

Mount Laurel Township MUA Hydrant Maintenance Program



Using ArcPad to Track Hydrant Flow Testing
and Flushing procedures



What is the Mount Laurel MUA?

- The Mount Laurel Township, Municipal Utilities Authority (MUA) is located within the Southern edge of Burlington County. Currently the (MUA) supplies water service to approximately 18,000+ customers. The authority also currently maintains over 183 liner miles of water mains, 1548+ fire hydrants and 4695 water valves throughout the township.

What is Hydrant Flushing?

- Hydrant flushing is a common water utility practice utilized for improving water quality, and for the reduction of tuberculation. A water utility provider should have an established flushing program in place throughout the hydrant distribution systems which is performed on a established intervals and time periods.

The MUA Hydrant Flushing Program

- In October 2006, the MLTMUA Water Department began implementing their yearly fire hydrant flushing tests using the ArcPad software in the field and linking the results to hydrant features in our water GeoDatabase.
- As required by federal and state agencies to maintain all of its fire hydrants, which included the performing of a yearly hydrant flush program.

Our Previous System

- Before GIS was implemented, the Water Department visited each hydrant via a hydrant master list and filled out a paper form which was then scanned and entered into a excel database. While this method produced positive results. It was decided that a geospatial based system would help to improve the accuracy of imputed data as well as cut down on the redundancy factors caused during data entry.

What is ArcPad?

ArcPad is software for mobile GIS and field mapping applications using handheld and mobile devices. ArcPad provides field-based personnel with the ability to capture, analyze, and display geographic information.

- **With ArcPad you can:**
 - Perform reliable, accurate, and validated field data collection.
 - Integrate GPS, rangefinders, and digital cameras into GIS data collection.
 - Share enterprise data with field-workers for updating and decision making.
 - Improve the productivity of GIS data collection.
 - Improve the accuracy of the GIS database and make it more up to date.

A globe of Earth is shown on the left side of the image, set against a blue, textured background that resembles water or a fine-grained surface. A bright, circular spotlight effect is centered on the globe, illuminating it and casting a soft shadow to the right. The globe shows continents in brown and green, surrounded by blue oceans and white clouds. The overall composition is clean and professional, suitable for a presentation or educational material.

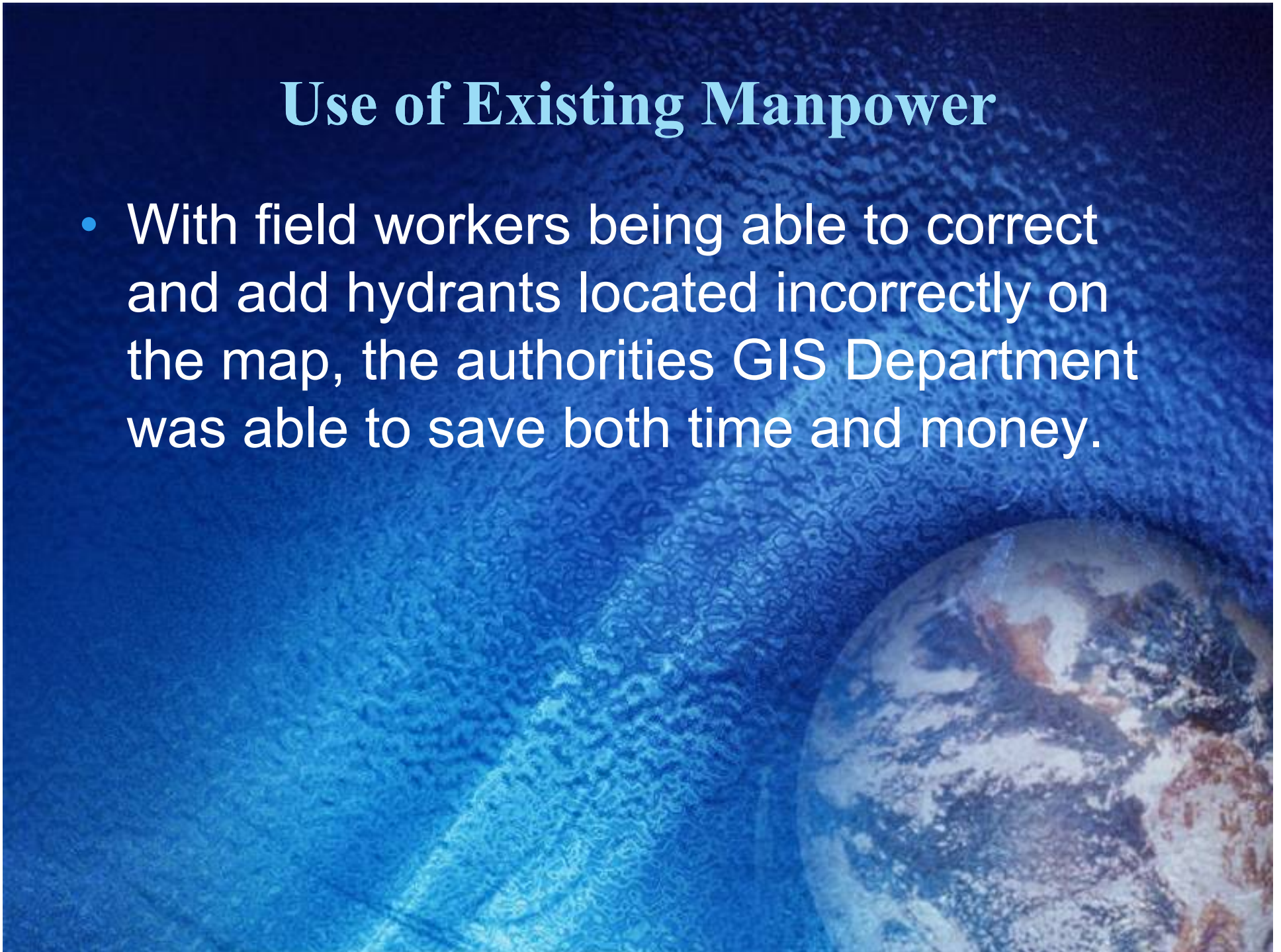
Benefits of Field Collection

Redundancy Cut Down

- Data entry redundancy problems were reduced dramatically, saving the Authority thousands of dollars in data entry expenses. With field workers entering data directly into a our geo-database, the need for information to be copied from paper field notes was eliminated. Also the use of an close ended questionnaire, eliminated data entry problems associated with the filed note method.

Use of Existing Manpower

- With field workers being able to correct and add hydrants located incorrectly on the map, the authorities GIS Department was able to save both time and money.



Additional Information

- Field workers were able to collect data that the GIS Department was not able to or was unfeasible to collect at the time. Since the cost of gathering the data coordinated with regularly scheduled field work.

Locating Hydrants Faster in the Field

- The use of both GPS and GIS software helped to cut down on the number of hours field workers spent locating and documenting hydrants in the field, as a result field crews were able to spend more time in identifying previously undocumented aspects of each hydrant such as its location, grade, valves, reflectors, security rings and general conditions.

Fewer 3rd Party Software Purchases

- By combining multiple software applications into a single GIS application. Fewer software purchases are necessary, and the continuous updates, upgrades, and maintenance agreements associated with each of the previous software applications are eliminated.
- The main purpose of designing a GIS any application is should be modeled after the best attributes of other existing software applications—such as document management, data entry, and retrieval with an interactive mapping system—into one user friendly application.

A globe of Earth is positioned on the left side of the image, resting on a blue, textured surface that resembles water or a similar material. The globe shows continents in brown and green and oceans in blue. A shadow is cast from the globe towards the right, indicating a light source from the upper left. The background is a gradient of blue and purple.

Future Plans

Share Results With Departments Easier

- Using ArcReader the GIS Department will be able to share the results all MLTMUA Departments, who will now be able to look up hydrant via, ID numbers, street address or graphic selection.

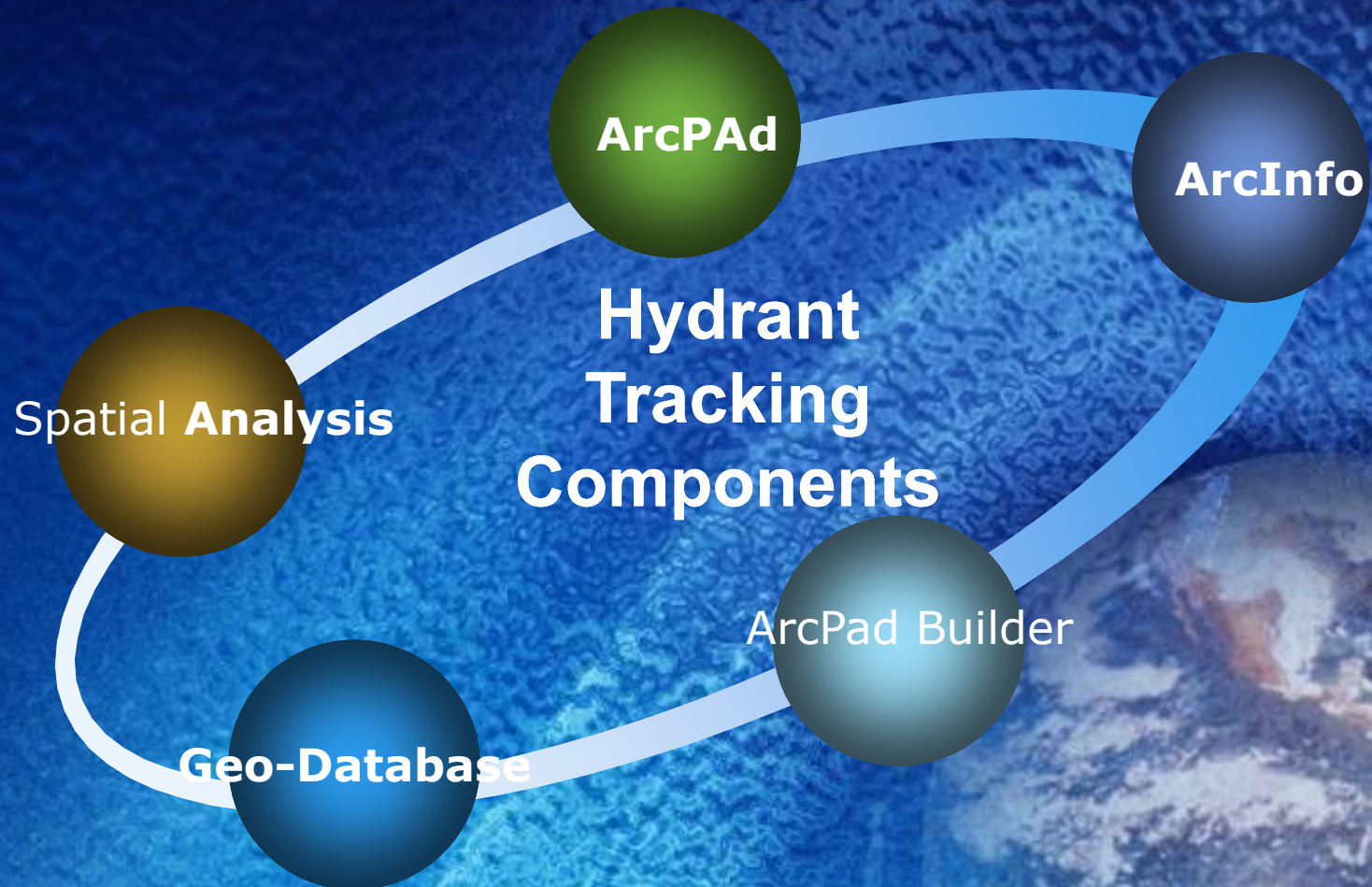
Shared Information with Agencies

- The information obtained can be shared with other township agencies such as the fire and police departments. In addition agencies such as the fire department which also performs maintenance on both township and private hydrants will be able to incorporate their additional data into the GIS system.

Future GIS Field Applications

- Although the full value of the project has yet to be realized, the payoff is already apparent and the future can only bring further benefits. This program has been a huge success and we are now planning to expand it to a number of other functions performed by both the water and sewer departments.

Software Components



ArcPad In The Field



Hydrant Forms

Hydrant APM

Hydrant Info

Flow Testing

Flushing

Painting

Mount Laurel Township Hydrant Inventory - GIS Department

Hydrant Info | Flushing | Flow Test | Maintenance | FD Record | Hydrant Painting | Picture

MLT Hydrant Information: HY1038

Hydrant ID: HY1038
Manufacturer: USF M250
Date: 1/90
Value Opening: 5 1/4"
Diameter: MIA / Private / Unknown
Pressure Rating: 150 PSI

Hydrant Condition:

Hydrant Reflectors: Yes No
Control Grade: Yes No
Security Ring: Yes No
Needs Paint: Yes No
Last Flushing Date: 11/10/2009
Last Flow Tested: 11/10/2009

General Hydrant Notes:
Current flush will cause flooding

Address/Moved On Map: 02001 Contact
Photo Number: [upload]

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Mount Laurel Township Hydrant Inventory - GIS Department

Hydrant Info | Flushing | Flow Test | Maintenance | FD Record | Hydrant Painting | Picture

MLT Flow Testing: HY1038

Flow Tested: Yes Unchecked

Date Tested: 11/10/2009
Flowed Outlet Size: 4 1/2"
Flow Operator: [dropdown]
Masthead Operator: [dropdown]
Masthead Flow Hydrant #: HY1038 [OK] [Cancel] [Print] [Close]

Flow Start Time: 04:15
Flow Stop Time: 0
Flow Step Time: 0
Flow Step: One Hydrant Flow

Hy Flow Setup: [dropdown]
Flow Test Notes: R: Monitor Hydrant F112: Flowed Hydrant

Hydrant Condition:

Hydrant Reflectors: Yes No
Control Grade: Yes No
Security Ring: Yes No
Needs Paint: Yes No

Flowed Flow: 12
Monitor Gauge: 100
Monitor Headgauge: 100
Pressure: 41 psi
Run SPN: [dropdown]

Flow Test Notes: [text area]

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Mount Laurel Township Hydrant Inventory - GIS Department

Hydrant Info | Flushing | Flow Test | Maintenance | FD Record | Hydrant Painting | Picture

MLT Hydrant Flushing Form: HY1038

Start Time: 05:15
2007 Flushing Date: 11/10/2009
Operator: Jim McQuay
Value Entered: [dropdown]
Flushing Issue: [dropdown]
Value Daily: [dropdown]
Hydrant Checked: Yes
Dual Functioning: Yes

Value Condition: Good
Lubricated Nozzle Cap: Yes
Value Box Condition: Good
Condition of Hose Nozzle: OK
Hydrant Valve Problem: None
Hydrant Problem: None

End Time: 05:16
Status: Flushed 2007

Hydrant Condition:

Hydrant Reflectors: Yes No
Control Grade: Yes No
Security Ring: Yes No
Needs Paint: Yes No

2007 Flow Testing Notes:
[text area]

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Mount Laurel Township Hydrant Inventory - GIS Department

Hydrant Info | Flushing | Flow Test | Maintenance | FD Record | Hydrant Painting | Picture

Hydrant Painting Info: HY1038

Case Status: Hydrant Was Painted

Date Painted: 11/10/2009
Need Color: [dropdown] Find WY Color
Ownership: Private
Paint: 15000000

Hydrant Condition:

Hydrant Reflectors: Yes No
Control Grade: Yes No
Security Ring: Yes No
Needs Paint: Yes No

Painting Notes: [text area]

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Hydrant Main Page

Hydrant ID

Mount Laurel Township Hydrant Inventory - GIS Department

Hydrant Info | Flushing | Flow Test | Maintenance | FD Record | Hydrant Painting | Picture

MLT Hydrant Information:

Hydrant ID: **Old ID#:**

Manufacturer:


Hydrant Manufacture Date:

Valve Opening:

Ownership: MUA Private Unknown

Pressure Rating:

Hydrant Stock Photo



Added/Moved On Map:

Photo Number:

Hydrant Condition:

Hydrant Reflectors: Yes No

Correct Grade: Yes No

Security Ring: Yes No

Needs Paint: Yes No

Last Flusing Date:

Last Flow Tested:

General Hydrant Notes:

cannot flush will cause flooding

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ok x

Stock Photo

Field Notes

Hydrant Flushing Page

Mount Laurel Township Hydrant Inventory - GIS Department

Hydrant Info | Flushing | Flow Test | Maintenance | FD Record | Hydrant Painting | Picture

MLT Hydrant Flushing Form:

Start Time: 0606

2007 Flusing Date: 10/20/2007

Operator: Jim McGory

Valve Exercised:

Flushing Issues: None

Water Quility: Normal

Hydrent Checked: Yes

Drain Functioning: Yes

Valve_Condition: Good

Lubricated Nozzel Caps: Yes

Valve Box Condition: Good

Condition of Hose Nozzels: OK

Hydrant Valve Problems: None

Hydrant Problems: None

End Time: 0616 Flushed 2007

Hydrant Condition:

Hydrant Reflectors: Yes No

Correct Grade: Yes No

Security Ring: Yes No

Needs Paint: Yes No

2007 Flow Testing Notes:
JM-hyd needs to be lubricated

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ok x

Hydrant Flow Testing Page

Mount Laurel Township Hydrant Inventory - GIS Department

Hydrant Info | Flushing | **Flow Test** | Maintenance | FD Record | Hydrant Painting | Picture

MLT Flow Testing:

Flow Tested: Yes Un-tested

Date Tested:

Flowed Outlet Size:

Flow Operator:

Monitorer Operator:

Monitored Flow Hydrant #: 3rd HY Opened:

Flow Start Time:

Flow Stop Time:

Hydrant Condition:

Hydrant Reflectors: Yes No

Correct Grade: Yes No

Security Ring: Yes No

Needs Paint: Yes No

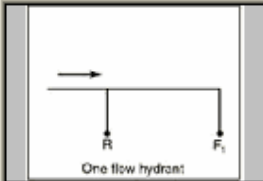
Flowed Pitot:

Monitor Static Pressure: psi

Monitor Residual Pressure: psi

Hy Flow Setup:

R - Monitor Hydrant
F1-2 - Flowed Hydrants



Flow Test Notes

Flow gpm × $\frac{\text{hr}}{\text{hf}}$ = GPM @ 20 psi

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VBA Script
To run GPM
Equation

Hydrant Painting Page

Mount Laurel Township Hydrant Inventory - GIS Department

Hydrant Info | Flushing | Flow Test | Maintenance | FD Record | Hydrant Painting | Picture

Hydrant Painting Info: HY1078

Color Schema Hydrant Was Painted

Date Painted: 3/31/2008

Nosel Color: Blue

Ownership: Private

Painter: CHRZANOW

Hydrant Condition:

Hydrant Reflectors: Yes No

Correct Grade: Yes No

Security Ring: Yes No

Painting Notes:

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