



**Review of Internal Controls  
Over Fuel Inventory**

**Report # 08-09**

**Prepared By**

**Office of Inspector General**

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# SOUTH FLORIDA WATER MANAGEMENT DISTRICT

July 31, 2009


**Audit and Finance Committee Members:**

Mr. Charles J. Dauray, Chair  
Mr. Eric Buermann, Member  
Mr. Michael Collins, Member

Re: Review of Internal Controls  
over Fuel Inventory- *Project No.*  
*08-09*

This audit was performed pursuant to the Inspector General's authority set forth in Chapter 20.055, F.S. Enclosed is the subject report that was conducted at the request of Operations and Maintenance Management to evaluate internal controls over the purchasing, receiving and dispensing of fuel used for District Pump and Field Station operations. This report was prepared by Dan Sooker.

Sincerely,



John W. Williams, Esq.  
Inspector General

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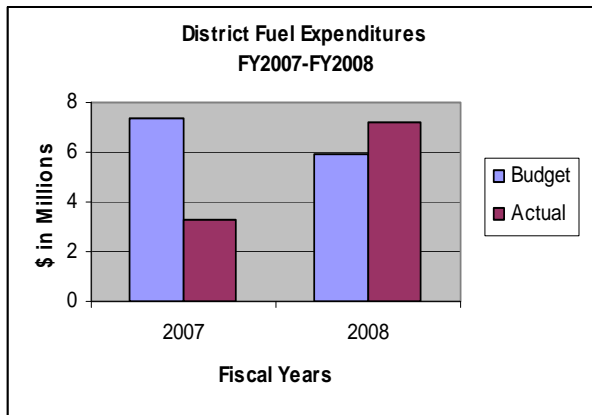
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## BACKGROUND

At management's request, we reviewed the internal controls over the purchasing, receiving and dispensing of unleaded and diesel fuels. In total, the District has ninety-one above and below ground fuel storage tanks that run pumps, equipment, cars and trucks at field and pump stations. These tanks hold between 1,000 – 25,000 gallons of fuel with pump station locations having multiple large tanks. The District's S-5A pump station is one of the larger pumping facilities which has four 25,000 gallon diesel fuel tanks.

Almost all District fuel is purchased from suppliers at Port Everglades in Broward County, Florida and transported to field and pump stations by outside haulers under contract with the District. Through the District's competitive bidding process, the contracted haulers transport fuel from suppliers in Port Everglades to various field and pump stations charging the District a contractually agreed on per gallon rate. The District's FY2007 and FY2008 fuel purchases are shown in the following graph.



As expected in FY2008, District fuel expenditures increased because of the continuing rise in fuel costs. The average per gallon cost of unleaded and diesel fuel for FY2008 was \$3.38 and \$3.46, versus \$2.71 and \$2.49 in FY2007, respectively. These per gallon fuel prices represent an increase of 35%

from the prior year. The increase in fuel expenditures from FY2007 to FY2008 is primarily due to the above mentioned increase in fuel cost as well as an increase in pumping.

Until two years ago, District staff used a dip stick to measure the fuel in the tank before and immediately after a fuel delivery in order to verify the quantities received. Palm Beach County, Martin County and other municipalities still use this method to account for fuel. Fuel inventory in these counties is reconciled to the stick reading.

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The District has discontinued this practice for all fuel tanks except for a small tank at Dupuis where they continue to measure with a dip stick. The District now uses automated fuel tracking systems (i.e. Veeder Root, Caldwell and Pneumercator) to substantiate fuel quantities. The District's automated monitoring systems are fully integrated to measure the amount of fuel received and dispensed. These systems also measure in-tank inventory quantities which are used for periodic reconciliations and provide alerts if a leak in the fuel tank is detected. Backup measuring systems include dip stick readings and tank gauges.

## **OBJECTIVE SCOPE and METHODOLOGY**

Our objective was to evaluate internal controls over the purchasing, receiving and dispensing of fuel used for District Pump and Field Station operations. In order to accomplish our objectives, we performed the following:

- Conducted interviews of appropriate staff
- Examined fuel invoices, reconciliations and other relevant documents
- Reviewed the internal controls in place over the purchasing, receiving and dispensing of fuel
- Visited District Pump and Field Stations that have fuel tanks

Our audit was conducted in accordance with Generally Accepted Government Auditing Standards. These standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## AUDIT RESULTS

### Executive Summary

We found that the District's internal controls over fuel, combined with Port Everglades and fuel hauling contractor processes and procedures, provides reasonable assurance that fuel deliveries are in accordance with quantities ordered. However, overall internal controls would be strengthened by implementing physical security measures at identified District fuel facilities and performing monthly reconciliations of the fuel general ledger account. These improvements would help to ensure that fuel inventory is secured against misappropriation.

We met with the largest District fuel hauling contractor to discuss and observe their internal control procedures. Our review of contractor fuel delivery processes and procedures revealed an internal control program which included stringent driver hiring practices and training programs. Additionally, all of their fuel trucks have a sophisticated GPS system that tracks the truck's route from Port Everglades to where fuel is being dispensed. At Port Everglades, fuel suppliers load contractor transport tankers using meters calibrated and approved by Florida's Department of Agriculture and Consumer Services' Bureau of Petroleum Inspection.

To verifying fuel quantities delivered, the District uses an automated tracking system but some fuel quantity variances are expected. For almost all fuel deliveries, the District and fuel contractor differ slightly as to the quantities delivered. Some amount of fuel measuring variance is expected from its expansion and contraction and volume estimation errors when determining fuel quantities. As temperature changes fuel expands and contracts, which results in an increase or a decrease of fuel quantities. Management has determined that an acceptable variance of 50 gallons per 3,000 gallons, or less, of fuel between the quantity of fuel received (as measured by the District's automated monitoring system) and the contractor bill of lading. Differences of more than 50 gallons would trigger a call to the contractor to start a series of procedures aimed at identifying the cause of the variance.

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To improve fuel inventory safeguards and accountability, we recommend that Operations and Maintenance (O&M) management continue implementing a regular fuel account reconciliation process that identifies and accounts for differences between the G/L fuel account and quantities measured by the fuel tracking system. For the period February 2007 – September 2008 the reconciliation process identified a net reduction of 35,656 gallons to the fuel inventory in the G/L account. These represent less than 1% of fuel purchases differences and were primarily due to unrecorded usage, data entry errors and temperature differences. No fuel misappropriations were uncovered. Fuel account reconciliations are being performed monthly.

### **Procedures to Monitor Fuel Deliveries Could be Improved**

We found that the District's internal controls over the purchasing, receiving and dispensing of fuel at District facilities could be improved by implementing additional control procedures designed to safeguard fuel inventory. No internal control system provides absolute assurance but our recommended improvements to controls over fuel would provide additional safeguards.

We met with the District's largest fuel hauling contractor to discuss and observe their internal control procedures. District fuel suppliers and transporters have internal control procedures in place which provide additional assurances that fuel deliveries are in accordance with District orders. Depending on the type and quantities of fuel ordered, District fuel hauling contractors use transport or short trucks to make field and pump station deliveries. District fuel orders include diesel, off-road diesel and unleaded gasoline. Large fuel orders of 7,500 gallons are delivered by transport truck. Transport truck deliveries to District facilities are not metered but deliveries by short trucks are through metered pump dispensers. Even though transport trucks do not have metered fuel dispensers, contractor and District internal controls and Port Everglades processes and procedures provide reasonable assurance that fuel deliveries are in accordance with quantities ordered and that fuel inventory is secured against misappropriation.

At Port Everglades, fuel suppliers load contractor transport tankers using meters calibrated and approved by Florida's Department of Agriculture and Consumer Services'

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(FDACS) Bureau of Petroleum Inspection. FDACS' Bureau of Petroleum Inspection conducts calibration tests on fuel pumps and meters at retail and wholesale petroleum facilities to ensure that petroleum quantities dispensed are accurate. When testing determines that a meter is accurate, the Bureau places a security seal on the meter. If the meter is determined to be improperly calibrated, it is taken out of service. Overall, the Bureau's calibration testing program confirmed that most meters are accurate and rarely do they take meters out of service for improper calibration. Short truck meters are also calibrated and approved by FDACS' Bureau of Petroleum Inspection. To comply with various Federal, State and local laws and ordinances, the District's above and below ground fuel tanks are serviced and inspected annually to ensure alarm systems, tank integrity, measuring devices and other inspection elements are working. Palm Beach and other counties also conduct tank inspections.

Our review of contractor fuel delivery processes and procedures indicated an internal control program that includes stringent driver hiring practices and training programs. The contractors check references and also conduct motor vehicle and criminal background checks as a condition of employment and then conducts follow-up background checks every six months.

Another contractor control is that all of their fuel trucks have a sophisticated GPS system that tracks the truck's route from Port Everglades, the time spent by the contractor's driver at each stop, and when fuel is being dispensed. Contractor procedures also require that if the driver stops for any reason outside the expected route, the driver is required to call the dispatcher. In the event of a fuel delivery discrepancy with the District, the vendor can track the trucks movements for any unusual delays that might indicate unauthorized fuel dispensing.

We observed a fuel delivery at a District field station and a pump station. To determine the beginning fuel balance, fuel operations staff ran a tank status report immediately before the fuel delivery. After the fuel has been unloaded, the automated tracking system ran another tank status report to determine the fuel quantity received. This amount is compared to the contractor's bill of lading. All District tanks have a backup system to verify fuel delivery quantities in case the automated monitoring system fails.



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During the pump station delivery, there was a significant quantity variance between the District's automated monitoring system and the contractor's bill of lading. Through use of the backup system to verify quantities received, District staff determined that the automated tracking system was malfunctioning. The system was later repaired.

We also noted that after unloading diesel fuel from the transport fuel truck, the driver reattached the hose to the previously emptied compartment to ensure that all fuel was delivered. We were told by the contractor that this procedure is done because diesel fuel has a syrup like consistency and some fuel remains in the truck compartment after the first time it is unloaded to an above ground tank. The District fuel tank's automated fuel monitoring system is not sensitive enough to detect these gallons (usually 15-30 gallons) but this additional step ensures that all fuel is unloaded.

All District fuel facilities have some level of physical security. We observed S-5A pump station physical security. In addition to the diesel tanks, the S-5A pump station also has an underground unleaded fuel tank. To secure the fuel tanks and the overall grounds, the pump station has two gated entrances with a keypad requiring visitors to punch in an access code or speak to the S-5A operator to gain access to the premises. The front entrance also has a camera that is monitored by the B-1 security desk during unmanned evening hours. In addition, the fuel intake valves on the below ground and above ground tanks are secured with locks. Our fuel delivery observation at the West Palm Beach field station revealed similar security. However, the District's Emergency/Security Management initiated an inspection of seventy-three critical structures and field stations and identified physical security improvements that are needed to enhance fuel facility internal controls. These improvements include fencing and other physical security measures.

A concern of O&M Management was whether to require fuel hauling contractors to seal their transport tanker trucks. The process of sealing a truck requires the driver to affix an adhesive seal over the discharge valves after loading with fuel at Port Everglades. The purpose of sealing the tanker is to ensure that there is no unauthorized dispensing of fuel from the truck and accordingly the seal should be unbroken when the truck reaches the District facility. The seal is then broken when the discharge valve is opened and fuel is unloaded.

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If the District insisted on a process that would require seals on these fuel transport trucks, the contractor's drivers would have to apply the seals to the discharge valves after the truck is loaded at Port Everglades. Fuel suppliers at the Port will not seal the tankers. The fact that the fuel hauler's drivers would apply the seals reduces the effectiveness of this control. However, considering the contractor's GPS system to monitor transport truck activities from Port Everglades to District facilitates and the District's internal controls over the process, we believe that overall controls would not be enhanced by having the contractor's driver attach the seals over the discharge valves.

## **Recommendations**

- 1. Finalize District fueling procedures to include a requirement that fuel truck driver reattaches the hose to the truck's emptied fuel compartment to ensure that all fuel is unloaded.**

**Management Response:** Operations and Maintenance management communicated to all District staff receiving fuel that fuel truck drivers must reattach the hose to the truck's emptied fuel compartment to ensure that all fuel is unloaded. This has been added to our processes and procedures.

**Responsible Department:** Operations and Maintenance Resource Area

**Estimated Completion Date:** Completed

- 2. Implement physical security measures that were identified by Emergency/Security Management.**

**Management Response:** Fencing repairs will be done in FY2010. New fences will be deferred to future years due to FY2010 budget constraints. For security systems, we will coordinate with Security Management to have them budget for these systems in future years.

**Responsible Department:** Operations and Maintenance Resource Area

**Estimated Completion Date:** Completed

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## **Controls over the Fuel Reconciliation Process Could be Strengthened**

O&M management has initiated a fuel reconciliation process that reconciles the various District computer systems that account for the purchase, receiving and dispensing of fuel.

The District's General Ledger (G/L) fuel account is updated both manually and through system interfaces for fuel deliveries and usage. District fuel monitoring computer systems that interface with the G/L include TRAK and Voyager software.

For fuel deliveries at District pump and field stations, the G/L fuel account is updated by manual journal entry. The amount recorded in the G/L account is the quantity delivered as documented on the Port Everglades bill of lading multiplied by the midday Oil Price Information Service fuel price (OPIS). Fuel quantities are confirmed by the storekeeper or other District staff. The midday OPIS fuel price is verified by the Procurement Department before the invoice is approved for payment.

For fuel usage, the G/L fuel account is updated on a nightly basis through automated interfaces with the TRAK and Voyager systems. The TRAK and Voyager systems account for refueling District vehicles at field stations and commercial gas stations, respectively. At field stations, TRAK is the fuel pump software system which records the number of gallons dispensed at field station pumps. The Voyager system accounts for vehicle refueling at commercial gas stations. All District vehicles are assigned a Voyager credit card and a TRAK key for refueling. In order to refuel at either commercial gas stations or field stations, the vehicle operator must enter their employee ID number and the vehicle mileage on the system keypad.

Fleet Management adds a supplemental layer to the internal control process over fuel usage by monitoring all District vehicle refueling either at field stations using TRAK key system or commercial gas station using the Voyager credit card system. Various month end reports that capture fuel usage are run and analyzed by Fleet Management. Deviations are researched.

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## **Fuel Deliveries and Account Reconciliations**

We found that District internal controls over fuel to ensure that deliveries are in accordance with quantities ordered could be improved. Because fuel expands and contracts due to temperature changes, verifying quantities delivered is not an exact science. Almost always, the District and contractor differ slightly (both plus and minus) as to the quantities delivered. Some amount of fuel measuring variance is expected from expansion and contraction and volume estimation inaccuracies when determining fuel quantities. As temperature changes fuel expands and contracts which results in an increase or a decrease of fuel quantities.

O&M management has determined through an analysis of fuel deliveries that an acceptable variance would be a difference of 50 gallons or less for every 3,000 gallons delivered between amounts recorded by the District's automated monitoring system and the contractor bill of lading. A variance above this level would trigger a call to the fuel delivery contractor to start a series of procedures aimed at identifying the cause of the variance. However, O&M management should not be precluded from conducting a fuel inventory analysis for differences below 50 gallons even though the differences are under the thresholds. Our review of governments and companies with fuel tanks and the National Institute of Standards and Technology indicated that the 50 gallon variance fell within the range of acceptable variances of these entities.

To safeguard fuel inventory, O&M Management initiated fuel account reconciliations to identify differences from the G/L fuel account and quantities measured by the fuel tracking system. Through this process, usage differences of 35,656 gallons of fuel were identified for the cumulative period February 2007 – September 2008 that reduced the fuel inventory in the G/L account. These differences represent less than 1% of fuel purchases and were primarily due to unrecorded usage, data entry errors and temperature differences. No fuel misappropriations were uncovered.

Adjustments resulting from fuel account reconciliations are recorded in the G/L fuel account. To better track these adjustment, we recommend that O&M management establish a separate G/L account reserved for reconciliation adjustments.

Currently, not all District fuel tanks have been reconciled. O&M management is in the process of completing reconciliations for omitted fuel tanks. To ensure that fuel

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inventory throughout the District is safeguarded all fuel tanks should be reconciled on a monthly basis. In addition, O&M management should conduct year-end inventories of fuel at all field and pump stations.

**Recommendations**

- 3. Establish an account in the General Ledger to record all fuel adjustments resulting from system reconciliations.**

**Management Response:** Currently, there is a SAP report which segregates the gallons and the dollar value of each adjustment from reconciliations that was made to the fuel accounts. Through this report, Operations and Maintenance management can oversee the fuel accounts and monitor these adjustments. An additional general ledger account is not needed.

**Responsible Department:** Operations and Maintenance Resource Area

**Estimated Completion Date:** Completed

- 4. Conduct monthly fuel account reconciliations. Amend fuel inventory procedures for O&M management to conduct year-end inventories of fuel at all field and pump stations.**

**Management Response:** Reconciliation spreadsheets are prepared monthly to verify fuel balances. Accounting and the Operations and Maintenance Department will coordinate year end fuel inventories.

**Responsible Department:** Operations and Maintenance Resource Area and Accounting

**Estimated Completion Date:** September 30, 2009

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5. **Identify all District fuel tanks and reconcile tank quantities monthly. Excessive variances between fuel measured by the District's automated tracking system and the contractor's bill of lading should be researched.**

**Management Response:** Operations and Maintenance management will monitor adjustments to fuel accounts. Any excessive variances between fuel measured by the District's automated tracking system and the contractor's bill of lading will be researched.

**Responsible Department:** Operations and Maintenance Resource Area

**Estimated Completion Date:** September 30, 2009