

# **Fort Bend Subsidence District 2003 Regulatory Plan**



**Adopted September 24, 2003  
FBSD Board Resolution No. 03-187**

**Fort Bend Subsidence District  
PO Box 427  
Richmond, TX 77469-0427  
(281) 342-3273**

**[www.fbsubsidence.org](http://www.fbsubsidence.org)**

# CONTENTS

<b>PURPOSE AND INTENT .....</b>	<b>2</b>
<b>BACKGROUND.....</b>	<b>2</b>
<b>GROUNDWATER MANAGEMENT PLAN.....</b>	<b>3</b>
<b>REGULATORY OBJECTIVES .....</b>	<b>3</b>
<b>GROUNDWATER REGULATION.....</b>	<b>4-8</b>
Permitting .....	4
Permit Fees .....	4
Regulatory Area Descriptions .....	5
Regulatory Area Map .....	6
Regulatory Area Requirements .....	7-8
<b>REGULATORY PLAN ADMINISTRATION .....</b>	<b>9-11</b>
Water Conservation and Efficient Water Strategies .....	9
Surface Water Conversion and Other Alternative Water Supply Strategies.....	9
Groundwater Reduction Plans.....	10
Contractual Agreement and/or Financial Commitment .....	11
Construction Start Date .....	11
Early/Over Conversion Credits .....	11
Water Conservation Credits .....	11
<b>APPENDIX A: DEFINITIONS</b>	

## **PURPOSE AND INTENT**

It is the purpose and intent of the District Regulatory Plan (DRP) to establish policy in the areas of groundwater regulation, permits, and enforcement and to establish District regulatory areas and regulatory requirements for each area. The District's Regulatory Plan has been developed for the period through the year 2030. This Regulatory Plan will be reviewed periodically and may be amended or revised prior to the year 2030. This Regulatory Plan replaces in whole the Regulatory Plan adopted by the Board of Directors in 1990.

## **BACKGROUND**

The Fort Bend Subsidence District (District) was created in 1989 by the State Legislature (Act of May 26, 1989, 71<sup>st</sup> Leg., R.S., ch. 1045 Tex. Gen. Laws 4251) as a conservation and reclamation district. The District was created "... to provide for the regulation of the withdrawal of groundwater within the district created by this Act to prevent subsidence that contributes to or precipitates flooding, inundation, or overflow of areas within the District, including rising waters resulting from storms or hurricanes."

The District adopted its first Regulatory Plan in September 1990. The initial plan focused on the need for better data and called for additional groundwater monitoring and subsidence measurements within Fort Bend County.

Since the 1990 Regulatory Plan, the District has performed the following items:

- Collected water-level measurements in both the Chicot and Evangeline Aquifers in Fort Bend County
- Collected and analyzed water quality samples from wells in the two aquifers
- Collected land-surface elevations throughout the county, consisting of re-levelings in 1995 and 2000 and the development of five GPS elevation sites operated on a monthly schedule
- Established updated population and water demand projections through the year 2030
- Prepared and had certified by the Texas Water Development Board, the District's Groundwater Management Plan (as required Senate Bill 1 in 1997)
- Developed and recalibrated the Mod-flow groundwater model
- Developed and recalibrated four subsidence models (PRESS Sites)
- Developed baseline and various regulatory scenarios to determine the effects of groundwater regulation on the aquifers
- Assisted or participated in numerous other studies related to water issues in and around Fort Bend County, including the Region H Water Planning Group.

The District will continue to collect data and evaluate groundwater conditions in Fort Bend County and take necessary actions to meet the purpose for which it was created. When population estimates for 2005 are available from the U.S. Census Bureau, the District will evaluate the status of this Regulatory Plan and the estimates of population growth within Fort Bend County and make any necessary changes to this Regulatory Plan.

This 2003 Regulatory Plan divides the District into two regulatory areas and one sub-area. The requirements contained within this Regulatory Plan are based on the most current data and studies on water demand, aquifer levels, and projected subsidence. The Plan provides permittees organizational flexibility in meeting these regulations.

## **GROUNDWATER MANAGEMENT PLAN**

The District prepared a Groundwater Management Plan (GMP) in conformance with Senate Bill 1 (1997 Texas State Legislature) that was certified by the Texas Water Development Board in August 1998. The GMP sets forth the following five goals:

- Provide for the efficient use of groundwater
- Control and prevent waste of groundwater
- Control and prevent subsidence
- Address conjunctive surface water management
- Address groundwater natural resource issues

The GMP identifies objectives and action steps, in support of these goals that include:

- Assessment and revision of the 1990 District Regulatory Plan to establish acceptable levels of groundwater withdrawals.
- Analysis of permit fee structure to determine a fee schedule necessary to reduce groundwater dependence.
- Review, update and implement a District Regulatory Plan that balances regional land subsidence with groundwater availability.

In preparation for development of the 2003 District Regulatory Plan, the District updated population and water demand forecasts and analyzed their effect on water-levels in the Chicot and Evangeline Aquifers and the resultant impacts on land surface subsidence. The results of these analyses support the need for significant reductions in groundwater withdrawal.

## **REGULATORY OBJECTIVES**

Low-lying areas along the coast are the most vulnerable to floods resulting from hurricane storm surge events. While Fort Bend County is not generally affected by storm surges, subsidence in areas that are not vulnerable to storm surges still contributes to flooding. The objective in these areas is to halt subsidence as soon as realistically feasible.

In establishing these objectives, the District has taken into account the time and cost of introducing alternative water supplies into the District and considered other water resource management strategies that may be available.

# **GROUNDWATER REGULATION**

This portion of the District's Regulatory Plan establishes policy for the District regarding groundwater regulation. These policies are designed to support the regulation of groundwater withdrawals to control subsidence on a regional basis. Because subsidence is a region-wide problem requiring solutions achieved through concerted efforts, the District will work with other political subdivisions in the region to implement this Regulatory Plan.

## **Permitting**

The District may deny permits or limit groundwater withdrawals following the guidelines stated in the Act, the Rules of the District, and this Regulatory Plan. In determining whether to issue a permit or limit groundwater withdrawal, the District will weigh the public benefit against individual hardship after considering all appropriate documentation and relevant factors including:

1. the purposes of the Act,
2. the objectives and requirements of this Regulatory Plan,
3. the quality, quantity, and availability of alternative water supplies,
4. the feasibility of implementing alternative water supply strategies, and
5. the economic impact on the applicant from granting or denial of the permit, or terms prescribed by the permit, in relation to the effect on subsidence that would result.

## **Permit Fees**

The District's permit fees are intended to operate as an economic disincentive in order to regulate groundwater withdrawal. This 2003 Regulatory Plan establishes a permit fee structure that includes a base fee and a disincentive fee.

The District's permit fees are established for the purpose of achieving certain regulatory objectives and the reduction of groundwater withdrawals. All funds collected from permit fees will be used for regulatory purposes.

**Base Fees:** This fee is applied to all of a permittee's permitted groundwater withdrawals.

Funds obtained from collection of base fees are used to cover the costs of issuing permits and performing other regulatory functions of the District.

**Disincentive Fees:** In addition to the base fee, a disincentive fee will be applied to permitted groundwater withdrawals that exceed 40% of a Regulatory Area A permittee's total water demand.

The purpose of the disincentive fee is to create a financial incentive to encourage permittees to take steps to ultimately reduce groundwater use to no more than 40% of total water demand in Area A according to the schedule set forth in this Regulatory Plan. The disincentive fee can be avoided by reducing groundwater withdrawals to no more than 40% of total water demand or through actions in

compliance with milestones contained in a certified Groundwater Reduction Plan (GRP). The disincentive fee is applied in each permit year that groundwater reduction requirements are not met.

A disincentive fee rate will be determined after this Regulatory Plan is adopted and prior to June 2004.

Funds obtained from the collection of disincentive permit fees will be placed in a special account for the purpose of expediting reductions in groundwater withdrawal, the development of water conservation measures, and other alternative water supply strategies. The District's enabling legislation and Chapter 36 of the Water Code authorize the use of these funds to provide grants and/or loans for purposes such as financing the design and construction of alternative source water treatment and transmission facilities. The District will also consider various alternative means, including coordination with other agencies, for the distribution of any such funds.

## **Regulatory Area Descriptions**

The District is divided into two regulatory areas (Area A, which includes the Richmond/Rosenberg Sub-Area, and Area B), described in detail below and pictured on the following map.

### **Regulatory Area A**

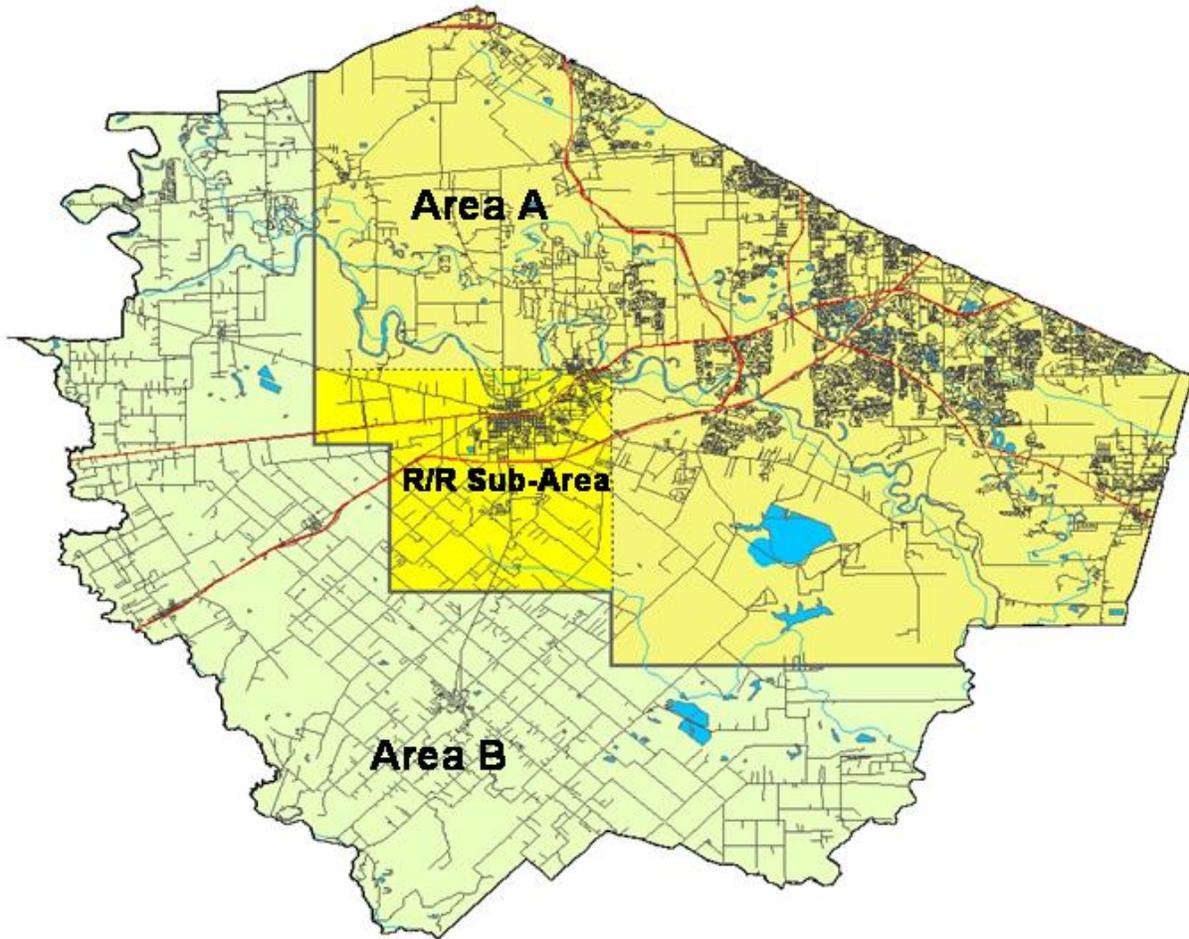
- Beginning at the intersection of longitude 95° 55' 00" west and the Fort Bend/Waller County line follow this line of longitude south to the point at 29° 32' 30" north latitude.
- Thence, east along this line of latitude to the point at 95° 52' 30" west longitude.
- Thence, south along this line of longitude to the point at 29° 27' 30" north latitude.
- Thence, east along this line of latitude to the point at 95° 45' 00" west longitude.
- Thence, south along this line of longitude to the point at 29° 25' 00" north latitude.
- Thence, east along this line of latitude to the intersection of longitude 95° 07' 30" west and the Fort Bend/Brazoria County line.
- Thence, generally north and east, following the Fort Bend/Brazoria County line to the intersection of the Fort Bend, Brazoria, and Harris County boundaries.
- Thence, generally northwest, following the Fort Bend/Harris County line to the intersection of the Fort Bend, Harris, and Waller County boundaries.
- Thence, generally southwest, following the Fort Bend/Waller County line back to the intersection with longitude 95° 55' 00" west.

### **Richmond/Rosenberg Sub-Area**

- Beginning on the Area A/B boundary, at the intersection of longitude 95° 55' 00" west and latitude 29° 35' 00" north, follow this line of latitude east to the point at longitude 95° 45' 00" west.
- Thence, south along this line of longitude to the Area A/B boundary at the intersection of longitude 95° 45' 00" west and 29° 27' 30" north.
- Thence, generally northwest, following the Area A/B boundary back to the intersection with latitude 29° 35' 00" north and longitude 95° 55' 00" west.

## Regulatory Area B

- The remaining portion of Fort Bend County that lies outside of Regulatory Area A.



# Regulatory Area Requirements

## Regulatory Area A

1. Following adoption of the District's Regulatory Plan, the District will require that unconverted permittees begin a planning process to define acceptable methods necessary to meet the groundwater compliance requirements established within this Regulatory Plan.
2. Two or more permittees may enter into contractual agreements to share costs or cooperate in ways that achieve orderly reductions in total groundwater use and conversions to alternative water supplies. Permittees may join with or form new regional entities for the purpose of reducing groundwater withdrawal. Individual permittees will be waived from separate compliance with groundwater reduction requirements when they form a group that achieves collective compliance with the regulatory area requirements.
3. Beginning in January, 2008, a permittee (or a group of permittees operating under a single permit) will be required to submit a Groundwater Reduction Plan (GRP) to the District for certification. (Minimum requirements for an acceptable GRP are presented in more detail further in this Regulatory Plan).
4. Beginning in January, 2013, a permittee (or a group of permittees operating under a single permit) shall be required to reduce and maintain their groundwater withdrawals to comprise no more than 70% of the permittee's total water demand, except that permittees whose wells are located within the Richmond/Rosenberg Sub-Area shall be required to meet the reduction requirements beginning in January 2015. A permittee with an aggregate system that is split between Regulatory Area A and the Richmond/Rosenberg Sub-Area will be required to meet the reduction requirements applicable to the Richmond/Rosenberg Sub-Area.
5. Beginning in January, 2025 and continuing thereafter, a permittee (or a group of permittees operating under a single permit) shall be required to reduce and maintain their groundwater withdrawals to comprise no more than 40% of the permittee's total water demand.
6. A disincentive fee shall be applied to any groundwater withdrawals that constitute greater than 40% of a permittee's (or a group of permittee's operating under a single permit, within the same regulatory area) total water demand if a permittee has not developed and received certification of a GRP by the permit beginning date in 2008 (Item 3 of this section) or if a permittee is not in compliance with the reduction schedule found in Items 4 and 5 of this section or with the elements identified in their certified GRP.

## Regulatory Area A - Exemptions:

1. Permits for irrigating agricultural crops, as defined in the District Rules, are exempted from groundwater reduction requirements and disincentive fees set forth in the District Regulatory Plan. However, all permittees are encouraged to use best management practices to reduce groundwater withdrawals.

2. Permittees with a total water demand of 10.0 million gallons per year (MGY) or less are exempted from groundwater reduction requirements and disincentive fees until such time that an alternative water supply is available. When an alternative water supply is available to a site, permittees under the 10.0 MGY exemption, will be required to reduce their groundwater withdrawal to no more than 40% of their total water demand, unless the permittee is in compliance with a certified Groundwater Reduction Plan.
3. Permittees demonstrating that they meet the definition of economic hardship may be granted an exemption from groundwater reduction requirements and disincentive fees. All exemptions based on economic hardship will be reconsidered during the regular, annual permitting process. Economic hardship exemptions are granted at the discretion of the Board and are not considered a long-term solution.

## **Regulatory Area B**

1. Increases in groundwater withdrawal, regardless of use type, may be permitted by the District, through regular permitting procedures, as adopted by the District.
2. Groundwater withdrawn in this area for uses other than agricultural irrigation shall not be supplied to any areas inside the boundary of Area A, unless the permittee can demonstrate that the groundwater was withdrawn for use in a single, aggregate system prior to the adoption of this District Regulatory Plan.
3. Permittees within Area B are not subject to groundwater reduction requirements and disincentive fees at this time. The District will continue to evaluate water-level and subsidence conditions within the boundaries of Area B and may adopt groundwater reduction requirements in the future as necessary, to meet the goals of the District.

## **REGULATORY PLAN ADMINISTRATION**

This section provides guidance for fulfilling milestone requirements in this Regulatory Plan. The District has developed a regulatory approach that provides a hierarchy of options to consider when evaluating how to reduce reliance on groundwater. Implementation of these options could significantly reduce a permittee's groundwater need while not requiring this reduction to come totally from surface water.

The evaluation of strategies for meeting water demands involves an analytical process, which requires an integrated examination of the following options:

1. Efficient Management Practices -- the applicant should pursue all feasible measures to assure efficient management of the applicant's water supplies in order to minimize groundwater usage;
2. Water Conservation -- the applicant should consider the implementation of aggressive water conservation measures;

3. Surface Water Conversion -- the applicant should initiate implementation of surface water conversion.
4. Other Alternative Water Supply Strategies – the applicant is encouraged to investigate other alternative water supply strategies, including but not limited to reuse projects, to meet reduction requirements.

## **Water Conservation and Efficient Management Practices**

Measurable reductions in groundwater withdrawals can be achieved through the use of water conservation measures and efficient management practices. Conservation measures and efficient management practices result in the overall reduction of total water demand, which reduces both the need for groundwater and alternative water supplies. The District encourages the use of any conservation measures and efficient management practices that reduce total water demand. The District may require permittees to submit water conservation and drought management plans with implementation measures, to preserve and protect groundwater resources within the District’s boundaries. Measures that can be implemented include, but are not limited to:

1. Audits of facilities to determine what measures can be used to reduce water consumption such as irrigation schedules and installation of low-flow toilets or other water conservation devices.
2. Leak detection, water audits, and other efficient management practices that improve overall system accountability.
3. Installation of water efficient appliances such as washers, dishwashers, etc.
4. For municipal users, rebate programs for installation of low-flow toilets, low water use appliances, and/or retrofit kits which include items such as low-flow shower heads, faucet aerators, shut-off valves, flow restrictors, and toilet leak detection dye tablets.
5. Adoption of educational programs such as “Learning to be Water Wise™”
6. Education of the public through water conservation pamphlets.
7. Pricing policies that discourage excessive and wasteful water use practices.

## **Surface Water Conversion and Other Alternative Water Supply Strategies**

Reductions in groundwater withdrawals will be achieved through surface water conversion or other alternative water supply strategies, including but not limited to reuse, use of treated effluent, and desalinated water. Conversion to alternative water supplies meets the District’s requirements for reducing groundwater withdrawals to a certain percent of total water demand. All alternative water supplies must be metered in order to satisfy the District’s groundwater reduction requirements.

## Groundwater Reduction Plans

Permittees eligible to submit Groundwater Reduction Plans in Regulatory Area A are required to submit GRPs for groundwater reductions in compliance with the deadlines in this Regulatory Plan. All GRPs must, at a minimum, include details of the strategies and steps necessary to achieve the groundwater reduction requirements for Area A, as stated previously.

In order for permittees in Area A who are not otherwise exempt to avoid disincentive fees, the permittees must have received certification of their GRP by the beginning date of their permit term in 2008. The District may adopt a schedule, by rule or resolution, for GRPs to be submitted for review. GRPs must be submitted to the District for certification prior to filing an application for renewal or for a new well, beginning, in January, 2008.

Minimum requirements for an acceptable GRP include:

1. Identification of current and projected total water demand
  - The data must be from a source agreed upon by the District and the permittee
  - Projections must be for a time period consistent with Plan's requirements through the year 2030.
  - Reasons detailing significant projected increases or decreases in groundwater total water demand
2. Plans for groundwater reduction
  - Definition of infrastructure requirements to meet permittee's projected total water demand
  - Timetable showing what infrastructure will be constructed by specific dates to meet projected requirements
  - Explanation of how infrastructure costs will be financed
  - Identification of source and amount of alternative water supply and water provider
  - Evidence (executed contractual agreement and/or financial commitment) that the water supplier has sufficient water supplies and/or rights and is committed to meet the permittee's present and projected demands
  - Preliminary engineering report of the proposed facilities to be constructed through year 2013 including a description of the proposed project and area maps.
  - Conceptual schematic plans of the proposed facilities to be constructed for the year 2025 requirements.
3. Specific details of any conservation measures and/or efficient management practices to be implemented.
4. Description of how over-conversion credits and/or water conservation credits would be used by the permittee (or group of permittees).
5. Other information reasonably necessary for an adequate understanding of the project.

## **Contractual Agreement and/or Financial Commitment**

A contractual agreement and/or financial commitment is any legally binding written instrument that is evidence of the agreement between, in this case, a water supplier and a permittee requiring an alternative water supply. The contractual agreement shall include the term of the agreement, the amount of water to be supplied, and the method of payment. The financial commitment shall include the manner in which financial resources will be acquired, as well as the manner in which funding will be dispensed.

## **Construction Start Date**

The construction start date for infrastructure projects will be deemed to be the point in time when a construction contract has been signed, a notice to proceed has been issued, and the actual physical construction begins in accordance with the schedule. A schedule for construction with milestones tied to specific calendar dates must be in place before a project's construction start date will be acknowledged by the District. Estimates of construction time will be reviewed on a case by case basis, with an appropriate start date and construction milestone(s) being elements of a certified GRP.

## **Over-Conversion Credits**

District staff has evaluated the concept of using over-conversion credits to facilitate the accomplishment of early and over-conversion in Regulatory Area A and has recommended that the Board of Directors adopt, by resolution, a Regulatory Area A Over-Conversion Credit Policy, which would establish a uniform policy and procedure governing the issuance and redemption of over-conversion credits. District staff and consultants evaluated and modeled a proposed over-conversion scenario by using the District's groundwater model and subsidence PRESS models and have determined that the modeled over-conversion scenario, which included a gallon-for-gallon over-conversion credit, resulted in a net benefit in terms of subsidence prevention.

The recommended over-conversion credit policy would allow entities in Regulatory Area A to reduce groundwater withdrawals and convert to alternative water supplies (including metered reuse) prior to the 2013 conversion date and/or in excess of the conversion requirements after 2013 in exchange for a credit that could be used to offset future under-conversions.

## **Water Conservation Program Credits**

In October of 1999, the District began sponsoring fifth grade students in a water conservation program entitled "Learning to be WaterWise." The award-winning program is a combination education and plumbing retrofit program implemented in local school districts utilizing a specialized water conservation resource action program that includes teacher curriculum and resource materials and a student kit containing plumbing retrofit devices.

As a means of encouraging water conservation and generating support for the WaterWise program, District staff has evaluated the concept of establishing a water conservation credit program in which entities who sponsor students in the WaterWise program would receive a water conservation credit

certificate worth a certain amount of groundwater based on the number of students sponsored (84,000 gallons per student sponsored). District staff has recommended that the Board of Directors adopt, by resolution, the “Learning to be WaterWise” Water Conservation Program, which would establish a uniform policy and procedure governing the issuance and redemption of water conservation credits.

## **APPENDIX A: DEFINITIONS**

“Act” means District’s enabling legislation (Act of May 26, 1989, 71<sup>st</sup> Leg., R.S., ch. 1045 Tex. Gen. Laws 4251).

“Alternative Water Supply” means water from any source other than groundwater withdrawn from within Fort Bend County, including but not limited to surface water, reuse water, treated effluent, and desalinated water.

“Area” means a geographical area designated by the Board in which regulatory policy will be applied.

“Available Alternative Water Supplies” or “Availability of Alternative Water Supplies” means alternative water supplies that can be utilized with the exercise of reasonable diligence within a reasonable time.

“Board” means the Board of Directors of the Fort Bend Subsidence District.

“Conservation” means water saved through efficient practices and technology.

“Contractual Agreement” means the entire agreement made between the parties where, in this case, one party agrees to provide a specified amount of surface or alternative source water to another for a specified period of time.

“Construction Start Date” means the date fixed for the start of work that is adequate to meet infrastructure requirements as described in a GRP certified by the District.

“District” means the Fort Bend Subsidence District.

“DRP” means District Regulatory Plan

“Economic Hardship” means, for the purpose of this Regulatory Plan, a permittee serving an area that does not have an alternative water source available and where average per capita income is more than 35% below the county average. If data for a permittee’s specific service area or geographic limits is not available, a permittee may use data corresponding to the appropriate census tracts or zip codes.

“GMP” means Groundwater Management Plan

“GRP” means Groundwater Reduction Plan

“Groundwater” means water located beneath the earth’s surface but does not include water produced with oil in the production of oil and gas.

“Over-Conversion Credit” means a credit issued by the District to a permittee (or group of permittees) who reduces groundwater pumpage beyond District requirements, redeemable pursuant to District policies.

“Permittee” includes any person (see below) to whom the District issues a water well permit allowing the withdrawal of a specified amount of groundwater for a designated period of time. Permittee may also include a group of individual entities, within the same regulatory area who have contracted together to operate under a single permit in order to meet groundwater reduction requirements.

“Person” includes corporation, individual, organization, government or governmental subdivision or agency, business trust, estate, trust, partnership, association, or any other legal entity.

“Preliminary Engineering” means the amount of engineering necessary to define the infrastructure needs of the project, to determine the feasibility and projected construction timetable of the project, and to establish reliable cost estimates. The requirement of preliminary engineering is not intended to include preliminary construction plans for the entire submittal, however, that level of detail could be required for specific components. The District will make the final determination of whether a proposed GRP meets the definition of preliminary engineering.

“Subsidence” means the lowering in elevation of the surface of land by the withdrawal of groundwater.

“Surface Water” means metered water from rivers, lakes, and reservoirs.

“Total Water Demand” means the amount of groundwater, surface water, and other alternative water supplies being utilized by a permittee to meet current or projected water needs. This may also include water from alternative water strategies and conservation measures.

“Water Conservation Program Credit” means a credit issued by the District for sponsorship of students in the District’s water conservation program, redeemable pursuant to District policies.

“Well” means any excavation, facility, device or method that could be used to withdraw groundwater.

“Withdraw” means the act of extracting groundwater by any method.