



# Abandoned Artesian Well Plugging Program

# 2003

St. Johns River Water Management District

## Overview

An artesian well is a well that has been drilled into a rock formation that contains water confined under pressure (an artesian aquifer; Figure 1). An abandoned artesian well is one that has no present or future beneficial use. It also may:

- Not have a properly functioning valve or flow control
- Not meet current well construction standards
- Be discharging salt water into a drinking water aquifer

Free-flowing abandoned artesian wells can potentially waste many millions of gallons per day of our water resource. Non-flowing abandoned wells may also act as a conduit for sources of contaminants to enter the aquifer. The goal of the St. Johns River Water Management District's (SJRWMD) abandoned artesian well plugging program is to assure the continued availability of groundwater resources by detecting, evaluating, and controlling abandoned artesian wells. The program seeks, and is designed to actively encourage, public participation in detecting problem wells. Control and remediation of abandoned wells is achieved by sharing plugging costs with other governmental entities and well owners.

In general terms, the process of permanently plugging an abandoned well involves a site visit and well inventory, including installation of a temporary plug where possible, correspondence to formalize participation, geophysical logging of the well, and permanent well abandonment by a licensed well driller under contract to SJRWMD. All steps in this process are

This document was prepared to comply with the requirements of Section 373.207, Florida Statutes (1991). It is the twenty-first annual report on the inventory of abandoned artesian wells in the St. Johns River Water Management District and on the work plan for controlling or plugging inventoried wells. This report covers the fiscal year October 1, 2002, through September 30, 2003.

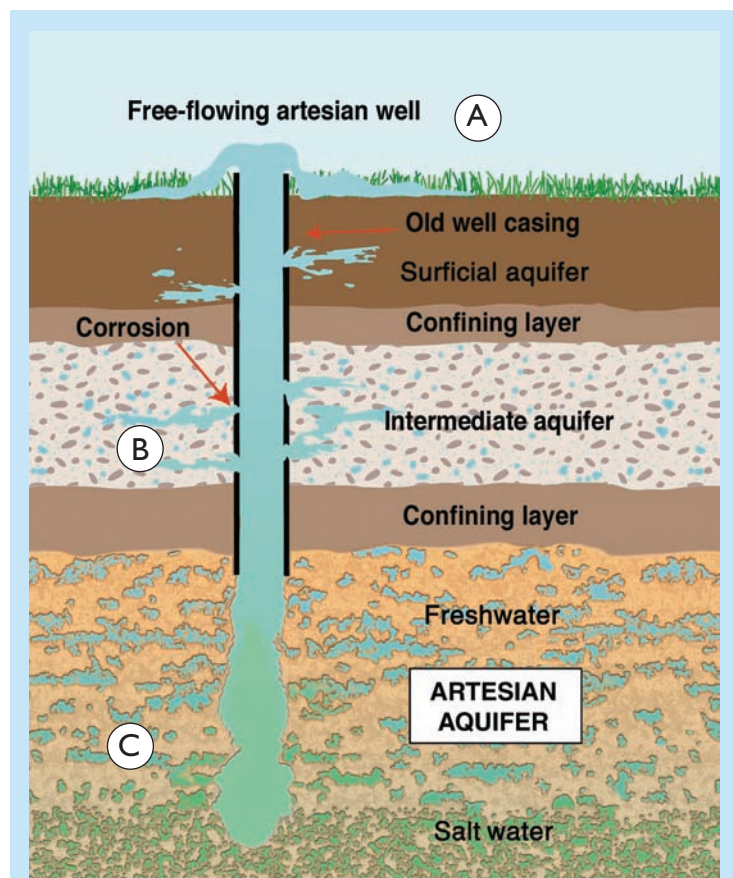


Figure 1. This well schematic illustrates several problems which may be associated with abandoned artesian wells, including (A) uncontrolled (continuous) flow at the surface, (B) leakage below the surface into the surficial and intermediate aquifers, and (C) intra-aquifer flow in the artesian aquifer where water of lesser quality moves upward and contaminates the freshwater in the upper portion of the same aquifer.



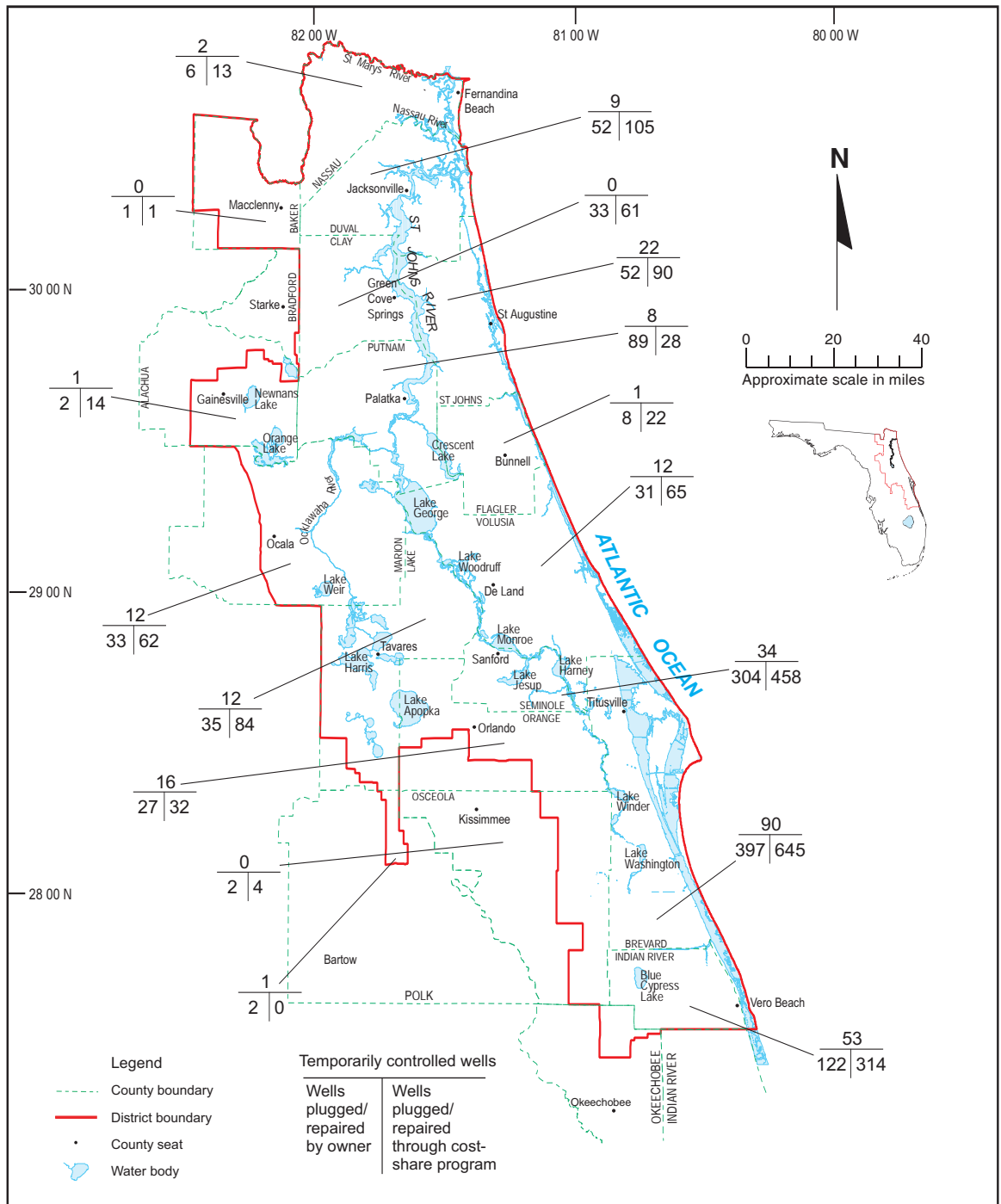


Figure 2. Distribution of temporarily controlled and plugged or repaired abandoned artesian wells in the St. Johns River Water Management District as of September 30, 2003

essentially ongoing, with new wells being inventoried as existing wells are being geophysically logged and other wells are being abandoned. The program seeks to halt and/or prevent the waste of groundwater resources.

In addition to water conservation, other benefits derived from the program include the hydrogeologic data collected as part of our well inventory process and the public awareness perspective of understanding the groundwater resources of a local area.





## 2003 Results

In fiscal year 2002–2003, a total of 90 wells were plugged or repaired, conserving an estimated maximum potential flow of 21.8 million gallons per day (mgd) of water (Table 1). Plugging or repairing wells through the SJRWMD program has conserved an estimated maximum potential flow of 540 mgd of water from 1976 through September 2003.

Total contractual costs for the well plugging program in fiscal year 2002–2003 were \$310,090, or \$3,445 per well (based on 90 wells). Reimbursement revenue from county and individual cost-share cooperators accounted for \$102,526 of the total contractual costs of well plugging (Table 2).

County	Number of Wells Plugged	Number of Wells Repaired	Total Estimated Maximum Potential Flow (mgd)
Alachua	0		0
Baker	0		0
Bradford	0		0
Brevard	23		6.3
Clay	5		0.7
Duval	1		0.6
Flagler	0		0
Indian River	11	1	5.8
Lake	9		1.0
Marion	1		0.2
Nassau	3		1.0
Okeechobee	0		0
Orange	5		0.2
Osceola	0		0
Polk	0		0
Putnam	0		0
St. Johns	6		3.6
Seminole	21		2.1
Volusia	4		0.3
<b>Total</b>	<b>89</b>	<b>1</b>	<b>21.8</b>

Table 1. Wells plugged or repaired by the St. Johns River Water Management District during fiscal year 2002–2003

The program provides a direct economic incentive for reporting and plugging these wells. Without this program, a great many abandoned wells would not be properly addressed.



As of September 30, 2003, the cumulative number of artesian wells identified under the abandoned artesian well plugging program was 3,467 (Figure 2). Of this total, 273 are undergoing investigation to be permanently plugged, 1,998 have been permanently plugged or repaired through the SJRWMD cost-share program, and 1,196 have been plugged or repaired by the well owners. A summary is presented in Table 3 of the wells which are on the SJRWMD inventory of wells under investigation to be permanently abandoned. These wells have been temporarily controlled whenever possible.

Cooperator (reimbursement percentage)	Total Cost	Cooperator Cost
Brevard County (50)	\$32,920	\$16,460
Clay County (50)	\$10,070	\$5,035
Florida Department of Transportation (50)	\$2,674	\$1,337
Indian River County (50)	\$38,858	\$19,429
Lake County (50)	\$364	\$182
Nassau County (50)	\$2,660	\$1,330
Natural Resources Conservation Services (75)	\$32,241	\$10,487
Seminole County (50)	\$71,452	\$35,000
Individual (various)	\$17,795	\$13,266
SJRWMD/State Lands/Florida Forever (100)	\$101,056	N/A
<b>Total</b>	<b>\$310,090</b>	<b>\$102,526</b>

Table 2. Cost-share funding during fiscal year 2002–2003, by cooperator

County	Number of Wells in Inventory
Alachua	1
Baker	0
Bradford	0
Brevard	90
Clay	0
Duval	9
Flagler	1
Indian River	53
Lake	12
Marion	12
Nassau	2
Okeechobee	0
Orange	16
Osceola	0
Polk	1
Putnam	8
St. Johns	22
Seminole	34
Volusia	12
<b>Total</b>	<b>273</b>

Note: Total actual flow from these wells is estimated at approximately 4 mgd.

Table 3. Inventory of wells under investigation to be permanently abandoned, as of September 30, 2003



**SUMMARY** The program is responsible for plugging a substantial number of wells each year. At the same time, significant numbers of new abandoned artesian wells continue to be reported. Two factors contribute to the increase in abandoned wells: Florida's pattern of rapidly changing land use and water well obsolescence. Water well obsolescence typically results from the corrosion of metallic well casings. Both factors can be expected to continue in the foreseeable future, making it likely that SJRWMD will continue programs to control abandoned wells.

Note: The number of wells and the flow calculations presented in these annual reports may not correlate between years. Any discrepancies are related to (1) improvements in estimating flow rates (more wells have been measured) or (2) minor corrections to the database.



The primary goal of Florida's water management districts is the protection of water resources. Their mission is to manage water resources to ensure the continued availability of those resources while maximizing environmental and economic benefits. This is accomplished through regulation of consumptive uses; providing assistance to federal, state and local governments; operation and maintenance of control works; land acquisition and management; and applied research.

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