

Stakeholder advisory forum for the Blaine Aquifer Brackish Groundwater Mapping Project

June 29, 2016 9:00 to 11:00 a.m.

Meeting held at the Gateway Groundwater Conservation District, Quanah, TX.

List of Stakeholder Statements (S), questions (Q), and responses (R).

Note: This list is based on meeting notes. A video recording was not made.

1. Q: Define brackish groundwater?

A: TWDB response – 1,000 to 10,000 milligrams per liter total dissolved solids is considered the economical range of salinity for groundwater desalination. We will map up to 35,000 milligrams per liter total dissolved solids, which is the level of seawater, for some projects based on the geology. 0 to 1,000 milligrams per liter total dissolved solids is fresh according to the Safe Drinking Water Act for public water supply systems. Anything above that must be treated.

The term brackish is not well defined, originating as a term from the mixing of river and seawater in bays. We use the U.S. Geological Survey salinity classification of fresh, slightly saline, moderately saline, very saline, and brine.

Total dissolved solids is the sum of the positive ions of calcium, magnesium, sodium, and potassium and the negative ions of chloride, sulfate, bicarbonate, and carbonate in addition to some other constituents like silica.

2. Q: Why was the Whitehorse Group included in this study?

A: Contractor response – In some locations the Whitehorse Group is hydrologically connected to the Blaine Aquifer. We have some slides in the presentation that will show this relationship.

3. Q: What is the difference between zones 4 and 5?

[Question refers to slide 6 of the presentation]

A: Contractor response - The boundary line represents a surface water and possibly a groundwater divide. There are two rivers through each of these zones. There is a difference in stratigraphy between the zones, with less karst in zone 5 to the south. There are more brine emissions to the Salt Fork of the Brazos.

4. S: Some areas of the Seymour Formation were deleted from the TWDB designation of the Seymour Aquifer.

[Statement refers to slide 7 of the presentation]

A: Contractor response – Yes, there were some areas removed. There will be a discussion of the surface geology map in the presentation to show this.

[TWDB Note: the previous and revised boundaries of the Blaine and Seymour aquifers are listed in the 2007 State Water Plan.]

5. S: The Seymour Aquifer is present in Stonewall County.

A: Contractor response – The Seymour overlies the Blaine Aquifer in this area. In places, the Blaine has dissolved and collapsed under the Seymour.

Many karst features were mapped by the Bureau of Economic Geology and added to the karst slide [slide 13 of the presentation]

6. S: There are areas lacking a lot of data points for the static water level map.

[Statement refers to slide 20 of the presentation]

A: Contractor response – Yes, there is missing data in some areas. We used topography and stream data in these areas to develop our map.

7. S: I agree with conclusions in the aquifer thickness map. Discussion during the legislative session for House Bill 30 implied there were acres and acres of brackish groundwater in the Blaine Aquifer. Where is it?

[Statement refers to slide 21 of the presentation]

8. Q: Can you put a total dissolved solids concentration on this map?

[Question refers to slide 23 of the presentation]

A: Contractor response – We will discuss the water quality data soon.

[See slide 23 of the presentation]

9. Q: What is the cutoff for the brine interface?

A: Contractor response – 35,000 milligrams per liter total dissolved solids concentration is the cutoff for this study. Slide 21 of the presentation shows the U.S. Geological Survey classification. Total dissolved concentrations in the brine are up to 150,000 milligrams per liter total dissolved solids.

10. S: I don't agree with the statement that water quality can be the same laterally [from one well to another].

[Statement refers to slide 25 of the presentation]

A: Contractor response – Let me correct my comment. The water quality could be considered the same vertically within the well but not extrapolated laterally to other wells.

11. Q: Is the base of the aquifer based on 35,000 milligrams per liter total dissolved solids?

[Question refers to slide 29 of the presentation]

A: Contractor response – The aquifer base is the physical base, based on stratigraphy, and is not based on the brine interface. The next slide discusses the brine interface [slide 29].

12. S: It is difficult to predict where the water will be found in the Blaine Aquifer. Drillers may hit a cavity and find water or not find water. The water quality of a well is not equivalent laterally. The water quality varies depending on drilling into a cavity.

13. Q: What types of injection wells are located in northeast Wheeler County?

[This question was based on the 3-dimensional visualization demonstration showing stratigraphy, water wells, and injection wells. The wells are plotted on a map shown on slide 42]

A: Contractor response – W 14 Class II injection wells are for disposal of produced water and H1 Class II injection wells are used for water flood. We have categorized the injection wells based on type.

14. Q: Will the model show continuous water surface in the Blaine? The Blaine groundwater is not continuous. How do we convey to the Legislature that the Blaine groundwater is not continuous like the Ogallala Aquifer?

A: Contractor response – The Blaine Formation is mapped across the study area almost continuously. The static water levels are mapped, as well as the brine surface. The brackish groundwater is contained in karst – cavities and fractures. If there is not karst or fractures, the Blaine may not have significant groundwater.

15. Q: Did you map other geologic formations such as the Dog Creek Shale?

A: Contractor response – No, we did not have the time and in many cases the necessary geophysical well log data to map other formations.

16. S: We would like to take this map of exclusion zones to the groundwater conservation district boards and citizens to get their input and recommend changes. We know there is a very tight timeline to complete this study.

A: TWDB response – We will get an updated map, based on comments and suggestions from this meeting, to each of you next week.

We need to have the draft study report submitted to the TWDB at the end of July. TWDB will provide comments to the contractor by mid-August, and the contractor will provide the completed report at the end of August.

TWDB will review the report, comments from stakeholders, and make recommendations to the Executive Administrator in September. We anticipate presenting the proposed brackish groundwater production zone recommendations to the Board in October. If approved, these brackish groundwater production zones will be added to our Biennial Seawater and Brackish Groundwater Report and presented to the Board in November. The report is due to the Legislature December 1, 2016.

We need stakeholder feedback before we make recommendations in September. Please provide written comments to Jean Perez, Blaine Aquifer contract manager and we will forward them to our contractor.

17. S: A well has been drilled in between Dickens County and Guthrie on Highway 82, south of the highway. There is a half-section west of the Pitchfork Ranch. The well will be used for drinking water.

18. Q: What is the infrastructure distance?

[Question refers to slide 46 of the presentation]

A: Contractor response – Distance to a municipality.

19. S: There is a dot in northeast Dickens County that represents a public supply area. This area provides drinking water to King County.

[Statement refers to slide 47 of the presentation]

A: We will look at the wells associated with this point and modify the data accordingly.

20. S: Proposed production area number 2 has significant agricultural production. Suggest you look at infrared air photos to see irrigated land use. The City of Dodson is in southwest Collingsworth County, the Red River Authority has the well data.

[Statement refers to slide 47 of the presentation]

A: Contractor response – We will look at air photos and revise the data accordingly. We will contact the Red River Authority for well data.

21. S: Proposed production area number 3 is completely covered in irrigated land.

[Statement refers to slide 47 of the presentation]

A: Contractor response – We will check air photo data.

22. S: There is new irrigation in Motley County.

23. S: In Fisher County near Sylvester, check the rural water system in this area.

24. S: Many water well reports were never turned into the state. If drillers did not find a sufficient amount of water for the client, the reports may not have been filed.

25. Q: Have you talked with the Red River Authority? They have a large area of control and have taken over many smaller water systems.

A: We will talk with the Red River Authority.

26. Q: is the white area on the potential production area – exclusion map excluded from potential production area designation?

[[Question refers to slide 47 of the presentation]

A: Contractor response - Yes, at this time this region does not meet the requirement that the aquifer produce moderate amounts of groundwater.

27. Q: Will the biennial report to the legislature include brackish groundwater production zones from other aquifers in the future?

A: TWDB response – Yes, the biennial report is due each even numbered year prior to the next legislative session. We will include the results of each aquifer study completed at that time in the future reports. All of these aquifer studies are to be completed by December 1, 2022.