE WATER TREATMENT REGULATIONS

SYSTEM NAME: HEBER PUBLIC UTILITY DISTRICT **SYSTEM NO:1310007-001**

TREATMENT PLANT NAME: HEBER WATER PLANT May MONTH: YEAR: 2018

TREATMENT WATER TURBIDITIES EVERY FOUR HOURS (NTU)

DATE	PEAK RAW WATER TURBIDITY	PEAK SETTLED WATER TURBIDITY	MIDNIGHT TO 0400	0400 TO 0800	0800 TO NOON	NOON TO 1600	1600 TO 2000	2000 TO MIDNIGHT	AVERAGE	MINIMUM CT RATIO
1	4.7	1.00	.05	.06	.04	.07	.07	.05	.06	20.89
2	4.3	.66	.03	.04	.08	.07	.08	.04	.06	6.4
3	6.4	.33	.05	.04	.07	.07	.04	.04	.05	6.09
4	5.1	.79	.07	.06	.06	.05	.03	.03	.05	6.47
5	6.2	.59	.06	.05	.05	.08	.07	.07	.06	6.74
6	5.3	.82	.05	.04	.05	.06	.06	.09	.06	5.87
7	4.6	.30	.06	.06	.07	.07	.04	.07	.06	4.9
8	4.6	.64	.07	.09	.08	.05	.06	.04	.07	5.13
9	5.4	.71	.11	.06	.07	.06	.06	.04	.07	4.69
10	8.4	.75	.06	.10	.07	.05	.06	.04	.06	4.09
11	7.6	.73	.03	.06	.08	.04	.04	.04	.05	4.69
12	7.9	.87	.06	.05	.05	.05	.04	.06	.05	6.55
13	6.35	.46	.05	.02	.09	.06	.05	.03	.05	5.69
14	5.1	.66	.04	.05	.08	.06	.06	.03	.05	5.88
15	4.8	.54	.06	.06	.06	.06	.04	.05	.06	5.75
16	7.4	.52	.05	.04	.04	.04	.04	.07	.05	6.86
17	9.5	.65	.07	.06	.04	.04	.04	.04	.05	4.97
18	7.5	.50	.07	.05	.04	.07	.05	.05	.06	5.46
19	8.5	.91	.07	.07	.04	.04	.04	.03	.05	6.87
20	7.2	.35	.06	.05	.07	.06	.04	.06	.06	5.57
21	5.2	.70	.05	.05	.05	.07	.07	.05	.06	4.4
22	7.5	.66	.05	.04	.07	.07	.06	.08	.06	4.17
23	5.1	.26	.05	.05	.04	.06	.06	.04	.05	4.12
24	7	.81	.07	.05	.05	.05	.09	.07	.06	4.57
25	6.37	.38	.07	.07	.06	.07	.09	.07	.07	5.59
26	18.5	.54	.07	.04	.04	.08	.06	.04	.06	7.18
27	7.87	.53	.03	.04	.05	.06	.05	.07	.05	6.99
28	3.37	.41	.09	.06	.07	.06	.05	.05	.06	5.52
29	5.25	.88	.08	.08	.05	.05	.05	.04	.06	5.63
30	5.63	.64	.05	.05	.04	.05	.06	.07	.05	4.96
31	7.1	.52	.04	.05	.05	.03	.04	.04	.04	5.84
AVE	6.64	0.62							0.06	6.08

If a continuous monitoring turbidimeter is used, determine the discrete turbidy value for the same times during each four hour period.

Total No. of Samples: 186 No. of Readings < 0.25 NTU: 186

% Readings < 0.25 NTU = No. Readings < 0.25 NTU / Total No. of Samples X 100 = 100%

MEETS STANDARD (I.e. MORE THAN 95% OF READINGS ARE ≤ 0.25 NTU) (Y / N)? Y.

AVERAGE PERCENT REDUCTION DURING THE MONTH = (AVERAGE RAW NTU - AVERAGE EFFLUENT NTU) / AVERAGE RAW NTU X 100 = 99 %

MEETS STANDARD (I.e. REDUCTION IS GREATER THAN 80%) (Y / N) Y.

95th PERCENTILE VALUE (95% OF ALL TURBIDITY READINGS ARE LESS THAN THIS VALUE)

OF ALL TURBIDITY READINGS: .08 NTU'S

Incidents of turbidity greater than 1.0 NTU

Date of Incident					
Value		N/A			
Duration					

Total number of incidents where turbidity is > 1.0 NTU: None > 5.0 NTU: None

Meet Standards (i.e. NTU is not > 1.0 for more than eight consecutive hours) (Y/N): Yes

After placing the filter back into service after any interruption (e.g. backwashing), did the filter effluent comply with the following criteria:

a: <= 2.0 NTU after all events (Y/N)? Yes

b: <= 1.0 NTU after 90% events (Y/N)? Yes

c: <= 0.5 NTU after four hours (Y/N)? Yes

Indicate the date that the turbidimeters that are used for regulatory monitoring purposes were calibrated:

Date	Which Turbidimeter	Which standards used, primary or secondary	Date	Which Turbidimeter	Which standards used, primary or secondary
5/9/2018	1720 E	Primary			
5/9/2018	Hach 2100N	Secondary			

DISINFECTION PROCESS DATA

Disinfectant residual type (check one): free chlorine X

combined chlorine

other

Incidents of chlorine residuals less than 0.2 ppm at the plant effluent:

Date of Incident					
Duration					
Date Dept. Notified		N/A			

Total number of incidents where residual is < 0.2 ppm: None

Meet Standard (i.e. is not less than 0.2 ppm for more than four hours (Y/N)? Yes

Number of distribution system residual samples collected:	7
Number of distribution system samples for HPC only:	0
Total number of residual and/or HPC samples collected:	7
Number of samples with no detectable residual and HPC is not measured:	0
Number of samples with no residual and HPC > 500 CFU/mL:	0
Number of samples for HPC only and HPC > 500 CFU/mL:	0
Total number of samples with no residual and/or HPC > 500 CFU/mL:	0

Compute V:

Where V = [1 - (Total No. of samples with no residual and/or HPC > 500)/(Total No. of residual and/or HPC samples collected)] x 100

V = 100.0%

Meets Standard (i.e. V >= 95%) (Y/N) ? Yes

SUMMARY OF WATER QUALITY COMPLAINTS

General Complaints:

Type of Complaint	Number	Corrective Actions Taken
Taste/Odor		None
Color		None
Turbidity		None
Suspended Solids		None
Other		None

Reports of Gastrointestinal Illness (attach additional sheets if necessary):

Person Reporting	Date	Corrective Actions Taken
		N/A

Attach an explanation of any failure of the performance standards or operating criteria and corrective action taken or planned.

Signature: _____

Date: 6/1/2018

Heber PUD 1310007 Inactivation

0.75 & 1.7 Reservoirs in Series

May-2018

Filtration Giardia Removal Credit 2.5
Filtration Virus Removal Credit 2

	Value	Corresponding CT Ratio
Max Q	1677	1.50
Min Volume	458,948	1.50
Min Residual	1.05	1.50
Avg CT Ratio	6.09	
Min CT Ratio	4.09	

Date	Time	Raw E.Coli (MPN)	residual ppm	pH	Temp (c)	Q gpm	WSE	1.7 Reservoir Volume (gal)	1.7 Reservoir T10	0.75 Reservoir Volume (gal)	0.75 Reservoir T10	CT actual	CT Required	Log G Inactivation Rqd	Log V Inactivation Rqd	CT (G) Ratio	Log G Inactivation Achieved	Log V Inactivation Achieved	Met Standard
5/1/2018	0800	12.1	1.49	8.36	23	1130	21.2	1,244,822	0.03	525,930	0.35	292.0	14.0	0.5	2	20.89	13.7	508.2	Yes
5/2/2018	0800	47.9	1.52	8.33	22	1216	21.8	1,280,052	0.03	540,814	0.35	284.6	44.5	1.5	3	6.40	12.8	461.5	Yes
5/3/2018	0800	47.9	1.56	8.5	22	1264	22.5	1,321,155	0.03	558,180	0.35	290.0	47.6	1.5	3	6.09	12.4	470.3	Yes
5/4/2018	0800	47.9	1.54	8.36	22	1241	22.5	1,321,155	0.03	558,180	0.35	291.6	45.1	1.5	3	6.47	12.9	472.8	Yes
5/5/2018	0800	47.9	1.43	8.31	22	1140	22.5	1,321,155	0.03	558,180	0.35	294.8	43.7	1.5	3	6.74	13.3	478.0	Yes
5/6/2018	0800	47.9	1.38	8.37	23	1335	22.6	1,327,027	0.03	560,661	0.35	244.0	41.6	1.5	3	5.87	11.9	424.7	Yes
5/7/2018	0800	47.9	1.3	8.38	24	1576	22	1,291,796	0.03	545,776	0.35	189.5	38.7	1.5	3	4.90	10.4	354.2	Yes
5/8/2018	0800	47.9	1.29	8.4	24.5	1514	21.7	1,274,181	0.03	538,334	0.35	193.1	37.6	1.5	3	5.13	10.8	373.9	Yes
5/9/2018	0800	47.9	1.2	8.48	25	1543	21.4	1,256,565	0.03	530,891	0.35	173.8	37.1	1.5	3	4.69	10.1	348.7	Yes
5/10/2018	0800	47.9	1.08	8.4	26	1645	21.2	1,244,822	0.03	525,930	0.35	145.4	35.5	1.5	3	4.09	9.1	313.1	Yes
5/11/2018	0800	47.9	1.05	8.4	27	1407	21.3	1,250,693	0.03	528,410	0.35	166.0	35.4	1.5	3	4.69	10.1	383.9	Yes
5/12/2018	0800	47.9	1.19	8.4	26	1124	21.3	1,250,693	0.03	528,410	0.35	235.5	36.0	1.5	3	6.55	13.1	507.3	Yes
5/13/2018	0800	47.9	1.32	8.47	25	1390	21.5	1,262,437	0.03	533,372	0.35	213.2	37.5	1.5	3	5.69	11.7	427.8	Yes
5/14/2018	0800	47.9	1.39	8.4	26	1475	22	1,291,796	0.03	545,776	0.35	216.5	36.8	1.5	3	5.88	12.0	466.4	Yes
5/15/2018	0800	47.9	1.49	8.4	26	1577	21.7	1,274,181	0.03	538,334	0.35	214.1	37.2	1.5	3	5.75	11.8	461.2	Yes
5/16/2018	0800	47.9	1.54	8.4	25	1346	21.5	1,262,437	0.03	533,372	0.35	256.9	37.4	1.5	3	6.86	13.6	515.5	Yes
5/17/2018	0800	47.9	1.46	8.35	26	1633	19.4	1,139,129	0.03	481,275	0.35	181.2	36.4	1.5	3	4.97	10.5	390.2	Yes
5/18/2018	0800	47.9	1.42	8.38	26	1416	19.1	1,121,514	0.03	473,833	0.35	200.1	36.7	1.5	3	5.46	11.3	430.9	Yes
5/19/2018	0800	47.9	1.56	8.4	25	1175	18.6	1,092,155	0.03	461,429	0.35	257.9	37.5	1.5	3	6.87	13.6	517.5	Yes
5/20/2018	0800	47.9	1.58	8.5	26	1404	18.5	1,086,283	0.03	458,948	0.35	217.4	39.0	1.5	3	5.57	11.6	468.4	Yes
5/21/2018	0800	47.9	1.24	8.4	25	1506	18.5	1,086,283	0.03	458,948	0.35	159.1	36.2	1.5	3	4.40	9.6	319.1	Yes
5/22/2018	0800	47.9	1.32	8.4	26	1677	18.5	1,086,283	0.03	458,948	0.35	152.1	36.5	1.5	3	4.17	9.2	327.5	Yes
5/23/2018	0800	47.9	1.12	8.4	30	1544	19.4	1,139,129	0.03	481,275	0.35	147.0	35.7	1.5	3	4.12	9.2	420.5	Yes
5/24/2018	0800	47.9	1.29	8.4	27	1540	19	1,115,642	0.03	471,352	0.35	166.2	36.4	1.5	3	4.57	9.9	384.4	Yes
5/25/2018	0800	47.9	1.37	8.4	26	1339	19.2	1,127,386	0.03	476,314	0.35	205.2	36.7	1.5	3	5.59	11.5	441.9	Yes
5/26/2018	0800	47.9	1.32	8.4	29	1047	19.9	1,168,488	0.03	493,679	0.35	262.0	36.5	1.5	3	7.18	14.1	698.5	Yes
5/27/2018	0800	47.9	1.43	8.5	25	1180	21.2	1,244,822	0.03	525,930	0.35	268.3	38.4	1.5	3	6.99	13.9	538.4	Yes
5/28/2018	0800	47.9	1.48	8.4	25	1643	21.8	1,280,052	0.03	540,814	0.35	205.1	37.2	1.5	3	5.52	11.4	411.5	Yes
5/29/2018	0800	47.9	1.3	8.3	25	1513	22	1,291,796	0.03	545,776	0.35	197.4	35.1	1.5	3	5.63	11.6	396.1	Yes
5/30/2018	0800	47.9	1.17	8.3	25	1568	22	1,291,796	0.03	545,776	0.35	171.5	34.6	1.5	3	4.96	10.5	343.9	Yes
5/31/2018	0800	47.9	1.28	8.28	26	1443	21.9	1,285,924	0.03	543,295	0.35	202.9	34.7	1.5	3	5.84	11.9	437.0	Yes

County of Imperial Public Health Laboratory

Environmental Test Result Form

SYSTEM

SAMPLE # 182568

System: Heber Public Utility District	Sample Type: Routine
Collection Site: #15 Raw Gate H-1	Source: Water — Other: 4.3 NTU's
Site Description:	Collected: 05/02/2018 10:45 AM — Collected By: Guillermo Verdugo
	Received: 05/02/2018 01:40 PM — Received By: Letty Lopez

TEST RESULTS, CONCLUSIONS AND COMMENTS:

	Total Coliform		E-Coli	
Quanti-Tray (Test Method: SM 9223A, B)	MPN/100ml	Conclusion	MPN/100ml	Conclusion
	1413.6	PRESENT	47.9	PRESENT

Read: Leticia Lopez	Approved: Steve Schuyler	Printed: Steve Schuyler
Date: 5/1/2018 2:13:00 PM	Date: 05/03/2018 03:18:00 PM	Date: 05/03/2018 03:18:12 PM

REQUESTED BY:

Heber Public Utility District
1078 Dogwood Rd.
Heber, CA 92249

LABORATORY
ELAP #: 1773
Director: Holly Maag B.S. M.H.A.
Imperial County Public Health Laboratory
935 Broadway
El Centro, CA 92243
Phone: (442)265-1427
Fax: (442)265-1472

County of Imperial Public Health Laboratory

Environmental Test Result Form

SYSTEM **SAMPLE # 182568**

System: Heber Public Utility District	**Sample Type:** Routine
Collection Site: #15 Raw Gate H-1	**Source:** Water — **Other:** 4.3 NTU's
Site Description:	**Collected:** 05/02/2018 10:45 AM — **Collected By:** Guillermo Verdugo
	Received: 05/02/2018 01:40 PM — **Received By:** Letty Lopez

TEST RESULTS, CONCLUSIONS AND COMMENTS:

Quanti-Tray (Test Method: SM 9223A, B)	Total Coliform		E-Coli	
	MPN/100ml	Conclusion	MPN/100ml	Conclusion
	1413.6	PRESENT	47.9	PRESENT

Read: Leticia Lopez	Approved: Steve Schuyler	Printed: Steve Schuyler
Date: 5/3/2018 3:13:00 PM	Date: 05/03/2018 03:18:00 PM	Date: 05/03/2018 03:18:12 PM

REQUESTED BY:

Heber Public Utility District
1078 Dogwood Rd.
Heber, CA 92249

LABORATORY
ELAP #: 1773
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Imperial County Public Health Laboratory
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El Centro, CA 92243
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Fax: (442)265-1472

Heber PUD

WEEKLY GENERAL PHYSICAL SAMPLES

OPERATOR		*DATE*	*SITE #*	*COLOR*	*ODOR*	*TURBIDITY*
G.V. RAW		5-2-18	15	3	3	4.3 NTU
G.V. TAP		5-2-18	1	NONE	NONE	0.12 NTU
G.V. TAP		5-2-18	2	NONE	NONE	0.12 NTU
G.V. TAP		5-2-18	3	NONE	NONE	0.13 NTU
G.V. TAP		5-16-18	4	NONE	NONE	0.11 NTU
G.V. TAP		5-16-18	5	NONE	NONE	0.12 NTU
G.V. TAP		5-16-18	6	NONE	NONE	0.12 NTU
G.V. TAP		5-16-18	7	NONE	NONE	0.12 NTU

MONTHLY SUMMARY OF DISTRIBUTION SYSTEM COLIFORM MONITORING

System Name	System Number
Heber Public Utility District	1310007
Sampling Period Month: May	Year: 2018

	Number Required	Number Collected	Number Total Coliform Positives	Number Fecal/ E.coli Positives
1. Routine Samples (see note 1)	7	7	0	0
2. Repeat Samples Following Samples Which are Total Coliform Positive and Fecal/E.coli ***Negative*** (see notes 5 and 6)		0	0	0
3. Repeat Samples Following Routine Samples Which are Total Coliform ***Positive*** and Fecal/E.coli Positive (see notes 5 and 6)		0	0	0
4. MCL Computation For Total Coliform Positive Samples				
a. Totals (sum of columns)	7	7	0	
b. If 40 or more samples collected in month, determine percent of samples that are total coliform positive [(total number positive/total number collected) x 100]				

c. Is system in compliance.....with fecal/E. coli MCL? (see notes 2 and 3) ☑ Yes ☐ No

...with monthly MCL? (see note 4) ☑ Yes ☐ No

5. Invalidated Samples
(Note what samples, if any, were invalidated; who authorized the invalidation; and when replacement samples were collected. Attach additional sheets, if necessary.)

6. Summary Completed By:

Signature	Title	Date
	Chief Operator	6/1/2018

NOTES AND INSTRUCTIONS:

1. Routine samples include:
   a. Samples required pursuant to 22 CCR Section 64423, and any additional samples required by an approved routine sample siting plan established pursuant to 22 CCR Section 64422.
   b. Extra samples required for systems collecting less than five routine samples per month that had one or more total coliform positives in previous month;
   c. Extra samples for systems with high source water turbidities that are using surface water or groundwater under direct influence of surface water and do not practice filtration in compliance with regulations;
2. Note: For a repeat sample following a total coliform positive sample, any fecal/E.coli positive repeat (boxed entry) **constitutes an MCL violation and requires immediate notification to the department** (22, CCR, Section 64426.1).
3. Note: For repeat sample following a fecal/E.coli positive sample, any total coliform positive repeat (boxed entry) **constitutes an MCL violation and requires immediate notification to the department** (22, CCR, Section 64426.1).
4. Total coliform MCL **(Notify Department within 24 hours of MCL violation):**
   a. For systems collecting less than 40 samples, if two or more samples are total coliform positive, then the MCL is violated.
   b. For systems collecting 40 or more samples, if more than 5.0 percent of samples collected are total coliform positive, then the MCL is violated.
5. Positive results and their associated repeat samples must be tracked on the worksheet on the other side.
6. For systems collecting more than one routine sample per month, three repeat samples must be collected for each total coliform positive sample. Repeat samples must be collected within 24 hours of being notified of the positive results.
7. For systems collecting one or less routine samples per month, four repeat samples must be collected for each total coliform positive sample.

County of Imperial Public Health Laboratory

Environmental Test Result Form

SYSTEM **SAMPLE # 182566**

System:	**Heber Public Utility District**	Sample Type:	**Routine**
Collection Site:	**23 W.Sparrow St#1**	Source:	**Water**
Site Description:	**Tap**	Collected:	05/02/2018 01:05 PM
		Received:	05/02/2018 01:40 PM

Chlorine :	**1.39**
Other :	**.12 NTU's**
Collected By:	**Guillermo Verdugo**
Received By:	**Letty Lopez**

TEST RESULTS, CONCLUSIONS AND COMMENTS:

	Total Coliform		E-Coli	
Presence/Absence (Test Method: SM 9223A, B)		Conclusion		Conclusion
		Absent		Absent

Read:	Leticia Lopez	Approved:	Steve Schuyler	Printed:	Steve Schuyler
Date:	5/3/2018 3:00:00 PM	Date:	05/03/2018 03:17:00 PM	Date:	05/03/2018 03:17:30 PM

REQUESTED BY:

Heber Public Utility District
1078 Dogwood Rd.
Heber, CA 92249

LABORATORY
ELAP #: 1773
Director: Holly Maag B.S. M.H.A.
Imperial County Public Health Laboratory
935 Broadway
El Centro, CA 92243
Phone: (442)265-1427
Fax: (442)265-1472

County of Imperial Public Health Laboratory

Environmental Test Result Form

SYSTEM

SAMPLE # 182567

System:	Heber Public Utility District	Sample Type:	Routine
Collection Site:	Elementary School#2	Source:	Water
Site Description:	Tap	Collected:	05/02/2018 12:30 PM
		Received:	05/02/2018 01:40 PM
Chlorine :	1.44		
Other :	.12 NTU's		
Collected By:	Guillermo Verdugo		
Received By:	Letty Lopez		

TEST RESULTS, CONCLUSIONS AND COMMENTS:

	Total Coliform		E-Coli	
Presence/Absence (Test Method: SM 9223A, B)		Conclusion		Conclusion
		Absent		Absent

Read:	Letlcia Lopez	Approved:	Steve Schuyler	Printed:	Steve Schuyler
Date:	5/3/2018 2:00:00 PM	Date:	05/03/2018 03:17:00 PM	Date:	05/03/2018 03:17:30 PM

REQUESTED BY:

Heber Public Utility District
1078 Dogwood Rd.
Heber, CA 92249

LABORATORY
ELAP #: 1773
Director: Holly Maag B.S. M.H.A.
Imperial County Public Health Laboratory
935 Broadway
El Centro, CA 92243
Phone: (442)265-1427
Fax: (442)265-1472

County of Imperial Public Health Laboratory

Environmental Test Result Form

SYSTEM **SAMPLE # 182565**

System:	Heber Public Utility District	Sample Type:	Routine
Collection Site:	19 Hawk St#3	Source:	Water
Site Description:	Tap	Collected:	05/02/2018 12:43 PM
		Received:	05/02/2018 01:40 PM
Chlorine :	1.49		
Other :	.13 NTU's		
Collected By:	Guillermo Verdugo		
Received By:	Letty Lopez		

TEST RESULTS, CONCLUSIONS AND COMMENTS:

	Total Coliform		E-Coli	
Presence/Absence (Test Method: SM 9221A, B)		Conclusion		Conclusion
		Absent		Absent

Read:	Leticia Lopez	Approved:	Steve Schuyler	Printed:	Steve Schuyler
Date:	5/3/2018 2:00:00 PM	Date:	05/03/2018 03:17:00 PM	Date:	05/03/2018 03:17:30 PM

REQUESTED BY:

Heber Public Utility District
1078 Dogwood Rd.
Heber, CA 92249

LABORATORY
ELAP #: 1773
Director: Holly Maag B.S. M.H.A.
Imperial County Public Health Laboratory
935 Broadway
El Centro, CA 92243
Phone: (442)265-1427
Fax: (442)265-1472

County of Imperial Public Health Laboratory

Environmental Test Result Form

SYSTEM **SAMPLE # 183048**

System:	**Heber Public Utility District**	Sample Type:	**Routine**
Collection Site:	**189 Gill Rd#4**	Source:	**Water**
Site Description:	**Tap**	Collected:	05/16/2018 12:50 PM
		Received:	05/16/2018 01:33 PM

Chlorine :	**1.02**
Other :	**.11 NTU's**
Collected By:	**Guillermo Verdugo**
Received By:	**Letty Lopez**

TEST RESULTS, CONCLUSIONS AND COMMENTS:

	Total Coliform		E-Coli	
Presence/Absence (Test Method: SM 922.5A, B)		Conclusion		Conclusion
		Absent		Absent

Read:	Steve Schuyler	Approved:	Steve Schuyler	Printed:	Steve Schuyler
Date:	5/17/2018 2:42:00 PM	Date:	05/17/2018 02:43:00 PM	Date:	05/17/2018 02:43:39 PM

REQUESTED BY:

Heber Public Utility District
1078 Dogwood Rd.
Heber, CA 90049

LABORATORY
ELAP #: 1773
Director: Holly Maag B.S. M.H.A.
Imperial County Public Health Laboratory
935 Broadway
El Centro, CA 92243
Phone: (442)265-1427
Fax: (442)265-1472

County of Imperial Public Health Laboratory

Environmental Test Result Form

SYSTEM **SAMPLE # 183047**

System:	**Heber Public Utility District**	Sample Type:	**Routine**
Collection Site:	**Kennedy's Market#5**	Source:	**Water**
Site Description:	**Tap**	Collected:	05/16/2018 12:56 PM
		Received:	05/16/2018 01:33 PM
Chlorine :	**1.57**		
Other :	**.12 NTU's**		
Collected By:	**Guillermo Verdugo**		
Received By:	**Letty Lopez**		

TEST RESULTS, CONCLUSIONS AND COMMENTS:

Presence/Absence (Test Method: SM 9223A, B)	Total Coliform		E-Coli	
		Conclusion		Conclusion
		Absent		Absent

Read:	Steve Schuyler	Approved:	Steve Schuyler	Printed:	Steve Schuyler
Date:	5/17/2018 2:42:00 PM	Date:	05/17/2018 02:43:00 PM	Date:	05/17/2018 02:43:39 PM

REQUESTED BY:

Heber Public Utility District
1078 Dogwood Rd.
Heber, CA 92249

LABORATORY
ELAP #: 1773
Director: Holly Maag B.S. M.H.A.
Imperial County Public Health Laboratory
935 Broadway
El Centro, CA 92243
Phone: (442)265-1427
Fax: (442)265-1472

County of Imperial Public Health Laboratory

Environmental Test Result Form

SYSTEM **SAMPLE # 183050**

System:	**Heber Public Utility District**	Sample Type:	**Routine**	Chlorine :	**1.48**
Collection Site:	**Ogden Geo.Ther.Do#6**	Source:	**Water**	Other :	**.12 NTU's**
Site Description:	**Tap**	Collected:	05/16/2018 12:18 PM	Collected By:	**Guillermo Verdugo**
		Received:	05/16/2018 01:33 PM	Received By:	**Letty Lopez**

TEST RESULTS, CONCLUSIONS AND COMMENTS:

	Total Coliform		E-Coli	
Presence/Absence (Test Method: SM 9223A, B)		Conclusion		Conclusion
		Absent		Absent

Read:	Steve Schuyler	Approved:	Steve Schuyler	Printed:	Steve Schuyler
Date:	5/17/2018 2:42:00 PM	Date:	05/17/2018 03:43:00 PM	Date:	05/17/2018 03:43:39 PM

REQUESTED BY:

Heber Public Utility District
1078 Dogwood Rd.
Heber, CA 92249

LABORATORY
ELAP #: 1773
Director: Holly Maag B.S. M.H.A.
Imperial County Public Health Laboratory
935 Broadway
El Centro, CA 92243
Phone: (442)265-1427
Fax: (442)265-1472

County of Imperial Public Health Laboratory

Environmental Test Result Form

SYSTEM **SAMPLE # 183049**

System:	**Heber Public Utility District**	Sample Type:	**Routine**
Collection Site:	**#7 Gibson & Schaeffer**	Source:	**Water**
Site Description:	**Tap**	Collected:	05/16/2018 12:42 PM
		Received:	05/16/2018 01:33 PM

Chlorine :	**1.26**
Other :	**.12 NTU's**
Collected By:	**Guillermo Verdugo**
Received By:	**Letty Lopez**

TEST RESULTS, CONCLUSIONS AND COMMENTS:

	Total Coliform		E-Coli	
Presence/Absence (Test Method: SM 9223A, B)		Conclusion		Conclusion
		Absent		Absent

Read:	Steve Schuyler	Approved:	Steve Schuyler	Printed:	Steve Schuyler
Date:	5/17/2018 2:42:00 PM	Date:	05/17/2018 02:43:00 PM	Date:	05/17/2018 02:43:39 PM

REQUESTED BY:

Heber Public Utility District
1078 Dogwood Rd.
Heber, CA 92249

LABORATORY
ELAP #: 1773
Director: Holly Maag B.S. M.H.A.
Imperial County Public Health Laboratory
935 Broadway
El Centro, CA 92243
Phone: (442)265-1427
Fax: (442)265-1472

Appendix J
Sample Daily Monitoring Form

HEBER PUD WATER TREATMENT PLANT

DAILY PROCESS CONTROL

Task or Condition	Operator:_____ Date:_____ Day of The Week_____
Plant Mode	Storage Tanks Water Level: # 1_____Ft. # 2_____Ft. #3_____Ft.
	Filter #1 AUTO MANUAL OFF Filter #2 AUTO MANUAL OFF Filter #3 Auto Manual OFF
Filtration Rate	_____/_____Gal/ Min _____/_____Gal/ Sq. Ft. (GPM/280 sq ft.)
Clarifier/Filter Head Loss	Clarifier Head Loss Gauge Reading_____/_____ Filter Head Loss Gauge Reading_____/_____
Hypochorite System	Auto Standby Manual /_____ Hrs Run Time /_____ Tank Level% /_____Cell Amps
Hypochorite Feed Rate	Finish Water Auto Hand Set Point _____mg/l Cl2 Demand_____mg/l Total_____Mls/Min
Hypochorite Feed Rate	Distribution Pump Station Hand Off Stroke _____% Speed_____% Total_____Mls/Min
Distribution Pumps	# 101 Auto OFF _____Gpm _____Hz _____Hrs _____Psi
	# 102 Auto OFF _____Gpm _____Hz _____Hrs _____Psi
	# 103 Auto OFF _____Gpm _____Hz _____Hrs _____Psi
	# 104 Auto OFF _____Gpm _____Hz _____Hrs _____Psi
Distribution Flow Meter	Reading_____Gal. Demand:_____Mgd
Ferric/Polymer Feed Rate	(F) Total_____Mls/Min Dosage_____mg/l (P) Total_____Mls/Min Dosage_____mg/l
Ferric Feed Rate @ Static Mixer	Speed _____% Stroke_____% Total_____Mls/Min Dosage_____mg/l
TTHM System Aerators/	#1 Run Time_____ #2 Run Time_____ #3 Run Time_____ #4 Run Time_____
Blowers Hours	Blower #1 Run Time _____ Blower #2 Run Time_____ Mixer #1 ON OFF Mixer #2 ON OFF
Finish Water Pumps	#1 Auto OFF _____Hrs #2 Auto OFF _____Hrs #3 Auto OFF _____Hrs
Raw Water Pumps	#1 Auto OFF _____Hrs #2 Auto OFF _____Hrs #3 Auto OFF _____Hrs
Upstream Clarifier	Turbidity_____Ntu's Turbidity_____Ntu's
Downstream Clarifier	Turbidity_____Ntu's Turbidity_____Ntu's PH_____
Removal Efficiency %	_____/_____IN(ntu's) - _____/_____OUT(ntu's)
	_____/_____IN(ntu's) X 100 =_____/_____% Removal Average_____%
Raw Water Ponds	# 1 Turbidity_____Ntu's PH_____Units Temperature_____C
	# 2 Turbidity_____Ntu's PH_____Units Temperature_____C
	# 3 Turbidity_____Ntu's PH_____Units Temperature_____C
Storage Tanks	# 1 Turbidity_____Ntu's CL_2 Residual_____Mg/L PH_____Units Temp_____
	# 2 Turbidity_____Ntu's CL_2 Residual_____Mg/L PH_____Units Temp_____
	# 3 Turbidity_____Ntu's CL_2 Residual_____Mg/L PH_____Units Temp_____
Tap Water	Turbidity_____Ntu's CL_2_____Mg/L PH_____ Temp._____C
Combined Filter Eff	Turbidity_____Ntu's CL_2_____Mg/L PH_____ Temp._____C
Central Main Canal	Turbidity_____Ntu's PH_____ Temp._____C

Comments:

Appendix K
HPUD Emergency Notification Plan

WATER QUALITY EMERGENCY NOTIFICATION PLAN

Name of Utility: Heber Public Utility District

Physical Location/Address: 1085 Ingram Ave, Heber CA 92249

The following persons have been designated to implement the plan upon notification by the State Department of Health Services that an imminent danger to the health of the water users exists:

	Contact Name & Title	Email Address	Telephone Day	Telephone Evening	Telephone Cell
1.	Laura Fischer (General Manager)	lfischer@heber.ca.gov	(760) 482-2440		(760) 336-1572
2.	Francisco Rodriguez (Lead Operator)	frodriguez@heber.ca.gov	(760) 482-2440		(760) 427-4685
3.	Guillermo Verdugo (Operator)	gverdugo_heber@hotmail.com	(760) 482-2440		(760) 460-2056

The implementation of the plan will be carried out with the following State and County Health Department personnel:

	State & County Health Departments: Contact Name & Title	Email Address	Telephone Day	Telephone Evening
1.	Sean Sterchi, District Engineer California Department of Public Health	Sean.Sterchi@cdph.ca.gov	(619) 525-4922	(619) 654-7262
2.	Tuba Ertas, CDPH Scott Ketcham, CDPH Alan Tell, CDPH Randy Barnard, CDPH	Tuba.Ertas@cdph.ca.gov Scott.Ketcham@cdph.ca.gov Alan.Tell@cdph.ca.gov Randy.Barnard@cdph.ca.gov	(619) 525-4493 (619) 525-4395 (619)-525-2573 (619) 525-4022	(619) 884-3308 (619) 993-9529 (858) 204-0219 (858) 248-3292
3.	San Diego Mark McPherson, Chief Bob Giesick, Supervising REHS Peter Neubauer, REHS Wendy Martinez, REHS	Mark.McPherson@sdcounty.ca.gov Bob.Giesick@sdcounty.ca.gov Peter.Neubauer@sdcounty.ca.gov Wendy.Martinez@sdcounty.ca.gov	(858) 495-5572 (858) 694-3718 (858) 694-3113 (858) 694-2242	(619) 843-4094 (619) 607-7260 (619) 607-8352 (619) 204-3350
4.	Imperial Jeff Lamoure, Manager. Env. Health Roger Berger, Engineer	jefflamoure@imperialcounty.net ivwater2@cox.net	(760) 336-8530 (619) 280-3018	(760) 353-9780 (619) 280-3018

5. If the above personnel cannot be reached, contact:

Office of Emergency Services Warning Center (24 hrs)	**(800) 852-7550 or (916) 845-8911**

When reporting a water quality emergency to the Warning Center, please ask for the California Department of Public Health – Drinking Water Program Duty Officer.

NOTIFICATION PLAN

Attach a written description of the method or combination of methods to be used (radio, television, door-to-door, sound truck, etc.) **to notify customers in an emergency.** For each section of your plan give an estimate of the time required, necessary personnel, estimated coverage, etc. Consideration must be given to special organizations (such as schools), non-English speaking groups, and outlying water users. Ensure that the notification procedures you describe are practical and that you will be able to actually implement them in the event of an emergency. Examples of notification plans are attached for large, medium and small communities.

Report prepared by: Francisco Rodriguez **Date:** 3/24/11

HEBER PUBLIC UTILITY DISTRICT
1078 Dogwood Rd., Suite 103 • P.O. Box H
Heber, Ca 92249
TEL. (760) 482-2440 • Fax (760) 353-9951

March 24, 2011

Sean Stechi P.E
District Engineer
California Department of Public Health
Southern California Drinking Water Operation Branch
1350 Front St. Room 2050
San Diego, Ca 92101

Re: Water Quality Emergency Notification Plan

Mr. Sterchi,

Our Community is small and the most efficient means of notification will be Emergency Notification Letters that would be hand delivered door to door. It is estimated that the entire Heber District service area can be covered in less than 5 hours.

If you have any questions, please do not hesitate to call or e-mail me. Thank You.

Sincerely,

Francisco Rodriguez
Heber Public Utility District
Lead Plant Operator

Appendix L
Draft Customer Information Letter for Emergency/violation

Date:

UNSAFE WATER ALERT

[Insert one-liner language other than Spanish here, otherwise delete.]

Heber Public Utility District water is possibly contaminated with [an unknown substance]

DO NOT USE YOUR WATER

Failure to follow this advisory could result in illness.

An unknown substance has been added to the drinking water supplied by the Heber Public Utility District due to a recent [intrusion; break-in] at [one of the wells; our treatment plant; storage tank; specific facility]. The California Department of Public Health, Imperial County Health Department, and Heber Public Utility District Water System are advising residents of Heber to NOT USE THE TAP WATER FOR DRINKING, COOKING, HAND WASHING, OR BATHING UNTIL FURTHER NOTICE.

What should I do?

- **DO NOT USE YOUR TAP WATER---USE ONLY BOTTLED WATER.** Bottled water should be used for all drinking (including baby formula and juice), brushing teeth, washing dishes, making ice, food preparation and bathing **until further notice**.
- **DO NOT TRY AND TREAT THE WATER YOURSELF.** Boiling, freezing, filtering, adding chlorine or other disinfectants, or letting water stand will not make the water safe.

OPTIONS

- Optional: Potable water is available at the following locations: [List locations]
  Please bring a clean water container (5 gallons maximum capacity).

We will inform you when tests show that the water is safe again. We expect to resolve the problem within [estimated time frame].

For more information call:
Water Utility contact: Laura Fischer, General Manager, (760) 482-2440
California Department of Public Health at: (619) 525-4159
Local County Health Department: (760) 482-4438

This notice is being sent to you by Heber Public Utility District. California Public Water System ID # 1310007. Date Distributed: [date].

Please share this information with all other people who receive this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand.

Appendix M
Draft Boil Water Order Form

Date:

BOIL WATER ORDER

Este informe contiene información muy importante sobre su agua potable.
Tradúzcalo o hable con alguien que lo entienda bien.

BOIL YOUR WATER BEFORE USING

Failure to follow this advisory could result in stomach or intestinal illness.

Due to the recent event [e.g., water outage, power outage, flood, fire, earthquake or other emergency situation], the California Department of Public Health in conjunction with the Imperial County Health Department, and Heber Public Utility District Water System are advising residents of Heber to use boiled tap water or bottled water for drinking and cooking purposes as a safety precaution.

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a boil, **let it boil for one (1) minute,** and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking and food preparation **until further notice**. Boiling kills bacteria and other organisms in the water. [or This is the preferred method to assure that the water is safe to drink.]

Optional alternative to include for prolonged situations where it fits.

- **An alternative method of purification for residents that do not have gas or electricity available is to use fresh liquid household bleach (Clorox®, Purex®, etc.). To do so, add 8 drops (or 1/4 teaspoon) of bleach per gallon of clear water or 16 drops (or 1/2 teaspoon) per gallon of cloudy water, mix thoroughly, and allow to stand for 30 minutes before using. A chlorine-like taste and odor will result from this purification procedure and is an indication that adequate disinfection has taken place.**
- Water purification tablets may also be used by following the manufacturer's instructions.
- Optional: Potable water is available at the following locations: [List locations]
  Please bring a clean water container (5 gallons maximum capacity).

We will inform you when tests show no bacteria and you no longer need to boil your water. We anticipate resolving the problem within [estimated time frame].

For more information call:
Water Utility contact: Laura Fischer, General Manager, (760) 482-2440
California Department of Public Health – Drinking Water Field Operations Branch- District Office at (619) 525-4159
Local Environmental Health Jurisdiction: (760) 482-4438

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

FECHA:

ORDEN DE HERVIR EL AGUA

Hierva su Agua antes de Usarla

Falta de seguir este aviso podría tener resultados estómago o enfermedad intestinal

Debido a la [falta de agua (water outage), falta de electricidad (power outage), inundacion (flood), incendio (fire), temblor (earthquake) or other emergency], durante [date, month, etc.], el Departamento de California de Servicios de Salud en conjunción con Heber Public Utility District y el Condado de Imperial esta aconsejando a todos usuarios de el sistema de Heber Public Utility District District que hiervan el agua de canilla o usen agua embotellada para beber y cocinar como medida de seguridad.

Que debo hacer?

NO BEBA EL AGUA SIN ANTES HERVIRLA. Hierva toda el agua, **déjela hervir por un minuto**, y déjela reposar antes de usarla, o utilize agua embotellada. Agua hervida o embotellada debe ser usada para beber y para preparar la comida hasta el próximo aviso. Hierviendo morta a bacteria y otros organismos en el agua. [or Este es el metodo preferido para asegurar que el agua esta segura para beber.]

Optional alternative to include for prolonged situations where it fits.

- Otro método de purificación del agua para los residentes que no tengan gas o electricidad disponibles es utilizar blanqueador líquido de uso doméstico (Clorox®, Purex®, etc.). Para hacerlo, añada 8 gotas (o 1/4 cucharadita) de blanqueador por galón de agua clara, o 16 gotas (o media cucharadita) por galón de agua turbia, mézclelo bien y déjelo descansar 30 minutos antes de utilizarlo. Este procedimiento de purificación causa que el agua huela y tenga sabor a cloro, lo que indica que ha sido desinfectada de manera adecuada.
- También se puede utilizar tabletas de purificación del agua siguiendo las instrucciones del fabricante.
- Optativo: Hay agua potable disponible en los siguientes sitios: [List locations]
  Traiga un recipiente limpio para el agua (con una capacidad máxima de 5 galones).

Le informaremos cuando las pruebas demuestren que no hay bacterias y que usted ya no necesita hervir su agua. Anticipamos que resolveremos el problema el [date of expected resolution in Spanish day-month-year].

Para mas información, por favor póngase en contacto con:
Contacto del sistema de agua: Laura Fischer, General Manger al (760) 482-2440.
Departamento de Salud de California: (760) 482-4438.
Condado de Imperial: (760) 482-4462.

Por favor comparta esta información con otros que pueden tomar de esta agua, colocando este aviso en lugares visibles, o remitiéndolo por correo, o entregandolo manualmente. Es de particular interés distribuir este aviso ampliamente si usted lo recibe representando un negocio, un hospital u hogar de infantes u hogar de ancianos o comunidad residencial.

LAST UPDATED – 01/11/2010

Appendix N
Alarm List with ID Tags, Set Point, and Triggered Action

Heber Public Utility District -
Water Treatment Plant Alarm List

Item	Facility	Equipment	Id Tag:	Alarm	Alarm Category/ Signal	Set Point	Delay (sec)	Triggered Action
1	Static Mixer Facility	Polyferric Chemical Pumps	YA-331	Pump #1 Fail	Critical Alarm	Fault	60	Call out operator
			YA-332	Pump #2 Fail	Critical Alarm	Fault	60	Call out operator
		Turbidity Instrument	AI-330	Raw water High Turbidity	Critical Alarm	≥ 20 NTU	900	Call out operator
2	Raw Water Pump Station (RWPS)	Raw Water Pump	YA-203	Pump #1 Fail	Critical Alarm	Fault	60	Text & email to operator
			YA-204	Pump #2 Fail	Critical Alarm	Fault	60	Text & email to operator
			YA-205	Pump #3 Fail	Critical Alarm	Fault	60	Text & email to operator
		Water Level Indicator	LAHH-200B	High high water level	Critical Alarm	≥ 989.00	60	Repeat every 10 minutes and Call out operator
			LALL-200A	Low low water level	Critical Alarm	≤ 980.00	60	Repeat every 10 minutes and Call out operator
		Pressure	PIT-200	High Pressure	Critical Alarm	≥ 15 PSI	60	Call out operator
		Turbidity Instrument	AI-200	Raw water high turbidity	Critical Alarm	≥ 15 NTU	900	Call out operator
	Clarifier/Filter System	Control Air Pressure	YA-150	Air Compressor Fail	Critical Alarm	Fault	0	Shutdown of all C/F units & Call out operator
		Blower #1	YA-151	Fail	Critical Alarm	Fault	60	Call out operator
		Blower #2	YA-152	Fail	Critical Alarm	Fault	60	Call out operator
		Backwash High Rate Valve	YA-153	Not in Auto	Critical Alarm	Fault	60	Call out operator
		Clarifier Communication	YA-154	Fail	Critical Alarm	Fault	300 or 0	Shutdown of all C/F units & Call out operator
		Turbidity Level (CFE)	AIT-406A	High	Critical Alarm	≥ 0.20 NTU	600	Call out operator
		Turbidity Level (CFE)	AIT-406A	High High	Critical Alarm	≥ 0.24 NTU	840	Shutdown of all C/F units & Call out operator

Item	Facility	Equipment	Id Tag:	Alarm	Alarm Category/ Signal	Set Point	Delay (sec)	Triggered Action
	Clarifier/Filter (C/F) Unit #1	Filter Level	LSH-120	High	Critical Alarm	≥ 5.2 FT	300	Shutdown C/F unit no. 1 & Call out operator
		Filter Level	LSL-120	Low	Critical Alarm	≤ 0.5 FT	15	Shutdown C/F unit no. 1 & Call out operator
		Clarifier Pressure/Headloss	PSH-120	High	Non-Critical Alarm	≥ 1.7 PSI	60	Annunciator on SCADA
		Clarifier Pressure/Headloss	PSHH-120	High High	Critical Alarm	≥ 2.5 PSI	0	Shutdown C/F unit no. 1 & Call out operator
		Turbidity Level (IFE)	AI-453	High	Critical Alarm	≥ 0.20 NTU	600	Call out operator
		Turbidity Level (IFE)	AI-453	High High	Critical Alarm	≥ 0.24 NTU	840	Shutdown C/F unit no. 1 & Call out operator
		Backwash Fail High Turbidity	YA-122	High	Critical Alarm	≥ 0.24 NTU	0	Shutdown C/F unit no. 1 & Call out operator
		Flush Required	YA-123		Non- Critical Alarm	Time & pressure	900	Annunciator on SCADA
		Backwash Fail No Blower	YA-124		Critical Alarm	Fault	60	Call out operator
		Flush Fail No Blower	YA-125		Critical Alarm	Fault	60	Shutdown C/F unit no. 1 & Call out operator
		Not all Valves in Auto	YA-126		Critical Alarm	Operator Error	15	Shutdown C/F unit no. 1 & Call out operator
		Backwash Required	YA-127		Critical Alarm	Time & pressure	900	Call out operator
		Filter Pressure	PSH-121	High	Critical Alarm	≥ 4 PSI	0	Shutdown C/F unit no. 1 & Call out operator
		Filter Pressure	PSL-120	Low	Critical Alarm	≤ 8 FT Water Column	900	Call out operator
		Inlet Flow	YA-128	Low	Critical Alarm	≤ 100 GPM	300	Shutdown C/F unit no. 1 & Call out operator
		Filter Level	LSH-220	High	Critical Alarm	≥ 5.2 FT	300	Shutdown C/F unit no. 2 & Call out operator
		Filter Level	LSL-220	Low	Critical Alarm	≤ 0.5 FT	15	Shutdown C/F unit no. 2 & Call out operator
		Clarifier Pressure/Headloss	PSH-220	High	Non-Critical Alarm	≥ 1.7 PSI	60	Annunciator on SCADA
		Clarifier Pressure/Headloss	PSHH-220	High High	Critical Alarm	≥ 2.5 PSI	0	Shutdown C/F unit no. 2 & Call out operator
		Turbidity Level (IFE)	AI-353	High	Critical Alarm	≥ 0.20 NTU	600	Call out operator
		Turbidity Level (IFE)	AI-353	High High	Critical Alarm	≥ 0.24 NTU	840	Shutdown C/F unit no. 2 & Call out operator
3		Backwash Fail High Turbidity	YA-222	High	Critical Alarm	≥ 0.24 NTU	0	Shutdown C/F unit no. 2 & Call out operator

Item	Facility	Equipment	Id Tag:	Alarm	Alarm Category/ Signal	Set Point	Delay (sec)	Triggered Action
	Clarifier/Filter (C/F) Unit #2	Flush Required	YA-223		Non- Critical Alarm	Time & pressure	900	Annunciator on SCADA
		Backwash Fail No Blower	YA-224		Critical Alarm	Fault	60	Call out operator
		Flush Fail No Blower	YA-225		Critical Alarm	Fault	60	Shutdown C/F unit no. 2 & Call out operator
		Not all Valves in Auto	YA-226		Critical Alarm	Operator Error	15	Shutdown C/F unit no. 2 & Call out operator
		Backwash Required	YA-227		Critical Alarm	Time & pressure	900	Call out operator
		Filter Pressure	PSH-221	High	Critical Alarm	≥ 4 PSI	0	Shutdown C/F unit no. 2 & Call out operator
		Filter Pressure	PSL-220	Low	Critical Alarm	≤ 8 FT Water Column	900	Shutdown C/F unit no. 2 & Call out operator
		Inlet Flow	YA-228	Low	Critical Alarm	≤ 100 GPM	300	Shutdown C/F unit no. 2 & Call out operator
	Clarifier/Filter (C/F) Unit #3	Filter Level	LSH-320	High	Critical Alarm	≥ 5.2 FT	300	Shutdown C/F unit no. 3 & Call out operator
		Filter Level	LSL-320	Low	Critical Alarm	≤ 0.5 FT	15	Shutdown C/F unit no. 3 & Call out operator
		Clarifier Pressure/Headloss	PSH-320	High	Non-Critical Alarm	≥ 1.7 PSI	60	Annunciator on SCADA
		Clarifier Pressure/Headloss	PSHH-320	High High	Critical Alarm	≥ 2.5 PSI	0	Shutdown C/F unit no. 3 & Call out operator
		Turbidity Level (IFE)	AI-321	High	Critical Alarm	≥ 0.20 NTU	600	Call out operator
		Turbidity Level (IFE)	AI-321	High High	Critical Alarm	≥ 0.24 NTU	840	Call out operator
		Backwash Fail High Turbidity	YA-322	High	Critical Alarm	≥ 0.24 NTU	0	Shutdown C/F unit no. 3 & Call out operator
		Flush Required	YA-323		Non- Critical Alarm	Time & pressure	900	Annunciator on SCADA
		Backwash Fail No Blower	YA-324		Critical Alarm	Fault	60	Call out operator
		Flush Fail No Blower	YA-325		Critical Alarm	Fault	60	Shutdown C/F unit no. 3 & Call out operator
		Not all Valves in Auto	YA-326		Critical Alarm	Operator Error	15	Shutdown C/F unit no. 3 & Call out operator
		Backwash Required	YA-327		Critical Alarm	Time & pressure	900	Call out operator
		Filter Pressure	PSH-321	High	Critical Alarm	≥ 4 PSI	0	Shutdown C/F unit no. 3 & Call out operator
		Filter Pressure	PSL-320	Low	Critical Alarm	≤ 8 FT Water Column	900	Shutdown C/F unit no. 3 & Call out operator

Item	Facility	Equipment	Id Tag:	Alarm	Alarm Category/ Signal	Set Point	Delay (sec)	Triggered Action
		Inlet Flow	YA-328	Low	Critical Alarm	≤ 100 GPM	300	Shutdown C/F unit no. 3 & Call out operator
	Polymer Pump Station	Polymer Feed Pumps	YA-301	Pump #1 Fail	Critical Alarm	Fault	60	Shutdown C/F unit no. 1 & Call out operator
			YA-302	Pump #2 Fail	Critical Alarm	Fault	60	Shutdown C/F unit no. 2 & Call out operator
			YA-303	Pump #3 Fail	Critical Alarm	Fault	60	Shutdown C/F unit no. 3 & Call out operator
	Polyferric Pump Station	Polyferric Feed Pumps	YA-351	Pump #1 Fail	Critical Alarm	Fault	60	Call out operator
			YA-352	Pump #2 Fail	Critical Alarm	Fault	60	Call out operator
4	Finish Water Transfer Pump Station	Finish Water Pumps	YA-403	Pump #1 Fail	Critical Alarm	Fault	60	Call out operator
			YA-404	Pump #2 Fail	Critical Alarm	Fault	60	Call out operator
			YA-405	Pump #3 Fail	Critical Alarm	Fault	60	Call out operator
		Water Level Indicator	YY-400A	High high Level	Critical Alarm	≥ 988.75	30	**Shutdown all C/F units & Call out operator**
			YY-400B	Low low Level	Critical Level	≤ 978.75	60	Call out operator
		Finish Water Residual Chlorine	AIT-406	Low Level	Critical Alarm	2.0 PPM	120	Call out operator
			AIT-406	Low low Level	Critical Alarm	1.80 PPM	120	**Shut Down Plant & call out operator**
			AIT-406	High Level	Critical Alarm	3.8 PPM	120	Call out operator
			AIT-406	High high Level	Critical Alarm	4.0 PPM	120	**Shut Down Plant & call out operator**
5	Finish Water Storage Tanks	Storage Reservoir Level 3.0 MG Tank	LAH-100	High Level	Critical Alarm	≥ 26.0 FT	300	Call out operator
			LAL-100	Low level	Critical Alarm	≤ 15 FT	300	Call out operator
			LAHH-100	High high Level	Critical Alarm	≥ 27.0 FT	300	Shut Down Plant & Call out operator
			LALL-100	Low low level	Critical Alarm	≤ 12 FT	300	Call out operator
		Storage Reservoir Level 0.75 MG Tank	LAH-500	High Level	Critical Alarm	≥ 26.0 FT	300	Call out operator
			LAL-500	Low level	Critical Alarm	≤ 15 FT	300	Call out operator

Item	Facility	Equipment	Id Tag:	Alarm	Alarm Category/ Signal	Set Point	Delay (sec)	Triggered Action
6	High Service Pump Station (HSPS)	Booster Pumps Related	YA-101	Pump #1 Fault	Critical Alarm	Fault	10	Call out operator
			YA-102	Pump #2 Fault	Critical Alarm	Fault	10	Call out operator
			YA-103	Pump #3 Fault	Critical Alarm	Fault	10	Call out operator
			YA-104	Pump #4 Fault	Critical Alarm	Fault	10	Call out operator
			PI-101	Discharge Pressure Low	Critical Alarm	≤ 40 PSI	60	Call out operator
			PI-101	Discharge Pressure High	Critical Alarm	≥ 65.0 PSI	60	Call out operator
			FI 100	Flow Rate High	Critical Alarm	≥ 4,000 GPM	60	Call out operator
			FI 100	Flow Rate Low	Critical Alarm	≤ 100 GPM	180	Call out operator
		Surge Anticipator Valve	YA-105	By pass Valve On	Critical Alarm	Bypass On	60	Call out operator
		Residual Chlorine Analyzer	AIT-120	Low Level	Critical Alarm	1.10 PPM	900	Call out operator
			AIT-120	Low Low Level	Critical Alarm	1.0 PPM	180	Call out operator
			AIT-120	High Level	Critical Alarm	2.0 PPM	180	Shut down secondary clorination pumps if running & Call out operator
7	Clarifier/Filter Backwash Pump Station	Backwash Pumps	YA-315	Pump #1 Fail	Critical Alarm	Fault	60	Call out operator
			YA-316	Pump #2 Fail	Critical Alarm	Fault	60	Call out operator
8	Backwash Decant Pump Station	Backwash Decant Pumps	YY-110A	Pump 1 Fault	Critical Alarm	Fault	60	Call out operator
			YY-110B	Pump 2 Fault	Critical Alarm	Fault	60	Call out operator
		Wet well Level Indicator	LAHH-110	High High wet well Level	Critical Alarm	≥ 992.50	60	Call out operator
		Turbidity Instrument	AIT-110	High NTU	Process	≥ 15 NTU	900	Call out operator
		Hydrogen Detector Sensor	YA-704	Hydrogen High Alarm	Critical Alarm	25% (1% LEL)	10	Shut down System, Vacate Disinfection System Room & Call out operator
		Brine Tank Level	LSL-610	Brine Tank Low Level	Critical Alarm	≤ 25 %	60	Call out operator

Item	Facility	Equipment	Id Tag:	Alarm	Alarm Category/ Signal	Set Point	Delay (sec)	Triggered Action
9	Sodium Hypochlorite Disinfection System (SHDS)	SHDS	LS-601	Electrolytic Cell 1 Level Alarm	Non-Critical Alarm	Fault	60	Annunciator on SCADA
			LS-602	Electrolytic Cell 2 Level Alarm	Non-Critical Alarm	Fault	60	Annunciator on SCADA
			LS-603	Electrolytic Cell 3 Level Alarm	Non-Critical Alarm	Fault	60	Annunciator on SCADA
			LS-604	Electrolytic Cell 4 Level Alarm	Non-Critical Alarm	Fault	60	Annunciator on SCADA
			LS-605	Electrolytic Cell 5 Level Alarm	Non-Critical Alarm	Fault	60	Annunciator on SCADA
		Sodium Hypochlorite Sotrage Tank	LSL-600	Sodium Hypo. Tank 1 Low Level	Critical Alarm	≤ 30 %	60	Call out operator
			LSH-600	Sodium Hypo. Tank 1 High Level	Critical Alarm	≥ 85%	60	Call out operator & Shut down hypo production
			LIT-600	Sodium Hypo. Tank 2 Low Level	Critical Alarm	≤ 30 %	60	Call out operator
			LIT-600	Sodium Hypo. Tank 2 High Level	Critical Alarm	≥ 85%	60	Call out operator & Shut down hypo production
		SHDS Blowers	YA-608	Blower 1	Critical Alarm	Fault	60	Call out operator
			YA-609	Blower 2	Critical Alarm	Fault	60	Call out operator
		SHDS Chemical Metering Pumps	YA-600	Pump #1 Fail	Critical Alarm	Fault	60	Call out operator
			YA-601	Pump #2 Fail	Critical Alarm	Fault	60	Call out operator
			YA-602	Pump #3 Fail	Critical Alarm	Fault	60	Call out operator
			YA-603	Pump #4 Fail	Critical Alarm	Fault	60	Call out operator
			YA-604	Pump #1 Leak	Critical Alarm	Fault	60	Call out operator
			YA-605	Pump #2 Leak	Critical Alarm	Fault	60	Call out operator
			YA-606	Pump #3 Leak	Critical Alarm	Fault	60	Call out operator
			YA-607	Pump #4 Leak	Critical Alarm	Fault	60	Call out operator
		SHDS Control Panel	YA-700	Fault	Critical Alarm	Fault	60	**Shut down all C/F units & call out operator**
		Disinfection System PLC	YA-701	PLC Fail	Critical Alarm	Fault	60	Call out operator
10	Stormwater Pump Station	Stormwater Pumps	YA-800A	Pump 1 Fault	Non Critical Alarm	Fault	60	Annunciator on SCADA
			YA-800B	Pump 2 Fault	NonCritical Alarm	Fault	60	Annunciator on SCADA
		Wet well Level Indicator	LAHH-800	High High wet well Level	Critical Alarm	≥ 985.00	60	Call out operator

Item	Facility	Equipment	Id Tag:	Alarm	Alarm Category/ Signal	Set Point	Delay (sec)	Triggered Action
11	THM Removal System	THM Blowers	YI-901B	Blower 1 Fault	Critical Alarm	Fault	60	Call out operator
			YI-902B	Blower 2 Fault	Critical Alarm	Fault	60	Call out operator
		Aeration Units	YI-903B	Aeration Unit 1 Fault	Critical Alarm	Fault	60	Call out operator
			YI-904B	Aeration Unit 2 Fault	Critical Alarm	Fault	60	Call out operator
			YI-905B	Aeration Unit 3 Fault	Critical Alarm	Fault	60	Call out operator
			YI-906B	Aeration Unit 4 Fault	Critical Alarm	Fault	60	Call out operator
12	1.7 MG Tank	Residual Chlorine Analyzer	AIT-100	Low Level	Critical Alarm	1.2 PPM	120	Call out operator
			AIT-100	Low low Level	Critical Alarm	1.0 PPM	120	Plant Shut Down & Call out operator
			AIT-100	High Level	Critical Alarm	2.8 PPM	120	Call out operator
			AIT-100	High high Level	Critical Alarm	3.0 PPM	120	Plant Shut Down & Call out operator
13	Emergency Shower and Eye Wash Stations (ESEWS)	At Clarifier/Filter Units	YA-155	Station operated	Critical Alarm	On	5	Call out operator
		At Static Mixer Facility	YA-333	Station operated	Critical Alarm	On	5	Call out operator
		At Disinfection Building	YA-600B	Station operated	Critical Alarm	On	5	Call out operator
14	Loss of IID Power	IID Transformer	YY-104	Power Failure	Critical Alarm	Fault	120	ATS to turn on Generator & Call out operator
15	Generator Set	Generator/ATS	YIR-700	Generator On	Critical Alarm	On	60	Call out operator
			YY-103	Generator Fail	Critical Alarm	Fault	60	Call out operator
			YY-700	Generator not in auto	Critical Alarm	Fault	60	Call out operator
			YY-102	Fuel Low Level	Critical Alarm	≤ 15%	60	Call out operator
			YA-700A	Fuel Leak Detection	Critical Alarm	On	60	Call out operator
			YC-106	Power Fail after 5 Minutes ATS on “Generator On” Position	Critical Alarm	Fault	60	Call out operator

Appendix O
Disinfection Byproduct Rule (DBPR) for TTHM Reporting Form

State Water Resources Control Board, Division of Drinking Water, San Diego District

Reporting Sheet revised 8/28/2018

Stage 2 DDBPR Quarterly TTHM Report for Disinfection Byproducts Compliance (in µg/L or ppb)

System Name: Heber PUD System No.: 1310007 Year: 2018 Quarter: 3rd TTHM MCL = 0.080 mg/L or 80 ug/L

Year:	2017										2018															
Quarter:	1st Qtr	2nd	3rd Qtr							4th	1st Qtr				2nd Qtr				3rd Qtr				4th Qtr			
	Jan	May	Jul	Aug	Sept	Qtr	Oct	Nov	Dec	Qtr	Jan	Feb	Mar	Qtr	Apr	May	Jun	Qtr	Jul	Aug	Sept	Qtr	Oct	Nov	Dec	Qtr
Sample Date (m/d):	1/11	5/16	7/12 & 7/26	8/9 & 8/23	9/6 & 9/20	ave	10/4 & 10/18	11/1	12/13	ave	1/8	2/5	3/5	ave	4/9	5/8	6/5	ave	7/17	8/13		ave				ave
Monitoring Location	TTHM Results (ug/L)																									
(900) McCabe	59.1	107.0	55.3	70.7	64.7	63.6	50.7	55.2	44.9	50.3	44.5	38.4	49.0	44.0	58.9	61.5	54.9	58.4	90.5	29.9		60.2				
(901) Littlefield	47.1	97.3	56.8	54.8	58.2	56.6	49.4	45.8	40.8	45.3	38.0	35.8	50.3	41.4	64.2	61.5	68.7	64.8	84.5	81.8		83.2				
# of Samples Taken	2	2	2	2	2		2	2		2	2	2	2		2	2	2		2	2						
Monitoring Location	TTHM Operational Evaluation Level (OEL) (ug/L)																									
(900) McCabe	78	**83**				73				68				50				53				56				
(901) Littlefield	70	76				64				61				46				54				68				
Maximum OEL value:	78	**83**				73				68				50				54				68				0
Is OEL ≤ MCL for all monitoring locations? (a)	Yes	No				Yes				Yes				Yes				Yes				Yes				
Monitoring Location	TTHM Location Running Annual Average (RAA) (ug/L)																									
(900) McCabe	**88**	**90**				72				70				66				54				53				
(901) Littlefield	80	**82**				66				62				60				52				59				
Maximum LRAA value:	**88**	**90**				72				70				66				54				59				0
Meets standard for all monitoring locations (i.e., LRAA ≤ MCL)? (b)	No	No				Yes				Yes				Yes				Yes				Yes				

(a) If OEL exceeds TTHM MCL, system must conduct an operational evaluation and submit a report to DDW no later than 90 days after being notified of the analytical result that caused the OEL exceedance.

(b) If LRAA exceeds the TTHM MCL, system must conduct public notification.

(c) If any individual quarter's result will cause the LRAA to exceed the TTHM MCL, the system is out of compliance at the end of that quarter.

Comments:

Signature

08/30/18

Date

Appendix P
Filter Media Inspection Record Form

SYSTEM: HEBER PUBLIC UTILITY DISTRICT

SYSTEM NO: 1310007-001

DATE:

OPERATOR(S):

FILTER INSPECTION FORM

Filter No. (1, 2 or 3)	Core Location No. 1 - Depth of Media (Inches)		Core Location No. 2 - Depth of Media (Inches)		Average of Core for Location Nos. 1 and 2.		Required Depth Range (Inches)	Meets Requirement (Yes or No)	Remarks/Maintenance/Deficiencies
	Anthracite		Anthracite		Anthracite		17 to 19		
	Silica Sand		Silica Sand		Silica Sand		7 to 8		
	Garnet		Garnet		Garnet		2.5 to 3.5		
Remarks									

Notes: