

## **EXHIBIT B**

### **ASSESSMENT OF OSMOTIC MECHANISMS PAIRING DESALINATION CONCENTRATE AND WASTEWATER TREATMENT SCOPE OF WORK and TIME LINE**

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**This scope of work is represents the contents of Appendix A, in a more discrete manner.**

#### **Task 1 - Survey of Water Categories and Quality**

- A. Identify various classes of impaired waters in wastewater treatment plants
  - (i) Raw wastewater
  - (ii) Primary treated wastewater
  - (iii) Secondary treated wastewater
  - (iv) Tertiary treated wastewater
- B. Identify various classes of brine sources
  - (i) brackish desalination brine
  - (ii) seawater desalination brine
- B. Identify Texas based utilities possessing water quality data
- C. Collect water quality and quantity data from targeted wastewater treatment facilities (target 5 facilities located near desalting facilities) and desalting facilities
- D. Characterize the osmotic pressure of these streams using existing osmotic pressure models

#### **Task 2 - Screening and Selection of Hybrid Forward Osmosis System Configurations**

- A. Using characterization in Task 1.D, brainstorm different process configurations that using a combination of forward osmosis and reverse osmosis processes
- B. Conduct qualitative analysis of process configurations conducted in Task 2.A to select one or two configurations for additional analysis

#### **Task 3 - Testing of Novel Forward Osmosis Spiral Wound Membrane Element**

- A. Characterize performance of spiral wound membrane versus flat sheet using pure water and synthetic draw solution to determine hydraulic and mass transfer differences due to scale up
- B. Test the most promising configuration of impaired water and draw solution (brine). Due to handling of wastes, prepared synthetic solutions may be utilized (subject to additional review)

#### **Task 4 – System and Process Modeling**

- A. Develop evaluation criteria for staging configurations of FO modules
- B. Using data from Task 3.B, prepare empirical performance models for the FO modules
- C. Brainstorm potential staging configurations for FO processes
- D. Model the performance of various configurations
- E. Using the criteria in Task 4.A, select configuration for subsequent modeling
- F. Conduct process modeling for FO/RO hybrid process. Prepare mass balances for input into cost models in Task 5.

#### **Task 5 – Cost Modeling and Feasibility Analysis**

- A. Develop a cost model for a modular conceptual full-scale forward osmosis process
- B. Incorporate forward osmosis cost model into a facility cost model including reverse osmosis
- C. Conduct capital cost, operating cost and total water cost models for 4 different flow-rates
- D. Compare cost models with existing reclamation costs obtained from literature

#### **Task 6 – Final Report**

- A. Prepare draft report
- B. Incorporate comments on draft
- C. Prepare final report
- D. Reproduce and distribute final report.

