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Enhancing Watershed Fresh Water Supplies Through Innovative Water Treatment Systems

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Description of Project

Texas A&M University is planning field demonstrations of the University's new desalination process to treat brackish ground water and oil field produced water and recover fresh water for re-use for beneficial purposes. The A&M process is designed to treat impaired surface water sources, waste water from industrial processes, and brine produced during oil field operations. The technology is expected to find application in many parts of Texas and the Western U.S. where alternate fresh water resources are critically needed.

A&M has been working on brackish water and oil field brine desalination for more than three years and has developed a combination of oil removal and reverse osmosis membrane filtration contained in portable modules. These portable units can be placed at lease production batteries in the oil field, at a source of brackish ground water, or near saline surface waters. The process is based upon advanced pre-treatment techniques, new types of microfiltration, and the use of newly commercialized RO membrane filters that resist fouling and provide long field lifetimes. The project includes an extensive analytical program to monitor water discharge to ensure that all EPA standards for fresh water will be met.

Treated waters can be used to decontaminate polluted soils, restore vegetation on drastically disturbed sites, provide ecological benefits and improve water quality in impaired streams. Further opportunity could include supplementing rural community water supplies. Demonstrations operated by the A&M team will provide engineering and economic data and serve to educate stakeholders about the effectiveness and multiple benefits of these technologies. Stakeholder input will be used to develop strategies that optimize use of treated waters. Results of these pilot projects will be applicable to other semi-arid watersheds, and coordinated Extension outreach programs will facilitate its application in other communities

The technology development and field demonstrations are being sponsored by a group of government, industry, and academic agencies including the Texas Water Development Board (TWDB), the Texas Water Resources Institute (TWRI), the Department of Petroleum Engineering at Texas A&M, the Global Petroleum Research

Institute (GPRI), and the Stripper Well Consortium. In addition, the program is endorsed by the Texas Railroad Commission and has received support from Burlington Resources Inc. and Key Energy, two oil and gas operators in West Texas and the North Texas Ft Worth Basin development.