

Drinking Water Source Assessment

Water System

TORRANCE-CITY, WATER DEPT.

Los Angeles County

Water Source

WELL 09 - PENDING

Assessment Date

April, 2009

California Department of Health Services
Drinking Water Field Operations Branch
Torrance Municipal Water Department

District No.	T3
System No.	1910213
Source No.	016
PS Code	1910213-016

Assessment Summary

District Name	Torrance Municipal Water	District No.	T3	County	Los Angeles
System Name	TORRANCE-CITY, WATER DEPT.			System No.	1910213
Source Name	WELL 09 - PENDING	Source No.	016	PS Code	1910213-016
Completed by	Alan Berndt			Date	April, 2009

According to DHS records, this Source is Groundwater. This Assessment was done using the Default Groundwater System Method.

Description of System and Source

The TORRANCE-CITY, WATER DEPT. water system is located in Los Angeles County and serves the City of Torrance. There are approximately 26,200 service connections serving a population of 105,000.

WELL 09, the subject of this assessment, was constructed in 2008. It is 570 deep and we estimate it will produce approximately 3,000 gallons per minute. The principal recharge areas are Montebello Forebay, seawater barriers. General land use on the vicinity of the well includes municipal, residential and commercial activities. The protection zones and recharge areas extend into parklands, industrial areas, and residential areas.

Assessment Procedures

The assessment of the source, WELL 09, was conducted by Alan Berndt (City of Torrance) in conjunction with GEOSCIENCE Support Services, Inc. under the Drinking Water Source Assessment and Protection (DWSAP) program.

The groundwater protection zones were calculated using the Modified Calculated Fixed Radius Method, using the equation given in Appendix I of DHS' DWSAP guidance. The method calculates the protection zones as a function of pumping rate, porosity, time and screened interval of the well.

Horizontal flow direction in the area of the source well was estimated to be toward the east. The estimate is based on system personnel knowledge and potentiometer maps generated by the WRD.

The following sources of information were used in the assessment: EPA, State, County and USGS databases and knowledge and records maintained by the water system personnel.

Contents of this Assessment

Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Assessment Summary
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Vulnerability Summary
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Source Location Form
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Delineation of Water Protection Zones
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Physical Barrier Effectiveness Checklist
Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Source Data Sheet
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Inventory of Possible Contaminating Activities
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Vulnerability Ranking
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Assessment Map

Comments

The physical barrier effectiveness was calculated to be 56, which indicates Moderate effectiveness.

Vulnerability Summary

District Name Torrance Municipal Water District No. T3 County Los Angeles
 System Name TORRANCE-CITY, WATER DEPT. System No. 1910213
 Source Name WELL 09 - PENDING Source No. 016 PS Code 1910213-016

Completed by Alan Berndt Date April, 2009

THE FOLLOWING INFORMATION MUST BE INCLUDED IN THE SYSTEM CONSUMER CONFIDENCE REPORT

A source water assessment was conducted for the WELL 09 - PENDING
 of the TORRANCE-CITY, WATER DEPT. water system in April, 2009.

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

Historic gas stations
 Underground storage tanks - Confirmed leaking tanks

Discussion of Vulnerability

Potentially contaminating activities (PCAs) were screened for in Zone A, B5, and B10. A source is considered vulnerable to all PCAs that have a vulnerability score of 8 or higher and/or PCAs that have a contaminant in source water potentially associated with their activity. The source is considered potentially vulnerable to 46 PCAs.

A copy of the complete assessment may be viewed at:

City of Torrance Public Works Department
 20500 Madrona Ave
 Torrance, CA 90630

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

Alan Berndt
 Senior Water Service Supervisor
 310-618-6219
 310-618-6224 (fax)
 aberndt@torrnet.com

Delineation of Water Protection Zones

District Name Torrance Municipal Water **District No.** T3 **County** Los Angeles
System Name TORRANCE-CITY, WATER DEPT. **System No.** 1910213
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Completed by Russell Kyle **Date** April, 2009

Method Used to Delineate Protection Zones

1. Calculated Fixed Radius

X 2. Modified Calculated Fixed Radius (Attach documentation for direction of ground water flow.)

3. More Detailed Methods

4. Arbitrary Fixed Radius (For use only by or permission of DHS)

Maximum Pumping Rate of Well (Q)	<u>3,000</u>	gallons/minute
	<u>4,839</u>	acre feet/year
	<u>210,801,000</u>	cubic feet/year
Effective Porosity	<u>0.20</u>	<input checked="" type="checkbox"/> Default Value
Screened Interval of Well	<u>310</u>	feet <input type="checkbox"/> Default Value

Direction of Ground Water Flow	<u>28.00</u>	degrees
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Protection Zone	Calculated Value	Minimum Value	Base Radius	Direction	Modified Distance
Zone A - 2 Year TOT*	1,471 Feet	600 Feet	1,471 Feet	upgradient	2,207 Feet
				downgradient	736 Feet
Zone B5 - 5 Year TOT*	2,326 Feet	1,500 Feet	2,326 Feet	upgradient	3,489 Feet
				downgradient	1,163 Feet
Zone B10 - 10 Year TOT*	3,290 Feet	0 Feet	3,290 Feet	upgradient	4,935 Feet
				downgradient	1,645 Feet

*TOT = Time of Travel

Physical Barrier Effectiveness (PBE)

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Parameter	Possible Points	This Source	Score
Type of Aquifer Confinement			
1. Unconfined, Semi-confined, Fractured Rock, Unknown Aquifer	0	X	0
2. Confined	50		
Aquifer Material (Unconfined Aquifers) Type of material within aquifer			
1. Porous Media (Interbedded sands, silts, clays, gravels) with continuous clay layer minimum 25' thick above water table within Zone A	20		
2. Porous Media (Interbedded sands, silts, clays, gravels)	10	X	10
3. Fractured rock (Low Physical Barrier Effectiveness - no further questions required)	0		
Pathways of Contamination (All Aquifers) Presence of Abandoned or Improperly Destroyed Wells			
1. Present within Zone A (2 year TOT distance)	Yes	0	
	No	5	X
	Unknown	0	
2. Present within Zone B5 (2 -5 year TOT distance)	Yes	0	
	No	3	X
	Unknown	0	
3. Present within Zone B10 (5-10 year TOT distance)	Yes	0	
	No	2	X
	Unknown	0	
Static Water Conditions (Unconfined Aquifers)			
Depth to Static Water (DTW) <u>74</u> feet	0 to 20 feet	0	
	20 to 50 feet	2	
	50 to 100 feet	6	X
	Greater than 100 feet	10	
	Unknown	0	
Well Operation (Unconfined Aquifers)			
Depth to Uppermost Perforations (DUP) <u>190</u> feet			
Maximum Pumping Rate of Well (Q) <u>3000</u> gallons/minute			
Length of Screened Interval (H) <u>310</u> feet	Less than 5	0	
	Between 5 and 10	5	
	Greater than 10	10	X
	Unknown	0	
	[DUP - DTW / Q/H] <u>11.99</u>		

Physical Barrier Effectiveness (PBE)

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Parameter	Possible Points	This Source	Score
Well Construction (All Aquifers)			
Sanitary Seal (Annular Seal) Depth <u>101</u> feet	None or less than 20 feet		
	Between 20 and 50 feet		
	50 feet or greater	X	10
	Unknown		
Surface Seal (concrete cap)	Not present or improperly constructed		
	Watertight, slopes away from well at least 2' laterally in all directions	X	4
	Unknown		
Flooding potential at well site	Subject to localized flooding (i.e. in low area or unsealed pit or vault) or within 100 year flood plain		
	Not subject to flooding	X	1
	Unknown		
Security at well site	Not secure		
	Secure	X	5
	Unknown		

Score	Effectiveness
0 to 35	Low
36 to 69	Moderate
70 to 100	High

Maximum Score = 70

Score	<u>56</u>
Effectiveness	<u>Moderate</u>

Inventory of Possible Contaminating Activities (PCA Inventory)

District Name Torrance Municipal Water **District No.** T3 **County** Los Angeles
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PCA (Risk Ranking)	PCA in Zone A	PCA in Zone B5	PCA in Zone B10	*	Comments
Commercial/Industrial Activities					
Automobile - Body shops (H)	N	N	N		
Automobile - Car washes (M)	N	Y	N		
Automobile - Gas stations (VH)	N	Y	Y		
Automobile - Repair shops (H)	N	Y	Y		
Boat services/repair/refinishing (H)	N	N	N		
Chemical/petroleum pipelines (H)	N	N	N		
Chemical/petroleum processing/storage (VH)	N	Y	Y		
Dry cleaners (VH)	N	N	Y		
Electrical/electronic manufacturing (H)	N	N	N		
Fleet/truck/bus terminals (H)	N	N	N		
Furniture repair/manufacturing (H)	N	N	N		
Home manufacturing (H)	N	N	N		
Junk/scrap/salvage yards (H)	N	N	N		
Machine shops (H)	Y	N	N		
Metal plating/ finishing/fabricating (VH)	N	Y	N		
Photo processing/printing (H)	N	N	Y		
Plastics/synthetics producers (VH)	N	N	N		
Research laboratories (H)	N	N	N		
Wood preserving/treating (H)	N	N	N		
Wood/pulp/paper processing and mills (H)	N	N	N		
Lumber processing and manufacturing (H)	N	N	N		
Sewer collection systems (H in Zone A, otherwise L)	Y	Y	Y		
Parking lots/malls [>50 spaces] (M)	Y	Y	Y		
Cement/concrete plants (M)	N	N	N		
Food processing (M)	N	N	N		
Funeral services/graveyards (M)	N	N	N		
Hardware/lumber/parts stores (M)	N	N	Y		
Appliance/Electronic Repair (L)	N	Y	Y		
Office buildings/complexes (L)	Y	Y	Y		
Rental Yards (L)	Y	N	Y		
RV/mini storage (L)	N	N	Y		

Y = Yes N = No U = Unknown

*** = A contaminant potentially associated with this activity has been detected in the water supply.**

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PCA (Risk Ranking)	PCA in Zone A	PCA in Zone B5	PCA in Zone B10	*	Comments
Residential/Municipal Activities					
Airports - Maintenance/fueling areas (VH)	N	N	N		
Landfills/dumps (VH)	N	N	N		
Railroad yards/maintenance/fueling areas (H)	N	N	N		
Septic systems - high density [>1/acre] (VH in Zone A, otherwise M)	N	N	N		
Sewer collection systems (H in Zone A, otherwise L)	Y	Y	Y		
Utility stations - maintenance areas (H)	N	N	N		
Wastewater treatment plants (VH in Zone A, otherwise H)	N	N	N		
Drinking water treatment plants (M)	N	N	N		
Golf courses (M)	N	N	Y		
Housing - high density [>1 house/0.5 acres] (M)	Y	Y	Y		
Motor pools (M)	N	N	N		
Parks (M)	Y	N	Y		
Waste transfer/recycling stations (M)	N	N	N		
Apartments and condominiums (L)	Y	Y	Y		
Campgrounds/Recreational areas (L)	N	N	N		
Fire stations (L)	N	Y	N		
RV Parks (L)	N	N	N		
Schools (L)	Y	Y	Y		
Hotels, Motels (L)	N	N	N		
Agricultural/Rural Activities					
Grazing [> 5 large animals or equivalent per acre] (H in Zone A, otherwise M)	N	N	N		
Concentrated Animal Feeding Operations [CAFOs] as defined in federal regulation 1 (VH in Zone A, otherwise H)	N	N	N		
Animal Feeding Operations as defined in federal regulation 2 (VH in Zone A, otherwise H)	N	N	N		
Other Animal operations (H in Zone A, otherwise M)	N	N	N		
Farm chemical distributor/ application service (H)	N	N	N		
Farm machinery repair (H)	N	N	N		
Septic systems - low density [<1/acre] (H in Zone A, otherwise L)	N	N	N		

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PCA (Risk Ranking)	PCA in Zone A	PCA in Zone B5	PCA in Zone B10	*	Comments
Agricultural/Rural Activities					
Lagoons/liquid wastes (H)	N	N	N		
Machine shops (H)	N	N	N		
Pesticide/fertilizer/petroleum storage & transfer areas (H)	N	N	N		
Agricultural Drainage (H in Zone A, otherwise M)	N	N	N		
Wells - Agricultural/ Irrigation (H)	N	N	N		
Managed Forests (M)	N	N	N		
Crops, irrigated [Berries, hops, mint, orchards, sod, greenhouses, vineyards, nurseries, vegetable] (M)	Y	N	N		
Fertilizer/Pesticide/Herbicide Application (M)	Y	N	N		
Sewage sludge/biosolids application (M)	N	N	N		
Crops, nonirrigated [e.g., Christmas trees, grains, grass seeds, hay, pasture] [includes drip-irrigated crops] (L)	N	N	N		
Other Activities					
NPDES/WDR permitted discharges (H)	U	U	U		
Underground Injection of Commercial/Industrial Discharges (VH)	N	N	N		
Historic gas stations (VH)	Y	Y	N		
Historic waste dumps/landfills (VH)	N	N	N		
Illegal activities/unauthorized dumping (H)	N	N	Y		
Injection wells/dry wells/ sumps (VH)	N	N	N		
Known Contaminant Plumes (VH)	N	N	N		
Military installations (VH)	N	N	N		
Mining operations - Historic (VH)	N	N	N		
Mining operations - Active (VH)	N	N	N		
Mining - Sand/Gravel (H)	N	N	N		
Wells - Oil, Gas, Geothermal (H)	N	N	N		
Salt Water Intrusion (H)	N	N	N		
Recreational area - surface water source (H)	N	N	N		
Underground storage tanks - Confirmed leaking tanks (VH)	Y	Y	Y		
Underground storage tanks - Decommissioned - inactive tanks (L)	Y	Y	Y		

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PCA (Risk Ranking)	PCA in Zone A	PCA in Zone B5	PCA in Zone B10	*	Comments
Other Activities					
Underground storage tanks - Non-regulated tanks [tanks smaller than regulatory limit] (H)	U	U	U		
Underground storage tanks - Not yet upgraded or registered tanks (H)	U	U	U		
Underground storage tanks - Upgraded and/or registered - active tanks (L)	U	Y	Y		
Above ground storage tanks (M)	U	N	N		
Wells - Water supply (M)	Y	N	N		
Construction/demolition staging areas (M)	N	N	N		
Contractor or government agency equipment storage yards (M)	N	N	N		
Dredging (M)	N	N	N		
Transportation corridors - Freeways/state highways (M)	Y	Y	Y		
Transportation corridors - Railroads (M)	N	N	N		
Transportation corridors - Historic railroad right-of-ways (M)	N	N	N		
Transportation corridors - Road Right-of-ways [herbicide use areas] (M)	N	N	N		
Transportation corridors - Roads/Streets (L)	Y	Y	Y		
Hospitals (M)	N	N	N		
Storm Drain Discharge Points (M)	N	N	N		
Storm Water Detention Facilities (M)	N	N	N		
Artificial Recharge Projects - Injection wells [potable water] (L)	N	N	N		
Artificial Recharge Projects - Injection wells [non-potable water] (M)	N	N	N		
Artificial Recharge Projects - Spreading Basins [potable water] (L)	N	N	N		
Artificial Recharge Projects - Spreading Basins [non-potable water] (M)	N	N	N		
Medical/dental offices/clinics (L)	Y	Y	Y		
Veterinary offices/clinics (L)	N	N	N		
Surface water - streams/lakes/ivers (L)	N	N	N		
Wells - monitoring, test holes (L)	Y	Y	Y		

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Vulnerability Ranking

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Zone	PCA (Risk Ranking)	*	PCA Risk Points	Zone Points	PBE Points	Vulnerability Score
A	Historic gas stations (VH)		7	5	3	15
A	Underground storage tanks - Confirmed leaking tanks (VH)		7	5	3	15
A	Machine shops (H)		5	5	3	13
A	Sewer collection systems (H in Zone A, otherwise L)		5	5	3	13
A	Sewer collection systems (H in Zone A, otherwise L)		5	5	3	13
B5	Automobile - Gas stations (VH)		7	3	3	13
B5	Chemical/petroleum processing/storage (VH)		7	3	3	13
B5	Historic gas stations (VH)		7	3	3	13
B5	Metal plating/ finishing/fabricating (VH)		7	3	3	13
B5	Underground storage tanks - Confirmed leaking tanks (VH)		7	3	3	13
A	Crops, irrigated [Berries, hops, mint, orchards, sod, greenhouses, vineyards, nurseries, vegetable] (M)		3	5	3	11
A	Fertilizer/Pesticide/Herbicide Application (M)		3	5	3	11
A	Housing - high density [>1 house/0.5 acres] (M)		3	5	3	11
A	Parking lots/malls [>50 spaces] (M)		3	5	3	11
A	Parks (M)		3	5	3	11
A	Transportation corridors - Freeways/state highways (M)		3	5	3	11
A	Wells - Water supply (M)		3	5	3	11
B5	Automobile - Repair shops (H)		5	3	3	11
B10	Automobile - Gas stations (VH)		7	1	3	11
B10	Chemical/petroleum processing/storage (VH)		7	1	3	11
B10	Dry cleaners (VH)		7	1	3	11
B10	Underground storage tanks - Confirmed leaking tanks (VH)		7	1	3	11
A	Apartments and condominiums (L)		1	5	3	9
A	Medical/dental offices/clinics (L)		1	5	3	9
A	Office buildings/complexes (L)		1	5	3	9
A	Rental Yards (L)		1	5	3	9
A	Schools (L)		1	5	3	9
A	Transportation corridors - Roads/Streets (L)		1	5	3	9
A	Underground storage tanks - Decommissioned - inactive tanks (L)		1	5	3	9

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Zone	PCA (Risk Ranking)	*	PCA Risk Points	Zone Points	PBE Points	Vulnerability Score
A	Wells - monitoring, test holes (L)		1	5	3	9
B5	Automobile - Car washes (M)		3	3	3	9
B5	Housing - high density [>1 house/0.5 acres] (M)		3	3	3	9
B5	Parking lots/malls [>50 spaces] (M)		3	3	3	9
B5	Transportation corridors - Freeways/state highways (M)		3	3	3	9
B10	Automobile - Repair shops (H)		5	1	3	9
B10	Illegal activities/unauthorized dumping (H)		5	1	3	9
B10	Photo processing/printing (H)		5	1	3	9
A	NPDES/WDR permitted discharges (H)		5	0	3	8
A	Underground storage tanks - Non-regulated tanks [tanks smaller than regulatory limit] (H)		5	0	3	8
A	Underground storage tanks - Not yet upgraded or registered tanks (H)		5	0	3	8
B5	NPDES/WDR permitted discharges (H)		5	0	3	8
B5	Underground storage tanks - Non-regulated tanks [tanks smaller than regulatory limit] (H)		5	0	3	8
B5	Underground storage tanks - Not yet upgraded or registered tanks (H)		5	0	3	8
B10	NPDES/WDR permitted discharges (H)		5	0	3	8
B10	Underground storage tanks - Non-regulated tanks [tanks smaller than regulatory limit] (H)		5	0	3	8
B10	Underground storage tanks - Not yet upgraded or registered tanks (H)		5	0	3	8

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