Image Management Solutions
for
Environmental Due Diligence
with Sanborn Fire Insurance Maps
Presentation Outline

• Introduction

• Focus on Environmental Due Diligence

• Sanborn Fire Insurance Maps

• Technology Transition Using ESRI Capabilities

• EDR -Image Management Solutions With ArcGIS

www.edrnet.com

www.rmsi.com
About EDR

Environmental Data Resources Inc

www.edrnet.com

www.rmsi.com
About EDR

- Leading provider of environmental risk information services and related workflow applications in the United States

- Established in 1991, EDR is headquartered in Milford, Connecticut with regional offices located throughout the United States

www.edrnet.com

www.rmsi.com
About EDR

• Innovator of the most comprehensive database of environmental and historical land use information

• Provides reports, subscription services and other solutions to help its customers assess and manage environmental risk

• EDR is wholly owned by DMG Information Inc., the business information division of Daily Mail and General Trust, plc (DMGT)
About RMSI

Delivering a world of solutions
About RMSI

A professional services company providing geospatial solutions and application software services to clients worldwide

Focus Sectors

• Land Information Management
• Utilities and Core Geospatial Solutions
• Telecommunications
• Agriculture and Natural Resources
• Risk, Insurance and Modeling

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Environmental Due Diligence
Historical Research for Environmental Due Diligence

- Historical-use reports assist environmental due diligence and risk management professionals in assessing prior uses of a property and its surrounding area in order to identify situations that may have elevated environmental risk.

- Raising need is to enhance the precision of historical information as a decision support system for environmental industry needs.

- Geospatial technology helps transform information to a seamless integrated database fostering historical research.

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Sanborn Fire Insurance Map
Sanborn Fire Insurance Maps

- Essential Phase I historical information source for Environmental Site Assessment
- Tracks site-specific changes in landscape and property usage over a period
- Large scale maps dating from 1867 to present for over 9,000 cities and towns in the U.S., Canada, and Mexico
- Maps were originally designed to assist fire insurance agents in determining the degree of fire hazard associated with a particular property

EDR®
www.edrnet.com

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Sanborn Fire Insurance Maps

- Maps include outline of each building, size, shape and construction, location of windows and doors.
- Maps include street names, numbered addresses, property boundaries, associated structures on each property.

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Sanborn Fire Insurance Maps

• The maps' labeling of the type, use, building material used in construction, flammable material on site, and even name of specific buildings in towns and cities they have become increasingly popular primary sources

• Maps provide invaluable details to historians, genealogists, urban planners, architectural historians, environmentalists, economists, and many other specialists and scholars
Few Map Samples

McRae, Georgia
Savannah, Georgia
Athens, Georgia
Mt. Vernon, Georgia
Technology Transition

Using

ESRI Capabilities
Fire Insurance Map

Earlier

• Voluminous reports and documents
• Maps stored as Microfilms
• Data Storage Space
• Data navigation from map and text
• Visualization Hardships
Fire Insurance Map

Now...

- Largest repository for environmental site assessment
- Comprehensive Data Storage & Retrieval
- With over 23 million records compiled from over 1,200 federal, state, local, tribal and proprietary databases
- Expedite repetitive tasks relating to report assembly, formatting, management and administration.

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Fire Insurance Map

- Rescanned every Sanborn map to create high-resolution images, so that more details can be visualized.
- Provides instant, site-specific search results using web interface.
- Enable users to significantly reduce the time and effort associated with historical property due diligence.
- Ability to find property in the center of the map, with much greater ease of reference to adjoining properties.
Utilizing ESRI Capability

Image Management Solutions
Utilizing ESRI Capability

• Historical fire insurance map as Integrated Image Data.
• Using transformation algorithms of ArcGIS, individual map sheets for each city/vintage were geo-referenced.
• Digital storage of Map sheets as old as 100 years.
• Effective Workflow management.
• Least amount of distortion and maintaining the accuracy levels.
• Metadata tagging of images covering details viz., image number, image type, target pixel X and Y, etc…
Spatial Footprints

• Generation of Spatial footprint for each georeferenced Fire Map Sheet

• Loaded into ArcSDE Layer

• Enables Quick Search to establish Map Volume and Years of Coverage

• 1.3 Million GeoTIFF Images

• 7 Terabytes
Georeferenced Footprints

Map Sheet

Footprint

Arc SDE

Georef Image

DBMS Server

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Georeferenced Map Sheets
Utilizing ESRI Capability

Image Map Mosaic Services
Image Map Mosaic Services

- 43 Image Services
  - Tiled by geographic region, state, and city
  - Some dedicated cities (New York (5), Philadelphia, Chicago, Detroit, and Los Angeles)
  - Roughly 220,000 Images per Image Service
  - Deep historic stack of coverage, up to 26 years in parts of New York City
  - Best of Layer, with pyramids for quick overview.
  - 8.1 Million GeoTIFF Images
Map Mosaic Services

Before: 1.2 Million Disparate Maps
Map Mosaic Services

After: Seamless Mosaic
Network Infrastructure

- High-bandwidth, high-availability environment
- 2 Dell PowerEdge 2950 Application Servers, 8 GB of RAM
- 2 VMware Application Servers, 4 GB of RAM
- SAN Connection to 12 TB of GeoTIFF Images
- 2 Image Server Licenses, 23 Image Service Providers, 46 Image Services
- Disaster / Recovery site with full duplication
Client Connection

- Custom VB.NET Image Service Manager calling ISClient.dll
- Created to handle projection, buffering, metadata, and image format support
- Web Service for ad-hoc requests, Windows Service for batched requests
- ESRI’s ArcGIS Desktop support using the Best of Layer
Application Benefits

- Customized search results
- Additional insight gained on property vicinity
- Review of findings quickly
- Easy comparison of map years
- Increased coverage
- View plotted sites on a current aerial photo.
- Saves time cross-referencing databases
- Quickly navigate from the map to text detail
- Easily view orphan detail
EDR Deliverable Formats

PDFs
Data Stream
Data Portal
SAS
Workflow Applications
Wall Map
Excel
Hard Copy Reports
Email Alerts
Useful Links

- Environmental Data Resources, Inc:
  www.edrnet.com

- RMSI:
  www.rmsi.com

- Historic Sanborn Fire Insurance Map Information:

- Sanborn Map Key with Symbols and Abbreviations: