

CHAPTER 3 -- CRITERIA FOR WATER USE

3.1 INTRODUCTION

The purpose of this Chapter is to identify the procedures and information employed by the District to review the Work Plan. The objective of the review is to insure that the Tribe demonstrates that the use is a reasonable-beneficial use, that such use will not interfere with any presently existing legal use of water protected under the Compact and is consistent with the Compact.

3.2 DEFINITIONS

3.2.1 Annual Withdrawal means the quantity of water for use on a yearly basis.

3.2.2 Area of Influence means the area of land surrounding a well or wellfield which may be impacted by the wellfield or, as a consequence of regional gradients, a land area which may impact the wellfield because groundwater flow under the land area is towards the wellfield. The area of influence of a wellfield may be determined on a case-by-case basis by defining the drawdown induced by proposed withdrawals as the boundaries of the area of influence.

3.2.3 Cone of Depression means the conical shape taken by the potentiometric surface showing the variation of drawdown with distance due to pumping from a well or wellfield within its area of influence.

3.2.4 **Conservation** means the act of reducing water usage through voluntary or mandatory altering of water use practices and/or installation of low water use systems, fixtures, and devices.

3.2.5 **Current Pumpage** means the quantity of water pumped during the recent twelve (12) month period preceding the date of Work Plan.

3.2.6 **Daily Withdrawal** means for agricultural use, the maximum monthly supplemental requirement divided by thirty (30) days.

3.2.7 **Freshwater** means an aqueous solution with a chloride concentration equal to or less than two hundred fifty (250) milligrams per liter (mg/l).

3.2.8 **Historical Maximum Daily Withdrawal** means the maximum quantity of water that was pumped on any one (1) day during the current pumpage period.

3.2.9 **Maximum Daily Withdrawal** means the maximum quantity of water which can be withdrawn on a daily basis.

3.2.10 **Potential Yield** means the amount of water that can be withdrawn from a wellfield on an annual basis without creating adverse impacts, including but not limited to, impacts on the wellfield itself, adjacent uses protected under the Compact, the environment protected under the Compact, water bodies, land use, and water quality.

3.2.11 **Saline Water** means an aqueous solution with a chloride concentration greater than 250 mg/l and less than that of seawater.

3.2.12 **Saline Water Interface** means the saline water interface is that hypothetical surface of chloride concentration between

freshwater and seawater where the chloride concentration is 250 mg/l at each point on the surface.

3.2.13 **Seawater** means an aqueous solution with a chloride concentration equal to or greater than 19,000 mg/l.

3.2.14 **Service Territory or Service Area** means the geographical region in which a water supplier has the ability and the legal right to distribute water for use.

3.2.15 **System Efficiency (Irrigation)** means the ratio of the volume of water utilized by a crop to the volume of water applied.

3.2.16 **Use Class** means the use classes described in Chapter 2 - Water Shortage.

3.3 CRITERIA

3.3.1 **General**

3.3.1.1 **Control Over Activities** -- The Tribe must have legal control over the activities or situations for which water use is proposed in the Work Plan. This includes service areas for public water supply, lands which they wish to irrigate, and lands on which pumps or wells will be located.

3.3.1.2 **Federal Agencies** -- The Tribe must provide information on necessary approvals from agencies such as Environmental Protection Agency, and other Federal agencies that have control over related activities.

3.3.1.3 **Minimum Stages, Levels, and Flows** -- Some withdrawals will be subject to limitations because of minimum surface or groundwater levels, in accordance with the requirements and objectives of the Compact and Manual.

3.3.1.4 Environmental -- The administrative procedures used to determine impacts are included in Chapter 1 of this Manual.

3.3.2 Evaluation of Water Needs

3.3.2.1 Agriculture -- For agricultural uses *excluding livestock), supplemental crop irrigation requirements will be determined by using the supplemental irrigation requirements per acre, as set forth under 3.3.2.1(b) and dividing by the system efficiencies, as set forth in 3.3.2.1(A). If the existing and/or proposed capacity is less than the supplemental crop requirement divided by the system efficiency, then the water need will be the existing and proposed capacity.

A. System Efficiency

<u>System</u>	<u>Method</u>	<u>Efficiency</u>
	Surface-gravity	Seepage, furrow 50%
		Semi-closed,closed pipe 50%
		Crown flooding 50%
		Sub-irrigation 50%
	Sprinkler	Sprinkler 75%
		Volume gun, traveling gun 75%
		Overhead 75%
	Trickle	Drip 85%
		Spray jet 85%

B. Maximum Monthly Crop Requirements -- soil types for Tribal lands are shown on Figures 3-1 to 3-4.

1. Big Cypress Reservation (Inches per acre)

<u>Soil Type</u>	.8	3.6
Alfalfa	5.59	4.14
Avocado	3.27	2.64

Citrus	5.30	5.30
Grapes	3.48	2.16
Grass	4.37	3.42
Pasture	3.29	2.93
Sugarcane	5.31	3.97
Grain Corn	5.40	4.51
Sweet Corn	5.48	4.57
Potato	7.17	5.88
Small Vegetables	3.67	3.20
Tomato	4.96	4.18

2. Brighton Reservation (Inches per acre)

<u>Soil Type</u>	.8	1.5	3.6
Alfalfa	5.83	5.28	4.83
Avocado	3.74	3.41	3.01
Citrus	5.30	5.30	5.30
Grapes	3.70	3.16	2.58
Grass	5.45	4.16	3.74
Pastures	3.40	3.08	2.69
Sugarcane	5.50	4.95	4.27
Grain Corn	5.58	5.17	4.72
Sweet corn	5.66	5.25	4.79
Potato	7.36	6.82	6.31
Small Vegetables	3.92	3.59	3.18
Tomato	5.14	4.78	4.33

3. Hollywood (Dania) Reservation (Inches per acre)

<u>Soil Type</u>	.2	0.4	3.6
Alfalfa	6.83	6.61	4.90
Avocado	4.32	4.13	2.68
Citrus	5.30	5.30	5.30
Grapes	4.55	4.35	2.88
Grass	5.44	5.23	3.68
Pasture	3.22	3.05	1.88
Sugarcane	6.39	6.18	4.52
Grain Corn	6.48	6.26	4.60

Sweet corn	6.57	6.35	4.67
Potato	8.42	8.17	6.27
Small Vegetables	4.61	4.41	2.94
Tomato	6.01	5.80	4.18

4. Immokolee Lands (Inches per acre)

<u>Soil Type</u>	.8
Alfalfa	5.59
Avocado	3.27
Citrus	5.30
Grapes	3.48
Grass	4.37
Pasture	3.29
Sugarcane	5.31
Grain Corn	5.40
Sweet corn	5.48
Potato	7.17
Small Vegetables	3.67
Tomato	4.96

3.3.2.2 Public Water Supply (Potable) -- For potable water uses potable demand shall be calculated by multiplying projected population by the capita consumption.

- A. Per capita consumption will be determined using either:
 1. Historical average per capita daily water use calculated either by dividing average daily water withdrawals by the most recent twelve (12) months of pumpage data by the permanent resident population for the same period of time, or by determining the per capita daily water use, as described above, for each of the five (5) most recent years and choosing the highest value. Or:
 2. If no historical use of water exists, a design per capita use based on dwelling unit type, population characteristics, and comparison with adjacent similar developments will be used.

- B. Maximum daily withdrawal will be determined by multiplying the average daily allocation by an acceptable maximum daily to average daily withdrawal ratio determined using either:
1. Dividing the historical maximum daily withdrawal by the average daily withdrawal for twelve (12) months of record or where several years of pumpage records are available, determining the ratio for each of the previous three (3) years and using the most suitable ration. Or:
 2. For proposed developments, a ratio between 1.5 and 2.0 will be used.

3.3.2.3 **Industrial** -- For industrial uses water demand shall be based on the amount of water needed to perform an industrial process in an efficient, non-wasteful and economic manner.

3.3.2.4 **Mining (Dewatering)** -- For mining (dewatering) water demand shall be based on the amount of withdrawal required to economically and effectively remove the material.

3.3.2.5 **Livestock** -- For livestock water uses, the water needs will be determined by multiplying the estimated total number of animals by gallons needed per day per animal. Usage by beef cattle is twelve (12) gallons per day per head (gpd/head), usage for dairy cattle is 35 gpd/head for drinking and 150 gpd/head for barn use, usage by horses is 12 gpd/head.

3.3.2.6 **Freeze Protection** -- The water needed for freeze protection will be evaluated when:

- A. The Tribe makes a request.
- B. The Tribe is able to show through system design that the water can be utilized.
- C. The application of water in the proposed manner will provide freeze protection.

- D. The use of water is in agreement with the amount of water necessary for freeze protection as commonly approved by the District, or in agreement with the University of Florida, Institute of Food and Agricultural Services. And
- E. The requested amount of water necessary for freeze protection exceeds the water needed for irrigation. The use of water for freeze protection will be subject to technical review as described under 3.3.3.

3.3.3 Evaluation of Water Availability

3.3.3.1 General -- An evaluation of the water which can be withdrawn without causing impacts on the resource, existing legal uses protected under the Compact, or the environment, will be performed on a case-by-case basis. However, where supporting technical data is not submitted to the District for review, the criteria in section 3.3.3 will be used. Available water shall be determined using, but not limited to: Hydrological data, existing aquifer performance testing, monitoring data, computer modeling, and other techniques to determine the amount of water that can be withdrawn without causing water level or potentiometric head declines that would have one or more of the following consequences:

- A. Impacts on Existing Legal Users -- Impacts on existing legal users of water protected under the Compact, defined as a decrease of ten percent (10%) or more in the withdrawal capability of an existing legal use as protected under the Compact.
- B. Impacts on Tribal Wetlands -- Significant impacts on wetlands or environmental features protected under this Compact. Significant impacts to the environmental features shall be defined as potentially occurring when a one (1) foot drawdown in the water table aquifer is projected beneath the wetland: as determined by modeling ninety (90) days of pumpage with no recharge to the aquifer. Should the potential exist for significant impacts as established by the above criteria and the withdrawal source cannot be moved, the District may require that a monitoring program be initiated to determine actual impacts. If the monitoring program indicates that a one (1) foot drawdown occurs

beneath the wetland and the District discovers that there is potential for significant adverse impact of the biological and hydrological function indicative of that wetland type, then pumpages shall be reduced or terminated.

- C. Impacts on Saline Water -- Impact as a result of saline water intrusion, defined as potentially occurring when a hydraulic head of less than one (1) foot National Geodetic Vertical Datum (NGVD) cannot be maintained between the withdrawal point and saline water during the months of November through April; or where monitoring within eight hundred (800) feet of a production well reflects chloride concentration increases at the base of the aquifer, indicating long term advancement of the saline front; or other evidence showing saline water intrusion will be a serious threat to the aquifer as a result of the withdrawal.

- D. Impacts on Aquifer Contamination -- Impacts on aquifer contamination as a result of potential movement of contaminants in the aquifer. Potential for movement shall be defined as occurring when a 1.0 foot drawdown in the aquifer is projected beneath the contaminant source; determined by modeling ninety (90) days of pumpage assuming no recharge to the aquifer. More stringent restrictions may be necessary as determined by the affected contaminant source.

- E. Impacts on Non-Tribal Land Uses -- Impacts on existing land uses protected under the Compact, on lands other than Reservations or Tribal Trust Lands, such as land subsidence or collapse; significant lowering of lake or wetland water levels; drainage of ponds and other water bodies; or appreciable damage or destruction of landscape and other vegetation. An appreciable impact on existing water bodies is defined as a drawdown of water levels of 10% or more as a direct result of lowering of water table elevations or potentiometric levels.

Should the potential exist for significant impacts as determined by the above criteria, and the withdrawal source cannot be moved, the District may require that a monitoring program be initiated to determine actual impacts. If the monitoring program indicates that consequential drawdowns occur which may result in significant adverse impacts on

existing land uses protected under the Compact then pumpages shall be reduced or terminated.

3.3.3.2 Special Provisions Applicable to Specified Reservation and Tribal Trust Lands.

A. Brighton Reservation --

1. The District shall determine, to the degree possible, whether the Tribe is getting its share of surface water, as specified in the Compact from the District canals and from District borrow canals calculated by the District on a monthly basis, and shall take the necessary steps to provide solutions to the water supply problems.

The District shall:

- i. Examine operational criteria for District structures in the Indian Prairie Basin to balance the available surface water in the northern and southern areas of the system;
- ii. To the extent feasible, seek to eliminate structural bypasses in the Indian Prairie Basin and uses of Indian Prairie Basin water by those outside the basin by substituting an alternate source for such uses; and
- iii. Cooperate with the Tribe to identify functional problems within the Tribe's internal water supply system.

2. The District shall investigate the feasibility of augmenting surface water supplies in the Indian Prairie Basin. Such efforts could include, but are not limited to, investigating the feasibility of:
 - i. Installing a pump facility on the Istokpoga Canal;
 - ii. Expanding the Lake Okeechobee Service Area to replenish the water supply in the borrow canals in the Indian Prairie Basin; and
 - iii. Modifying the regulation schedule of Lake Istokpoga.
3. The District shall report its initial findings resulting from the investigation undertaken pursuant to this section no later than December 31, 1987. The District shall propose a plan of action to fulfill requirements of this section no later than January 31, 1988 which shall be reasonably designed to assure that the Tribe will receive its share of basin waters as specified in the Compact.
4. If the above investigations do not result in the Tribe receiving fifteen percent (15%) of the total amount of water which can be withdrawn by all users from surface water in the Indian Prairie Basin as specified in the Compact, then the District shall take such action as is necessary to ensure that the requirements of the Compact are met.