



Audit of the Integrated Real Estate Information System (IRIS)

Project #17-09

Prepared by
Office of the Inspector General

J. Timothy Beirnes, CPA, Inspector General
Alyassia Taylor, CIGA, CGAP, Lead Consulting Auditor



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

January 11, 2018

Governing Board Members

Re: Audit of the Integrated Real
Estate Information System (IRIS),
Project No. 17-09

This audit was performed pursuant to the Inspector General's authority set forth in Chapter 20.055, F.S. Our objective primarily focused on assessing the extent to which IRIS provides the desired operational and business needs (including assessing the integrity of the system's data). Alyassia Taylor and I prepared this report.

Sincerely,

A handwritten signature in blue ink, reading "J. Timothy Beirnes".

J. Timothy Beirnes, CPA
Inspector General

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BACKGROUND

In accordance with the Office of the Inspector General’s Fiscal Year 2017 Audit Plan, we conducted an Audit of the Integrated Real Estate Information System (IRIS).

In 2002, the District purchased the Integrated Real Estate Information System (IRIS). IRIS is used to maintain the District’s land acquisitions. We performed an audit of the system’s implementation in 2010, which resulted in ten recommendations (Audit 09-16). The recommendations were implemented, including a recommendation to bring hosting of the system “in-house” to save the District \$365,000 per year in hosting fees. However, in-house maintenance and hosting resulted in a loss of some of the system’s prior capabilities. We conducted this audit of the system after seven years of usage to assess the system’s effectiveness and integrity.

Based on a report of land acquisitions in IRIS, the District has acquired over 41,000 acres of land at costs over \$312.6M¹ since Fiscal Year 2011. IRIS is used primarily by the Real Estate Division (RE) to track land acquisitions and ensure that supporting documentation associated with acquisitions – such as deeds and closing documents – is maintained properly. Land is tracked by “Tract ID”, a unique identifier that Real Estate Division staff creates for each tract of land that is purchased. If tracts are combined through acquisitions, a new tract ID is created, and historical information on the former tract is maintained through notes in IRIS. IRIS helps the Real Estate Division track the acquisition steps through tasks, which are described for each stage of the acquisition, e.g., title search, negotiation, and closing. The steps required to complete the acquisition process vary based on the type of land acquisition (i.e., a donation, exchange, willing seller, or condemnation). Not all acquisition costs are tracked in the system. The Real Estate Division also uses a spreadsheet to track associated costs; such as closing, negotiations, and title searches, to generate reports of costs associated with cost share projects. IRIS does not interface with SAP; therefore, acquisition costs and associated costs are manually entered in SAP for financial tracking and reporting.

¹ Land costs do not include all exchanges and donations, which may have an initial land cost of \$0.

OBJECTIVE, SCOPE, and METHODOLOGY

The objective of the audit was to determine the extent to which the following occur with IRIS:

- The system provides the desired operational and business needs;
- Physical computer assets are adequately safeguarded;
- Technical administrative support is adequate;
- User needs are being properly supported and measured; and
- The system contains adequate access controls to prevent unauthorized access.

To accomplish our objective, our work included, but was not limited to, the following steps:

- Interviewing Information Technology (IT) Division and Real Estate Division staff;
- Reviewing supporting documentation of land acquisitions and associated costs within IRIS; and,
- Reviewing IRIS system access and programming.

The scope of the audit included all transactions in the IRIS database. To test documentation controls associated with real estate acquisitions, we selected a judgmental sample of 40 acquisitions from the total population of transactions entered into the system since Fiscal Year 2011.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those 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.

AUDIT RESULTS

Executive Summary

We found that controls over access and physical security are sufficient to safeguard the assets and information in the system. The IT Division has controls in place to ensure that access to IRIS is limited to those who require access, and that access is granted at a configuration level. There are only two “superusers” who can view, edit, and delete files from IRIS. These users appear to have the necessary access as required for their job function. Moreover, servers for IRIS are housed in the District’s data center. Access to the data center has been adequately restricted to allow access to only district employees and contractors who require access.

The Real Estate staff using IRIS are accurately entering the information into the system from source documents. We tested the source documentation attached to the tracts in IRIS to determine whether the information input into IRIS was accurate. We judgmentally selected a sample of 40 acquisitions from the population of acquisitions which occurred between Fiscal Years 2011 and 2017 to determine whether there was sufficient supporting documentation for the acquisition, and to determine whether the information in IRIS was accurate. Based on testing, we determined that the information in IRIS appears to be accurate and the supporting documentation that is included in the system appears sufficient. The staff is also using the system to document acquisition tasks as they are completed. There were no noted inaccuracies during data testing. Although we noted the resulting weaknesses in controls in the database, the Real Estate Division staff appears to be utilizing the system to the fullest of its capabilities.

Since the time the District brought IRIS hosting in-house, the IT Division has programmed some of the requested enhancements from the Real Estate Division as allotted by budget; however, not all requested enhancements have been programmed into the system. The Real Estate Division continues to use an Excel spreadsheet to track acquisition costs, and must manually enter important land cost data into these separate spreadsheets as well as into SAP. Manual data entry puts the District at risk of input errors. The Real Estate Division staff must also manually notify each other (typically via email) as tasks are ready for completion in IRIS. There is not an automatic notification to

create a more efficient transition through acquisition activities. Programming additional enhancements to address automatic notifications, reporting special program (i.e., CERP) costs, and interfacing with SAP would improve the effectiveness of IRIS and ensure the accuracy of financial reporting for the Real Estate Division.

We noted the IT Division's monitoring of the system is not adequate to ensure that all errors in programming are caught in a timely manner for data integrity. There are weak controls over the input and editing of data in the system. During testing, we noted that the system allows the user to make inaccurate entries such as completion dates prior to start dates in the task manager. The system does not prevent users from overwriting information previously entered, or notify the user that information has been overwritten. Moreover, we were unable to determine whether the database contains all information that is entered into the system. During testing, we noted 1,933 primary key field numbers were missing from the database sequence, with no known cause for the missing numbers. Therefore, we cannot assure a level of completeness of the database.

Lastly, we reviewed the controls over the land costs spreadsheet that is used by the Real Estate Division staff to track associated land costs. This spreadsheet has been in use over 25 years. There is a password to protect access to the spreadsheet; however, this password has not been changed since inception. Because the spreadsheet is in Excel format, there are inherent control risks, which should be addressed by the Real Estate Division and IT Division should consider the feasibility of merging the data in this spreadsheet into IRIS for greater data integrity and efficiency.

The IT Division has Sufficient Controls Over System Access

The IT Division has sufficient controls in place to ensure that logical access to IRIS is limited to those who require access, and that access is granted at a configuration level. There are two “superusers” who can view, edit, and delete files from IRIS. These users appear to have the necessary access as required for their job function.

Physical Security for the Data Center is Sufficient

IRIS servers are housed in the District’s data center. Access to the data center has been restricted to a limited number of District employees and contractors who require access. We reviewed the access list for the Data Center and concluded that persons with access were authorized District employees, contractors, and personnel from partner agencies. The District has sufficient controls over physical access of the IRIS servers.

The Real Estate Division Accurately Enters Data into IRIS

The Real Estate staff using IRIS are accurately entering the information into the system from source documents. We tested the source documentation attached to the tracts in IRIS to determine whether the information input into IRIS was accurate. We pulled a judgmental sample of 40 acquisitions from the population of acquisitions which occurred between FY 2011 and FY 2017. For each acquisition, we determined whether there was sufficient supporting documentation for the acquisition, and then reviewed the supporting documentation attached to the file in IRIS to determine whether the information in IRIS was accurate. We determined that the information in IRIS appears to be accurate based on the supporting documentation that is included in the system. There were no exceptions noted.

Enhance Programming to Ensure that IRIS Contains Complete Data

IRIS may not contain all data that was originally entered into the system. In a database, there is a primary key which is generated in sequence by the system for every new line of data entered. In IRIS, the System Code field is the primary key field. A verification of the system's completeness by System Code showed that the system was missing 1,933 system code numbers. We were unable to determine whether the missing numbers in the sequence indicates there was information, once in the system, that was deleted. A programmer in the IT Division stated that there was an error in the system's programming. For one of the missing numbers, this error in programming prevented saving the data entered in the system, and skipped to the next System Code number in the series. There was evidence that another one of the missing numbers was deleted; however, we were unable to obtain evidence to verify the explanation for this deletion. We were also unable to determine the reason for the remaining 1,931 of the 1,933 missing numbers in the system. A database should maintain all data inputs unless an intentional deletion occurs. If a database does not maintain the entirety of the information input into the system, the completeness and integrity of the system is questioned. We were unable to determine whether the missing system codes indicated incomplete data, and therefore cannot assert that the data in the system is complete.

Recommendations

- 1. The IT Division should monitor entries into the system on a consistent basis to ensure that:**
 - **Data that is entered into the system is maintained in the system; and**
 - **Intentional deletions are documented and logged appropriately.**

Management Response: We agree with the recommendation. The IT Division will create a user-report for the Real Estate data steward that can be run to monitor the errors logged.

Responsible Division: IT Division

Estimated Completion: July 31, 2018

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2. **The IT Division should correct the error in programming that allows the system to skip numbers in the sequence of the primary key field. An error message should be generated when an error occurs that results in skipped numbers in the primary key sequence.**

Management Response: We agree with the recommendation. The IT Division will update the application to ensure system codes (i.e. primary key field) are not skipped during the generation process.

Responsible Division: IT Division

Estimated Completion: July 31, 2018

Strengthen Controls Over Data Entry

The controls over several important fields in the database should be strengthened to ensure that the system's data is accurate and/or complete. During system testing, the following inputs were accepted by the database:

- **Tasks saved with dates of completion prior to dates of request.** The tasks in IRIS are used to ensure that all work on an acquisition is completed. Without accurate tracking of the start and completion of these tasks, the task feature provides inadequate usability for the Real Estate Division.
- **Description of work field saved with as little as three characters.** The Description of Work field is a required field for each acquisition. To bypass the required function, a user can place one character in the field.
- **Duplicate Tract ID saved in the system.** Although there was an obvious error on the duplicated tract ID page (in the documents upload section), this error would not be noticeable to a user unless the user returned to the page where the duplicate tract ID is entered.
- **Overwriting previously saved data.** The primary user of the system has access privileges which allow any of the fields such as the tract ID, tract name, and description of work to be overwritten without an indication to the user that an overwrite has occurred. If a user unintentionally changes a field, the user is not aware of such a change.

The IRIS database should have controls to ensure that the fields include the elements they were designed to contain. However, the database fields were not programmed to contain such controls. Without input controls, fields can be overwritten and deleted, causing inaccuracies in the data. Inaccurate data can lead to inaccurate management and reporting of the land owned by the District.

Recommendation

3. The IT Division should implement controls over the required fields in IRIS to ensure:

- **Task completion dates are subsequent to task request dates;**
- **Duplicate tract ID's cannot be entered in the system;**
- **Required fields contain a minimum number of characters;**
- **Users are alerted when a field is overwritten or deleted.**

Management Response: We agree with the recommendation. The IT Division will add a business rule ensuring the task completion date cannot be before the task request date. The IT Division will add a business rule to confirm the tract ID has not been previously used. The IT Division will work with the Real Estate Division to implement the minimum number of characters and alerts based on business requirements.

Responsible Division: IT Division

Estimated Completion: July 31, 2018

Improve Monitoring and Review of IRIS Events

Currently, no efficient method is in place for the IT Division to monitor or review the events that occur in the IRIS database. When an error occurs in IRIS, the IT staff can run a Tract Detail report to show all modifications that occurred in the system for that tract. The Tract Detail report will show the user and the date of the modification; however, this report is only useful if the tract that was modified is known. If the user is not aware of what tracts were affected by a specific action (such as editing a tract number by mistake), the log is not helpful.

Without an effective audit log and monitoring process, errors in the system go unnoticed and may cause concerns for system integrity. There is also no efficient way to determine the cause when problems occur in the system. For example, during testing for completeness, we found that not all primary key numbers were in the database. The missing numbers could be due to errors in the system, deletion or other reasons. We were unable to assess the cause of the missing primary key numbers. We were also unable to determine whether the primary key numbers were originally tied to any data. The audit log and Tract Detail report was unable to provide any assistance in determining whether there were originally data in the system (see finding “Enhance Programming to Ensure that IRIS Contains All Data” for further details).

According to the IT Division, the audit log can be programmed to present a daily transaction report (with an enhancement); however, it has not been programmed to do so.

Recommendations

- 4. The IT Division should program the audit log to create a report that can be run of daily events/transactions in the system.**

Management Response: We agree with the recommendation. The IT Division will create a user-report for the Real Estate data steward that can be run to monitor the audit log.

Responsible Division: IT Division

Estimated Completion: July 31, 2018

5. The Real Estate Division should monitor the Audit log regularly for errors.

Management Response: We agree with the recommendation. The Real Estate Division's IRIS data steward currently occasionally monitors the Audit log for errors. After IT creates the user report referenced in recommendation #4, the log will be reviewed prior to the issuance of the monthly RE Activity reports.

Responsible Division: Real Estate Division

Estimated Completion: July 31, 2018

Improve Controls Over the Land Costs Spreadsheet

The Real Estate Division's land acquisition costs spreadsheet ("Land Costs Spreadsheet") has inadequate controls to ensure the data is accurate. The spreadsheet was created over 25 years ago prior to the implementation of IRIS to document the associated costs (such as surveying and closing costs) for reporting special programs such as CERP and other cost sharing programs. The implementation of IRIS did not include integrating the information from this spreadsheet. The land acquisition costs are important to the District's reporting of land cost allocations, matched funds, and land values.

The data is stored in a Microsoft Excel spreadsheet. One inherent risk in using an Excel spreadsheet is there is no audit log to track the users of the spreadsheet, or the data entered in the spreadsheet. Access to the spreadsheet is protected by two passwords. Three employees know the passwords. However, the passwords have not been changed since the spreadsheet's inception.

There are currently no controls to protect the cells' formulas and data from being overwritten (intentionally or inadvertently). The cells containing formulas can be protected in Excel; however, this protection has not been enabled in the spreadsheets.

Controls ensuring the accuracy of the Land Costs Spreadsheet could also be strengthened. Because the land costs are captured in Excel, stronger controls would ensure that the information input in to the spreadsheet is accurate. Currently, there are no policies or procedures written for the proper use of the spreadsheets. There is no process for reviewing the spreadsheets to ensure that information entered in the spreadsheet is accurate, and that any formulas/macros are not edited.

The data in the spreadsheet captures land acquisition costs that are spread across several different tracts. This makes it difficult to tie costs to specific projects for verification of accuracy. Therefore, we could not determine the accuracy of the data in the spreadsheet.

Recommendations

- 6. The IT Division and Real Estate Division should consider the feasibility and cost benefit of adding an enhancement to IRIS that will integrate the data captured by the land costs spreadsheet.**

Management Response: We agree with the recommendation. The Real Estate and IT Divisions will review the feasibility and cost benefits to integrate the data captured by the land costs spreadsheet into IRIS. These results will be presented to IT-Business Governance to determine the District priority of implementing this enhancement.

Responsible Division: IT Division and Real Estate Division

Estimated Completion: July 31, 2018

- 7. The Real Estate Division should enable cell protection in the spreadsheet to ensure that data is protected from overwrite.**

Management Response: We agree with the recommendation. The Real Estate Division believes password protection is sufficient since this spreadsheet is only maintained for historical data. RE will ensure password access to the spreadsheet only by a few essential Real Estate Division staff. (See recommendation #9 for password change recommendations).

Responsible Division: Real Estate Division

Estimated Completion: July 31, 2018

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- 8. The Real Estate Division management should develop and implement a review or reconciliation of the data that is input in the spreadsheet to ensure the accuracy of the data.**

Management Response: We agree with the recommendation. The Real Estate Division uses the LCS for reference to find costs that were tracked in LGFS, the District's predecessor financial software, and does not input any information into the LCS. No further action is necessary after the spreadsheet password protection feature is modified to limit access by specific Real Estate Division staff who monitor and oversee the data (see recommendation #7).

Responsible Division: Real Estate Division

Estimated Completion: July 31, 2018

- 9. The Real Estate Division should periodically change the passwords on the "Land Costs Spreadsheet."**

Management Response: We agree with the recommendation. The Real Estate Division will require a password change every 90 days after the spreadsheet is modified for limited Real Estate Division staff access (see recommendation #7).

Responsible Division: Real Estate Division

Estimated Completion: July 31, 2018

Consider System Enhancements to Address the Needs of the Real Estate Division

The District implemented IRIS with the intent to create a more efficient method to track the large volume of land costs and transactions taking place. The IRIS database does maintain land information; however, it does not provide the efficiency that could create a more effective tracking of the District's land.

Although IRIS is used to maintain information on the District's land and acquisitions, it lacks the following items which would make it a more effective system:

- IRIS does not provide an automated system to notify users when tasks in the acquisition process are ready for completion, or have been completed. The original IRIS system (prior to being hosted in-house) contained automatic notifications which were sent to the users when a task was ready for completion during a land transaction. Currently, the real estate staff must manually notify users (via email) when tasks (such as providing closing documentation or completing a survey) are needed.
- The system does not track acquisition costs to generate a report of projects such as those related to CERP. It does not track all costs in one place, or integrate with SAP for financial reporting. Users are forced to manually input financial information into an Excel Spreadsheet as well as SAP. These manual entries and spreadsheets run the risk of user input error and data integrity issues.

Recommendations

10. The IT Division should consider a program enhancement that automatically generates notification to respective users to complete necessary tasks.

Management Response: We agree with the recommendation. The IT Division will update the application to send an email notifying users of a new task.

Responsible Division: IT Division

Estimated Completion: July 31, 2018