

Reply To  
Attn Of: WD-133

**MEMORANDUM**

SUBJECT: Sole Source Aquifer Determination: Central Pierce  
County Aquifer System -- ACTION MEMORANDUM

FROM: Charles E. Findley  
Director, Water Division

TO: Gerald A. Emison  
Acting Regional Administrator

I. PURPOSE OF THE ACTION

Water Division is submitting for your approval a sole source aquifer determination package for the Central Pierce County Aquifer System located in the State of Washington.

Based on our analysis of geologic, hydrologic, economic, and public health factors, I recommend that you sign the attached Federal Register notice (Attachment 1) thereby designating the Central Pierce County Aquifer System as a sole source aquifer.

II. BACKGROUND

Authority pursuant to Section 1424(e) of the Safe Drinking Water Act as follows:

"If the Administrator determines, on his own initiative or upon petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of that determination in the Federal Register. After the publication of any such notice, no commitment for federal financial assistance (through a grant, contract, loan guarantee, or otherwise) may be entered into for any project which the Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health, but

a commitment for federal assistance may, if authorized under another provision of law, be entered into to plan or design the project to assure that it will not so contaminate the aquifer."

On June 23, 1987, the Environmental Protection Agency (EPA) Region 10 Administrator received a petition from the Director of Health for the Tacoma-Pierce County Health Department. The petition, which was forwarded to the Office of Ground Water (now the Ground Water Section), requested that EPA designate the "Clover/Chambers Creek Aquifer", an area of approximately 144 square miles of central Pierce County, as a sole source aquifer under Section 1424(e) of the Safe Drinking Water Act. On July 29, 1987, EPA requested additional information from the Health Department. A revised petition was submitted to EPA on February 1, 1988. On February 24, 1988, EPA sent the Health Department a letter which acknowledged that the petition was considered complete, and that the technical review phase would begin.

EPA's evaluation of the petition determined that the requested boundaries were technically flawed. EPA then proposed new larger boundaries consistent with national guidance on sole source aquifer designations. After some delay, the Health Department became supportive of the proposed boundaries. (See CONTROVERSIAL ISSUES for additional discussion of the boundary issue).

In order to obtain public comment on the proposed designation, the Water Division issued a Public Notice that was published in the Tacoma Morning News Tribune on April 22, 1993. The Notice was also distributed by mail to various federal, state, tribal, and local officials. The Notice stated that a public hearing would be held if sufficient interest were expressed to EPA by May 25, 1993, and that a public comment period would remain open until June 15, 1993. Region 10 also issued a press release with similar information on April 23, 1993.

EPA did not receive any requests to hold a public hearing before the period expired and the hearing was cancelled. A letter received on June 11, 1993, from the Chair of the Tacoma-Pierce County Board of Health requested a 30 day extension of the public comment period and EPA participation in an informal public meeting to hear concerns from interested parties about the impacts of the designation on the community. In response to this request, EPA issued a second Public Notice on June 18, 1993, that extended the public comment period until July 19, 1993. EPA also participated in an informal public meeting in Tacoma arranged by the Health Department on July 14, 1993.

### III. DESCRIPTION OF THE CENTRAL PIERCE COUNTY AQUIFER SYSTEM

Note: Some information in this section represents an unfootnoted summary from the "Support Document for Sole Source Aquifer Designation of the Central Pierce County Aquifer System", EPA 910/R-93-001, prepared by the EPA Region 10 Ground Water Section (Attachment 2).

The Central Pierce County Aquifer System consists primarily of unconsolidated sediments deposited by glaciers and associated meltwater during the Quaternary Period. The ground water moves regionally toward the Puget Sound and river valleys that constitute the aquifer system boundaries. Locally, the direction and gradient of ground water movement can vary dramatically from the overall regional trend.

Depth to ground water varies from zero to hundreds of feet. Deep wells drilled within the area penetrate multiple productive aquifers of permeable glacial outwash separated by relatively impermeable aquitards of glacial till or non-glacial sediments. The degree of hydrologic connection between individual aquifer units can vary greatly.

Subsurface disposal of waste and wastewater is the chief threat to ground water quality over much of the aquifer system. The Tacoma-Pierce County Health Department has identified individual and community septic systems, disposal of urban stormwater, and solid waste landfills as principal concerns. Although concentrations of nonpoint contaminants (such as nitrate and chloride) are still generally below drinking water standards, they have increased significantly over time throughout parts of the aquifer system. Man-induced contamination which has exceeded drinking water standards has been documented in some industrial and commercial areas, several of which have been selected for clean-up under the Superfund Program.

The sole source aquifer boundaries are primarily surface water boundaries located in lowland areas that have eroded downward through aquifer system glacial materials and which receive discharging ground water from the aquifer system. The Puget Sound forms the western boundary of the aquifer system. The Puyallup River forms the northern boundary and also the eastern boundary as far south as the Town of Electron (just northeast of Lake Kapowsin). South of Electron, the eastern boundary follows the ancestral Puyallup River Valley which is now occupied by Lake Kapowsin, Ohop Lake, and Ohop Creek. The

Nisqually River forms the southern boundary of the aquifer system from its intersection with Ohop Creek downstream to the Puget Sound.

The Health Department estimates that about 400,000 people live within the aquifer system boundaries or in nearby areas which at least partly utilize ground water from the system. Ground water supplies about 60 percent of the average drinking water demand within the designated area. During peak demands, ground water supplies approximately 84 percent of the drinking water within the area. The petitioner has determined that although alternative sources of drinking water are physically available, they cannot legally and economically replace the ground water supply within the proposed area and serve all those who now depend upon the aquifer system.

#### IV. CONTROVERSIAL ISSUES

As the Responsiveness Summary (Attachment 3) indicates, there were no controversial issues formally raised during the public comment period. However, some noteworthy issues that have historically surrounded the proposed designation are described below.

##### Proposed Landfill

The boundaries requested for sole source aquifer designation in the original 1987 petition coincided with the boundaries of a geohydrologic study prepared for the Health Department (Brown and Caldwell, 1985). Upon further examination, however, it became evident that the boundaries were based primarily on political rather than technical considerations. The Health Department was concerned at the time that petitioning EPA to designate a larger area would conflict with the siting of a proposed Pierce County landfill.

Although EPA has no direct authority under the sole source aquifer program to review projects funded by state, local, or private concerns, Washington's solid waste regulations restrict the siting of new landfills over EPA-designated sole source aquifers. Local health departments, with the approval of the Washington Department of Ecology, may grant a variance to this provision provided that the landfill is properly placed, designed, and operated over the aquifer. To date, this option has never been pursued or exercised. Although the solid waste provision could make it more difficult for the County and State to eventually approve the landfill, there are other issues, such as its proposed construction over a wetlands area, that will more

likely determine its ultimate fate.

#### Revision of Boundaries

Region 10's evaluation of the Health Department's petition determined that:

- 1) the petitioned boundary was only part of a much larger aquifer system and could not be considered as a hydrogeologically separate unit;
- 2) designation of the petitioned boundary would violate national EPA guidance which calls for designation of an entire aquifer, an aquifer system, or part of an aquifer that is hydrogeologically separate from the rest of an aquifer; and
- 3) the Agency would have difficulty defending the technical validity of the original boundary if it were legally challenged at some point after the designation.

After a series of meetings with Health Department representatives and informal consultation with other EPA hydrogeologists and a ground water hydrologist from the U.S. Geological Survey, the boundaries were extended to those now proposed based on our interpretation of available data and hydrogeological principles. On July 25, 1988, the Health Department provided EPA with drinking water consumption estimates and other data for the larger area. In 1989, the Region 10 Water Division Director endorsed working towards designation of the proposed aquifer system boundaries. No formal or credible technical evidence has been presented to EPA that would necessitate a revision to the proposed boundaries.

#### Economic Impacts from Project Reviews

Many people have expressed concern that EPA's statutory authority to review federal financially-assisted projects after the designation will lead to widespread adverse economic impacts by blocking, delaying, or increasing the costs of proposed projects. Based on past experience, the Water Division considers fears about dire economic impacts from sole source aquifer project reviews to be largely unfounded. Only those projects with the potential to create a significant hazard to public health are typically reviewed by EPA. Increased project costs or significant delays due to EPA reviews are not common because most projects are already designed in accordance with existing standards established by federal, state, or local entities, and such standards are often adequate. When EPA has required changes, project proponents seeking federal financial assistance

have usually been willing and able to modify projects in order to protect ground water quality. To date, since Region 10's first sole source aquifer designation in 1978, only one project proponent has been either unwilling or unable to modify the project design in order to receive EPA approval of federal funding.

## V. ACTION OPTIONS

There are two options to be evaluated regarding this proposed action. They are:

### Option 1

Designate the Central Pierce County Aquifer System as a sole source aquifer at this time.

#### Pros

- ! The aquifer system supplies approximately 60 percent of the average drinking water demand for the area, and approximately 84 percent of the peak drinking water demand for the area.
- ! Although alternative sources of drinking water are physically available, they cannot legally and economically replace the ground water supply and serve all those who now depend upon the aquifer system.
- ! As the principal drinking water source for the area, contamination of the aquifer system would create a significant hazard to public health.
- ! Federal financially-assisted projects proposed in the area would be subject to EPA review under Section 1424(e) of the Safe Drinking Water Act to ensure that they do not create a significant hazard to public health.
- ! The boundaries of the aquifer system are based on available data and hydrogeological principles.
- ! Aquifers with similar qualifications have been designated in the past.
- ! The designation is supported by the petitioner (Tacoma-Pierce County Health Department), as well as the Washington Department of Ecology (Ground Water Quality Unit) and the Washington Department of Health (Wellhead

Protection Program).

Cons

- ! A designation is a permanent action unless subsequent provisions are made for repeal of such action.
  
- ! The review of federal financially-assisted projects within the designated area and the need to coordinate such reviews with various federal, state, and local agencies will result in an increased workload for Region 10 Ground Water Section staff.

Option 2

Do not designate the Central Pierce County Aquifer System as a sole source aquifer at this time.

Pro

- ! EPA would avoid the impacts of designation and would not have to review federal financially-assisted projects under Section 1424(e) of the Safe Drinking Water Act.

Cons

- ! There appears to be no statutory basis for not designating the aquifer system. The proposed sole source aquifer area meets all EPA designation criteria.
  
- ! A decision not to designate would be difficult to sustain if challenged.
  
- ! A decision not to designate would deny residents of the area the limited federal protection of ground water quality offered by EPA review of projects and the increased public awareness of the value of the resource.

VI. RECOMMENDED COURSE OF ACTION

Based on available information and designation criteria set forth in EPA's Sole Source Aquifer Designation Decision Process: Petition Review Guidance, February 1987, the Central Pierce County Aquifer System is the principal source of drinking water for the proposed designated area. Our analysis shows that the aquifer system is the source for approximately 60 percent of the average drinking water demand for the designated area. The proposed boundaries of the aquifer system have been appropriately determined based on our interpretation of available data and

hydrogeological principles. No alternative source or combination of sources of drinking water have been identified that can legally and economically replace the ground water supply within the proposed area and serve all those who now depend upon the aquifer system. These findings were made available and comment was solicited from various federal, state, tribal, and local officials, and the public. No new information was provided to EPA during the public comment period that would dispute these findings. Therefore, I recommend that you sign the attached Federal Register notice designating the Central Pierce County Aquifer System as a sole source aquifer.

Attachments

- Attachment 1: Federal Register Notice
- Attachment 2: Region 10 Support Document
- Attachment 3: Responsiveness Summary
- Attachment 4: Fact Sheet

## RESPONSIVENESS SUMMARY OF PUBLIC COMMENTS

### SOLE SOURCE AQUIFER PETITION FOR THE CENTRAL PIERCE COUNTY AQUIFER SYSTEM

04-23-93	Press Release Issued
04-23-93	First Public Notice Issued
05-25-93	Public Hearing Cancelled Due to Lack of Interest
06-15-93	First Public Comment Period Ended
06-18-93	Second Public Notice Issued
07-14-93	Informal Public Meeting Held in Tacoma
07-19-93	Second Public Comment Period Ended

#### Summary of Public Participation Process and Written Comments

In order to obtain public comment on the proposed designation, EPA issued a public notice which was published in the Morning News Tribune on April 22, 1993. The notice was also distributed by mail to numerous federal, state, and local officials. The notice stated that 1) the Environmental Protection Agency (EPA) was proposing to designate the Central Pierce County Aquifer System as a sole source aquifer based on the petition from the Tacoma-Pierce County Health Department and the EPA review; 2) a public hearing would be held if sufficient interest were expressed to EPA by May 25, 1993; 3) a public comment period would remain open until June 15, 1993; and 4) a document that summarized the bases for the proposal was available for review. EPA also issued a press release with similar information on April 23, 1993.

EPA did not receive any requests to hold a public hearing before the period expired and the hearing was cancelled. Three written comments were received by EPA prior to the June 15, 1993 deadline. A letter from the Ground Water Quality Unit Supervisor, Washington Department of Ecology, expressed support for the designation. A letter from the Pacific Northwest Regional Director, U.S. Department of the Interior, Bureau of Reclamation, documented the Bureau's review of the support document but offered no additional comment.

A letter received on June 11, 1993 from the Chair of the Tacoma-Pierce County Board of Health offered support for the designation, but also requested a 30 day extension of the public comment period and EPA participation in an informal public meeting to hear concerns from interested parties about the

impacts of the designation on the community. In response to this request, EPA issued a second public notice on June 18, 1993 that extended the public comment period until July 19, 1993.

Two additional letters were received during the second public comment period. Another member of the Ground Water Quality Unit, Washington Department of Ecology, offered support for the designation but requested additional information on the hydrogeologic analyses which led to the revision of the petitioned boundary. This information was provided to the Unit Supervisor by a Region 10 Ground Water Section hydrogeologist. A letter from the Water Division Superintendent, Tacoma Public Utilities, stated support for the designation citing the increase in public awareness on the importance and vulnerability of ground water resources.

In response to the Tacoma-Pierce County Board of Health letter of June 11, 1993, EPA participated in an informal public meeting in Tacoma on July 14, 1993. The meeting was attended by representatives from local planning and land services, health, utilities, solid waste, community and economic development, housing, and environmental health agencies in Pierce County. Also attending were representatives from the Onsite Sewage Advisory Board, Building Industry Association, Rural Water Association, Port of Tacoma, City of Tacoma, City of Milton, and a number of hydrogeologic consultants and local elected officials.

#### Revised Aquifer System Boundaries

At the meeting, a representative from the Ground Water Section presented an overview of the sole source aquifer program and outlined the Agency's technical review process and basis for selecting the boundaries. Some participants raised questions regarding EPA's determination of aquifer system boundaries. In response, the boundaries requested for sole source aquifer designation by the health department in the original 1987 petition coincided with the boundaries of a geohydrologic study prepared for the health department (Brown and Caldwell, 1985). Upon further examination, however, it became evident that the boundaries were based primarily on political rather than technical considerations. The health department was concerned at the time that petitioning EPA to designate a larger area would conflict with the siting of a proposed Pierce County landfill.

Region 10's evaluation of the health department's petition determined that:

- 1) the petitioned boundary was only part of a much larger aquifer system and could not be considered as a hydrogeologically separate unit;
- 2) designation of the petitioned boundary would violate national EPA guidance which calls for designation of an entire aquifer, an aquifer system, or part of an aquifer that is hydrogeologically separate from the rest of an aquifer; and
- 3) the Agency would have difficulty defending the technical validity of the original boundary if it were legally challenged at some point after the designation.

After a series of meetings with health department representatives and informal consultation with other EPA hydrogeologists and a ground water hydrologist from the U.S. Geological Survey, the boundaries were extended based on EPA's interpretation of available data and hydrogeological principles. EPA has requested but has not received any formal or credible technical evidence that would necessitate a revision to the proposed boundaries. The boundaries selected by EPA are primarily surface water boundaries which act as regionally important ground water discharge areas for aquifer system materials.

A detailed description of aquifer system boundaries and the reasons for their selection are available for public review in the "Support Document for Sole Source Aquifer Designation of the Central Pierce County Aquifer System", EPA 910/R-93-001.

#### Economic Concerns

A number of persons at the informal public meeting expressed economic concerns over the designation, some contending that EPA's review authority could hinder economic development by blocking or delaying proposed projects. In response, sole source aquifer designations are not based on economic criteria other than the potential cost of alternative drinking water supplies needed to replace the petitioned aquifer should it become contaminated, i.e., economic impacts from post-designation project reviews are not relevant in the Agency's designation decision.

Regardless, based on past experience, EPA considers fears about dire economic impacts from sole source aquifer project reviews to be largely unfounded. Under the sole source aquifer program, EPA has the authority to review only federal financially-assisted projects proposed over a designated aquifer

area. Of these, only those projects with the potential to create a significant hazard to public health have typically been referred to EPA for review. The majority of these reviews have resulted in an approval of funding without any project modification. When EPA has required changes, project proponents seeking federal financial assistance have usually been willing and able to modify projects in order to protect ground water quality. To date, since Region 10's first sole source aquifer designation in 1978, only one project proponent has been either unwilling or unable to modify the project design in order to receive EPA approval of federal funding.

EPA acknowledges that ground water quality protection measures may increase costs to a project or cause delays if modifications are required. Increased project costs or significant delays due to EPA reviews are not common because most projects are already designed in accordance with existing standards established by federal, state, or local entities, and such standards are often adequate. Involving EPA early on in the planning and design phases of a project greatly facilitates a more timely and efficient review, and increases the likelihood of EPA approval without modification. Where EPA requires project modifications, the Agency believes that such measures represent an investment that will pay for itself many times over. The high cost of replacing contaminated drinking water supplies or cleaning up polluted ground water (when possible) underscores the wisdom of taking steps to prevent or reduce the possibility of contamination from occurring in the first place.

#### Press Response

One newspaper reporter called EPA to discuss the designation. As a result, an article about the proposed sole source aquifer appeared on the front page of the Morning News Tribune (Tacoma, Washington) on Saturday, May 8, 1993.

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