

# USEPA's Comprehensive Geospatial Information Sharing Framework

## An Overview

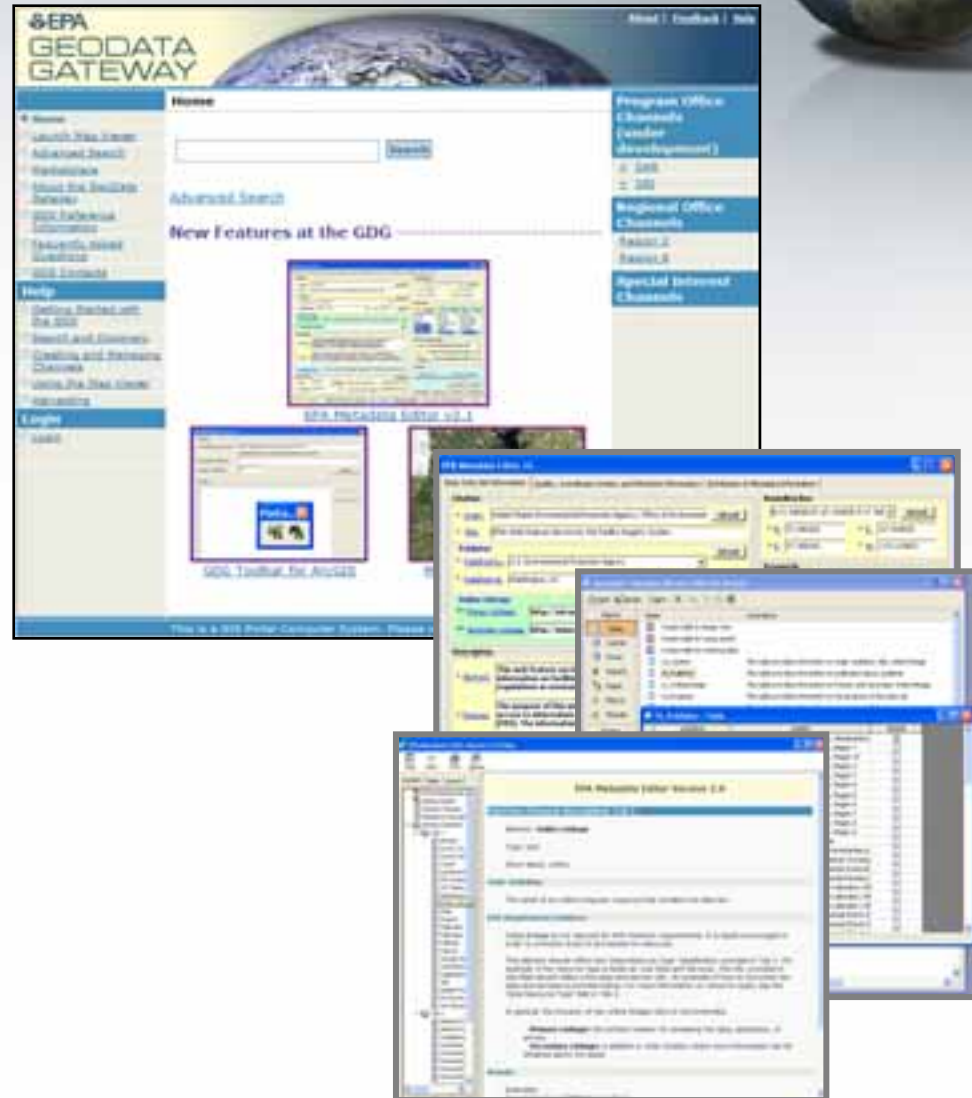


**ESRI Federal User Conference**  
**February 22, 2008**



# Agenda

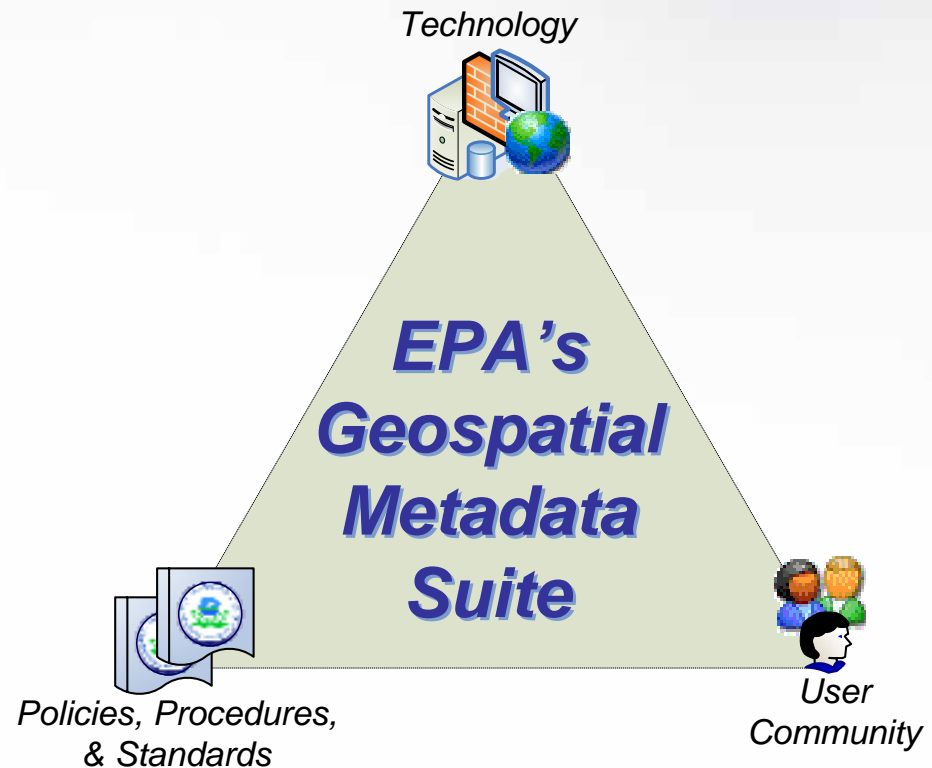
- Background
  - What is EPA's Geospatial Information Sharing Framework?
  - Why was it developed?
    - Drivers
    - Initial Efforts
    - Need for Change
- Current EPA Metadata Suite
  - Policy/Planning Framework
  - Users/Community
  - Technology
- Demonstration
  - GeoData Gateway
- Lessons Learned
- What's Next?



# Background



- **What is EPA's Geospatial Metadata Framework?**
  - Definition:
    - EPA's enterprise solution for geospatial information sharing that meets internal and external needs
  - Key Components:
    - Policy/Planning/Standards
    - User Community
    - Technology



# Background



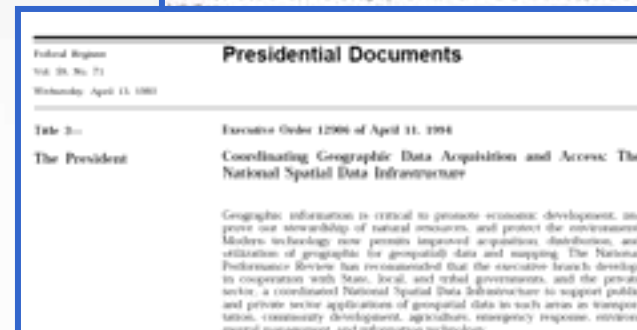
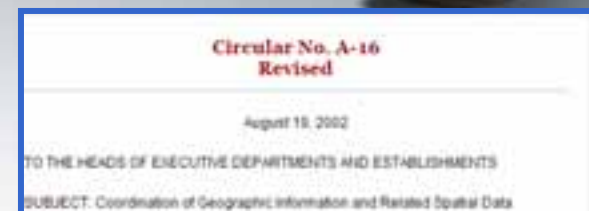
- **Why was it Developed?**

- **Key Drivers**

- Executive Order 12906
    - OMB Circular A-16
    - Intra- and Inter-Agency Sharing Efforts

- **Initial Efforts**

- Done the usual way: create solution and put it out there for people to use
    - Dual system for internal/external access
    - All components not standards-based
    - Information not synchronized
    - No direct links to data
    - Difficult to document metadata
    - No direct management by users
    - Lack of stewardship
  - **Result:** Not widely used, no buy-in, difficult to encourage participation



# Background



- **Need for Change**

- EPA decided it needed to organize geospatial metadata
  - Over 2,600 entries between all central systems
  - Contributions by over 21 EPA organizations
- EPA Metadata Workgroup (2005)
  - **Business Rules:** EPA's Implementation of FGDC CSDGM
    - » Work sessions completed over 9 months
    - » EPA Regions and Programs represented
    - » Resulted in EPA Geospatial Metadata Technical Specification
  - **Architecture:** Define baseline and target architecture
    - » Baseline reviewed holdings at central and Regional websites (>4,000 holdings identified)
    - » Target included a standards-based integrated, dynamic system

# Background



- Results of EPA's Geospatial Metadata Workgroup
  - Clear Business Requirements
    - Policies, procedures, standards, governance, strategic planning
    - Stakeholder Engagement:: Outreach, training, user input and feedback
  - Clear Architecture Requirements
    - Key new technologies
      - **GeoData Gateway (GDG)**: ESRI Portal Toolkit Implementation
      - **EPA Metadata Editor**: Custom Extension to ArcGIS Desktop



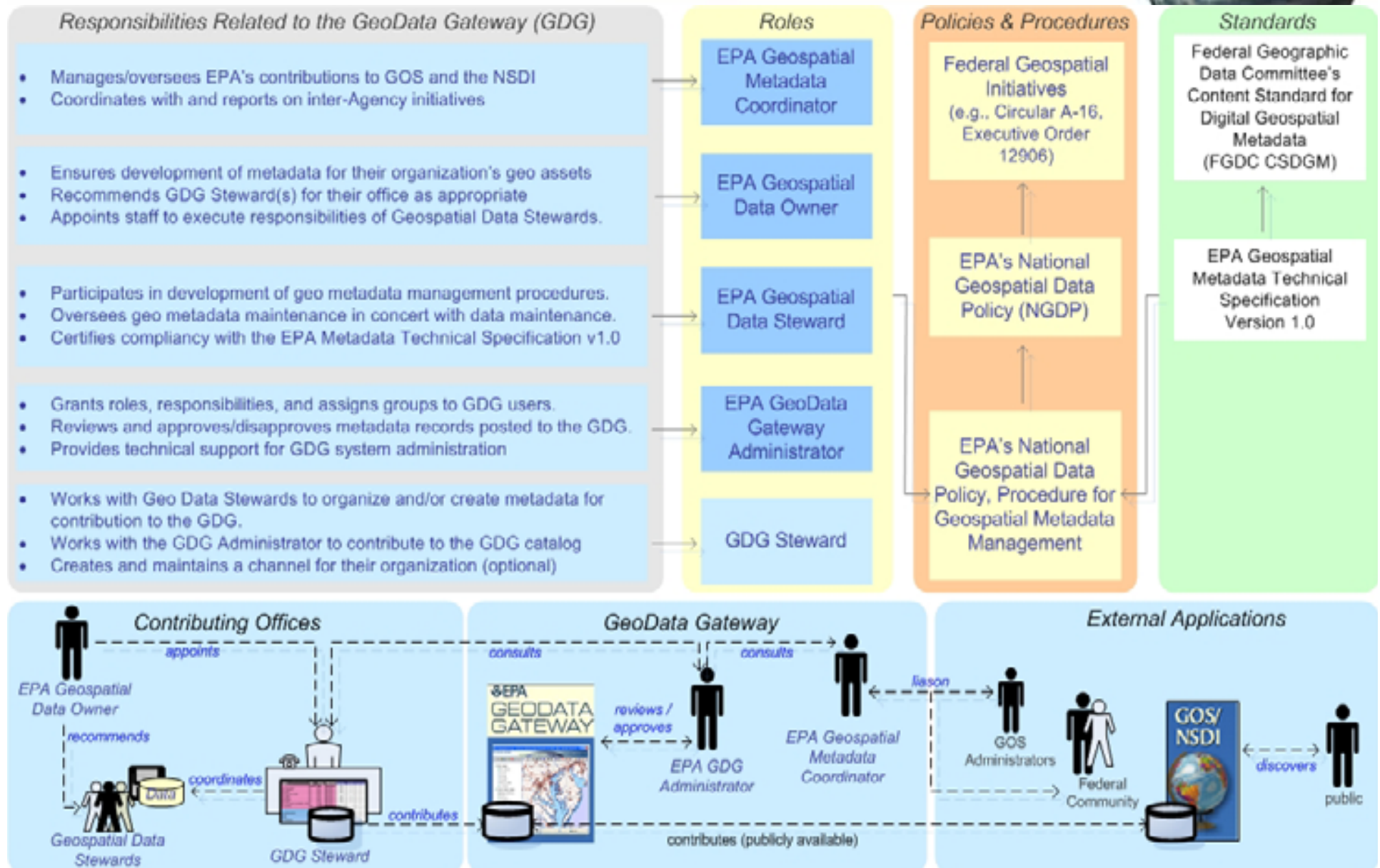
# Current EPA Metadata Suite



- **Implementation: Policy/Planning Framework**
  - EPA Geospatial Metadata Technical Specification
  - EPA's National Geospatial Data Policy (NGDP): Procedure for Geospatial Metadata Management
  - GDG Governance Structure Report and Maintenance Plan
  - GDG/EME Cost Benefit Analysis
  - GDG/EME Strategic Plan



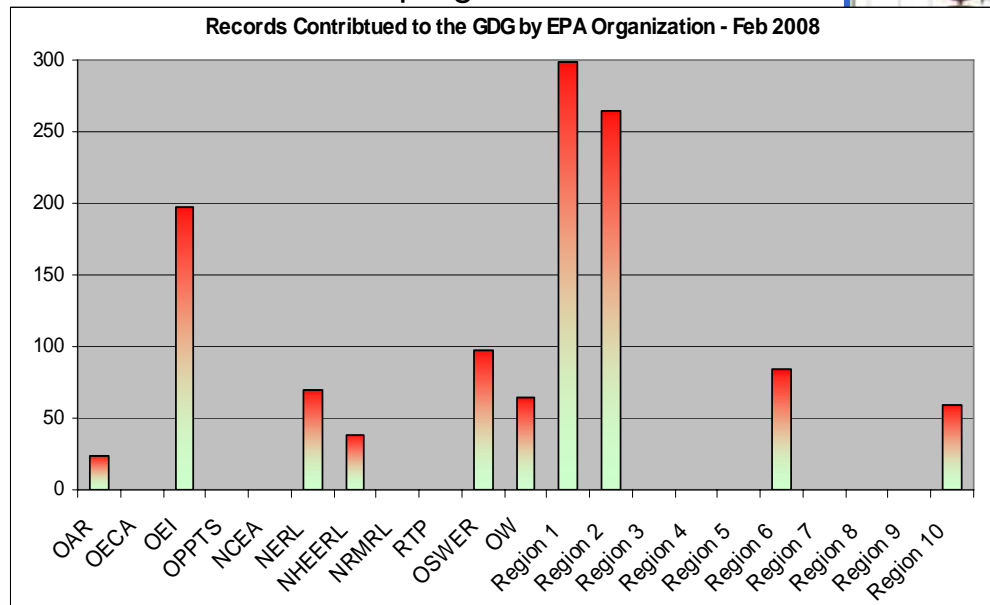
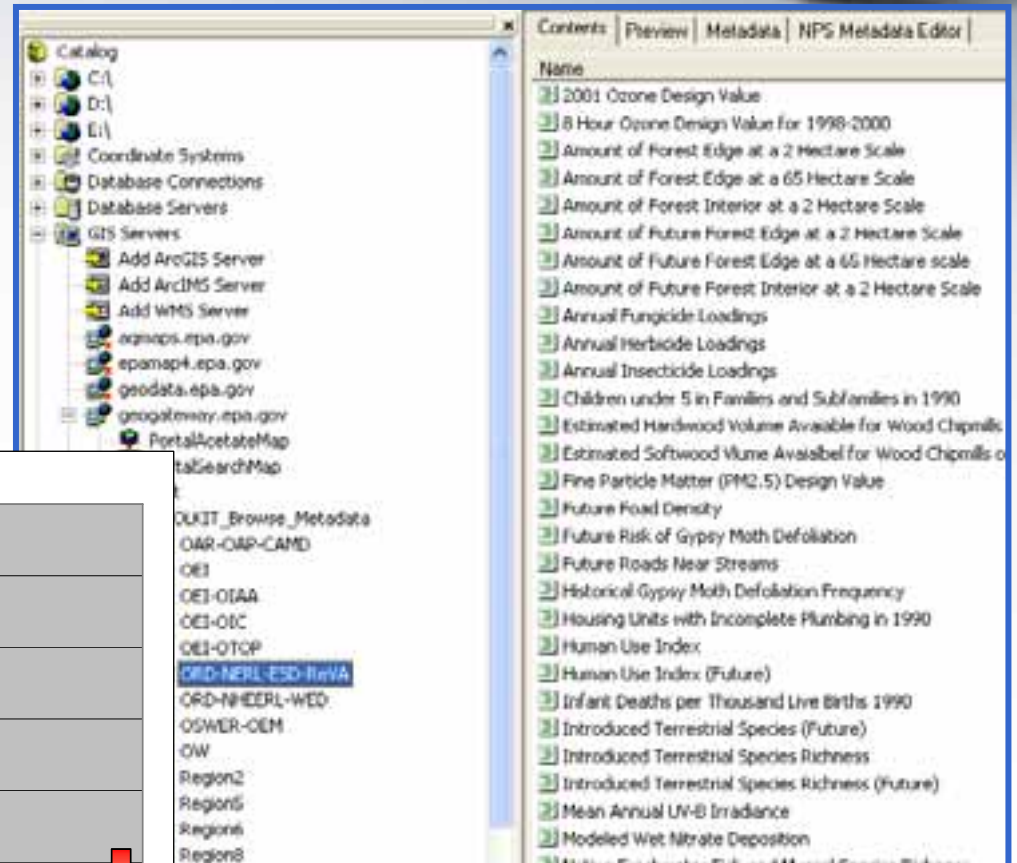
# Current EPA Metadata Suite





# Current EPA Metadata Suite

- Implementation: Users/Community
  - Intense outreach in 2006/07
    - Monthly Stakeholder Sessions
    - GDG/EME Training
    - Presentations at major conferences
    - ESRI Award & Paper
  - Groups who have started working with us\*
    - 8 out of 10 Regions
    - 6 out of 11 programs

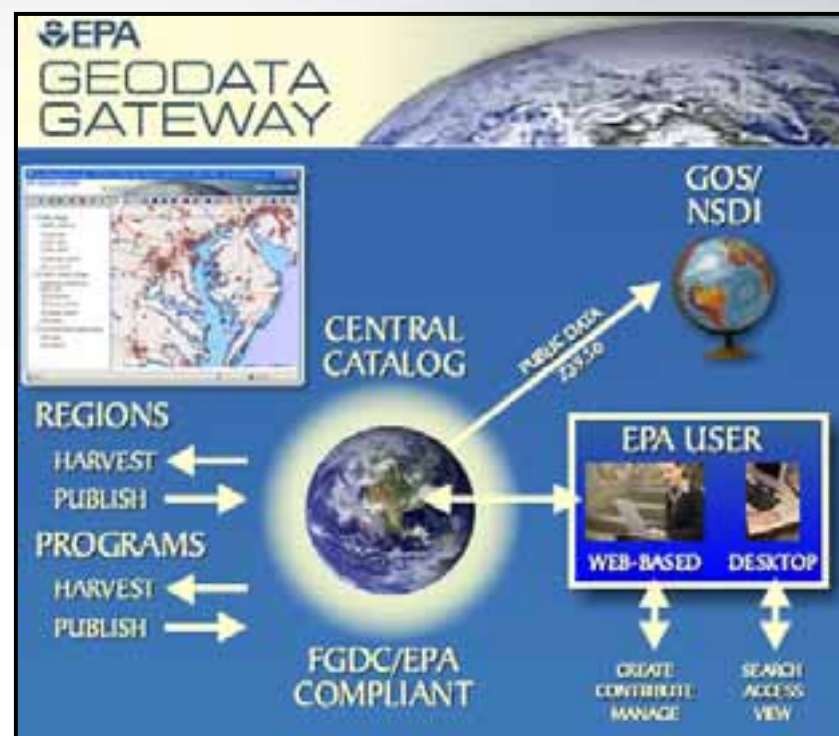


\* All groups working with us may not have contributed records yet

# Current EPA Metadata Suite



- Implementation: Technology Framework
  - **GeoData Gateway (GDG)**
    - Central, standards-based system that automates contributions and allows distributed users to manage their information.
    - Single-Sign-On with EPA's Central Identity and Access Management (IAM) System
    - Automates contributions to Geospatial One-Stop (GOS) and the National Spatial Data Infrastructure (NSDI) Clearinghouse (single system)
    - Reusable components that can be integrated with other applications



# Current EPA Metadata Suite



- Implementation: Technology Framework

- EPA Metadata Editor (EME)

- Simplified interface integrated in ArcCatalog
    - EPA Validation Service
    - Database-driven defaults
    - Used across EPA, states & other Feds
    - Over 950 downloads since July 2007

# Demonstration



The screenshot displays the EPA Geodata Gateway website. The header features the EPA logo and the text "GEODATA GATEWAY" on the left, and links for "About | Feedback | Help" on the right. The main content area is titled "Home" and includes a search bar with a "Search" button. Below the search bar, there is a section for "Advanced Search" and "New Features at the GDG". The "New Features at the GDG" section highlights three tools: "EPA Metadata Editor v2.1", "GDG Toolbar for ArcGIS", and "Microsoft Virtual Earth". The left sidebar contains a "Home" section with links to "Launch Map Viewer", "Advanced Search", "Marketplace", "About the GeoData Gateway", "GDG Reference Information", "Frequently Asked Questions", and "GDG Contacts". Below this is a "Help" section with links to "Getting Started with the GDG", "Search and Discovery", "Creating and Managing Channels", "Using the Map Viewer", and "Harvesting". At the bottom of the sidebar is a "Login" section with a "Login" link. The right sidebar contains three sections: "Program Office Channels (under development)" with links to "OAS" and "OSI", "Regional Office Channels" with links to "Region 2" and "Region 6", and "Special Interest Channels". A footer at the bottom of the page states: "This is a GIS Portal Computer System. Please read the [Disclaimer](#) and [Privacy](#)."

# Demo Slides



**EPA**  
**GEODATA**  
**GATEWAY**

About | Feedback | Help

■ Home

[Launch Map Viewer](#)

[Advanced Search](#)

[Marketplace](#)

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Help

[Getting Started with the GDG](#)

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[Login](#)

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New Features at the GDG

  
[EPA Metadata Editor v2.1](#)

  
[GDG Toolbar for ArcGIS](#)

  
[Microsoft Virtual Earth](#)

Program Office Channels (under development)

± QAS

± OSI

Regional Office Channels

[Region 2](#)

[Region 6](#)

Special Interest Channels

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# Demo Slides



The screenshot shows the EPA Geodata Gateway website. At the top left is the EPA logo and the text "GEODATA GATEWAY". At the top right are links for "About", "Feedback", and "Help". The main content area is divided into three columns. The left column has a "Home" section with links like "Launch Map Viewer", "Advanced Search", "Clip N Ship", "Marketplace", "About the GeoData Gateway", "GDG Reference Information", "Frequently Asked Questions", and "GDG Contacts". Below this is a "Help" section with links like "Getting Started with the GDG", "Search and Discovery", "Editing Channels", "Using the Map Viewer", and "Harvesting". At the bottom of the left column is a "Login" section with a "Login" link. The middle column has a "Home" section with a search bar and a "New Feature" section. A blue dialog box titled "Connect to geogateway.epa.gov" is overlaid on the middle column. The dialog box contains a key icon, a message stating "The server geogateway.epa.gov at epaAuth userid/password requires a username and password.", a "User name:" field with a dropdown menu showing "Jessica\_Zichichi", a "Password:" field with masked characters, and a checked checkbox labeled "Remember my password". At the bottom of the dialog box are "OK" and "Cancel" buttons. Below the dialog box are two smaller images: "GDG Toolbar for ArcGIS" and "Microsoft Virtual Earth". The right column has a "Channels" section with a "Using Channels" link, a "Program Office Channels" section with links for "OAS", "OEL (Enterprise)", "OSWER", and "OW", a "Regional Office Channels" section with links for "Region 2" and "Region 6", and a "Special Interest Channels" section with a link for "NatureServe". At the bottom of the page is a blue bar with the text "This is the GDG. Please read the Disclaimer and Privacy and Security."


# Demo Slides



<div>  <b>GEODATA GATEWAY</b> </div> <div> <a href="#">About</a>   <a href="#">Feedback</a>   <a href="#">Help</a> </div>						
<b>Manage Repositories</b>						
<ul style="list-style-type: none"> <li><a href="#">Home</a></li> <li><a href="#">Launch Map Viewer</a></li> <li><a href="#">Advanced Search</a></li> <li><a href="#">Clip N Ship</a></li> <li><a href="#">Marketplace</a></li> <li><a href="#">About the GeoData Gateway</a></li> <li><a href="#">GDG Reference Information</a></li> <li><a href="#">Frequently Asked Questions</a></li> <li><a href="#">GDG Contacts</a></li> <li><b>Help</b> <ul style="list-style-type: none"> <li><a href="#">Getting Started with the GDG</a></li> <li><a href="#">Search and Discovery</a></li> <li><a href="#">Editing Channels</a></li> <li><a href="#">Using the Map Viewer</a></li> <li><a href="#">Harvesting</a></li> </ul> </li> <li><b>Login</b> <ul style="list-style-type: none"> <li><a href="#">Log Out (Jessica Richer)</a></li> </ul> </li> <li><b>Admin Functions</b> <ul style="list-style-type: none"> <li><a href="#">Manage Metadata</a></li> <li><a href="#">Batch Upload</a></li> <li><b>Manage Repositories</b></li> </ul> </li> <li><b>My Functions</b> <ul style="list-style-type: none"> <li><a href="#">Manage my Channels</a></li> <li><a href="#">Upload Metadata</a></li> <li><a href="#">Manage my Repositories</a></li> <li><a href="#">Manage my Metadata</a></li> <li><a href="#">Manage my Searches</a></li> <li><a href="#">Manage my Maps</a></li> <li><a href="#">Download GDG Toolbar</a></li> </ul> </li> </ul>	Harvest ID	Name	Date Created	Last Updated	Owner Name	Action
	201	ArcIMS: http://r1-gis-web2.r1.epa.gov	2007-11-08	2007-11-08	cn=00001043,cn=users,dc=epa,dc=gov	<a href="#">Update</a> <a href="#">Delete</a> <a href="#">History</a>
	261	WAF: http://geodata.epa.gov/ORD/NERL/ReVA/	2007-11-30	2007-11-30	cn=00002664,cn=users,dc=epa,dc=gov	<a href="#">Update</a> <a href="#">Delete</a> <a href="#">History</a>
	181	WAF: http://geogateway.epa.gov:8080/sde2waf/R2/	2007-11-07	2008-02-07	cn=00003212,cn=users,dc=epa,dc=gov	<a href="#">Update</a> <a href="#">Delete</a> <a href="#">History</a>
	221	WAF: http://r2test-web.r02.epa.gov/staging_area/gis/xml/public/	2007-11-08	2007-11-08	cn=00003212,cn=users,dc=epa,dc=gov	<a href="#">Update</a> <a href="#">Delete</a> <a href="#">History</a>
	361	WAF: http://geogateway.epa.gov:8080/sde2waf/R10/	2008-02-03	2008-02-03	cn=00018143,cn=users,dc=epa,dc=gov	<a href="#">Update</a> <a href="#">Delete</a> <a href="#">History</a>
	242	ArcIMS: r7arims.r7.comp.epa.gov	2007-11-29	2007-11-29	cn=00020161,cn=users,dc=epa,dc=gov	<a href="#">Update</a> <a href="#">Delete</a> <a href="#">History</a>
	168	WAF: http://geodata.epa.gov/Metadata/PCS	2007-11-01	2007-11-01	cn=00026103,cn=users,dc=epa,dc=gov	<a href="#">Update</a> <a href="#">Delete</a> <a href="#">History</a>
	163	WAF: http://geo.epa.gov/Metadata/DocsTemplates	2007-11-01	2007-11-01	cn=00026103,cn=users,dc=epa,dc=gov	<a href="#">Update</a> <a href="#">Delete</a> <a href="#">History</a>
	164	WAF: http://geodata.epa.gov/Metadata/AFS	2007-11-01	2007-11-01	cn=00026103,cn=users,dc=epa,dc=gov	<a href="#">Update</a> <a href="#">Delete</a> <a href="#">History</a>
	165	WAF: http://geodata.epa.gov/Metadata/AFS_FS	2007-11-01	2007-11-01	cn=00026103,cn=users,dc=epa,dc=gov	<a href="#">Update</a> <a href="#">Delete</a> <a href="#">History</a>
	166	WAF: http://geodata.epa.gov/Metadata/NPL	2007-11-01	2007-11-01	cn=00026103,cn=users,dc=epa,dc=gov	<a href="#">Update</a> <a href="#">Delete</a> <a href="#">History</a>
	167	WAF: http://geodata.epa.gov/Metadata/NPL_FS	2007-11-01	2007-11-01	cn=00026103,cn=users,dc=epa,dc=gov	<a href="#">Update</a> <a href="#">Delete</a> <a href="#">History</a>
	173	WAF: http://geodata.epa.gov/Metadata/TRI_FS	2007-11-01	2007-11-01	cn=00026103,cn=users,dc=epa,dc=gov	<a href="#">Update</a> <a href="#">Delete</a> <a href="#">History</a>
	169	WAF: http://geodata.epa.gov/Metadata/PCS_FS	2007-11-01	2007-11-01	cn=00026103,cn=users,dc=epa,dc=gov	<a href="#">Update</a> <a href="#">Delete</a> <a href="#">History</a>
	170	WAF: http://geodata.epa.gov/Metadata/RCR	2007-11-01	2007-11-01	cn=00026103,cn=users,dc=epa,dc=gov	<a href="#">Update</a> <a href="#">Delete</a> <a href="#">History</a>

# Demo Slides



**GEODATA  
GATEWAY**

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**Harvesting Repository Information**

Protocol: ☒ ArcIMS ☐ Z39.50 ☐ OAI-PMH ☐ WAF ☐ CSW

Repository URL:

Metadata Service Name:

User Name:

Password:

The GIS Portal will categorize your metadata based on the metadata theme keyword. Each metadata may be assigned to one of the [19 topic category in the ISO 19115](#). The ISO topic category can be inserted directly in the metadata as one of the theme keywords or you can also provide a look up table that will translate theme keyword in your metadata with an ISO topic category. An ISO topic category will be assigned for any first match of theme keyword found in the lookup table and the metadata. See an example of a [theme lookup table](#).

Please select the method to provide the theme keyword:

☒ Already inserted in the metadata  
☐ Look-up table

How often do you want this repository harvested:

☒ Once every month  
☐ Twice every month  
☐ Once every week  
☐ Only once  
☐ Skip harvesting

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# Demo Slides



**EPA GEODATA GATEWAY** [About](#) | [Feedback](#) | [Help](#)

**Manage My Metadata**

Document Title:

Document UUID:

Owner:

Status:

Date range between:  (yyyy-mm-dd)

For selected records:

No matching records were found.

☐ Action ☐ UUID

No matching records were found.

Update Date	Status	Policy
-------------	--------	--------

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**GATEWAY**

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- [Manage my Metadata](#)**
- [Manage my Searches](#)
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**Manage My Metadata**

Document Title:   
Document UUID:   
Owner:   
Status:   
Date range between:  and  (yyyy-mm-dd)

For selected records:


Results 1-10 of 137 meta

☐ **Action**

		Owner	Update Date	Status	Policy
<input type="checkbox"/>	<div> <div> </div> <div> (D91E03- -A1/ 260E-8C1 204F44379) File Geodatabase </div> </div>	OEI-OTOP	2008-02-07	Approved	Restricted
<input type="checkbox"/>	<div> <div> </div> <div> (8A67F6B0- D11F -68C4- AC3D-7D3 4216111C3) 2007 TeleAtlas Layers - Compressed ArcGIS 9.2 File Geodatabase </div> </div>	OEI-OTOP	2008-02-07	Approved	Restricted
<input type="checkbox"/>	<div> <div> </div> <div> (D9A19737- 442D -44D9- 6F19-EED B7403D142) Airports Provided by TANA (Original File Name: D2000_XXXXXX) </div> </div>	OEI-OTOP	2008-02-03	Approved	Restricted
<input type="checkbox"/>	<div> <div> </div> <div> (8AB28B6- ED18 -8440-6866- D48 232D457B1) Block Groups Provided by TANA (Original File Name: D2000_XXXXXX): Block Group Boundaries without a Shoreline Buffer) </div> </div>	OEI-OTOP	2008-02-03	Approved	Restricted
<input type="checkbox"/>	<div> <div> </div> <div> (1D2FD0E3- 4903 -9716- 518A-D51 584155853) Blocks Provided by TANA </div> </div>	OEI-OTOP	2008-02-03	Approved	Restricted
<input type="checkbox"/>	<div> <div> </div> <div> (68F2DA48- 9E2D -1234-0F0B- 268 8508EE1D3) Counties Provided by TANA (Original File Name: D2000_XXXXXX): County Boundaries) </div> </div>	OEI-OTOP	2008-02-03	Approved	Restricted

# Demo Slides



**GEODATA  
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Channel:

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[Map Services](#)  
[About this Channel](#)

**Introduction**

This channel provides links to geospatial resources maintained by the Office of Wastewater Management (OWM). Metadata records currently in this channel include information on waste water facilities, combined sewer overflow, permit compliance systems, and more. The available data sources are in ArcIMS feature and image services. OWM program applications can also be accessed in this channel, or under the WATERS Tool channel.

For more information, go to: <http://www.epa.gov/owm/faq.htm> or, please contact:

Michael Plastino  
email: [plastino.michael@epa.gov](mailto:plastino.michael@epa.gov)  
phone no: 202-564-0682

Go to main channel: [gwr](#)

**Section**

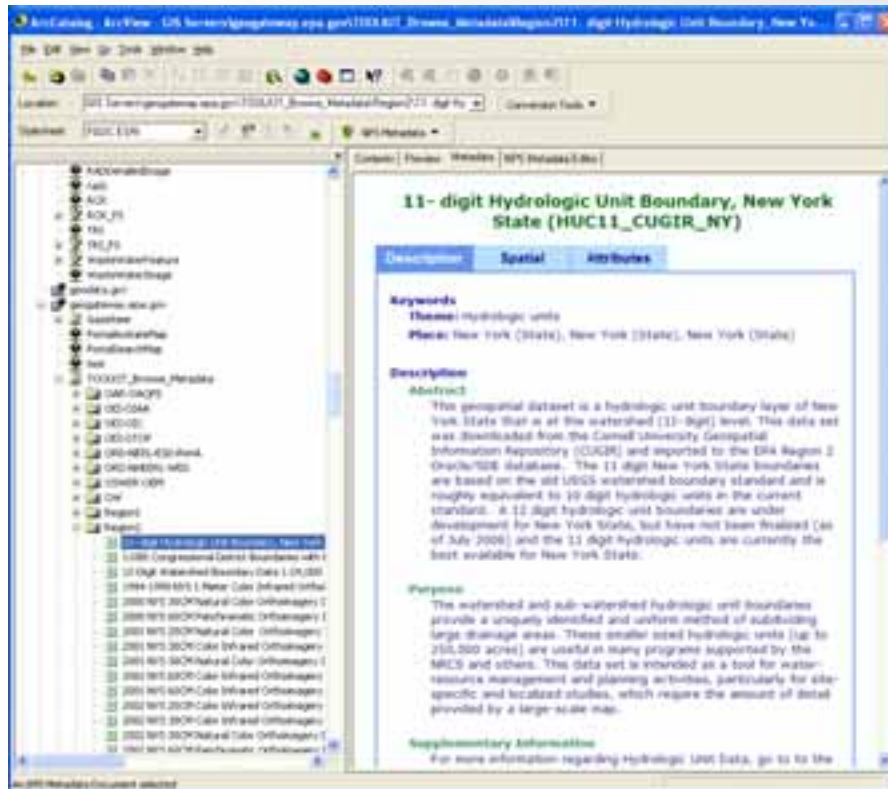
**Waste Water Facilities Feature Service**

**Content Summary:**  
Data provided within this feature service include the Waste Water Facilities (wastewater\_fac). These locations are the source locations for the Waste Water NHD Location points (wastewater\_nhd) that were indexed to the NHD.

**Contact:**  
Tod Dabolt, USEPA Office of Water

**Content Type:**  
WFS Vector Data Service

# Demo Slides



# Lessons Learned



- *There have been a few bumps along the way.....*
  - Adopting Relatively New Technology
    - Often first to discover bugs
    - Not a large user base to draw on
  - Performance & Reliability
    - Image & feature services have been very flaky within the Map Viewer components
    - Sometimes things just 'stop' working
  - Integration with the Larger EPA Architecture
    - Need Service Level Agreements
    - Need to understand new responsibilities placed on other system owners in advance!
  - Use of COTS Product
    - Customization is always a risk
  - User Buy-in is Key
    - If users buy-in and understand what they need to do, they will often put up with imperfection.

# What's Next?

- **Implement Strategic Plan**

- **GDG Outreach**

- Address consumer needs
    - Continue to work with producers
    - Work with application developers

- **GDG Technology Enhancements**

- Performance and Usage Monitoring
    - Minor enhancements to improve user experience

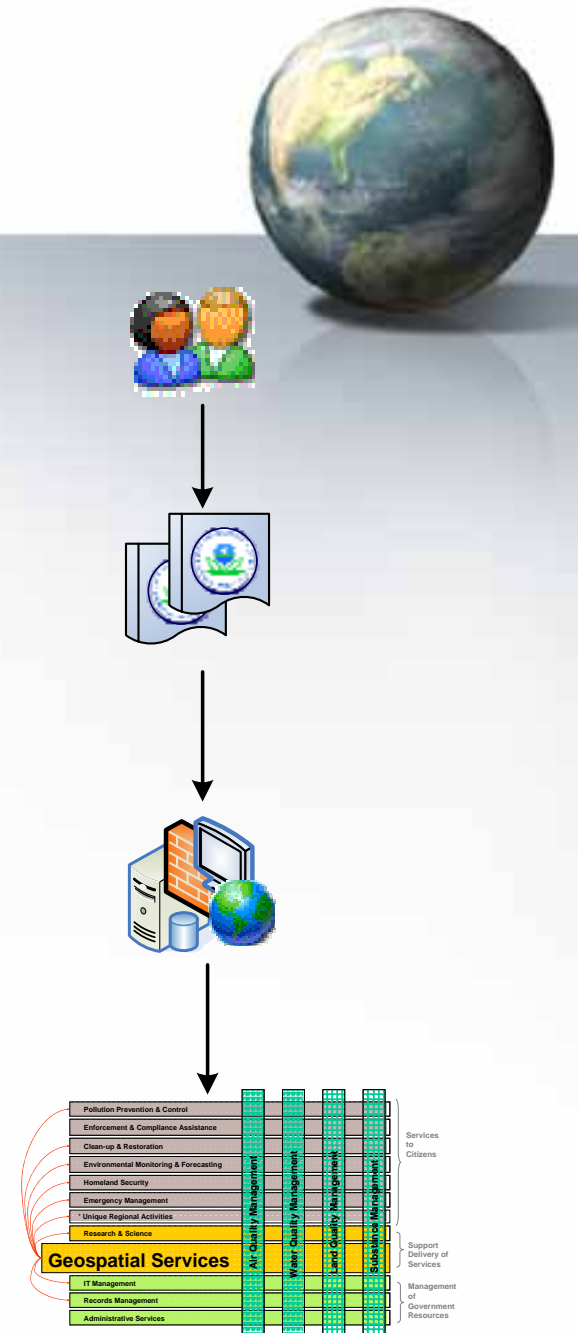
- **EME Technology Enhancements**

- Implement stakeholder feedback
    - Web-based version to replace GDG web front end
    - Implement validation web service at GDG

- **Continue Integration with EPA IT Infrastructure**

- Evaluate and implement high-value integration efforts

- **Long-term funding plan**



# For More Information:



- Michelle Torreano
  - GDG Project Manager & Agency Geospatial Metadata Coordinator
  - 202-566-2141
  - [Torreano.michelle@epa.gov](mailto:Torreano.michelle@epa.gov)
- EPA's Public Geospatial Metadata Components
  - EPA Policies
    - <http://geodata.epa.gov/policies.html>
  - EPA Metadata Editor
    - <http://geodata.epa.gov/eme.html>
  - Environment and Conservation Channel at GOS
    - <http://geodata.gov>