

Responsiveness Summary

Sole Source Aquifer Petition for the Mahomet Aquifer System in East-Central Illinois

March 2015

Summary of Public Participation Process

This document provides the U.S. Environmental Protection Agency's responses to all public comments received on the proposal to designate the Mahomet Aquifer System in east-central Illinois as a Sole Source Aquifer (SSA) under Section 1424(e) of the Safe Drinking Water Act, 42 U.S.C. § 300h-3(e). On March 12, 2014, EPA issued public notice of its proposal to approve the petition to designate a portion of the Mahomet Aquifer System in east-central Illinois as a sole source aquifer under Section 1424(e) of the SDWA. The notice was published in the Champaign News Gazette and the Peoria Journal Star. EPA also made the notice available on its website at <http://www.epa.gov/region5/water/gwdw/mahomet/index.htm>. EPA provided the public with an opportunity to submit written comments from March 13 to June 12, 2014. In addition, EPA held a public meeting and hearing in Champaign, Illinois on May 13, 2014, and another public meeting and hearing in Morton, Illinois on May 14, 2014. The public was given an opportunity to submit oral comments during these hearings. The transcripts of the public hearings and all written comments received by EPA are part of the Reference List, which is available at the web address listed above.

EPA thanks all members of the public who took the time to provide comments or otherwise participate in this public process. All comments received have been thoroughly reviewed and considered by EPA in its decision-making process. To minimize redundancy, many similar or identical comments made at the public hearings and in writing are addressed once with a general response. EPA's responses to all public comments are provided below.

Response to Comments

Comment 1: The vast majority of written and oral comments received during the public comment period expressed support for the designation of the Mahomet Aquifer as an SSA.

Response: EPA thanks these commenters for their support. As explained in the Federal Register notice, EPA believes that the Mahomet Aquifer System in east-central Illinois meets the criteria for designation as an SSA.

Comment 2: One commenter opposed designation of the Mahomet Aquifer System as an SSA because (1) EPA's authority to review proposed projects receiving "Federal financial assistance" could result in EPA reviewing privately funded projects at some point in the future and (2) the designation could inhibit agriculture above the SSA.

Response: As explained further in response to other comments, EPA's authority under Section 1424(e) of the SDWA is limited to review of proposed projects receiving "Federal financial assistance" that may contaminate the aquifer through a recharge zone so as to create a significant hazard to public health. EPA exercises the authority granted to it by Congress in Section 1424(e) of the SDWA, which does not include the review of privately funded projects. In addition, EPA

does not believe the designation of the Mahomet Aquifer System as an SSA will inhibit agriculture. EPA's role regarding agriculture projects receiving "Federal financial assistance" and the SSA Program traditionally has been to coordinate with the U.S. Department of Agriculture funding agency to ensure that existing federal, state, and local ground water quality measures are being followed.

Comment 3: Some commenters questioned the scope of the SSA program and asked what citizens can do in light of the limited authority granted to EPA under Section 1424(e) of the SDWA.

Response: These commenters correctly recognize that designation of an SSA provides limited federal protection of ground water resources and by no means constitutes a complete ground water protection strategy. Effective protection of sources of drinking water requires the integration of federal, state, and local efforts. Concerned citizens should contact state and local authorities to determine what other measures can be taken to protect this aquifer.

Comment 4: One commenter asked whether the use of Federal funds in any project to cleanup polychlorinated biphenyls (PCBs) outside of the aquifer boundaries that would be disposed of within aquifer boundaries would be subject to review by EPA. Another commenter asked whether Federal dollars used to fund a project to cleanup PCBs from the Great Lakes would be subject to review before allowing the PCBs to be placed in the Clinton Landfill.

Response: Not all federally funded projects are subject to EPA's review under Section 1424(e) of the SDWA. EPA's authority under Section 1424(e) of the SDWA is to review projects receiving "Federal financial assistance." Projects receiving "Federal financial assistance" are a subset of those receiving federal funding. "Federal financial assistance" typically includes financial benefits provided directly as aid to a project by a department, agency, or instrumentality of the Federal government in any form including contracts, grants, and loan guarantees. "Federal financial assistance" does not include actions or programs carried out directly by or on behalf of the Federal government. EPA determines whether projects receive "Federal financial assistance" on a case-by-case basis and based on the specific project, person, or entity completing the project, source of Federal funds involved, and any other relevant factors. Because the commenters do not refer to specific proposed projects and do not go into detail on the source of the Federal funds involved and the person or entity that would complete the projects, EPA cannot opine on whether these projects would be subject to its review under SDWA Section 1424(e).

Comment 5: Some commenters expressed concern regarding hydraulic fracturing, pipeline construction and operation, toxic chemical storage and disposal (other than PCBs), and coal ash disposal over the aquifer.

Response: To the extent that these comments were intended to communicate that designation of the Mahomet Aquifer System as an SSA will help protect this important source of drinking water, EPA acknowledges this sentiment and recognizes the importance of this aquifer system through this designation. EPA, however, believes some of the comments reflect a misunderstanding regarding the effect of the proposed designation. Designation of an SSA will not result in review of projects or activities over the SSA area or project review area that do not receive any "Federal financial assistance," as explained above in the response to comment 4. In

addition, proposed projects that are funded entirely by state, local, or private concerns are not subject to SSA review by EPA.

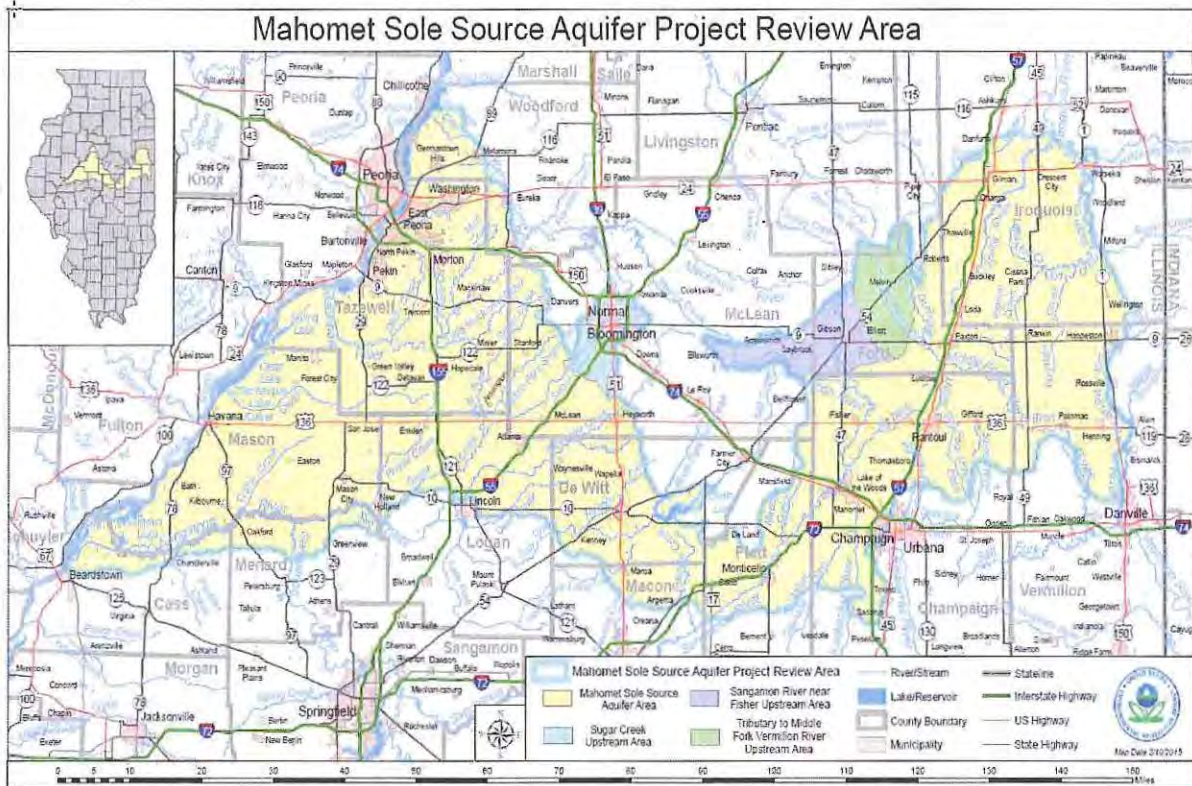
Comment 6: A number of commenters expressed concern about the storage of toxic chemicals over the aquifer, particularly at the Clinton Landfill. Many of these commenters asked EPA to deny the Toxic Substances Control Act (TSCA) application by Clinton Landfill, Inc. seeking approval to dispose of wastes containing PCBs at Clinton Landfill #3 in DeWitt County, Illinois. Clinton Landfill Inc. also submitted a comment taking no position on the proposed designation.

Response: The designation of the Mahomet Aquifer System as an SSA will only affect Clinton Landfill, Inc.'s operation under federal law to the extent that PCB disposal at that landfill involves proposed projects receiving "Federal financial assistance," which is explained in greater detail in response to Comment 4. If such a proposed project arose, it would be subject to EPA review. Today's SSA designation will not impact any disposal of PCBs at the Clinton Landfill under federal law if such disposal occurs as a result of projects funded entirely by state, local, or private concerns.

In addition, to the extent that commenters have voiced opposition to Clinton Landfill, Inc.'s application to EPA, seeking approval to dispose of waste containing PCBs regulated under TSCA at Clinton Landfill No. 3 in DeWitt County, Illinois, the EPA notes that this SSA designation and the application by Clinton Landfill, Inc. under TSCA are governed by separate statutes, criteria, and procedures.

Comment 7: One commenter asked EPA to consider expanding the SSA project review area beyond the proposed SSA boundary to include the upper reaches of Kickapoo Creek (McLean County) and the North Fork of Salt Creek (McLean and DeWitt Counties). In support of its position on Kickapoo Creek, the commenter attached an excerpt from a 1994 study entitled "The Sankoty-Mahomet Aquifer in the Confluence Area of the Mackinaw and Mahomet Bedrock Valleys, Central Illinois: A Reassessment of Aquifer Characteristics."

Response: The SSA project review area includes the designated area, or the surface area above the aquifer and its recharge areas, and all or a portion of the stream flow source areas that flow into the recharge areas of the aquifer. After receiving the petition, EPA analyzed available studies and data and proposed to expand the SSA project review area to include, not only the proposed SSA area, but also the upstream portions of the Sangamon River in McLean County, Ford County and Champaign County; Sugar Creek; and tributary to the Middle Fork of the Vermilion River in Ford County and Livingston County. These areas are depicted in the map below.



Based on its review of available studies and data, including the study referenced by the commenter, the upper reaches of the Kickapoo Creek in McLean County and the North Fork of the Salt Creek in McLean and DeWitt Counties are not losing streams contributing recharge of the Mahomet Aquifer. Therefore, EPA is not including the upstream watersheds for these creeks in the SSA project review area.

Comment 8: One commenter expressed support for the designation of the Mahomet Aquifer System as an SSA, but noted that designation should include all of the subsurface drainage areas including the buried valley and tributaries extending even into adjoining states. The commenter also expressed concern about the quantity of water being withdrawn from the aquifer by communities and for agricultural purposes, and the uncertainty of where recharge of the aquifer occurs. The commenter noted that these topics deserve further study.

Response: Regarding the commenter’s statement that the SSA designation should be expanded to include all of the subsurface drainage areas including the buried valley and tributaries, EPA’s review of the literature found that the Mahomet-Teays bedrock valley contains some smaller valleys which are tributary to its main stem. These smaller valleys, however, do not contain enough sand and gravel to be significant sources of ground water. The aquifer boundary has historically not included these tributary valleys. Based on information reviewed by EPA, the 500-foot contour line (Herzog, et.al. - Buried Bedrock Surface of Illinois – 1994) in conjunction with information found in the saturated thickness map of the Mahomet Aquifer (Figure 8 of the petition) best represent the buried valleys that contain enough sand or sand and gravel to be significant sources of ground water. The Mahomet Aquifer has been mapped by studies that

used boreholes to penetrate the top surface of the Mahomet sand, providing greater accuracy on the extent of the aquifer than the bedrock surface alone (i.e., the contour line). The boundary is depicted on EPA's Final Designated Mahomet Sole Source Aquifer Area Map.

As for the commenter's concern about the uncertainty of where recharge occurs and statement that the designated boundary of the SSA should extend into adjoining states, EPA acknowledges that the Mahomet-Teays Aquifer extends into Indiana, Ohio and possibly West Virginia. EPA asked the petitioners to provide a more detailed study of ground water flow in the area which included the Vermilion River and points 20 miles further east into Indiana. There is evidence that ground water east of the eastern SSA boundary discharges to the Iroquois River to the northeast and the North Fork of the Vermilion River to the east and southeast. According to "Meeting East-Central Illinois Water Needs to 2050: Potential Impacts on the Mahomet Aquifer and Surface Reservoirs" by George S. Roadcap, et.al. (2011), a "saddle is formed where eastward flow from the Paxton high meets westward ground water inflow from Indiana. The resulting flow is directed north toward the Iroquois River and south, possibly toward the North Fork Vermilion River near Danville, Illinois. Although the data are limited, the shape of the potentiometric saddle suggests that inflow of ground water from Indiana is not very significant." Based on this study and other available information, EPA believes the Iroquois River and the North Fork of the Vermilion River are appropriate ground water divides establishing an eastern SSA boundary.

Finally, regarding the commenter's concern with the quantity of the water withdrawn from the aquifer by communities and for agricultural purposes, EPA notes considerable interest from local officials and the public regarding the availability of water from the Mahomet Aquifer System. EPA's authority under the SSA program is limited to reviewing projects that potentially affect the quality of the water in the SSA, not whether the projects will affect the quantity of water. EPA encourages the commenter to contact state and local officials to address water quantity concerns.

Comment 9: One commenter expressed support for the designation of the Mahomet Aquifer System as an SSA and provided references to relevant information from recent and ongoing research from the Illinois State Geological Survey (ISGS) within the proposed boundary area. The commenter stated that the ISGS currently is conducting research to identify and understand the geometries of geologic and hydrogeologic units that may produce natural hydraulic interconnections between shallower geologic units and the Mahomet Aquifer. The commenter also mentions that anthropogenic interconnections are formed at some large-diameter, high-capacity municipal, industrial, or irrigation wells that are constructed using artificial gravel packs.

The commenter goes on to discuss and refer to ongoing three-dimensional geologic mapping and geophysical surveying by the ISGS in parts of Champaign County and adjacent counties. According to the commenter, these studies have shown that in the eastern part of the Mahomet Aquifer System, the boundary of the aquifer extends beyond the 500-foot buried valley contour line in Illinois. The commenter mentions that the Mahomet Aquifer is now considered to be comprised of several different deposits of sand and gravel including, in addition to the Mahomet Sand Member, preglacial sediment and much younger glacial outwash assigned to the Pearl Formation (also known as the lower Glasford/Upper Banner aquifer) that has source areas to the

north and east of Illinois. In places, the commenter states that these sand and gravel deposits are separated by discontinuous layers of till, silt, and clay, and the aquifer and aquitard materials have not been mapped throughout the Mahomet Aquifer System.

Finally, the commenter noted that ISGS has observed considerable geological complexities within the Wedron Group and the upper part of the Glasford Formation sediments, which were not reflected in the conceptual model presented in the petition nor in the layering or parameterization of the ground water flow model presented in Roadcap et al. (2011). According to the commenter, in the eastern part of the Mahomet Aquifer System, ISGS has not observed the type of sediment interconnections between the land surface and the Mahomet Aquifer that are reported in the petition.

Response: EPA thanks this commenter for expressing support for this designation and providing cited references to support the information in the comment. To ensure that this designation is based on the best available science, EPA obtained and reviewed each of the eight references cited by the commenter. EPA notes that two of the references cited by the commenter were listed as “in review” and had not yet been published. Notwithstanding the fact that two of these references are still undergoing scientific review, and for the reasons explained further below, the information referenced by the commenter does not affect EPA’s decision to use the 500-foot contour line and saturated thickness information for the boundary for the designated SSA area. In addition, the referenced information and the comment support the decision to designate the Mahomet Aquifer System, which includes overlying geologic units.

As for the commenter’s statement that the eastern part of the Mahomet Aquifer in Illinois extends beyond the 500-foot contour line, EPA refers the commenter to its response to Comment 8, which covers this issue. For the reasons explained in that response, EPA believes the 500-foot contour line and information in the saturated thickness map of the Mahomet Aquifer (Figure 8 of the petition) best represent the buried valleys that contain enough sand or sand and gravel to be significant sources of ground water. The Mahomet Aquifer has been mapped by studies that used boreholes to penetrate into the top surface of the Mahomet sand, providing greater accuracy on the extent of the aquifer than the bedrock surface alone. This is depicted on EPA’s Final Designated Mahomet Sole Source Aquifer Area Map.

The commenter’s remaining statements confirm that, in the eastern portion of the designated SSA area, there are considerable geologic complexities that are not yet fully understood on small scale. Although ISGS’s future work may shed more light on this issue, there is considerable evidence supporting the existence of interconnections between the Mahomet Aquifer and overlying geologic units, namely aquifer zones in the Glasford Formation, in this portion of the designated SSA area. The commenter acknowledges this by stating that the Mahomet Aquifer is now considered to be comprised of several different deposits of sand and gravel including, in addition to the Mahomet Sand Member, preglacial sediment and much younger glacial outwash assigned to the Pearl Formation (also known as the lower Glasford/Upper Banner aquifer) that has source areas to the north and east of Illinois.

In the eastern portion of the designated SSA area, the Mahomet Aquifer is over 300 feet below the surface in some places and is overlain by many discontinuous bodies of coarse- and fine-grained sediment. ISGS studies referenced in the comment letter, as well as other studies

reviewed by EPA, show that the interconnections between the aquifer zones in the Glasford Formation and the Mahomet Aquifer are highly variable and localized. The three-dimensional modeling performed by ISGS supports the existence of these interconnections. According to ISGS, the Glasford Formation, in particular, contains discontinuous deposits of sand and gravel forming aquifer zones. Even though ISGS's understanding of these interconnections is evolving and this evolution may not have been fully captured in the ground water flow model presented in Roadcap, et al. (2011), EPA believes that it is appropriate to designate the Mahomet Aquifer System, including overlying aquifer zones such as those in the Glasford Formation, as an SSA.

