

Southern Willamette Valley Groundwater Investigations

Conducted by DEQ's Groundwater Quality Program

Principal Investigators for the 2000-2001 Study:

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Principal Investigators for the 2002 Study:

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State of Oregon
Department of
Environmental
Quality

DEQ Regional Groundwater Studies

- **45 areas investigated since the 1980's**
- **26 studies identified areas of contamination**
- **Contaminants include:**
 - ❖ **Nitrate**
 - ❖ **Pesticides**
 - ❖ **VOCs**
 - ❖ **Bacteria**

**Areas in the Southern Willamette Valley (SWV)
where there are high levels of nitrate:**

- Junction City vicinity;
- Coburg vicinity; and
- Albany –Lebanon Plain area

**Other Studies that have demonstrated similar
results:**

- OSU Extension Service Nitrate Testing
- Oregon Real Estate Transaction Testing
- Public Water Supply Testing
- USGS Studies

1993 -1994 DEQ Investigations

COBURG

- 20 wells
- NO₃ > 3 in 12 wells
- NO₃ > 10 in 4 wells
- NO₃ up to 15 mg/l

JUNCTION CITY

- 20 wells
- NO₃ > 3 in 11 wells
- NO₃ > 10 in 8 wells
- NO₃ up to 31 mg/l

ALBANY – LEBANON PLAIN

- 21 wells
- NO₃ > 3 in 7 wells
- NO₃ up to 6.5 mg/l

2000 – 2001 Southern Willamette Valley Nitrate Study

Nitrate

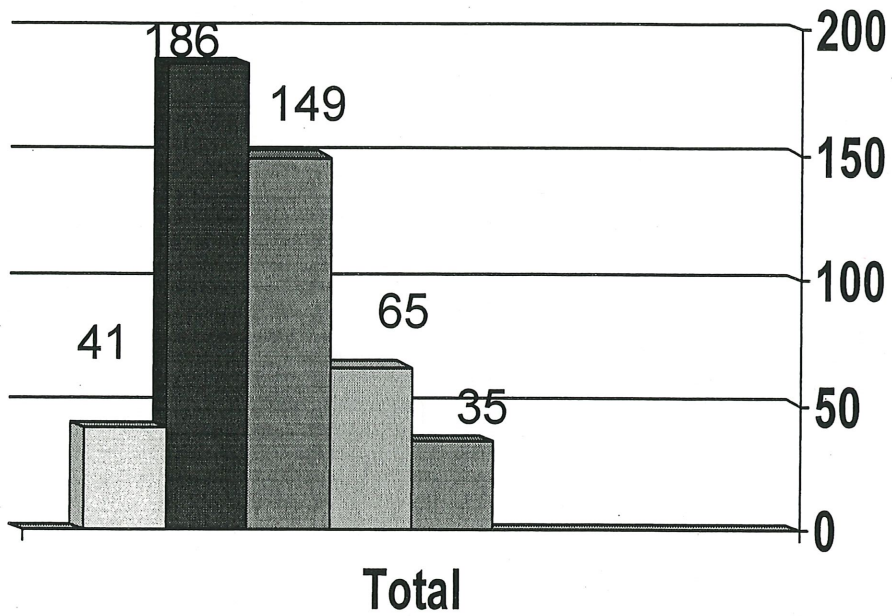
Shallow wells (less than 75 feet deep)

Good overall coverage

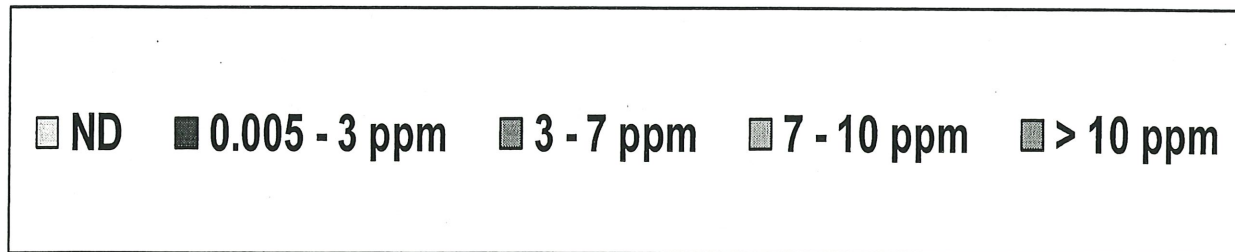
476 Wells

- 437 Private Wells**
- 29 Public Water Supplies**
- 10 Irrigation Wells**

Figure 10
Histogram of Nitrate Results 2000-2001



Total number of wells



2002 Groundwater Investigations

Focused on 2000-2001 wells with
 $\text{NO}_3 > 7 \text{ mg/l}$



Samples Collected for the Following Analyses:

- ❖ Nitrate / Nitrite
- ❖ Ammonia
- ❖ Phosphates
- ❖ Total Kjendahl Nitrogen (TKN)
- ❖ Sulfate
- ❖ Alkalinity
- ❖ Calcium, Magnesium, Potassium, Sodium
- ❖ Iron, Manganese, Lithium, Aluminum
- ❖ Lead, Arsenic, Selenium
- ❖ Pesticides
- ❖ Bacteria (courtesy of OSU Extension)
- ❖ Hardness
- ❖ Chloride
- ❖ pH, Temp., and Specific Conductance

2002 Nitrate Results

•107 wells were sampled – most were from the group of 2000-2001 wells that had NO₃ greater than 7 mg/l

- NO₃ less than 3.0 mg/l = 6 wells**
- NO₃ 3.01 -7.0 mg/l = 9 wells**
- NO₃ 7.01 – 10.0 mg/l = 43 wells**
- NO₃ 10.01 – 28.00 mg/l = 49 wells**

Pesticide Results

- **Innovative Analytical Process**
- **Parts per trillion**
- **Results back from all wells**

18 different compounds found, most common were:

- **atrazine and its breakdown product desethyl atrazine**
- **simazine**
- **malathion**
- **terbacil**

PRELIMINARY PESTICIDE RESULTS

atrazine

34 detections – up to 192 ppt

DWS – 3,000 ppt (3 ppb)

PRG – 300 ppt

desethyl atrazine

55 detections – up to 776 ppt

simazine

12 detections – up to 239 ppt

DWS – 4,000 ppt (4 ppb)

PRG – 560 ppt