

STATE OF TEXAS §

TWDB Contract No. 1900012284

COUNTY OF TRAVIS §

**INTERAGENCY COOPERATION CONTRACT**  
**BETWEEN**  
**THE TEXAS WATER DEVELOPMENT BOARD**  
**AND**  
**TEXAS STATE UNIVERSITY**

THIS INTERAGENCY COOPERATION CONTRACT (CONTRACT) is entered into by and between the State agencies shown below as the parties, pursuant to the authority granted and in compliance with the provisions of the Interagency Cooperation Act, Chapter 771, TEX. GOV'T CODE.

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**SECTION I. CONTRACTING PARTIES**

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**Receiving Agency:** Texas Water Development Board (TWDB)  
1700 North Congress, Agency Code 580  
Austin, Texas 78701  
(512) 463-7981

**Performing Agency:** Texas State University (TEXAS STATE)  
Office of Sponsored Programs  
601 University Drive  
San Marcos, Texas 78666  
(512) 245-6729

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**SECTION II. STATEMENT OF SERVICES TO BE PERFORMED**

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The PERFORMING AGENCY (TEXAS STATE), will evaluate and synthesize environmental flow studies funded 2014 through 2017 in five basin-bay areas according to the Scope of Work in Exhibit A and deliverables' requirements in Exhibit C.

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**SECTION III. PAYMENT**

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1. **BASIS FOR COMPUTING REIMBURSABLE COSTS.** The TWDB shall pay TEXAS STATE for work performed in Exhibit A upon the submittal of invoice(s) of sufficient detail to determine work performed and in accordance with the Task and Expense Budget detailed in Exhibit B. All payments will be made in accordance with TEX. GOV'T CODE, § 771.008, Exhibit D, Reimbursement Requirements.

2. **TOTAL PAYMENTS.** The maximum total amount payable under this CONTRACT shall not exceed Two Hundred and Thirty-Seven Thousand Dollars and No/100 (\$237,000.00). The TWDB agrees to compensate and reimburse CONTRACTOR in a total amount not to exceed \$237,000.00 for costs incurred and paid by the TEXAS STATE pursuant to performance of this CONTRACT. The TWDB shall reimburse the TEXAS STATE for ninety percent (90%) of the total of each invoice submittal. Upon TEXAS STATE performance and completion of the project and acceptance by the TWDB, the TWDB shall pay the retained ten percent (10%) to the TEXAS STATE. For all reimbursement billings including any subcontractor's expenses, the TWDB must have provided written approval of any required interlocal agreements, contracts or agreements between the TEXAS STATE and the subcontractor. The TEXAS STATE is fully responsible for paying all charges by subcontractors prior to reimbursement by the TWDB.

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#### **SECTION IV. PAYMENT FOR SERVICES**

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TEXAS STATE will provide the TWDB with quarterly invoices according to Exhibit D with specific cost details for each task or specific item of work to be performed by the TEXAS STATE or its subcontractor and for each category of reimbursable expenses for the services provided under this CONTRACT in accordance with Exhibit A. Quarterly progress reports outlining progress of the Project will be submitted no more than 30 days following each State fiscal quarter: 1 September - 30 November; 1 December - 28 February; 1 March - 31 May; and 1 June - 31 August. The TWDB shall timely reimburse the TEXAS STATE for all invoices in accordance with TEX. GOV'T CODE ANN. § 771.008 (Supp. 2013). Reimbursements with funds outside the State Treasury shall be made by the TWDB issuing warrants for payment to the TEXAS STATE.

Interagency payments for deposit outside of the state treasury (into local bank accounts) will be processed in Uniform Statewide Accounting System (USAS) generating a Warrant for payment.

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#### **SECTION V. TERM OF CONTRACT**

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This CONTRACT takes effect when executed by both the TEXAS STATE and the TWDB. This CONTRACT shall terminate on August 31, 2020, unless terminated earlier by written agreement of the parties.

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#### **SECTION VI. AMENDMENT, TERMINATION AND STOP ORDERS**

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1. This CONTRACT may be altered or amended by mutual written consent or terminated by the EXECUTIVE ADMINISTRATOR of the TWDB at any time by written notice to TEXAS STATE. Upon receipt of such termination notice,

TEXAS STATE 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. TEXAS STATE shall submit a statement showing in detail the work performed under this CONTRACT to the date of termination. The TWDB shall then pay TEXAS STATE 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 TEXAS STATE at any time. Upon receipt of such order, TEXAS STATE 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 TEXAS STATE of the Stop Work Order, TEXAS STATE shall regard this CONTRACT terminated in accordance with the foregoing provisions.

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**SECTION VII. MISCELLANEOUS PROVISIONS**

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Force Majeure: TEXAS STATE or the TWDB may be excused from performance under this CONTRACT for any period when performance is prevented as the result of an act of God, strike, war, civil disturbance, epidemic, or court order, provided that the party experiencing the event of Force Majeure has prudently and promptly acted to take any and all steps that are within the party's control to ensure performance and to shorten the duration of the event of Force Majeure. The party suffering an event of Force Majeure shall provide notice of the event to the other parties as soon as practicable but not later than 36 hours. Subject to this provision, such nonperformance shall not be deemed a default or a ground for termination.

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**SECTION VIII. CORRESPONDENCE**

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For the TWDB:

**Contract Issues:**

Texas Water Development Board  
Attention: Contract Administration  
P.O. Box 13231  
Austin, Texas 78711-3231  
Email: [contracts@twdb.texas.gov](mailto: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](mailto:invoice@twdb.texas.gov)

**Physical Address:**

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

For TEXAS STATE:

**Contract Issues:**

Thomas B. Hardy, Ph. D.  
Texas State University  
601 University Dr.  
San Marcos, TX 78666-4684  
Email: [thom.hardy@txstate.edu](mailto:thom.hardy@txstate.edu)  
Phone: 512-245-6729

**Payment Request Submission:**

Marivel Alvarez  
Texas State University  
601 University Dr.  
San Marcos, TX 78666-4684  
Email: [grants@txstate.edu](mailto:grants@txstate.edu)  
Phone: 512-245-2102

**Physical Address:**

Meadows Center for Water & the  
Environment  
Texas State University  
601 University Drive  
San Marcos, TX 78666-4684

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**SECTION IX. CERTIFICATIONS**

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The PARTIES hereby certify that,

A. The services specified above are necessary and essential and are properly within the statutory functions and programs of the affected agencies of State Government;

B. The proposed arrangements serve the interest of efficient and economical administration of State Government;

C. The services, supplies or materials contracted for are not required by Section 21 of Article 16 of the Constitution of Texas to be supplied under contract given to the lowest responsible bidder nor is this CONTRACT prohibited by TEX. GOV'T CODE ANN. §§ 771.003 (b) or (c) (Supp. 2013); and

D. The services provided herein do not constitute information resources technologies.

The TWDB further certifies that it has the authority to receive the services contracted for pursuant to the authority of TEX. WATER CODE ANN, § 6.190 and the current Appropriations Act.

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

RECEIVING AGENCY:

TEXAS WATER  
DEVELOPMENT BOARD

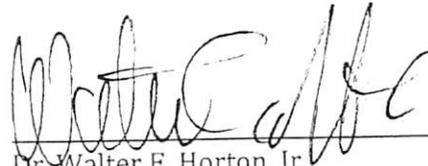


Jeff Walker  
Executive Administrator

Date: 1-8-19

PERFORMING AGENCY:

TEXAS STATE UNIVERSITY



Dr. Walter E. Horton, Jr.  
Associate Vice President for Research

Date: 1-7-19

Reviewed and Approved to Sign  
Joanne Palmer, OTC



## **Exhibit A Scope of Work**

This project will evaluate and synthesize the studies implemented from work plans for adaptive management of the environmental flows process (Senate Bill 3, 80th Texas Legislature, 2007). The purpose of this project is to evaluate the applicability of environmental flow studies for meeting the goals of either validating or refining analyses, recommendations, or standards or identifying strategies to provide for environmental flows in five basin-bay systems, including the (1) Trinity and San Jacinto Rivers and Galveston Bay, (2) Brazos River and Associated Bay and Estuary System, (3) Colorado and Lavaca Rivers and Matagorda and Lavaca Bays, (4) Guadalupe, San Antonio, Mission, and Aransas Rivers and Mission, Copano, Aransas, and San Antonio Bays, and (5) Nueces River and Corpus Christi and Baffin Bays. The project will synthesize results from studies specific to each basin as well as synthesize studies across basins to inform a statewide assessment of environmental flow science.

### **Task 1**

#### **Task 1. A. Evaluation of TWDB-funded environmental flow studies**

For five basin-bay systems (Trinity-San Jacinto, Brazos, Colorado-Lavaca, Guadalupe-San Antonio, and Nueces), each study (or study component) listed in Table 1 will be evaluated by two members of the Project Team following established guidelines utilized in the peer review publication process. As implied, for multidisciplinary type studies, two qualified members of the Project Team will be assigned to match specific technical expertise (e.g., fisheries versus hydrology). Use of two reviewers instead of three per the normal peer review process is simply a cost benefit approach given the volume of material and expertise offered by reviewers. Each study (and components) will be assessed in terms of:

- Whether there was a clear statement of objectives and/or hypothesis
- Whether adequate background information was provided within the context of the open peer reviewed or gray literature
- A critical evaluation of the methodologies, including:
  - Study site(s) selection
  - Data collection methods
  - Analytical methods
  - Definitions of terms
  - Coherence between data analysis and results
  - Coherence between results and discussion with relevant linkage to previous work and open peer reviewed or gray literature
  - Coherence between results, discussion and summary of findings
  - Coherence of any recommendations given the specific study or other related studies

- Whether the study provided an assessment of estimated attainment frequencies under existing or full water-right allocations

The independent reviews will then be compared to identify any inconsistencies and/or commonality of technical issues and their implications on the efficacy of the use of study results to inform the SB3 adaptive management process. These reviews will also assess whether adequate data exists to sufficiently evaluate TCEQ standards and inform future study priorities. If significant gaps to evaluate standards are identified, recommended options to resolve the gaps will be included. The assessment of instream flow studies will focus on the riverine components (Hydrology and Hydraulics, Biology, Physical Processes and Water Quality) as described in the Texas Instream Flow Program Technical Guidance document, and for which the principle investigators, as members of the National Research Council of the National Academy of Sciences, provided scientific peer review. The bay and estuary studies will be evaluated based on the general scientific approach to the problem of delineating the effect of inflows on the estuarine ecosystem including a critical review of the guidance provided by the Texas SB3 Science Advisory Committee.

This process will also entail the identification of any specific recommendations for remedial data needs, reanalysis of data, or applied research to address data/information gaps. The project will also suggest a manageable list of short and long-term indicators, and data collection requirements, that can be used to assess ecological form and function of affected resources.

#### **Task 1. B. Evaluation of Basin-Bay Area Stakeholder Committee (BBASC) work plan status**

Based on the technical review of existing studies in Table 1 as well as other germane research and studies identified under Tasks C and D, the Project Team will provide a critical evaluation of the existing BBASC workplans and the associated SAC review/recommendations on a system by system basis. This will also include an evaluation of the BBASC work plans and Science Advisory Committee (SAC) review/recommendations system wide that assess consistency across systems versus system specific approaches that may be warranted. The review, which encompasses the results from Tasks C and D, will specifically address proposed study components that may be obsolete, require revision necessary to address data or knowledge gaps, or identify studies, monitoring or applied research elements not currently identified in the BBASC workplans or priority framework on a system by system basis. This review and recommendations will not only be system specific but also consider specific research or study recommendations that are program wide in their utility to inform the adaptive management process statewide.

This project will also explicitly incorporate the broader national and international literature where previous efforts have materially addressed validation of prescribed

flow regimes to meet targets of ecologically sound environments for both in-river and bay/estuary systems. In particular, work conducted under the European Union Water Framework Directives and programs in Australia and South Africa provide cognizant input.

### **Task 1. C. Synthesis of TWDB-funded environmental flow studies**

One outcome of the independent reviews of each study is a consistent evaluation of the objective, methods, data, analyses, results and discussion/conclusions on a system by system basis. This includes the assessment of instream versus bay/estuary study components and their integration. This provides a framework (or matrix) to systematically compare study components across systems in terms of methods, data, analytical approaches and interpretation of results to meet study objectives. This comparison across systems for in-stream, bay/estuary and integrated assessments provides the basis within the context of the broader national and international literature and assessment frameworks identified in Task D to elucidate underlying strategies or in their absence, a methodological framework to achieve a coherent strategy to meet the adaptive management process. This project includes the identification of specific strategies for system specific versus statewide approaches necessary to obtain requisite data to validate or obtain the requisite data and studies that will provide system specific and statewide recommendations or strategies to achieve the objectives of environmental flows to maintain sound ecological environments for both in-stream and bay/estuary systems.

### **Task 1. D. Compilation of a bibliography of other studies**

The Project Team believes that a review and integration of the results from the TWDB RFQ 580-18-RFQ0067 – Environmental Flow Regime Assessment and Development of a Monitoring Framework will be critical. The results of that study will provide important input on elucidating the coherence of existing SB3 studies and priorities. Incorporation of those study results will ensure any recommendations on proposed studies, methodologies, monitoring or applied research derived from this study are compatible and integrated. The Project Team has already compiled a large set of reference works of related basic life history research papers for multiple taxa, peer reviewed articles on flow-ecology relationships and validation studies and includes numerous gray literature material. This includes work conducted in the last few years with the Southern Instream Flow Network and the Southeast Aquatic Resources Partnership which accumulated a broad list of literature specific to defining flow ecology relationships for multiple taxa (riparian, macroinvertebrate, fish) that has not been utilized by reviewed SB3 assessment studies.

The Project Team will specifically contact TPWD, TWDB, TCEQ, and river authorities in each basin to acquire relevant studies that can inform the adaptive management process. In addition, other active entities such as the Comptroller of Public Accounts, Edward Aquifer Authority, The Nature Conservancy, National Wildlife Federation, etc., will be queried for any relevant data and studies. A comprehensive literature search will also be conducted using available research databases for germane life history studies, assessment methodologies, validation studies, etc., not only specific to Texas but at both national and international levels.

We will provide an Annotated Bibliography of the resource material acquired under this task that not only summarizes the content of each article or study, but also elucidates the utility of the content to inform recommendations for studies, monitoring, or research supporting the adaptive management process related to existing or proposed BBASC study plans.

### **Task 1. E. Stakeholder presentations**

An initial coordination meeting will be held with TWDB and individual BBASC representatives at the outset of the project. We expect these will be in the form of a webinar and/or one day workshop to solicit their understanding of their existing studies, and their workplan study selection and prioritization process. These meetings will also be used to outline our philosophical and methodological approaches to the study. This is intended to inform the Project Team on a number of factors such as stakeholder understanding (or lack thereof) of how previous or proposed studies specifically target element(s) of the adaptive management process; to what extent there was/is an understanding of how each study relates to the broader scientific literature, accepted standards of practice, including their understanding of data collection, analytical approaches and interpretation of study results in the context of the SB3 adaptive management process. We also strive to improve our own understanding of the needs and expectations of individuals within each BBASC. Results from these workshops will be incorporated into the presentation of results under Tasks C, D and E. In particular, the initial meetings will help frame the basis of presentations under Task E, where some elements of 'education' are likely to be warranted to place previous results, study plans, and priorities in context of the Project Team reviews.

The Project Team will prepare a summary, including results in graphical, written, and oral formats appropriate for multi-disciplinary and non-technical audiences, of each study listed in Table 1 by basin-bay system with an emphasis on the efficacy of each study to inform validation of flow regimes within the context of the adaptive management process for the existing TCEQ adopted standards. The review will also encompass the efficacy of any SAC guidance considering accepted state, national or internationally recognized standards of practice in applied environmental flow or bay/estuary validation studies. This summary will include a critical review of

discipline specific methodological approaches, data analysis and study component integration within the context of the broader assessment and research literature.

The Project Team will provide a summary workshop for each of the BBASCs covering the components described below. Depending on the breadth of material related to the instream versus bay/estuary inflows and their integrated assessments, the workshops may be scheduled for one versus two days. Each workshop will be facilitated to allow the Project Team members presenting (instream, estuary, integrated, recommendations) to focus on the technical exchanges with the BBASC participants. The facilitator will be tasked with keeping the workshop process open and objective, and specifically to inhibit any advocacy by individuals or entities. The workshops will be presented in a dual format (video and webinar) to ensure broader access by those not able to travel. The video/webinar material will then be posted as a web access link. In addition, the question/answer periods for each presentation will be recorded and utilized where necessary to clarify and/or add material as an addendum to the presentation(s) as part of the final product. In most cases it is anticipated that this material will be in the format of a comment/response matrix.

The summative overview will include, where necessary, the identification of shortcomings in methodologies, data collected, analyses, result presentation, conclusions and study recommendations specific to each study and their implications on the validation of flow regimes. These individual study overviews will initially be broken down by riverine versus bay/estuary study groupings. If significant shortcomings are identified, options to resolve the shortcomings will be summarized, which will include reanalysis of existing data where feasible, the potential to be addressed through proposed workplan studies or if warranted, recommendations of new study/data needs that are required. This will include the identification of pending workplan studies that may not be warranted given existing study results, pending workplans that may be modified, or where access to other data/study results outside the SB3 process may materially inform the adaptive management process. The recommendation(s) for revised or new studies will include estimated time and cost.

Once the instream versus bay/estuary study overviews have been provided, the presentation(s) will outline the linkage (or lack thereof) between riverine and bay/estuary flow regimes based on the summative component study results. In the event of deficiencies in this regard, the presentation(s) will include where feasible, additional analyses using existing data/results that may be undertaken versus the role of pending SB3 studies (or their revision) or new studies necessary to meet integration needs. This will include in context any time and cost estimates. This will also include where appropriate any overlay of supporting information, data, and analyses from other studies conducted in the system (or broader research and literature) that may fill knowledge gaps, data, or inform the validation of integrated flow regimes not addressed by the existing or proposed workplan studies. The recommendations will be provided with associated time and cost estimates.

The workshop will then provide an overview of the existing BBASC workplans in the context of the critical review of studies completed to date and within the broader context of the available literature/studies. This review will identify proposed workplan study elements that may not be relevant in context and identify recommended study elements, monitoring, and/or applied research that should be considered to fill gaps that will be needed to meet original objectives as outlined above. The recommendations will be supported within the context of recognized state, national and international standards of practice and peer review literature within the context of the SB3 adaptive management process. The recommendations presented will include both time and cost considerations and identify specific data or knowledge gaps necessary to inform the validation process.

**Deliverables:**

**Coordination Meetings:** Project coordination meetings will consist of, at a minimum, an initial kickoff meeting, a mid-course meeting and a summative meeting in early summer of 2020 as a status check on meeting project report deadlines. Other meetings with the Project Manager (Dr. Hardy) will be scheduled as needed to keep the TWDB informed.

**Stakeholder Meetings/Presentations:** The Project Team will hold at least two, and as needed, workshops for each of the five basin-bay systems (Trinity-San Jacinto, Brazos, Colorado-Lavaca, Guadalupe-San Antonio, and Nueces), including one meeting at the outset of the project (via webinar or in-person) to solicit a better understanding of stakeholder information needs and another meeting (in-person) at the end to present the results of the project. The summary workshops should present results in graphical, written, and oral formats appropriate for multi-disciplinary and non-technical audiences.

**Quarterly Progress Reports:** Quarterly progress reports outlining progress of the Project will be submitted no more than 30 days following each State fiscal quarter: 1 September - 30 November; 1 December - 28 February; 1 March - 31 May; and 1 June - 31 August.

**Draft Report:** A draft report summarizing the review, evaluation, and synthesis of previously funded environmental flow studies in terms of BBASC work plans for adaptive management of adopted environmental flow standards will be provided 60 days prior to the end of the contract (August 31, 2020). Draft deliverables will be submitted for review and comment by the TWDB. These comments will be addressed in the Final Report and a copy of the comments will be incorporated into the final deliverables.

**Final Report:** A final report which incorporates necessary revisions as requested by the TWDB will be provided within 30 days of receiving comments from the TWDB. The final report will be accompanied by a transmittal letter.

All draft and final reports shall be delivered in Microsoft Word and PDF formats, and presentations should be delivered in PowerPoint and PDF formats. Acceptance of the final report indicates the successful completion of the Project.

**Table 1. Environmental flow studies funded to support adaptive management of the Senate Bill 3 Process, 2014 – 2017. Links to reports available are provided as hyperlinks. Reports not available on the website can be obtained upon request to [contracts@twdb.texas.gov](mailto:contracts@twdb.texas.gov).**

| <b>Studies Separated by Basin</b>                                      |                                                                                                                                                                                                                                                                                         | <b>TWDB Contract Number</b> |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| <b><i>Trinity and San Jacinto Rivers and Galveston Bay</i></b>         |                                                                                                                                                                                                                                                                                         |                             |
| 1                                                                      | <u><a href="#">Defining bioindicators for freshwater inflow needs studies: Phase I</a></u>                                                                                                                                                                                              | 1400011695                  |
| 2                                                                      | <u><a href="#">LiDAR acquisition and flow assessment for the Middle Trinity River</a></u>                                                                                                                                                                                               | 1400011696                  |
| 3                                                                      | <u><a href="#">Determination of freshwater inflow volume from the Trinity River into Galveston Bay, May 2014 – August 2015</a></u>                                                                                                                                                      | 1400011697                  |
| 4                                                                      | An evaluation of the variability of sediment and nutrient loading into Galveston Bay from the Trinity River watershed (data available upon request)                                                                                                                                     | 1600011927                  |
| 5                                                                      | <u><a href="#">Evaluation of adopted flow standards for the Trinity River</a></u>                                                                                                                                                                                                       | 1600011940                  |
| 6                                                                      | Defining bioindicators for freshwater inflow needs studies: Phase II – The health of the bay (available upon request after Sep. 1, 2018)                                                                                                                                                | 1600011941                  |
| <b><i>Brazos River and Associated Bay and Estuary System</i></b>       |                                                                                                                                                                                                                                                                                         |                             |
| 7                                                                      | <u><a href="#">Instream flows research and validation methodology framework and Brazos Estuary characterization</a></u>                                                                                                                                                                 | 1400011722                  |
| 8                                                                      | Validation or refinement of the adopted TCEQ environmental flow standards for the Brazos River (available here: <a href="http://www.twdb.texas.gov/publications/reports/contracted_reports/index.asp">http://www.twdb.texas.gov/publications/reports/contracted_reports/index.asp</a> ) | 1600012009                  |
| <b><i>Colorado and Lavaca Rivers and Matagorda and Lavaca Bays</i></b> |                                                                                                                                                                                                                                                                                         |                             |
| 9                                                                      | <u><a href="#">Studies to evaluate achievement of freshwater inflow standards and ecological response</a></u>                                                                                                                                                                           | 1400011715                  |
| 10                                                                     | <u><a href="#">Evaluation of freshwater delivery alternatives to East Matagorda Bay</a></u>                                                                                                                                                                                             | 1400011759                  |
| 11                                                                     | Improve simulation of groundwater/surface water interaction in the Groundwater Management Area 12 groundwater availability model (available upon request)                                                                                                                               | 1548304853                  |
| 12                                                                     | An evaluation of the variability of sediment and nutrient loading into Matagorda Bay from the Colorado River (data available upon request)                                                                                                                                              | 1600011927                  |
| 13                                                                     | Validation or refinement of the adopted TCEQ standards for the Colorado and Lavaca rivers (available here: <a href="http://www.twdb.texas.gov/publications/reports/contracted_reports/index.asp">http://www.twdb.texas.gov/publications/reports/contracted_reports/index.asp</a> )      | 1600012010                  |

|    |                                                                                                                                                                                                                                                                                                                           |            |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 14 | <u>Evaluation of rainfall-runoff patterns in the Upper Colorado River Basin</u>                                                                                                                                                                                                                                           | 1600012011 |
|    | <b><i>Guadalupe, San Antonio, Mission, and Aransas Rivers and Mission</i></b>                                                                                                                                                                                                                                             |            |
| 15 | <u>Instream flows research and validation methodology framework</u>                                                                                                                                                                                                                                                       | 1400011709 |
| 16 | <u>Guadalupe Bayou flow and inundation study</u>                                                                                                                                                                                                                                                                          | 1400011710 |
| 17 | <u>Rangia clam investigations</u>                                                                                                                                                                                                                                                                                         | 1400011711 |
| 18 | <u>Assessing the effects of freshwater inflows and other key drivers on the population dynamics of blue crab and white shrimp using a multivariate time series modeling framework: Phase I</u>                                                                                                                            | 1400011712 |
| 19 | <u>Strategy options for meeting attainment frequencies for the estuaries</u>                                                                                                                                                                                                                                              | 1400011713 |
| 20 | An evaluation of the variability of sediment and nutrient loading into San Antonio Bay from the Guadalupe/San Antonio River (data available upon request)                                                                                                                                                                 | 1600011927 |
| 21 | Continuation of instream flows research and validation methodology framework (available here: <a href="http://www.twdb.texas.gov/publications/reports/contracted_reports/index.asp">http://www.twdb.texas.gov/publications/reports/contracted_reports/index.asp</a> )                                                     | 1600011937 |
| 22 | Assessing the effects of freshwater inflows and other key drivers on the population dynamics of blue crab and white shrimp using a multivariate time series modeling framework: Phase II (available upon request after Sep. 1, 2018)                                                                                      | 1600011966 |
|    | <b><i>Nueces River and Corpus Christi and Baffin Bays</i></b>                                                                                                                                                                                                                                                             |            |
| 23 | <u>Re-examination of the 2001 Agreed Order monthly targets and safe yield versus current demand evaluations: Phase I</u>                                                                                                                                                                                                  | 1400011716 |
| 24 | Using landform and hydraulic modifications to increase the benefit of freshwater inflows to Nueces Bay and Nueces Delta: Phase I (available here: <a href="http://www.twdb.texas.gov/publications/reports/contracted_reports/index.asp">http://www.twdb.texas.gov/publications/reports/contracted_reports/index.asp</a> ) | 1400011717 |
| 25 | <u>Nueces watershed pre- and post-development nutrient budgets</u>                                                                                                                                                                                                                                                        | 1400011718 |
| 26 | <u>Modeling salinity fluxes in the Nueces delta</u>                                                                                                                                                                                                                                                                       | 1400011719 |
| 27 | Nueces Bay circulation assessment project (available upon request after Sep. 1, 2018)                                                                                                                                                                                                                                     | 1600011935 |
| 28 | Identify vegetation/marsh changes occurring in the Rincon Bayou Delta and the relationship of those changes to freshwater inflow (available upon request after Dec. 31, 2018)                                                                                                                                             | 1600011971 |
| 29 | <u>Using landform and hydraulic modifications to increase the benefit of freshwater inflows to Nueces Bay and Nueces Delta: Phase II: Verification and feasibility assessment for landform modifications in the Nueces Delta</u>                                                                                          | 1600012013 |
| 30 | <u>Re-examination of the 2001 Agreed Order monthly targets: Phase 2</u>                                                                                                                                                                                                                                                   | 1600012014 |
| 31 | <u>Nutrient Budget for Nueces Bay</u>                                                                                                                                                                                                                                                                                     | 1600012015 |
| 32 | <u>Alternative methods to add freshwater to the Nueces Delta</u>                                                                                                                                                                                                                                                          | 1600012016 |
| 33 | An evaluation of the variability of sediment and nutrient loading into Nueces Bay from the Nueces River (data available upon request)                                                                                                                                                                                     | 1600011927 |

**Exhibit B  
Task and Expense Budgets**

**TASK BUDGET**

| TASK         | DESCRIPTION                                       | AMOUNT       |
|--------------|---------------------------------------------------|--------------|
| 1            | Statewide Synthesis of Environmental Flow Studies | \$237,000.00 |
| <b>TOTAL</b> |                                                   |              |

**EXPENSE BUDGET**

| CATEGORY                      | CONTRACTOR          |
|-------------------------------|---------------------|
| Salaries & Wages <sup>1</sup> | \$30,000.00         |
| Fringe <sup>2</sup>           | \$7,800.00          |
| Travel <sup>3</sup>           | \$1,300.00          |
| Other Expenses <sup>4</sup>   | \$287.25            |
| Subcontract Services          | \$166,700.00        |
| Overhead <sup>5</sup>         | \$30,912.75         |
| Profit                        | \$0.00              |
| <b>TOTAL</b>                  | <b>\$237,000.00</b> |

<sup>1</sup> Salaries and Wages is defined as the cost of salaries of engineers, draftsmen, stenographers, surveyors, clerks, laborers, etc., for time directly chargeable to this CONTRACT.

<sup>2</sup> 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.

<sup>3</sup> Travel is limited to the maximum amounts authorized for state employees by the General Appropriations Act, Tex. Leg. Regular Session, 2017, Article IX, Part 5, as amended or superseded.

<sup>4</sup> Other Expenses is defined to include expendable supplies, communications, reproduction, postage, and costs of public meetings directly chargeable to this CONTRACT.

<sup>5</sup> 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 C**

### **Draft and Final Report Requirements**

1. **TEXAS STATE will complete the Scope of Work and will deliver four (4) double-sided copies of a draft final report to the TWDB no later than the sixty (60) days prior to the expiration date of this CONTRACT. 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. After a 30-day review period, the TWDB will return review comments to TEXAS STATE.**
  
2. **TEXAS STATE will consider incorporating comments from the TWDB and other commentors on the draft final report into a final report. TEXAS STATE will include a copy of the TWDB's comments in the final report. TEXAS STATE will submit one (1) electronic copy of the entire Final Report in Portable Document Format (PDF) and six (6) bound double-sided copies of the final report to the TWDB no later than the expiration date of the CONTRACT. TEXAS STATE will also 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 TWDB will either accept or reject the final report. If the final report is rejected, the rejection letter sent to TEXAS STATE shall state the reasons for rejection and the steps TEXAS STATE plans to take to have the final report accepted.**
  
3. **TEXAS STATE will submit a brief progress report with submittal of payments according to Exhibit D, Reimbursement Requirements. 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 TEXAS STATE plans to take to correct any problems that have been encountered.**

**Exhibit D**  
**Reimbursement Requirements**

1. TEXAS STATE shall submit payments and documentation for reimbursement billing according to the SECTION IV, PAYMENT FOR SERVICING and in accordance with the approved task and expense budgets contained in Exhibit C to this CONTRACT. TEXAS STATE 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. TEXAS STATE 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 and contracts or agreements between TEXAS STATE and the subcontractor are consistent with the terms of this CONTRACT. TEXAS STATE is fully responsible for paying all charges by subcontractors prior to reimbursement by the TWDB.

2. TEXAS STATE 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 TEXAS STATE and its subcontractors shall be in a manner consistent with Generally Accepted Accounting Principles.
3. By executing this CONTRACT, TEXAS STATE 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. TEXAS STATE shall comply with and cooperate in any such investigation or audit. TEXAS STATE agrees to provide the State Auditor with access to any information the State Auditor considers relevant to the investigation or audit. TEXAS STATE 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.
4. TEXAS STATE shall submit a progress report as described in SECTION IV. PAYMENT FOR SERVICES 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 TEXAS STATE for the TWDB's share of the total study costs shall be submitted by TEXAS STATE to the executive administrator for reimbursement:

- 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) Total costs to be reimbursed by the TWDB for the billing period; and
  - (8) Certification, signed by TEXAS STATE 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 TEXAS STATE 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 TEXAS STATE for subcontracted work:
- (1) Copies of invoices from the subcontractors to TEXAS STATE;
  - (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 TEXAS STATE 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.

5. Incomplete requests will be returned to TEXAS STATE if deficiencies are not resolved within ten (10) business days.
6. If for some reason the reimbursement request cannot be processed due to the need for an amendment to the CONTRACT, TEXAS STATE will be required to resubmit the Payment Request Checklist dated after the execution of the amendment.
7. TEXAS STATE 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.
8. TEXAS STATE is responsible for submitting any final payment request and documentation for reimbursement, along with a request to release any retained funds, no later than 120 days following the expiration date as described in SECTION V of this CONTRACT. Failure to submit a timely final payment request may result in the release of the retained funds to TEXAS STATE and a lapse and closure of any other remaining funding under this CONTRACT.