STATE OF TEXAS TWDB Contract No. 1600012014

COUNTY OF TRAVIS General Revenue
HDR Engineering, Inc.

This Contract, (hereinafter "CONTRACT"), between the Texas Water Development Board (hereinafter "TWDB") and HDR Engineering, Inc. (hereinafter "CONTRACTOR"), is composed of two parts, SECTION I. SPECIFIC CONDITIONS AND EXCEPTIONS TO THE STANDARD AGREEMENT and SECTION II. STANDARD AGREEMENT. The terms and conditions set forth in SECTION I will take precedence over terms and conditions in SECTION II.

SECTION I. SPECIFIC CONDITIONS AND EXCEPTIONS TO STANDARD AGREEMENT

ARTICLE I. DEFINITIONS

For the purposes of this CONTRACT, the following terms or phrases shall have the meaning ascribed therewith:

1. TWDB – The Texas Water Development Board, or its designated representative

2. CONTRACTOR – HDR Engineering, Inc.

3. EXECUTIVE ADMINISTRATOR – The Executive Administrator of the TWDB or a designated representative

4. PARTICIPANT(S) – HDR Engineering, Inc.

5. REQUIRED INTERLOCAL AGREEMENT(S) – n/a

6. RESEARCH PROJECT – Re-examination of the 2001 Agreed Order Monthly Targets: Phase 2

7. TWDB APPROVAL DATE – July 21, 2016

8. DEADLINE FOR CONTRACT EXECUTION – November 21, 2016

9. CONTRACT INITIATION DATE – July 21, 2016

10. STUDY COMPLETION DATE – June 30, 2017

11. CONTRACT EXPIRATION DATE – August 31, 2017

12. TOTAL STUDY COSTS – $20,000.00

13. TWDB SHARE OF THE TOTAL STUDY COSTS – the lesser of $20,000.00 or 100 percent of the total study costs or individual payment submission

14. LOCAL SHARE OF THE TOTAL STUDY COSTS – $0.00 in cash or 0 percent of the total study costs or individual payment submission

15. PAYMENT SUBMISSION SCHEDULE – Monthly

16. OTHER SPECIAL CONDITIONS AND EXCEPTIONS TO STANDARD AGREEMENT OF THIS CONTRACT

Section II. Article III. Item No. 7 is deleted in its entirety.

SECTION II. STANDARD AGREEMENT

ARTICLE I. RECITALS

Whereas, on TWDB APPROVAL DATE, the TWDB considered providing the CONTRACTOR a grant to conduct a RESEARCH PROJECT;

Whereas, the CONTRACTOR and PARTICIPANT will commit the LOCAL SHARE OF THE TOTAL STUDY COSTS, if applicable, in cash and/or in-kind services to pay for the LOCAL SHARE OF THE TOTAL STUDY COSTS of this RESEARCH PROJECT;

Whereas, the CONTRACTOR is the entity who will act as administrator of the TWDB's research grant and will be responsible for the execution of this contract;

Whereas, on the TWDB APPROVAL DATE, the TWDB approved a research grant to CONTRACTOR;

Now, therefore, the TWDB and the CONTRACTOR, agree as follows:

ARTICLE II. PROJECT DESCRIPTION AND SERVICES TO BE PERFORMED

1. The TWDB enters into this CONTRACT pursuant to Water Code §§11.1491 and 16.058 as appropriate; Exhibit A, the original grant application, which is incorporated herein and made a permanent part of this CONTRACT.

2. The CONTRACTOR will conduct a RESEARCH PROJECT, as delineated and described in Exhibit A, according to the Scope of Work contained in Exhibit B.

3. A progress report, including results to date, will be provided to the EXECUTIVE ADMINISTRATOR monthly, throughout the project. Special interim reports on special topics and/or results will be provided as appropriate. Instructions for the progress report are shown in Exhibit E, TWDB Guidelines for a Progress Report.

4. Within the first 60 days of the commencement of this CONTRACT, CONTRACTOR will consult with TWDB staff to prepare a list of entities that potentially may be affected by the results of this RESEARCH PROJECT. On the STUDY COMPLETION DATE, this list will be reviewed and updated by the CONTRACTOR and submitted to the TWDB with the draft final report.

ARTICLE III. CONTRACT TERM, SCHEDULE, REPORTS, AND OTHER PRODUCTS

1. The CONTRACTOR has until the DEADLINE FOR CONTRACT EXECUTION to execute this CONTRACT and to provide acceptable evidence of any REQUIRED INTERLOCAL AGREEMENT(S) and the Contractors' ability to

provide the LOCAL SHARE OF THE TOTAL STUDY COSTS, if applicable, to the EXECUTIVE ADMINISTRATOR for approval or the TWDB's SHARE OF THE TOTAL STUDY COSTS will be rescinded.

2. The term of this CONTRACT shall begin and the CONTRACTOR shall begin performing its obligations hereunder on the CONTRACT INITIATION DATE and shall expire on the CONTRACT EXPIRATION DATE. Delivery of an acceptable final report prior to the CONTRACT EXPIRATION DATE shall constitute completion of the terms of this CONTRACT.

3. The CONTRACTOR will complete the Scope of Work and will deliver four (4) double-sided copies of a draft final report to the EXECUTIVE ADMINISTRATOR no later than the STUDY COMPLETION DATE. The draft final report will include the scope of work; a description of the research performed; the methodology and materials used; any diagrams or graphics used to explain the procedures related to the study; any data collected; an electronic copy of any computer programs, maps, or models along with an operations manual and any sample data set(s) developed under the terms of this CONTRACT; analysis of the research results; conclusions and recommendations; a list of references, a Table of Contents, List of Figures, List of Tables, an Executive Summary, and any other pertinent information. All final reports should be prepared according to Exhibit D, Guidelines for Authors Submitting Contract Reports to the Texas Water Development Board. After a 30-day review period, the EXECUTIVE ADMINISTRATOR will return review comments to the CONTRACTOR.

4. The CONTRACTOR will consider incorporating comments from the EXECUTIVE ADMINISTRATOR and other commentors on the draft final report into a final report. The CONTRACTOR will include a copy of the EXECUTIVE ADMINISTRATOR's comments in the final report. The CONTRACTOR will submit one (1) electronic copy of the entire final report in Portable Document Format (PDF) and five (5) bound double- sided copies of the final report to the EXECUTIVE ADMINISTRATOR no later than the sixty days (60) after the STUDY COMPLETION DATE.

5. The CONTRACTOR will submit one (1) electronic copy of any computer programs or models and an operations manual developed under the terms of this CONTRACT. In compliance with Texas Administrative Code Chapters 206 and 213 (related to Accessibility and Usability of State Web Sites), the digital copy of the final report will comply with the requirements and standards specified in statute. After a 30-day review period, the EXECUTIVE ADMINISTRATOR will either accept or reject the final report. If the final report is rejected, the rejection letter sent to the CONTRACTOR shall state the reasons for rejection and the steps the CONTRACTOR needs to take to have the final report accepted and the retainage released.

6. The CONTRACTOR will submit the most recent progress report with submittal of payments according to the PAYMENT SUBMISSION SCHEDULE. Progress reports shall be in written form and shall include a brief statement of the overall progress made since the last status report; a brief description of any problems that have been encountered during the previous reporting period that will affect the study, delay the

timely completion of any portion of this CONTRACT, inhibit the completion of or cause a change in any of the study's products or objectives; and a description of any action the CONTRACTOR plans to take to correct any problems that have been encountered.

7. The EXECUTIVE ADMINISTRATOR can extend the STUDY COMPLETION DATE and the CONTRACT EXPIRATION DATE upon written approval. The CONTRACTOR should notify the EXECUTIVE ADMINISTRATOR in writing within ten (10) working days prior to the STUDY COMPLETION DATE or thirty (30) days prior to the CONTRACT EXPIRATION DATE that the CONTRACTOR is requesting an extension to the respective dates.

ARTICLE IV. COMPENSATION AND REIMBURSEMENT

1. The TWDB agrees to compensate and reimburse the CONTRACTOR in a total amount not to exceed the TWDB's SHARE OF THE TOTAL STUDY COSTS for costs incurred and paid by the CONTRACTOR pursuant to performance of this CONTRACT. The CONTRACTOR will contribute local matching funds, if applicable, in sources and amounts defined as the LOCAL SHARE OF THE TOTAL STUDY COSTS. The TWDB shall reimburse the CONTRACTOR for one hundred percent (100%) of the TWDB's share of each invoice pending the CONTRACTOR's performance up to ninety percent (90%) of the total funding costs. Upon completion of a Final Report, and written acceptance of said Final Report by the EXECUTIVE ADMINISTRATOR, the TWDB shall pay the remaining ten percent (10%) to the CONTRACTOR upon submission of a final invoice.

2. The CONTRACTOR shall submit payments and documentation for reimbursement billing according to the PAYMENT SUBMISSION SCHEDULE and in accordance with the approved task and expense budgets contained in Exhibit C to this CONTRACT. The CONTRACTOR has budget flexibility within task and expense budget categories to the extent that the resulting change in amount in any one task or expense category does not exceed 35% of the total authorized amount by this CONTRACT for the task or category. Larger deviations shall require approval by EXECUTIVE ADMINISTRATOR or designee which will be documented through an Approved Budget Memorandum to the TWDB contract file. The CONTRACTOR will be required to provide written explanation for the overage and reallocation of the task and expense amount.
   For all reimbursement billings including any subcontractor's expenses, the EXECUTIVE ADMINISTRATOR must have determined that the REQUIRED INTERLOCAL AGREEMENT(S) and contracts or agreements between the CONTRACTOR and the subcontractor are consistent with the terms of this CONTRACT. The CONTRACTOR is fully responsible for paying all charges by subcontractors prior to reimbursement by the TWDB.

3. The CONTRACTOR and its subcontractors shall maintain satisfactory financial accounting documents and records, including copies of invoices and receipts, and

shall make them available for examination and audit by the EXECUTIVE ADMINISTRATOR. Accounting by the CONTRACTOR and its subcontractors shall be in a manner consistent with Generally Accepted Accounting Principles.

4. By executing this CONTRACT, the CONTRACTOR accepts the authority of the State Auditor's Office, under direction of the legislative audit committee, to conduct audits and investigations in connection with any and all state funds received pursuant to this contract. The CONTRACTOR shall comply with and cooperate in any such investigation or audit. The CONTRACTOR agrees to provide the State Auditor with access to any information the State Auditor considers relevant to the investigation or audit. The CONTRACTOR also agrees to include a provision in any subcontract related to this CONTRACT that requires the subcontractor to submit to audits and investigation by the State Auditor's Office in connection with any and all state funds received pursuant to the subcontract.

5. The CONTRACTOR shall submit a progress report as described in Article II, Item 3 and the following documentation which documents the TOTAL STUDY COSTS for the reporting period even if the TOTAL STUDY COSTS is zero for reimbursement by the TWDB to the CONTRACTOR for the TWDB's SHARE OF THE TOTAL STUDY COSTS shall be submitted by the CONTRACTOR to the EXECUTIVE ADMINISTRATOR for reimbursement billing:

   A. Completed and Signed Payment Request Checklist which includes the following:
   (1) TWDB CONTRACT Number;
   (2) Billing period; beginning (date) to ending date;
   (3) Total Expenses for this period;
   (4) Total In-kind services;
   (5) Less LOCAL SHARE OF THE TOTAL STUDY COSTS for the billing period;
   (6) Total TWDB's SHARE OF THE TOTAL STUDY COSTS for the billing period;
   (7) Amount of retainage to be withheld for the billing period;
   (8) Total costs to be reimbursed by the TWDB for the billing period; and
   (9) Certification, signed by the CONTRACTOR’s authorized representative, that the expenses submitted for the billing period are a true and correct representation of amounts paid for work performed directly related to this contract.

   B. For direct expenses incurred by the CONTRACTOR other than subcontracted work:
   (1) A spreadsheet showing the tasks that were performed; the percent and cost of each task completed; a total cost figure for each direct expense category including labor, fringe, overhead, travel, and other expenses such as communication and postage, technical and computer services, expendable supplies, printing and reproduction; and

(2) Copies of detailed, itemized invoices/receipts for other expenses (credit card summary receipts or statements are not acceptable).

C. For direct expenses incurred by the CONTRACTOR for subcontracted work:
(1) Copies of invoices from the subcontractors to the CONTRACTOR;
(2) A spreadsheet showing the tasks that were performed; the percent and cost of each task completed; a total cost figure for each direct expense category including labor, fringe, overhead, travel, and other expenses such as communication and postage, technical and computer services, expendable supplies, printing and reproduction; and the total dollar amount due to the consultant; and
(3) Copies of detailed, itemized invoices/receipts for other expenses (credit card summary receipts or statements are not acceptable).

D. For travel expenses for the CONTRACTOR and/or subcontractor(s) –
(1) Names, dates, work locations, time periods at work locations, itemization of subsistence expenses of each employee, limited, however, to travel expenses authorized for state employees by the General Appropriations Act, Tex. Leg. Regular Session, 2015, Article IX, Part 5, as amended or superceded. Receipts required for lodging;
(2) Copies of invoices or tickets for transportation costs or, if not available, names, dates, and points of travel of individuals; and
(3) All other reimbursable travel expenses -- invoices or purchase vouchers showing reason for expense with receipts to evidence the amount incurred.

6. Incomplete requests will be returned to the CONTRACTOR if deficiencies are not resolved within ten (10) business days.

7. If for some reason the reimbursement request cannot be processed due to the need for an amendment to the CONTRACT, the CONTRACTOR will be required to resubmit the Payment Request Checklist dated after the execution of the amendment.

8. The CONTRACTOR is responsible for any food or entertainment expenses incurred by its own organization or that of its subcontractors, outside that of the travel expenses authorized and approved by the State of Texas under this CONTRACT.

9. A compliance report in accordance with Texas Administrative Code (TAC) Title 1, Part 5, Chapter 111, Subchapter B, Rule §111.14; The CONTRACTOR shall maintain business records documenting its compliance with the approved Historically Underutilized Business subcontracting plan in the format prescribed by the Texas Procurement and Support Services (Exhibit F). The compliance reports must include payment information on all HUB and non-HUB subcontractors. Submittal of these monthly compliance reports is required as a condition of payment.

The TWDB will monitor the HUB subcontracting plan monthly to ensure the value of the subcontracts meets or exceeds the HUB subcontracting provisions specified in the

contract. CONTRACTOR who fails to implement the HUB subcontracting plan in good faith will be reported to Texas Procurement and Support Services. The TWDB may revoke the contract for breach of contract and make a claim against the contractor.

ARTICLE V. INTELLECTUAL PROPERTY: OWNERSHIP, PUBLICATION, AND ACKNOWLEDGMENT

1. "Use" of a work product, whether a CONTRACTOR Works, a Subcontractor Works or otherwise, shall mean and include, without limitation hereby, any lawful use, copying or dissemination of the work product, or any lawful development, use, copying or dissemination of derivative works of the work product, in any media or forms, whether now known or later existing.

2. "No Compensation Obligation" shall mean there is no obligation on the part of one co-owner or licensee of a work, whether a CONTRACTOR Works, a Subcontractor Works or otherwise, to compensate other co-owners, licensees or licensors of the work for any use of the work by the using co-owner or licensee, including but not limited to compensation for or in the form of: royalties; co-owner or licensee accounting; sharing of revenues or profits among co-owners, licensees or licensors; or any other form of compensation to the other co-owners, licensees or licensors on account of any use of the work.

3. "Dissemination" shall include, without limitation hereby, any and all manner of: physical distribution; publication; broadcast; electronic transmission; internet streaming; posting on the Internet or world wide web; or any other form of communication, transmission, distribution, sending or providing, in any forms or formats, and in or using any media, whether now known or later existing.

4. The TWDB shall have an unlimited, unrestricted, perpetual, irrevocable, non-exclusive royalty-free right to access and receive in usable form and format, and to use all technical or other data or information developed by CONTRACTOR and Subcontractor in, or otherwise resulting from, the performance of services under this CONTRACT.

5. For purposes of this Article, "CONTRACTOR Works" are work products developed by CONTRACTOR and Subcontractor using funds provided under this CONTRACT or otherwise rendered in or related to the performance in whole or part of this CONTRACT, including but not limited to reports, drafts of reports, or other material, data, drawings, studies, analyses, notes, plans, computer programs and codes, or other work products, whether final or intermediate.

    a. It is agreed that all CONTRACTOR Works shall be the joint property of the TWDB and CONTRACTOR.

    b. The parties hereby agree that, if recognized as such by applicable law, the CONTRACTOR Works are intended to and shall be works-made-for-hire

with joint ownership between the TWDB and CONTRACTOR as such works are created in whole or part.

c. If the CONTRACTOR Works do not qualify as works-made-for-hire under applicable law, CONTRACTOR hereby conveys co-ownership of such works to the TWDB as they are created in whole or part. If present conveyance is ineffective under applicable law, CONTRACTOR agree to convey a co-ownership interest of the CONTRACTOR Works to the TWDB after creation in whole or part of such works, and to provide written documentation of such conveyance upon request by the TWDB.

d. The TWDB and CONTRACTOR acknowledge that the copyright in and to a copyrightable CONTRACTOR Work subsists upon creation of the CONTRACTOR Work and its fixing in any tangible medium. CONTRACTOR or the TWDB may register the copyrights to such Works jointly in the names of the CONTRACTOR and the TWDB.

e. The TWDB and CONTRACTOR each shall have full and unrestricted rights to use a CONTRACTOR Work with No Compensation Obligation.

6. For purposes of this Article, "Subcontractor Works" include all work product developed in whole or part by or on behalf of Subcontractors engaged by CONTRACTOR to perform work for or on behalf of any CONTRACTOR under this CONTRACT (or by the Subcontractors' Subcontractors hereunder, and so on). CONTRACTOR shall secure in writing from any Subcontractors so engaged:

a. unlimited, unrestricted, perpetual, irrevocable, royalty-free rights of the TWDB (and, if desired, of CONTRACTOR) to access and receive, and to use, any and all technical or other data or information developed in or resulting from the performance of services under such engagement, with No Compensation Obligation; and either

b. assignment by the Subcontractor to the TWDB (and, if desired by them, jointly to the CONTRACTOR) of ownership (or joint ownership with the Subcontractor) of all Subcontractor Works, with No Compensation Obligation; or

c. grant by Subcontractor of a non-exclusive, unrestricted, unlimited, perpetual, irrevocable, world-wide, royalty-free license to the TWDB (and, if desired by them, the CONTRACTOR) to use any and all Subcontractor Works, including the right to sublicense use to third parties, with No Compensation Obligation.

7. No unauthorized patents. CONTRACTOR Works and Subcontractor Works or other work product developed or created in the performance of this CONTRACT or otherwise using funds provided hereunder shall not be patented by CONTRACTOR or their Subcontractor unless the EXECUTIVE ADMINISTRATOR consents in writing

to submission of an application for patent on such works; and provided that, unless otherwise agreed in writing, any application made for patent shall include and name the TWDB (and, as applicable and desired by them, CONTRACTOR) as co-owners of the patented work:

a. no patent granted shall in any way limit, or be used by CONTRACTOR or Subcontractor to limit or bar the TWDB's rights hereunder to access and receive in useable form and format, and right to use, any and all technical or other data or information developed in or resulting from performance pursuant to this CONTRACT or the use of funds provided hereunder; and

b. the TWDB (and, if applicable, the CONTRACTOR) shall have No Compensation Obligation to any other co-owners or licensees of any such patented work, unless otherwise expressly agreed in writing.

8. CONTRACTOR shall include terms and conditions in all contracts or other engagement agreements with any Subcontractors as are necessary to secure these rights and protections for the TWDB; and shall require that their Subcontractors include similar such terms and conditions in any contracts or other engagements with their Subcontractors. For the purposes of this section, "Subcontractors" includes independent contractors (including consultants) and also employees working outside the course and scope of employment.

9. Any work products subject to a TWDB copyright or joint copyright and produced or developed by the CONTRACTOR or their Subcontractor pursuant to this CONTRACT or using any funding provided by the TWDB may be reproduced in any media, forms or formats by the TWDB or CONTRACTOR at their own cost, and be disseminated in any medium, format or form by any party at its sole cost and in its sole discretion. CONTRACTOR may utilize such work products as they may deem appropriate, including Dissemination of such work products or parts thereof under their own name, provided that any TWDB copyright is noted on the materials.

10. The CONTRACTOR agrees to acknowledge the TWDB in any news releases or other publications relating to the work performed under this CONTRACT.

ARTICLE VI. AMENDMENT, TERMINATION, AND STOP ORDERS

1. This CONTRACT may be altered or amended by mutual written consent or terminated by the EXECUTIVE ADMINISTRATOR at any time by written notice to the CONTRACTOR. Upon receipt of such termination notice, the CONTRACTOR shall, unless the notice directs otherwise, immediately discontinue all work in connection with the performance of this CONTRACT and shall proceed to cancel promptly all existing orders insofar as such orders are chargeable to this CONTRACT. The CONTRACTOR shall submit a statement showing in detail the work performed under this CONTRACT to the date of termination. The TWDB shall then pay the CONTRACTOR promptly that proportion of the prescribed fee, which applies to the work, actually performed under

this CONTRACT, less all payments that have been previously made. Thereupon, copies of all work accomplished under this CONTRACT shall be delivered to the TWDB.

2. The EXECUTIVE ADMINISTRATOR may issue a Stop Work Order to the CONTRACTOR at any time. Upon receipt of such order, the CONTRACTOR shall discontinue all work under this CONTRACT and cancel all orders pursuant to this CONTRACT, unless the order directs otherwise. If the EXECUTIVE ADMINISTRATOR does not issue a Restart Order within 60 days after receipt by the CONTRACTOR of the Stop Work Order, the CONTRACTOR shall regard this CONTRACT terminated in accordance with the foregoing provisions.

ARTICLE VII. SUBCONTRACTS

Each Subcontract entered into to perform required work under this CONTRACT shall contain the following provisions:

a. a detailed budget estimate with specific cost details for each task or specific item of work to be performed by the Subcontractor and for each category of reimbursable expenses;

b. a clause stating that the Subcontract is subject to audit by the Texas State Auditor's Office and requiring the Subcontractor to cooperate with any request for information from the Texas State Auditor, as further described in Article X, Section 1, Paragraph D hereof;

c. a clause stating that payments under the Subcontract are contingent upon the appropriation of funds by the Texas Legislature, as further described in Article X, Section 1, Paragraph A hereof;

d. a clause stating that ownership of data, materials and work papers, in any media, that is gathered, compiled, adapted for use, or generated by the Subcontractor or the CONTRACTOR shall become data, materials and work owned by the TWDB and that Subcontractor shall have no proprietary rights in such data, materials and work papers, except as further described in Article V hereof;

e. a clause stating that Subcontractor shall keep timely and accurate books and records of accounts according to Generally Acceptable Accounting Principles as further described in Article X, Section 2, Paragraph H;

f. a clause stating that Subcontractor is solely responsible for securing all required licenses and permits from local, state and federal governmental entities and that Subcontractor is solely responsible for obtaining sufficient insurance in accordance with the general standards and practices of the industry or governmental entity; and

g. a clause stating that Subcontractor is an independent contractor and that the TWDB shall have no liability resulting from any failure of Subcontractor that results in breach of CONTRACT, property damage, personal injury or death.

ARTICLE VIII. LICENSES, PERMIT, AND INSURANCE

1. For the purpose of this CONTRACT, the CONTRACTOR will be considered an independent contractor and therefore solely responsible for liability resulting from negligent acts or omissions. The CONTRACTOR shall obtain all necessary insurance, in the judgment of the CONTRACTOR, to protect themselves, the TWDB, and employees and officials of the TWDB from liability arising out of this CONTRACT.

2. The CONTRACTOR shall be solely and entirely responsible for procuring all appropriate licenses and permits, which may be required by any competent authority for the CONTRACTOR to perform the subject work.

3. Indemnification. The CONTRACTOR shall indemnify and hold the TWDB and the State of Texas harmless, to the extent the CONTRACTOR may do so in accordance with state law, from any and all losses, damages, liability, or claims therefore, on account of personal injury, death, or property damage of any nature whatsoever caused by the CONTRACTOR, arising out of the activities and work conducted pursuant to this CONTRACT. The CONTRACTOR is solely responsible for liability arising out of its negligent acts or omissions during the performance of this CONTRACT.

ARTICLE IX. SEVERANCE PROVISIONS

Should any one or more provisions of this CONTRACT be held to be null, void, voidable, or for any reason whatsoever, of no force and effect, such provision(s) shall be construed as severable from the remainder of this CONTRACT and shall not affect the validity of all other provisions of this CONTRACT which shall remain of full force and effect.

ARTICLE X. GENERAL TERMS AND CONDITIONS

1. GENERAL TERMS.

   a. No Debt Against the State. This CONTRACT does not create any debt by or on behalf of the State of Texas and the TWDB. The TWDB's obligations under this CONTRACT are contingent upon the availability of appropriated funds and the continued legal authority of the TWDB to enter into this CONTRACT.

   b. Independent Contractor. Both parties hereto, in the performance of this contract, shall act in an individual capacity and not as agents, employees, partners, joint ventures or associates of one another. The employees or agents of one party shall not be deemed or construed to be the employees or agents of the other party for any purposes whatsoever.

c. Procurement Laws. The CONTRACTOR shall comply with applicable State of Texas procurement laws, rules and policies, including but not limited to competitive bidding and the Professional Services Procurement Act, Government Code, Chapter 2254, relating to contracting with persons whose services are within the scope of practice of: accountants, architects, landscape architects, land surveyors, medical doctors, optometrists, professional engineers, real estate appraisers, professional nurses, and certified public accountants.

d. Right to Audit. The CONTRACTOR and its Subcontractors shall maintain all financial accounting documents and records, including copies of all invoices and receipts for expenditures, relating to the work under this CONTRACT. CONTRACTOR shall make such documents and records available for examination and audit by the EXECUTIVE ADMINISTRATOR or any other authorized entity of the State of Texas. CONTRACTOR'S financial accounting documents and records shall be kept and maintained in accordance with Generally Accepted Accounting Principles. By executing this CONTRACT, the CONTRACTOR accepts the authority of the Texas State Auditor's Office to conduct audits and investigations in connection with all state funds received pursuant to this CONTRACT. The CONTRACTOR shall comply with directives from the Texas State Auditor and shall cooperate in any such investigation or audit. The CONTRACTOR agrees to provide the Texas State Auditor with access to any information the Texas State Auditor considers relevant to the investigation or audit. The CONTRACTOR also agrees to include a provision in any Subcontract related to this CONTRACT that requires the Subcontractor to submit to audits and investigation by the State Auditor's Office in connection with all state funds received pursuant to the Subcontract.

e. Force Majeure. Unless otherwise provided, neither CONTRACTOR nor the TWDB nor any agency of the State of Texas, shall be liable to the other for any delay in, or failure of performance, of a requirement contained in this CONTRACT caused by force majeure. The existence of such causes of delay or failure shall extend the period of performance until after the causes of delay or failure have been removed provided the non-performing party exercises all reasonable due diligence to perform. Force majeure is defined as acts of God, war, strike, fires, explosions, or other causes that are beyond the reasonable control of either party and that by exercise of due foresight such party could not reasonably have been expected to avoid, and which, by the exercise of all reasonable due diligence, such party is unable to overcome. Each party must inform the other in writing with proof of receipt within two (2) business days of the existence of such force majeure or otherwise waive this right as a defense.

2. STANDARDS OF PERFORMANCE.

a. Personnel. CONTRACTOR shall assign only qualified personnel to perform the services required under this CONTRACT. CONTRACTOR shall be responsible for ensuring that any Subcontractor utilized shall also assign only qualified personnel. Qualified personnel are persons who are properly licensed to perform the work and who have sufficient knowledge, skills and ability to perform the tasks and services required herein according to the standards of performance and care for their trade or profession.

b. Professional Standards. CONTRACTOR shall provide the services and deliverables in accordance with applicable professional standards. CONTRACTOR represents and warrants that he is authorized to acquire Subcontractors with the requisite qualifications, experience, personnel and other resources to perform in the manner required by this CONTRACT.

c. Antitrust. CONTRACTOR represents and warrants that neither CONTRACTOR nor any firm, corporation, partnership, or institution represented by CONTRACTOR, or anyone acting for such firm, corporation, partnership, or institution has (1) violated the antitrust laws of the State of Texas under the Texas Business & Commerce Code, Chapter 15, of the federal antitrust laws; or (2) communicated directly or indirectly the proposal resulting in this CONTRACT to any competitor or other person engaged in such line of business during the procurement process for this CONTRACT.

d. Conflict of Interest. CONTRACTOR represents and warrants that CONTRACTOR has no actual or potential conflicts of interest in providing the deliverables required by this CONTRACT to the State of Texas and the TWDB. CONTRACTOR represents that the provision of services under this CONTRACT will not create an appearance of impropriety. CONTRACTOR also represents and warrants that, during the term of this CONTRACT, CONTRACTOR will immediately notify the TWDB, in writing, of any potential conflict of interest that could adversely affect the TWDB by creating the appearance of a conflict of interest.

CONTRACTOR represents and warrants that neither CONTRACTOR nor any person or entity that will participate financially in this CONTRACT has received compensation from the TWDB or any agency of the State of Texas for participation in the preparation of specifications for this CONTRACT. CONTRACTOR represents and warrants that he has not given, offered to give, and does not intend to give at any time hereafter, any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor or service to any public servant in connection with this CONTRACT.

e. Interested Parties. All non-governmental CONTRACTORS are required to submit a Certificate of Interested Parties at the time the signed contract is submitted to the TWDB. The Certificate of Interested Parties (Form 1295) is a

sworn statement by the contracting business entity and must be submitted even if there is no interested party in the transaction. The Form 1295 and instructions for completing and submitting the form are available at: https://www.ethics.state.tx.us/tec/1295-Info.htm. The TWDB is prohibited from executing a contract unless the contracting business entity submits a completed Form 1295.

f. Proprietary and Confidential Information. CONTRACTOR warrants and represents that any information that is proprietary or confidential, and is received by CONTRACTOR from the TWDB or any governmental entity, shall not be disclosed to third parties without the written consent of the TWDB or applicable governmental entity, whose consent shall not be unreasonably withheld.

g. Public Information Act. CONTRACTOR acknowledges and agrees that all documents, in any media, generated in the performance of work conducted under this CONTRACT are subject to public disclosure under the Public Information Act, Government Code, Chapter 552. CONTRACTOR shall produce all documents upon request of the TWDB within two (2) business days when the documents are required to comply with a request for information under the Public Information Act.

h. Accurate and Timely Record Keeping. CONTRACTOR warrants and represents that he will keep timely, accurate and honest books and records relating to the work performed and the payments received under this CONTRACT according to generally accepted accounting standards. Further, CONTRACTOR agrees that he will create such books and records at or about the time the transaction reflected in the books and records occurs.

i. Dispute Resolution. The CONTRACTOR and the TWDB agree to make a good faith effort to resolve any dispute relating to the work required under this CONTRACT through negotiation and mediation as provided by Government Code, Chapter 2260 relating to resolution of certain contract claims against the state. The CONTRACTOR and the TWDB further agree that they shall attempt to use any method of alternative dispute resolution mutually agreed upon to resolve any dispute arising under this CONTRACT if this CONTRACT is not subject to Chapter 2260.

j. Contract Administration. The TWDB shall designate a project manager for this CONTRACT. The project manager will serve as the point of contact between the TWDB and CONTRACTOR. The TWDB's project manager shall supervise the TWDB's review of CONTRACTOR's technical work, deliverables, draft reports, the final report, payment requests, schedules, financial and budget administration, and similar matters. The project manager does not have any express or implied authority to vary the terms of the CONTRACT, amend the CONTRACT in any way or waive strict performance of the terms or conditions of the CONTRACT.

ARTICLE XI. CORRESPONDENCE

All correspondence between the parties shall be made to the following addresses:

For the **TWDB**:

Contract Issues:
Texas Water Development Board
Attention: Contract Administration P.O.
P.O. Box 13231
Austin, Texas 78711-3231
Email: contracts@twdb.texas.gov

Payment Request Submission: Texas Water Development Board Attention: Accounts Payable
P.O. Box 13231
Austin, Texas 78711-3231
Email: invoice@twdb.texas.gov

Physical Address:
Stephen F. Austin State Office Building
1700 N. Congress Avenue
Austin, Texas 78701

For the **HDR ENGINEERING, INC.:**

Contract Issues:
HDR Engineering, Inc.
Attention: Kelly J. Kaatz, PE
4401 West Gate Blvd. Suite 400
Austin, Texas 78745
Email: Kelly.kaatz@hdrinc.com

Payment Request Submission:
HDR Engineering, Inc.
Attention: Cory Shockley
4401 West Gate Blvd. Suite 400
Austin, Texas 78745
Email: cory.shockley@hdrinc.com
Phone: 512-912-5182/Fax: 512-912-5158

Physical Address
HDR Engineering, Inc.
4401 West Gate Blvd. Suite 400
Austin, Texas 78745

IN WITNESS WHEREOF, the parties have caused this CONTRACT to be duly executed in multiple originals.

TEXAS WATER DEVELOPMENT BOARD

Jeff Walker
Executive Administrator

Date: 10-13-16

HDR ENGINEERING, INC.

Kelly J. Kaatz, PE
Senior Vice President

Date: 9/30/16

EXHIBIT A

ORIGINAL GRANT APPLICATION

Statement of Qualifications

Re-Examination of the 2001 Agreed Order Monthly Targets: Phase 2

RFQ No. 580-16-RFQ0017

Texas Water Development Board

April 8, 2016

April 8, 2016

Angela Wallace
Texas Water Development Board
1700 N. Congress Avenue
Austin, TX 78701

RE: Request for Qualifications #580-16-RFQ0017
Re-Examination of the 2001 Agreed Order Monthly Targets: Phase 2

Dear Ms. Wallace,

HDR Engineering, Inc. (HDR) is exceptionally qualified to perform this study for the Nueces River and Corpus Christi and Baffin Bays Basin and Bay Area Stakeholder Committee (Nueces BBASC).

We are excited about this opportunity to apply our technical expertise in service to the Nueces BBASC and the Texas Water Development Board (TWDB). Through our work on the Phase 1 portion of this evaluation (Nueces BBASC Study No. 1 - Re-Examination of the 2001 Agreed Order Monthly Targets and Safe Yield Versus Current Demand Evaluations), HDR has a first-hand knowledge and understanding of the study goals and is uniquely qualified to perform the requested Phase 2 services.

As Project Manager, **Cory Shockley, PE** is responsible for coordination with TWDB and the Nueces BBASC. As shown in this Statement of Qualifications, HDR's key personnel for this study — Cory Shockley, **Sam Vaugh, PE** and **Laura Stahnke** — have extensive experience in the lower Nueces River Basin and with the 2001 TCEQ Agreed Order, and with the Corpus Christi Water Supply Model.

The HDR Team is personally committed to our relationships with TWDB and the Nueces BBASC. We look forward to providing our technical expertise and quality service for the successful completion of this study.

Sincerely,
HDR Engineering, Inc.

Kelly J. Kaatz, PE
Senior Vice President

Cory Shockley, PE
Project Manager

hdrinc.com

4401 West Gate Blvd., Suite 400, Austin, TX 78745
T 512.912.5100 **F** 512.912.5158

Texas Registered Engineering Firm F-754

Texas Water Development Board

P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.texas.gov
Phone (512) 463-7847, Fax (512) 475-2053

Addendum to RFQ No. 580-16-RFQ0017
RE-EXAMINATION OF THE 2001 AGREED ORDER
MONTHLY TARGETS: PHASE 2

RFP NO:	580-16-RFQ0017	**ADDENDUM NO. :**	1
Deadline for Submission for RFQ:	3:00 PM, Tuesday, March 29, 2016		
Contact: Tina Newstrom	Phone: 512-463-7979 Email: angela.wallace@twdb.texas.gov		

PURPOSE OF ADDENDUM

Please change the following:

On cover page listed as RESPONSES DUE and also under SECTION IV, 4.4 SCHEDULE OF EVENTS, EVENT DATE: Deadline for Submission: Change due date from March 29, 2016 to **Friday, April 8, 2016**.

End of Addendum No. 1

IN THE SUBMISSION OF RFQ, RESPONDENT SHOULD ACKNOWLEDGE RECEIPT OF THIS ADDENDUM; OTHERWISE THE SUBMISSION MAY NOT BE GIVEN CONSIDERATION. RESPONDENT MAY ACKNOWLEDGE RECEIPT BY RETURNING A SIGNED COPY WITH THEIR SUBMISSION.

Kelly J. Kaatz, PE
RESPONDENT NAME

AUTHORIZED SIGNATURE

TABLE OF CONTENTS

CONTENT ITEM 1
EXECUTION OF STATEMENT OF QUALIFICATIONS
to the
REQUEST FOR QUALIFICATIONS

Company Name: HDR Engineering, Inc.

Address: 4401 West Gate Blvd.
Suite 400
Austin, TX 78745

Phone Number: 512-912-5100

E-Mail: kelly.kaatz@hdrinc.com

I, Kelly J. Kaatz, PE, am the above-referenced company's representative and I am authorized to submit this response and sign future contract documents. By signing below, the representative certifies that if a Texas address is shown as the address, the respondent qualifies as a Texas Bidder as defined in 34 TAC Rule 20.32(68).

Authorized Signature — April 4, 2016 (Date)

Senior Vice President
Title

CONTENT ITEM 2
COMPANY PROFILE SUMMARY AND HISTORY

a. Company name, address, phone number, and legal status (corporation, partnership, joint venture, sole proprietorship).

HDR Engineering, Inc. (corporation)
4401 West Gate Blvd, Suite 400, Austin, TX 78745
512-912-5100

b. Name and title of person submitting the proposal with the authority to bid the company.

Kelly J. Kaatz, PE
Senior Vice President

c. Name, phone number, and email address of contact person for any questions on the proposal.

Cory Shockley, PE
512-912-5182 | Cory.Shockley@hdrinc.com

d. Describe the general nature of previous work, the number of years in business, size and scope of operation.

HDR is a multi-discipline firm with nearly 10,000 employees, offering services in the areas of water resources, environmental science, water supply planning and facilities design, wastewater treatment, energy, bridges, and transportation since our founding in 1917. Our technical expertise and history of quality service are some of the reasons HDR is consistently ranked among the top engineering firms by *Engineering News-Record* (ENR).

While HDR has grown to become a global firm, we still provide a small-firm, service-oriented approach. Our customer service and quality of work distinguish HDR from other firms. Repeat business, which represents 90 percent of HDR's workload, is a clear indication of our clients' satisfaction and confidence in our ability to understand and meet their needs.

The Austin office of HDR will perform the services described in this Statement of Qualifications. The Austin office is comprised of over 100 professionals in water resources, environmental, transportation and other related disciplines.

Examples of the experience of HDR's personnel in the lower Nueces Basin, include:

1) Performed previous *Nueces River and Corpus Christi and Baffin Bays Basin and Bay Area Stakeholder Committee (Nueces BBASC) Work Plan* items, including: Nueces BBASC Work Plan No. 1 - Re-Examination of the TCEQ 2001 Agreed Order Monthly Targets and Safe Yield Versus Current Demand Evaluations; and Nueces BBASC Work Plan No. 3 - Nueces Watershed Pre- and Post-Development Nutrient Budgets.
2) Completed water supply and water quality-related projects for the City of Corpus Christi, including the Corpus Christi Water Supply Model (CCWSM), which simulates several water quality constituents.

3) Provided technical support in the Development of Environmental Flow Recommendations for the Nueces BBASC.
4) Completed the 2011 Coastal Bend Regional Water Planning Group (RWPG) Phase I Study – Water Quality Modeling of Regional Water Supply System to Enhance Water Quality and Improve Industrial Water Conservation.
5) Participated in the Nueces Estuary Regional Wastewater Planning Study Phases I and II in cooperation with Naismith Engineering, Inc. and the University of Texas Marine Science Institute.
6) Provided technical support for the Nueces Feasibility Study – U.S. Army Corps of Engineers (USACE), which included water supply, flood control, and water quality enhancement components.
7) Performed water supply and water quality-related analyses for the Coastal Bend Bays and Estuaries Program (CBBEP), including evaluation of Salinity Monitoring and Real Time (SMART) Inflow Management concepts for the Nueces Estuary.
8) Participation on the Nueces River and Corpus Christi and Baffin Bays Basin and Bay Expert Science Team (Nueces BBEST).
9) Managed the development of the Coastal Bend Region for the 2001, 2006, 2011, 2016, and the upcoming 2021 Coastal Bend Regional Water Plans as the lead technical consultant.
10) Completed the original development and subsequent updates of the Nueces Bay and Estuary Model (NUBAY) and continued evaluations of the TCEQ 2001 Agreed Order.
11) Developed the Nueces Water Availability Model (WAM), which is still in use for determining water availability in the Nueces River basin for water rights permitting and as part of the regional water planning process.
12) Cited as the design Engineer of Record on the Rincon Pipeline.

HDR's experts have intimate knowledge of the development of the TCEQ 2001 Agreed Order (Order), operations of the City's reservoirs, and the best existing simulation model experience. HDR personnel assigned to this team developed the Corpus Christi Water Supply Model (CCWSM – formerly known as the Nueces Bay and Estuary Model – NUBAY). The model was developed to support negotiation of the Agreed Order and manage reservoir system operations and conservation programs to maximize reliable water supply while minimizing ecosystem impacts. Additionally, the model has the ability to assess the risk of future water supply shortages in light of current storage and demand projections. HDR — in partnership with the City, Coastal Bend Regional Water Planning Group (RWPG), Texas Water Development Board, USACE, Coastal Bend Bay and Estuaries Program (CBBEP), and others — has, through the years, updated and improved this model which continues to be the best tool available for evaluating water supply and freshwater inflow implications for the lower Nueces Basin and Estuary. HDR utilized this model in the Nueces BBASC process to evaluate potential effects of the application of environmental flow standard recommendations on water supply, freshwater inflow, and salinity variations. HDR is currently under contract with the City to update the CCWSM with an updated period of record through 2015 to include the recent drought and additional model functionality.

CONTENT ITEM 3
RESUMES OF INDIVIDUALS

Submit résumés for each individual who will work on this project.

HDR has selected a highly knowledgeable and capable project team for the execution of the Re-Examination of the 2001 Agreed Order Monthly Targets: Phase 2 project. This team has substantial knowledge and understanding of the Nueces Basin and the TCEQ Agreed Order, as well as significant experience evaluating scenarios using the Corpus Christi Water Supply Model.

Cory Shockley, PE | Project Manager / Engineer

Cory is a senior water resources engineer/project manager with 17 years of experience at HDR. His project experience includes water supply planning, water right permitting, modeling analyses and development, and water supply project implementation. Cory has been the lead programmer on the CCWSM for the last 14 years. He has in-depth knowledge of the TCEQ Agreed Order with the City of Corpus Christi and a strong understanding of water issues in the Nueces Basin. Cory uses his expertise to manage and lead teams of various sizes to develop successful water supply solutions for a diverse client base.

Sam Vaugh, PE | Senior Water Resources Engineer / Quality Control

Sam is a senior water resources engineer with 31 years of experience at HDR. His background includes a wide variety of water supply and environmental flows projects. Sam has been working in the Nueces Basin for the last 25 years, and was the original author of the predecessor model to the CCWSM. He has been involved with, and continues to have an active role, on several BBEST and BBASC efforts across Texas.

Laura Stahnke | Water Resources EIT

Laura is a water resources EIT working on a variety of projects, including water supply planning, hydrology and hydraulics, and water resources modeling efforts. She is heavily involved in the current update of the CCWSM, including the extension of the period of record through 2015. Laura has three years of experience at HDR, where she has participated in the technical aspects of several planning and modeling efforts for a diverse set of clients.

Résumés are included in the Appendix.

CONTENT ITEM 4
HISTORICALLY UNDERUTILIZED BUSINESSES SUBCONTRACTING PLAN

Please see SECTION IV, GENERAL INFORMATION, 4.1.B, Item 4

All HUB Subcontracting Plan Forms must be completed and submitted with the Response.

The forms are entitled and can be found at:
http://comptroller.texas.gov/procurement/prog/hub/hub-subcontracting-plan/

HUB Subcontracting Plan Form
HUB Subcontracting Plan Form, SECTION 2 continuation sheet
HUB Subcontracting Plan Good Faith Effort - Method A (Attachment A)
HUB Subcontracting Plan Good Faith Effort - Method B (Attachment B)
HUB Subcontracting Opportunity Notification Form

Per Item 5.3 of the RFQ, the HUB Subcontracting Plan has been submitted under separate cover with this Statement of Qualifications.

CONTENT ITEM 5
OWNERSHIP OF BUSINESS ENTITY
Name(s) and Social Security Number(s) of Each Person with at least 25 Percent Ownership of the Business Entity Submitting the RFQ
(if applicable)

N/A*

Name

Social Security Number

Name

Social Security Number

Name

Social Security Number

Name

Social Security Number

* The sole "shareholder" of HDR, Inc. is the HDR, Inc. BEST Plan and ESOP, a qualified benefit plan in which all employees are "participants". No one participant/ employee owns more than one percent of the outstanding stock of the company.

EDUCATION
BS, Environmental Engineering (Hydrology), Tarleton State University, 1999

REGISTRATIONS
Professional Engineer, Texas, No. 94761, 2004

INDUSTRY TENURE
16 years

HDR TENURE
16 years

Adam “Cory" Shockley, PE

Associate Vice President | Project Manager

Cory's experience covers a wide variety of areas in water resources engineering. His experience includes integrated water planning, river basin modeling, water rights analysis and permitting, model programming in the FORTRAN language, and hydrology and hydraulics. He also serves as the project manger for several projects managing tasks and personnel to provide solutions for complex water supply issues. He has assisted in the development and submittal of several water rights applications, and is intensely familiar with several of the state water availability models and has used them in application throughout the state. He has also participated in the development of several of the regional water plans and has been keenly involved in the analysis and development of plan documents. Cory has served in many roles for both public and private clients at local, state and national levels. He has made several technical presentations to clients, project stakeholders, resource agencies, and the public.

RELEVANT EXPERIENCE

2016 Brazos G Regional Water Plan, Brazos River Authority, TX. Cory is the Assistant Project Manager and lead for all surface water analyses. He used the Brazos Water Availability Model (WAM) to determine existing surface water supplies and reservoir yields. Using the Brazos WAM, he evaluated the yield of potential water management strategies throughout the basin, including the BRA System Operations Permit. Cory developed plans for several counties in the region, assigning water management strategies to meet future needs. He evaluated the impacts of the Plan using the Brazos WAM and determined changes in streamflow due to implementation. Cory also authored several sections of the Plan and reviewed others for content and editorial correctness. He developed presentations of analysis results and presented these results to the planning group and answered questions from the planning group and members of the public. He also participated in public meetings and recorded public comment for inclusion in the Plan.

Long Range Water Supply Plan, Dallas Water Utilities, TX. Cory is the Project Manager for the development of the 2014 Long Range Water Supply Plan (LRWSP) for the City of Dallas. This comprehensive planning exercise involves similar details to regional planning, but on a more detailed and complex level. The Dallas LRWSP includes population and demand forecasting, estimating current and future supplies with adjustments made for potential climate variability, identifying, evaluating and ranking over 300 potential water management strategies using a criteria based scoring system. A big focus of the LRWSP is on implementation and the next steps necessary to develop recommended strategies from the plan. The resulting final report details many of the next steps necessary for Dallas to consider as future strategy implementation occurs.

Turkey Peak Reservoir Permitting and Preliminary Engineering, Palo Pinto County MWD, TX. As water rights permitting lead and assistant project manager, Cory developed the water rights application for the Turkey Peak Storage Restoration Project and supporting technical memorandum. He provided the analysis and authored the sections on water availability and environmental flow estimated for the reach affected by the proposed project. Cory worked closely with TCEQ staff to identify creative ways to implement the project in a way that does not require a new appropriation of state water, thereby greatly simplifying the water rights permitting process. He also worked with the Water Research Laboratory at Utah State to develop a physical model of the dam and spillway to evaluate and refine the preliminary configuration of the stepped spillway, stilling basin and discharge channel into Palo Pinto Creek.

Water Supply Planning Analysis and Cedar Ridge Reservoir Water Rights Application Support, City of Abilene, TX. Cory assisted the City of Abilene in determining the need for future supply sources and determining the most adequate supply to pursue for meeting future needs. Several water supply options were evaluated from a supply, cost and environmental impacts standpoint. The preferred project considering these criteria was the Cedar Ridge Reservoir. Project work shifted to several aspects of evaluating this project for potential permitting by the City for use as a future water supply. Cory provided significant amounts of yield analysis using the Brazos WAM, and an updated version of the Brazos WAM referred to as the Brazos Mini-WAM that extended the period of record through June 2008 for the Clear Fork of the Brazos Basin down through Possum Kingdom Reservoir. He assisted in the development of this model and in updating the hydrological data sets from 1997 through 2008. Cory assisted in the geotechnical evaluation of the reservoir site, which resulted in moving the reservoir upstream due to the presence of gypsum at the original dam site. He performed analysis to determine a Hydrology-based Environmental Flow Regime (HEFR) for the new reservoir site using newly developed state methodology. He applied and compared this flow regime to other flow regime methodologies at the reservoir site using the water availability models. Cory participated in the development of the water rights application and the supporting technical memorandum, and authoring the section on water availability analysis.

Abilene Multi-Source Water Supply Model, City of Abilene, TX. Using FORTRAN and Visual Basic programming languages, Cory developed a reservoir system operations model for the Abilene system that included three existing supply reservoirs, one future potential supply reservoir, multiple treatment plant nodes, water quality for conservative constituents, and pumping and treatment costs. The model is configured to operate in long-term simulation mode or in short-term projection mode, where historical hydrology and current conditions are used to project where reservoir levels could be 12, 24 or 36 months from now, given a certain set of operation parameters. The model was updated to include detailed simulation of the City's reuse system, including an additional reservoir utilized to store and divert wastewater for reuse customers.

Regional Water Plan Development Projects, TX. Cory provided engineering analysis and project support for several different aspects of developing the regional water plans for Regions L, O, N and G for the 2001, 2006 and 2011 Regional Water Plans. Work included development, modification and use of the HDR Planning Level Cost Studies Model to determine a planning level cost estimate for a variety of water management strategies. The engineering cost analysis tasks included updating previous cost estimates to current cost construction indices, mapping out pipeline routes, calculating all hydraulics associated with proposed pipeline route, determining the most cost-effective option for different variables for the proposed project, and summarizing data. Options analyzed included reservoir and dam construction, WTP construction, pump/booster station construction, groundwater well and intake costs, pipeline construction, and various other costs associated with this type of project. Project support included evaluation of surface water supplies and determining impacts to the surface waters of the state through implementation of the plan. This analysis was performed using WAMs developed as part of the regional planning process, or other models as required for the specific region.

EDUCATION
MS, Civil Engineering (Water Resources), University of Texas at Austin, 1985

BS, Civil Engineering, Rice University, 1981

REGISTRATIONS
Professional Engineer, Texas, No. 63487, 1987

INDUSTRY TENURE
34 years

HDR TENURE
30 years

Samuel "Sam" Vaugh, PE

Vice President | Professional Associate | Senior Project Manager

Sam's experience in water resources engineering includes regional water supply planning, river basin hydrology, water rights permitting, reservoir system modeling, environmental flows, conjunctive management of groundwater and surface water resources, aquifer recharge, dam design and construction administration, open channel hydraulics, and stormwater management.

RELEVANT EXPERIENCE

Nueces River Basin/Nueces Estuary, TX.

- For an Agreed Order regarding the Nueces Estuary and operations of the Choke Canyon Reservoir/Lake Corpus Christi System, Sam was a technical resource to the Nueces Estuary Advisory Council, City of Corpus Christi, TCEQ and TPWD.
- He was the primary author of the Lower Nueces River Basin & Estuary Model (*aka* NuBay or CCWSM) used for simulation of reservoir system storage and estuarine inflows subject to multiple operations and demand scenarios, including the Agreed Order.
- Sam served as Chair of the Nueces River and Corpus Christi and Baffin Bays, Basin & Bay Expert Science Team.
- Sam was a technical consultant to the Nueces River and Corpus Christi and Baffin Bays, Basin & Bay Area Stakeholder Committee for development of a recommendations report.
- Sam was Project Manager for the Nueces River Basin Water Availability Model (Nueces WAM) used by TCEQ for water rights administration and to evaluate new water rights applications.
- Sam was the primary author of the Nueces River Basin Model, which included simulation of Edwards Aquifer recharge enhancement projects and channel losses in the Nueces and Frio Rivers.
- Sam was Project Manager for the Nueces Estuary Regional Wastewater Planning Study, which included technical evaluation of collection and delivery of treated effluent to the Nueces Delta.

Guadalupe - San Antonio River Basin/Guadalupe Estuary, TX.

- Sam served as Chair of the Guadalupe, San Antonio, Mission, and Aransas Rivers and Mission, Copano, Aransas, and San Antonio Bays, Basin & Bay Expert Science Team.
- He was the primary author of the Guadalupe - San Antonio River Basin Model, which included natural daily streamflows and TPWD/TWDB Guadalupe Estuary fisheries harvest and salinity equations post-processing.
- Sam was Project Manager for the Guadalupe - San Antonio River Basin Water Availability Model (GSA WAM), which included consensus criteria for environmental flow needs and daily water availability computation procedures.
- He was a technical consultant to the Guadalupe, San Antonio, Mission, and Aransas Rivers and Mission, Copano, Aransas, and San Antonio Bays, Basin & Bay Area Stakeholder

Committee for a recommendations report.

- Sam was Project Manager for an Environmental Criteria Refinement Study, which included water quality modeling, biological studies and sensitivity analyses.
- He was Project Manager for an Evaluation of Alternative Instream Flow and Bay & Estuary Flow Criteria for Run-of-River Diversions, which included drought contingency provisions.
- Sam was technical consultant manager for the 2001, 2006, 2011 & 2016 South Central Texas (Region L) Regional Water Plans, which included evaluations of firm water supply, cost, and potential environmental effects subject to environmental flow needs. The plans include ecologically-based assessments of changes in instream flows and freshwater inflows to the Guadalupe Estuary and the most comprehensive evaluations of cumulative effects of regional water plan implementation in Texas.
- Sam was Project Manager for an amendment of the Canyon Reservoir Water Rights, which included instream flow requirements.
- He was a member of the Edwards Aquifer Recovery Implementation Program, Expert Science Subcommittee.

Neches River Basin/Sabine River Basin/ Sabine-Neches Estuary, TX.

- Sam was Vice Chair of the Sabine & Neches Rivers and Sabine Lake Bay, Basin & Bay Expert Science Team.
- Sam was Project Manager for the Upper Neches River Water Supply Project Feasibility Study, which included yield analyses subject to environmental flow standards.
- He was Project Manager for the Evaluation of Bottomland Hardwood Preservation Opportunities.
- Sam was project engineer for the Example Translation of HEFR Flow Regime into Permit Conditions for the Big Sandy Reservoir site.

San Jacinto River Basin/Trinity - San Jacinto Estuary, TX. Sam was Project Manager for the Sheldon Reservoir Study, which included inflow enhancement for environmental management goals.

All Texas River Basins & Estuaries. Sam was Project Manager for a Reservoir Site Protection Study, which included application of consensus criteria for environmental flow needs and an assessment of potential effects on ecologically significant steam segments and bottomland hardwood preservation sites.

EDUCATION
MS, Water Resource Engineer, University of Texas, 2013

BS, Civil Engineering, University of Portland, 2007

REGISTRATIONS
Engineering Intern, Oregon, No. 84804EI

INDUSTRY TENURE
4 years

HDR TENURE
2 years

Laura Stahnke, EIT

Water Resources EIT

Laura's experience is focused in water resources planning and management, as well as surface water hydrology and hydraulics. She has experience using planning and design tools such as WRAP, FRAT, HEC-HMS, HEC-RAS, StormCAD, Flow Master and GIS software. Laura assists in water planning applications for various projects, and has experience in the water rights permitting and reservoir storage projections for drought management. She also provides support for watershed based hydrology studies and contributes to floodplain and stream restoration design projects.

RELEVANT EXPERIENCE

Corpus Christi Water Supply Model Update, City of Corpus Christi, TX. Laura is currently updating the period of hydrologic record of the Corpus Christi Water Supply Model (CCWSM) for use in re-evaluating system yields considering recent drought. Her responsibilities include compiling historical hydrologic data, such as reservoir levels, water right diversions, effluent discharges, streamflow, precipitation, and evaporation through 2015

2016 Regional Water Plans, TX. Laura assisted in the development of the 2016 South Central Texas (Region L), Brazos G (Region G), and Coastal Bend (Region N) Regional Water Plans. Tasks during the plan formulation process included updating existing surface water and groundwater supplies, developing new local and regional groundwater strategies, assisting with new reservoir and run of river strategies, and compiling needs and strategies into a comprehensive report. In addition, Laura calculated municipal and industrial conservation potentials for individual water user group and completed preliminary cost estimates for water management strategies using current cost construction indices. The completion of the preliminary cost estimates included mapping of pipeline routes using GIS software, performing pipeline hydraulic calculations, and determining the most cost-efficient configuration of the individual water management strategies. Laura headed the effort on the drought management analysis, which included evaluating the drought of record in the region, compiling drought contingency plans, and determining emergency strategies for at risk entities. Laura presented the results of these efforts at a regional planning group meeting.

Brazos G Water Availability Update, TX. Laura performed updates on the Brazos Mini-WAM to extend the simulation period of record from June 2008 through December 2014. The process consisted of updating naturalized flow records for the applicable Brazos River upper basin control points by performing reservoir water budgets. The water budget analysis included estimating evaporation and content changes for all significant reservoirs in the upper basin and accounting for any historical adjustments due to diversions and return flows. This model is used to perform safe yield analyses for significant reservoirs in the upper basin using the updated Mini-WAM to compare

current drought conditions with the drought of record.

Long Range Water Supply Plan, Dallas Water Utilities, Dallas, TX. Laura assisted with updating reservoir yields for existing and potential projects while performing storage traces and considering the 1950s and 1908 droughts. Laura assisted in the analysis and reporting of several potential water management strategies for Dallas, including reservoir dredging, emergency interconnects and flood reallocation. She also calculated estimates of capital and life-cycle costs for various strategies. The plan was composed to assist Dallas staff evaluate and select future supply projects.

Hydrologic Analyses of O.H. Ivie. Laura compiled hydrologic data and performed a water balance analysis at Lake O.H. Ivie to prepare a statistical water surface elevation and storage capacity projection based on various historical drought conditions. The model was then used to compare different operation patterns to assist in source management and prolong the supply of the reservoir in dry seasons.

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We practice increased use of sustainable materials and reduction of material use.

Exhibit B
Scope of Work

Re-Examination of the 2001 Agreed Order Monthly Targets: Phase 2

Background

The Nueces Basin and Bay Area Stakeholder Committee (Nueces BBASC) is requesting that this project be completed to re-examine the monthly pass-through targets that are part of the 2001 Agreed Order between the City of Corpus Christi (CoCC or City) and the Texas Commission on Environmental Quality (TCEQ). As described in Section 4.1 of the Nueces Basin and Bay Area Expert Science Team (Nueces BBEST) Report, it is believed that there has been a seasonal shift in inflows to Nueces Bay and the Choke Canyon Reservoir / Lake Corpus Christi (CCR/LCC) System that serves as the CoCC primary water supply. The Nueces BBASC report, in Section 2.3, suggests that opportunities to better manage limited freshwater inflows may be identified by reviewing new data that were not available during development of the 1995 Agreed Order, which is the basis for current pass-through operations of the reservoir system. Phase 1 of this work was completed in the previous round of BBASC work plan funding, and looked at current hydrologic data to identify possible shifts in the hydrologic regime specific to bay and estuary inflows. This phase will consider the results of the Phase 1 work and input from area stakeholders to identify and evaluate new scenarios for the Agreed Order Monthly Targets.

HDR developed the Corpus Christi Water Supply Model (CCWSM) for the CoCC and other regional interests to simulate operations of the City's water supply system under the Agreed Order. One use of the CCWSM is to determine the yield of the system under a variety of operating scenarios. Currently, the City uses a safe yield of 205,000 acre feet per year (acft/yr; including Lake Texana), with a reserve of 125,000 acft in the CCR/LCC System, as its supply number for planning purposes. HDR is currently updating the CCWSM under separate contract with the CoCC to include hydrologic data through 2015, and to determine new safe yields of the system considering updated hydrologic information.

Organization of Scope of Work

Under this Scope of Work, HDR will perform three major tasks to re-examine the 2001 Agreed Order monthly targets:

Task 1: This task will seek to identify scenarios of variations of the Agreed Order monthly targets, with a focus on moving target volumes from higher target months to lower target months. This task will rely upon the related Phase 1 work conclusions and on input from area stakeholders, such as the Nueces Estuary Advisory Council (NEAC), for identifying scenarios.

Task 2: This task will focus on performing the model simulations for the scenarios identified in Task 1 and summarizing the results with a focus on freshwater inflows to Nueces Bay and resulting change on safe yield of the system.

Task 3: HDR anticipate providing a result presentation to the BBASC/NEAC group, as well as delivering a draft report for review and then a final with incorporated comments. If project results are favorable, the report is expected to contain a plan for advising a 10-year pilot project with new, modified monthly inflow targets for the purpose of improving the management of freshwater resources of the Nueces Bay and Delta.

Task 1. Identify New Agreed Order Monthly Targets

Specific subtasks associated with this task are as follows.

Task 1.1 Identify potential Agreed Order Monthly Patterns

HDR will review the Phase 1 project to identify potential scenarios for evaluation. HDR will meet (one meeting) with stakeholders of the NEAC and / or the Nueces BBASC to receive input on additional scenarios for simulation. This meeting may take place in person in the Corpus Christi area or over teleconference or email. HDR anticipates that up to fifteen (15) different scenarios may be identified for evaluation. This number could be fewer depending on the feedback received from stakeholders. It is possible that the scenario results will provide the potential for additional scenarios to be identified from the original set. HDR anticipates that ten (10) or so scenarios will be identified from stakeholders with another five (5) being identified during the evaluation analysis.

Task 2. Perform Scenario Simulations

HDR will perform model simulations and compare results for the scenarios identified in Task 1.

Task 2.1 Perform Scenario Evaluations

HDR will use the CCWSM to simulate the CoCC water supply system under different Agreed Order scenarios, identified in Task 1. Following is a list of assumptions that will be common to all scenarios:

- Approximate 2010 reservoir conditions (2010 elevation – area – capacity relationships),
  - Note new bathymetric survey results are pending at the Texas Water Development Board and if this information becomes available it will be incorporated into this analysis.
- Full use of the Lake Texana system (41,840 acft/yr firm plus 12,000 acft/yr interruptible),
- Lake Corpus Christi Target Stabilization Level = 74 ft-mean sea level (msl),
- 5.35 MGD municipal & industrial effluent returned to Nueces Bay, and
- 52% return flow factor applied to all CoCC demands with discharges to the Nueces Estuary.

Task 2.2 Compare Results from the Scenarios

From the scenarios simulated in Task 2.1, HDR will compare the outputs focusing on the volume and frequency of freshwater inflow events to Nueces Bay. HDR will develop graphs and tables that illustrate the similarities and differences of freshwater inflow events, reservoir storage, and system yields under the different scenarios

Task 3. Participate in Meetings and Develop Technical Memorandum

Specific subtasks associated with this task are as follows.

Task 3.1 Present Results

Prepare for and participate in one (1) meeting involving TWDB staff, members of the NEAC, the City of Corpus Christi, and others to summarize analyses performed, results obtained, and recommendations for further study.

Task 3.2 Prepare a Draft Report

Prepare a draft Report summarizing analyses performed, results obtained, and recommendations for further study. The anticipated schedule is to submit these deliverables to the TWDB for review within four (4) months of receipt of the notice to proceed, but not later than the Study Completion Date. If the results indicate potential for changing the Agreed Order monthly targets to allow for more effective management of freshwater inflow to the Nueces Bay, the report will contain a plan for advising a 10-year pilot project with the new modified monthly inflow targets.

Task 3.3 Prepare and Submit Final Technical Memorandum and Presentation

Prepare and submit a final Report to the TWDB within one (1) month of receipt of comments on the drafts, but not later than the Contract Expiration Date.

Task 3.4 Deliverables include monthly progress reports, draft report and final report

Monthly progress reports will be submitted to the TWDB Contract Manager no more than 30 days following each state fiscal quarter up to the Contract Expiration Date (state fiscal quarters: September 1 - November 30, December 1 - February 28, March 1 – May 31, and June 1 - August 31). Monthly reports will include a brief statement of the overall progress made and any problems that have been encountered during the reporting period.

A draft report is due no later than the Study Completion Date. A final technical report that incorporates BBASC/TWDB comments is due on the Contract Expiration Date.

Project Schedule

The following are estimated time requirements for completion of the project tasks from date of notice to proceed. All work is anticipated to be completed in early 2017, but all final documents must be submitted no later than the Contract Expiration Date. The extended duration of the schedule is to allow for at least two meetings of the Nueces Estuary Advisory Council, which generally occurs quarterly. The CCWSM is currently being upgraded under a separate contract with the City of Corpus Christi. The analysis described in this SOW should rely on the newly updated model. The new model should be available for use in September of 2016. The estimated weeks below can be based on notice to proceed or the data of the availability of the model, whichever is later.

EXHIBIT C

TASK AND EXPENSE BUDGETS

TASK BUDGET

TASK	DESCRIPTION	TWDB AMOUNT
TASK 1	Identification of Alternate Monthly Agreed Order Target Simulations	$2,850.00
TASK 2	Model Simulations and Result Summaries	10,800.00
TASK 3	Meetings and Report	6,350.00
Total		$20,000.00

EXPENSE BUDGET

CATEGORY	TWDB AMOUNT
Salaries and Wages[1]	$6,115.00
Fringe[2]	2,986.00
Travel[3]	400.00
Other Expenses[4]	127.00
Subcontract Expenses	0.00
Overhead[5]	8,372.00
Profit	2,000.00
TOTAL	**$20,000.00**

[1] Salaries and Wages is defined as the cost of salaries of engineers, draftsmen, stenographers, surveymen, clerks, laborers, etc., for time directly chargeable to this CONTRACT.

[2] Fringe is defined as the cost of social security contributions, unemployment, excise, and payroll taxes, workers' compensation insurance, retirement benefits, medical and insurance benefits, sick leave, vacation, and holiday pay applicable thereto.

[3] Travel is limited to the maximum amounts authorized for state employees by the General Appropriations Act, Tex. Leg. Regular Session, 2015, Article IX, Part 5, as amended or superseded

[4] Other Expenses is defined to include expendable supplies, communications, reproduction, postage, and costs of public meetings directly chargeable to this CONTRACT.

[5] Overhead is defined as the costs incurred in maintaining a place of business and performing professional services similar to those specified in this CONTRACT.

EXHIBIT D

GUIDELINES FOR AUTHORS SUBMITTING CONTRACT REPORTS TO THE TEXAS WATER DEVELOPMENT BOARD

1.0 Introduction

The purpose of this document is to describe the required format of contract reports submitted to the Texas Water Development Board (TWDB). Our reason for standardizing the format of contract reports is to provide our customers a consistent, and therefore familiar, format for contract reports (which we post online for public access). Another reason for standardizing the format is so that we can more easily turn a contract report into a TWDB numbered report if we so choose. Remember that your report will not only be seen by TWDB staff, but also by any person interested in the results of your study. A professional and high quality report will reflect well on you, your employer, and the TWDB.

Available upon request, we will provide a Microsoft Word template (used to write these instructions) that gives the fonts, spacing, and other specifications for the headings and text of the report. Please follow this template as closely as possible.

2.0 Formatting your report

The TWDB format is designed for simplicity. For example, we use Times New Roman for all text. We use 12 point, single-spaced text, left justification for paragraph text, 18 point bold for first-level headings, and 14 point bold for second-level headings. Page numbers are centered at the bottom of the page. Other than page numbers, please refrain from adding content to the document header or footer. Page setup should use one-inch margins on all four sides.

2.1 Text

The best way to format your document is to use the styles described and embedded in the template document (Authors_Template.dot) that is available on request from the TWDB. To use the Authors_Template.dot file, open it in Word (make sure *.dot is listed under Files of type) and save it as a .doc file. Advanced users can add the .dot file to their computers as a template. Make sure the formatting bar is on the desktop (to open, go to View→Toolbars→Formatting) or, to view all of the formatting at once, go to Format→Styles and Formatting and select Available Styles from the dropdown box at the bottom of the window. The formatting in the template document provides styles (such as font type, spacing, and indents) for each piece of your report. Each style is named to describe what it should be used for (for example, style names include Chapter Title, Body Text, Heading 1, References, and Figure or Table Caption). As you add to your report, use the dropdown list on the Formatting Toolbar or the list in the Styles and Formatting window to adjust the text to the correct style. The Authors_Template.dot file shows and lists the specifications for each style.

2.1.1 Title

Give your report a title that gives the reader an idea of the topic of your report but is not terribly long. In addition to the general subject (for example, “Droughts”), you may include a few additional words to describe a place, methodology, or other detail focused on throughout the paper (for example, “Droughts in the High Plains of Texas” or “Evaluating the effects of drought using groundwater flow modeling”). Please capitalize only the first letter of each word except ‘minor’ words such as ‘and’ and ‘of’. Never use all caps.

Use headings to help the reader follow you through the main sections of your report and to make it easier for readers to skim through your report to find sections that might be the most interesting or useful to them. The text of the report should include an executive summary and sections outlined in 4.4 of Attachment 1. Headings for up to five levels of subdivision are provided in the template; however, we suggest not using more than three or four levels of subdivision except where absolutely necessary. Please avoid stacked headings (for example, a Heading 1 followed immediately by a Heading 2), and capitalize only the first letter of headings or words where appropriate—never use all caps.

2.2 Figures and photographs

To publish professional-looking graphics, **we need all originals to be saved at 300 dots-per-inch** (dpi) and in grayscale, if possible, or in the CMYK color format if color is necessary. Excessive use of color, especially color graphics that do not also work in grayscale, will prevent us from publishing your report as a TWDB numbered report (color reproduction costs can be prohibitive). Preferred file formats for your original graphics are Adobe Illustrator (.ai), Photoshop (.psd), EPS with .tiff preview, .jpg, .png, or .tiff files. Refrain from using low resolution .jpg or .gif files. Internet images at 72 dpi are unacceptable for use in reports.

All graphics shall be submitted in two forms:

1. Inserted into the Microsoft Word document before you submit your report. Ideally, inserted graphics should be centered on the page. Format the picture to downsize to 6 inches wide if necessary. Please do not upsize a graphic in Word.
2. Saved in one of the formats listed above.

2.2.1 Other graphics specifications

It is easiest to design your figures separately and add them in after the text of your report is more or less complete. Graphics should remain within the 1-inch page margins of the template (6.5 inches maximum graphic width). Be sure that the graphics (as well as tables) are numbered in the same order that they are mentioned in the text. Figures should appear embedded in the report after being called out in the text. Also, remember to include a caption for each graphic in Word, not as part of the graphic. We are not able to edit or format figure captions that are part of the figure. For figures and photographs, the caption should appear below the graphic. For tables, the caption should appear above.

2.2.2 Creating publication-quality graphics

When designing a graphic, make sure that the graphic (1) emphasizes the important information and does not show unnecessary data, lines, or labels; (2) includes the needed support material for the reader to understand what you are showing; and (3) is readable (see Figures 1 and 2 for examples). Edward R. Tufte's books on presenting information (Tufte, 1983; 1990; 1997) are great references on good graphic design. Figures 1 through 3 are examples of properly formatted, easy to understand graphics. Do not include fonts that are less than 6 points.

For good-looking graphics, the resolution needs to be high enough to provide a clear image at the size you make them within the report. In general, 300 dpi will make a clear image—200 dpi is a minimum. Try to create your figures at the same size they will be in the report, as resizing them in Word greatly reduces image quality. Photographs taken with at least a two-megapixel camera (if using digital) and with good contrast will make the best images. Save the original, and then adjust color levels and size in a renamed image copy. Print a draft copy of your report to double-check that your figures and photographs have clear lines and show all the features that you want them to have.

Figures and photographs should be in grayscale. Color greatly adds to the cost of printing, so we are trying to keep it to a minimum. Also remember that your report may be photocopied, scanned, or downloaded and printed in black and white. For this reason, you should use symbols or patterns, or make sure that colors print as different shades in black and white. All interval or ratio data (data measuring continuous phenomena, with each color representing an equal interval) need to be displayed in a graded scale of a single color (Figure 3). This way your figures will be useful even as a photocopy.

If you need help with your graphics or have questions, please contact the TWDB graphics department at (512) 936-0129.

2.2.3 Using other people's graphics

Figures and photographs (and tables) need to be your own unless you have written permission from the publisher that allows us to reprint them (we will need a copy of this permission for our records). Avoid using any figures or photographs taken off the Internet or from newspapers or magazines—these sources are difficult to cite, and it is often time-consuming and expensive to gain permission to reproduce them.

2.3 Tables

Tables should be created in Microsoft Word (see Table 1). Tables should include a minimal amount of outlining or bold font to emphasize headings, totals, or other important points. Tables should be numbered separately from figures, and captions should appear above the text of the table.

Table 1: A sample table. Note caption above table.

			Table text heading*					
Table text	1940	1950	1960	1970	1980	1990	2000	%GW
Table text	15	441	340	926	196	522	83	97.4
Table text	64	944	626	173	356	171	516	99.9
Total	79	1385	966	1099	552	693	599	

* A footnote should look like this using 10 point Times New Roman.
%GW = percent groundwater
Be sure to describe any abbreviations or symbols, and, unlike in this table, be sure to note the units!

3.0 Units

Measurements should be in English units. Metric units may be included in parentheses after the English units.

All units of geologic time should conform to the most recent geologic timescale (Gradstein and others, 2004). A summary of this timescale is available from the International Commission on Stratigraphy's website at http://stratigraphy.org/chus.pdf.

4.0 Citations and references

It is important to give credit where credit is due. Therefore, be sure to use the appropriate citations and include references in your paper.

4.1 In-text citations

Each piece of information you use in your report that comes from an outside source must be cited within the text using the author's last name and the year of publication. If there are two authors, list the last

name of each followed by the year, and if there are more than two authors, list the last name of the first author followed by "and others" and the year. For example: the end of the Jurassic Period occurred approximately 145.5 million years ago (Gradstein and others, 2004).

4.2 References

All sources that are cited within the report should be listed at the end of the paper under the heading References. The references should follow the guidelines in "Suggestions to Authors of the Reports of the United States Geological Survey" (Hansen, 1991). These are available online at http://www.nwrc.usgs.gov/lib/lib_sta.html (a link to the chapter "Preparing references for Survey reports," p. 234-241, is found here). Several examples of complete reference citations are listed at the end of these guidelines. Be sure that any citations that appear in tables or figures are included in the reference list. Also, before submitting the report, please check that all the citations in the report are included in the reference list and all references in the reference list are cited in the report. If at all possible, avoid web-based citations. These materials are often transient and therefore useless to future readers.

5.0 Submitting your report

Before you submit your report, proofread it. Look for spelling and grammatical errors. Also, check to see that you have structured the headings, paragraphs, and sentences in your paper so that it is easy to follow and understand (imagine you are a reader who does not already know the information you are presenting!).

6.0 Conclusions

Following the instructions above and providing accurate and readable text, tables, figures, and citations will help to make your report useful to readers. Scientists may read your report, as well as water planners, utility providers, and interested citizens. If your report successfully conveys accurate scientific information and explanations to these readers, we can help to create more informed decisions about the use, development, and management of water in the state.

7.0 Acknowledgments

Be sure to acknowledge the people and entities that assisted you in your study and report. For example: We would like to thank the Keck Geology Consortium, the American Society of Civil Engineers, and the Texas Bar CLE for providing examples to use in developing these guidelines. In addition, we appreciate Mike Parcher for providing information on how to create publication-quality graphics, Shirley Wade for creating the data used in sample Figure 1, and Ian Jones for providing sample Figure 3.

8.0 References

Gradstein, F.M., J.G. Ogg, and A.G. Smith, eds., 2005, A geologic time scale 2004: Cambridge, Cambridge University Press, 610 p.

Hansen, W.R., ed., 1991, Suggestions to authors of the reports of the United States Geological Survey (7th ed.): Washington, D.C., U.S. Government Printing Office, 289 p.

Tufte, E. R., 1983, The visual display of quantitative information: Cheshire, C.T., Graphics Press, 197 p.

Tufte, E. R., 1990, Envisioning information: Cheshire, C.T., Graphics Press, 126 p.

Tufte, E. R., 1997, Visual explanations: Cheshire, C.T., Graphics Press, 156 p.

9.0 Examples of references

Arroyo, J. A., and Mullican, III, W. F., 2004, Desalination: *in* Mace, R. E., Angle, E. S., and Mullican, W. F., III, editors, Aquifers of the Edwards Plateau: Texas Water Development Board Report 360, p. 293-302.

Bates, R. L., and Jackson, J. A., 1984, Dictionary of geological terms: Anchor Press/Doubleday, Garden City, New York, 571 p.

Blandford, T. N., Blazer, D. J., Calhoun, K. C., Dutton, A. R., Naing, T., Reedy, R. C., and Scanlon, B. R., 2003, Groundwater availability of the southern Ogallala aquifer in Texas and New Mexico–Numerical simulations through 2050: contract report by Daniel B. Stephens and Associates, Inc., and the Bureau of Economic Geology, The University of Texas at Austin to the Texas Water Development Board, variably paginated.

Fenneman, N. M., 1931, Physiography of Western United States (1st edition): New York, McGraw-Hill, 534 p.

Hubert, M., 1999, Senate Bill 1–The first big bold step toward meeting Texas's future water needs: Texas Tech Law Review, v. 30, no. 1, p. 53-70.

Kunianski, E. L., 1989, Precipitation, streamflow, and baseflow in West-Central Texas, December 1974 through March 1977: U. S. Geological Survey Water-Resources Investigations Report 89-4208, 2 sheets.

Mace, R. E., Chowdhury, A. H., Anaya, R., and Way, S.-C., 2000, A numerical groundwater flow model of the Upper and Middle Trinity aquifer, Hill Country area: Texas Water Development Board Open File Report 00-02, 62 p.

Maclay, R. W., and Land, L. F., 1988, Simulation of flow in the Edwards aquifer, San Antonio Region, Texas, and refinements of storage and flow concepts: U. S. Geological Survey Water-Supply Paper 2336, 48 p.

For more examples of references, see p. 239-241 of "Suggestions to Authors of the Reports of the United States Geological Survey" at http://www.nwrc.usgs.gov/lib/lib_sta.html.

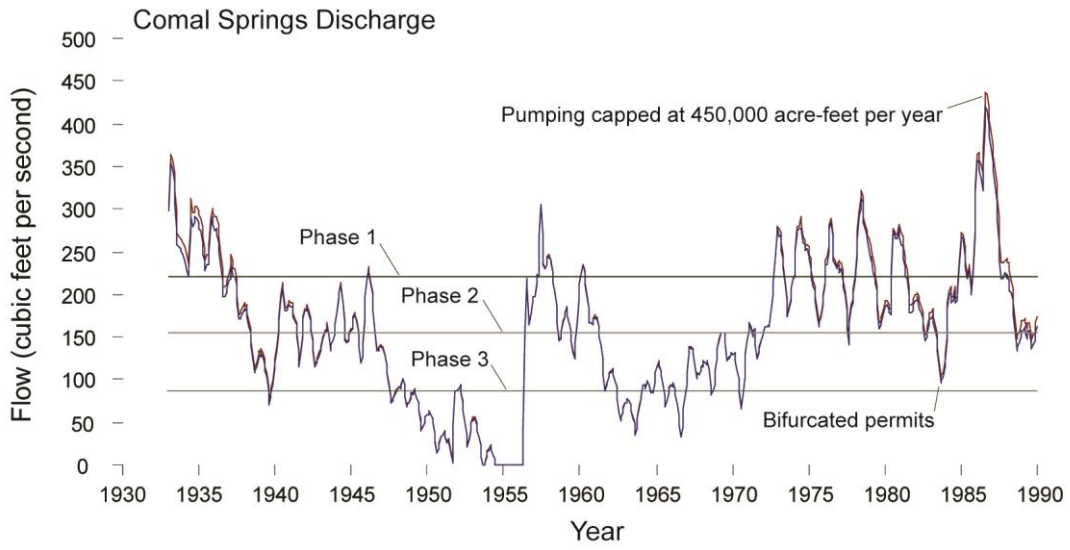

Figure 1. A sample figure showing only the information needed to help the reader understand the data. Font size for figure callouts or labels should never be less than 6 point.

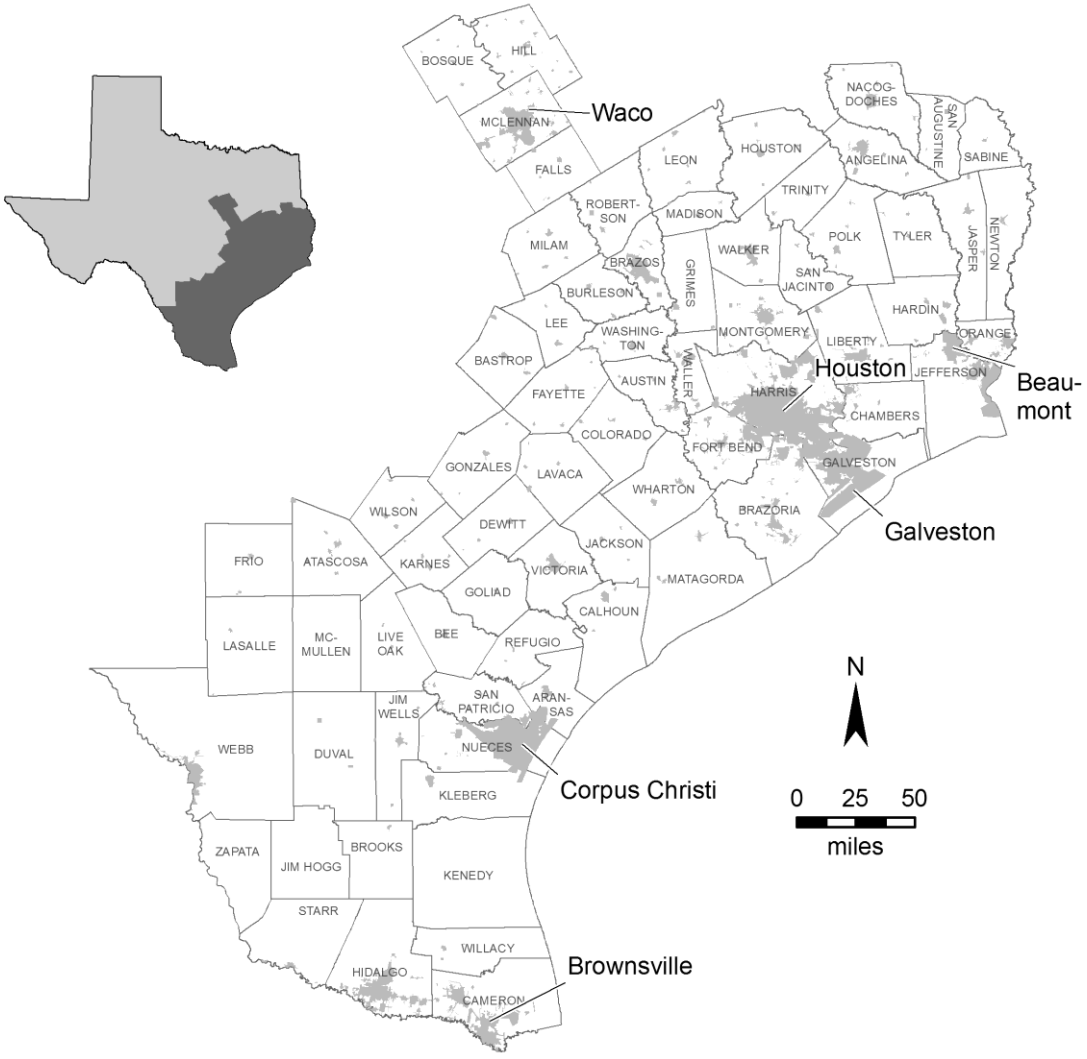

Figure 2. A sample subject area map, giving the reader enough information to understand the location being discussed in this conference. For map figures, be sure to include a north arrow to orient the reader, a scale, and, if needed, a submap that places the figure in greater geographic context. Be sure that text is readable and that any citations listed on the figure or in the figure caption are included in the reference list. Font size should never be less than 6 pt.

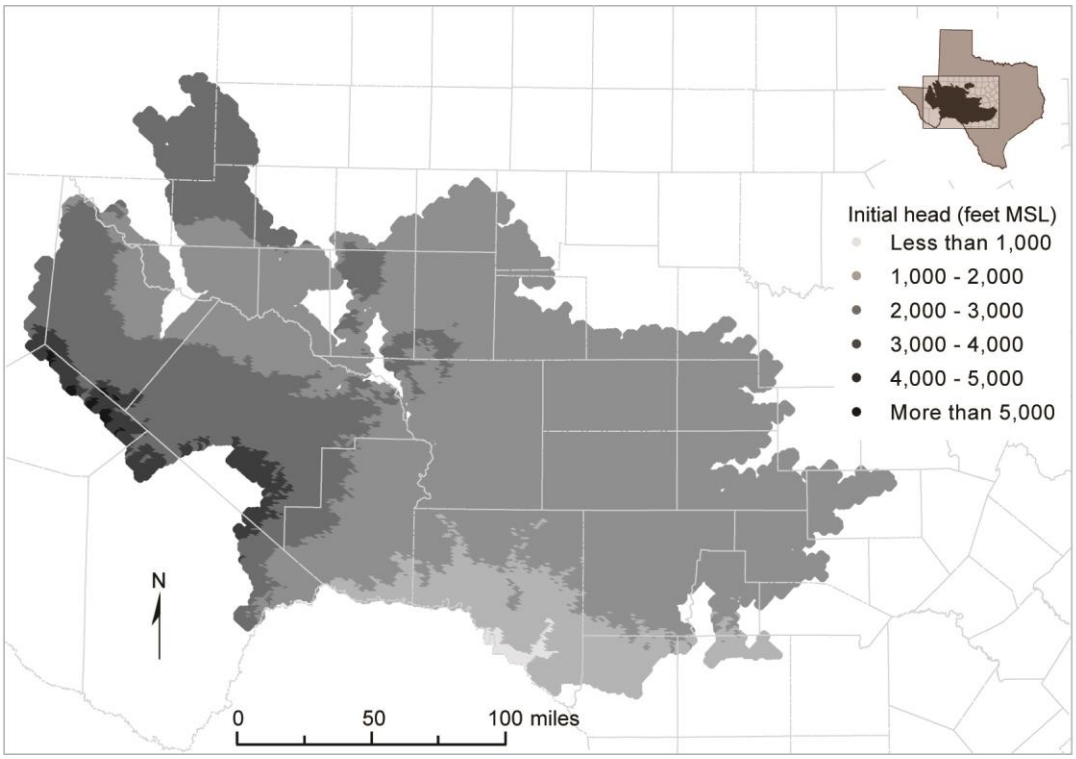

Figure 3. Initial hydraulic heads used in model simulations for layer 1. Note the use of grayscale shading to show differences.

EXHIBIT E
TWDB Guidelines for a Progress Report

Texas Water Development Board Contractors are required by their contracts to provide Progress Reports usually with the submission of an invoice/payment request.

The progress report should contain the following standard elements:

- Date: Date the memo is sent
- To: Name and position of the reader
- From: Name and position of the writer

Subject: TWDB Contract Number and a clear phrase that focuses the reader's attention on the subject of the memo

Work Completed: *(The next section of a progress report explains what work has been done during the reporting period. Specify the dates of the reporting period and use active voice verbs to give the impression that you or you and your team have been busy) For Example:*

Task 1: Completed 3 draft chapters and all appendices. Met with sub consultants on their chapters.
Task 2: Completed sample collection throughout river reach.
Task 3: No work completed in reporting period.

Problems:
If the reader is likely to be interested in the glitches you have encountered along the way, mention the problems you have encountered and explain how you have solved them. If there are problems you have not yet been able to solve, explain your strategy for solving them and give tell the reader when you think you will have them solved.

EXHIBIT F
HUB SUBCONRACTING PLAN PROGRESS ASSESSMENT REPORT

Use current form located at:
http://www.window.state.tx.us/procurement/prog/hub/hub-forms/