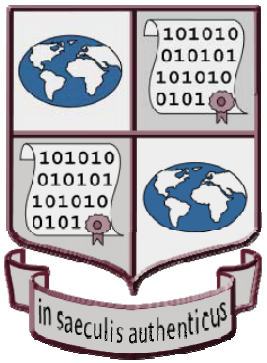
InterPARES 2 Project

International Research on Permanent Authentic Records in Electronic Systems



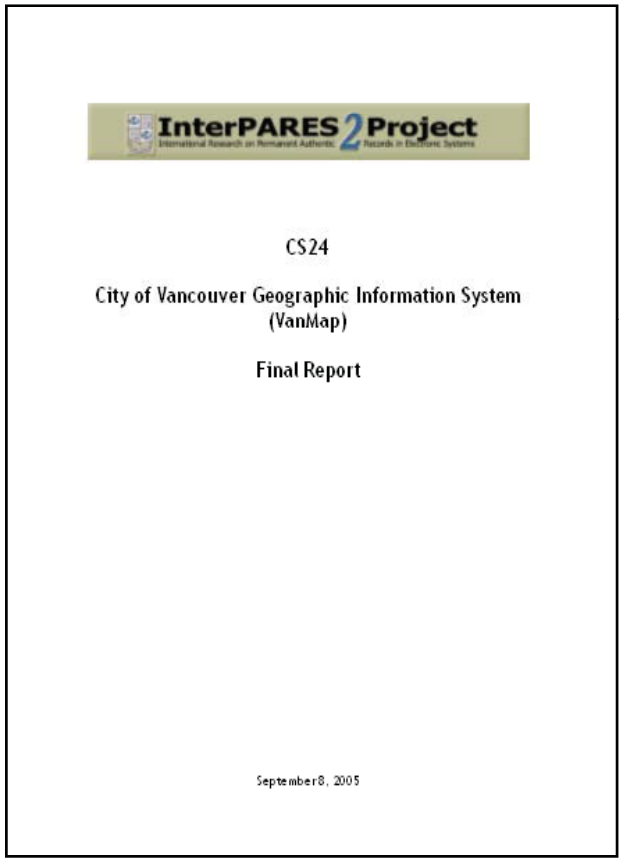
A Case Study in e-Government: VanMap

Evelyn McLellan
Insurance Corporation of BC

Victoria, BC

February 23, 2007

The VanMap case study


InterPARES 2 Project

CS24

City of Vancouver Geographic Information System (VanMap)

Final Report

September 8, 2005

Glenn Dingwall, City of Vancouver Archives

Richard Marciano, San Diego Supercomputer Center

Reagan Moore, San Diego Supercomputer Center

Evelyn Peters McLellan, Insurance Corporation of BC

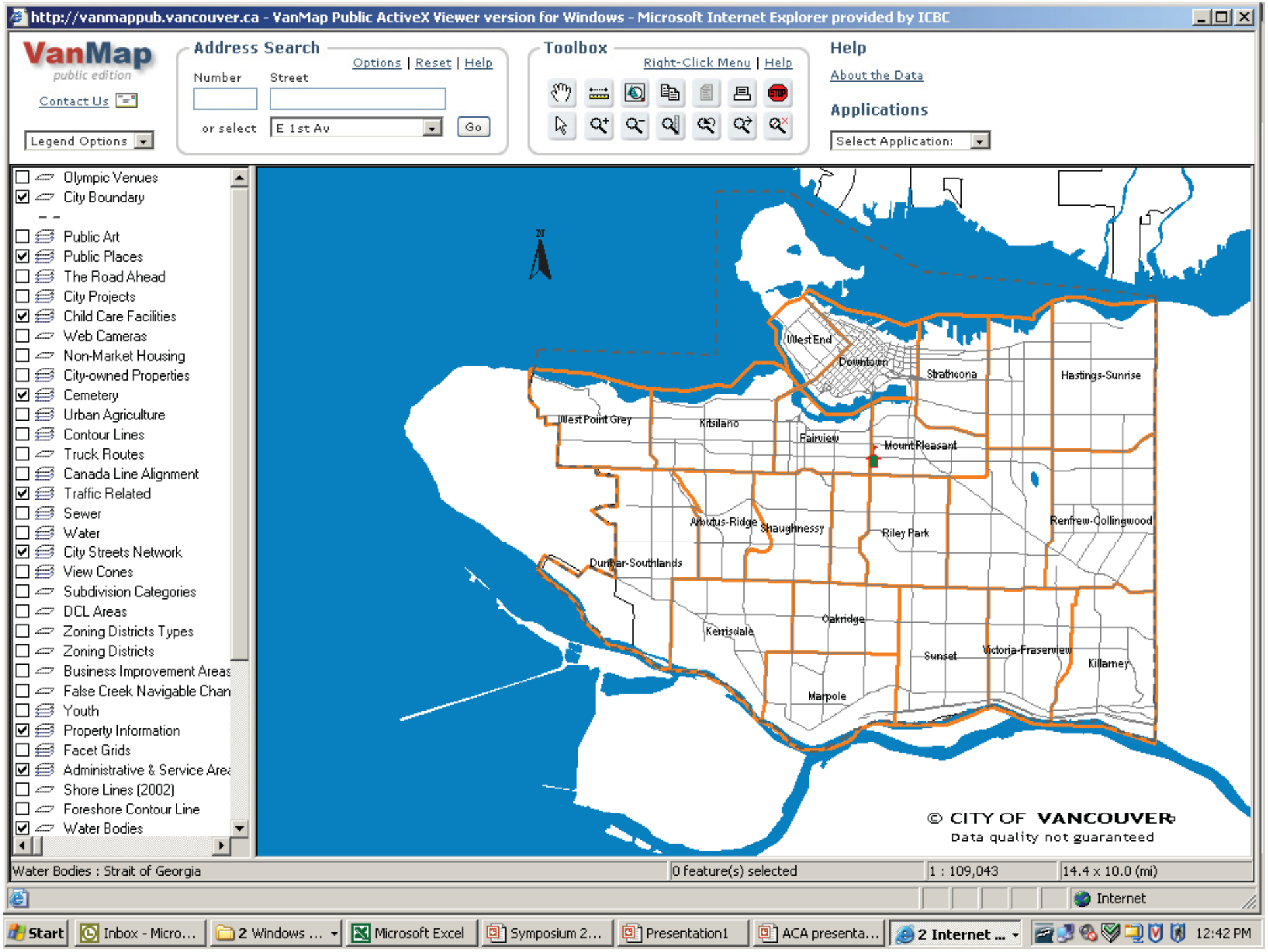
What is a GIS?

- **G**eographic **I**nformation **S**ystem
- Database system containing data linked to geospatial coordinates
- Typically presented to the viewer in the form of interactive maps
- May incorporate files such as CAD drawings, satellite imagery and photographs that are not geospatially referenced

What is VanMap?

The cross-corporate GIS created by the City of Vancouver and used by staff in

- Engineering
- Planning
- Permits and Licenses
- By-law Enforcement
- Social Planning
- Police
- Fire and Rescue
- Parks and Recreation


http://vanmappub.vancouver.ca - VanMap Public ActiveX Viewer version for Windows - Microsoft Internet Explorer provided by ICBC
VanMap
public edition
Contact Us
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Select Application:
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City Boundary
Public Art
Public Places
The Road Ahead
City Projects
Child Care Facilities
Web Cameras
Non-Market Housing
City-owned Properties
Cemetery
Urban Agriculture
Contour Lines
Truck Routes
Canada Line Alignment
Traffic Related
Sewer
Water
City Streets Network
View Cones
Subdivision Categories
DCL Areas
Zoning Districts Types
Zoning Districts
Business Improvement Areas
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Youth
Property Information
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Administrative & Service Area
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Downtown
Strathcona
Hastings-Sunrise
West Point Grey
Kitsilano
Fairview
Mount Pleasant
Arbutus-Ridge
Shaughnessy
Riley Park
Renfrew-Collingwood
Dunbar-Southlands
Oakridge
Kerrisdale
Sunset
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Killarney
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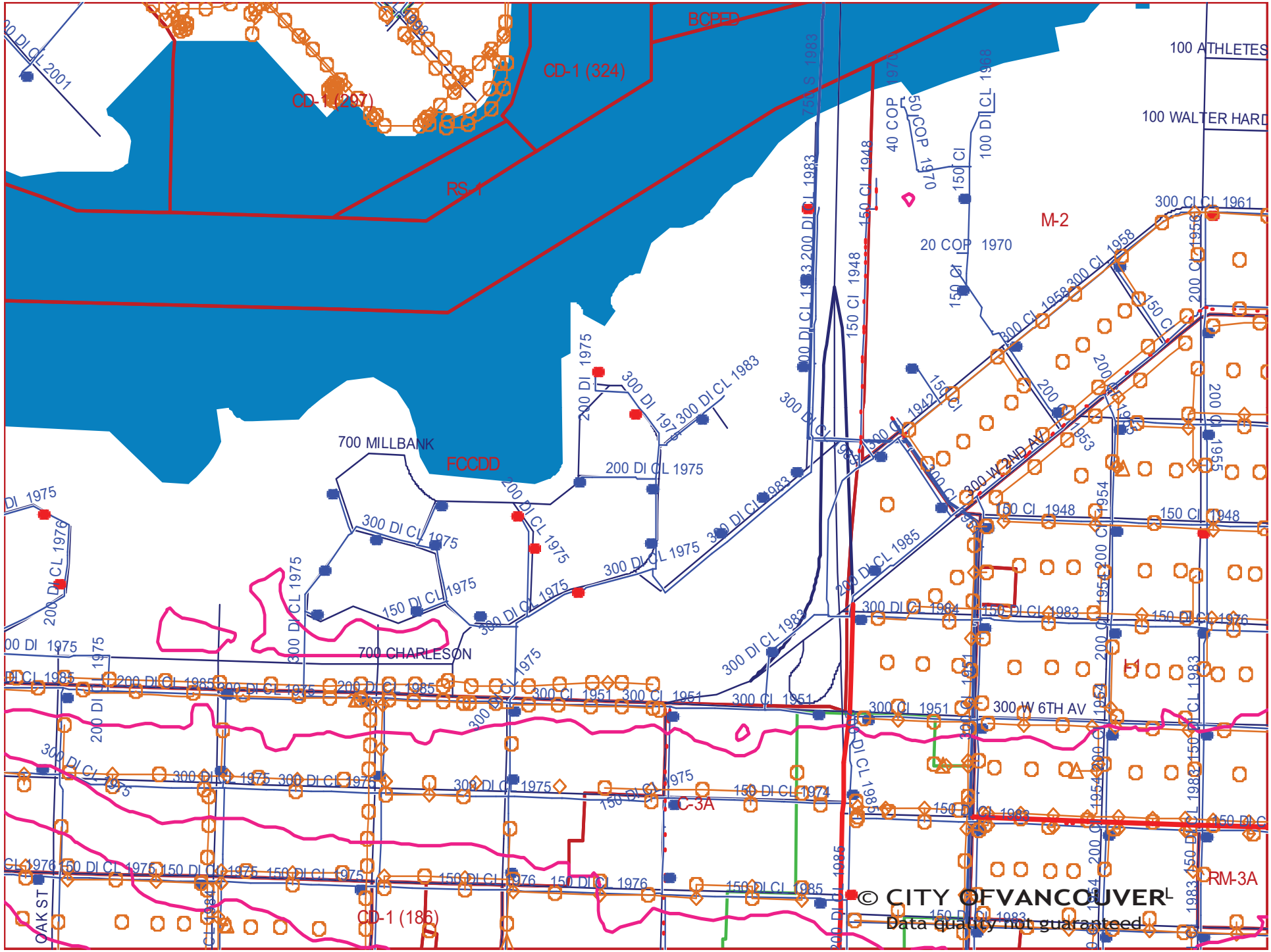
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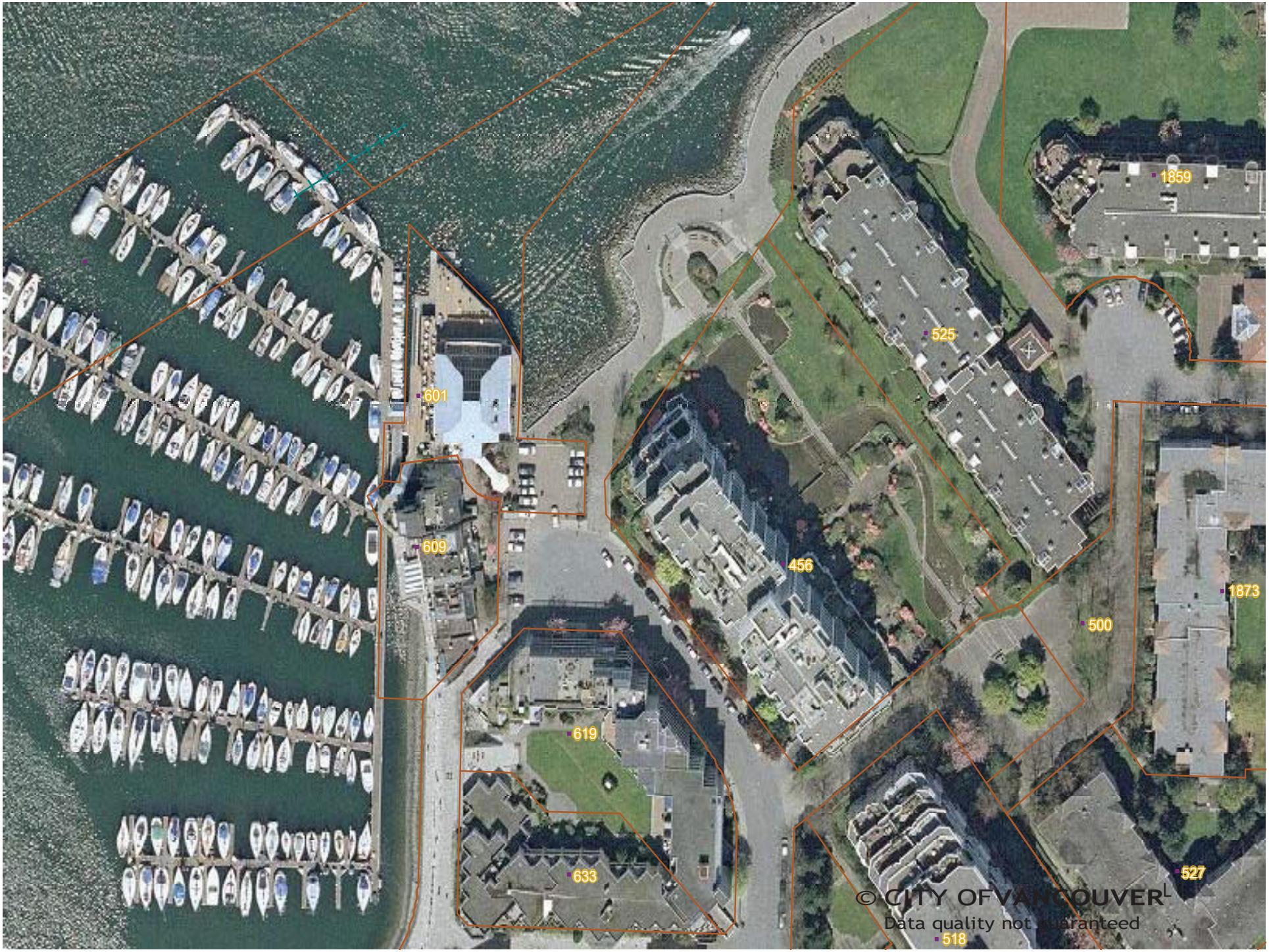
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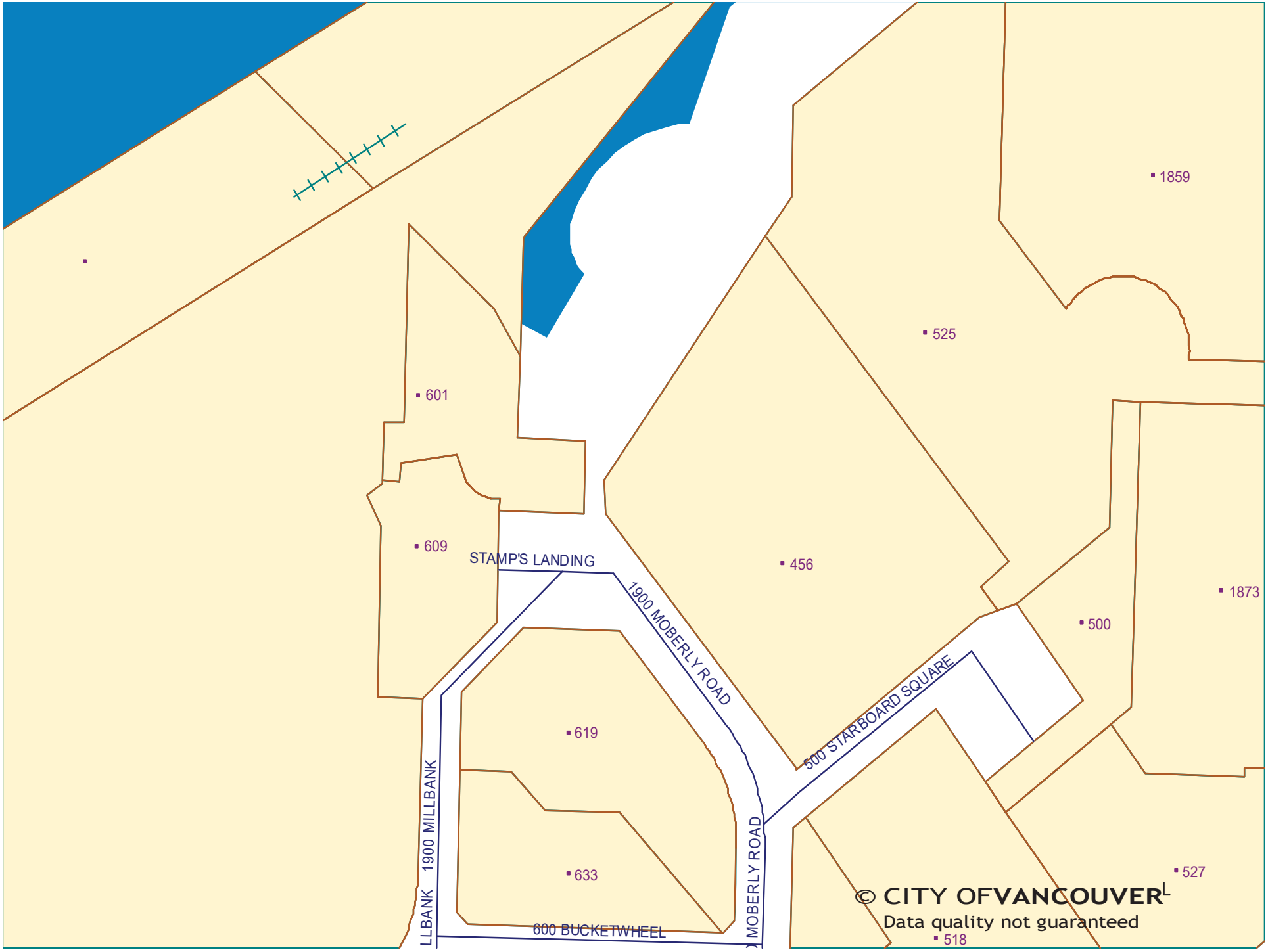
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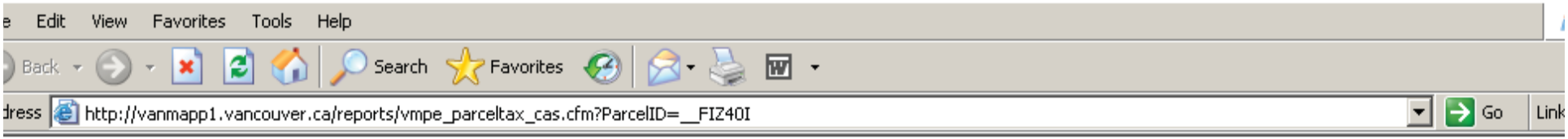

anMap
public edition

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ax Attributes Report

urce: The city's Property Tax System. (see About Data for the latest update.)

ecord	PID or Strata Plan Number	Assessment Roll Number (Folio)	From Address Number	To Address Number	Street Name	Property Postcode	Lot	Block	District Lot	Plan	Legal Description	Previous Year Land Value($)	Previous Year Improvement Value($)	Current Year Land Value ($)	Current Year Improvement Value($)	Asse Y
	VAS1831	164632770001		601	STAMPS LANDING	V5Z 3Z1	1		FC	VAS1831	LOT 1 PLAN VAS1831 DISTRICT LOT F C NEW WESTMINSTER AN UNDIVIDED 795 /808 SHARE IN THE COMMON PROPERTY T HEREIN EX PLAN 18514, 18515, & 1851 6.	570000	1124000	584000	1135000	2007
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VanMap technical components

- Oracle Spatial database
- Other databases
- CAD drawings, satellite imagery, photographs, html pages
- Autodesk MapGuide
- Autodesk ActiveX Viewer
- Application servers
- Web server

A dynamic system

- Some data are overwritten without being saved
- The data are viewed as maps but these views are not saved
- New layers are being added all the time

Is VanMap a record?

- A **record** is a document made or received in the course of a practical activity as an instrument or a by-product of such activity, and set aside for action or reference.
- A **document** is an indivisible unit of information constituted by a message affixed to a medium....A document has fixed form and stable content.

Is VanMap a record?

Yes!

- It is made and received in the course of a practical activity
- It is an instrument and a by-product of that activity
- It is an indivisible unit

Is VanMap a record?

No!

- It lacks fixed form and stable content
- It is not set aside for action or reference

Can VanMap become a record?

- Yes, if we introduce fixed form and stable content
- We need to configure the system so that as each layer is updated it is saved rather than overwritten
- Then we need to develop a means of reproducing VanMap as it was on any given date

What about the map views?

- It is not feasible to require City staff to save the map views
- We would preserve not what the staff member *saw* at a given point in time but what s/he would have been *able to see*
- Improved business process documentation would fill in the gap

Building a preservation environment…

- Step 1: save the layers
- Step 2: add metadata to the layers
- Step 3: store the data in a secure environment
- Step 4: create infrastructure independence
- Step 5: migrate to new/neutral technology platforms
- Step 6: reproduce VanMap

…using data grid technology

- Software developed by San Diego Supercomputer Center to manage large volumes of data
- Implemented as the Storage Resource Broker (SRB) which manages several large data repositories

Data grid technology

- Manages data and their associated metadata
- Separates the data from dependence on original creating infrastructure
- Maintains audit trails of all operations performed on the data
- Manages access and retrieval
- Supports migration of data to new platforms

Data grids and VanMap

The scenario:

- Data grid is inserted between the data storage systems and the access applications
- Each saved layer within the GIS is independently registered in the data grid
- Date-based queries are used to reproduce VanMap layers

Testing the data grid

The test:

1. Selected data transferred from Vancouver to San Diego Supercomputer Center
2. Data stored in technological environment similar to original environment
3. Data registered in an SRB data grid
4. Data queried for specific dates
5. Queried data loaded into a different GIS product

Testing the data grid

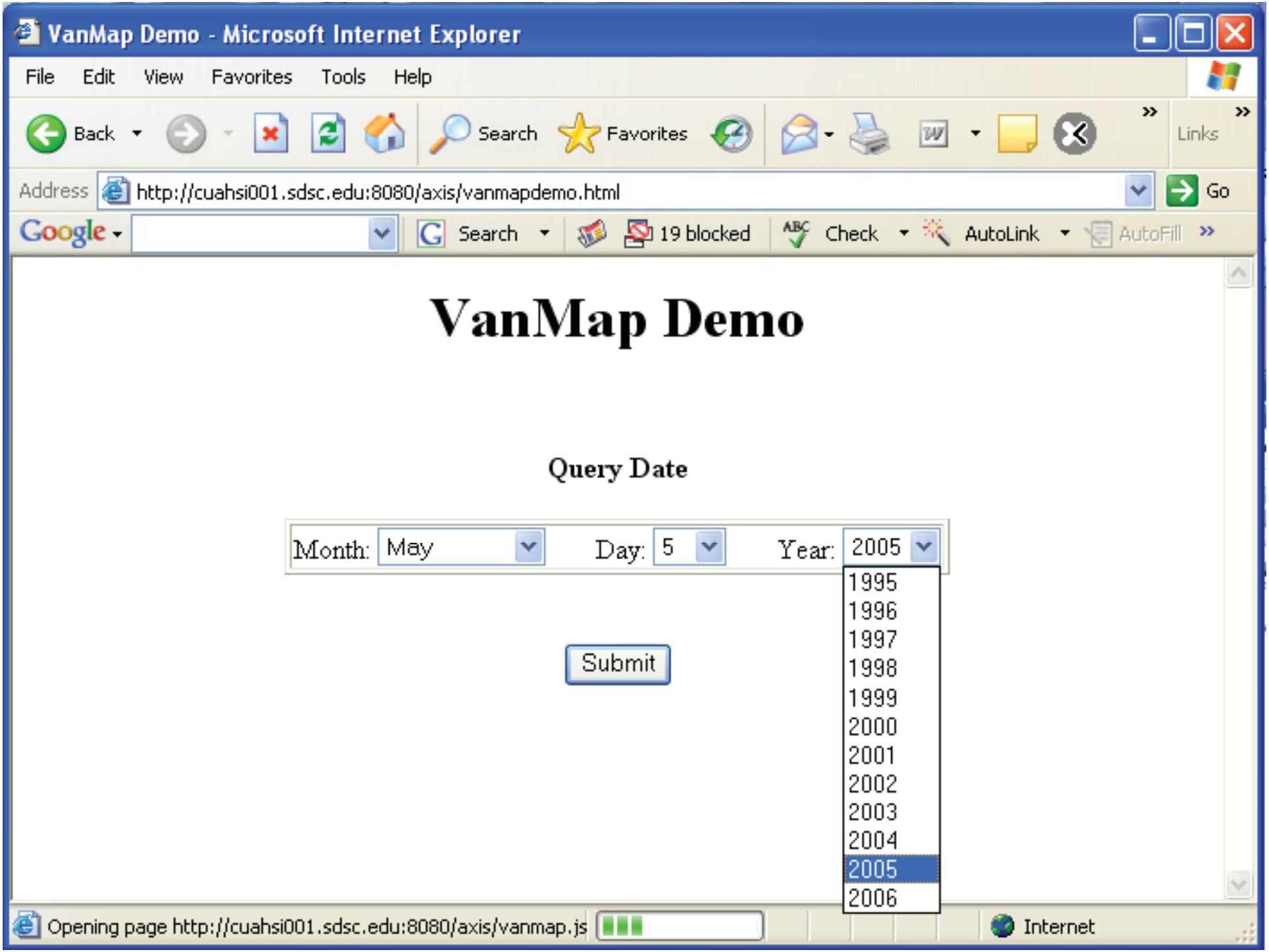
VanMap Background Data:

- ***Majorstreets*** 5/1/04
- ***Webcam*** 3/21/04
- ***Can_wat*** 1/1/05
- ***Parcels*** 1/1/06
- ***Cityline*** 1/1/06
- ***Cityhall*** 1/1/06
- ***Sealine*** 1/1/06
- ***Shoreline*** 1/1/06

Testing the data grid

VanMap Temporal Data:

- ***ParkingMeterLines***
  - 1/1/2003
  - 1/1/2004
- ***ParkingMeterPoints***
  - 2/1/2002
  - 2/1/2004
- ***Streets***
  - 6/1/2003
  - 6/1/2004
- ***Zoning***
  - 11/4/2004
  - 11/30/2005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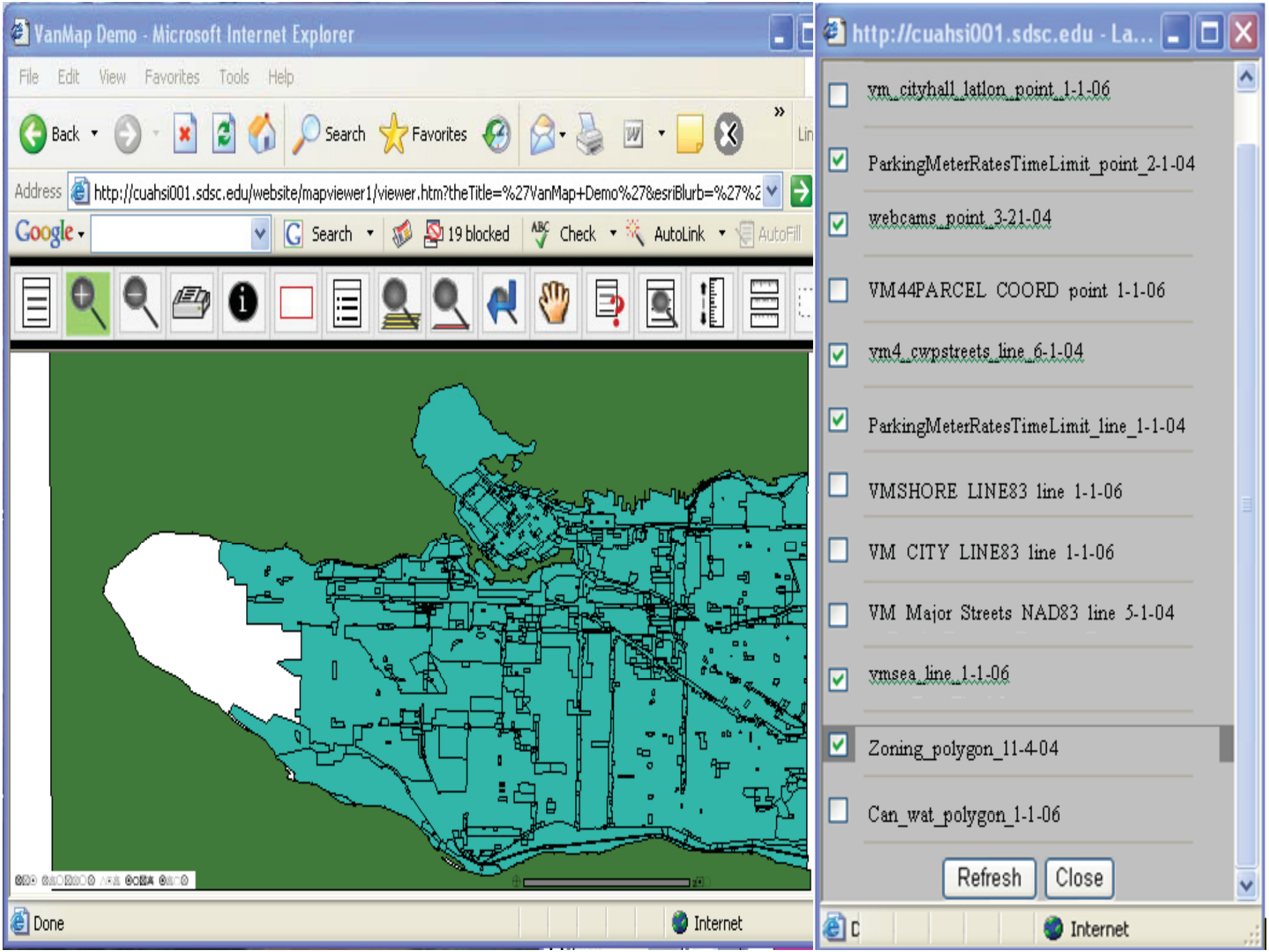
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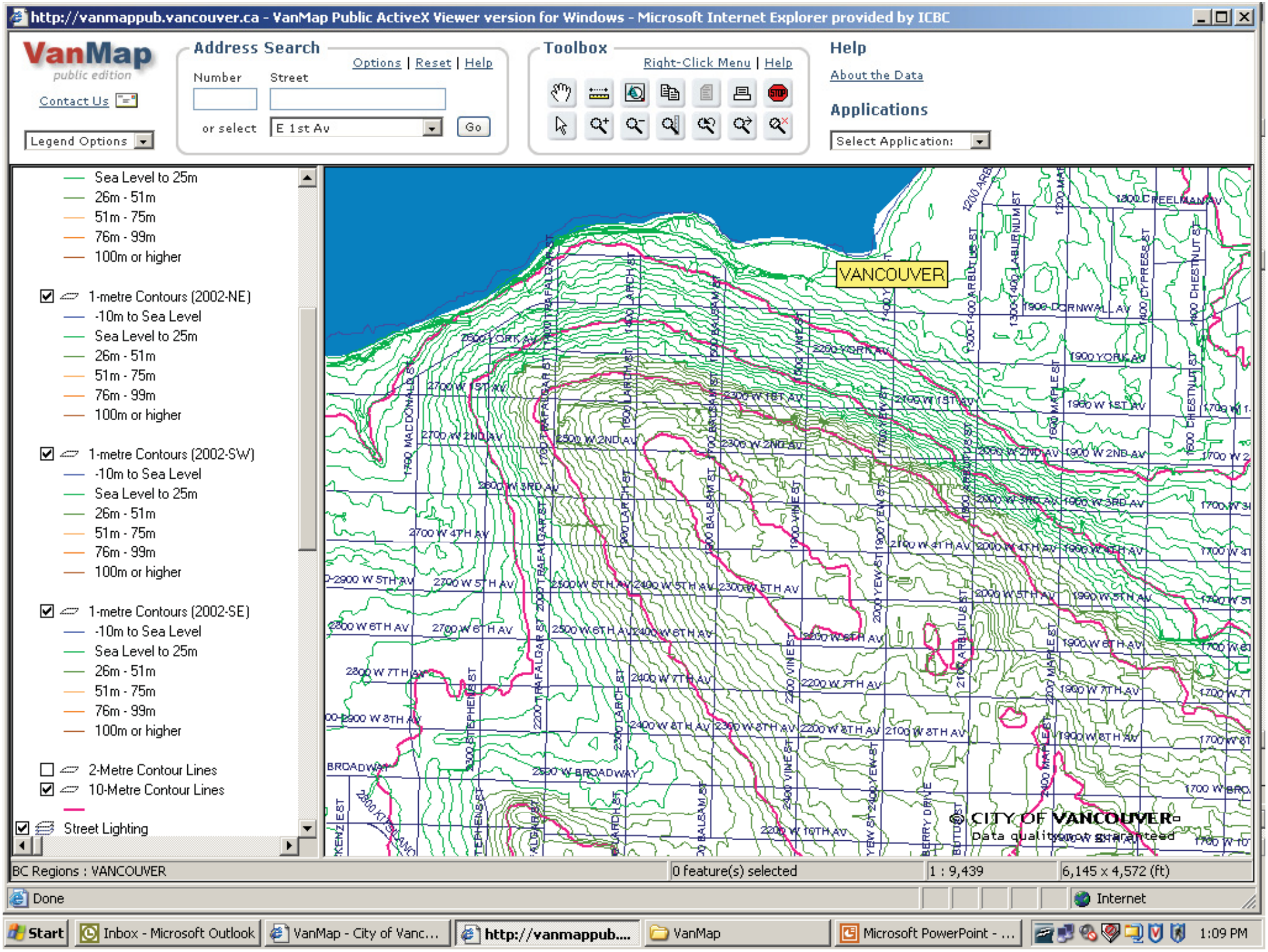
What gets preserved?

- The data themselves must be preserved
- The ability to render the data as interactive maps must be preserved
- Presentation elements such as colours and fonts do not necessarily have to be preserved


http://vanmappub.vancouver.ca - VanMap Public ActiveX Viewer version for Windows - Microsoft Internet Explorer provided by ICBC
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51m - 75m
76m - 99m
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-10m to Sea Level
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51m - 75m
76m - 99m
100m or higher
1-metre Contours (2002-SW)
-10m to Sea Level
Sea Level to 25m
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Sea Level to 25m
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© CITY OF VANCOUVER
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6,145 x 4,572 (ft)
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VanMap
Microsoft PowerPoint - ...
1:09 PM

Why preserve VanMap?

- VanMap plays a vital role in the delivery of government services in the City of Vancouver
- Governments are kept accountable through their records
- The e-government challenge: it is easier to create than to preserve

http://www.interpares.org

http://www.sdsc.edu/

http://www.vancouver.ca/vanmap/