Health Consultation

Private Well Survey

BOOMSNUB/AIRCO SUPERFUND SITE
VANCOUVER, CLARK COUNTY, WASHINGTON
EPA FACILITY ID: WAD009624453

December 24, 2003

Prepared by

The Washington State Department of Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

DOH 334-234 December 2003

Foreword

The Washington State Department of Health (DOH) has prepared this health consultation in cooperation with the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR is part of the U.S. Department of Health and Human Services and is the principal federal public health agency responsible for health issues related to hazardous waste. This health consultation was prepared in accordance with methodologies and guidelines developed by ATSDR.

The purpose of this health consultation is to identify and prevent harmful human health effects resulting from exposure to hazardous substances in the environment. Health consultations focus on specific health issues so that DOH can respond to requests from concerned residents or agencies for health information on hazardous substances. DOH evaluates sampling data collected from a hazardous waste site, determines whether exposures have occurred or could occur, reports any potential harmful effects, and recommends actions to protect public health. The findings in this report are relevant to conditions at the site during the time of this health consultation, and should not necessarily be relied upon if site conditions or land use changes in the future.

For additional information or questions regarding DOH or the contents of this health consultation, please call the health advisor who prepared this document:

Lenford O'Garro
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Office of Environmental Health Assessments
P.O. Box 47846
Olympia, WA 98504-7846
(360) 236-3376
1-877-485-7316
Website: http://www.doh.wa.gov/consults

For more information about ATSDR, contact the ATSDR Information Center at 1-888-422-8737 or visit the agency's Web site: www.atsdr.cdc.gov/.

Glossary

Agency for Toxic Substances and Disease Registry (ATSDR)	The principal federal public health agency involved with hazardous waste issues, responsible for preventing or reducing the harmful effects of exposure to hazardous substances on human health and quality of life. ATSDR is part of the U.S. Department of Health and Human Services.
Aquifer	An underground formation composed of materials such as sand, soil, or gravel that can store and/or supply groundwater to wells and springs.
Contaminant	A substance that is either present in an environment where it does not belong or is present at levels that might cause harmful (adverse) health effects.
Environmental Protection Agency (EPA)	The federal agency that develops and enforces environmental laws to protect the environment and the public's health.
Exposure	Contact with a substance by swallowing, breathing, or touching the skin or eyes. Exposure may be short-term [**acute exposure**], of intermediate duration, or long-term [**chronic exposure**].
Groundwater	Water beneath the earth's surface in the spaces between soil particles and between rock surfaces [compare with **surface water**].
Hazardous substance	Any material that poses a threat to public health and/or the environment. Typical hazardous substances are materials that are toxic, corrosive, ignitable, explosive, or chemically reactive.

Monitoring wells	Special wells drilled at locations on or off a hazardous waste site so water can be sampled at selected depths and studied to determine the movement of groundwater and the amount, distribution, and type of contaminant.
No apparent public health hazard	A category used in ATSDR's public health assessments for sites where human exposure to contaminated media might be occurring, might have occurred in the past, or might occur in the future, but where the exposure is not expected to cause any harmful health effects.
Plume	A volume of a substance that moves from its source to places farther away from the source. Plumes can be described by the volume of air or water they occupy and the direction they move. For example, a plume can be a column of smoke from a chimney or a substance moving with groundwater.
Remedial investigation	The CERCLA process of determining the type and extent of hazardous material contamination at a site.
Route of exposure	The way people come into contact with a hazardous substance. Three routes of exposure are breathing [**inhalation**], eating or drinking [**ingestion**], or contact with the skin [**dermal contact**].
Volatile organic compound (VOC)	Organic compounds that evaporate readily into the air. VOCs include substances such as benzene, toluene, methylene chloride, and methyl chloroform.

Background and Statement of Issues

The Washington State Department of Health (DOH) conducted a well survey to identify private wells near the Boomsnub/Airco Superfund site located in Hazel Dell, an unincorporated (urban growth area) town, next to and north of the city of Vancouver, Clark County, Washington. Previous health assessments prepared by DOH recommended a well survey to identify all existing wells in or close to the identified path of groundwater contamination plumes in the Alluvial and Upper Troutdale aquifer.[1, 2] This health consultation summarizes the procedure and results of the well survey. DOH prepares health consultations under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR).

The sites consists of the former Boomsnub facility and BOC Gases properties, and are located south of the intersection of NE 47th Avenue and NE 78th Street, also two other areas of groundwater contamination extend west of NE 47th Avenue. The Boomsnub metal plating facility operated from 1967 to 1994, and contaminated the soil with chromium. AIRCO, which later became BOC Gases, is a compressed gas manufacturing facility that began operations in 1964. BOC Gases is responsible for introducing volatile organic compounds (VOC's) [TCE, PCE and Freon II] to the groundwater. The Washington State Department of Ecology (DOE) began investigating the chromium contamination at the Boomsnub property in 1987 and installed a groundwater treatment system in the Alluvial aquifer in 1990 to collect and remove chromium. During the operation of the system VOC's were detected in the groundwater. The groundwater treatment system was expanded to treat the additional contaminants.[1, 2, 3] In 1991, chromium ranging from 0.0112 parts per million (ppm) to 0.292 ppm was discovered in a few private wells near Boomsnub, these wells were connected to a municipal water system.[1] By December 1993, monitoring of the private well with chromium at a level of 0.292 ppm in 1991 revealed the level had dropped to 0.03 ppm.[1]

In 1994, the Environmental Protection Agency (EPA) took over as the lead regulatory agency for the Boomsnub/Airco site. Many monitoring wells have been installed in the area and a Site-Wide Groundwater Operable Unit has identified contaminated groundwater in the Alluvial and Upper Troutdale aquifers.[2] Due to the movement of the contamination plume in the Alluvial aquifer and concerns about the quality of the groundwater being used by private well owners in or near the plume, DOH, in cooperation with the Southwest Washington Health District, DOE, the City of Vancouver, Clark Public Utilities, and the EPA issued a news release in July 1994 advising residents who were using private wells in the vicinity of the Boomsnub/Airco site to connect to the public water system.[1, 2] The recommendation was made to ensure a safe water supply for people who had wells in or adjacent to the contamination plume.[1, 2] In 1994, the EPA then excavated and removed about 6000 tons of chromium-contaminated soil from the site. An additional 2500 cubic yards of contaminated soil was later removed from the site in 2001.

The survey area was defined using Arcview® geographical information system (GIS) software by drawing a 7000 feet by 3645 feet rectangle area around the location of the plume (Figure 1).

The resulting map was provided to the Clark County Department of Assessment and Geographical Information Systems to obtain a list of tax parcel numbers, names and addresses of the property owners within the area to be surveyed. The list of names and addresses were then sent to the two municipal water systems serving the survey area. Clark County Utilities and the City of Vancouver Utility crosschecked their database of public water use against the assessor's names and addresses for verification. To further reduce the number of survey letters owners received, Clark County's online Geographical Information System (GIS) was accessed for records of land use, property type and aerial photos of the remaining parcel numbers. This process removed undeveloped lots, railroads and utilities right-of-way. All remaining property owners (tax parcel numbers) in the survey area were sent the attached letter and survey form (see Appendix A) to obtain well information. To enhance the mail survey results, a door-to-door follow-up survey was done to find all those who did not respond, this included returned mail and don't know categories. The Washington State Department of Ecology (DOE) water well log search and viewer were accessed to obtain well logs and other information when possible. The intent of the survey was to confirm the lack of private drinking wells in the area near the Boomsnub/Airco Superfund site.

Discussion

In two previous health assessments, DOH recommended a door-to-door survey of wells in the area. No record of a private well survey for the Boomsnub/Airco area was located. DOH obtained a summary of private wells in the Boomsnub/BOC gases vicinity from the Clark Public Utilities.[4] This survey was conducted to identify any private wells that might be an exposure point for contaminants in groundwater originating at Boomsnub/Airco site.

The total number of parcels within the survey area was 685. After cross checking the parcel numbers against databases for the two municipal water systems that serve the survey area, a total of 119 parcel numbers were identified as not being served by municipal water systems. GIS aerial photographs and land use descriptions further reduced this total to 57 by eliminating vacant parcels and those with no water supply. A total of 57 mail surveys were sent out on May 19, 2003, to the owners of these parcel numbers.

Table 1, shows the results of the mail survey: Of the nineteen respondents, fourteen were on municipal water system, two had private wells, two had no water source present and one checked don't know category. Only one of the two respondents with private wells was listed in the Clark Public Utilities private wells summary as having a well.

Table 1. Mail well survey near the Boomsnub/Airco superfund site, Hazel Dell, Washington 2003.

	No of owners (parcel numbers)	Effective sample
Survey Sample	57	NA
Non-Respondents	37	65%
Respondents	19	33%
Returned Mail No forwarding address	1	2%

NA - Not applicable

With only thirty-three percent of owners responding to the mailed survey, a door-to-door follow-up survey was conducted on July 1, 2003, to reach the 39 non-respondents (i.e. did not respond, returned mail don't know categories). Visual inspection of the area eliminated 16 of the 39 owners or parcel numbers (10 had no buildings, 3 had only sheds, 1 had an unoccupied industrial building, 1 had an unoccupied or abandoned home and 1 was a PUD well area). The remaining 23 homes and businesses in the survey area were found to be on municipal water system.

The door-to-door follow-up found no other private wells located in the surveyed area. The mail survey provided more information than the door-to-door survey, as the respondents were more likely to answer more questions. However both survey methods provided the essential information, which was whether or not a private well existed for potable purpose.

Table 2, shows the final results of the well survey, 2 owners (parcel numbers) or 0.3 % were on private wells, 603 owners (parcel numbers) or 88.0 % were on municipal water system and 80 owners (parcel numbers) or 11.7 % were eliminated (undeveloped lots, railroads and utilities right-of-way, no buildings or open field area, sheds, unoccupied industrial type building, unoccupied or abandon home and PUD well area). These 2 private wells are located adjacent to the contaminated groundwater plume.

Clark Public Utilities' records indicate that some of the residents with water supply wells near the contaminant plume have connected to one of the municipal water system. [4] EPA's Monitoring Well Description and Location Data show several other private wells located in the area. [5] Most of these wells have been connected to one of the two municipal water systems

serving the area. Ecology's water well log search and viewer showed that none of the private wells in the area have been abandoned. Therefore, it is possible that some of these wells may be in use even though the homes are connected to one of the municipal water system.

Table 2. Private well area of concern near the Boomsnub/Airco superfund site, Hazel Dell, Washington 2003.

	No of owners (parcel numbers)	**Effective sample**
Surveyed Sample	685	NA
Municipal Water System	603	88.0%
Private Wells	2	0.3%
Eliminated lots	80	11.7%

NA - Not applicable

Child Health Considerations

The unique vulnerabilities of infants and children demand special attention in communities with contamination of their water, food, soil or air. The potential for exposure and subsequent adverse health effects are often increased for younger children as opposed to older children or adults. ATSDR and DOH recognize that children are susceptible to developmental toxicity that can occur at levels much lower than those causing other types of toxicity.

The purpose of this consult was to evaluate well survey responses, not to evaluate chemical data. A subsequent health consult will be prepared that will evaluate the results of private well water analysis, and the potential health effects on children.

Conclusions

Two private drinking water wells, or 0.3 % of all parcels, were identified in the surveyed area. EPA is aware of the two wells identified in the survey and has tested them. DOH has obtained the data from EPA and will evaluate the data. EPA has made a determination regarding these wells as not being adversely impacted by the contamination from Boomsnub/Airco.

While the initial mailed out response rate was only 33%, the door-to-door follow-up survey provides reassurance that no other drinking water wells are located in the contaminated groundwater plume. Several other private wells that were shown to be located in the area are now connected to one of the municipal water system, therefore are of no concern.
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Recommendations/Action Plan

1. DOH will evaluate the sampling data for those wells identified in the survey.

2. Because of the existence of chemicals in area groundwater, DOH recommends that no new wells be drilled in the area of contamination.

Preparer of Report

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References

1. Washington State Department of Health. Public Health Assessment for Boomsnub/Airco, Vancouver, Clark County, Washington, CERCLIS No. WAD009624453, July 18, 1995.

2. Washington State Department of Health. Public Health Assessment for Boomsnub/Airco Superfund site (a/k/a Boomsnub/Airco), Vancouver, Clark County, Washington, EPA FACILITY ID: WAD009624453, September 28, 2001.

3. Remedial Investigation/ Feasibility Study Boomsnub/AIRCO Superfund Site Hazel Dell, Washington. November 1997, revision 1. Prepared by ICF Kaiser Engineers, Inc., Seattle Washington.

4. Summary of Private Wells in the Boomsnub/BOC Gases Vicinity, Steve Prather, Clark County Public Utilities, April 19, 1999.

5. Boomsnub-Airco (BOC Gases) Site, Vancouver, WA- Groundwater sampling data, U.S. EPA, October 15 1999.

Appendices

Letter and Well Survey

May 19, 2003

Dear Resident:
The Washington State Department of Health is requesting information on drinking water wells in your area. We need this information to determine whether all drinking water wells have been identified near the Boomsnub/Airco Superfund site where contaminated groundwater exists. Information about your well will not be used for any other purpose and will be available to the public only by formal request. Your participation in this survey is voluntary. You will not lose any services or benefits if you choose not to participate. If you do use a private well, your participation will allow us to assess the need for sampling and, if necessary, evaluate sample results.
Please take a few minutes and fill out the enclosed form and return it to us by June 16th. We ask that you fill it out regardless of your water source so that we know you have received this request. We have included a self-addressed stamped enveloped for your convenience.

If you have any questions, please do not hesitate to call me toll-free at 1-877-485-7316 or (360) 236-3376. Your cooperation is appreciated.

Sincerely,

Lenford O'Garro
Public Health Advisor
Site Assessment Section
Office of Environmental Health Assessments
Washington State Department of Health
Enclosure (Survey)

Boomsnub/Airco Neighborhood Water Well Survey

Please answer all questions on the survey. Thank you.
We will contact you if you have a well that should be tested.

1. Your name:
2. Your *physical* address:

(*Please make address corrections directly on this form*)
3. Your telephone number: _____
What are the best times to call you? _____
4. Property Information: Parcel # and Site or Legal Address:

(Label with address and parcel #)
5. What is your source of tap water? (**check only one**)

_____ No Water Source Present

_____ Municipal (city) water system

_____ Small community (neighborhood) water system → Water system name: / Operator's name: / Operator's phone #:

_____ Private well (serving 1 or 2 houses)

_____ Don't know

If you use a private well, please indicate:

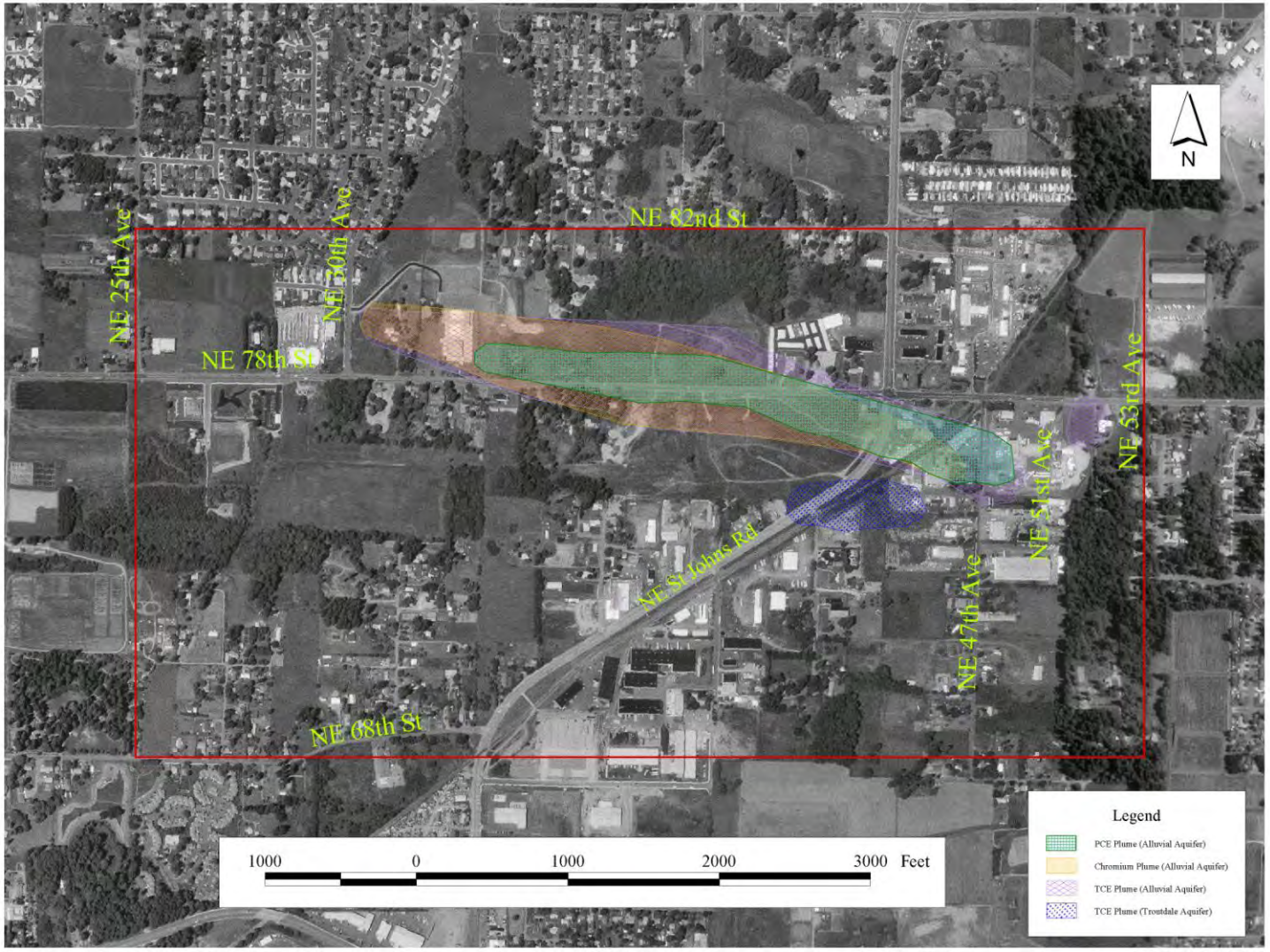
Name of well owner: _____ Phone #: _____
(if someone else)

Location of the well (for example, "100 feet behind my house" or "behind the house at 2011 Oak Rd.")

Well depth: _____ Year drilled: _____

Please Return Survey by June 16 to: Lenford O'Garro, Department of Health, PO Box 47846, Olympia, WA 98504
If you have questions call 1-877-485-7316 or 360-236-3376

Figure 1: Map of Boomsnub Survey area, Hazel Dell, Washington.



Certification

This Health Consultation was prepared by the Washington State Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was begun.

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ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health consultation and concurs with the findings.

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Richard Gillig
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ATSDR