



Audit of the Vegetation Management Program

Report # 09-04

Prepared By

Office of Inspector General

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

August 11, 2010

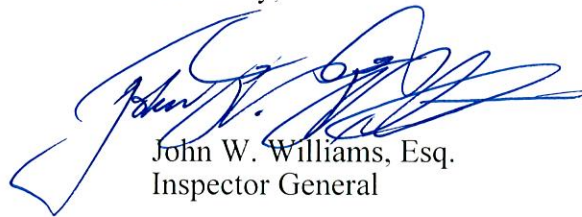
Audit and Finance Committee Members:

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Re: Audit of the Vegetation
Management Program – *Project No*
09-04

This audit was performed pursuant to the Inspector General's authority set forth in Chapter 20.055, F.S. The audit examined the overall Vegetation Management program including the process to purchase and apply herbicides. Our examination covered the period October 1, 2007 through December 31, 2009. This report was prepared by Dan Sooker.

Sincerely,

A handwritten signature in blue ink, appearing to read "John W. Williams", is written over a faint, stylized outline of the state of Florida.

John W. Williams, Esq.
Inspector General

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Background

In accordance with the FY09 Audit Plan, our Office completed an audit of the Vegetation Management Program.

The primary purpose of the vegetation management program is to ensure that South Florida's conservation lands are preserved and the region's water resources continue to function unobstructed by aquatic vegetation. Vegetation management activities primarily benefit the District-wide water resource management and regional restoration programs. These programs integrate mechanical, biological, herbicidal and physical methods (such as fire and flooding) to control exotic vegetation.

This image shows the results of a precise aerial herbicide application to gain control of cattails which had overtaken large areas of Lake Okeechobee that were formerly open water. The aerial herbicide application managed to target the cattail but avoid non-target plants.



The vegetation management program aims at attaining maintenance control over invasive plants in canals, lakes, right-of-ways and District properties. Invasive plants are non-indigenous vegetation that have no natural enemies, such as insects, and can often out-compete native vegetation because of the lack of growth restraints. There are 146 invasive plant species of which 72 are considered category 1 species according to the Florida Exotic Pest Plant Council¹. Category 1 species are defined as most invasive and disruptive. Category 1 invasive exotic plants alter native plant communities by displacing native species, change community structures or ecological functions, or hybridize with natives. Examples of category 1 species are melaleuca, Brazilian pepper, water hyacinth, and hydrilla. Herbicides used by the District to control invasive exotic

¹ Florida Exotic Pest Plant Council is a not-for-profit organization that supports the management of invasive exotic plants in Florida's natural areas by providing a forum for the exchange of scientific, educational and technical information. The Council's 2009 Invasive Plant List reported 72 Category 1 and 74 Category 2 invasive plants in Florida.

plants are limited to only those approved by the Environmental Protection Agency and the Florida Department of Agriculture and Consumer Services.

Maintenance control is defined as a means of applying management techniques on a continuous basis to keep invasive plant populations at its lowest feasible level. In District canals, this means maintaining floating aquatic plants at less than 1% of the entire canal surface area and 50% unobstructed for submersed plants. According to quarterly performance measurement reports, the program goals are being met. The application of herbicide products to control exotic vegetation is usually the most cost-effective approach.



Before



After

The adjacent pictures of the before and after herbicide application on the C-23 canal illustrates the affect aquatic weeds can have on canal conveyance and the success of vegetation management in controlling aquatic plants with in-house staff and/or outside contractors.

In FY09, the District reorganized its operations to better align resources with District programs. Under the reorganization, the Vegetation Management Division and Land Stewardship Division were combined to form the Vegetation and Land Management Department. Prior to the reorganization, both Land Stewardship and Vegetation Management Divisions conducted exotic vegetation eradication separately. Now, this combined department has a staff of fifty that is tasked with controlling exotic vegetation in approximately 2,000 miles of canals and 1.3 million acres in South Florida. This combination should result in improved operational efficiencies.

The primary sources of funding for vegetation management programs are the State of Florida, ad valorem taxes and trust fund revenue. For FY08 and FY09, the District received \$6.6 and \$6.1, respectively, from the State of Florida for aquatic plant and melaleuca control programs. However, the Vegetation Management program will

experience substantial reductions in state funding for FY11 primarily due to the economic downturn. Vegetation Management Program expenditures (including District staff salaries) for the last three fiscal years were as follows:

Functional Area	FY08 Expenditures	FY09 Expenditures	FY10 Budget	FY10 Expenditures to Date
Aquatic Plant Control	\$6,756,420	\$7,312,230	6,713,156	\$3,226,659
Bio-control Exotic Plant	446,967	501,977	513,159	1,501
Terrestrial Plant Control	1,481,233	1,498,890	1,727,181	64,076
Exotic Plant Control	8,533,558	8,132,210	8,945,288	2,221,753
Plant Control	2,240,681	2,474,156	3,702,020	841,876
Total	\$19,458,859	\$19,919,463	\$21,600,804	\$6,355,865

Outside contractor vegetation management control activities represent approximately 72% of the total expenditures for FY08 and FY09. For FY11, outside contractor participation in the vegetation management program will be substantially reduced.

The Department coordinated with the Florida Department of Environmental Protection, Florida Fish and Wildlife Conservation Commission, the United States Army Corp. of Engineers and local governments to implement vegetation management activities. Significant programs partnered with other governments include aquatic plant control in Lake Okeechobee, the Kissimmee Chain of Lakes, melaleuca eradication and stocking canals with grass carp.

Objective Scope and Methodology

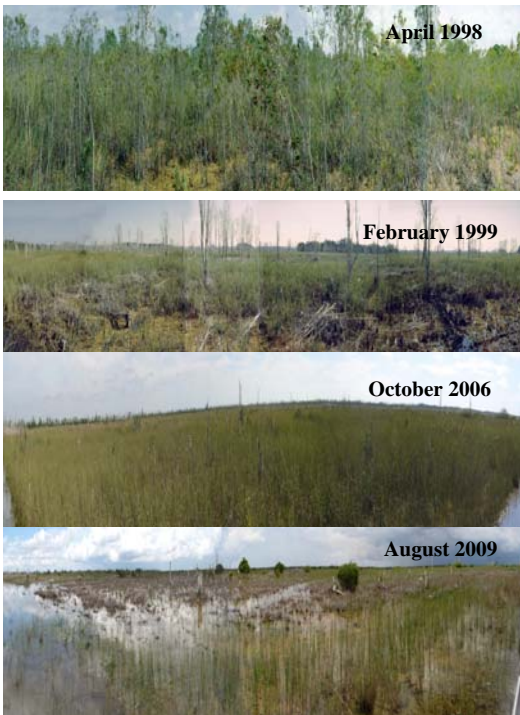
The objective of the audit was to determine whether the Vegetation Management program is meeting its program goals and the reporting requirements are being met. In order to accomplish our objectives, we performed the following:

- Interviewed staff that manages or is active in vegetation management programs.
- Examined relevant documents.

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.

Executive Summary

The Vegetation and Land Management program appears to be operating in an effective and efficient manner. The Department's burn rate is at 97% and program goals are being met. It is also apparent that the program is a leader in the State of Florida in controlling exotic nuisance plants.



The series of photographs represent Vegetation Management's melaleuca eradication efforts in the Pennsuco Wetland Mitigation Area. In 1998, the area was infested with melaleuca but this sequence of pictures illustrates the progress made in reaching maintenance control over time. The continual improvement was a result of herbicide follow-up applications to ensure that the area remain relatively free of exotic vegetation. Herbicide treatment and follow-up is the key to preventing exotic vegetation from regaining a foothold.

We found that internal controls over herbicides appear adequate to ensure that herbicide inventory is safeguarded and herbicide expenditures appear accurately recorded. However, our analysis indicated that for FY08 and FY09, field stations

maintained a 54-day and 59-day supply of herbicide inventory, respectively, even though the annual herbicide price agreements require vendors to deliver herbicides within a 7-day time frame. While having inventory available for unforeseen circumstances can prove beneficial, maintaining high levels of inventory also increases the District's risk from loss or accidents. We recommend that Operations and Maintenance maintain an inventory cushion but at levels closer to the 7-day mandatory delivery time frame.

We found that improvements could be made to Vegetation Management's performance measurement system to better report the department's success in achieving its annual goals. Performance measurement reporting should clearly communicate whether the department is or is not meeting the programmatic goals and objectives. We recommended that the department establish performance measurements that better communicate the department's success in meeting its goals and objectives.

On-Hand Herbicide Inventory Should Be Reduced

We found that internal controls over herbicides appear adequate to ensure that herbicide inventory is safeguarded and herbicide expenditures appear accurately recorded. For all field stations the herbicide building is locked and has a keypad alarm system. The common practice at District field stations is for the Storekeeper to have access to the herbicide building. Keys to the herbicide building are issued to the storekeepers and the Director and another field station manager. The Purchasing Technician and Administrative Assistant are usually backups to the Storekeeper when the Storekeeper is away from the field station. The Director and another field station manager also have keys to the herbicide building. At one of the field stations, the herbicide building has a locked caged area where the herbicides are maintained. Herbicide buildings are monitored by Security at the B-1 building headquarters in West Palm Beach, Florida.

The SAP inventory account is updated when herbicides are ordered and received. Adjustments to the inventory account are made when Storekeepers issue herbicides to District vegetation management staff and outside contractors and record the herbicide

quantity issued and returned to SAP inventory and budget accounts. Returned herbicide is restocked and the SAP system is updated for the estimated amount of the unused portion of the herbicide.

To reorder herbicides, the Storekeeper completes a purchase requisition and forwards it to the Field Station Purchasing Tech who prepares a purchase order and almost always assigns it to the lowest bidder that responded to the District's annual request for bid (RFB) for herbicide unit pricing. On an annual basis, the District issues a RFB to obtain the best pricing for the most used herbicides. Those vendors offering the most competitive herbicide pricing are awarded one-year price agreements. However, the Purchasing Tech may use any vendor to purchase herbicides if their price is better and is not compelled to only use vendors who responded to the RFB and initially provided the best unit pricing.

We reviewed herbicide purchases for the audit period and noted one instance in which the Purchasing Tech did not use the vendor awarded the price agreement for the herbicide, glyphosate. Initially, this incident appeared to be an internal control weakness but further review of the transaction revealed that the Purchasing Tech purchased the herbicide for considerably less than the agreement unit price and saved the District a substantial amount of money.

Field station Crew Chiefs usually determine the herbicide quantities needed. At field stations there is no formal method for reordering herbicides and it is generally based on judgment (i.e. observation and anticipated workload). In our previous audit of the Vegetation Management program dated July 6, 1999, Operations and Maintenance agreed to keep inventories at 45 days or less except in unusual circumstances.

Herbicide Inventory Usage²		
Description	FY08	FY09
Beginning Inventory	\$529,486	\$471,523
Ending Inventory	471,523	328,459
Average Inventory	\$500,504	\$399,991
Expenditures	\$3,346,867	\$2,457,906
Inventory Turnover Ratio³	6.9	6.1
Number of Days in Inventory	54	59

Our analysis indicated that for FY08 and FY09, field stations maintained a 54-day and 59-day supply of herbicide inventory, respectively, even though the annual

herbicide price agreements require vendors to deliver herbicides within a 7-day time frame.

Unexpected weather conditions such as wind and rain can affect the spraying crews work plan; however, the average number of days in herbicide inventory appears consistently high. While having inventory available for unforeseen circumstances can prove beneficial, maintaining high levels of inventory also increases the District's risk from loss or accidents. Moreover, management's pledge to reduce inventory levels to 45 days appears insufficient when considering the 7-day vendor herbicide delivery assurance. As such, we recommend that Operations and Maintenance build in an inventory cushion but maintain inventory levels closer to the 7-day mandatory delivery time frame.

Physical counts of herbicides are performed annually by Operations and Maintenance and Accounting personnel independent of the stores and aquatic weed operations. A review of inventory records indicated that there has been no major physical count to book adjustments. In addition, our discussion with Field Station Storekeepers revealed that informal physical counts of herbicide inventory are conducted at least monthly.

² Herbicide usage represents the amount of herbicides used by District field station spray crews.

³ The inventory turnover ratio tells how often inventory turns over during the course of the year.

A high inventory turnover ratio is generally positive.

Recommendation

1. **Establish an inventory reordering system that reduces the number of days of on-hand herbicide inventory levels closer to the mandatory 7-day delivery time frame.**

Management Response: Agree. The Vegetation and STA Management Division will work closely with each field station to develop and implement an herbicide inventory process that will accommodate the needs of all Field Stations. We are recommending keeping the inventory levels at 30 days. This will allow for unforeseen schedule changes between the time herbicides are purchased and the time of application.

Responsible Department: North, Central and South Field Station Department, Vegetation and Land Management Department.

Estimated Completion Date: January 1, 2011

Improve Performance Measurement Reporting

We found that improvement could be made to Vegetation Management's performance measure system to better report the department's success in achieving its annual goals. While the goals and success indicators in the District's strategic plan are well defined, performance measurements which evaluate the success in meeting those goals are less defined. Performance measurement reporting should clearly communicate that the department is or is not meeting the programmatic goals and objectives.

According to the Vegetation Management Plan, the overall success indicator is to achieve maintenance control in Lake Okeechobee, District canals and other water bodies. Maintenance control is defined as maintaining floating aquatic plants at less than 1% of the entire canal surface area in District canals and 50% unobstructed for submersed plants. However, current performance measurements merely establishes the number of

acres to be treated for exotic vegetation infestation which may or may not translate into meeting the goal of maintenance control for Lake Okeechobee, District canals and other water bodies.

For FY11, maintenance control goals and objectives may be difficult to achieve. The Vegetation Management program will experience substantial reductions in state and overall program funding for next fiscal year. As a result, the program is eliminating outside herbicide application contracts in FY11, which will likely have an adverse affect on vegetation management control efforts.

Recommendation

- 2. Establish performance measurements that better communicate the department's success in meeting programmatic goals and objectives.**

Management Response: Agree. The Vegetation Management and STA Division has been working on revising the Division's performance measures to better align with our current annual work plan and processes. Improved performance measures will better communicate if we are meeting the programmatic goals and objectives of the Department.

Responsible Department: Vegetation and Land Management Department, Vegetation and STA Management Division.

Estimated Completion Date: January 1, 2011