

**Lee County Board Of County Commissioners
Agenda Item Summary**

Blue Sheet No. 20040914

1. REQUESTED MOTION:

ACTION REQUESTED: Authorize the establishment of one (1) new Well Drill Inspector position, Position Group Code 52650, to meet increased well inspection workload. Approve transfer from General Fund Reserves in the amount of \$43,300 to cover salary, fringe benefits, and operating costs for the balance of the current fiscal year in the Natural Resources/Water Resources Business Unit, OC5370700100.

WHY ACTION IS NECESSARY: Board approval required for establishment of a new position.

WHAT ACTION ACCOMPLISHES: Provides adequate level of well inspection services.

2. DEPARTMENTAL CATEGORY:

COMMISSION DISTRICT #: C-W 08

C8D

3. MEETING DATE:

07-27-2004

4. AGENDA:

- CONSENT
- ADMINISTRATIVE
- APPEALS
- PUBLIC
- WALK ON
- TIME REQUIRED:

5. REQUIREMENT/PURPOSE:
(Specify)

- STATUTE
- ORDINANCE
- ADMIN. CODE
- OTHER

6. REQUESTOR OF INFORMATION:

- A. COMMISSIONER
- B. DEPARTMENT Public Works
- C. DIVISION Natural Resources
- BY: Roland E. Ottolini, P.E.

[Signature]

7. BACKGROUND:

The Lee County well construction permitting program was implemented in 1985 under Ordinance 85-33, subsequently restated as Ordinances 87-7, 91-11, and 00-15 based on the authority delegated to Lee County by the South Florida Water Management District (SFWMD). To protect Lee County's groundwater resources, this program regulates all well construction in unincorporated Lee County by licensing well construction contractors, issuing well construction permits and inspecting the wells constructed to insure compliance with Lee County and SFWMD requirements. The number of well construction permits issued in 2000 and 2003 was 2,273 and 2,881 respectively. Through June 30, 2004, 2,200 permits have been issued. During 2003, the well construction staff provided 5,721 total inspections. To date, 4,330 inspections have been performed. The well inspection team consists of two (2) Well Drill Inspectors and one (1) Well Drilling Inspector Supervisor. This will be the first inspection personnel enhancement since 1986. Although a new Well Drill Inspector position was included in the FY04/05 budget request, this position is required now to meet the increased inspection workload.

- Position salary and benefits: \$7,000
- Vehicle: \$28,000
- Computer: \$3,000
- Miscellaneous Operating expenses: \$5,300
- Total \$43,300

Attachments: Memorandum regarding additional position.
Transfer of Funds

8. MANAGEMENT RECOMMENDATIONS:

9. RECOMMENDED APPROVAL:

A Department Director	B Purchasing or Contracts	C Human Resources	D Other	E County Attorney	F Budget Services				G County Manager
					OA	OM	Risk	GC	
<i>[Signature]</i> 7-14-04	N/A	<i>[Signature]</i>	N/A	<i>[Signature]</i> 7/14/04	<i>[Signature]</i> 7/14/04	<i>[Signature]</i> 7/15/04	<i>[Signature]</i> 7/15/04	<i>[Signature]</i> 7/15/04	<i>[Signature]</i> 7-14-04

10. COMMISSION ACTION:

- APPROVED
- DENIED
- DEFERRED
- OTHER

Rec. by CoAtty
Date: *7/14/04*
Time: *2:25*
Forwarded to:
Co. Admin
7/15/04

RECEIVED BY
COUNTY ADMIN
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Lee County
SOUTHWEST FLORIDA

**INTEROFFICE MEMORANDUM
FROM
PUBLIC WORKS
NATURAL RESOURCES MANAGEMENT**

Date: April 12, 2004

TO: Roland Ottolini, P.E.
Elin Clemons

From: Anura Karuna-Muni, P.E.
Rand Edelstein Jr., P.G.

SUBJECT: Additional Well Inspector Position

The hydrogeology of Lee County is complex due to the presence of at least seven different aquifer units. Each of these aquifers exhibits differences in groundwater quality and hydraulic head. Under these conditions, proper design and installation of all wells is critical to insure protection of the limited groundwater resources. The complexity of the subsurface conditions present in Lee County and protection of the limited groundwater resource are the primary factors necessitating the Well Code Ordinance. Prior to adoption and implementation of the Well Code Ordinance, many wells in Lee County were improperly constructed and/or maintained, allowing cross communication between aquifer units that resulted in degraded water quality and often the permanent loss of potable water supply resources.

Lee County Ordinance 00-15, Well Code provides the statutory authority and specifies the requirements of the Lee County well permitting program. The Lee County Well Code Ordinance was enacted to provide minimum requirements for safeguarding life, health and public welfare by regulating and controlling design, construction, alteration, repair, equipment, location, maintenance and plugging of wells in the unincorporated areas of Lee County. The Well Code Ordinance is dedicated to development and maintenance of better well drilling, to safeguarding water resources, and to standardizing drilling and other practices. The Well Code Ordinance requires that a Natural Resources Division (NRD) inspector conduct inspection of well construction, alterations, and plugging.

In addition to being a requirement of the Well Code Ordinance, the well inspections performed by the NRD inspector's are essential for insuring the wells are constructed or abandoned by grouting in the manner required by the site specific conditions to protect the groundwater resources. The most critical elements of proper well construction are installation of the well casing to the depth dictated by the subsurface conditions and completely filling the annular space between the borehole and the well casing with grout. Figure 1 provides a conceptualized illustration of a properly constructed well and an improperly constructed well. The improperly constructed well illustrates voids in the annular grout and an annular interval with no grout allowing potential direct migration of surface water into the aquifers and migration of groundwater across the confining unit between the water-table aquifer and the Lower Tamiami aquifer. It also illustrates a well casing installed to an insufficient depth, that allows the open borehole to interconnect two aquifers allowing migration of

groundwater across the confining unit between the Lower Tamiami aquifer and the Sandstone aquifer. The scenario illustrated by the improperly constructed well interconnects three aquifer units potentially adversely affecting water quality and availability in all three aquifers. The determination of the well casing depth, the proper grouting of the well casing/borehole annular space and the total well depth are critical components of the NRD well inspection. A single improperly constructed well can cause a degradation of groundwater quality capable of eliminating the aquifer unit(s) from providing potable water over a wide area.

The total well depth can be independently determined when the NRD inspector is present to personally observe the drilling process or after completion of well construction by measurement using a weighted tape. Independent determination of the proper depth placement of the well casing is best made when the NRD inspector is present to personally observe the casing installation during well construction. If the well casing installation is not observed, the NRD inspector must measure the well casing depth using a weighted tape to "feel" the bottom of the casing and the start of the open borehole interval. Under some conditions the well casing depth cannot be determined using this method. Independent determination of the correct well casing/borehole annular space grout placement can only be achieved when the NRD inspector is present to personally observe the grouting during well construction. Correct well casing/borehole annular space grout placement is achieved by inserting a small diameter pipe (tremmie pipe) in the annular space from land surface to the bottom of the borehole, then pumping the required volume of grout through the tremmie pipe and filling annular space with grout from the bottom of the borehole to land surface. Volumetric calculations are performed to determine and confirm the volume of grout that should be used to completely fill the well casing/borehole annular space.

The NRD well inspection team has consisted of three well inspectors since July 1986. Additionally, the supervising hydrogeologist has supplemented the inspection team by performing well inspections during periods of high inspection demand. During 1996, the NRD inspection team performed 1986 initial inspections and 1061 return inspections for a total of 3047 inspections. During 2003, the NRD inspection team performed 3417 initial inspections and 2304 return inspections for a total of 5721 inspections. The total number of inspections performed by the NRD well inspection team has increased by 87 percent from 1996 to 2003. The factors necessitating one or more return inspections include the drilling contractor's inability to complete the well construction for various reasons and/or the NRD inspector's schedule limits the time available for initial inspection requiring a return visit to witness critical stages of well construction or to perform a final inspection following completion of well construction. The length of time required to construct a well and the actual time when the critical stages of well construction will occur, typically cannot be predicted with any certainty and are not under the control of the NRD inspectors. Similarly, the NRD inspector's daily schedule is variable due to the uncertainty of the time required for construction of a specific well and also is not entirely under the control of the NRD inspectors.

The increase in the total number of inspections required has resulted in an increasing number of inspections being performed following completion of well construction (after the fact inspections). During the first quarter of 1996, 62 percent of the well inspections were performed after the fact (see Figure 2). During the first quarter 2003, 77 percent of the well inspections were performed after the fact (see Figure 2). After the fact inspections are incomplete well and under certain circumstances do not allow the inspector to verify the information provided by the well contractor. The after the fact well inspections being performed by the NRD well inspectors do not independently

determine if the correct casing/borehole annular space grout placement has been performed by the drilling contractor and under certain conditions, the well casing depth cannot be determined. These after the fact well inspections may allow improper well construction that has the potential to result in contamination and loss of the limited potable groundwater resource(s).

The number of new permit well inspections that the NRD inspection team will receive on any particular day is dictated by the drilling contractors. The number of return inspections that the NRD inspection team must perform on any particular day is dependent on the well construction activity and inspection scheduling on the previous day. Due to these factors, the total number of inspections that the NRD inspection team will need to perform on any particular day cannot be anticipated in advance and is not entirely under the control of the NRD inspectors. The individual inspectors' schedules are prepared daily and organized to minimize travel between inspection sites and to minimize the number of after the fact inspections.

After the fact inspections cannot independently determine if the correct casing/borehole annular space grout placement has been performed by the drilling contractor and under certain conditions, the well casing depth cannot be determined. The inspector must rely on the drilling contractor to provide information on the volume of grout and grout mixture used without witnessing the grout preparation and placement. Instances have been documented where the grouting information, casing depth and/or total well depth provided to the NRD inspectors by the drilling contractor has been determined to be unreliable or incorrect. It is essential for proper implementation of the Well Code Ordinance to have the NRD well inspectors witness the critical stages of well construction (well casing placement and well casing/borehole annular grout installation) for as many well installations as possible. Based on the number of inspections being performed, their locations and scheduling considerations, the current well inspection team comprised of three well inspectors is insufficient to insure that the number of inspections performed after the fact is minimized. Addition of a fourth well inspector to the NRD well inspection team is warranted at this time.

The current well permitting fees were adopted in the late 1980's. Currently, the permitting fee revenue funds approximately 40 percent of the permitting program costs. Revenue from the General Fund provides the funding for the remainder of the permitting program costs. An increase in the well permitting fees should be implemented to increase the percentage of the permitting program funded by the well permitting fee revenue and to provide funding for the proposed fourth well inspector position.

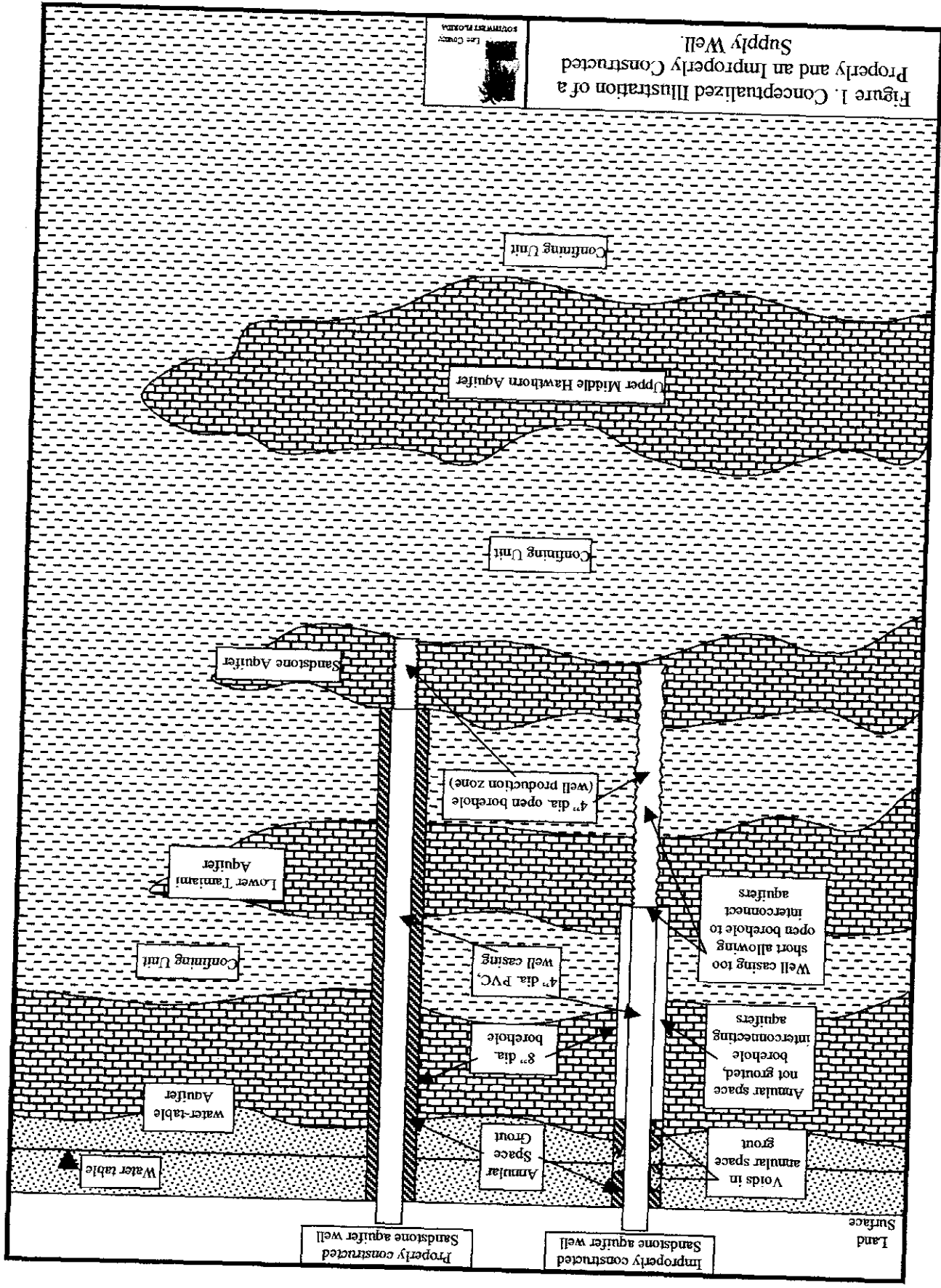


Figure 1. Conceptualized Illustration of a Properly and an Improperly Constructed Supply Well.



Lee County, Missouri

NEW POSITION REQUEST FORM - FY 04/05

Department Name: Public Works Division Name: Natural Resources

Business Unit Name: Water Resource Management Business Unit #: OC5370700100

Position Title: Well Drill Inspector

Position Group Number: 52650 Proposed Salary Amount w/o fringes \$ 32,655

Position Justification: Currently, well inspections are being performed by two well inspectors and the Well Inspector Supervisor. Fully 75% of well inspections are being completed after the fact with critical segments (well opening, grouting, etc.) unsupervised, requiring heavy reliance on competence of well drilling contractors and their employees. Since 1996, well inspections have increased from 3,047 to 5,721 (88%) with no change in staffing levels. As one of South Florida's most precious resources, ground water safety is constantly being compromised due to our inability to effectively monitor well installations around Lee County.

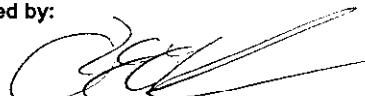
Total Position Costs: List below the total costs associated with the new position (detailed by object code). These costs could be for additional equipment, uniforms, computer, vehicles, etc. that are needed by the new employee to perform his/her job.

These amounts should not be entered into One World. The amounts will be added to your proposed budgets by the Management & Budget Analyst if the position request is approved.

<u>Object Code</u>	<u>Object Code Description</u>	<u>Budget Amount</u>
<u>5012XX</u>		<u>32,655</u>
<u>502XXX</u>	<u>New Position Fringe Benefits Total</u>	<u>16,648</u>
<u>505120</u>	<u>General Office Supplies</u>	<u>150</u>
<u>505230</u>	<u>Uniforms</u>	<u>200</u>
<u>505280</u>	<u>Testing Kit and Tools</u>	<u>2,000</u>
<u>505285</u>	<u>Modular Furniture</u>	<u>2,800</u>
<u>505420</u>	<u>Florida Groundwater Association</u>	<u>150</u>
<u>506410*</u>	<u>Laptop with Docking Station</u>	<u>3,000</u>
<u>506430*</u>	<u>Ford Explorer</u>	<u>28,000</u>
	<u>TOTAL NEW POSITION COSTS</u>	<u>\$ 85,603</u>

* List here and on FY 04-05 Equipment Needs Form

Requested by:



 Department/Division Director

4/20/05

 Date

Use of this form:
 For use of both Model Required and Model Exempt departments.
 For Model Required departments, use this form for RECOMMENDED model only.