STONE ENVIRONMENTAL

State of GIS in Vermont

GIS Everywhere, Anytime, On Any Device for Everyone!

March 2, 2017

Presented by David Healy

To The Vermont House Energy and Technology Committee

State of GIS in Vermont Three Eras

Vision: GIS Everywhere; Anytime; On Any Device for Everyone

Background

Data Development, Organization, & Access: A-

Government Utilization: C+

Operational Capacity and Infrastructure: C+

Agency/Department Organization and Utilization: C

Economic Drivers: B

Future Trends and Possibilities: ?

Open Data From Everywhere: A+

Era 1 1988-1995: Organizational / Formative / Background

State of Geographic Information Systems in Vermont

Vice President, Applied Information Management @ Stone Environmental

- Since 1995 Stone's Geospatial Data Solutions Group grew from 1 person to eight full-time GIS specialists with GIS revenues in 2016 of > $800,000.
- Vermont GIS Data is Essential to all Aspects of our Vermont Consulting.

VGIS Organizational

- Drafted Original Language in Act 200 Establishing VGIS in OPRD
- Operationalized GIS in Vermont as a Collaborative State/Regional/Local and Private Sector Venture - 1988-1991:
  - Data Development
  - Data Standards
  - Data Sharing Polity
  - Training

Provide the Committee a Perspective as a User of VGIS; 30 years of GIS Experience locally, Nationally and Internationally, and as a Business.

Era 2 1995-2015: Data Development,Dissemination & Use

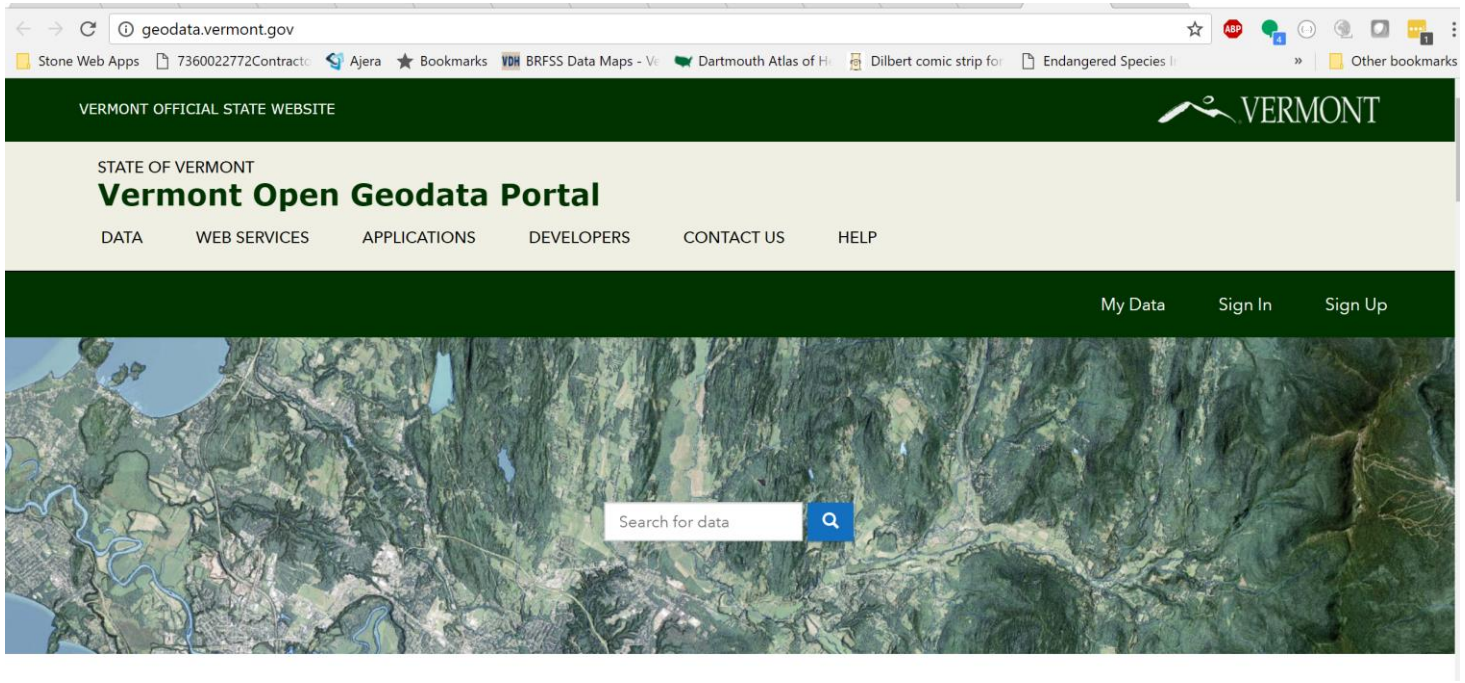
State of Geographic Information Systems in Vermont

Data Availability: A

Data Access: B+

- Superb Open Data Portal -- Great Data Search and Web Mapping
- Still Need all State, Regional and Local Contributors in Same Portal
- Still Missing Critical Data: Current Socio-Economic; Bedrock Geology

Data Documentation and Quality: A+



Era 2 1995-2015: Data Development, Dissemination & Use

State of Geographic Information Systems in Vermont

Diverse and Disparate Widespread Adoption by State Organizations and RPCs

Enterprise GIS Consortium Started to Help Coordinate in State Goverment

VCGI Outside of Government

Beginning of Web-based Data Portals and Map Viewers

Databases Robust with Many Users

Phone and Tablet Applications Begin

Era 2 1995-2015: Data Development, Dissemination & Use

State of Geographic Information Systems in Vermont

Government Operations and Utilization: C+

- Ranges from enterprise uses (Vtrans) to “one off” uses of technology (ADCA)
  - The skill levels and understanding of the technology varies tremendously
  - Even those will skills rarely go to national conferences or developer courses.
  - Until GIS is embedded in each Agency Secretary and Commissioner office level, Executives will not be able to get critical information rapidly.
  - Some Vermont Agencies/Departments saw GIS as maps: it is so much more.

Era 3 After 2015: GIS Solutions Everywhere, Anytime, On Any Device for Everyone

State of Geographic Information Systems in Vermont

Over 300 State and Local Government GIS Solution Templates Exist!

Solutions Require:

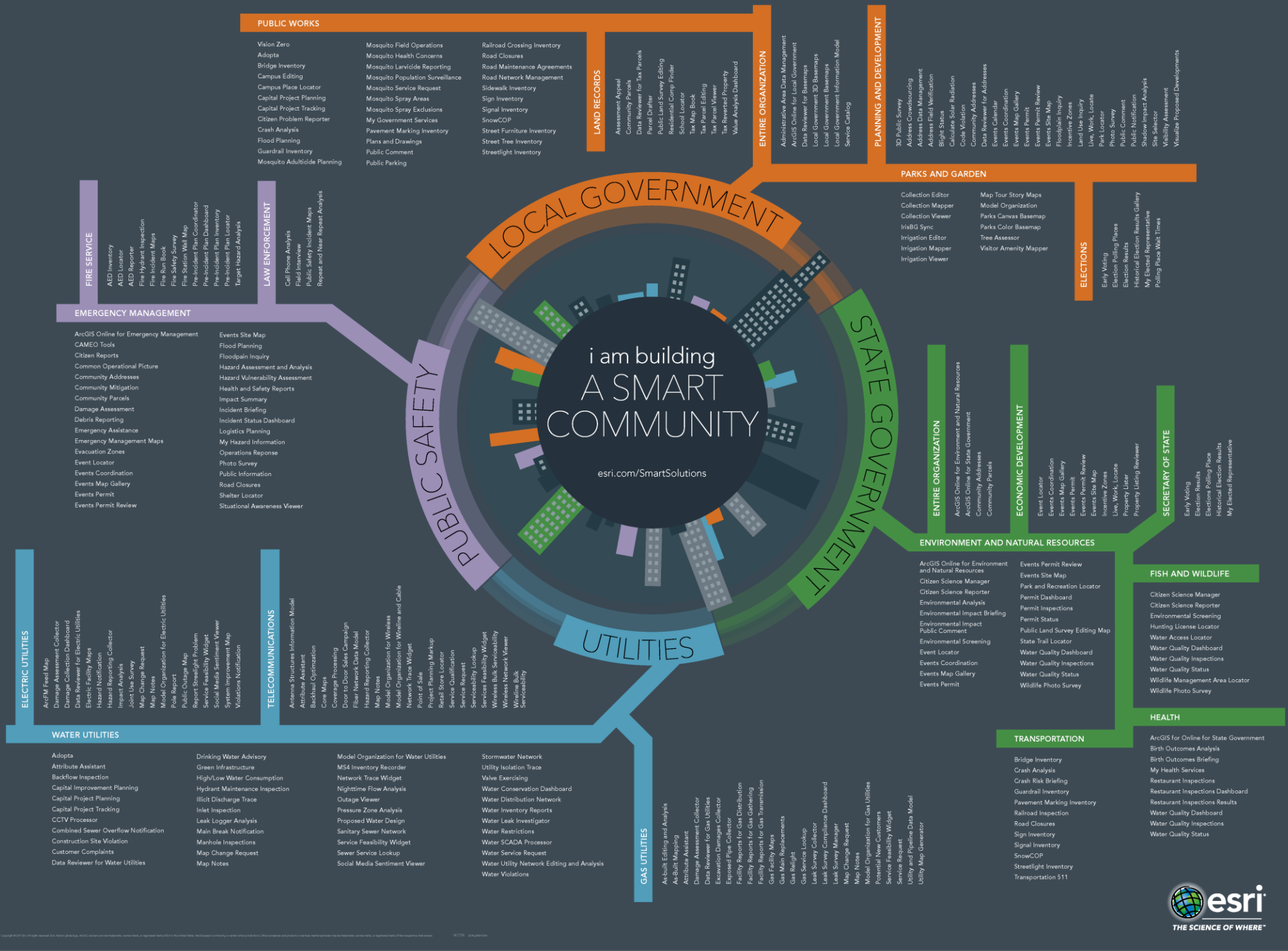
- Organizational Harmonization
- Executive Leadership

Solutions Cover Diverse Segments of Government

- Desktop Solutions
- Web Apps
- Native Apps
  - Tablet
  - Phone
- Field Data Collection

Skill Development Is Essential

- Hackathons/Internal and Cross Disciplinary Efforts
- Conference Participation and Attendance


i am building
A SMART COMMUNITY
esri.com/SmartSolutions
LOCAL GOVERNMENT
STATE GOVERNMENT
UTILITIES
PUBLIC SAFETY
PUBLIC WORKS
Vision Zero
Adopta
Bridge Inventory
Campus Editing
Campus Place Locator
Capital Project Planning
Capital Project Tracking
Citizen Problem Reporter
Crash Analysis
Flood Planning
Guardrail Inventory
Mosquito Adulticide Planning
Mosquito Field Operations
Mosquito Health Concerns
Mosquito Larvicide Reporting
Mosquito Population Surveillance
Mosquito Service Request
Mosquito Spray Areas
Mosquito Spray Exclusions
My Government Services
Pavement Marking Inventory
Plans and Drawings
Public Comment
Public Parking
Railroad Crossing Inventory
Road Closures
Road Maintenance Agreements
Road Network Management
Sidewalk Inventory
Sign Inventory
Signal Inventory
SnowCOP
Street Furniture Inventory
Street Tree Inventory
Streetlight Inventory
LAND RECORDS
Assessment Appeal
Community Parcels
Data Reviewer for Tax Parcels
Parcel Drafter
Public Land Survey Editing
Residential Comp Finder
School Locator
Tax Map Book
Tax Parcel Editing
Tax Parcel Viewer
Tax Reverted Property
Value Analysis Dashboard
ENTIRE ORGANIZATION
Administrative Area Data Management
ArcGIS Online for Local Government
Data Reviewer for Basemaps
Local Government 3D Basemaps
Local Government Basemaps
Local Government Information Model
Service Catalog
PLANNING AND DEVELOPMENT
3D Public Survey
Address Crowdsourcing
Address Data Management
Address Field Verification
Blight Status
Calculate Solar Radiation
Code Violation
Community Addresses
Data Reviewer for Addresses
Events Calendar
Events Coordination
Events Map Gallery
Events Permit
Events Permit Review
Events Site Map
Floodplain Inquiry
Incentive Zones
Land Use Inquiry
Live, Work, Locate
Park Locator
Photo Survey
Public Comment
Public Notification
Shadow Impact Analysis
Site Selector
Visibility Assessment
Visualize Proposed Developments
PARKS AND GARDEN
Collection Editor
Collection Mapper
Collection Viewer
IrisBG Sync
Irrigation Editor
Irrigation Mapper
Irrigation Viewer
Map Tour Story Maps
Model Organization
Parks Canvas Basemap
Parks Color Basemap
Tree Assessor
Visitor Amenity Mapper
ELECTIONS
Early Voting
Election Polling Places
Election Results
Historical Election Results Gallery
My Elected Representative
Polling Place Wait Times
FIRE SERVICE
AED Inventory
AED Locator
AED Reporter
Fire Hydrant Inspection
Fire Incident Maps
Fire Run Book
Fire Safety Survey
Fire Station Wall Map
Pre-Incident Plan Coordinator
Pre-Incident Plan Dashboard
Pre-Incident Plan Inventory
Pre-Incident Plan Locator
Target Hazard Analysis
LAW ENFORCEMENT
Cell Phone Analysis
Field Interview
Public Safety Incident Maps
Repeat and Near Repeat Analysis
EMERGENCY MANAGEMENT
ArcGIS Online for Emergency Management
CAMEO Tools
Citizen Reports
Common Operational Picture
Community Addresses
Community Mitigation
Community Parcels
Damage Assessment
Debris Reporting
Emergency Assistance
Emergency Management Maps
Evacuation Zones
Event Locator
Events Coordination
Events Map Gallery
Events Permit
Events Permit Review
Events Site Map
Flood Planning
Floodpain Inquiry
Hazard Assessment and Analysis
Hazard Vulnerability Assessment
Health and Safety Reports
Impact Summary
Incident Briefing
Incident Status Dashboard
Logistics Planning
My Hazard Information
Operations Reponse
Photo Survey
Public Information
Road Closures
Shelter Locator
Situational Awareness Viewer
ENTIRE ORGANIZATION
ArcGIS Online for Environment and Natural Resources
ArcGIS Online for State Government
Community Addresses
Community Parcels
ECONOMIC DEVELOPMENT
Event Locator
Events Coordination
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Events Permit
Events Permit Review
Events Site Map
Incentive Zones
Live, Work, Locate
Property Lister
Property Listing Reviewer
SECRETARY OF STATE
Early Voting
Election Results
Elections Polling Place
Historical Election Results
My Elected Representative
ENVIRONMENT AND NATURAL RESOURCES
ArcGIS Online for Environment and Natural Resources
Citizen Science Manager
Citizen Science Reporter
Environmental Analysis
Environmental Impact Briefing
Environmental Impact Public Comment
Environmental Screening
Event Locator
Events Coordination
Events Map Gallery
Events Permit
Events Permit Review
Events Site Map
Park and Recreation Locator
Permit Dashboard
Permit Inspections
Permit Status
Public Land Survey Editing Map
State Trail Locator
Water Quality Dashboard
Water Quality Inspections
Water Quality Status
Wildlife Photo Survey
FISH AND WILDLIFE
Citizen Science Manager
Citizen Science Reporter
Environmental Screening
Hunting License Locator
Water Access Locator
Water Quality Dashboard
Water Quality Inspections
Water Quality Status
Wildlife Management Area Locator
Wildlife Photo Survey
HEALTH
ArcGIS for Online for State Government
Birth Outcomes Analysis
Birth Outcomes Briefing
My Health Services
Restaurant Inspections
Restaurant Inspections Dashboard
Restaurant Inspections Results
Water Quality Dashboard
Water Quality Inspections
Water Quality Status
TRANSPORTATION
Bridge Inventory
Crash Analysis
Crash Risk Briefing
Guardrail Inventory
Pavement Marking Inventory
Railroad Inspection
Road Closures
Sign Inventory
Signal Inventory
SnowCOP
Streetlight Inventory
Transportation 511
ELECTRIC UTILITIES
ArcFM Feed Map
Damage Assessment Collector
Damage Collection Dashboard
Data Reviewer for Electric Utilities
Electric Facility Maps
Hazard Notification
Hazard Reporting Collector
Impact Analysis
Joint Use Survey
Map Change Request
Map Notes
Model Organization for Electric Utilities
Pole Report
Public Outage Map
Report Streetlight Problem
Service Feasibility Widget
Social Media Sentiment Viewer
System Improvement Map
Violations Notification
TELECOMMUNICATIONS
Antenna Structures Information Model
Attribute Assistant
Backhaul Optimization
Core Maps
Coverage Processing
Door to Door Sales Campaign
Fiber Network Data Model
Hazard Reporting Collector
Map Notes
Model Organization for Wireless
Model Organization for Wireline and Cable
Network Trace Widget
Point of Sale
Project Planning Markup
Retail Store Locator
Service Qualification
Service Request
Serviceability Lookup
Services Feasibility Widget
Wireless Bulk Serviceability
Wireless Network Viewer
Wireline Bulk Serviceability
WATER UTILITIES
Adopta
Attribute Assistant
Backflow Inspection
Capital Improvement Planning
Capital Project Planning
Capital Project Tracking
CCTV Processor
Combined Sewer Overflow Notification
Construction Site Violation
Customer Complaints
Data Reviewer for Water Utilities
Drinking Water Advisory
Green Infrastructure
High/Low Water Consumption
Hydrant Maintenance Inspection
Illicit Discharge Trace
Inlet Inspection
Leak Logger Analysis
Main Break Notification
Manhole Inspections
Map Change Request
Map Notes
Model Organization for Water Utilities
MS4 Inventory Recorder
Network Trace Widget
Nighttime Flow Analysis
Outage Viewer
Pressure Zone Analysis
Proposed Water Design
Sanitary Sewer Network
Service Feasibility Widget
Sewer Service Lookup
Social Media Sentiment Viewer
Stormwater Network
Utility Isolation Trace
Valve Exercising
Water Conservation Dashboard
Water Distribution Network
Water Inventory Reports
Water Leak Investigator
Water Restrictions
Water SCADA Processor
Water Service Request
Water Utility Network Editing and Analysis
Water Violations
GAS UTILITIES
As-built Editing and Analysis
As-Built Mapping
Attribute Assistant
Damage Assessment Collector
Data Reviewer for Gas Utilities
Excavation Damages Collector
Exposed Pipe Collector
Facility Reports for Gas Distribution
Facility Reports for Gas Gathering
Facility Reports for Gas Transmission
Gas Facility Maps
Gas Main Replacements
Gas Relight
Gas Service Lookup
Leak Survey Collector
Leak Survey Compliance Dashboard
Leak Survey Manager
Map Change Request
Map Notes
Model Organization for Gas Utilities
Potential New Customers
Service Feasibility Widget
Service Request
Utility and Pipeline Data Model
Utility Map Generator
esri
THE SCIENCE OF WHERE

Era 3 After 2015: Recommendataions

GIS Solutions Everywhere; Anytime; On Any Device for Everyone

Elevate VCGI to Highest Level with Lead Responsibility to Assist in Solutions

Harmonize Solution Approach – Unified Theme Across Government

Authorize and Fund Enterprise GIS Software Licensing

Elevate the Location of Departmental “Solution” Teams

Purchase and Take Advantage of Esri’s Business/Community Analyst

Fully Take Advantage of Solution Templates

Increase Education/Training Funding

Mandate All Programmatic Tabular Data Go into Open Data Portal

- Both Geographically Encoded and Non-Geographically Coded
- Consider Abandoning Socrata as a Data Portal

State of Geographic Information Systems in Vermont

Stone Vermont Applications/Solution Examples

Agriculture Food and Markets

- AgBMP Application
- Geotargeting of Farm Digesters

Environment

- Class 3 & 4 Roads Erosion Risk
- Areawide Brownfield Studies
  - Bennington
  - Northfield
  - Swanton
- Stormwater Solutions

Health:

- Primary Care Service Areas – Green Mountain Care Board
- Vermont's Dental Landscape – Green Mountain Care Board
- Blueprint for Community Health Data Portal

Vtrans

- Road Vulnerability/Criticality

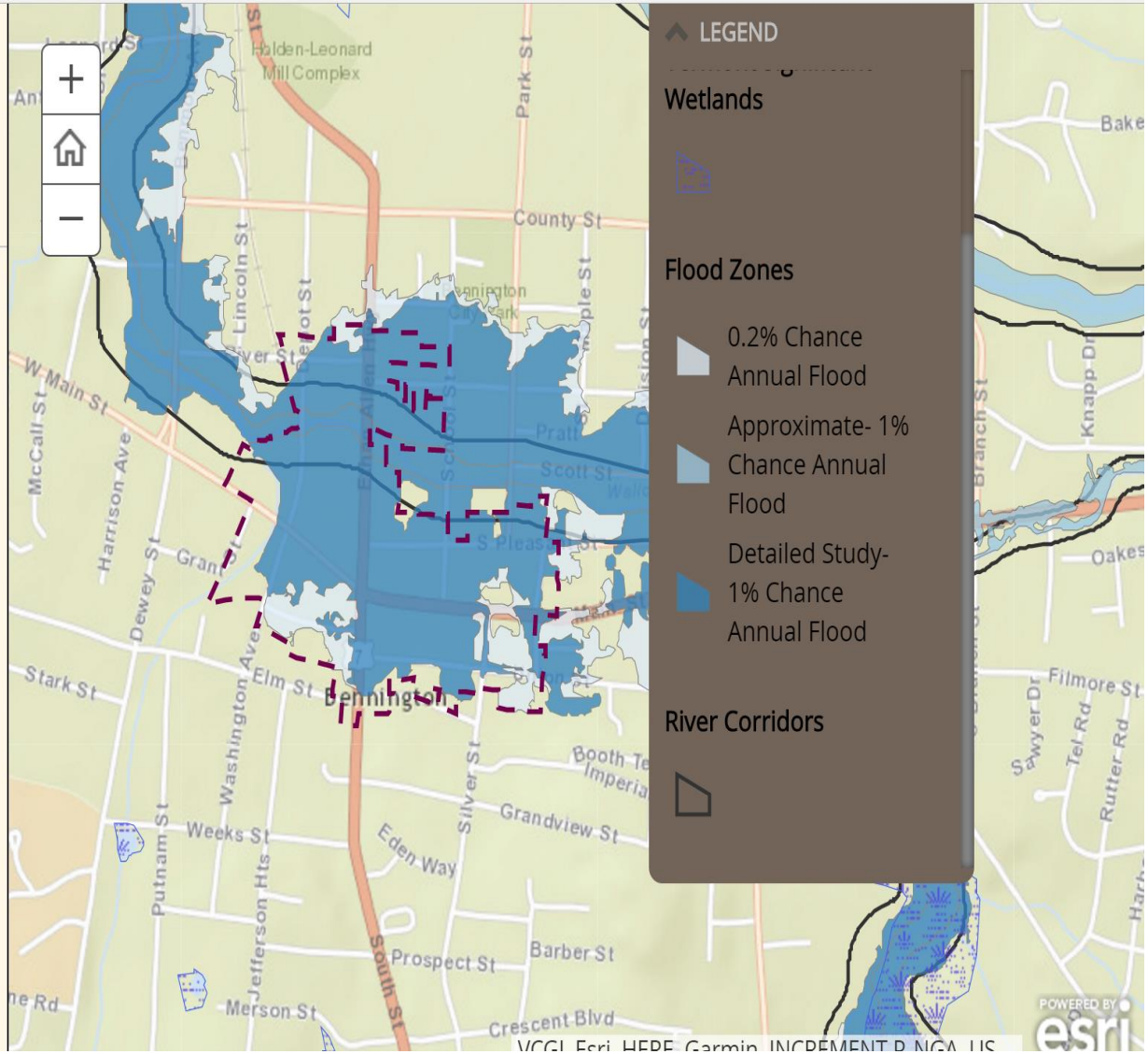
Bennington Downtown Area-Wide Plan

Natural Setting

Early industry of Bennington took advantage of water power provided by the Walloomsac River resulting in extensive development of the river's flood plain, armoring of its banks, and construction of levees. Today, much of Downtown Bennington resides within the 100 year flood zone or the designated river corridor.

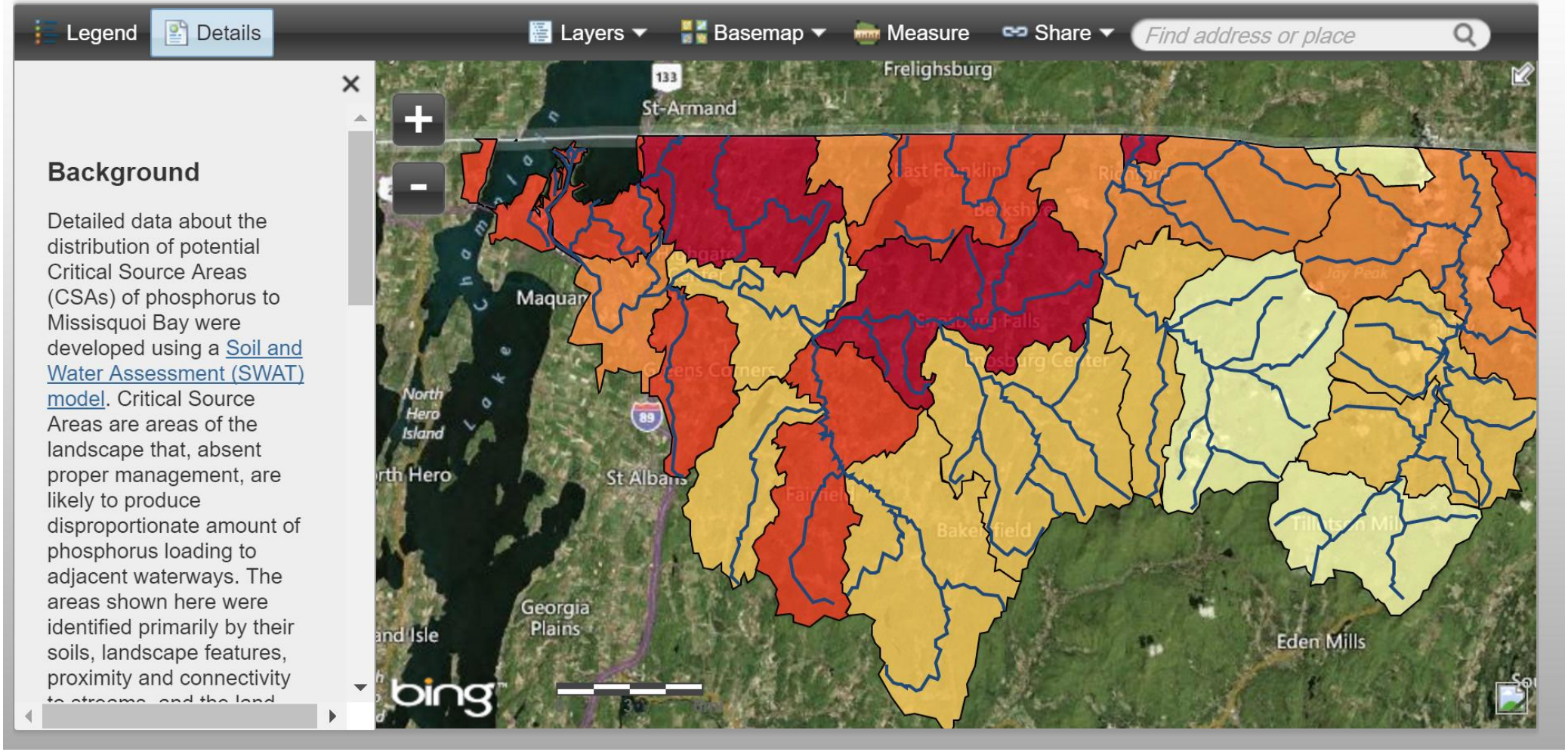
Definitions:

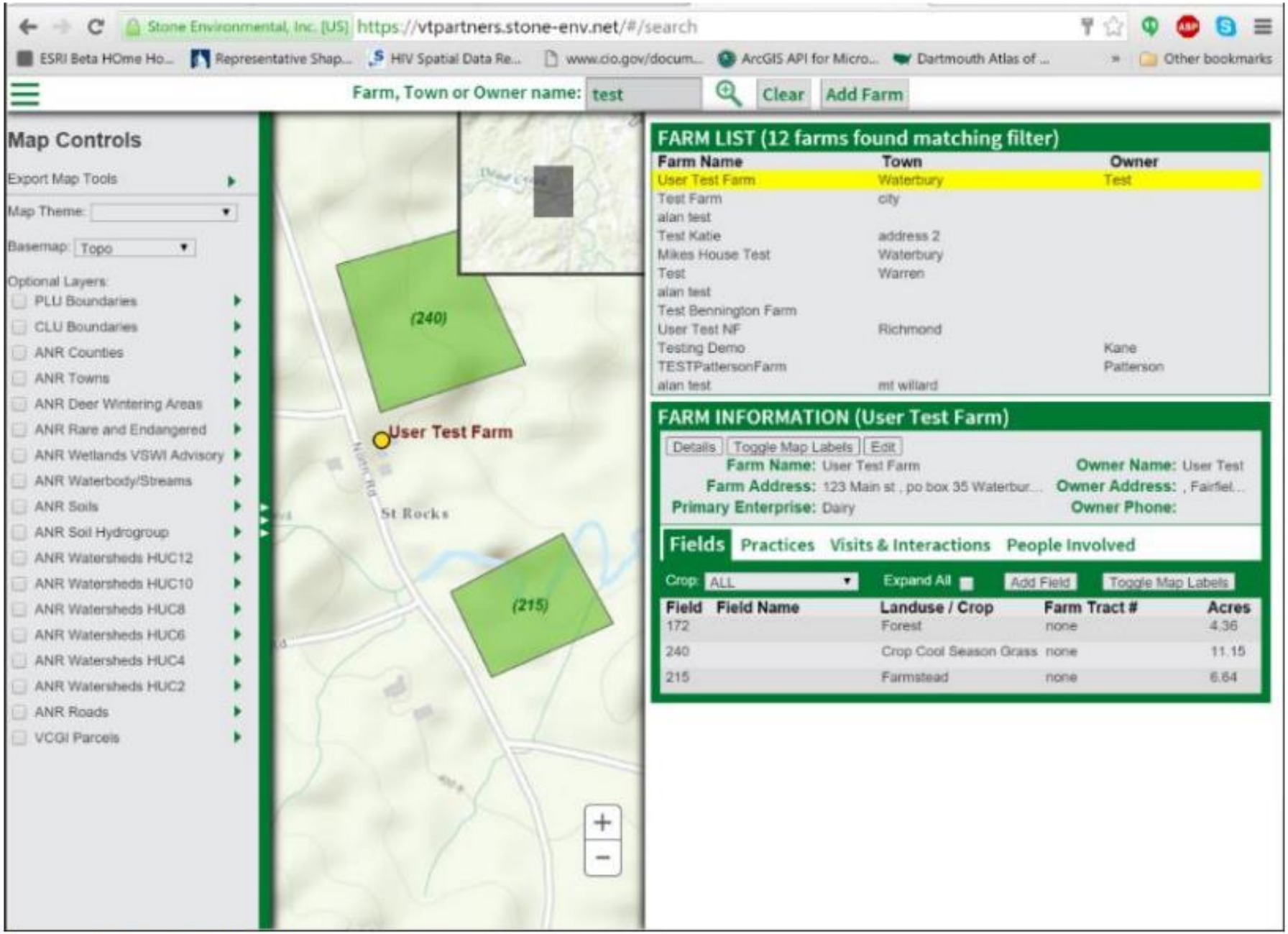
River Corridor: According to the Vermont Agency of Natural Resources, a river corridors encompass the area of land surrounding a river that provides for the meandering, floodplain, and the riparian functions



resiliencyvt.net
Resiliency VT
Transportation Resilience
Planning Application
Welcome, Roy!
VT Rt 100 segment Pitt 2.
Risk Category: High
7
8
3
16
Vulnerability Scores
Inundation
Erosion
Deposition
Flood Scenario
10%
2%
1%
Impact-Criticality Rating
Complete Failure
Temporary Operation Failure
Reduced capacity
Very low to low
Moderate
Critical to Very Critical
DDIR Irene Damage Sites
Rte. 100 Mileposts
Potential Erosion Areas
Q100 Shear Stress (lb/sqft)
0 - 1.4
1.4 - 2.1
2.1 - 2.8
2.8 - 3.7
3.7 - 5.0
HEC-RAS Cross-Sections
Slope (LiDAR)
50 - 75%
75 - 100%
100 - 125%
> 125%
5ft Contours (LiDAR)
Road to River Differential (ft)
0 - 5
5 - 10
10 - 15
15 - 20
20 - 25
Mitigation Options
Option 1: Repair roadway embankment to maximize bankfull channel width
Option 2: Relocate roadway to east
Option 3: Reconnect floodplain on opposite (west) bank
Gallery

Missisquoi Phosphorus Critical Source …





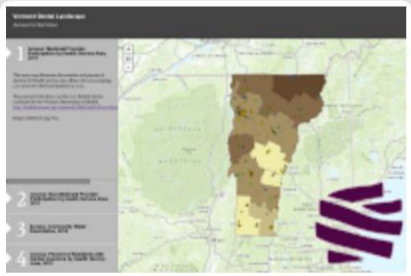
View of Farm Field Practice and Cropping Information.

Dental Health in Vermont

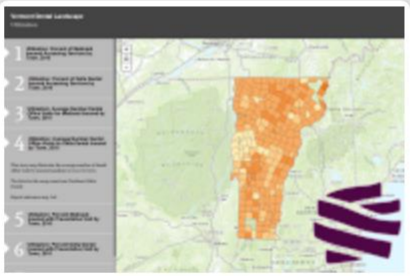
Green Mountain Care Board Home About the Board

Understanding Conditions Through Story Maps

Search maps

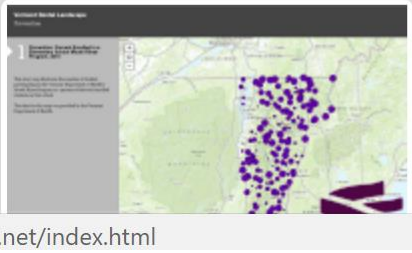


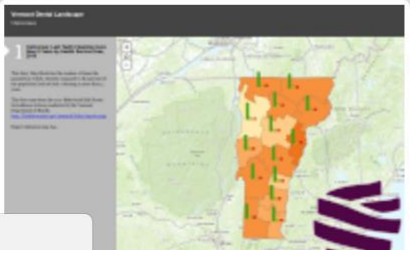
Access

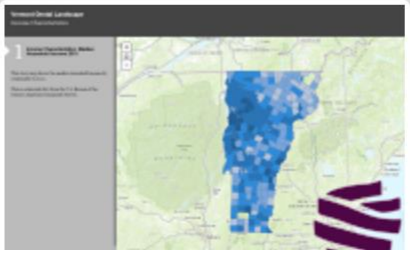


Utilization

Financial







-env.net/index.html

About the Vermont Dental Health Story Maps

The Vermont Dental Health Story Maps are a part of a study commissioned by the Green Mountain Care Board (GMCB) to examine the status of oral health care in Vermont. The Landscape Gallery was developed by Stone Environmental to support the JSI Research and Training Institute's Report to the Board. Stone Environmental Compiled data from Vermont's Department of Health, Finance Regulation, Office of Medicaid, Northeast Delta Dental, and the U.S. Bureau of the Census. These maps represent insights into Dental Care Access, Utilization, Financial, Prevention,

VT Solar Sandbox

Create YOUR plan to reach our 2050 rewewables goal

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