Overview of the Edwards Aquifer Habitat Conservation Plan (EAHCP)

The Edwards Aquifer Recovery Implementation Program Habitat Conservation Plan (EAHCP) was approved by the U.S. Fish & Wildlife Service (USFWS) as a regional plan to protect eight federally listed and three non-listed species—termed Covered Species—associated with the Edwards Aquifer while helping to ensure its stability as a regional water supply.

After approval of the EAHCP, the USFWS issued an Incidental Take Permit (ITP) under the federal Endangered Species Act of 1973 to five cooperating Permittees: Edwards Aquifer Authority (EAA), City of New Braunfels, City of San Marcos, Texas State University, and the City of San Antonio acting by and through its San Antonio Water System Board of Trustees.

The area covered by the ITP (Permit Area) is bounded by EAA’s jurisdictional boundary, which encompasses Uvalde, Medina, and Bexar counties and portions of Atascosa, Caldwell, Comal, Guadalupe, and Hays counties.

The EAHCP describes impacts that are likely to result from Covered Activities, identifies Conservation Measures to minimize and mitigate those impacts; and assures funding to implement those Conservation Measures and, more broadly, the EAHCP.

Covered Species

- **Texas Wild-Rice** Zizania texana ENDANGERED
- **Texas Blind Salamander** Eurycea ruthveni ENDANGERED
- **San Marcos Salamander** Eurycea nana ENDANGERED
- **Fountain Darter** Etheostoma fonticola ENDANGERED
- **San Marcos Gambusia** Gambusia georgiana ENDANGERED
- **Comal Springs Dryopid Beetle** Syropus texanus ENDANGERED
- **Comal Springs Riffle Beetle** Heleomyzon comalensis ENDANGERED
- **Peck’s Cave Amphipod** Sisyphurus pecki ENDANGERED
- **Texas Trogloëtic Water Slater** Lernaea smithii PETITIONED
- **Edwards Aquifer Diving Beetle** Holopneustes longipes PETITIONED
- **Comal Springs Salamander** Eurycea sp. NOT LISTED

**Highlights of 2022**

**Program Administration**

- 10-year highlight: Program staff updated the EAHCP logo in recognition of the plan’s 20th anniversary.
- Program staff launched a multi-year ITP renewal process in coordination with the USFWS. Funding for this effort will come in part from a $1 million federal Habitat Conservation Planning Assistance Grant.
- The National Habitat Conservation Plan Coalition showcased the EAHCP during its 2022 Annual Meeting in Austin.
- In coordination with the USFWS, EAHCP staff helped bring fountain darters and Texas blind salamanders to display aquariums at the new EAA Education Outreach Center.

**Springflow Protection**

- 10-year highlight: Despite multiple periods of extreme drought (2013, 2014, 2018, 2021, 2022), the springflows were below average but stayed above the minimum flow requirements.
- La Niña drought conditions persisted through 2022, bringing above-average temperatures and below-average rainfall. In June, Comal and San Marcos springflows fell below Condition M levels; habitat mitigation and restoration activities were limited in accordance with the ITP. Condition M restrictions remained in place through 2022.
- 2022 drought impacted both spring systems, causing Spring Runs 1 and 2 to stop flowing temporarily in New Braunfels and reduced flow in San Marcos to historic lows.
- Springflow conditions below 635 feet mean sea level at the J-17 Bexar Index Well on October 1 triggered the Voluntary Irrigation Suspension Program Option. Participants in the program will suspend Edwards Aquifer pumping in 2023.

**Habitat Restoration**

- 10-year highlight: 10 years of restoration of aquatic and riparian habitat in the Comal and San Marcos springs systems.
- Since 2013, Texas wild-rice (TWR) has expanded from 5,020 m² in 2013 to 13,070 m² in 2022. Planting of TWR in the upper San Marcos River stopped in 2019, but TWR continues to expand naturally.
- Since 2013, hygrophila, an aggressive non-native aquatic plant, has been drastically reduced in all of the Long-term Biological Goal Reaches.
- Since 2013, most non-native riparian plants have received initial treatment in the public parks along the Comal and San Marcos rivers; treatment of regrowth will continue until the end of the permit.

**2022 ANNUAL REPORT SUMMARY**

The Edwards Aquifer Habitat Conservation Plan (EAHCP) is a regional plan to protect 11 species associated with the Edwards Aquifer while helping to ensure its stability as a regional water supply.

Since 2013, over 15,351 acres of non-native riparian plants have been treated in the public parks along the Comal and San Marcos rivers.

Since 2013, over 4.1 million cubic feet of untreated non-native plants have been restored to native vegetation.

Since 2013, over 220,000 riparian plants have been removed from the public parks along the Comal and San Marcos rivers.

Since 2013, over 15,000 riparian plants have been transplanted in the public parks along the Comal and San Marcos rivers.

Since 2013, over 12,000 riparian plants have been planted in the public parks along the Comal and San Marcos rivers.

Since 2013, over 10,000 riparian plants have been established in the public parks along the Comal and San Marcos rivers.

Since 2013, over 8,000 riparian plants have been established in the public parks along the Comal and San Marcos rivers.

Since 2013, over 6,000 riparian plants have been established in the public parks along the Comal and San Marcos rivers.

Since 2013, over 4,000 riparian plants have been established in the public parks along the Comal and San Marcos rivers.

Since 2013, over 2,000 riparian plants have been established in the public parks along the Comal and San Marcos rivers.

Since 2013, over 1,000 riparian plants have been established in the public parks along the Comal and San Marcos rivers.

Since 2013, over 500 riparian plants have been established in the public parks along the Comal and San Marcos rivers.

Since 2013, over 250 riparian plants have been established in the public parks along the Comal and San Marcos rivers.

Since 2013, over 100 riparian plants have been established in the public parks along the Comal and San Marcos rivers.

Since 2013, over 50 riparian plants have been established in the public parks along the Comal and San Marcos rivers.
The current financial projections and cost estimates for the EAHCP indicate an overall fiscally stable Program with an adequate budget for Program implementation in fiscal year 2023. The EAHCP Program has a reserve balance of $22,702,150 and a cash balance of $35,566,158. There are adequate funds for the EAHCP Program in fiscal year 2023.

Incidental Take

Incidental take of listed species from Covered Activities is quantified annually and measured against the total take authorized by the ITP. In the Comal Springs system, take totaled 5,064 fountain darters, 743 Comal Springs riffle beetles, 5 Comal Springs dryopid beetles, and 115 Peck’s cave amphipod. The Comal invertebrate take was mostly due to severe drought conditions that reduced portions of occupied habitat. In the San Marcos Springs system, take totaled 37,442 fountain darters and 3,559 San Marcos salamanders, primarily due to recreational impacts on aquatic vegetation in Spring Lake Dam and City Park monitored sections of the San Marcos River.

Covered Species Accumulated Take through 2022

<table>
<thead>
<tr>
<th>Species</th>
<th>0%</th>
<th>20%</th>
<th>40%</th>
<th>60%</th>
<th>80%</th>
<th>100%</th>
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<tbody>
<tr>
<td>Texas blind salamander</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>San Marcos salamander</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Peck’s Cave amphipod</td>
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<tr>
<td>Fountain darter: San Marcos</td>
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<td></td>
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<tr>
<td>Fountain darter: Comal</td>
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<td></td>
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<tr>
<td>Comal Springs riffle beetle</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Comal Springs dryopid beetle</td>
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</tbody>
</table>

Implementation of Conservation Measures

Conservation Measures are activities carried out by the Permittees in the Permit Area as part of EAHCP implementation. These measures encompass springflow protection, habitat conservation, and various supporting activities such as research and biological monitoring.

The tables at right summarize progress toward fulfilling the Conservation Measures. Implementation efforts are highlighted for 2022. As the EAHCP enters its 11th year of implementation, most Conservation Measures have either been fulfilled or are in an on-going or maintenance phase.

All efforts to implement the Conservation Measures were conducted in accordance with the Permittees’ approved annual Work Plans.

Status Key and Abbreviations

<table>
<thead>
<tr>
<th>Implementation Status</th>
<th>Abbreviation</th>
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<td>Working toward fulfillment</td>
<td>W</td>
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<tr>
<td>Fulfillment expected</td>
<td>F</td>
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<tr>
<td>Fulfillment achieved or implemented</td>
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</tr>
<tr>
<td>Maintenance</td>
<td>M</td>
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<tr>
<td>On-going</td>
<td>O</td>
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<tr>
<td>Implemented when triggered</td>
<td>I</td>
</tr>
<tr>
<td>Triggered</td>
<td>T</td>
</tr>
<tr>
<td>New opportunities sought contingent on funding</td>
<td>N</td>
</tr>
<tr>
<td>No activity</td>
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Permittees

<table>
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<tr>
<th>Permittees</th>
<th>Acronym</th>
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</thead>
<tbody>
<tr>
<td>CONB</td>
<td>City of New Braunfels</td>
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<tr>
<td>COSM</td>
<td>City of San Marcos</td>
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<tr>
<td>EAA</td>
<td>Edwards Aquifer Authority</td>
</tr>
<tr>
<td>SAWIS</td>
<td>San Antonio Water System</td>
</tr>
<tr>
<td>TXST</td>
<td>Texas State University</td>
</tr>
</tbody>
</table>

Springflow Protection Measures

- Aquifer Storage and Recovery Springflow Protection Program Enrollment
- Aquifer Storage and Recovery Springflow Protection Program Storage
- Aquifer Storage and Recovery Springflow Protection Program Forbearance
- Voluntary Irrigation Suspension Program Option Enrollment
- Voluntary Irrigation Suspension Program Option Implementation
- Regional Water Conservation
- Stage V Critical Period Management (San Antonio Pool)
- Stage V Critical Period Management (Uvalde Pool)

Habitat Conservation Measures

- Management of Public Recreation
- Designation of Permanent Access Points/Bank Stabilization
- Native Riparian Habitat Restoration
- Texas Wild-Rice Enhancement
- Aquatic Vegetation Restoration and Maintenance
- Decaying Vegetation Removal and Dissolved Oxygen Management
- Management of Floating Vegetation Mats and Litter
- Reduction of Non-native Species Introduction and Live Bait Prohibition
- Monitoring and Reduction of Gill Parasites
- Non-native Animal Species Control
- Diversion of Surface Water
- Research Programs in Spring Lake
- Drying Classes (Spring Lake) and Boating (Spring Lake and Sessom Pk)"