

Drinking Water Source Assessment

Water System

Soquel Creek Water District

Water Source

Polo Grounds Well

Assessment Date

June, 2011

California Department of Public Health
Drinking Water Field Operations Branch
CDPH Monterey District

District No.	05
System No.	4410017
Source No.	
PS Code	

Vulnerability Summary

District Name: CDPH Monterey	District No.: 05	County : Santa Cruz
System Name: Soquel Creek Water District	System No.: 4410017	
Source Name: Polo Grounds Well	Source No.:	PS Code: 4410017-

Completed by: Georgina King, Hydrometrics WRI	Date: June 15, 2011
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THE FOLLOWING INFORMATION MUST BE INCLUDED IN THE SYSTEM CONSUMER CONFIDENCE REPORT

A source water assessment was conducted for the Polo Grounds Well of the Soquel Creek Water District water system in June, 2011.

The source is considered most vulnerable to the following activities not associated with any detected contaminants:

- Septic systems - high density (>1/acre)
- Sewer collection systems- Residential
- Septic systems – low density (<1/acre)
- Parks
- Irrigated crops
- Fertilizer, pesticide/ herbicide application
- Drinking water treatment plant

Discussion of Vulnerability

Iron and manganese are the only constituents of concern in the groundwater at the source well. Elevated iron and manganese are naturally occurring in the Purisima Formation, from which the Polo Grounds well produces its water. Onsite iron and manganese treatment will take place prior to the pumped water entering the distribution system. The Purisima Formation is also known to have elevated turbidity and color, which has not been observed at the source well. However, the onsite iron and manganese treatment would also be able to treat the turbidity and color issues if they did occur.

Apart from the aforementioned constituents, nitrate is the only other contaminant that has once been detected in the water supply (but still below the maximum contaminant level). Despite no other contaminants being detected in the water supply, the source is still considered vulnerable to activities located near the drinking water source. Potential sources of contamination are related to residential land use and to a lesser extent, the agricultural land use within the capture zones of the well. Within the District's boundary, all residential units are connected to the sewer system. Outside of the District's boundary, residences use septic systems. Leaks in the sewer collection system and seepage from the septic systems have the potential to impact the soil and

Drinking Water Source Assessment and Protection (DWSAP) Program

groundwater. Fertilizer use in parks such as the Polo Grounds and fruit tree orchards are other potential sources of contamination to the source well.

On-site storage and use of sodium hypochlorite (12.5%) for chlorination and precipitant, and diesel for the generator are also potential sources of contamination to the well. The sodium hypochlorite is stored in a double contained polyethylene tank, with a issued HazMat permit from the County of Santa Cruz Environmental Health Department, who perform annual inspections of the tank. The diesel tank also is inspected annually by the County of Santa Cruz Environmental Health Department.

There is one abandoned well approximately 300-400 feet from the source well.

A copy of the complete assessment may be viewed at:

California Department of Public Health
Drinking Water Field Operations Branch
1 Lower Ragsdale, Building 1, Suite 120
Monterey, AC 93940

You may request a summary of the assessment be sent to you by contacting:

Laura Brown
General Manager
Soquel Creek Water District
5180 Soquel Drive
PO Box 1550
Capitola, CA 95010-1550
(831) 475-8500

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Vulnerability Ranking - Groundwater

District Name: **CDPH Monterey** District No.: **05** County : **Santa Cruz**
 System Name: **Soquel Creek Water District** System No.: **4410017**
 Source Name: **Polo Grounds Well** Source No.: PS Code: **4410017-**

Completed by: **Georgina King, Hydrometrics WRI** Date: **June 15, 2011**

Zone	PCA (Risk Ranking)	PCA Risk Points	Zone Points	PBE Points	Vulnerability Score
		VH = 7 H = 5 M = 3 L = 1	A = 5 B5 = 3 B10 = 1 Unknown=0	L = 5 M = 3 H = 1	Risk + Zone + PBE points
A	Septic systems - high density (>1/acre) (VH if in Zone A, otherwise M)	7	5	1	13
A	Sewer collection systems- Residential (H, if in Zone A, otherwise L)	5	5	1	11
A	Septic systems – low density (<1/acre) (H in Zone A, otherwise L)	5	5	1	11
A	Parks (M)	3	5	1	9
A	Crops, irrigated (M)	3	5	1	9
A	Fertilizer, Pesticide/ Herbicide Application (M)	3	5	1	9
A	Drinking water treatment plants (M)	3	5	1	9
A	Transportation Corridors- Roads/ Streets (L)	1	5	1	7
A	Surface water - streams/ lakes/rivers (L)	1	5	1	7
A	Wells – monitoring, test holes (L)	1	5	1	7
B5	Septic systems - high density (>1/acre) (VH if in Zone A, otherwise M)	3	3	1	7
B5	Parks (M)	3	3	1	7
B5	Crops, irrigated (M)	3	3	1	7
B5	Fertilizer, Pesticide/ Herbicide Application (M)	3	3	1	7
B5	Wells – Water supply (M)	3	3	1	7
B5	Sewer collection systems- Residential (H, if in Zone A, otherwise L)	1	3	1	5
B5	Septic systems – low density (<1/acre) (H in Zone A, otherwise L)	1	3	1	5
B5	Transportation Corridors- Roads/ Streets (L)	1	3	1	5
B5	Surface water - streams/ lakes/rivers (L)	1	3	1	5
B10	Septic systems - high density (>1/acre) (VH if in Zone A, otherwise M)	3	1	1	5
B10	Parks (M)	3	1	1	5
B10	Crops, irrigated (M)	3	1	1	5
B10	Fertilizer, Pesticide/ Herbicide Application (M)	3	1	1	5

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B10	Wells – Water supply (M)	3	1	1	5
Unknown	Storm Drain Discharge Points (M)	3	0	1	4
B10	Sewer collection systems- Residential (H, if in Zone A, otherwise L)	1	1	1	3
B10	Septic systems – low density (<1/acre) (H in Zone A, otherwise L)	1	1	1	3
B10	Transportation Corridors- Roads/ Streets (L)	1	1	1	3
B10	Surface water - streams/ lakes/rivers (L)	1	1	1	3

Explanation of Source Water Assessments and Definition of Terms

A source water assessment was recently completed for this drinking water source. The assessment identifies the vulnerability of the drinking water supply to contamination from typical human activities. The assessments are intended to facilitate and provide the basic information necessary for a local community to develop a program to protect the drinking water supply.

A summary of the complete assessment is provided here. For more information, contact the agency or individual that prepared the assessment (shown in summary). You may also contact the local Department of Public Health Drinking Water Field Operations Branch district office (<http://www.cdph.ca.gov/programs/Documents/DDWEM/OriginalDistrictMapCDPH.pdf>).

Additional information about assessments can be found at: <http://www.cdph.ca.gov/certlic/drinkingwater/Pages/DWSAP.aspx>

Terms used in this summary:

Source Water Assessment: An assessment is an evaluation of a drinking water source to determine the "possible contaminating activities" (PCAs) to which the source is most vulnerable. The assessment includes: a delineation of protection zones around the source; an inventory of the types of PCAs within the source protection zones; and an analysis to determine the PCAs to which the source is most vulnerable. The information is compiled into a report that includes a map, calculations, checklists, and a summary of the findings.

Possible Contaminating Activity (PCA): A PCA is a current or historic human activity that is an actual or potential origin of contamination for a drinking water source. PCAs include activities that use, store, produce or dispose of chemicals that have the potential to contaminate drinking water supplies. There are 110 types of PCAs in the California DWSAP program.

PCA Risk Ranking: Each type of PCA is assigned a risk ranking (Very High, High, Moderate, or Low). The risk ranking is based on the contaminant(s) typically associated with that PCA, the likelihood of release from that type of facility based on historical experience, and the mobility of the contaminant(s).

PCA Inventory: The PCA inventory is a review using local knowledge, databases, and on-site evaluations to identify the occurrence and approximate location of PCAs in the source water zones. The inventory for the basic DWSAP assessments is a presence-absence review. If a type of PCA occurs in a zone, a "Yes" is noted in the inventory for that zone, regardless of whether there is one or many of that type of facility within the zone. If a PCA has been associated with a contaminant detected in the water supply, a notation is made in the PCA inventory.

Source Water Zones or Areas: These are areas located around and typically adjacent to a drinking water source that have been identified as initial protection areas.

For groundwater sources, there are typically three concentric circular zones around a source (Zones A, B5 and B10). The sizes of the are determined based on characteristics of the source. PCAs located in the inner Zone A are considered more of a risk to the water supply than PCAs located in the middle Zone B5. Similarly, PCAs located in Zone B5 are considered more of a risk than PCAs located in the outer Zone B10.

For surface water sources, the watershed is defined as the overall protection area, and as an option, zones are defined closer to the source. Two types of zones are typically established. Zone A is the area within and near the surface water body and its tributaries. Zone B is an area within 2,500 feet of the intake, not including areas in Zone A. For surface water sources, PCAs located in Zone A are considered a greater threat than PCAs located in Zone B. PCAs located on the watershed outside of the zones are considered to be of less risk to the water supply. If zones have not been defined, PCAs are considered to be of equal risk regardless of location on the watershed.

Physical Barrier Effectiveness (PBE): The PBE for a source is an evaluation of the ability of the source and the surrounding area to prevent the movement of contaminants into the source. The PBE is based on the construction and operation features of the source, and the characteristics of the surrounding area. A source is assigned a PBE of Low, Moderate or High, where High indicates that the physical barriers of the source and site are very effective in preventing the movement of contaminants. By design, typical groundwater sources will have Moderate PBE, while typical surface water sources will have Low PBE. This is due to the greater exposure of surface water sources to contamination.

Vulnerability Ranking: The vulnerability ranking is a summary of the PCAs identified in the assessment prioritized by the risk that they pose to the water supply. The prioritization is based on the risk associated with a PCA, the zone in which it occurs, and the PBE of the source. In the vulnerability ranking, points are assigned as follows:

PCA risk ranking	Very High = 7	High = 5	Moderate = 3	Low = 1	Unknown in any zone = 0
Zone (Groundwater)	A = 5	B5 = 3	B10 = 1		
Zone (Surface water with zones)	A = 5	B = 3	Watershed = 1		
Zone (Surface water without zones)	Watershed = 5				
Physical Barrier Effectiveness	Low = 5	Moderate = 3	High = 1		

The points for each type of PCA in each zone are totaled to give a vulnerability score, and the PCAs are ranked in order from the highest score to the lowest score. PCAs associated with detected contaminants are ranked at the top, regardless of vulnerability score. By definition, groundwater sources are not considered vulnerable to PCAs with scores less than 8, and surface water sources are not considered vulnerable to PCAs with scores less than 11. It should be noted that the vulnerability ranking scores do not have a direct quantitative value. Rather, the points are used only to relatively rank the types of PCAs for an individual source.

Note: Some of the summaries do not include a vulnerability ranking. If the assessment was done on paper and the details were not entered into the database, the vulnerability ranking is not available here. In addition, alternate methods of determining vulnerability were allowed in some cases, and the vulnerability ranking is not in the database.

Vulnerability Summary: The source is considered most vulnerable to the PCAs with the highest score, and to PCAs associated with detected contaminants. These PCAs are noted in the vulnerability summary. Further details or discussion may be provided in the vulnerability discussion.