

Docuware Cover Sheet DWR

Cabinet (circle one): DWR RRCA ARCA GMD

File Name State Programs (from index)

Sub File Name ASR (from index)

Sub-Sub File Name Wichita

Year (calendar) 2003

End Year _____

Privileged Yes - Circle if true

Comments/Keywords

Phase 1 permit & accounting meeting summary

After scanning:

File hard copy CE Desk / CE Cabinet / Laterals

Send to Archives

Send to Field Office

Recycle

File only:

File hard copy CE Desk / CE Cabinet / Laterals

Memorandum



WATER RESOURCES
RECEIVED

DEC 05 2003

KS DEPT OF AGRICULTURE

Date: November 25, 2003

To: Jim Bagley
Tom Huntzinger
Dave Waldo
Mike Cochran
David Warren
Jerry Blain
Dave Stous

From: Jeff Klein

Re: WICHITA
ASR Phase 1
ASR Permit and Accounting System
B&McD Project No. 29886

1. A meeting was conducted in Topeka at KDWR's office on November 24, 2003 at 1:00 p.m. to discuss permits and the accounting system for the ASR project. The following people were in attendance:

Jerry Blain	-	City of Wichita
Jim Bagley	-	KDWR
Tom Huntzinger	-	KDWR
Will Gilliland	-	KDWR
Mark Jennings	-	KDWR
Dave Waldo	-	KDHE
Mike Cochran	-	KDHE
Dave Stous	-	Burns & McDonnell
Jeff Klein	-	Burns & McDonnell

2. We reviewed responses to the October 30, 2003 KDWR letter on Wichita's ASR permit applications as follows. The goal is consolidation of pertinent information for the for the permit application to establish a record.

- MODFLOW Model:

- KDWR does not want to run the model at this time; however, they would like a copy of the files on a CD in MODFLOW format. *This will be provided.*

DEC 05 2003

KS DEPT OF AGRICULTURE

Memorandum
November 25, 2003
Page 2

- KDWR wants complete documentation on assumptions, parameters, etc used in the model. *This will be provided from previous reports.*
- Model examples of the proposed accounting system were discussed. This method uses MODFLOW output to estimate water movement between the index or accounting cells. An example with two index cells near the ASR Phase 1 project was reviewed. The analysis uses water data from 1993 to 1998 and tracks subsurface flow, evapotranspiration, withdrawals, natural recharge, artificial recharge, underflow, dynamic storage, etc. This data is transferred to an intermediate format where flows in and out of cells is tracked and prepared for a summary form. This approach allows net available ASR credit in each cell to be determined from year to year as well as estimate water volume discharged to the river. Currently, the ASR project includes more cells than the Phase 1 project; many cells won't have withdrawals. Since Phases 2, 3 and 4 are planned for development following Phase 1, the accounting system for the whole project needs to be provided. KDWR likes this approach. *Provide KDWR with the complete three-step process for all 38 index cells.*
- A final copy of the Demonstration Project Completion report for the Bureau was provided to KDWR.
- Water level versus water quality for the diversion wells were discussed as follows:
 - USGS data shows increases in specific conductance in the Halstead test well over the period of operation.
 - Chemical changes are an indicator of impact but not a benchmark for this type of aquifer. If the hydrogeology is proper, water changes will occur.
 - No equilibrium occurs between the river and the aquifer since the river stage and water quality is constantly changing over a wide range during times that pumping would be allowed.
 - Completing a mass balance based on specific conductance to determine the percent groundwater and surface water was discussed. Because equilibrium would not be established during ASR diversion pumping, this would be extremely difficult if even possible.
 - These wells capture a mixture of groundwater and surface water while replacing all captured groundwater with surface water through bank filtration. This is proven with water level data and illustrated to a lesser degree by water quality changes.

DEC 05 2003

KS DEPT OF AGRICULTURE

Memorandum
November 25, 2003
Page 3

- Some people have expressed concerned about the volume induced versus the volume diverted. Since each site is different, the City realized that pumping rates may need to be modified based on final hydrogeological conditions. Diversion rates could exceed the rate at which water is induced from the river. If this occurs, the City would need to lower the wells' diversion rate. No problems occurred at the Halstead test well.
- The Phase 1 and the Halstead test well site both have clay lenses, not a confining clay layer, and similar geology. Induced flow at the Halstead diversion well site had to travel about 150 feet to move around a clay lens to reach the lower aquifer. This was illustrated by the drawdown contour for the shallow aquifer.
- If we have the case where an extensive confining clay layer exists, that site would not be suitable for diversion wells screened below the confining clay layer.
- Review of soil logs for the Phase 1 site do not show a confining clay layer, just clay lenses. No pump test data is available for the Phase 1 at this time. This would require installation of a test well and monitoring wells and an aquifer test to prove and quantify induced infiltration occurs.
- For the Demonstration Project, a term permit was issued to prove induced infiltration occurred. This was proven based on changes in water level in the shallow and deep monitoring wells adjacent to the test well in initial tests, while running and after shut-off (recovery).
- Automated data collection devices could be set in the shallow and deep monitoring wells at the Phase 1 site to document changes in water level for comparison to the river. This data would show if there is a connection between the river and the aquifer.
- A figure showing Theis analysis results at the Phase 1 site was distributed. The analysis shows the resulting drawdowns based on the Halstead test well parameters and the river at base flow if all seven wells are pumping. This is a conservative analysis method.
- A figure showing the Demonstration Project water surface level data was distributed. The shallow and deep monitoring wells are located about 100 feet from the test well. No impact was noted 1500 feet away.

DEC 05 2003

KS DEPT OF AGRICULTURE

Memorandum
November 25, 2003
Page 4

- A recovery period of seven days was discussed for regulatory purposes. The actual recovery time will be site specific and will be impacted by water use activities in the area.
- The City measured the depth of the river bottom for the river bank and bottom. These are shown on the provided hydrogeologic cross sections.
- The Demonstration Project had 18 monitoring wells for one test diversion well to analyze and document the surface water groundwater interaction. A shallow and deep monitoring well near each diversion well is proposed to demonstrate the surface water connection.
- Drawdown in the shallow monitoring well proves a communication with the lower aquifer.
- *The figures provided today will be resubmitted with a narrative explaining the data.*
- Bentley well field is about 1.5 miles south of the southern-most index cell. Groundwater rights are not over-appropriated in this area. No impacts are expected between the projects.
- Water Quality Monitoring:
 - The City proposes to sample the blended diversion water after every seven days of operation.
 - Baseline sampling of the index wells shows that 60 percent of the samples do not meet SDWA standards for chlorides, nitrates or arsenic.
 - KDHE wants a full proposal with facility locations.
 - There may be some long-term issues with reducing water sampling and analysis requirements with a UIC permit. The UIC regulation is for the protection of human health and environment.
 - The issue of degradation of native groundwater for some parameters, while staying within the SDWA standards and considering the no action chlorides of 300 mg/L, needs to be finalized. Under the UIC permit, KDHE can set the water quality anywhere between native and SDWA standards. This is a bigger issue for surface water chlorides. We have always proposed and discussed the use of the

DEC 05 2003

KS DEPT OF AGRICULTURE

Memorandum
November 25, 2003
Page 5

SDWA standards for the measured parameters as was used in the Demonstration Project.

- The no action alternative will allow chlorides to reach 300 mg/L in the next 50 years and impair future use of the water. Beyond reasonable economic limit and impairment of use of the water need to be considered.
- KDWR can condition their permit to refer to KDHE on water quality.
- KDHE will provide a copy of a UIC permit for the City to use as a guide. The KDHE permit process can start anytime.
- City is not anticipating the current GMD2 Board will support the Project. This puts KDWR on the spot to judge the Project on science.
- The opposition may try to prove that since we are not taking all surface water, we are not inducing enough infiltration. They may also try to key on the water quality.
- Public Hearing:
 - Once permit applications are accepted, KDWR will conduct a public hearing, probably in the Halstead High School auditorium.
 - Several formats could be followed. These include sworn testimony, informal discussion, all formal discussion, cross-examination, etc. The final format may be dictated on the number of questions about the project after the 30 day meeting notification is issued.

3. Schedule:

- No schedule for completion has been set. KDWR will consider the accounting approaches and call the City. KDWR is ready to move on this project and get to the public hearing. The hearing is followed by a 30 day comment period.