August 10, 2010

Mr. J. Kevin Ward, Executive Administrator
Texas Water Development Board
P O Box 13231
Austin, TX 78711-3231

Dear Mr. Ward:

As Coordinator for Groundwater Management Area (GMA) 10, I want to inform you that GMA 10 has formally adopted Desired Future Condition (DFC) for the Leona Aquifer in Medina County of GMA 10.

After reviewing "GTA Aquifer Assessment 09-01", all groundwater conservation district (GCD) representatives in attendance, eight of the nine members of the Joint Coordinating Committee of GMA 10, voted unanimously on May 17, 2010, to adopt a DFC for the Leona Aquifer in Medina County of GMA 10 of an average drawdown of fifteen feet.

Enclosed please find the following items related to the DFC adoption for the record:
- Copies of posted meeting notices and sign-in sheets for the May 17, 2010 meeting (Exhibit A);
- Minutes of the July 19, 2010 meeting (Exhibit B);
- Resolution No. 2010-01 with signatures of all attending GCD representatives (Exhibit C); and
- Copy of "GTA Aquifer Assessment 09-01" (Exhibit D).

If there are any additional submission requirements necessary, please contact me at (210) 222-2204 or you may e-mail me at rillgner@edwardsaquifer.org.

Respectfully,

Rick Illgner
Governmental Affairs Officer
Edwards Aquifer Authority

RI/em

Enclosures
NOTICE OF OPEN MEETING

As required by section 36.108(c), Texas Water Code, a meeting of the Groundwater Management Area 10 Planning Committee, comprised of delegates from the following groundwater conservation districts located wholly or partially within Groundwater Management Area 10: Edwards Aquifer Authority, Guadalupe County GCD, Medina County GCD, Uvalde County UWCD, Plum Creek CD, Barton Springs Edwards Aquifer CD, Hays Trinity GCD, Trinity Glen Rose GCD and Kinney County GCD will be held on Monday, May 17, 2010 at 11:30 am at the Conference Center of the Edwards Aquifer Authority, 1615 N. St. Mary's, San Antonio, TX 78215.

At this meeting, the following business may be considered and recommended for Joint Planning Committee action:

1. Call to Order.
2. Designation of meeting Secretary.
3. Public Comment.
4. Receipt of Posted Notices.
5. Approval of April 19, 2010 Minutes.
6. Discussion and possible action related to establishing standard terminology for the various stages of a specific DFC of GMA 10.
7. Presentation, discussion and possible action concerning the Initially Prepared Plans of the regional water planning groups for Regions K and L, with respect to identified needs and responsive water management strategies.
8. Discussion and possible action related to establishing a Preliminary DFC for the Edwards Aquifer in the Northern Subdivision of GMA-10.
9. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Trinity Group, relevant aquifer assessments, and a schedule for the establishment of Trinity DFCs.
10. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Saline Edwards, relevant aquifer assessments, and a schedule for the establishment of Saline Edwards DFC(s).
11. Discussion and possible action related to the adoption of the DFC for the Leona Gravel and Related Aquifers in Medina County.
12. Discussion and possible action related to establishing a Preliminary DFC for the Leona Gravel and Related Aquifers in Uvalde County.
13. Discussion and possible action related to designating and establishing Preliminary DFC(s) for the relevant aquifers in the Western Subdivision of GMA-10 and in Kinney County.
14. Discussion and possible action concerning the schedule and location of upcoming public hearings on Preliminary Recommended DFCs that are planned by member GCDs.
15. Next Meeting and Discussion Topics.
16. Adjournment

Edwards Aquifer Authority
Phone (210) 222-2204 Fax (210) 222-9869
GROUNDFWATER MANAGEMENT AREA #10 JOINT PLANNING MEETING

NOTICE OF OPEN MEETING

As required by section 36.108(e), Texas Water Code, a meeting of the Groundwater Management Area 10 Planning Committee, comprised of delegates from the following groundwater conservation districts located wholly or partially within Groundwater Management Area 10: Edwards Aquifer Authority, Guadalupe County GCD, Medina County GCD, Uvalde County UWCD, Plum Creek CD, Barton Springs Edwards Aquifer CD, Hays Trinity GCD, Trinity Glen Rose GCD and Kinney County GCD will be held on Monday, May 17, 2010 at 11:30 am at the Conference Center of the Edwards Aquifer Authority, 1615 N. St. Mary’s, San Antonio, TX 78215.

At this meeting, the following business may be considered and recommended for Joint Planning Committee action:

1. Call to Order.
2. Designation of meeting Secretary.
3. Public Comment.
4. Receipt of Posted Notices.
5. Approval of April 19, 2010 Minutes.
6. Discussion and possible action related to establishing standard terminology for the various stages of a specific DFC of GMA 10.
7. Presentation, discussion and possible action concerning the Initially Prepared Plans of the regional water planning groups for Regions K and L, with respect to identified needs and responsive water management strategies.
8. Discussion and possible action related to establishing a Preliminary DFC for the Edwards Aquifer in the Northern Subdivision of GMA-10.
9. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Trinity Group, relevant aquifer assessments, and a schedule for the establishment of Trinity DFCs.
10. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Saline Edwards, relevant aquifer assessments, and a schedule for the establishment of Saline Edwards DFC(s).
11. Discussion and possible action related to the adoption of the DFC for the Leona Gravel and Related Aquifers in Medina County.
12. Discussion and possible action related to establishing a Preliminary DFC for the Leona Gravel and Related Aquifers in Uvalde County.
13. Discussion and possible action related to designating and establishing Preliminary DFC(s) for the relevant aquifers in the Western Subdivision of GMA-10 and in Kinney County.
14. Discussion and possible action concerning the schedule and location of upcoming public hearings on Preliminary Recommended DFCs that are planned by member GCDs.
15. Next Meeting and Discussion Topics.
16. Adjournment

Edwards Aquifer Authority

FILED this 10th day of May, 2010

Phone (210) 222-2204
Fax (210) 222-9869

NINA S. SELLS
COUNTY CLERK CALDWELL COUNTY, TEXAS
NOTICE OF OPEN MEETING

As required by section 36.108(e), Texas Water Code, a meeting of the Groundwater Management Area 10 Planning Committee, comprised of delegates from the following groundwater conservation districts located wholly or partially within Groundwater Management Area 10: Edwards Aquifer Authority, Guadalupe County GCD, Medina County GCD, Uvalde County UWCD, Plum Creek CD, Barton Springs Edwards Aquifer CD, Hays Trinity GCD, Trinity Glen Rose GCD and Kinney County GCD will be held on Monday, May 17, 2010 at 11:30 am at the Conference Center of the Edwards Aquifer Authority, 1615 N. St. Mary’s, San Antonio, TX 78215.

At this meeting, the following business may be considered and recommended for Joint Planning Committee action:

1. Call to Order.
2. Designation of meeting Secretary.
3. Public Comment.
4. Receipt of Posted Notices.
5. Approval of April 19, 2010 Minutes.
6. Discussion and possible action related to establishing standard terminology for the various stages of a specific DFC of GMA 10.
7. Presentation, discussion and possible action concerning the Initially Prepared Plans of the regional water planning groups for Regions K and L, with respect to identified needs and responsive water management strategies.
8. Discussion and possible action related to establishing a Preliminary DFC for the Edwards Aquifer in the Northern Subdivision of GMA-10.
9. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Trinity Group, relevant aquifer assessments, and a schedule for the establishment of Trinity DFCs.
10. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Saline Edwards, relevant aquifer assessments, and a schedule for the establishment of Saline Edwards DFC(s).
11. Discussion and possible action related to the adoption of the DFC for the Leona Gravel and Related Aquifers in Medina County.
12. Discussion and possible action related to establishing a Preliminary DFC for the Leona Gravel and Related Aquifers in Uvalde County.
13. Discussion and possible action related to designating and establishing Preliminary DFC(s) for the relevant aquifers in the Western Subdivision of GMA-10 and in Kinney County.
14. Discussion and possible action concerning the schedule and location of upcoming public hearings on Preliminary Recommended DFCs that are planned by member GCDs.
15. Next Meeting and Discussion Topics.
16. Adjournment

Edwards Aquifer Authority
Phone (210) 222-2204   Fax (210) 222-9869
Trinity Glen Rose Groundwater Conservation District
6335 Camp Bullis Rd. Suite #25 San Antonio, Texas 78257 (210) 698-1155 Fax (210) 698-1159

Groundwater Management Area Joint Planning Meeting
Monday, May 17, 2010 11:30 A.M.

Notice is given that one or more members of the Board of Directors and/or their designated representatives and/or Staff of the Trinity Glen Rose Groundwater Conservation District (TGRGCD) will attend a meeting of Groundwater Conservation Districts which are located within the State of Texas Groundwater Management Area #10 for purposes of discussing and/or conducting joint planning in compliance with the requirements of HB 1763, which was passed during the 2005 Texas Legislative Session. This meeting will be held at the Edwards Aquifer Authority, located at Conference Center of the Edwards Aquifer Authority, 1615 N. St. Mary's, San Antonio, TX 78215 on Monday, May 17, 2010 at 11:30 a.m. for the following purposes:

Agenda

1. Call to Order.
2. Designation of meeting Secretary.
3. Public Comment.
4. Receipt of Posted Notices.
5. Approval of April 19, 2010 Minutes.
6. Discussion and possible action related to establishing standard evaluation methodology and timeframes of a specific DFC of GMA 10.
7. Presentation, discussion and possible action concerning the Initially Prepared Plans of the regional water planning groups for Regions K and L, with respect to identified needs and responsive water management strategies.
8. Discussion and possible action related to establishing a Preliminary DFC for the Edwards Aquifer in the Northern Subdivision of GMA-10.
9. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Trinity Group, relevant aquifer assessments, and a schedule for the establishment of Trinity DFCs.
10. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Saline Edwards, relevant aquifer assessments, and a schedule for the establishment of Saline Edwards DFC(s).
11. Discussion and possible action related to the adoption of the DFC for the Leona Gravel and Related Aquifers in Medina County.
12. Discussion and possible action related to establishing a Preliminary DFC for the Leona Gravel and Related Aquifers in Uvalde County.
13. Discussion and possible action related to designating and establishing Preliminary DFC(s) for the relevant aquifers in the Western Subdivision of GMA-10 and in Kinney County.
14. Discussion and possible action concerning the schedule and location of upcoming public hearings on Preliminary Recommended DFCs that are planned by member GCDs.
15. Next Meeting and Discussion Topics.
16. Adjournment

Posted at the TGRGCD office, TGRGCD Website, Bexar County, Kendall County and Comal County Courthouses, on this, the 6th day of May, 2010.

[Signature]
General Manager, Trinity Glen Rose Groundwater Conservation District

The Trinity Glen Rose Groundwater Conservation District is committed to compliance with the Americans with Disabilities Act (ADA). Reasonable accommodations and equal opportunity for effective communications will be provided upon request. Please contact the District Representative at 210-219-5555 at least 24 hours in advance if accommodation is needed.
Trinity Glen Rose Groundwater Conservation District

6335 Camp Bullis Rd. Suite #25 San Antonio, Texas 78257 (210) 698-1155 Fax (210) 698-1159

Groundwater Management Area Joint Planning Meeting
Monday, May 17, 2010 11:30 A.M.

Notice is given that one or more members of the Board of Directors and/or their designated representatives and/or Staff of the Trinity Glen Rose Groundwater Conservation District (TORGCD) will attend a meeting of Groundwater Conservation Districts which are located within the State of Texas Groundwater Management Area #10 for purposes of discussing and/or conducting joint planning in compliance with the requirements of HB 1763, which was passed during the 2005 Texas Legislative Session. This meeting will be held at the Edwards Aquifer Authority, located at Conference Center of the Edwards Aquifer Authority, 1615 N. St. Mary's, San Antonio, TX 78215 on Monday, May 17, 2010 at 11:30 a.m. for the following purposes:

**Agenda**

1. Call to Order.
2. Designation of meeting Secretary.
3. Public Comment.
4. Receipt of Posted Notices.
5. Approval of April 19, 2010 Minutes.
6. Discussion and possible action related to establishing standard terminology for the various stages of a specific DFC of GMA 10.
7. Presentation, discussion and possible action concerning the Initially Prepared Plans of the regional water planning groups for Regions K and L, with respect to identified needs and responsive water management strategies.
8. Discussion and possible action related to establishing a Preliminary DFC for the Edwards Aquifer in the Northern Subdivision of GMA-10.
9. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Trinity Group, relevant aquifer assessments, and a schedule for the establishment of Trinity DFCs.
10. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Saline Edwards, relevant aquifer assessments, and a schedule for the establishment of Saline Edwards DFC(s).
11. Discussion and possible action related to the adoption of the DFC for the Leona Gravel and Related Aquifers in Medina County.
12. Discussion and possible action related to establishing a Preliminary DFC for the Leona Gravel and Related Aquifers in Uvalde County.
13. Discussion and possible action related to designating and establishing Preliminary DFC(s) for the relevant aquifers in the Western Subdivision of GMA-10 and in Kinney County.
14. Discussion and possible action concerning the schedule and location of upcoming public hearings on Preliminary Recommended DFCs that are planned by member GCDs.
15. Next Meeting and Discussion Topics.
16. Adjournment

Posted at the TORGCD office, TORGCD Website, Bexar County, Kendall County and Comal County Courthouses, on this, the 6th day of May, 2010.

George [Signature]
General Manager, Trinity Glen Rose Groundwater Conservation District

The Trinity Glen Rose Groundwater Conservation District is committed to compliance with the Americans with Disabilities Act (ADA). Reasonable accommodations and equal opportunity for effective communications will be provided upon request. Please contact the District Representative at 210-219-3575 at least 24 hours in advance if accommodation is needed.
Trinity Glen Rose Groundwater Conservation District
6335 Camp Bullis Rd, Suite #25 San Antonio, Texas 78257 (210) 698-1155 Fax (210) 698-1159

Groundwater Management Area Joint Planning Meeting
Monday, May 17, 2010 11:30 A.M.

Notice is given that one or more members of the Board of Directors and/or their designated representatives and/or Staff of the Trinity Glen Rose Groundwater Conservation District (TGRGCD) will attend a meeting of Groundwater Conservation Districts which are located within the State of Texas Groundwater Management Area #10 for purposes of discussing and/or conducting joint planning in compliance with the requirements of HB 1763, which was passed during the 2005 Texas Legislative Session. This meeting will be held at the Edwards Aquifer Authority, located at Conference Center of the Edwards Aquifer Authority, 1615 N. St. Mary’s, San Antonio, TX 78215 on Monday, May 17, 2010 at 11:30 a.m. for the following purposes:

Agenda

1. Call to Order.
2. Designation of meeting Secretary.
3. Public Comment.
4. Receipt of Posted Notices.
5. Approval of April 19, 2010 Minutes.
6. Discussion and possible action related to establishing standard terminology for the various stages of a specific DFC of GMA 10.
7. Presentation, discussion and possible action concerning the Initially Prepared Plans of the regional water planning groups for Regions K and L, with respect to identified needs and responsive water management strategies.
8. Discussion and possible action related to establishing a Preliminary DFC for the Edwards Aquifer in the Northern Subdivision of GMA-10.
9. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Trinity Group, relevant aquifer assessments, and a schedule for the establishment of Trinity DFCs.
10. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Saline Edwards, relevant aquifer assessments, and a schedule for the establishment of Saline Edwards DFC(s).
11. Discussion and possible action related to the adoption of the DFC for the Leona Gravel and Related Aquifers in Medina County.
12. Discussion and possible action related to establishing a Preliminary DFC for the Leona Gravel and Related Aquifers in Uvalde County.
13. Discussion and possible action related to designating and establishing Preliminary DFC(s) for the relevant aquifers in the Western Subdivision of GMA-10 and in Kinney County.
14. Discussion and possible action concerning the schedule and location of upcoming public hearings on Preliminary Recommended DFCs that are planned by member GCDs.
15. Next Meeting and Discussion Topics.
16. Adjournment

Posted at the TGRGCD office, TGRGCD Website, Bexar County, Kendall County and Comal County Courthouses, on this, the 6th day of May, 2010.

[Signature]

General Manager, Trinity Glen Rose Groundwater Conservation District

The Trinity Glen Rose Groundwater Conservation District is committed to compliance with the Americans with Disabilities Act (ADA). Reasonable accommodations and equal opportunity for effective communications will be provided upon request. Please contact the District Representative at 210-219-5555 at least 24 hours in advance if accommodation is needed.
Groundwater Management Area #10 Joint Planning Meeting

NOTICE OF OPEN MEETING

As required by section 36.108(e), Texas Water Code, a meeting of the Groundwater Management Area 10 Planning Committee, comprised of delegates from the following groundwater conservation districts located wholly or partially within Groundwater Management Area 10: Edwards Aquifer Authority, Guadalupe County GCD, Medina County GCD, Uvalde County UWCD, Plum Creek CD, Barton Springs Edwards Aquifer CD, Hays Trinity GCD, Trinity Glen Rose GCD and Kinney County GCD will be held on Monday, May 17, 2010 at 11:30 am at the Conference Center of the Edwards Aquifer Authority, 1615 N. St. Mary’s, San Antonio, TX 78215.

At this meeting, the following business may be considered and recommended for Joint Planning Committee action:

1. Call to Order.
2. Designation of meeting Secretary.
3. Public Comment.
4. Receipt of Posted Notices.
5. Approval of April 19, 2010 Minutes.
6. Discussion and possible action related to establishing standard terminology for the various stages of a specific DFC of GMA 10.
7. Presentation, discussion and possible action concerning the Initially Prepared Plans of the regional water planning groups for Regions K and L, with respect to identified needs and responsive water management strategies.
8. Discussion and possible action related to establishing a Preliminary DFC for the Edwards Aquifer in the Northern Subdivision of GMA-10.
9. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Trinity Group, relevant aquifer assessments, and a schedule for the establishment of Trinity DFCs.
10. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Saline Edwards, relevant aquifer assessments, and a schedule for the establishment of Saline Edwards DFC(s).
11. Discussion and possible action related to the adoption of the DFC for the Leona Gravel and Related Aquifers in Medina County.
12. Discussion and possible action related to establishing a Preliminary DFC for the Leona Gravel and Related Aquifers in Uvalde County.
13. Discussion and possible action related to designating and establishing Preliminary DFC(s) for the relevant aquifers in the Western Subdivision of GMA-10 and in Kinney County.
14. Discussion and possible action concerning the schedule and location of upcoming public hearings on Preliminary Recommended DFCs that are planned by member GCDs.
15. Next Meeting and Discussion Topics.
16. Adjournment

Edwards Aquifer Authority
Phone (210) 222-2204 Fax (210) 222-9869

POSTED IN MY OFFICE
LISA J. WERNETTE
MAY 06 '10 PM -3 -9
COUNTY CLERK, MEDINA CO.
Groundwater Management Area No. 10 Joint Planning Meeting

Date: Monday, May 17, 2010
Time: 11:30 am
Place: Conference Center of the Edwards Aquifer Authority
Located at: 1545 N. St. Mary's, San Antonio, TX 78215

As required by section 36.108(a), Texas Water Code, a meeting of the Groundwater Management Area 10 Planning Committee, comprised of delegates from the following groundwater conservation districts located wholly or partially within Groundwater Management Area 10: Edwards Aquifer Authority, Guadalupe County GCD, Medina County GCD, Uvalde County UWCD, Plum Creek CD, Barton Springs Edwards Aquifer CD, Hays Trinity GCD, Trinity Glen Rose GCD and Kinney County GCD will be held.

At this meeting, the following business may be considered and recommended for Joint Planning Committee action:

1. Call to Order.
2. Designation of meeting Secretary.
3. Public Comment.
4. Receipt of Past Notices.
5. Approval of April 19, 2010 Minutes.
6. Discussion and possible action related to establishing standard terminology for the various stages of a specific DFC of GMA-10.
7. Presentation, discussion and possible action concerning the initially Prepared Plans of the regional water planning groups for Regions K and L with respect to identified needs and responsive water management strategies.
8. Discussion and possible action related to establishing a Preliminary DFC for the Edwards Aquifer in the Northern Subdivision of GMA-10.
9. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Trinity Group, relevant aquifer assessments, and a schedule for the establishment of Trinity DFCs.
10. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Saline Edwards, relevant aquifer assessments, and a schedule for the establishment of Saline Edwards DFC(s).
11. Discussion and possible action related to the adoption of the DFC for the Leon County Gravel-related Aquifers in Medina County.
12. Discussion and possible action related to establishing a Preliminary DFC for the Leon Gravel-related Aquifers in Uvalde County.
13. Discussion and possible action related to designating and establishing Preliminary DFC(s) for the relevant aquifers in the Western Subdivision of GMA-10 and in Kinney County.
14. Discussion and possible action concerning the schedule and location of upcoming public hearings on Preliminary Recommended DFCs that are planned by member GCDs.
15. Next Meeting and Discussion Topics.

Adjourn

The Board of Directors of the Hays-Trinity Conservation District reserves the right to go into Executive Session at any time during the course of this meeting to discuss any of the matters listed on the agenda, or as required by the Texas Open Meetings Act, Chapter 551, Government Code. No true public or executive will be made in Executive Session.

The Hays-Trinity Conservation District is committed to compliance with the Americans with Disabilities Act (ADA), reasonable accommodations and equal opportunity for effective communications will be provided upon request. Please contact the District office at 512-267-2250 at least 24 hours in advance to request accommodation.

This notice has been posted on a bulletin board at the place of the meeting and at the main entrance to the District office not later than five (5) days prior to the scheduled meeting in accordance with the provisions of the Texas Open Meetings Act, Chapter 551, Government Code.

Posted by: Claire A. Carranza

Center Lake Business Park: 14161 Hwy 290 W, Bldg 100, Ste. 212, Austin, Texas 78737
Mail P. O. Box 1648 Dripping Springs, TX 78620
E-mail: mgwasserdirector@haysgroundwater.com Phone: 512-565-2053 Fax: 512-565-2334 website: haysgroundwater.com
Groundwater Management Area #10 Joint Planning Meeting

NOTICE OF OPEN MEETING

As required by section 36.108(e), Texas Water Code, a meeting of the Groundwater Management Area 10 Planning Committee, comprised of delegates from the following groundwater conservation districts located wholly or partially within Groundwater Management Area 10: Edwards Aquifer Authority, Guadalupe County GCD, Medina County GCD, Uvalde County UWCD, Plum Creek CD, Barton Springs Edwards Aquifer CD, Hays Trinity GCD, Trinity Glen Rose GCD and Kinney County GCD will be held on Monday, May 17, 2010 at 11:30 am at the Conference Center of the Edwards Aquifer Authority, 1615 N. St. Mary's, San Antonio, TX 78215.

At this meeting, the following business may be considered and recommended for Joint Planning Committee action:

1. Call to Order.
2. Designation of meeting Secretary.
3. Public Comment.
4. Receipt of Posted Notices.
5. Approval of April 19, 2010 Minutes.
6. Discussion and possible action related to establishing standard terminology for the various stages of a specific DFC of GMA 10.
7. Presentation, discussion and possible action concerning the Initially Prepared Plans of the regional water planning groups for Regions K and L, with respect to identified needs and responsive water management strategies.
8. Discussion and possible action related to establishing a Preliminary DFC for the Edwards Aquifer in the Northern Subdivision of GMA-10.
9. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Trinity Group, relevant aquifer assessments, and a schedule for the establishment of Trinity DFCs.
10. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Saline Edwards, relevant aquifer assessments, and a schedule for the establishment of Saline Edwards DFC(s).
11. Discussion and possible action related to the adoption of the DFC for the Leona Gravel and Related Aquifers in Medina County.
12. Discussion and possible action related to establishing a Preliminary DFC for the Leona Gravel and Related Aquifers in Uvalde County.
13. Discussion and possible action related to designating and establishing Preliminary DFC(s) for the relevant aquifers in the Western Subdivision of GMA-10 and in Kinney County.
14. Discussion and possible action concerning the schedule and location of upcoming public hearings on Preliminary Recommended DFCs that are planned by member GCDs.
15. Next Meeting and Discussion Topics.
16. Adjournment

Edwards Aquifer Authority

Phone (210) 222-2204 Fax (210) 222-9869
NOTICE OF OPEN MEETINGS

Groundwater Management Area #10 Joint Planning Meeting

Monday, May 17, 2010 at 11:30 a.m.

Notice is given that an open meeting of Groundwater Conservation Districts that are located within the State of Texas Groundwater Management Area #10, with one or more members of the Board of Directors and/or its designated representative and/or staff of the Barton Springs Edwards Aquifer Conservation District in attendance, for purposes of discussing and/or conducting joint planning concerning desired future conditions, in compliance with Texas Water Code, Chapter 36.108. This meeting will be held on Monday, May 17, 2010 at 11:30 am at the Conference Center of the Edwards Aquifer Authority, 1615 N. St. Mary’s, San Antonio, TX 78215.

At this meeting, the following business may be considered and recommended for Joint Planning Committee action:

1. Call to Order.
2. Designation of meeting Secretary.
3. Public Comment.
4. Receipt of Posted Notices.
5. Approval of April 19, 2010 Minutes.
6. Discussion and possible action related to establishing standard terminology for the various stages of a specific DFC of GMA 10.
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11. Discussion and possible action related to the adoption of the DFC for the Leona Gravel and Related Aquifers in Medina County.
12. Discussion and possible action related to establishing a Preliminary DFC for the Leona Gravel and Related Aquifers in Uvalde County.
13. Discussion and possible action related to designating and establishing Preliminary DFC(s) for the relevant aquifers in the Western Subdivision of GMA-10 and in Kinney County.
14. Discussion and possible action concerning the schedule and location of upcoming public hearings on Preliminary Recommended DFCs that are planned by member GCDs.
15. Next Meeting and Discussion Topics.
16. Adjournment

Came to hand and posted on a Bulletin Board in the Courthouse, Travis County, Texas, on this the 15th day of May, 2010 at 1:05 p.m.

[Signature]
Deputy Clerk
Travis County, TEXAS
Groundwater Management Area #10 Joint Planning Meeting

NOTICE OF OPEN MEETING

As required by section 36.108(e), Texas Water Code, a meeting of the Groundwater Management Area 10 Planning Committee, comprised of delegates from the following groundwater conservation districts located wholly or partially within Groundwater Management Area 10: Edwards Aquifer Authority, Guadalupe County GCD, Medina County GCD, Uvalde County UWCD, Plum Creek CD, Barton Springs Edwards Aquifer CD, Hays Trinity GCD, Trinity Glen Rose GCD and Kinney County GCD will be held on Monday, May 17, 2010 at 11:30 am at the Conference Center of the Edwards Aquifer Authority, 1615 N. St. Mary's, San Antonio, TX 78215.

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8. Discussion and possible action related to establishing a Preliminary DFC for the Edwards Aquifer in the Northern Subdivision of GMA-10.
9. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Trinity Group, relevant aquifer assessments, and a schedule for the establishment of Trinity DFCs.
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12. Discussion and possible action related to establishing a Preliminary DFC for the Leona Gravel and Related Aquifers in Uvalde County.
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14. Discussion and possible action concerning the schedule and location of upcoming public hearings on Preliminary Recommended DFCs that are planned by member GCDs.
15. Next Meeting and Discussion Topics.
16. Adjournment

Edwards Aquifer Authority

Phone (210) 222-2204 Fax (210) 222-9869
Groundwater Management Area #10 Joint Planning Meeting

NOTICE OF OPEN MEETING

As required by section 36.108(c), Texas Water Code, a meeting of the Groundwater Management Area 10 Planning Committee, comprised of delegates from the following groundwater conservation districts located wholly or partially within Groundwater Management Area 10: Edwards Aquifer Authority, Guadalupe County GCD, Medina County GCD, Uvalde County UWCD, Plum Creek CD, Barton Springs Edwards Aquifer CD, Hays Trinity GCD, Trinity Glen Rose GCD and Kinney County GCD will be held on Monday, May 17, 2010 at 11:30 am at the Conference Center of the Edwards Aquifer Authority, 1615 N. St. Mary’s, San Antonio, TX 78215.

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7. Presentation, discussion and possible action concerning the Initially Prepared Plans of the regional water planning groups for Regions K and L with respect to identified needs and responsive water management strategies.
8. Discussion and possible action related to establishing a Preliminary DFC for the Edwards Aquifer in the Northern Subdivision of GMA-10.
9. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Trinity Group, relevant aquifer assessments, and a schedule for the establishment of Trinity DFCs.
10. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Saline Edwards, relevant aquifer assessments, and a schedule for the establishment of Saline Edwards DFC(s).
11. Discussion and possible action related to the adoption of the DFC for the Leona Gravel and Related Aquifers in Medina County.
12. Discussion and possible action related to establishing a Preliminary DFC for the Leona Gravel and Related Aquifers in Uvalde County.
13. Discussion and possible action related to designating and establishing Preliminary DFC(s) for the relevant aquifers in the Western Subdivision of GMA-10 and in Kinney County.
14. Discussion and possible action concerning the schedule and location of upcoming public hearings on Preliminary Recommended DFCs that are planned by member GCDs.
15. Next Meeting and Discussion Topics.
16. Adjournment

Edwards Aquifer Authority

Phone (210) 222-2204
Fax (210) 222-2205

[Signature]

(Chairperson)

[Signature]

(Kinney County, Texas)

[Signature]

(Deputy)
# SIGN-IN SHEET

Groundwater Management Area 10  
May 17, 2010

<table>
<thead>
<tr>
<th>NAME</th>
<th>REPRESENTING</th>
<th>PHONE</th>
<th>EMAIL</th>
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<tbody>
<tr>
<td>Rick Ellgen</td>
<td>EAA</td>
<td>210-222-2204</td>
<td><a href="mailto:r.ellgen@edwardstayer.org">r.ellgen@edwardstayer.org</a></td>
</tr>
<tr>
<td>Kirk Holland</td>
<td>BSEACD</td>
<td>512-282-8444</td>
<td><a href="mailto:k.holland@unt.edu">k.holland@unt.edu</a></td>
</tr>
<tr>
<td>David Baker</td>
<td>HTGCD</td>
<td>512-722-3390</td>
<td><a href="mailto:jacobswellspring@gmail.com">jacobswellspring@gmail.com</a></td>
</tr>
<tr>
<td>Stay Metcalfe</td>
<td>KGCD</td>
<td>830-587-9443</td>
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<tr>
<td>George Wiggman</td>
<td>TORGCD</td>
<td>210-698-1155</td>
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<tr>
<td>Vic Hilderbran</td>
<td>Uvalde County</td>
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<td>Tommy Bohmer</td>
<td>Medina Co GCD</td>
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<tr>
<td>Daniel Meyer</td>
<td>PCCCD</td>
<td>512-398-2882</td>
<td><a href="mailto:daniel.meyer@pcccd.org">daniel.meyer@pcccd.org</a></td>
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<tr>
<td>Sarah Sackville</td>
<td>TWDR</td>
<td>513-936-2387</td>
<td><a href="mailto:Sarahbacklows@gmail.com">Sarahbacklows@gmail.com</a></td>
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<tr>
<td>Jim Waddell</td>
<td>TWDS</td>
<td></td>
<td><a href="mailto:bill.waddell@twds.state.tx.us">bill.waddell@twds.state.tx.us</a></td>
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# SIGN-IN SHEET

Groundwater Management Area 10  
May 17, 2010

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<th>PHONE</th>
<th>EMAIL</th>
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<td>Steve Ralse</td>
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<td>210-302-3614</td>
<td><a href="mailto:stemail@ara-tx.org">stemail@ara-tx.org</a></td>
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<tr>
<td>Diana Ward</td>
<td>self</td>
<td>830-523-5132</td>
<td><a href="mailto:dkward@smail.com">dkward@smail.com</a></td>
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</table>
GMA-10 Joint Planning Committee  
Meeting Minutes  
May 17, 2010

1. Call to Order. The meeting was called to order by Committee Coordinator Rick Illgner at 11:30 am.

2. Designation of Meeting Secretary. Rick Illgner agreed to be the Secretary for the meeting.

3. Public Comment. There was no public comment.

4. Receipt of Posted Notices. A quorum of eight of the nine GMA-10 GCDs were present: Barton Springs/Edwards Aquifer Conservation District (BSEACD), Plum Creek GCD (PCGCD), Edwards Aquifer Authority (EAA), Medina Co. GCD (MCGCD), Uvalde Co. UWCD (UCUWCD), Hays Trinity GCD, Trinity Glen Rose GCD and Kinney County GCD (KCGCD); Guadalupe County GCD was not present. Posted meeting notices were received from all nine of the GCDs, including Guadalupe County GCD.

5. Approval of April 19, 2010, Minutes. Luana Buckner (Medina Co. GCD) moved and Kirk Holland (BSEACD) seconded approving the April 19, 2010, minutes as presented. There were no objections; therefore minutes were approved.

6. Discussion and possible action related to establishing standard terminology for the various stages of a specific DFC of GMA 10. Kirk Holland reviewed the DFC adoption flow chart that was discussed at the April 19, 2010 meeting specifically for the purpose of developing standard terminology during the process as follows:
   
   A  Trial DFC – for GCD board consideration  
   B  Preliminary DFC – set by GCD board for public input  
   C  Recommended DFC – recommended by the GCD board to the GMA  
   D  Proposed DFC – approved by the GMA for “preliminary final MAG”  
   E  Adopted DFC – final GMA-approved DFC

   Bill Hutchison commented that each of the steps may not be required in all situations and provided a few examples.

   Bill Hutchison summarized a TWDB MEMO dated May 12, 2010, regarding consideration of exempt use in the DFC process. Generally, the TWDB will convert a DFC into a “total pumping” number that will be presented to the TWDB board on May 20, 2010.

7. Discussion and possible action concerning the Initially Prepared Plans of the regional water planning groups for Regions K and L, with respect to identified needs and responsive water management strategies. Regional water planning PowerPoint presentations were made by Steve Raabe (San Antonio River Authority) and Jennifer Walker made presentations on demands and water management strategies that effect groundwater use for Region L and Region K respectively.
8. Discussion and possible action related to establishing a Preliminary DFC for the Edwards Aquifer in the Northern Subdivision of GMA-10. Kirk Holland discussed the development of DFCs by the BSEACD. The BSEACD is using springflow discharge at Barton springs as the DFC measure and is considering a range of 5 – 10 cfs for the drought of record (DOR). Modeling indicates that current pumping is approximately 11 cfs and with drought restrictions in place would provide about 5 cfs during a repeat of the DOR and 5 cfs may not pass the “Jeopardy” test with the U S Fish & Wildlife Service for the Habitat Conservation Plan that is under development. A DFC of 10 cfs would basically cut off all pumping during a DOR. Kirk anticipates a DFC between 5 and 10 cfs that could present management challenges to the district at low flows.

The BSEACD is considering an upper cap of 14 20 cfs that would be a function of water in storage in the aquifer to limit the total pumping amount which will be problematic during a drought. The BSEACD will hold a hearing on May 27.

Kirk Holland asked the TWDB for input on having two DFCs. Bill Hutchison responded that the DFC for water in storage is an important consideration and, while it is possible to have two DFCs, it is important that they do not conflict with one another. As an example, selecting an upper DFC of 20 cfs would probably be inconsistent with a 10 cfs DFC for the DOR. Therefore, BSEACD might consider expressing a DFC as an average springflow and a minimum springflow during the DOR. Kirk said he would get with the TWDB after the GMA 10 meeting to discuss the matter further.

9. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Trinity Group, relevant aquifer assessments, and a schedule for the establishment of Trinity DFCs. The BSEACD has worked with the Hays – Trinity GCD and would like DFCs for the upper, middle and lower Trinity and there might be parts of GMA 10 where the GMAM 10 boundaries are well-defined. It was mentioned that having a map of the areas where there is Trinity within GMA 10 would be helpful and the TWDB indicated they would try to have one for the next meeting. There is recognition that the DFC decisions of GMA 9 will affect the Trinity in GMA 10; therefore, it is a good idea to wait for the aquifer assessment to make decisions.

10. Discussion and possible action related to the designation of relevant aquifers for DFCs related to the Saline Edwards, relevant aquifer assessments, and a schedule for the establishment of Saline Edwards DFC(s). Kirk Holland said the BSEACD does not know a lot about the saline zone in the Edwards and is waiting on the TWDB on some information. The Bill Hutchison and Kirk Holland discussed DFC and assessment options.
11. Discussion and possible action related to the adoption of the DFC for the Leona Gravel and Related Aquifers in Medina County. Luana Buckner indicated that the Medina County GCD asked the TWDB to perform an aquifer assessment of the Leona Gravel in Medina County 'GTA Aquifer Assessment 09-01'. In the assessment, declines of 15°, 25° and 35° over a 50-year period were considered. After consideration, the Medina County GCD selected a 15° decline which yields a MAG of 22,110 acre-feet. Motion was made by Tommy Boehme and seconded by Luana Buckner that GMA 10 adopts a Desired Future Condition for the Leona Gravel in Medina County of 15° in 50 years. The motion passed unanimously.

12. Discussion and possible action related to the adoption of the DFC for the Leona Gravel and Related Aquifers in Uvalde County. Vic Hilderbran stated that the Uvalde County aquifer assessment is not complete, but should be finished soon. Although no decisions for a DFC have been made, the district has decided to use the J-27 monitoring well as a DFC measuring index. Public hearings will scheduled after the district receives the completed aquifer assessment and then the board will take a vote a few days later and he expects to have a recommendation for GMA 10 within a month.

13. Discussion and possible action related to designating and establishing Preliminary DFC(s) for the relevant aquifers in the Western Subdivision of GMA-10 and in Kinney County. The TWDB made a presentation to the Kinney County GCD on May 13 on an aquifer assessment and is continuing to work with the district. A work shop is scheduled for June 4 at which a DFC decision could be made.

14. Discussion and possible action concerning the schedule and location of upcoming public hearings on Preliminary Recommended DFCs that are planned by member GCDs. Kirk Holland reiterated that BSEACD will be holding a hearing on May 27. Luana Buckner indicated the Medina County GCD should have something on the Trinity by the next GMA 10 meeting

15. Next Meeting and Discussion Topics. The next meeting will be on Monday, June 14 from 11:30 to 2:00 at the EAA Conference Center. The agenda be distributed two weeks in advance (May 31) and that each GCD send the EAA a copy of their posted notice one week before the meeting (June 7) to avoid posting problems.

16. Adjournment. The meeting was adjourned at approximately 2:20 pm.
RESOLUTION No. 2010-01
RESOLUTION FOR RATIFICATION OF THE ADOPTION OF THE DESIRED FUTURE CONDITION OF THE LEONA GRAVEL AQUIFER IN MEDINA COUNTY WITHIN GROUNDWATER MANAGEMENT AREA 10

WHEREAS: GROUNDWATER MANAGEMENT AREA (GMA) 10 IS COMPRISED OF DELEGATES FROM THE FOLLOWING GROUNDWATER CONSERVATION DISTRICTS LOCATED WHOLLY OR PARTIALLY WITHIN GMA 10: BARTON SPRINGS EDWARDS AQUIFER CONSERVATION DISTRICT, EDWARDS AQUIFER AUTHORITY, GUADALUPE COUNTY GCD, HAYS TRINITY GCD, KINNEY COUNTY GCD, MEDINA COUNTY GCD, PLUM CREEK CD, TRINITY GLEN ROSE GCD, AND VALDE COUNTY UWCD;

WHEREAS: CHAPTER 36.108 OF THE TEXAS WATER CODE (JOINT PLANNING IN MANAGEMENT AREA), REQUIRES THAT THE GROUNDWATER CONSERVATION DISTRICTS IN THE GMA ADOPT DESIRED FUTURE CONDITIONS OF ALL RELEVANT AQUIFERS IN THE GMA FOR A FIFTY YEAR HORIZON, NO LATER THAN SEPTEMBER 1, 2010;

WHEREAS: THE COMMITTEE MEMBERS OF GMA 10 HAVE HELD PUBLIC MEETINGS NOTICED AND POSTED IN ACCORDANCE WITH STATE LAW, AND HAVE REVIEWED AND DISCUSSED GROUNDWATER AVAILABILITY MODEL (GAM) RUNS WITH INPUT AND COMMENT FROM STAKEHOLDERS WITHIN GMA 10;

WHEREAS: IN REFERENCE TO GAM RUN "GTA AQUIFER ASSESSMENT 09-01", THE COMMITTEE CONSIDERED SCENARIOS WITH AVERAGE DRAWDOWNS OF 15 FEET, 25 FEET, AND 35 FEET OVER THE NEXT 50 YEARS;

NOW, THEREFORE, BE IT RESOLVED THAT, ON MAY 17, 2010, THE DISTRICT MEMBERS OF GROUNDWATER MANAGEMENT AREA 10 ADOPTED THE SCENARIO WITH AN AVERAGE DRAWDOWN OF 15 FT AS THE DESIRED FUTURE CONDITION OF THE LEONA GRAVEL AQUIFER IN MEDINA COUNTY, AND THAT SUCH ADOPTION IS HEREBY RATIFIED;
AND IT IS SO ORDERED AND PASSED THIS 19TH DAY OF JULY 2010.

SIGNED
Kirk Holland Barton Springs Edwards Aquifer Conservation District

SIGNED
Luana Buckner Edwards Aquifer Authority

SIGNED
Ron Nauman Guadalupe County GCD

SIGNED
David Baker Hays Trinity GCD

SIGNED
Stan Metcalf Kinney County GCD

SIGNED
Thomas Boehme Medina County GCD

SIGNED
Daniel Meyer Plum Creek Conservation District

SIGNED
George Wissmann Trinity Glen Rose GCD

SIGNED
Vic Hilderbran Uvalde County UWCD
GTA Aquifer Assessment 09-01
by Peter G. George, Ph.D., P.G.
Texas Water Development Board
Groundwater Technical Assistance Section
(512) 475-2136

January 25, 2009
REQUESTOR:

Rick Ilgner, on behalf of Groundwater Management Area 10.

DESCRIPTION OF REQUEST:

In an email dated 3/13/2009, Mr. Rick Ilgner, administrator for GMA 10, requested the Texas Water Development Board (TWDB) to prepare a draft Managed Available Groundwater (MAG) for the Leona Gravel Aquifer in Medina County utilizing any and all TWDB data and information from the October 2002 Phase I Leona Gravel Aquifer Study (Lowry and Couch, 2002), water level data, and current pumping data provided by the Medina County Groundwater Conservation District. The draft MAG is to be based upon the Desired Future Condition.

DESIRED FUTURE CONDITIONS:

Allow average water-level declines in the Leona Gravel Aquifer of 15, 25, and 35 feet over the next 50 years.

METHODS:

A transient hydrologic budget for the saturated portion of an aquifer is described by Freeze and Cherry (1979, p.365):

\[ Q(t) = R(t) - D(t) + \frac{dS}{dt} \]

where
- \( Q(t) \) = total rate of groundwater withdrawal
- \( R(t) \) = total rate of groundwater recharge to the basin
- \( D(t) \) = total rate of groundwater discharge from the basin
- \( \frac{dS}{dt} \) = rate of change of storage in the saturated zone of the basin

For this analysis, it is assumed that

\[ R(t) = R(r) + R(e) \]

where
- \( R(r) \) = rejected recharge for the basin
- \( R(e) \) = effective recharge

Effective recharge is the amount of water that enters an aquifer and is available for development (Muller and Price, 1979, p. 5). Rejected recharge is the amount of total (or potential) recharge that discharges from an aquifer because it is over-full and cannot accept more water (Theis, 1940, p.1).
In addition, it is assumed that

\[ R(r) = D(t) \]

Therefore, the total rate of groundwater withdrawal equals effective recharge plus the change in storage of the aquifer, or

\[ Q(t) = R(e) + \frac{dS}{dt} \]

Using ArcGIS 9.2, the boundary of the Leona Gravel Aquifer was determined using the Digital Geologic Atlas of Texas (USGS and TWDB, 2006). The aquifer was divided into three units (Figure 1); unit 1 is the Leona Formation (Qle), unit 2 includes Quaternary Alluvium (Qal), and unit 3 is terrace deposits (Qt). These units were further subdivided by GMA and river basin boundaries. Map areas were calculated for each subdivision (Figure 2).

The average annual precipitation (1971-2000) for each aquifer outcrop map unit (Qle, Qt, and Qal) was determined from the Texas Climatic Atlas (Narasimhan and others, 2008) using zonal statistics in Spatial Analyst (ArcGIS 9.2). The average annual precipitation values were used to calculate annual effective recharge volumes (Table 1).

To determine the annual volume from storage used, the areas were multiplied by the estimated aquifer specific yield, and then by annual drawdown of 0.3, 0.5, and 0.7 feet.

All calculations were done in a Microsoft Excel worksheet (Tables 2 and 3).

**PARAMETERS AND ASSUMPTIONS:**

- The Leona Gravel Aquifer in Medina County consists of three units; unit 1 is the Leona Formation (Qle), unit 2 includes fluvial terrace deposits (Qt), and unit 3 is Quaternary Alluvium (Qal).
- Areas in acres for each unit of the aquifer, after being subdivided by GMA and river basin boundaries, were calculated in ArcGIS 9.2 using the 1:250,000 Digital Geological Atlas of Texas (USGS and TWDB, 2006).
- Annual water level declines of 0.3, 0.5, and 0.7 feet were estimated to be uniform across the aquifer.
- Average annual precipitation was used to calculate effective recharge volumes.
- The average annual precipitation for the aquifer area, based on the period of 1971 to 2000, was determined from the Texas Climatic Atlas (Narasimhan and others, 2008).
• Recharge from precipitation is estimated to be 5.5 percent of annual precipitation (Mace and others, 2000; Lowry and Couch, 2002).
• Well reports submitted to the TWDB by drillers from 2003 to 2009 indicate a mean thickness for Leona Gravel Aquifer of about 60 feet.
• Well reports submitted to the TWDB by drillers from 2001 to 2009 indicate a mean thickness for sand and gravel deposits in the aquifer of about 22 feet, with the remainder being mostly clay, or clay with silt and sand.
• Specific yield of the aquifer is estimated to be 0.15 (Johnson, 1967).
• Discharge from the Leona Gravel Aquifer to streams is assumed to be about 15,000 AFY.
• The draft managed available groundwater volume estimates are the sum of the annual effective recharge amount and the annual volume of water depleted from the aquifer based on the draft desired future condition.
• Annual volumes of groundwater taken from storage are calculated by dividing the total volume of depletion, based on the desired future condition, by 50 years.
• Conditions were assumed to be physically possible in the area of interest. It is assumed that water level declines do not exceed aquifer thickness.

RESULTS:

The annual effective recharge estimate for the Leona Gravel Aquifer in Medina County is 27,607 acre-feet per year (Table 1).

The results (Tables 2 through 7) show the draft managed available groundwater estimates for the Leona Gravel Aquifer in Medina County. A 15-foot decline over 50 years results in an estimated annual total volume of 22,110 acre-feet per year. A 25-foot decline over 50 years results in an estimated annual total volume of 28,445 acre-feet per year. A 35-foot decline over 50 years results in an estimated annual total volume of 34,780 acre-feet per year.
Figure 1. Partial geology of Medina County showing GMA and river basin boundaries.
Figure 2. Map areas based on geology, GMA boundaries, and river basins.
Table 1. Estimated total annual recharge volume for the Leona Gravel Aquifer by map area subdivisions (See Figure 2).

<table>
<thead>
<tr>
<th>GMA</th>
<th>Geologic Unit</th>
<th>County</th>
<th>GCD</th>
<th>River Basin</th>
<th>Map Area</th>
<th>Areal extent (acres)</th>
<th>Average precipitation (inches)</th>
<th>Average precipitation (feet)</th>
<th>Effective recharge rate (percent)</th>
<th>Estimated annual effective recharge (acre-feet)</th>
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<td>9</td>
<td>Qle: Leona Fm</td>
<td>Medina</td>
<td>Medina County GCD</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
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<td>2.38</td>
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<td>2</td>
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Total: 27,807
Table 2. Estimates of draft managed available groundwater for the Leona Gravel Aquifer by map area subdivisions, based on an annual drawdown of 0.3 feet for 50 years, 15 feet total (see Figure 1).

<table>
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<tr>
<th>Geologic Unit</th>
<th>Map Area</th>
<th>GMA</th>
<th>River Basin</th>
<th>Areal extent (acres)</th>
<th>Year</th>
<th>Specific Yield</th>
<th>Annual Drawdown (feet)</th>
<th>Estimated annual volume from storage (acre-feet)</th>
<th>Estimated annual effective recharge (acre-feet)</th>
<th>Estimated annual discharge to streams (acre-feet)</th>
<th>Estimated annual total volume (acre-feet)*</th>
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<tr>
<td>Qt: Leona Fm</td>
<td>N/A</td>
<td>9</td>
<td>N/A</td>
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<td>2010</td>
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<td>0.3</td>
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<td>Qt: Leona Fm</td>
<td>4</td>
<td>13</td>
<td>San Antonio</td>
<td>471</td>
<td>2010</td>
<td>0.15</td>
<td>0.3</td>
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<td>62</td>
<td>33</td>
<td>49</td>
</tr>
<tr>
<td>Qt: Fluvial terrace deposits</td>
<td>5</td>
<td>9</td>
<td>San Antonio</td>
<td>882</td>
<td>2010</td>
<td>0.15</td>
<td>0.3</td>
<td>40</td>
<td>118</td>
<td>63</td>
<td>93</td>
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<tr>
<td>Qt: Fluvial terrace deposits</td>
<td>6</td>
<td>10</td>
<td>Nueces</td>
<td>2,124</td>
<td>2010</td>
<td>0.15</td>
<td>0.3</td>
<td>96</td>
<td>279</td>
<td>151</td>
<td>224</td>
</tr>
<tr>
<td>Qt: Fluvial terrace deposits</td>
<td>7</td>
<td>10</td>
<td>San Antonio</td>
<td>12,081</td>
<td>2010</td>
<td>0.15</td>
<td>0.3</td>
<td>543</td>
<td>1,585</td>
<td>857</td>
<td>1,271</td>
</tr>
<tr>
<td>Qt: Fluvial terrace deposits</td>
<td>8</td>
<td>13</td>
<td>Nueces</td>
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<td>0.15</td>
<td>0.3</td>
<td>534</td>
<td>1,560</td>
<td>643</td>
<td>1,251</td>
</tr>
<tr>
<td>Qt: Alluvium</td>
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<td>N/A</td>
<td>0</td>
<td>2010</td>
<td>0.15</td>
<td>0.3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Qt: Alluvium</td>
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<td>10</td>
<td>Nueces</td>
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<td>0.15</td>
<td>0.3</td>
<td>275</td>
<td>779</td>
<td>433</td>
<td>620</td>
</tr>
<tr>
<td>Qt: Alluvium</td>
<td>10</td>
<td>10</td>
<td>San Antonio</td>
<td>2,010</td>
<td>2010</td>
<td>0.15</td>
<td>0.3</td>
<td>90</td>
<td>256</td>
<td>143</td>
<td>204</td>
</tr>
<tr>
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<td>13</td>
<td>Nueces</td>
<td>7,369</td>
<td>2010</td>
<td>0.15</td>
<td>0.3</td>
<td>332</td>
<td>940</td>
<td>523</td>
<td>749</td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>9,503</td>
<td>27,607</td>
<td>15,000</td>
<td>22,110</td>
</tr>
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</table>

(2011 to 2060: same numbers each year)

* Managed Available Groundwater (MAG) 50 year period totals: 475,148 1,380,338 750,000 1,165,486

The estimated total annual effective recharge volume for the Leona Gravel Aquifer by map areas is from Table 1. The formulas for this table are: specific yield * areal extent * annual drawdown = estimated annual volume from storage. The estimated annual volume from storage + estimated annual effective recharge - estimated annual discharge to streams = estimated annual total volume.
Table 3. Estimates of draft managed available groundwater for the Leona Gravel Aquifer by GMA for an annual drawdown of 0.3 feet, 15 feet total (see Figure 1).

<table>
<thead>
<tr>
<th>GMA</th>
<th>River Basin</th>
<th>Geologic Unit</th>
<th>Estimated annual effective recharge (acre-feet)</th>
<th>Estimated annual volume from storage (acre-feet)</th>
<th>Estimated annual discharge to streams (acre-feet)</th>
<th>MAG Estimated annual total volume (acre-feet)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>San Antonio</td>
<td>Qt: Fluvialite terrace deposits</td>
<td>116</td>
<td>40</td>
<td>63</td>
<td>93</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unit Totals:</td>
<td>116</td>
<td>40</td>
<td>63</td>
<td>93</td>
</tr>
<tr>
<td>10</td>
<td>Nueces</td>
<td>Qt: Leona Fm</td>
<td>14,385</td>
<td>4,945</td>
<td>7,806</td>
<td>11,525</td>
</tr>
<tr>
<td>10</td>
<td>San Antonio</td>
<td>Qt: Leona Fm</td>
<td>3,168</td>
<td>1,089</td>
<td>1,719</td>
<td>2,538</td>
</tr>
<tr>
<td>10</td>
<td>Nueces</td>
<td>Qt: Fluvialite terrace deposits</td>
<td>279</td>
<td>96</td>
<td>151</td>
<td>224</td>
</tr>
<tr>
<td>10</td>
<td>San Antonio</td>
<td>Qt: Fluvialite terrace deposits</td>
<td>1,585</td>
<td>543</td>
<td>857</td>
<td>1,271</td>
</tr>
<tr>
<td>10</td>
<td>Nueces</td>
<td>Qai: Alluvium</td>
<td>779</td>
<td>275</td>
<td>433</td>
<td>620</td>
</tr>
<tr>
<td>10</td>
<td>San Antonio</td>
<td>Qai: Alluvium</td>
<td>256</td>
<td>90</td>
<td>143</td>
<td>204</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unit Totals:</td>
<td>20,453</td>
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<td>11,109</td>
<td>16,382</td>
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<tr>
<td>13</td>
<td>Nueces</td>
<td>Qle: Leona Fm</td>
<td>4,476</td>
<td>1,539</td>
<td>2,429</td>
<td>3,586</td>
</tr>
<tr>
<td>13</td>
<td>San Antonio</td>
<td>Qle: Leona Fm</td>
<td>62</td>
<td>21</td>
<td>33</td>
<td>49</td>
</tr>
<tr>
<td>13</td>
<td>Nueces</td>
<td>Qt: Fluvialite terrace deposits</td>
<td>1,560</td>
<td>534</td>
<td>843</td>
<td>1,251</td>
</tr>
<tr>
<td>13</td>
<td>Nueces</td>
<td>Qai: Alluvium</td>
<td>940</td>
<td>332</td>
<td>523</td>
<td>749</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unit Totals:</td>
<td>7,038</td>
<td>2,426</td>
<td>3,829</td>
<td>5,635</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total (All Units):</td>
<td>27,607</td>
<td>9,503</td>
<td>15,000</td>
<td>22,110</td>
</tr>
</tbody>
</table>
Table 4. Estimates of draft managed available groundwater for the Leona Gravel Aquifer by map area subdivisions, based on an annual drawdown of 0.5 feet over 50 years, 25 feet total (see Figure 1).

<table>
<thead>
<tr>
<th>Geologic Unit</th>
<th>Map Area</th>
<th>GMA</th>
<th>River Basin</th>
<th>Areal extent (acres)</th>
<th>Year</th>
<th>Specific Yield</th>
<th>Annual Drawdown (feet)</th>
<th>Estimated annual volume from storage (acre-feet)</th>
<th>Estimated annual effective recharge (acre-feet)</th>
<th>Estimated annual discharge to streams (acre-feet)</th>
<th>Estimated annual total volume (acre-feet)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qtz: Leona Fm</td>
<td>N/A</td>
<td>9</td>
<td>N/A</td>
<td>0</td>
<td>2010</td>
<td>0.15</td>
<td>0.5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Qtz: Leona Fm</td>
<td>1</td>
<td>10</td>
<td>Nueces</td>
<td>109,896</td>
<td>2010</td>
<td>0.15</td>
<td>0.5</td>
<td>8,242</td>
<td>14,385</td>
<td>7,806</td>
<td>14,822</td>
</tr>
<tr>
<td>Qtz: Leona Fm</td>
<td>2</td>
<td>10</td>
<td>San Antonio</td>
<td>24,203</td>
<td>2010</td>
<td>0.15</td>
<td>0.5</td>
<td>1,815</td>
<td>3,168</td>
<td>1,719</td>
<td>3,264</td>
</tr>
<tr>
<td>Qtz: Leona Fm</td>
<td>3</td>
<td>13</td>
<td>Nueces</td>
<td>34,191</td>
<td>2010</td>
<td>0.15</td>
<td>0.5</td>
<td>2,564</td>
<td>4,476</td>
<td>2,429</td>
<td>4,611</td>
</tr>
<tr>
<td>Qtz: Leona Fm</td>
<td>4</td>
<td>13</td>
<td>San Antonio</td>
<td>471</td>
<td>2010</td>
<td>0.15</td>
<td>0.5</td>
<td>35</td>
<td>62</td>
<td>33</td>
<td>64</td>
</tr>
<tr>
<td>Qtz: Fluvial terrace deposits</td>
<td>5</td>
<td>9</td>
<td>San Antonio</td>
<td>882</td>
<td>2010</td>
<td>0.15</td>
<td>0.5</td>
<td>66</td>
<td>116</td>
<td>63</td>
<td>119</td>
</tr>
<tr>
<td>Qtz: Fluvial terrace deposits</td>
<td>6</td>
<td>10</td>
<td>Nueces</td>
<td>2,124</td>
<td>2010</td>
<td>0.15</td>
<td>0.5</td>
<td>159</td>
<td>279</td>
<td>151</td>
<td>288</td>
</tr>
<tr>
<td>Qtz: Fluvial terrace deposits</td>
<td>7</td>
<td>10</td>
<td>San Antonio</td>
<td>12,061</td>
<td>2010</td>
<td>0.15</td>
<td>0.5</td>
<td>905</td>
<td>1,585</td>
<td>857</td>
<td>1,633</td>
</tr>
<tr>
<td>Qtz: Fluvial terrace deposits</td>
<td>8</td>
<td>13</td>
<td>Nueces</td>
<td>11,869</td>
<td>2010</td>
<td>0.15</td>
<td>0.5</td>
<td>890</td>
<td>1,560</td>
<td>843</td>
<td>1,607</td>
</tr>
<tr>
<td>Qtz: Alluvium</td>
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<td>N/A</td>
<td>0</td>
<td>2010</td>
<td>0.15</td>
<td>0.5</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
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<td>Nueces</td>
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<td>0.5</td>
<td>458</td>
<td>770</td>
<td>433</td>
<td>803</td>
</tr>
<tr>
<td>Qtz: Alluvium</td>
<td>10</td>
<td>10</td>
<td>San Antonio</td>
<td>2,010</td>
<td>2010</td>
<td>0.15</td>
<td>0.5</td>
<td>151</td>
<td>256</td>
<td>143</td>
<td>264</td>
</tr>
<tr>
<td>Qtz: Alluvium</td>
<td>11</td>
<td>13</td>
<td>Nueces</td>
<td>7,369</td>
<td>2010</td>
<td>0.15</td>
<td>0.5</td>
<td>553</td>
<td>940</td>
<td>523</td>
<td>970</td>
</tr>
</tbody>
</table>

|                                |          |     |             |                      |      |                |                                           |                                               |                                               |                                               |
|                                | 15,838   | 27,807 | 15,000   | 28,445 |          |                |                                           |                                               |                                               |                                               |

(2011 to 2060: same numbers each year)

* Managed Available Groundwater (MAG)

The estimated total annual effective recharge volume for the Leona Gravel Aquifer by map areas is from Table 1. The formulas for this table are: specific yield * areal extent * annual drawdown = estimated annual volume from storage. The estimated annual volume from storage + estimated annual effective recharge – estimated annual discharge to streams = estimated annual total volume.
Table 5. Estimates of draft managed available groundwater for the Leona Gravel Aquifer by GMA for an annual drawdown of 0.5 feet, 25 feet total (see Figure 1).

<table>
<thead>
<tr>
<th>GMA</th>
<th>River Basin</th>
<th>Geologic Unit</th>
<th>Estimated annual effective recharge (acre-feet)</th>
<th>Estimated annual volume from storage (acre-feet)</th>
<th>Estimated annual discharge to streams (acre-feet)</th>
<th>MAG</th>
<th>Estimated annual total volume (acre-feet)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>San Antonio</td>
<td>Qt: Fluvialite terrace deposits</td>
<td>116</td>
<td>66</td>
<td>63</td>
<td>119</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Unit Totals:</strong></td>
<td><strong>116</strong></td>
<td><strong>66</strong></td>
<td><strong>63</strong></td>
<td><strong>119</strong></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Nueces</td>
<td>Qt: Leona Fm</td>
<td>14,385</td>
<td>8,242</td>
<td>7,806</td>
<td>14,822</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>San Antonio</td>
<td>Qt: Leona Fm</td>
<td>3,168</td>
<td>1,815</td>
<td>1,719</td>
<td>3,264</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Nueces</td>
<td>Qt: Fluvialite terrace deposits</td>
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<td>159</td>
<td>151</td>
<td>286</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>San Antonio</td>
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<td>1,565</td>
<td>905</td>
<td>857</td>
<td>1,633</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Nueces</td>
<td>Qt: Alluvium</td>
<td>779</td>
<td>458</td>
<td>433</td>
<td>803</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>San Antonio</td>
<td>Qt: Alluvium</td>
<td>256</td>
<td>151</td>
<td>143</td>
<td>264</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Unit Totals:</strong></td>
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<td><strong>11,730</strong></td>
<td><strong>11,109</strong></td>
<td><strong>21,074</strong></td>
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</tr>
<tr>
<td>13</td>
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<td>Qt: Leona Fm</td>
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<td>2,564</td>
<td>2,429</td>
<td>4,611</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>San Antonio</td>
<td>Qt: Leona Fm</td>
<td>62</td>
<td>35</td>
<td>33</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Nueces</td>
<td>Qt: Fluvialite terrace deposits</td>
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<td>843</td>
<td>1,607</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Nueces</td>
<td>Qt: Alluvium</td>
<td>940</td>
<td>553</td>
<td>523</td>
<td>970</td>
<td></td>
</tr>
<tr>
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<td></td>
<td><strong>Unit Totals:</strong></td>
<td><strong>7,038</strong></td>
<td><strong>4,043</strong></td>
<td><strong>3,829</strong></td>
<td><strong>7,252</strong></td>
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</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total (All Units):</strong></td>
<td><strong>27,607</strong></td>
<td><strong>15,838</strong></td>
<td><strong>15,000</strong></td>
<td><strong>28,445</strong></td>
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</tr>
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</table>
Table 6. Estimates of draft managed available groundwater for the Leona Gravel Aquifer by map area subdivisions, based on an annual drawdown of 0.7 feet over 50 years, 35 feet total (see Figure 1).

<table>
<thead>
<tr>
<th>Geologic Unit</th>
<th>Map Area</th>
<th>GMA</th>
<th>River Basin</th>
<th>Areal extent (acres)</th>
<th>Year</th>
<th>Specific Yield</th>
<th>Annual Drawdown (feet)</th>
<th>Estimated annual volume from storage (acre-feet)</th>
<th>Estimated annual effective recharge (acre-feet)</th>
<th>Estimated annual discharge to streams (acre-feet)</th>
<th>Estimated annual total volume (acre-feet)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qte: Leona Fm</td>
<td>N/A</td>
<td>9</td>
<td>N/A</td>
<td>0</td>
<td>2010</td>
<td>0.15</td>
<td>0.7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Qte: Leona Fm</td>
<td>1</td>
<td>10</td>
<td>Nueces</td>
<td>109,896</td>
<td>2010</td>
<td>0.15</td>
<td>0.7</td>
<td>11,536</td>
<td>14,385</td>
<td>7,806</td>
<td>18,118</td>
</tr>
<tr>
<td>Qte: Leona Fm</td>
<td>2</td>
<td>10</td>
<td>San Antonio</td>
<td>24,203</td>
<td>2010</td>
<td>0.15</td>
<td>0.7</td>
<td>2,541</td>
<td>3,168</td>
<td>1,719</td>
<td>3,990</td>
</tr>
<tr>
<td>Qte: Leona Fm</td>
<td>3</td>
<td>13</td>
<td>Nueces</td>
<td>34,191</td>
<td>2010</td>
<td>0.15</td>
<td>0.7</td>
<td>3,590</td>
<td>4,476</td>
<td>2,429</td>
<td>5,637</td>
</tr>
<tr>
<td>Qte: Leona Fm</td>
<td>4</td>
<td>13</td>
<td>San Antonio</td>
<td>471</td>
<td>2010</td>
<td>0.15</td>
<td>0.7</td>
<td>46</td>
<td>62</td>
<td>33</td>
<td>78</td>
</tr>
<tr>
<td>Qt: Fluvial terrace deposits</td>
<td>5</td>
<td>9</td>
<td>San Antonio</td>
<td>882</td>
<td>2010</td>
<td>0.15</td>
<td>0.7</td>
<td>93</td>
<td>116</td>
<td>63</td>
<td>146</td>
</tr>
<tr>
<td>Qt: Fluvial terrace deposits</td>
<td>6</td>
<td>10</td>
<td>Nueces</td>
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<td>2010</td>
<td>0.15</td>
<td>0.7</td>
<td>222</td>
<td>276</td>
<td>151</td>
<td>351</td>
</tr>
<tr>
<td>Qt: Fluvial terrace deposits</td>
<td>7</td>
<td>10</td>
<td>San Antonio</td>
<td>12,061</td>
<td>2010</td>
<td>0.15</td>
<td>0.7</td>
<td>1,266</td>
<td>1,565</td>
<td>857</td>
<td>1,993</td>
</tr>
<tr>
<td>Qt: Fluvial terrace deposits</td>
<td>8</td>
<td>13</td>
<td>Nueces</td>
<td>11,869</td>
<td>2010</td>
<td>0.15</td>
<td>0.7</td>
<td>1,246</td>
<td>1,560</td>
<td>843</td>
<td>1,963</td>
</tr>
<tr>
<td>Qat: Alluvium</td>
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<td>9</td>
<td>N/A</td>
<td>0</td>
<td>2010</td>
<td>0.15</td>
<td>0.7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Qat: Alluvium</td>
<td>9</td>
<td>10</td>
<td>Nueces</td>
<td>6,102</td>
<td>2010</td>
<td>0.15</td>
<td>0.7</td>
<td>641</td>
<td>776</td>
<td>433</td>
<td>988</td>
</tr>
<tr>
<td>Qat: Alluvium</td>
<td>10</td>
<td>10</td>
<td>San Antonio</td>
<td>2,010</td>
<td>2010</td>
<td>0.15</td>
<td>0.7</td>
<td>211</td>
<td>256</td>
<td>143</td>
<td>325</td>
</tr>
<tr>
<td>Qat: Alluvium</td>
<td>11</td>
<td>13</td>
<td>Nueces</td>
<td>7,369</td>
<td>2010</td>
<td>0.15</td>
<td>0.7</td>
<td>774</td>
<td>940</td>
<td>523</td>
<td>1,191</td>
</tr>
</tbody>
</table>

|                         |          |     |             | 22,174                  | 27,807 | 15,000 | 34,780 |

(2011 to 2060: same numbers each year)

* Managed Available Groundwater (MAG)
50 year period totals: 1,108,676 1,380,336 750,000 1,739,016

The estimated total annual effective recharge volume for the Leona Gravel Aquifer by map areas is from Table 1. The formulas for this table are: specific yield * areal extent * annual drawdown = estimated annual volume from storage. The estimated annual volume from storage + estimated annual effective recharge – estimated annual discharge to streams = estimated annual total volume.
Table 7. Estimates of draft managed available groundwater for the Leona Gravel Aquifer by GMA for an annual drawdown of 0.7 feet, 35 feet total (see Figure 1).

<table>
<thead>
<tr>
<th>GMA</th>
<th>River Basin</th>
<th>Geologic Unit</th>
<th>Estimated annual effective recharge (acre-feet)</th>
<th>Estimated annual volume from storage (acre-feet)</th>
<th>Estimated annual discharge to streams (acre-feet)</th>
<th>MAG Estimated annual total volume (acre-feet)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>San Antonio</td>
<td>Qt: Fluvialite terrace deposits</td>
<td>116</td>
<td>93</td>
<td>63</td>
<td>146</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unit Totals:</td>
<td>116</td>
<td>93</td>
<td>63</td>
<td>146</td>
</tr>
<tr>
<td>10</td>
<td>Nueces</td>
<td>Qle: Leona Fm</td>
<td>14,385</td>
<td>11,539</td>
<td>7,806</td>
<td>18,118</td>
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<tr>
<td>10</td>
<td>San Antonio</td>
<td>Qle: Leona Fm</td>
<td>3,168</td>
<td>2,541</td>
<td>1,719</td>
<td>3,990</td>
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<tr>
<td>10</td>
<td>Nueces</td>
<td>Qt: Fluvialite terrace deposits</td>
<td>279</td>
<td>223</td>
<td>151</td>
<td>351</td>
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<tr>
<td>10</td>
<td>San Antonio</td>
<td>Qt: Fluvialite terrace deposits</td>
<td>1,585</td>
<td>1,266</td>
<td>857</td>
<td>1,995</td>
</tr>
<tr>
<td>10</td>
<td>Nueces</td>
<td>Qal: Alluvium</td>
<td>779</td>
<td>641</td>
<td>433</td>
<td>986</td>
</tr>
<tr>
<td>10</td>
<td>San Antonio</td>
<td>Qal: Alluvium</td>
<td>256</td>
<td>211</td>
<td>143</td>
<td>325</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unit Totals:</td>
<td>20,453</td>
<td>16,421</td>
<td>11,109</td>
<td>25,766</td>
</tr>
<tr>
<td>13</td>
<td>Nueces</td>
<td>Qle: Leona Fm</td>
<td>4,476</td>
<td>3,590</td>
<td>2,429</td>
<td>5,637</td>
</tr>
<tr>
<td>13</td>
<td>San Antonio</td>
<td>Qle: Leona Fm</td>
<td>62</td>
<td>49</td>
<td>33</td>
<td>78</td>
</tr>
<tr>
<td>13</td>
<td>Nueces</td>
<td>Qt: Fluvialite terrace deposits</td>
<td>1,560</td>
<td>1,246</td>
<td>843</td>
<td>1,963</td>
</tr>
<tr>
<td>13</td>
<td>Nueces</td>
<td>Qal: Alluvium</td>
<td>940</td>
<td>774</td>
<td>523</td>
<td>1,191</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unit Totals:</td>
<td>7,038</td>
<td>5,660</td>
<td>3,829</td>
<td>8,869</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total (All Units):</td>
<td>27,607</td>
<td>22,174</td>
<td>15,000</td>
<td>34,780</td>
</tr>
</tbody>
</table>

**LIMITATIONS:**

Additional data are needed to create improved estimates; these estimates are a basic interpretation of the requested conditions. This analysis assumes homogeneous and isotropic aquifers; however, conditions for the Leona Gravel Aquifer may not behave in a uniform manner. There is uncertainty with respect to the distribution of the sand and gravel in the aquifer (Lowry and Couch, 2002; Green, 2003). The analysis further assumes that precipitation is the only source of aquifer recharge and that lateral inflow to the aquifer is equal to lateral outflow from the aquifer, and that future pumping will not alter this balance.

Discharge and recharge from other aquifers, such as the Edwards BFZ aquifer, are unknown as is recharge from streams. Discharge to streams from the Leona Gravel Aquifer is assumed to be 15,000 acre-feet per year, but this number needs to be investigated with gain-loss streamflow assessment research. The recharge rate is also a rough estimate as is the specific yield.
Note that estimates of managed available groundwater are based on the best available scientific tools that can be used to develop managed available groundwater and that these estimates can be a function of assumptions made on the magnitude and distribution of pumping in the aquifer. Therefore, it is important for groundwater conservation districts to monitor whether or not they are achieving their desired future conditions and to work with the TWDB to refine managed available groundwater given the reality of how the aquifer responds to the actual magnitude and distribution of pumping now and in the future.

REFERENCES:


Green, R.T., 2003, Geophysical survey to determine the depth and lateral extent of the Leona Aquifer in the Leona river floodplain, south of Uvalde, Texas: Prepared for the Edwards Aquifer Authority by the Southwest Research Institute, 21 p.


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