BEFORE THE DEPARTMENT OF WATER RESOURCES

OF THE STATE OF IDAHO

IN THE MATTER OF DESIGNATING AN AREA OF DRILLING CONCERN IN THE WESTERN PART OF THE CITY OF BOISE	)))))	PRELIMINARY ORDER

This matter came before the Idaho Department of Water Resources ("IDWR") as a request by Vopak USA Inc., formerly Van Waters and Rogers, Inc. ("VWR") and the Idaho Department of Environmental Quality ("IDEQ") to declare an area in the western part of the City of Boise as an Area of Drilling Concern ("ADC") pursuant to Section 42-238(15), Idaho Code. The purpose for seeking the designation is to protect public health and to prevent spreading of a ground water contaminant plume having concentrations of Perchloroethylene ("PERC") above the IDEQ adopted Ground Water Quality Standard (IDAPA 58.01.11). The establishment of an ADC is one of several components in the January 5, 1998 "Remedial Action Plan" approved by IDEQ to remediate contaminated ground water in certain areas of west Boise.

After publishing notice of a draft order proposing the designation of an ADC, holding a public hearing on February 28, 2001, and receiving public comment through March 15, 2001, the IDWR finds, concludes and orders as follows:

FINDINGS OF FACT

1. The area proposed for designation as the West Boise Area of Drilling Concern ("WBADC") extends for approximately two and one-half (2 ½) miles in a northwesterly direction from Boise Towne Square Mall to Five Mile Road north of Fairview Avenue. The WBADC includes the "Affected Area" of the 1998 Remedial Action Plan and covers about two and one-third (2 1/3) square miles of commercial and residential land in the City of Boise. See Attachment 1. This area is a densely populated and heavily used portion of the city. PERC, a commonly used cleaning fluid, has contaminated a shallow sand and gravel aquifer. A value of 5 micrograms per liter PERC determines the Affected Area boundary. The area of the WBADC includes a buffer zone surrounding the Affected Area to prevent drilling or reconstruction of wells which when pumped could potentially spread the plume.

2. A recent evaluation of ground water resources in the Treasure Valley (Neely and Crockett (1998) indicates the valley fill in the area consists of alluvial, colluvial, and lacustrine deposits. The Final Draft Remedial Action Plan Affected Area Boise, Idaho (Harding Lawson & Assoc. (1997)), reports that a shallow, unconfined upper alluvial zone at a depth of from thirty to forty feet receives seasonal recharge from the Ridenbaugh Canal, Farmer's Lateral Canal south of the area, and local irrigation practices in the vicinity of the Boise Towne Square Mall.

Domestic wells in the area pump water from this shallow aquifer. The Treasure Valley study indicated the predominant flow direction through this shallow system is toward the northwest. The shallow aquifer system appears, from well driller's reports, to be separated from a deeper aquifer system by a series of silt and clay confining beds. Well driller's reports show one of the confining beds to be a blue clay marker bed noted in most, but not all, reports in the area at a depth of 150 to 200 feet. Below this first marker bed, the first aquifer within what is considered the deeper aquifer system, consists of sand and gravel of the Idaho Group. The confined aquifer is found in this area at a depth below about 200 feet and is reported to be from 10 to 20 feet thick. Several other aquifers exist below this 200-foot deep zone and supply water to several deep wells for municipal and other purposes. The recharge area for these deeper aquifers of the Idaho Group sediments is not presently known with certainty, but may be from infiltration of precipitation along the Boise foothills and ridge areas as well as eastern portions of the lower Boise River valley. The predominant regional flow direction of this deeper aquifer is to the west or southwest.

3. Lithology, water chemistry, and well pump tests (Harding Lawson & Assoc., 1993, 1998) suggest that ground water communication across the confining zones between upper and lower aquifers is absent or minor. However, experience has shown that wells constructed through a shallow aquifer and into deeper aquifers may provide a conduit for movement of water between the aquifers, if not properly constructed. Man-made communication can occur if wells are constructed to obtain water from both aquifers, or if leakage occurs along unsealed well bores connecting both upper and lower aquifers. Corroded well casing can also allow movement of water from upper to lower aquifers. Wells drilled into the shallow aquifer near the Affected Area may, when pumped, draw contaminated water away from the plume area thus hastening the spread of contamination. These concerns must be addressed as wells are constructed, repaired, and abandoned in the WBADC.

CONCLUSIONS OF LAW

1. Section 42-238(12), Idaho Code, provides as follows:

> Well construction standards. The water resource board shall adopt minimum standards for new well construction, modification, and abandonment of existing wells, low temperature geothermal resource well construction and geothermal well construction in this state under the provisions of chapter 52, title 67, Idaho Code. Such standards shall require each well to be so constructed as to protect the ground water of the state from waste and contamination and may include additional requirements for wells drilled in "areas of drilling concern" as designated in accordance with subsection (15) of this section. Every licensed well driller will be furnished a copy of the adopted standards by the director, and will be required to construct or abandon each well in compliance with the adopted standards.

2. Section 42-238(15), Idaho Code provides as follows:

Drilling in a designated "area of drilling concern." The director may designate, as he determines necessary, "areas of drilling concern" on an aquifer by aquifer basis within which drillers must comply with the additional requirements of this section. The director shall designate "areas of drilling concern" to protect the public health and to prevent waste or contamination of ground or surface water because of factors such as aquifer pressure, vertical depth of the aquifer, warm or hot ground water, or contaminated ground or surface waters. It is unlawful for any person not meeting the requirements of this subsection to drill a well for any purpose in a designated "area of drilling concern." Any person drilling a new well or deepening or modifying an existing well for any purpose in an "area of drilling concern" as designated by the director as herein provided shall comply with the following additional requirements:

(a) Additional bonding requirements as determined by the director, to insure that the well is constructed or abandoned in compliance with the adopted standards for well construction.
(b) Additional experience and knowledge in drilling wells encountering warm water or pressurized aquifers as required by rules and regulations adopted by the water resource board.
(c) Document that specialized equipment needed to drill wells in "areas of drilling concern," as determined by the director, is or will be available to the driller.
(d) Provide a notice of intent to drill, deepen or modify a well, submit plans and specifications for the well and a description of the drilling methods that will be used, as required by the director, and receive the written approval of the director before commencing to drill, deepen, or modify any well in a designated "area of drilling concern."

Prior to designating an "area of drilling concern," the director shall conduct a public hearing in or near the area to determine the public interest concerning the designation. Notice of the hearing shall be published in two (2) consecutive weekly issues of a newspaper of general circulation in the area prior to the date set for hearing.

In the event an area has been designated as an "area of drilling concern" and the director of the department of water resources desires to remove such designation or modify the boundaries thereof, he shall likewise conduct a public hearing following similar publication of notice prior to taking such action.

3. Section 42-235, Idaho Code, provides in pertinent part that:

"Prior to beginning of construction of any well, or changing the construction of any well, the driller or well owner shall obtain a permit from the director of the department of water resources to protect the public health, safety and welfare and the environment, and to prevent the waste of water or mixture of water from different aquifers."

4. Section 42-230(b), Idaho Code, defines a "Well" as "...an artificial excavation or opening in the ground more than eighteen (18) feet in vertical depth below land surface by which ground water of any temperature is sought or obtained."

5. Rule 40.01c of the "Well Construction Standards" (IDAPA 37.03.09) provides "The designation of an area of drilling concern can include certain aquifers or portions thereof while excluding others."

6. Rule 50.01g of the "Well Driller Licensing Rules" (IDAPA Rule 37.03.10) provides that "Verbal authorizations to drill and pre-approved drilling permits (start cards) do not authorize drilling in these areas." (i.e. designated ADC's).

7. Rule 10.16 of the Well Driller Licensing Rules (IDAPA Rules 37.03.10) defines "Drilling or Well Drilling" as "The act of constructing a new well, or modifying, changing the construction, or abandoning an existing well."

ORDER

IT IS, THEREFORE, HEREBY ORDERED THAT:

I. The West Boise Area of Drilling Concern (WBADC) is hereby created to include the area within the following described boundaries:

SW¼ SW¼ Section 1; S½ SE¼, NW¼ SE¼, SW¼ NW¼, and SW¼ Section 2; S½ NE¼ and SE¼ Section 3; N½ NE¼ Section 10; N½ NW¼, SE¼ NW¼, NE¼ and N½ SE¼ Section 11; W½ and that portion of the E½ south of the Ridenbaugh Canal of Section 12; N½ NE¼ Section 13; all in Township 3 North, Range 1 East, Boise Meridian. The WBADC encompasses an area of approximately two and one-third (2 1/3) square miles. The WBADC Boundary was determined by locating the nearest public land survey quarter-quarter section line boundary outside of a one-eighth (1/8) mile wide buffer to the Affected Area, or the closest recognizable surface feature (canal). The exception is in the down gradient direction of the Affected Area (northwest) where the boundary was placed at the nearest ½ section line outside the 1/8 mile buffer.

A map of the WBADC is included as Attachment 1 and is hereby made a part of this Order.

II. Any person or driller proposing to drill a new well, or modifying, changing the construction, or abandoning an existing well for any purpose in the WBADC shall comply with the additional requirements of Section 42-238(15), Idaho Code, as follows:

A. A driller proposing to drill within the WBADC shall have on file with the Department the additional bonding required by Rule 60.01.b of the Well Driller Licensing Rules (IDAPA 37.03.10). The amount of the bond, as determined by the Director, shall be adequate to abandon or reconstruct the well to protect the resource and in no event shall the bond be less than $10,000.

B. A driller proposing to drill within the WBADC shall have additional experience and knowledge in drilling wells encountering contaminated aquifers as required by Rule 40.03 of the Well Construction Standards Rules (IDAPA 37.03.09) and shall provide documentation of such experience and knowledge when requested by the Director.

C. Any driller proposing to drill within the WBADC shall document that the specialized equipment needed to drill wells in areas of drilling concern, as determined by the Director, is or will be available to the driller.

D. Any person or driller proposing to drill in the WBADC shall provide notice of intent to conduct well construction activities, submit plans and specifications for the well and a description of the drilling methods that will be used as required by the Director, and receive the written approval of the Director before commencing well drilling in the WBADC in accordance with the following provisions:

1. Prior to commencing any well drilling activity (including abandonment of an existing well) in the WBADC, an application for drilling permit shall be submitted to the Director. The owner or his representative and the well driller shall sign the application. The practices of issuing an expedited "verbal" drilling permit approval and the "start card" procedure are not applicable in the WBADC, as provided in Rule 50.01.g of the Well Driller Licensing Rules (IDAPA 37.03.10).

2. An application to drill a well in the WBADC shall include a drilling prospectus prepared by an engineer or geologist licensed in Idaho. The Director may waive the requirement for the prospectus to be prepared by an engineer or geologist if the well depth will not exceed 150 feet below land surface. The prospectus shall include a diagram of the finished well showing all pertinent dimensions, a narrative describing the materials, methods, and timing/sequence to be used in the drilling operation, and an aerial photograph (8 inch to the mile scale) or a plat of similar scale showing the

well site relative to the "Affected Area" and other wells within a 500 foot radius of the proposed well, and the ownership of the adjoining properties. The prospectus shall be signed by the owner, well driller, and the engineer or geologist preparing it. Unless waived by the Director, the prospectus shall provide for the following:

a. Wells to be used for human consumption shall be designed and drilled to assure that water is not withdrawn from the shallow aquifer (less than 150 below land surface) within the WBADC. The drilling prospectus may provide for a well to be drilled or modified to withdraw water from the shallow aquifer for irrigation or other uses if the place of use is inside the boundaries of the WBADC or for disposal or use outside of the boundaries if the water is treated to meet drinking water standards, and public health and the environment are protected.

b. Wells drilled for production of water below the shallow aquifer within the WBADC shall be drilled using only water-based direct rotary drilling methods, to be described in the drilling prospectus, unless the Director approves an exception. Wells that penetrate only the shallow aquifer may be drilled using other methods to meet the conditions of the drilling permit and this Order.

c. If the drilling permit application is for abandonment of a well, the prospectus shall provide for abandonment using a tremie pipe or pressure grouting procedure to place a high solids bentonite grout or a non-shrinking cement grout from the bottom of the well to the top. If the casing is to be left in place, the prospectus shall include procedures to assure that bentonite grout or non-shrinking cement grout fills the annular space behind the casing to prevent vertical movement of water.

d. A prospectus for abandonment of a monitoring or aquifer test well shall include the written consent of the Idaho Department of Environmental Quality.

e. A prospectus will provide that any drilling permit issued by the Department in the WBADC will provide that the owner and well driller will, in writing, acknowledge that they have read and understand the permit requirements.

f. Drilling permits may be issued allowing wells existing on the effective date of the Order, which are less than 150 feet deep and outside the "Affected Area" but inside the WBADC boundary, to be modified or replaced as necessary to continue the authorized use of the well as long as the total depth of the modified well or replaced well does not exceed 150 feet in depth below land surface

Signed this 21st **day of** May **, 2001**

Norman C. Young, Administrator
Water Management Division

Selected References:

1993, Smith, C. R., Letter report to Mr. Wayne Grotheer, VWR, Pilot Boring Program Summary Boise Towne Square Mall Boise Idaho.

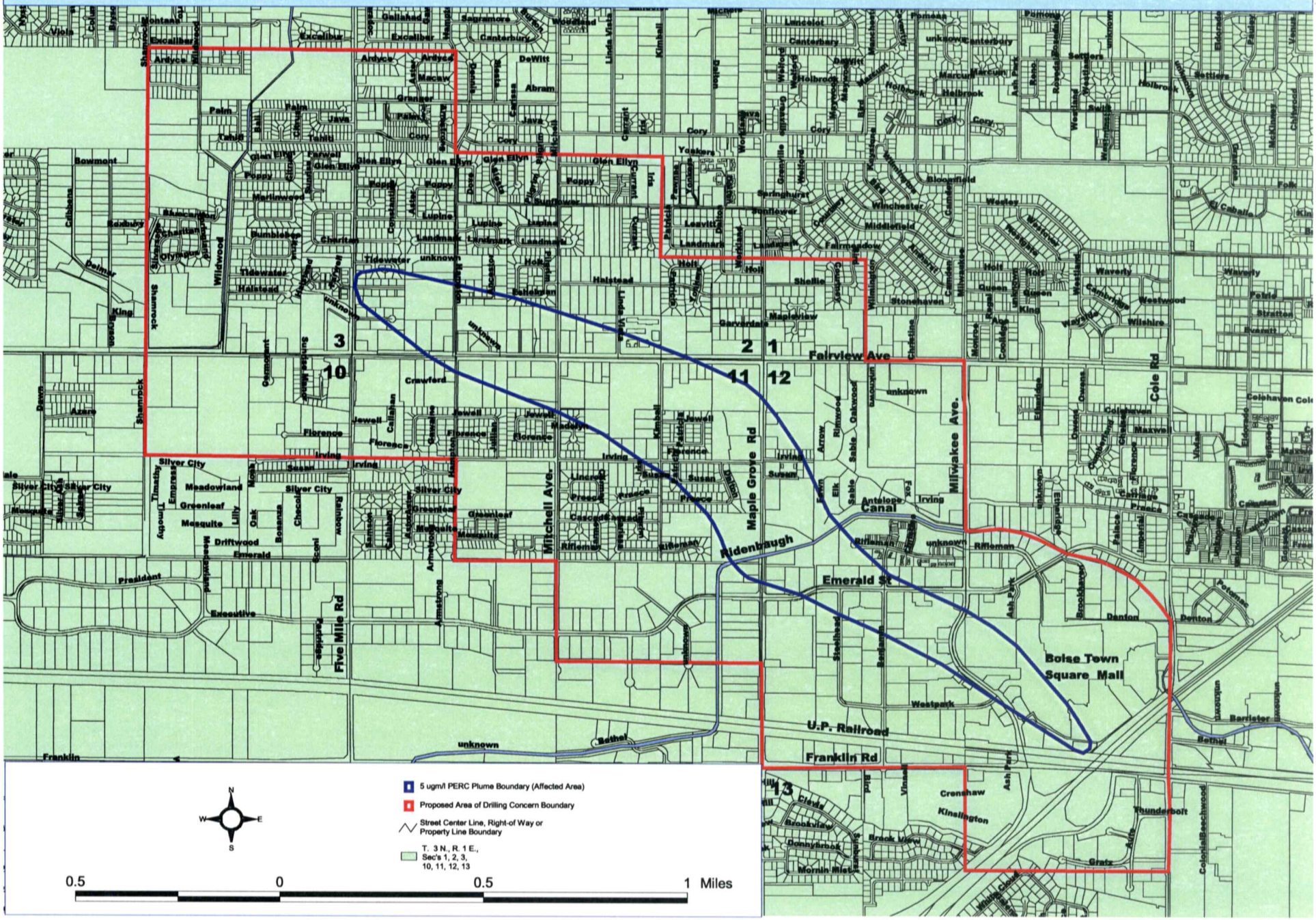
1993, Squires, Edward, Wood, S. H., and Osiensky, J. L., Hydrogeologic Framework of the Boise Aquifer System Ada County, Idaho.

1994, Risk Assessment Boise Town Square Mall Boise: Idaho Prepared for Van Waters & Rogers, Inc. by Harding Lawson Associates Engineering and Environmental Services.

1997, Risk Assessment Affected Area Boise, Idaho: Prepared for Van Waters & Rogers, Inc., Harding Lawson Associates Engineering and Environmental Services.

1997, Final Draft Remedial Action Plan Affected Area Boise, Idaho: Harding Lawson Associates Engineering and Environmental Services.

1998, Remedial Action Plan Affected Area Boise, Idaho: Prepared for Van Waters & Rogers, Inc. by Harding Lawson Associates Entering and Environmental Services.

1998, Ground Water Quality Characterization and Initial Trend Analysis for the Treasure Valley Shallow and Deep Hydrogeologic Subareas: Neeley, K. W., and Crockett, J. K., Idaho Department of Water Resources Water Information Bulletin No 50, Part 3.

Attachment 1. Proposed West Boise Area of Drilling Concern