

FINAL REPORT

As Required by

THE ENDANGERED SPECIES PROGRAM

TEXAS

Grant No. TX E-100-HP

Endangered and Threatened Species Conservation

**Barton Springs/Edwards Aquifer Conservation District Regional Habitat Conservation Plan
Completion Assistance**

Prepared by:

Kirk Holland



Carter Smith
Executive Director

Clayton Wolf
Director, Wildlife

12 July 2011

FINAL REPORT

STATE: Texas GRANT NUMBER: TX E-100-HP

GRANT TITLE: Barton Springs/Edwards Aquifer Conservation District Regional Habitat Conservation Plan Completion Assistance

REPORTING PERIOD: 1 July 2008 – 31 May 2011

OBJECTIVE(S):

To continue the significant progress made to date in order to successfully complete and produce the final Regional HCP for the District and a Draft and Final Environmental Impact Statement (EIS), to fulfill the Service's responsibilities under the National Environmental Policy Act (NEPA).

Segment Objectives:

1. Review and update/revise documents in response to comments and other direction by the Service;
2. Review and respond to public comments on various report versions;
3. Work with the Citizens Advisory Committee and the Biological Advisory Team to provide continue review and response to the documentation;
4. Develop additional data and analysis that are required by the Service to complete the documentation of take and the evaluation of jeopardy; and
5. Manage and administer the grant project.

Significant Deviations:

See Attachment A.


Summary Of Progress:

Please see Attachment A (pdf file).

Location: Travis County, Texas

Cost: Costs were not available at time of this report, they will be available upon completion of the Final Report and conclusion of the project.

Prepared by: Craig Farquhar Date: 12 July 2011

Approved by:  Date: 12 July 2011
C. Craig Farquhar

FINAL REPORT
BSEACD Regional Habitat Conservation Plan
Completion Assistance

Funding Source:
Texas Parks & Wildlife Department
Section 6 (Texas Non-traditional Program)
HCP Planning Assistance

Report Date:
July 11, 2011

W F (Kirk) Holland, P.G.
General Manager and Principal Investigator
Barton Springs/Edwards Aquifer Conservation District
1124 Regal Row
Austin, TX 78748
512.282.8441
kholland@bseacd.org

Regional HCP Completion Assistance

I. Final Report

ABSTRACT

During the course of this grant, the Barton Springs/Edwards Aquifer Conservation District (BSEACD, or District) made substantial progress in improving the scientific basis for a prospective Regional Habitat Conservation Plan (RHCP), in incorporating inputs from scientific and citizens' advisory bodies, in strengthening the regulatory and enforcement programs that underpin the RHCP, in producing a draft HCP for administrative review, and in updating the National Environmental Policy Act (NEPA)-related documentation. The experimental results from the preceding grant project had to be verified and, for some, corrected and/or re-stated; the data were then incorporated in a more useful probabilistic ecological risk assessment. During the course of this project, a severe drought occurred that offered an opportunity to assess the effects of drought on habitat quality in more detail than was previously accomplished, as well as an opportunity to develop and implement more stringent drought rules by BSEACD; both of these supported a needed re-structuring of the HCP document. In addition, new statutory requirements to develop "desired future conditions" of relevant aquifers through a joint planning process with other groundwater conservation districts introduced a new coordination element and the inclusion of new aquifer assessments by the Texas Water Development Board (TWDB) that would define the regulatory mechanisms available to BSEACD. Work on the NEPA documentation, especially the specific description of the HCP and the consequences of the federal action, was in turn delayed while the HCP measures were modified. These and other largely unavoidable time delays affected the project schedule from the outset and throughout the project, eventually resulting in the final documentation for the HCP and NEPA process not being completed on schedule and as planned. Then, new changes in the procurement policies of the US Fish & Wildlife Service (the Service), concerning non-competitive, no-cost time extensions of existing grants, prevented the remaining work to continue to be accomplished under this grant. The work on the project's scope that remained incomplete at the conclusion of this grant and that is required by the Service to issue an Incidental Take Permit is now being undertaken and will be completed by BSEACD without Section 6 funding, even that substantial funding that remained unutilized under this grant project.

OBJECTIVE

The objective of this grant is to continue the significant progress made to date in order to successfully complete and produce the final Regional HCP for the District and a Draft

and Final Environmental Impact Statement to fulfill the Service's responsibilities under NEPA.

ACCOMPLISHMENT OF TASKS

Six inter-related tasks were identified in the grant's Project Statement. Activities accomplished under each of these tasks are summarized in subsections below.

1. Review and update/revise documents in response to comments and other direction by the Service.

- a. Changes in the earlier Draft HCP (dHCP) documentation on the basis of Service comments, which were not provided until after the first six months of this grant project, were made and consolidated into a new base dHCP document.
- b. Further edits and tabulations were suspended, at the recommendation of the Biological Advisory Team (BAT), so that: a peer review of the key experimental information could be performed and elaborated; data presentation errors found in the peer review could be corrected and re-analyzed; and a new, probabilistic ecological risk assessment could be performed, to provide a better scientific basis for the Service to assess take and jeopardy.
- c. A scientific consensus was reached by the BAT on the ecological basis for the HCP, including areas of continuing uncertainty that the HCP would need to accommodate.
- d. The District met several times with the Service to discuss the implications of the new, statutorily mandated joint regional planning and the development of Desired Future Conditions (DFCs) and the resulting Managed Available Groundwater (MAG) limits for the Edwards Aquifer in the District's jurisdiction, noting that these statutorily defined parameters would of necessity be a primary regulatory basis for the District's HCP measures. Work under the grant project informed the District Board's decision-making in establishing the regulatory-meaningful DFC, and the Board's motion that provides the rationale and basis for the DFC is included in Section I, Supporting Materials, Exhibit 6.
- e. The editing and re-structuring of the documentation of both the dHCP and its companion Draft EIS (dEIS) was re-initiated on the basis of those discussions with the Service, the BAT, and the Citizens Advisory Committee (CAC).
- f. In response to the near-extreme drought of 2008-2009, the District made substantial revisions to its drought management rules and regulations, which were incorporated into the dHCP documentation, and also incorporated new drought-related information concerning salamander response to low aquifer levels.
- g. In the last year of the grant project, it became evident that the Service was not going to be supportive of a non-competitive time extension to the project, and that submission of a new grant proposal might not be successful and in any event would just produce further delays. So the Service essentially agreed that the District would complete as much of the dHCP documentation as possible before

the end of the grant period, and that the District would continue to work on what remained, which is more driven by the public and the Service, using its own internal funding. The advance administrative review version of the dHCP is the result of this agreement, and is included in Section III of this Final Report, under separate cover.

- h. As most effort was necessarily expended on the dHCP document, a companion dEIS document was not produced. However, much of the baseline demographic data that will be included in the dEIS was updated near the end of the grant project, and that tabulated information is included in Section I, Supporting Materials, Exhibit 2 in this Final Report.

2. Review and respond to public comments on various report versions.

- a. The project team communicated and met on several occasions with representatives of the environmental community and the City of Austin to discuss the HCP project, likely and possible HCP measures, and to respond to comments from their reviews of the prior documentation of the earlier project and of subsidiary reports of the BAT.
- b. The drought of 2008-2009 produced important and relevant new information on aquifer response to near-extreme drought conditions and salamander behavior, and several meetings were held with the City of Austin staff to discuss various dimensions of that information, so that it could be included in the new version of the dHCP and dEIS then under preparation.
- c. Initial discussions were held with representatives of Austin Water Utility and the Watershed Protection Department concerning the scope and participation of an omnibus Interlocal Agreement (ILA) with the City of Austin that is one of the primary adaptive management measures in the dHCP. It was determined that it will be advisable to have separate ILAs with each of these departments, rather than an omnibus ILA. Dialogue with these two departments continues.
- d. However, no new publicly available versions of the dHCP or dEIS were noticed and published under this project, so no further progress on this task was able to be made.

3. Work with the Citizens Advisory Committee and the Biological Advisory Team to provide/continue review and response to the documentation.

- a. The District re-established the BAT and the CAC for this grant project, which comprised for the most part the same individuals that served on these two groups in the prior grant project.
- b. Much of the substantive new work on the project was conducted either under the auspices of the BAT or in response to comments and guidance offered by the BAT. At least seven meetings of the BAT have been held, and a number of other meetings were held among individual BAT members and the project team. The primary focus of the BAT were the reviews and extension of the prior

experimental work and its revision to incorporate a new biological risk assessment by Dr. Bryan Brooks, as described in Task 4 of this project report (below).

- c. At least three meetings of the CAC were held during this project, including two that were joint meetings with the BAT, primarily to keep the CAC apprised of progress and reason for delays, and to solicit their inputs on ongoing activities. The lack of new written documentation before the end of the project's term militated against having additional meetings of the CAC.
- d. The chairs of both the BAT and the CAC reported status and findings to date to the District's Board of Directors, and also met at various times with the Service.

4. Develop additional data and analysis that are required by the Service to complete the documentation of take and jeopardy.

- a. Dr. Bryan Brooks, with oversight by the BAT to which he was the project liaison, was engaged in reviewing, correcting/re-stating, and, along with Dr. Art Woods and Dr. Mary Poteet, performing additional analyses of the previous experimental work of Dr. Woods and Poteet, as part of a requisite new biological risk assessment. This work spanned much of the first two years of the project and addressed experimental Dissolved Oxygen (DO) measurements and their instrumentation-related limitations; standard power curve analysis defining statistically significant sample size effects; specific vs. absolute organism growth effects; significance of life history and intrinsic growth rates; and physiological response to DO concentrations below the No Observable Adverse Effect Level (NOAEL.) The results of this work were reported in the peer-reviewed scientific journal *Copeia*, and a copy of that article is included in Section 1, Supporting Materials, Exhibit 1 in this Final Report.
- b. Dr. Brooks developed a means to use this newly validated information in a more robust probabilistic ecological risk assessment of physiological response of the salamander to low DO concentrations. A summary of these findings and conclusions by Dr. Brooks is included in Section 1, Supporting Materials, Exhibit 2 in this Final Report.
- c. A consensus scientific basis for the HCP was reached and recommended for the Service's assessment of take and jeopardy, although discussions about various aspects of that basis continued among the BAT, the project team, and various consultants.
- d. Because the relation between spring discharge and DO concentrations is key to the HCP but uncertain at very low spring flows, a new synthetic hydrologic model was constructed that allowed internally consistent comparison of the effects of several different groundwater management strategies on spring flows over the historical period of record. This work, accomplished by District principal consultant Dr. Kent Butler and sub-consultant Mr. Raymond Slade, a professional hydrologist, related the experimental work on salamander physiology to the aquifer performance during a wide range of natural climatological conditions and under several different groundwater management schemas. A summary of those

findings and conclusions is included in Section 1, Supporting Materials, Exhibits 4 and 5 in this Final Report.

- e. These additional work elements not only were unanticipated when the project was proposed, but also required a larger level of effort than originally projected. However, the project team, the Service, and the BAT deemed them to be a necessary precursor to the preparation of the final draft documentation on which public comments would be based and submitted to the Service.

5. Manage and administer the grant project.

- a. Dr. Kent Butler was engaged to assist the District and to serve as the project coordinator and principal consultant, and throughout most of the project, until his tragic death near the end of the project's term, ably assisted the Principal Investigator in project management and administration.
- b. As it became clear early in the project that additional time and work, beyond that envisioned when the grant project was designed and awarded, were going to be required, these project team managers continuously attempted to balance meaningful progress and preservation of grant funds for the intense work periods involving finalizing documentation and responding to public comment. With the exception of the dHCP document, neither of these needs developed during this grant project's term.
- c. In addition to BAT and CAC meetings discussed in Item 3 above, several meetings of the project team and Service staff were held to discuss progress from the Service's perspective, confirm the ongoing project approach and data needs, establish and re-establish some project milestones, and characterize the relationship of HCP measures to the emerging state-mandated DFCs and MAG estimates for the Edwards Aquifer, the salamander's habitat.
- d. Two meetings were held with the Texas Parks and Wildlife Department (TPWD) project administrator, including one as a joint meeting with the Service, to discuss the ongoing project delays, possible options going forward, and the certain need for a no-cost schedule extension to accommodate complex project realities. The difficulties in actually being successful in being granted such an extension in the current climate within the Service were identified.
- e. The prospective ILA between the City of Austin and the District, which will enable several HCP measures, was discussed with the principal parties in several meetings in the latter half of the project. Some initial discussions among members of the respective governing bodies were also held.
- f. Shortly after this grant project was kicked off, the Service's project manager assigned to this project left the Service and was not replaced by the Service's Austin Ecological Services Office until September 2009. While the new project manager became actively involved shortly thereafter, the project team made a special effort to accommodate both not having a project monitor for several months, and then to orient the new monitor to the project's status and issues, and to develop an approach that was responsive to his desired work style and arrangement.

- g. At the conclusion of the grant project's term, work on the project had incurred a cumulative \$95,673.74, of a total grant amount of \$175,000. Of this total cost incurred, \$21,962.81 was District labor costs, and consultant costs were \$73,645.93. The federal share of these costs defrayed by the grant was \$57,404.24, of a total budgeted federal share of \$105,000. The amount remaining, \$79,326.26, including \$47,595.76 of the federal share, represents the value of the work that was unable to be completed on the grant project and for which the project was not charged.

6. Submit Interim and Final Reports to TPWD.

- a. The first Interim Report, then-due shortly after the project was awarded and before any grant-specific subsequent progress could be made, comprised a cursory notice of no significant progress.
- b. The second Interim Report was accepted as-is by the Service, so no changes to that Interim Report were required.
- c. During the third reporting period, the Service instituted a new policy that changed its annual reporting periods to align better with the start date of its grant projects. This policy change resulted in a re-definition of this project's official annual reporting period, so that, as directed by TPWD, the third Interim Report covered a ten-month period from September 1, 2009, to June 30, 2010.
- d. The third Interim Report was presumed to be accepted as-is by the Service, although no notice was received, probably owing to the change in Service personnel. No changes to that Interim Report were required.
- e. This Final Report covers the final year of the grant project, ending May 31, 2011, and is hereby timely submitted to TPWD.

SUPPORTING MATERIALS

In addition to the primary deliverable under the grant, an early draft of the Administrative Review Version of the Draft Habitat Conservation Plan, which is provided as a separate volume in Section III of this Final Report, the project team produced a number of other supporting analyses and documents that are of major importance to the development of this RHCP and its NEPA documentation. Because of the size of most of these documents, they are included as exhibits in a folder named "HCP-2" on the District FTP site, from which each of these documents can be downloaded. For convenience, the exhibits that make up this appendix are identified below:

Exhibit 1 - H. Arthur Woods, Mary F. Poteet, Paul D. Hitchings, Richard A. Brain, and Bryan W. Brooks; "Conservation Physiology of the Plethodontid Salamanders *Eurycea nana* and *E. sosorum*: Response to Declining Dissolved Oxygen", *Copeia*, 2010(4):540-553. 2010. <http://www.bioone.org/doi/full/10.1643/CP-09-026>

Exhibit 2 - Bryan W Brooks, "Developing an Understanding of *Eurycea* sp. Thresholds to Dissolved Oxygen", Unpublished draft report to BSEACD, 30 March 2010.

Exhibit 3 – Zachary Stern, Updated data for tables in dEIS documentation, unpublished consultant work product for District HCP dEIS, May 2011.

Exhibit 4 – Raymond Slade and Kent Butler, "Technical Memo: Analyses of low flow statistical characteristics for Barton Springs", unpublished technical memorandum to HCP Project Team, December 8, 2009.

Exhibit 5 – Kent Butler and Raymond Slade, "Hydrographic Analysis of Low-Flow Discharges and Pumpage Management Alternatives at Barton Springs, Austin, Texas", unpublished report to the District Board of Directors, February 25, 2010.

Exhibit 6 – Text of Motion by District Board of Directors, providing rationale and basis for "Desired Future Conditions of the Freshwater Edwards Aquifer in the Northern Subdivision of GMA 10", as considered in a resolution by the GMA 10 Coordinating Committee adopting that Desired Future Condition, June 10, 2010.

Instructions for accessing District FTP site: Interested parties may go to the District FTP site, at <ftp://ftp.bseacd.org> and login using the username "public" (without the quote marks) and the password "bs3@cd" (again, without the quote marks). Users will find it easier to use Internet Explorer as a browser for this purpose, then go to "Page" on the toolbar, and select "Open FTP Site In Windows Explorer" from the drop-down list; you may then most easily drag and drop the desired file(s) onto your desktop. These files will remain on the FTP site until TPWD informs the District that these downloads have been accomplished for purposes of this Final Report, or until September 1, 2011, whichever is first.

Regional HCP Completion Assistance Project

II. SIGNIFICANT DEVIATIONS

While some important work was accomplished during this grant project, as described in Section I of this document, there were very significant deviations from the initially planned activities, scheduled work, and levels of effort during the project, such that the overall objective of the grant project was not realized during the project time frame. These deviations are described more fully below.

For the most part, these deviations are derived from the additional work, time commitment, and/or level of effort for most of the tasks beyond that originally planned and budgeted, rather than inattention to the project. It was and is believed this scope and schedule changes were required to provide the Service with an adequate basis for assessing take and jeopardy and for meeting its NEPA obligations. The deviations were duly reported in previous Interim Reports but it was thought that they represented only schedule variances that could be accommodated by a no-cost time extension of the project, which had previously been available to such projects. As reported earlier, such an extension proved to be evidently infeasible under new procurement policies of the Service, and the grant activities simply ran out of time. It should be noted that a considerable amount of time and costs were not billed to the project by both the District and its consultants, with a view toward preserving project resources for back-end activities that ultimately were not demanded by the project before the grant ended.

- A. The most substantive deviation was that the documentation for neither the HCP nor the NEPA process was completed. Even Administrative Review versions of the dEIS or dHCP were not able to be produced before the end of the grant, although an initial version of the dHCP was furnished to the Service near the end of the grant period. Other deviations derive from this lack of documentation.

There were a number of factors that created or contributed materially to this situation. Without intending to suggest that these were all extenuating circumstances or “justifications” for the deviation, each played a role:

- The initial comments from the service did not occur until December 2008, six months after execution of the grant contract, and were not able to be discussed substantively until January 2009.
- Following the initial review of the prior experimental report and the first meeting of the re-constituted BAT in the Spring of 2009, which itself was delayed while the TPWD decided on who was going to be the Chair of the BAT, it became clear that additional work was going to be required to verify the results and the findings based on those results. This work extended into a consensus need for a more probabilistic ecological risk assessment (PERA) to make a meaningful interpretation of the

experimental data for purposes of the HCP take and jeopardy determinations. This data validation and PERA process consumed about 18 months of the grant.

- In mid-2009, the Service's project monitor resigned to take another federal agency job out of state, and it was several months before the current project monitor was on board and fully engaged in the project.
 - A new, more stringent and rather aggressive drought management plan, developed by the District in response to the near-extreme drought of 2008-2009 and the emerging findings of the PERA, required re-casting of the HCP measures.
 - Revisions to the dHCP document also could not be completed until completion of the complementary, State-mandated joint groundwater planning process yielded reportable and enforceable DFCs and MAG estimates; the District is actually still waiting on final MAG estimates for the Edwards Aquifer from TWDB, almost a year after adopting the DFCs.
 - A requirement that the same District consultant/contractor could not be responsibly involved in both the HCP development and the EIS documentation processes created a situation where time was lost in taking a sequential approach to the overall documentation. This requirement was not accommodated in the grant proposal and in fact was not made known to the District until the last year of the grant project. A parallel approach to this documentation was indicated for this requirement and would have saved time, although the HCP measures development needed to be a precursor to the NEPA analysis and documentation, regardless.
- B. Because of the delays in being able to produce new versions of the project documents, there have been no public comments, beyond those of the CAC and especially BAT members, and no requirement to review and respond to comments of the public at-large.
- C. Similarly, because the public and the CAC have not had new versions of draft project documents, their inputs to the overall HCP process and document development have been limited.
- D. A much larger level of effort was required in association with the development of additional physiological data and their ecological analysis by the project's biological consultant, Dr. Bryan Brooks. In effect, Dr. Brook's work was shifted to more front-end original analytical activities, as opposed to, for example, responding to comments of other scientific reviewers and NEPA commentators.
- E. Finally, a considerable amount of programmatic insight and especially the revisions of the dEIS documentation to an Administrative Review version was lost with the tragic death of Dr. Kent Butler toward the end of the grant project, before he shared the results of his extant or planned edits to this documentation.

Regional HCP Completion Assistance Project

III. COPIES OF FINAL DRAFTS OF HCP AND EIS DOCUMENTATION

HCP: The Advance Administrative Review Version of the Draft HCP was produced under the auspices of this grant project. It is a large document and is being furnished to TPWD in both hard copy (two copies, as requested) by US mail under separate cover, and also in electronic form on the District FTP site, in the folder named HCP-2. It will also be posted on the District website, on the Grants/HCP page, but the size of this document will make web-based download times very long, even using a high-speed connection.

EIS: No revised NEPA document was able to be produced under the auspices of this grant project. The preliminary draft EIS and its appendices that were produced as a deliverable under the prior HCP grant project is available in electronic form on the District FTP site and the District's website.

Instructions for accessing the District FTP site: Interested parties may go to the District FTP site, at <ftp://ftp.bseacd.org> and login using the username "public" (without the quote marks) and the password "bs3@cd" (again, without the quote marks). Users will find it easier to use Internet Explorer as a browser for this purpose, then go to "Page" on the toolbar, and select "Open FTP Site In Windows Explorer" from the drop-down list; you may then most easily drag and drop the desired file(s) onto your desktop.