



## **Florida's Source Water Assessment and Protection Program: Source Water Assessments**



**Florida Department of Environmental Protection  
Tallahassee, Florida  
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## Introduction

Florida's lakes, rivers, streams and ground water aquifers are the source of our drinking water. Drinking water sources must be protected from contamination, whether from hazardous chemicals, storm water runoff, waste disposal sites, and even some business operations. Protecting drinking water is a state and national priority.

Originally passed by Congress in 1974, the Safe Drinking Water Act was created to protect public health by regulating the nation's public drinking water supply. It establishes national standards and practices to prevent the contamination of drinking water sources and to ensure proper drinking water treatment and distribution. In 1996 the Act was amended to include the Source Water Assessment and Protection Program (SWAPP).

SWAPP was developed to ensure that drinking water is protected at the source. All states participate. The Florida Department of Environmental Protection (DEP) is responsible for implementing SWAPP in Florida.

## Assessment Methodology

To assess and report to the public on potential contaminants of our source water and threats to public water systems, SWAPP comprises four key steps:

- 1) Define the source water protection area.
- 2) Identify known or potential sources of contaminants in the area.
- 3) Determine the susceptibility of the water source to the contaminants.
- 4) Notify the water systems and the public and explain the significance of the contaminants identified in the source inventory.

In 2004, DEP will assess all Florida's transient non-community, non-transient non-community and community systems. This report describes the methods and data sources DEP is using to conduct these assessments.

### ***Step 1: Define the Source Water Assessment Area***

A public water system (PWS)—whether publicly or privately owned—provides drinking water for consumption through pipes or other constructed conveyances. A PWS has at least 15 service connections or regularly serves at least 25 people. The three categories of systems covered by SWAPP are:

- 1) Community – has at least 15 service connections for year-round residents or serves 25 year-round residents.
- 2) Transient Non-Community – serves at least 25 people but the population is generally flow through or otherwise served only irregularly.
- 3) Non-Transient Non-Community – regularly serves at least 25 of the same people over six months per year but is not a community system.

SWAPP does not address private household wells and wells serving fewer than 25 people, which are overseen by the Florida Department of Health.

Assessment areas are delineated around each well and surface water intake. The size of the assessment area is based on the type of source (ground water or surface water), the type of system (community, transient non-community or non-transient non-community) and the number of people served by the system.

For transient and non-transient non-community systems supplied by ground water, a 500-foot radius circle around each well is used as the assessment area. For community systems supplied by ground water, a minimum 1000-foot radius circle is used. For community systems serving populations greater than 1000, five-year ground water travel times are modeled and an assessment area is defined by combining the minimum 1000-foot radius circle with the modeled area.

Assessment areas for systems supplied by surface water are determined by using the 72-hour upstream flow, combined with the 100-year flood plain and a 200-foot buffer zone around the intake structures.

Type of Assessment Area	Number of Public Water systems	Number of Wells or Intakes
Community	1760	6071
Non Transient Non Community	1046	1313
Transient Non Community	3486	3613
Surface Water	24	24

### ***Step 2: Identify Known or Potential Sources of Contamination***

Potential sources of contamination are those facilities, sites and activities that have the potential to affect the underlying ground water aquifers or nearby surface waters used for public drinking water supply. It is crucial to understand that these potential sources are just that—potential. Many are regulated by DEP or other agencies and operate under stringent construction and maintenance requirements designed to protect both human health and the environment.

Information about many of these sources is maintained within DEP databases. By utilizing these databases and a geographical information system (GIS), DEP can illustrate the relationships of potential contaminant sources to the approximately 12,000 public water supply intakes in Florida. Because this is a GIS-based project, location data for the public water supply intakes and for the potential sources of contamination are critical.

Eleven categories of potential sources were assessed. These are sources that (1) had electronic databases (2) had enough information to run our analysis and (3) had good location data. This is not the complete universe of potential sources of contamination. SWAPP is continually adding and improving data so that other potential sources of contamination can be added to future assessments.

Assessed categories are:

- State Funded Cleanup Sites: The state-funded cleanup program addresses sites with soil or ground water contamination when legal efforts have been exhausted to find and obtain funds from the responsible parties. A site is adopted for State cleanup if it poses an imminent hazard and does not qualify for Superfund or is a low priority for the Environmental Protection Agency (EPA). There are 75 State Funded Cleanup sites in Florida.
- National Priority List (Superfund) sites: Congress passed legislation in 1980 that established the Superfund Program to locate, investigate and clean up sites contaminated with hazardous substances. The EPA administers the Superfund Program in cooperation with individual States and tribal governments. There are currently 64 National Priority List (or NPL) sites in Florida.
- Solid Waste Facilities/Landfills: Landfills, or solid waste disposal facilities, are areas of land or excavations where waste is placed for disposal. A data set of 283 Class I, II and III landfills and construction and demolition disposal sites was used in this assessment.
- Class I Underground Injection Wells: Class I wells in Florida are used to inject non-hazardous industrial wastewater or municipal wastewater below the lowermost Underground Source of Drinking Water (USDW). There are approximately 125 active Class I injection wells in Florida.
- Underground Storage Tanks: An underground storage tank contains regulated substances such as motor fuels, residual oils, waste oil, lubricants, petroleum solvents and petroleum based substances. In this assessment, verified location data were available for 30,440 petroleum storage tank facilities.
- Large Quantity Generators (LQG): LQG facilities generate 2,200 pounds or more of hazardous waste, or 2.2 pounds of acutely hazardous waste (such as pesticides, toxics, or cyanide compounds) each month. Recycled waste is included in this quantity determination. There are 351 LQG facilities in Florida.
- Treatment, Storage or Disposal (TSD) Facilities: TSD facilities treat, store or dispose of hazardous waste. Potential contaminants vary depending upon the types, management and degradation of the waste. There are 159 TSDs in Florida.
- Delineated Ground Water Contamination Areas: The 1988 Legislature directed DEP to implement water well construction and water testing standards within areas of known ground water contamination. While areas have been delineated based on detection of solvents and gasoline, EDB (formerly used in pesticides)

has been the primary contaminant serving as the basis for the 427,897 acres delineated in 38 counties statewide.

- **Brownfield:** A “brownfield” generally refers to an abandoned, idled or under-used industrial or commercial property where expansion or redevelopment is complicated by actual or perceived environmental contamination. Fifty brownfield sites with identified sources of contamination were used in this assessment.
- **Dry-cleaning Facilities:** Data used in this assessment represents all locations registered as an operating or a former dry-cleaning facility. There were 2,483 dry-cleaning facilities used in this assessment.
- **Permitted (DEP) Wastewater facilities:** *Domestic wastewater* is wastewater derived principally from dwellings, businesses and institutions, and includes sanitary wastewater and sewage. *Industrial wastewater* is discharged from factories, manufacturing plants and facilities like pulp and paper mills, phosphate mines, power plants, car washes, laundromats, citrus processors and dairies. A total of 3,824 permitted domestic and industrial wastewater treatment facilities was included in this assessment.

### **Step 3: Determine Susceptibility of the Water Source**

Susceptibility is the level of risk for water contamination based on the nature of the contaminant(s) and the likelihood of movement to a drinking water source. Any potential sources of contamination near a drinking water well are identified and assigned a low, moderate, or high risk. This ranking gives system owners a simple screening tool to aid in making decisions about the best ways to protect drinking water sources.

The susceptibility analysis assumes that any contaminant released to the ground surface has the potential to enter a public water supply system. This analysis does not consider the treatment technologies public water systems use to remove contaminants or improve water quality. Susceptibility is calculated based on the following equally weighted factors:

- Health effects (toxicity and potential cancer risk) of a chemical of concern.
- Leaching potential (mobility) of a chemical of concern.
- Protection provided by the underlying geologic materials.
- Operating practices and design of the potential source(s) of contamination.

Each of these factors is evaluated and the potential contaminant source is given a score.

<b>Ranking</b>	<b>Range</b>
HIGH	Greater than 100
MODERATE	10 to 100
LOW	Less than 10

#### ***Step 4: Notify the Public Water Systems and the Public***

The final step is to provide water systems and the public with assessment results. A full report of the assessment results will be sent to each public water system. After review by the public water system, a tabular version of the reports will be made available on the SWAPP website at [www.dep.state.fl.us/swapp](http://www.dep.state.fl.us/swapp). To increase security, location information for public water systems or potential sources is not posted on the website.

### **Preliminary Statewide Assessment Results**

As of August 2004, approximately 75 percent of public water systems in the state were assessed. In 62 percent of the assessed public water systems, no potential sources of contamination were found. Of the 38 percent of systems with one or more potential sources of contamination within their assessment areas, the most prevalent potential source is petroleum storage tank facilities, followed by wastewater treatment facilities, dry cleaners and delineated ground water contamination areas.

<b>Type of Potential Source</b>	<b>Number</b>	<b>Percent of Total</b>
Petroleum Storage Tanks	1450	68.40%
Wastewater Treatment Facilities	484	22.83%
Delineated Ground Water Contamination Areas	85	4.01%
Dry Cleaning Facilities	82	3.87%
Large Quantity Generators of Hazardous Waste	9	0.08%
Treatment, Storage , and Disposal Facilities for Hazardous Waste	5	0.04%
Landfills	2	0.02%
State Funded Clean Up Sites	1	0.01%
Superfund Sites	1	0.01%

## Source Water Protection

The information provided in this report provides the foundation for a local effort to better protect Florida's drinking water. This assessment contains information that can be used to manage and prevent potential sources of contamination near a well system or surface water intake. You can use this information to develop a community-based plan to prevent pollution of ground water, lakes, rivers and streams that serve as sources of drinking water in your community.

Many community and non-transient non-community systems in Florida have already developed wellhead or source water protection plans. Many larger community systems are covered by county or city wellhead protection plans. The Florida Rural Water Association works with smaller systems to evaluate potential sources of contamination and provide options for source water protection. EPA has several examples of successful local source water protection programs available on its SWAPP website at <http://www.epa.gov/safewater/protect/casesty/casestudy>.

Source Water Protection could include:

- *Formation of a local team* - The team's primary objective should be to cohesively and efficiently protect sources of drinking water sources. Teams should consider ongoing authorized activities in the watershed along with local planning, land use and zoning requirements.
- *Management Measures* - Management strategies can be used to reduce or eliminate the potential threat to drinking water supplies posed by the contaminant sources identified through SWAPP. This may be accomplished through local regulatory controls or non-regulatory measures, such as best management practices or financial assistance, developed with the involvement of local citizens, businesses and industries.
- *Contingency Planning* - The development and implementation of both long and short-term drinking water supply replacement strategies for supplying safe drinking water to the consumer in the event of contamination or physical disruption.

The Department of Environmental Protection will also use SWAPP to determine additional measures it can take to better protect Florida's drinking water supplies.

## What Happens Next

This report presents the results of an initial statewide source water assessment. The assessments will be repeated every five years, with approximately one-fifth of the state re-evaluated each year.

One of the major efforts of SWAPP is to comprehensively locate and identify potential sources of contamination using verified, high quality data. As more information becomes available about potential sources of contamination, more types of information will be added to the assessments. In 2005, petroleum contamination clean-up sites and

contaminated sites with remedial action plans will be added. DEP is also working with the Department of Agriculture and Consumer Services to incorporate information about agricultural land uses and activities into the next assessments.

## Resources

- The DEP maintains a SWAPP website with program information, assessment results and links to additional information about drinking water and potential contaminant sources at [www.dep.state.fl.us/swapp](http://www.dep.state.fl.us/swapp) Additional information is also available by contacting:

Florida Source Water Assessment and Protection Program  
Florida Department of Environmental Protection  
2600 Blair Stone Road MS 3580  
Tallahassee, FL 32399-2400  
850-245-8644

- The US Environmental Protection Agency maintains an extensive website with information about the national program, SWAPP in other states and the use of SWAPP assessments by public water systems and local communities for source water protection. Visit [www.epa.gov/safewater/protect.html](http://www.epa.gov/safewater/protect.html) for more information.
- The Florida Rural Water Association (FRWA) works with small public water systems to protect and enhance public water supplies. Visit [www.frwa.net](http://www.frwa.net) for more information, or contact:

Florida Rural Water Association  
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