

ADOPTED 2/15/11

EMERGENCY WATER CONSERVATION PLAN



Prepared for:

**Western Hills
Water District**



Prepared by:

WESTERN HILLS WATER DISTRICT

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1.0 Introduction

Western Hills Water District (WHWD) operates and maintains the water distribution system serving the Diablo Grande development. WHWD supplies water to Diablo Grande utilizing two separate systems: a raw water distribution system and a potable water distribution system. Untreated water (raw) is supplied for irrigation of the Diablo Grande golf courses within the development via the raw water distribution system. The potable water distribution system supplies water to Diablo Grande residents. The California Aqueduct is the only source of water for the Diablo Grande development. Water supply serving Diablo Grande depends on the conveyance of raw water from the California Aqueduct to Diablo Grande via a series of raw water pumping stations all owned and operated by WHWD. Raw water is pumped from the California Aqueduct to the Diablo Grande Water Treatment Plant (WTP) where it is treated, filtered and routed to the Diablo Grande WTP clear well and pumped to the Zone 3 water tank.

California Department of Health Services requires WHWD to develop and implement an Emergency Water Conservation Plan (EWCP). The EWCP ensures a mechanism is in place that will allow WHWD to adapt to emergency situations related to their ability to deliver water to the residents and golf courses of Diablo Grande.

1.1 Purpose

The purpose of this Plan is to provide a mandatory emergency water conservation plan to minimize the effect of a possible water shortage to WHWD Customers and to implement provisions that will significantly reduce the consumption of water over an extended period of time. Measures taken to reduce water consumption will thereby extend the available water required for WHWD Customers while reducing hardships to the greatest extent possible to WHWD and its customers.

It is important to distinguish emergency water conservation planning from water conservation planning. While water conservation involves implementing permanent water use efficiency or reuse practices, emergency plans establish temporary methods or techniques to be used only as long as an emergency exists. The contingency measures included in the Plan may be implemented as precautionary measures to avoid or minimize the impact of drought-related water shortages or other emergency situations identified within this Plan.

It is also important to distinguish between required raw water and treated water conservation measures. A process or other type of failure at the water treatment plant may trigger emergency water conservation measures for only the treated water and not the raw water.

1.2 Application

The provisions of this Plan shall apply to all Customers and property served by WHWD wherever situated, and shall also apply to all property and facilities owned, maintained, operated, or under the jurisdiction of WHWD.

1.3 Triggering Conditions

The EWCP will be implemented when the WHWD Board determines an emergency affecting their ability to supply raw water and/or treated water to their customers is compromised.

Reduced water supply or a number of other uncontrollable circumstances can disrupt normal availability of WHWD's water supply and could present WHWD with an emergency water conservation situation. The EWCP is designed to provide procedures to respond to these emergencies.

The following are the potential situations that could trigger the EWCP to be implemented.

1.3.1 Power Source Reliability and Backup Power

The power source for the raw water pumping stations is supplied by Turlock Irrigation District (TID) from a substation located on Oak Flat Road. Historical records by TID indicate that there have only been a few incidents where power to the Diablo Grande development and surrounding areas has been interrupted for more than 9 hours. Diablo Grande staff indicates that the power was restored within a few hours to a majority of the Diablo Grande development. TID staff has stated, in the event of a power outage, power restoration to Diablo Grande is viewed as a priority due to the water delivery requirements. TID estimates power would be restored within 6 hours.

All raw water pump stations and the WTP now have backup diesel generators in case of a main TID power failure. These generators are capable of running the facilities they are stationed at for more than 12 hours at full capacity. These generators are subject to mechanical failure and potential fuel shortages.

Treated water from the clear well at the Diablo Grande WTP is routed to the Zone 3 tank via the Zone 3 pumping station. Backup power is provided for the Zone 3 pumping station from the 1000 kW generator at the WTP.

1.3.2 Water Delivery Restriction

On an annual basis the California Department of Water Resources (DWR) has the ability to decrease the amount of water WHWD can withdraw from the California Aqueduct. Although WHWD has an agreement that allows for the delivery of 8,000 acre feet per year, that amount is routinely reduced.

On average over the past five years, DWR has reduced the amount of water WHWD can withdraw by 40 to 50 percent. Currently WHWD needs a minimum allotment of 1,300 acre feet to meet the annual demands of its customers in a normal year. Drought or hot weather years will increase this demand. If DWR reduces WHWD's water allotment below 1,300 acre feet per year, WHWD will not be able to meet the total water demands of its customers and emergency conservation measures would need to be implemented.

WHWD is dependent on water supplied by the California Aqueduct. In 2007, the California Aqueduct was shut down for over 10 days. Pumps supplying water to the aqueduct were shut down due to concerns regarding entrainment of Delta Smelt on intake screens.

1.3.3 Chemical Shortage

The WTP relies on a number of chemicals and processes to treat the raw water before delivering it to the customers as potable water. In the past some of these chemicals have been in short supply or were unavailable. If the proper chemicals are not available, WHWD will not be able to treat the water to the level mandated by the State of California for potable water. This means that the water could not be delivered to customers until the water could be treated to the appropriate level. The shortage of proper chemicals would constitute an emergency and would require action on the part of WHWD. This situation would not affect the delivery of raw water to the golf courses.

1.3.4 System Treatment, Storage, or Distribution Failures or Contamination

The WHWD does not currently have a capital improvement or equipment replacement fund established. As the system ages there is the possibility of the equipment or systems failing or breaking down. Natural disasters such as earthquakes, floods, or bad weather may cause equipment to fail. If the District does not have the funds to immediately repair or replace the equipment, the District's ability to pump raw water or generate potable water could be impaired.

Water systems have the potential to become contaminated for a number of reasons. If the water system was to become contaminated the system would need to be shut down until the cause could be determined and the system cleaned and restored.

If either of these situations were to occur, the EWCP would need to be implemented until the crisis was resolved. Failures at the WTP or within the distribution system would not necessarily impact raw water deliveries.

1.3.5 Financial Crisis

WHWD is currently dependent on the developer of Diablo Grande to subsidize the District since the fees collected from the customers do not cover 100% of the costs associated with the operation and maintenance of WHWD. If the developer is financially unable to maintain the subsidy, the District would not have the resources to maintain the level of service the customers currently receive and emergency conservation measures would need to be implemented until a solution could be determined. This scenario could impact water service to either the raw water or treated water systems depending on the levels of funding available.

1.3.6 Labor Shortage

If WHWD is unable to employ the manpower necessary to adequately operate the WTP due to a shortage of qualified people or lack of funds to pay the staff, emergency conservation measures would need to be implemented.

1.3.7 Pandemic

Over the last several years, the Federal Environmental Protection Agency, the State of California and other public works organizations have recognized the potential impacts that could be caused by widespread influenza or other illnesses. Operations staff could be adversely impacted and not be able to maintain the level of water service expected by WHWD customers. Emergency conservation measures would need to be implemented at that point. Operations staff limitations due to a pandemic may impact either raw water or treated water systems.

This Plan includes a summary of the available water supply and estimated water demands at Diablo Grande, and presents the EWCP to be adopted and implemented by WHWD.

2.0 Water Demand and Supply

In the event that raw water supply to Diablo Grande is interrupted due to power failure or other problems in the raw water supply system or the Water District, the Zone 3 tank will be required to supply the water demands at the Diablo Grande development. It is assumed that the Zone 3 tank will provide enough storage to provide for fire storage, system equalization, and domestic demands.

2.1 Potable Water Demand

Maximum day demands at Diablo Grande are estimated to be 1,335 GPD/unit per the January 3, 2003 Brown and Caldwell Report. The planned number of units for Phase I of the Diablo Grande development project was projected to be approximately 416 units resulting in a total maximum day demand of approximately 0.56 million gallons per day (MGD).

Total Maximum Day Demand:
= Number of Units x Maximum Day Demand per Unit
= 416 Units x 1,335 GPD/Unit = 555,360 gal = 0.56 MGD

The EWCP assumes that the Zone 3 tank will provide maximum day water demands until emergency water conservation measures are mandated. Once emergency conservation measures are in place, domestic water use is anticipated to be reduced from maximum day demand levels to less than average day demand levels due to the emergency water conservation requirements.

2.2 Water Supply

The total storage capacity of the Zone 3 water tank is 1.00 million gallons (MG). Per the Patterson Fire Department and West Stanislaus County Fire Protection District Fire Chief, Bill Kinnear, the required fire flow storage at the Diablo Grande development is 0.30 MG. The equalization storage in the Zone 3 water tank is 25% of the total maximum day demand or approximately 0.14 MG. Assuming that the total 0.14 MG of equalization storage has been used, the total volume of water stored in the Zone 3 water tank available to meet a maximum day water demands at the Diablo Grande development is approximately 0.56 MG.

Available Volume of Water to Meet Maximum Day Demands:
= Capacity - (Fire Storage + Equalization)
= 1,000,000 gal - (300,000 gal + (0.25 x 555,360 gal))
= 561,160 gal = 0.56 MG

Number of Days of Supply Available from the Zone 3 Water Tank:
= Available Storage/Maximum Day Demand of 416 Units
= 0.56 MG/0.56 MGD
= 1 Day = 24 Hours

With an available water storage volume in the Zone 3 water tank of 0.56 MG and with a current estimated total maximum day demand of 0.56 MGD, the Zone 3 water tank can supply the Diablo Grande development for 24 hours in the event that the raw water supply is interrupted and/or the WTP is not able to function.

3.0 Emergency Water Conservation Plan (EWCP)

In order to prepare for a water supply shortage due to any of the reasons outlined in Section 1 of this Plan, the EWCP will be adopted by WHWD. Upon adoption of the EWCP, WHWD is responsible for requiring Diablo Grande to notify all existing raw water and treated water users of the potential for WHWD to implement the EWCP.

The following provisions outline WHWD's requirements for implementation of the EWCP including: emergency response time; implementation of the Emergency Water Hauling Plan (EWHP); water conservation measures; public enforcement; and recommended improvements to the existing potable water distribution system.

3.1 EWCP Procedures

The emergency action plan and procedures shall be reviewed and practiced by the designated emergency response team by conducting emergency response exercises. The EWCP shall also be updated annually. All Diablo Grande personnel shall be familiar with the procedure as outlined in the EWCP. In the event of an emergency, the California Department of Health Services shall be notified and involved with all emergency response decisions and procedures in accordance with the California Water Code.

3.2 Action Plan and Response Time

In the event that the water supply system is interrupted due to any of the reasons outlined in Section 1, the assigned Emergency Operations Team Leader for Diablo Grande will convene a strategy meeting with the appropriate staff to ensure that emergency plans and procedures are carefully followed. The goal of this emergency meeting will be to address, but is not limited to, the following:

- Determine the cause of the problem and estimate the amount of time required for the system to be brought back to full function.

- Determine if implementation of the EWHP will be necessary based on estimated time the water system will be off-line before returning to full function.
- Determine which conservation measures are necessary and which systems are impacted.
- Determine which local and emergency agencies will be notified.
- Designate personnel required to carry out the EWCP procedures.

As determined in Section 2.0, the available water storage volume at the Zone 3 storage tank required to meet maximum day demands at the Diablo Grande development is approximately 0.56 MGD, which will provide 24 hours of supply. WHWD is required to assess the emergency situation and determine whether or not to implement the EWHP within 6 hours from the time the water supply and distribution system is interrupted or when made aware of the problem. A maximum response time of 6 hours allows for 18 hours for WHWD to implement the EWHP and water conservation measures.

3.3 Emergency Water Hauling Plan (EWHP)

The following Emergency Water Hauling Plan will be implemented if the cause of the emergency is such that hauling water to the site will relieve the crisis. Water will continue to be hauled until the WHWD Board deems the crisis to be resolved.

The EWHP will utilize a licensed drinking water hauler to transport potable water from an approved potable water source via bulk water tanker trucks to supplement the Diablo Grande potable water supply shortage. The City of Atwater and the City of Turlock are prepared to supply WHWD with potable water on an emergency basis. According to Cherokee Freight Lines, the response time to have one tanker truck on-site is estimated at 6 hours. Each tanker truck can transport approximately 6,200 gallons of water. With a maximum emergency assessment response time of 6 hours, the first tanker truck hauling 6,200 gallons of potable water can be on-site approximately 12 hours from the time the raw water supply and distribution system is interrupted or the problem is identified. The assumed amount of time for a tanker truck to deliver one water load, including travel time from the emergency water source (City of Atwater and/or City of Turlock) plus loading time is approximately 2.5 hours. A total of fifteen truck loads, utilizing two tanker trucks delivering one load every 1.5 hours, will be necessary to supplement the reduced water use demands of 224 GPD/Unit for a 24-hour time period, or until the water supply is restored.

Potable water will be delivered on-site to the truck loading station located at the WTP. Tanker trucks will dock at the loading station and directly connect to the 14-inch filtered water line, as shown on Drawing No. 100-C-06 of the January 2004 Diablo Grande Water Supply and Treatment Facility Plans (see Figure 1). The potable water will then be routed to the clear well and pumped to the Zone 3 water tank utilizing the back-up generator. Potable water will be supplied to the Diablo Grande development in accordance with the EWHP procedures and requirements.

3.4 Implementation of Water Conservation Measures

In the event raw water delivery is interrupted or slowed for more than 24 hours, WHWD will mandate and enforce water conservation measures anticipated to reduce water use from maximum day demands to one-third of average day demands. Water conservation measures to be mandated are as follows:

- Golf course irrigation will not be permitted during the water shortage. All raw water deliveries, if available, will be prioritized for production of potable water.
- Exterior use of treated water will not be permitted by Diablo Grande residents or commercial customers..
- No washing of vehicles will be allowed except at off-site commercial car wash facilities.
- No filling of residential swimming pools and spas with potable water.
- Water for sanitary uses will only be utilized to flush solids.
- All golf and Clubhouse activities requiring potable water supplied from WHWD will be suspended.

In the event that the WHWD treatment, storage and distribution system is compromised, the same emergency conservation measures will be implemented with the exception of limiting raw water use on the golf courses for irrigation.

3.5 Enforcement

In order to enforce the mandated water conservation measures, WHWD personnel will begin 24-hour patrol of the Diablo Grande development for enforcement.

All water users are expected to comply with the restrictions imposed by implementation of this Plan. A person commits an offense if he or she knowingly makes, causes, or permits use of water contrary to the emergency water conservation measures implemented.

3.6 Failure to Comply

3.6.1 Penalties

The penalties for failure to comply with any of the provisions of this plan shall be as follows:

1. For the first violation by any Customer of any of the provisions of this Plan, the WHWD shall issue a written notice of the fact of such violation to the Customer.
2. For a second violation by any Customer of any of the provisions of this Plan shall have their water service turned off and payment of a \$500 fine will be required to reestablish water service.

Terminated service may be restored upon application of the Customer made not less than forty-eight (48) hours after the implementation of the action terminating service and only upon a showing by the Customer that the Customer is ready, willing and able to comply with the provisions of this Plan and WHWD rules regarding the conservation of water. Prior to any restoration of service, the Customer shall pay all WHWD charges for any termination of service and its restoration as provided for in the Department's rules governing water service, including but not limited to payment of all past due bills and fines.

3.6.2 Notice

The WHWD shall give notice of each violation to the Customer committing such violation as follows:

1. For any violation of the provisions of this Plan, the District may give written notice of the fact of such violation to the Customer personally, by posting a notice at a conspicuous place on the Customer's premises, or by United States Mail, First-Class postage prepaid, addressed to the Customer's billing address.

2. If the penalty assessed is, or includes, the termination of water service to the Customer, notice of the violation shall be given in the following manner:
 - a. By giving written notice thereof to the Customer personally; or
 - b. If the Customer is absent from or unavailable at either his place of residence or his place of business, by leaving a copy with some person of suitable age and discretion at either place, and sending a copy through the United States Mail, First-Class postage prepaid, addressed to the Customer at his place of business, residence, or such other address provided by the Customer for bills for water service if such can be ascertained; or

If such place of residence, business or other address cannot be ascertained, or a person of suitable age or discretion at any such place cannot be found, then by affixing a copy in a conspicuous place on the property where the failure to comply is occurring and also by delivering a copy to a person of suitable age and discretion there residing, or employed, if such person can be found, and also sending a copy through the United States Mail, First-Class postage prepaid, addressed to the Customer at the place where the property is situated as well as such other address provided by the Customer for bills for water service if such can be ascertained. Said notice shall contain, in addition to the facts of the violation, a statement of the possible penalties for each violation and statement informing the Customer of his right to a hearing on the violation.

3.6.3 Hearing

Any Customer who disputes any penalty levied pursuant to this Plan shall have a right to a dispute determination conducted pursuant to the WHWD's Rules governing Customer disputes. Any Customer dissatisfied with the WHWD's dispute determination may appeal that determination within 15 days of issuance to the Board, or to a designated hearing officer at the election of the Board. All defenses, both equitable and legal, may be asserted by a Customer in the appeal process. The decisions of the Board shall become final at the expiration of 45 calendar days.

During the period that the Plan is operative, the WHWD Manager may grant exemptions in special cases where a Customer can demonstrate extreme hardship.

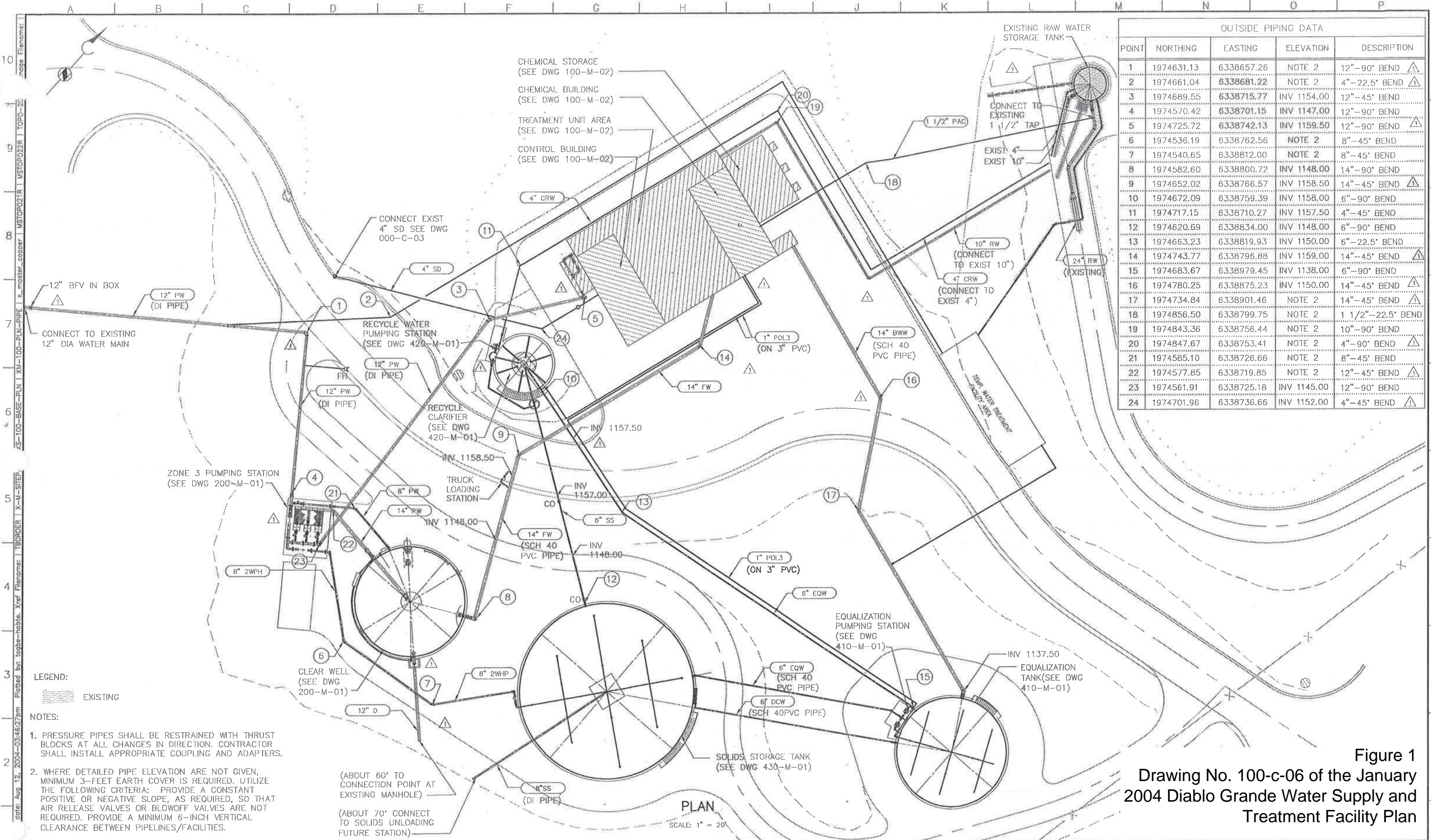
3.7 Public Notification of Plan Implementation

WHWD is responsible for all public notifications to all potentially affected Diablo Grande residents, who shall be notified of the water supply shortage in person. All verbal notifications must be accompanied by, or supplemented with, written notification. Water District Customers shall be notified within the shortest practical time to allow them sufficient time to plan for alternate arrangements, if necessary. Public notification to Customers shall be in accordance with the following requirements:

- Any notice provided to Customers must be written in a clear and readily understandable form, using plain language.
- Notice must clearly explain the water shortage/outage incident and that potential adverse health effects (if any) might result.
- Notice must specify whether all Customers or a particular segment of Customers are affected.
- Notice must identify the actions WHWD and Diablo Grande are taking to restore water supply (interim or permanent).
- Notice must state whether it is necessary for Customers to seek alternate water supplies during the time between the declared emergency and the restoration of normal supply.
- With each notice, the telephone number of the responsible Diablo Grande personnel shall be included so Customers may request additional information.

If a Customer is not at home, an information door hanger must be left on the front door. This will be followed with another attempt to contact the Customer in person.

APPENDIX A



OUTSIDE PIPING DATA				
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	1974631.13	6338657.26	NOTE 2	12"-90° BEND
2	1974661.04	6338681.22	NOTE 2	4"-22.5° BEND
3	1974689.55	6338715.77	INV 1154.00	12"-45° BEND
4	1974570.42	6338701.15	INV 1147.00	12"-90° BEND
5	1974725.72	6338742.13	INV 1159.50	12"-90° BEND
6	1974536.19	6338762.56	NOTE 2	8"-45° BEND
7	1974540.65	6338812.00	NOTE 2	8"-45° BEND
8	1974582.60	6338800.72	INV 1148.00	14"-90° BEND
9	1974652.02	6338766.57	INV 1158.50	14"-45° BEND
10	1974672.09	6338759.39	INV 1158.00	6"-90° BEND
11	1974717.15	6338710.27	INV 1157.50	4"-45° BEND
12	1974620.69	6338834.00	INV 1148.00	6"-90° BEND
13	1974663.23	6338819.93	INV 1150.00	6"-22.5° BEND
14	1974743.77	6338796.88	INV 1159.00	14"-45° BEND
15	1974683.67	6338979.45	INV 1138.00	6"-90° BEND
16	1974780.25	6338875.23	INV 1150.00	14"-45° BEND
17	1974734.84	6338901.46	NOTE 2	14"-45° BEND
18	1974856.50	6338799.75	NOTE 2	1 1/2"-22.5° BEND
19	1974843.36	6338756.44	NOTE 2	10"-90° BEND
20	1974847.67	6338753.41	NOTE 2	4"-90° BEND
21	1974585.10	6338726.66	NOTE 2	8"-45° BEND
22	1974577.85	6338719.85	NOTE 2	12"-45° BEND
23	1974561.91	6338725.18	INV 1145.00	12"-90° BEND
24	1974701.96	6338736.66	INV 1152.00	4"-45° BEND

- LEGEND:**
 EXISTING
- NOTES:**
 1. PRESSURE PIPES SHALL BE RESTRAINED WITH THRUST BLOCKS AT ALL CHANGES IN DIRECTION. CONTRACTOR SHALL INSTALL APPROPRIATE COUPLING AND ADAPTERS.
 2. WHERE DETAILED PIPE ELEVATION ARE NOT GIVEN, MINIMUM 3-FOOT EARTH COVER IS REQUIRED. UTILIZE THE FOLLOWING CRITERIA: PROVIDE A CONSTANT POSITIVE OR NEGATIVE SLOPE, AS REQUIRED, SO THAT AIR RELEASE VALVES OR BLOWOFF VALVES ARE NOT REQUIRED. PROVIDE A MINIMUM 6-INCH VERTICAL CLEARANCE BETWEEN PIPELINES/FACILITIES.
- (ABOUT 60' TO CONNECTION POINT AT EXISTING MANHOLE)
 (ABOUT 70' CONNECT TO SOLIDS UNLOADING FUTURE STATION)

Figure 1
Drawing No. 100-c-06 of the January 2004 Diablo Grande Water Supply and Treatment Facility Plan

BROWN AND CALDWELL SUBMITTED: _____ DATE: _____ APPROVED: _____ DATE: _____ APPROVED: _____ DATE: _____	LINE IS 2 INCHES AT FULL SIZE (IF NOT 2"-SCALE ACCORDINGLY) FILE: 22395 DRAWN: TOH DESIGNED: AS CHECKED: _____ CHECKED: _____	RECORD DRAWING THIS RECORD DRAWING WAS PREPARED USING INFORMATION REPORTED TO BROWN AND CALDWELL. THE INFORMATION WAS NOT INDEPENDENTLY FIELD VERIFIED. THIS DRAWING CANNOT BE RELIED UPON AS AN EXACT REPRESENTATION OF ACTUAL CONDITIONS			REVISIONS <table border="1"> <thead> <tr> <th>ZONE</th> <th>REV</th> <th>DESCRIPTION</th> <th>BY</th> <th>DATE</th> <th>APP</th> </tr> </thead> <tbody> <tr> <td>VAR</td> <td>Δ</td> <td>AS BUILT</td> <td>TOH</td> <td>2/04</td> <td>AS</td> </tr> </tbody> </table>			ZONE	REV	DESCRIPTION	BY	DATE	APP	VAR	Δ	AS BUILT	TOH	2/04	AS	DIABLO GRANDE STANISLAUS COUNTY, CALIFORNIA WATER SUPPLY AND TREATMENT FACILITIES		WATER TREATMENT PLANT YARD PIPING PLAN		SCALE AS SHOWN DRAWING NUMBER 100-C-06 SHEET NUMBER 21
		ZONE	REV	DESCRIPTION	BY	DATE	APP																	
VAR	Δ	AS BUILT	TOH	2/04	AS																			
PLAN SCALE: 1" = 20'																								