ALTERNATE WATER SOURCES

EPD Guidance Document
August 2007

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Georgia Environmental Protection Division
Watershed Protection Branch

Guidance Document

Alternate Water Sources

Developed by the Georgia Environmental Protection Division (EPD)

To support the *"Coastal Georgia Water and Wastewater Permitting Plan for Managing Saltwater Intrusion"*

August 2007

This guidance document is intended for entities in the 24-county area of Georgia's coast addressed in the "Coastal Georgia Water and Wastewater Permitting Plan for Managing Saltwater Intrusion", located in Sub-Regions 1, 2 and 3. It applies to municipal and industrial groundwater users, and the following categories of public/private drinking water suppliers:

- Private Industrial Transient and Non-Transient Non-Community Water Systems (TNCWS and NTNCWS) with an Operating Permit and a Water Withdrawal Permit;
- Private Industrial Transient and Non-Transient Non-Community Water Systems (TNCWS and NTNCWS) with ONLY an Operating Permit;
- Public Community Water Systems (CWS) with Water Withdrawal and/or Operating Permits;
- Governmentally Owned or Operated Public Drinking Water Systems with an Operating Permit; or
- Governmentally Owned or Operated Transient Non-Community (TNCWS) or Non-Transient Non-Community Public Water Systems (NTNCWS) with either an Operating Permit and/or a Withdrawal Permit.

It is designed to guide water systems in their evaluation of alternate water sources as a substitute for, or supplement to, Upper Floridan groundwater use.

When to use this guidance document: For most groundwater withdrawal permittees in the coastal counties of Georgia, a special condition of all new or modified withdrawal permits will be an evaluation of long-term alternate water sources as a substitute for, or supplement to, the water withdrawn from the Upper Floridan aquifer. This assessment shall be conducted in accordance with these guidelines and reported to the Appropriate EPD District Office (Brunswick or Savannah) for concurrence no later than 24 months from the permit issue date. This assessment is not part of your permit application. Contact information for the Coastal District offices can be found at http://www.gaepd.org/Documents/wpb.html .

How to use this guidance document: The guidance consists of 2 parts: Part 1 describes potential alternate water sources available to coastal Georgia; the economic and environmental criteria by which these alternate sources can be evaluated; and a method of scoring the alternate sources against those criteria. Part 2 consists of a form for you to describe the pros and cons of each alternate water source, and a table to fill out and score each alternate source. This form should be used to assist you in your Alternate Water Source Evaluation report. In both parts, practices such as re-use and conservation are briefly discussed. EPD Guidance Documents for these and other practices are available on line at http://www.gadnr.org/cws/

When completed by the permittee, the form and table in Part 2 should be submitted to EPD along with your Alternate Water Source Evaluation report.

EPD contact: If you have any questions, or require additional information, please contact the EPD Water Withdrawal Program, at 404-675-1680. As the July 2006 Coastal Permitting Plan is implemented, EPD will welcome feedback from permittees regarding this guidance document.

ALTERNATE WATER SOURCES

The Coastal Sound Science Initiative examined salt-water contamination of the upper Floridan aquifer on Hilton Head Island, South Carolina; in Brunswick, Georgia; and the possibility of salt-water intrusion elsewhere along the coast of Georgia. In 2006 the Georgia EPD released the Coastal Georgia Water and Wastewater Permitting Plan for Managing Salt Water Intrusion (2006 Coastal Plan) to minimize the threat of salt-water contamination of the Floridan aquifer. The plan requires that all municipal, industrial, and public/private water systems evaluate the feasibility of alternate water sources as a substitute for, or supplement to, groundwater derived from the Upper Floridan aquifer.

Part 1: Evaluating Alternate Water Sources

The purpose of the analysis is to serve as an aid in evaluating the feasibility of using water sources other than the Upper Floridan aquifer. The possible alternative water sources described in this document are considered to be the most feasible, and widely used, in Georgia and adjacent states. A form on which you can list the pros and cons of each alternate source; a table for you to score the various alternate water sources; and a suggested scoring technique for evaluating different sources are provided. You must submit a detailed Alternate Water Source Evaluation report along with the completed form and table to EPD within 24 months of your permit issuance date. If you choose a different alternate source from the ones listed in this guidance document, or use a different scoring method, provide a written description of your alternate source scoring methods.

In evaluating alternate water sources, the permittee should start with the following information:

1. Service delivery area.
2. The nature of the existing water distribution infrastructure and current cost of operations
3. The key decision makers who can or will decide which alternative is chosen
4. The financial and environmental criteria that may affect that decision
5. How population and water needs will change in the future

Once you have this information, you can begin evaluating which alternate water sources, if any, will be best for you. EPD expects that a combination of options may be required to meet demand and protect the groundwater resources for future growth.

Potential alternate water source options include:

1. **Water transfers.** Other nearby suppliers with surplus capacity may be able to provide sufficient water to offset groundwater use.

2. **Development of groundwater aquifers other than the upper Floridan aquifer.** In coastal Georgia, the Cretaceous aquifer, the lower Floridan aquifer, Brunswick (Miocene) aquifers, and surficial aquifers may provide sufficient water for some needs. These aquifers could potentially be used for recreational uses and landscape irrigation.

3. **Development of surface water resources**. Some rivers and streams in coastal Georgia may have sufficient flow and available water, with treatment, to supplement groundwater supplies. Surface water withdrawals must take existing downstream surface water users into account.

4. **Direct surface water supply reservoir.** In the upland counties where relief is higher, small community surface water supply reservoirs may be practical.

5. **Desalination.** Seawater can be treated to drinking water standards using well-established and widely used technology. Elsewhere, deep groundwater with high mineral content can sometimes be "de-salinated" at much lower cost and with much less waste than desalinated seawater.

6. **Other.** These options may not be practical in every situation. Therefore, you may need to consider developing cooperative agreements with adjacent or nearby entities to share the cost of a desalination system, small community reservoir, well field, or some other alternative supply source. It is also a fact that the cheapest water available is the water you already have. *For this reason, you are strongly encouraged to develop aggressive and effective water conservation plans, promote re-use of reclaimed water, promote household water efficiency, implement conservation-oriented water rate structures, and develop other practices that will minimize your need for alternative water sources.* Guidance documents addressing these practices can be found at **http://www.gadnr.org/cws/**

Criteria for Consideration

The following is a suggested list of criteria that may be considered in your scoring of alternative water supplies. Each permittee will have different circumstances to consider, and those circumstances will probably change with time.

Financial

- Construction and development costs of an alternate supply
- Operating costs of an alternate source (e.g. a new well field)
- The degree of control and management which you could exercise if water from outside your delivery area is used
- Reliability of an alternate source to meet peak demand
- The flexibility an alternate source provides in meeting your needs
- The long-term viability of the alternate water supply versus the likely need of additional capital costs at some point in the future

Environmental

- Aquatic biodiversity. Withdrawals of surface water or construction of reservoirs may have significant negative effects on fish and invertebrate populations, especially if surface water withdrawals occur during drought. Reservoirs may break up a watershed into isolated segments, preventing fish from moving throughout the watershed. Groundwater

withdrawals from surficial aquifers may de-water wetlands, causing a collapse of wetland flora and fauna.

- Water quality. Some streams and rivers in coastal Georgia are near the limit where they can assimilate more wastewater, such as the Savannah River downstream of Thurmond Dam. Additional withdrawals from these streams may impair their water quality.
- Sustainability

Scoring potential water resource options

As previously mentioned, each permittee will have different circumstances to consider when evaluating alternate water sources. For example, large cities with robust and secure tax bases may be able to afford state-of-the-art desalination facilities while small rural communities may only be able to afford modest surface water withdrawals. We recommend that you consult with the key decision makers in your organization or community, and evaluate the listed options as best you can. Remember: you may find that other options such as re-use or conservation are the most cost-effective measures for you. A suggested ranking from 0-3 of each "Criteria for Consideration" is shown below. Using the suggested rankings, please fill out the table along with the form on the next page, and submit it to EPD. (A sample table is shown below). You may develop your own method of evaluating each alternate water source option. If you do so, please describe your method in detail and submit it to EPD with your Alternate Water Source Evaluation report. After completing the table, provide a detailed discussion of how you evaluated the possible alternate water sources and what your recommended alternate source will be.

Sample form for scoring alternate water sources

Criterion / Source	Operating costs	Degree of control and management	Construction costs	Reliability of source during peak usage times	Flexibility provided by source	Long-term viability of source	Impact on local or regional water quality	Sustainability of source	Total score
Transfers	**3**	**2**	**2**	**2**	**2**	**2**	**1**	**2**	**16**
Alt. Aquifer	**3**	**3**	**2**	**3**	**3**	**2**	**3**	**2**	**21**
Surf. Water	**2**	**3**	**1**	**1**	**3**	**2**	**0**	**1**	**13**
Reservoir	**1**	**3**	**0**	**1**	**2**	**2**	**1**	**1**	**9**
De-sal	**0**	**3**	**0**	**2**	**3**	**3**	**1**	**3**	**11**
Other (specify)	**3**	**2**	**3**	**2**	**3**	**3**	**3**	**3**	**16**

Ranking

Unacceptable = 0
Difficult but acceptable = 1
Acceptable = 2
Would not be a problem = 3

Conservation, re-use, metering, etc.

The July 2006 Coastal Permitting Plan requires that all municipal, industrial, and public/private water systems evaluate the feasibility of alternate water sources as a substitute for, or supplement to, groundwater derived from the upper Floridan aquifer

You may have concluded that your community or water system cannot develop an alternate water source to the Upper Floridan aquifer. You may still be able to meet your current and future water needs by developing other methods of obtaining water. These include conservation education, re-use of reclaimed water, leak repair, implementing outdoor watering schedules, installing water meters, or implementing conservation rate structures. In many communities in Georgia and the United States, communities have been able to greatly reduce their water usage on a per capita basis and on an overall production basis, and thus greatly prolong their water availability, by implementing these practices. As part of the 2006 Coastal Plan, most groundwater withdrawal permittees will be required to assess these practices as a condition of their permit. EPD Guidance Documents to assist you in learning about and evaluating these practices are available on line at: http://www.gadnr.org/cws/

Part 2:Alternate Water Sources Evaluation Form

As a condition of your permit, you must complete a detailed and thorough evaluation of alternate water sources in your area, and submit it to EPD within 24 months of your permit issue date. This document and form should serve only as guides in the development of your evaluation report. To assist you in your evaluation, you may find it useful to complete the items below. Please submit this form along with your Alternate Water Source Evaluation report.

A. Briefly describe how you evaluated each alternate water source option, citing the pros and cons of each option.

1. **Water transfers.**

Pros:

Cons:

2. **Development of groundwater aquifers other than the upper Floridan aquifer**

Pros:

Cons:

3. **Development of surface water resources**

Pros:

Cons:

4. **Direct surface water supply reservoir**

Pros:

Cons:

5. **Desalination**

Pros:

Cons:

6. Other (please specify) _____

Pros:

Cons:

B. Using the ranking (0-3) shown below, rank each alternate water source under the criteria shown in the table. Write the total score in the last column. Indicate which alternate water source, if any, you chose.

Criterion / Source	Operating costs	Degree of control and management	Construction costs	Reliability of source during peak usage times	Flexibility provided by source	Long-term viability of source	Impact on local or regional water quality	Sustainability of source	Total score
Transfers									
Alt. Aquifer									
Surf. Water									
Reservoir									
De-sal									
Other (specify)									

Ranking
Unacceptable = 0
Difficult but acceptable = 1
Acceptable = 2
Would not be a problem = 3

ALTERNATE WATER SOURCE CHOSEN: _____

In your Alternate Water Source Evaluation report, describe in detail how you evaluated the possible alternate water sources and how you decided what your recommended alternate source is. Attach any additional pages.