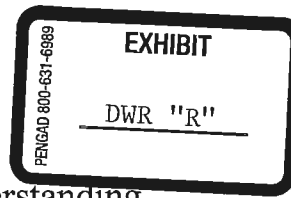


DWR EXHIBIT R
Draft MOU Submitted by GMD #2
August 12, 2004



DRAFT

Memorandum of Understanding
between
Equus Beds Groundwater Management District No. 2
and
The City of Wichita, Kansas
Regarding
Wichita's Proposed Aquifer Storage and Recovery Project, Phase 1

Background

As part its Integrated Local Water Supply Plan, the City of Wichita (City) proposed to install an aquifer storage and recovery (ASR) project (the Project) in the vicinity of the City's well field located in parts of Harvey and Sedgwick Counties. The Project calls for the diversion of up to 100 million gallons per day (MGD) of above-base-flow water from the Little Arkansas River when available. The water is to be stored in the aquifer until needed in times of extended dry periods. The Project provides a benefit to all users of the aquifer by helping to protect the well field area from migration of salt-water from the Arkansas River and the Burrton brine contamination area and by helping to overcome the dewatering of the aquifer from over-appropriation.

The Equus Beds Groundwater Management District No. 2 (GMD2) provides local management of the aquifer.

In review of water appropriation applications for Phase 1 of the Project, GMD2 expressed concerns about the installation and operation of the project. The City and representatives of GMD2 agreed to meet and address those concerns.

The purpose of this Memorandum of Understanding is to document agreements made between the City and GMD2 as to the installation and operation of Phase 1 of the Project.

Items of Understanding:

1. **Issue:** The conceptual Plan is to develop both direct surface water diversions and diversions using bank storage water from induced infiltration. The initial conceptual plan was for installation of 75 MGD of bank storage facilities and 25 MGD of direct surface water diversion. With recent advances in water treatment technology, development of additional surface supplies appears to be feasible.

Commitment: Based on current technology the City will develop at least 60 MGD of direct surface water diversions for recharge based on a 100 MGD ASR system and the City is committed to a four-year review period of the bank storage wells constructed in Phase 1 before the installation of any other bank storage wells

2. **Issue:** The City's initial plans are for bank storage wells to be screened in the lower parts of aquifer because of water quality and well efficiency concerns. The

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GMD2 is concerned about screening the bank storage wells in the lower aquifer zone. The GMD2 consultant has suggested a test of the upper aquifer zone.

Commitment: The City will install one shallow test well at one diversion well site to determine the approximate yield, water quality and connectivity to river. The test plan will be developed in consultation with GMD2.

3. **Issue:** As addressed in item 2, the City's initial plans were for the bank storage diversion wells to be screened in the lower parts of the aquifer because of water quality and efficiency concerns. The GMD2 consultant recommended also screening the upper aquifer zones to alleviate GMD2 concerns about the diversion wells being screened only in the lower aquifer zone.

Commitment: The City will design bank storage diversion wells screened in the upper as well as the lower sand zones. If the upper sand zone adversely affects water quality to an unacceptable amount, the City may seal it after consultation with GMD2

4. **Issue:** To provide additional protection against possible negative impacts of the diversion wells, GMD2 suggested that the City initially install and operate the diversion wells under a three (3) to five (5) year term permit.

Commitment: If deemed appropriate and acceptable to the DWR, the City will agree to the establishment of a special condition on the diversion well appropriations that requires a review by the DWR and GMD2 of all of the data collected from the diversion well sites prior to the end of the first four (4) years of operation. After receiving comments from GMD2, such review by DWR would, at minimum, determine if: 1) the aquifer at the diversion wells is connected to the river, 2) the deep aquifer is connected to the shallow aquifer, and, 3) the diversion wells are inducing river water into the aquifer at a rate sufficient to support the pumping of the diversion wells. Based on such review and findings, DWR could require that the City modify the operation of the diversion well(s), or discontinue pumping from the diversion well(s) or, continue the Project.

5. **Issue:** The City recognizes that GMD2 will incur extraordinary expense to monitor and review the Project. GMD2 asked that in light of budgetary constraints the City provide GMD2 with financial assistance during the special condition period referred to in 4 above.

Commitment: The City will provide a grant of up to \$20,000 per year for a period not to exceed four (4) years. This grant is in addition to and a not substitute for GMD2 land and groundwater assessments owed by the City.

6. **Issue:** One objective of the Project is to retard the eastward movement of the Burrton saltwater contamination. Phase 1 has multiple objectives including beginning to build a hydraulic barrier to the Burrton contamination. Additional phases are required to fully implement the hydraulic barrier.

Commitment: At the end of four (4) years of operation of the Project, the City in consultation with GMD2, will re-evaluate the design and placement of recharge facilities near the Burrton contamination plume to determine if more effective plume control will be needed in the Project.

7. **Issue:** GMD2 has requested a number of monitoring wells to be located on property where the City has no right of entry. Additionally, GMD2 has requested water quality sampling of domestic wells near the diversion and recharge facilities where the City has no right of entry.

Commitment: GMD2 will assist the City by obtaining permission for right of entry to sites for the Project monitoring facilities including but not limited to monitoring well sites and access to domestic wells for water quality sampling.

8. **Issue:** GMD2 and the City are committed to maintaining water quality in the Project area.

Commitment: The quality of the recharge water injected into the aquifer through the proposed ASR wells will meet USEPA/KDHE all drinking water standards and will not degrade the ambient use of water in the basin storage area.

9. **Issue:** GMD2 and the City are committed to protecting domestic water wells from changes in water quality standards.

Commitment: If water quality in existing or future domestic wells meets the then current drinking water standards and the water quality is subsequently changed by the Project such that the water no longer meets the then current drinking water standards, the City will provide and install a home water treatment system to bring the water back to drinking water standards or provide other appropriate remedies to replace the domestic water supply with water that meets the drinking water standard without additional cost to the resident.

10. The commitments made by the City and GMD2 as set forth in this Memorandum of Understanding are subject to the requirements of State law and regulations, and the orders of DWR. In the event that any commitment is in conflict with such law, regulation or order, the law, regulation or order controls. In such event, the City and GMD2 agree to enter into good faith discussions to seek amendment of the commitments consistent with the law, regulation or order.

11. It is the intent of the parties that the provisions of this Memorandum of Understanding are not intended to violate the Kansas Cash Basis Law (K.S.A. 10-12101, et seq.), the Kansas Budget Law (K.S.A. 79-2925), or other laws or regulations addressing the budgeting, funding, or expenditures of the respective governmental entities. Therefore, notwithstanding anything to the contrary herein contained, the parties obligations under this Memorandum of Understanding are to be construed in a manner that assures that each party is at all time in conformance of such laws or regulations.

12. It is agreed by the parties that in addition to the above terms, conditions and commitments, the recommendations of GMD2 on the Project will be modified to include the changes in Attachment "A" which is made a part hereof by reference.

13. GMD2 recommends approval of the Project with conditions referenced in this Memorandum of Understanding and GMD2 recommendations as modified by the Memorandum of Understanding.

The parties have each approved this Memorandum of Understanding on the dates designated below, and it is effective as of the latter date of approval.

Signed:

Date:

Equus Beds Groundwater Management
District No. 2

Date:

City of Wichita, KS

By: _____

Bob Seiler, President
Board of Directors

By: _____

Carlos Mayans
Mayor

Attachment "A"
Memorandum of Understanding
Between
Equus Beds Groundwater Management District No. 2
And
The City of Wichita, Kansas
Regarding
Wichita's Aquifer Storage and Recovery Project, Phase 1
Modifications to GMD2 Staff Recommendations
On
Applications 45569 to 45576

Bank Storage Applications Nos. 45569, 45570, 45571, 45572, 45573, 45574, 45575:

Staff Recommendation No.

7) stream flow data collected from the USGS gage at Highway 50 (Halstead) shall be used to determine flow conditions and bank storage well utilization and shall be based on stream flow adjusted for intervening base flow nodes and currently existing surface water rights;

8) DELETE (No longer germane with modification made to 7 above.)

17) ADD: The drawdown limit in any zone, shallow or deep, will not exceed ten (10') feet at a distance 660 feet from the point of diversion on either side of the Little Arkansas River;

19) ADD – The total pumping rate of the seven bank storage wells shall not exceed a maximum of 7,000 gallons per minute;

21) (Applications Nos. 45569 & 45575)

20) (Applications Nos. 45570, 45571, 45572, 45573, 45574) the applicant shall submit a water level and water quality monitoring plan for review and comment by GMD2 and approval by the Chief Engineer, DWR.

24) (Applications Nos. 45569, 45570 & 45575)

23) (Applications Nos. 45571, 45572, 45573, 45574) the applicant shall submit a well field operation, monitoring and reporting plan for review and comment by GMD2 and approval by the Chief Engineer, DWR.

25) (Applications Nos. 45569, 45570 & 45575)

24) Applications Nos. 45571, 45572, 45573, 45574) the operational plan shall include utilization of monitoring wells and the stream flow monitoring gage in an automated system; and

Aquifer Storage and Recovery Applications No. 45567

1) the City will provide GMD2 the actual distance from the proposed point of diversion to the nearest non domestic water wells substantiating that the proposed point of diversion complies with Well Spacing Regulation K.A.R. 5-22-2. The distances shall be either surveyed by a state-licensed surveyor or engineer, or scaled from an aerial photograph by qualified Harvey County Farm Service Agency staff.2) the basin storage area shall be defined in compliance with K.A.R. 5-1-1 (k).....

6) the index water levels are established in compliance with K.A.R. 5-1-1 (oo).....

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8) the lowest index water level shall be determined per K.A.R. 5-12-1(b)(2) and the highest index water level shall be 1425 feet msl (17.6 feet bls), based on the pre-development water level for index well no. 5 as determined from Kansas Geological Survey Bulletin No. 79 (1949);

16) a monitoring well network is installed at the applicant's expense to monitor the aquifer storage and recovery site as show on Attachment 45567-A(r), and shall include existing monitoring well site IW05;

20) before installation of the proposed ASR well, the applicant shall submit a water level and water quality monitoring plan to GMD2 for review and comment and to the Chief Engineer, DWR for approval;

24, 25 and 26) DELETE (This is a GMD2 action not an Applicant action and should not be a part of the conditions for the Applicant.)

Aquifer Storage and Recovery Applications No. 45568

1) the basin storage area shall be defined in compliance with K.A.R. 5-1-1 (k).....

5) the index water levels are established in compliance with K.A.R. 5-1-1 (oo).....

7) the lowest index water level shall be determined per K.A.R. 5-12-1(b)(2) and the highest index water level shall be 1425 feet msl (17.6 feet bls), based on the pre-development water level for index well no. 5 as determined from Kansas Geological Survey Bulletin No. 79 (1949);

15) a monitoring well network is installed at the applicant's expense to monitor the aquifer storage and recovery site as show on Attachment 45567-A(r), and shall include existing monitoring well site IW05;

19) before installation of the proposed ASR well, the applicant shall submit a water level and water quality monitoring plan to GMD2 for review and comment and to the Chief Engineer, DWR for approval;

23, 24 and 25) DELETE (This is a GMD2 action not an Applicant action and should not be a part of the conditions for the Applicant.)

Aquifer Storage and Recovery Applications No. 45576

1) the basin storage area shall be defined in compliance with K.A.R. 5-1-1 (k).....

5) the index water levels are established in compliance with K.A.R. 5-1-1 (oo).....

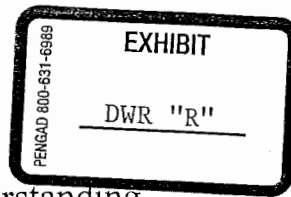
7) the lowest index water level shall be determined per K.A.R. 5-12-1(b)(2) and the highest index water level shall be 1427.5 feet msl (22 feet bls), based on the pre-development water level for index well no. 2 as determined from Kansas Geological Survey Bulletin No. 79 (1949);

15) a monitoring well network is installed at the applicant's expense to monitor the aquifer storage and recovery site as show on Attachment 45576-A(r), and shall include existing monitoring well site IW02;

19) before installation of the proposed ASR well, the applicant shall submit a water level and water quality monitoring plan to GMD2 for review and comment and to the Chief Engineer, DWR for approval;

23, 24 and 25) DELETE (This is a GMD2 action not an Applicant action and should not be a part of the conditions for the Applicant.)

DWR EXHIBIT R
Draft MOU Submitted by GMD #2
August 12, 2004



DRAFT

Memorandum of Understanding
between
Equus Beds Groundwater Management District No. 2
and
The City of Wichita, Kansas
Regarding
Wichita's Proposed Aquifer Storage and Recovery Project, Phase 1

Background

As part its Integrated Local Water Supply Plan, the City of Wichita (City) proposed to install an aquifer storage and recovery (ASR) project (the Project) in the vicinity of the City's well field located in parts of Harvey and Sedgwick Counties. The Project calls for the diversion of up to 100 million gallons per day (MGD) of above-base-flow water from the Little Arkansas River when available. The water is to be stored in the aquifer until needed in times of extended dry periods. The Project provides a benefit to all users of the aquifer by helping to protect the well field area from migration of salt-water from the Arkansas River and the Burrton brine contamination area and by helping to overcome the dewatering of the aquifer from over-appropriation.

The Equus Beds Groundwater Management District No. 2 (GMD2) provides local management of the aquifer.

In review of water appropriation applications for Phase 1 of the Project, GMD2 expressed concerns about the installation and operation of the project. The City and representatives of GMD2 agreed to meet and address those concerns.

The purpose of this Memorandum of Understanding is to document agreements made between the City and GMD2 as to the installation and operation of Phase 1 of the Project.

Items of Understanding:

1. **Issue:** The conceptual Plan is to develop both direct surface water diversions and diversions using bank storage water from induced infiltration. The initial conceptual plan was for installation of 75 MGD of bank storage facilities and 25 MGD of direct surface water diversion. With recent advances in water treatment technology, development of additional surface supplies appears to be feasible.

Commitment: Based on current technology the City will develop at least 60 MGD of direct surface water diversions for recharge based on a 100 MGD ASR system and the City is committed to a four-year review period of the bank storage wells constructed in Phase 1 before the installation of any other bank storage wells

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GMD2 is concerned about screening the bank storage wells in the lower aquifer zone. The GMD2 consultant has suggested a test of the upper aquifer zone.

Commitment: The City will install one shallow test well at one diversion well site to determine the approximate yield, water quality and connectivity to river. The test plan will be developed in consultation with GMD2.

- Issue:** As addressed in item 2, the City's initial plans were for the bank storage diversion wells to be screened in the lower parts of the aquifer because of water quality and efficiency concerns. The GMD2 consultant recommended also screening the upper aquifer zones to alleviate GMD2 concerns about the diversion wells being screened only in the lower aquifer zone.

Commitment: The City will design bank storage diversion wells screened in the upper as well as the lower sand zones. If the upper sand zone adversely affects water quality to an unacceptable amount, the City may seal it after consultation with GMD2

- Issue:** To provide additional protection against possible negative impacts of the diversion wells, GMD2 suggested that the City initially install and operate the diversion wells under a three (3) to five (5) year term permit.

Commitment: If deemed appropriate and acceptable to the DWR, the City will agree to the establishment of a special condition on the diversion well appropriations that requires a review by the DWR and GMD2 of all of the data collected from the diversion well sites prior to the end of the first four (4) years of operation. After receiving comments from GMD2, such review by DWR would, at minimum, determine if: 1) the aquifer at the diversion wells is connected to the river, 2) the deep aquifer is connected to the shallow aquifer, and, 3) the diversion wells are inducing river water into the aquifer at a rate sufficient to support the pumping of the diversion wells. Based on such review and findings, DWR could require that the City modify the operation of the diversion well(s), or discontinue pumping from the diversion well(s) or, continue the Project.

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10. The commitments made by the City and GMD2 as set forth in this Memorandum of Understanding are subject to the requirements of State law and regulations, and the orders of DWR. In the event that any commitment is in conflict with such law, regulation or order, the law, regulation or order controls. In such event, the City and GMD2 agree to enter into good faith discussions to seek amendment of the commitments consistent with the law, regulation or order.

11. It is the intent of the parties that the provisions of this Memorandum of Understanding are not intended to violate the Kansas Cash Basis Law (K.S.A. 10-12101, et seq.), the Kansas Budget Law (K.S.A. 79-2925), or other laws or regulations addressing the budgeting, funding, or expenditures of the respective governmental entities. Therefore, notwithstanding anything to the contrary herein contained, the parties obligations under this Memorandum of Understanding are to be construed in a manner that assures that each party is in full conformance of such laws or regulations.

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12. It is agreed by the parties that in addition to the above terms, conditions and commitments, the recommendations of GMD2 on the Project will be modified to include the changes in Attachment "A" which is made a part hereof by reference.

13. GMD2 recommends approval of the Project with conditions referenced in this Memorandum of Understanding and GMD2 recommendations as modified by the Memorandum of Understanding.

The parties have each approved this Memorandum of Understanding on the dates designated below, and it is effective as of the latter date of approval.

Signed:

Date:

Equus Beds Groundwater Management
District No. 2

Date:

City of Wichita, KS

By: _____

Bob Seiler, President
Board of Directors

By: _____

Carlos Mayans
Mayor

Attachment "A"
Memorandum of Understanding
Between
Equus Beds Groundwater Management District No. 2
And
The City of Wichita, Kansas
Regarding
Wichita's Aquifer Storage and Recovery Project, Phase 1
Modifications to GMD2 Staff Recommendations
On
Applications 45569 to 45576

Bank Storage Applications Nos. 45569, 45570, 45571, 45572, 45573, 45574, 45575:

Staff Recommendation No.

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8) DELETE (No longer germane with modification made to 7 above.)

17) ADD: The drawdown limit in any zone, shallow or deep, will not exceed ten (10') feet at a distance 660 feet from the point of diversion on either side of the Little Arkansas River;

19) ADD – The total pumping rate of the seven bank storage wells shall not exceed a maximum of 7,000 gallons per minute;

21) (Applications Nos. 45569 & 45575)

20) (Applications Nos. 45570, 45571, 45572, 45573, 45574) the applicant shall submit a water level and water quality monitoring plan for review and comment by GMD2 and approval by the Chief Engineer, DWR.

24) (Applications Nos. 45569, 45570 & 45575)

23) (Applications Nos. 45571, 45572, 45573, 45574) the applicant shall submit a well field operation, monitoring and reporting plan for review and comment by GMD2 and approval by the Chief Engineer, DWR.

25) (Applications Nos. 45569, 45570 & 45575)

24) Applications Nos. 45571, 45572, 45573, 45574) the operational plan shall include utilization of monitoring wells and the stream flow monitoring gage in an automated system; and.

Aquifer Storage and Recovery Applications No. 45567

1) the City will provide GMD2 the actual distance from the proposed point of diversion to the nearest non domestic water wells substantiating that the proposed point of diversion complies with Well Spacing Regulation K.A.R. 5-22-2. The distances shall be either surveyed by a state-licensed surveyor or engineer, or scaled from an aerial photograph by qualified Harvey County Farm Service Agency staff.2) the basin storage area shall be defined in compliance with K.A.R. 5-1-1 (k).....

6) the index water levels are established in compliance with K.A.R. 5-1-1 (o)

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8) the lowest index water level shall be determined per K.A.R. 5-12-1(b)(2) and the highest index water level shall be 1425 feet msl (17.6 feet bls), based on the pre-development water level for index well no. 5 as determined from Kansas Geological Survey Bulletin No. 79 (1949);

16) a monitoring well network is installed at the applicant's expense to monitor the aquifer storage and recovery site as show on Attachment 45567-A(r), and shall include existing monitoring well site IW05;

20) before installation of the proposed ASR well, the applicant shall submit a water level and water quality monitoring plan to GMD2 for review and comment and to the Chief Engineer, DWR for approval;

24, 25 and 26) DELETE (This is a GMD2 action not an Applicant action and should not be a part of the conditions for the Applicant.)

Aquifer Storage and Recovery Applications No. 45568

1) the basin storage area shall be defined in compliance with K.A.R. 5-1-1 (k).....

5) the index water levels are established in compliance with K.A.R. 5-1-1 (oo).....

7) the lowest index water level shall be determined per K.A.R. 5-12-1(b)(2) and the highest index water level shall be 1425 feet msl (17.6 feet bls), based on the pre-development water level for index well no. 5 as determined from Kansas Geological Survey Bulletin No. 79 (1949);

15) a monitoring well network is installed at the applicant's expense to monitor the aquifer storage and recovery site as show on Attachment 45567-A(r), and shall include existing monitoring well site IW05;

19) before installation of the proposed ASR well, the applicant shall submit a water level and water quality monitoring plan to GMD2 for review and comment and to the Chief Engineer, DWR for approval;

23, 24 and 25) DELETE (This is a GMD2 action not an Applicant action and should not be a part of the conditions for the Applicant.)

Aquifer Storage and Recovery Applications No. 45576

1) the basin storage area shall be defined in compliance with K.A.R. 5-1-1 (k).....

5) the index water levels are established in compliance with K.A.R. 5-1-1 (oo).....

7) the lowest index water level shall be determined per K.A.R. 5-12-1(b)(2) and the highest index water level shall be 1427.5 feet msl (22 feet bls), based on the pre-development water level for index well no. 2 as determined from Kansas Geological Survey Bulletin No. 79 (1949);

15) a monitoring well network is installed at the applicant's expense to monitor the aquifer storage and recovery site as show on Attachment 45576-A(r), and shall include existing monitoring well site IW02;

19) before installation of the proposed ASR well, the applicant shall submit a water level and water quality monitoring plan to GMD2 for review and comment and to the Chief Engineer, DWR for approval;

23, 24 and 25) DELETE (This is a GMD2 action not an Applicant action and should not be a part of the conditions for the Applicant.)

