

Abandoned Artesian Well Plugging Program

1999

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 essentially ongoing,

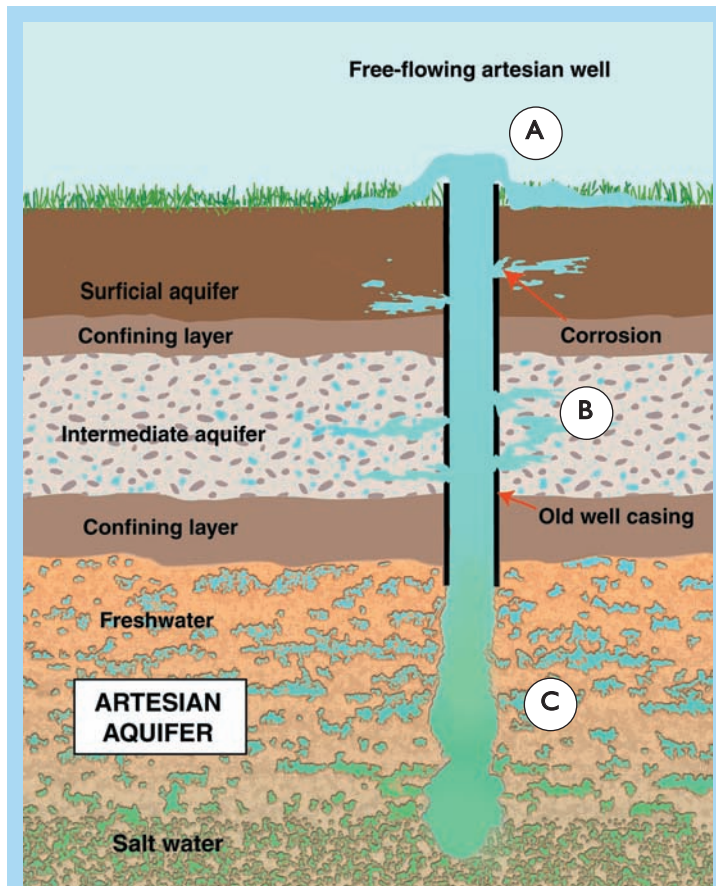


Figure 1. This well schematic illustrates several problems which may be associated with abandoned artesian wells, including (A) uncontrolled (continuous) flow at the surface, (B) leakage below the surface into the surficial and intermediate aquifers, and (C) intra-aquifer flow in the artesian aquifer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

This document was prepared to comply with the requirements of Section 373.207, Florida Statutes (1991). It is the sixteenth 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, 1998, through September 30, 1999.



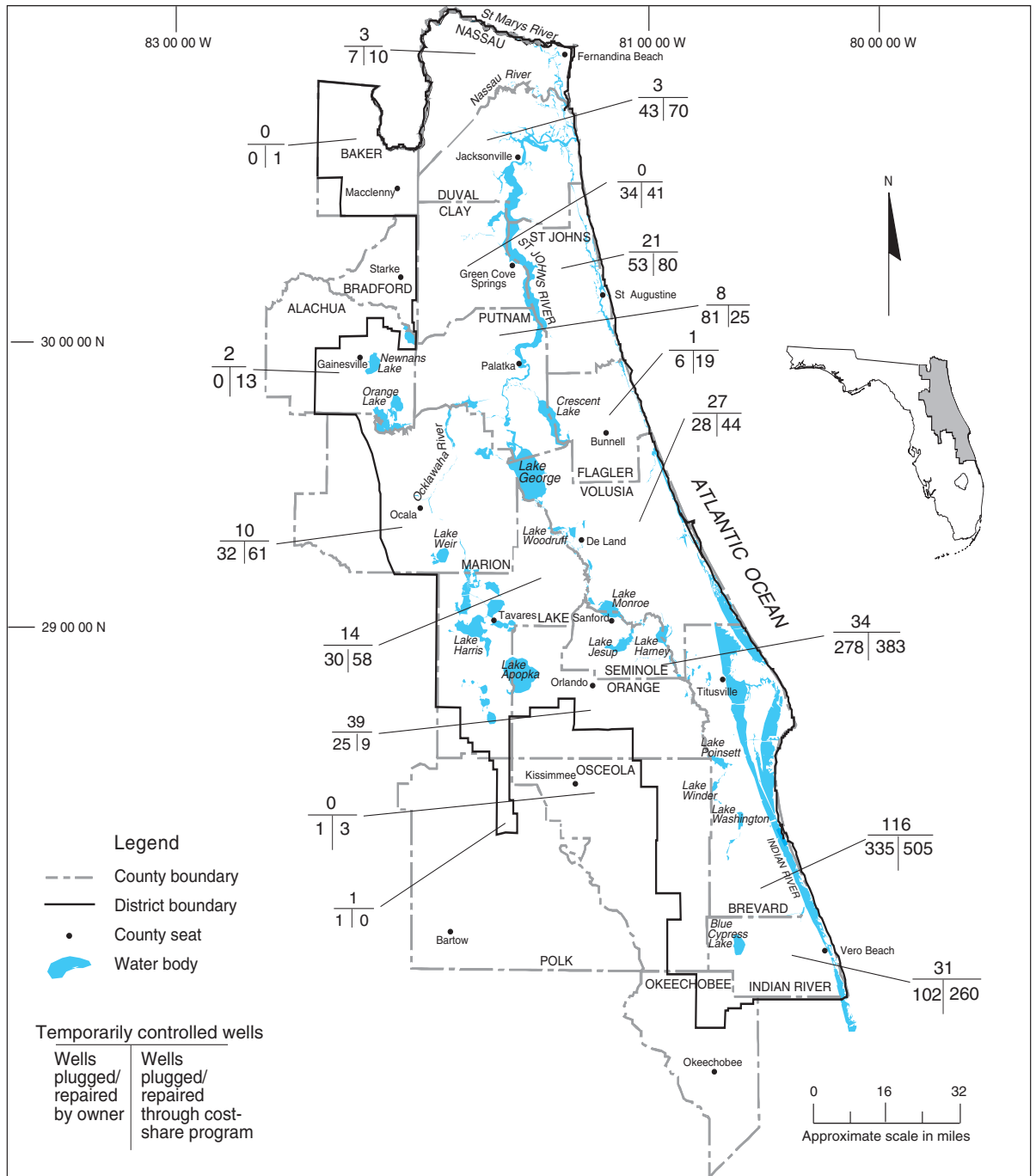


Figure 2. Distribution of temporarily controlled and plugged or repaired abandoned artesian wells in the St. Johns River Water Management District as of September 30, 1999

with new wells being inventoried as existing wells are being geophysically logged and other wells are being abandoned. The program provides direct intervention to halt and/or prevent the waste of water resources.

In addition to water conservation, other benefits derived from the program include public outreach, hydrogeologic data collected as part of our well inventory process, and the public health and welfare perspective of not allowing these wells to



1999 Results

In fiscal year 1998–99, a total of 108 wells were plugged or repaired, saving an estimated maximum potential flow of 29.70 million gallons per day (mgd) of water (Table 1). Plugging or repairing wells through the SJRWMD program has saved an estimated maximum potential flow of 431 mgd of water from 1976 through September 1999.

Total contractual costs for the well plugging program in fiscal year 1998–99 were \$319,148, or \$2,955 per well (based on 108 wells). Reimbursement revenue from county and individual cost-share cooperators accounted for \$74,122 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	12		7.50
Baker	0		0
Bradford	0		0
Brevard	20	1	5.50
Clay	7		1.00
Duval	3		1.69
Flagler	0		0
Indian River	14		7.28
Lake	2		0.20
Marion	10		2.00
Nassau	1		0.34
Okeechobee	0		0
Orange	0	1	0
Osceola	0		0
Polk	0		0
Putnam	10		1.03
St. Johns	0		0.60
Seminole	20		2.02
Volusia	7		0.54
Total	106	2	29.70

Note: Blank cells indicate zero. Any mathematical inaccuracy is due to rounding down.

Table 1. Wells plugged or repaired by the St. Johns River Water Management District during fiscal year 1998–99

go unnoticed and unattended. 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, 1999, the cumulative number of artesian wells identified under the abandoned artesian well plugging program was 2,948 (Figure 2). Of this total, 310 are undergoing investigation to be permanently plugged, 1,582 have been permanently plugged or repaired through the SJRWMD cost-share program, and 1,056 have been plugged or repaired by the well owners. A summary of the wells which are on the SJRWMD inventory of wells under investigation to be permanently abandoned is presented in Table 3. These wells have been temporarily controlled whenever possible.



COOPERATOR (reimbursement percentage)	TOTAL COST	COOPERATOR COST
Clay County (50)	\$ 10,564	\$ 5,282
Indian River County (50)	40,634	20,317
Brevard County (50)	28,545	14,272
Brevard Mosquito Control (50)	5,156	2,578
Seminole County (50)	37,507	18,754
Volusia SWCD (50)	8,948	4,474
ASCS/Farm Service Agency (75)	2,668	2,001
Individual (various)	12,904	6,444
SJRWMD (100)	107,406	NA
SJRWMD (other projects)	64,516	NA
Total	\$ 319,148	\$ 74,122

Table 2. Cost-share funding during fiscal year 1998–99, by cooperator

County	Number of Wells in Inventory
Alachua	2
Baker	0
Bradford	0
Brevard	116
Clay	0
Duval	3
Flagler	1
Indian River	31
Lake	14
Marion	10
Nassau	3
Okeechobee	0
Orange	39
Osceola	0
Polk	1
Putnam	8
St. Johns	21
Seminole	34
Volusia	27
Total	310

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, 1999



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 it will be necessary for SJRWMD to continue programs to control abandoned wells.

End 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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