



The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at ***wvOASIS.gov***. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at ***WVPurchasing.gov*** with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.

Header 1

 List View

General Information | [Contact](#) | [Default Values](#) | [Discount](#) | [Document Information](#)
Procurement Folder: 360133

SO Doc Code: CRFQ

Procurement Type: Central Contract - Fixed Amt

SO Dept: 0506

Vendor ID: 
SO Doc ID: EHS1800000003

Legal Name: WINDSOR SOLUTIONS INC

Published Date: 11/1/17

Alias/DBA:
Close Date: 11/9/17

Total Bid: \$90,000.00

Close Time: 13:30

Response Date: 
Status: Closed

Response Time:
Solicitation Description:  
Total of Header Attachments: 1

Total of All Attachments: 1



Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Solicitation Response

Proc Folder : 360133
Solicitation Description : Web Based E- Reporting Systems
Proc Type : Central Contract - Fixed Amt

Date issued	Solicitation Closes	Solicitation Response	Version
	2017-11-09 13:30:00	SR 0506 ESR11071700000002042	1

VENDOR
000000230953 WINDSOR SOLUTIONS INC

Solicitation Number: CRFQ 0506 EHS1800000003

Total Bid : \$90,000.00 Response Date: 2017-11-09 Response Time: 11:02:54

Comments:

FOR INFORMATION CONTACT THE BUYER

April Battle
(304) 558-0067
april.e.battle@wv.gov

Signature on File	FEIN #	DATE
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All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	4.1.1 Sportfish Consumption Advisory Limit System (SCALES)	0.00000			\$0.00

Comm Code	Manufacturer	Specification	Model #
80111713			

Extended Description :	4.1.1 Construct a web based e-reporting system to be called Sportfish Consumption Advisory Limit System (SCALES). SCALES will allow Sportfish Consumption Data for West Virginia to be collected and shared between the various program partners more efficiently using the EN infrastructure.
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Comments: Note: Bid total is \$90,000 (grand total of all lots 4.1.1.1, 4.1.1.2, and 4.1.1.3).

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
2	SCALES Specification 4.1.1.1	0.00000			\$20,000.00

Comm Code	Manufacturer	Specification	Model #
80111713			

Extended Description :	4.1.1.1 The e-reporting system must establish an Extract, Transform, and Load ETL process that must meet the following requirements of 4.1.1.1.1-4.1.1.1.3
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Comments: See Proposal for details

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
3	SCALES Specification 4.1.1.2	0.00000			\$25,000.00

Comm Code	Manufacturer	Specification	Model #
80111713			

Extended Description :	The e-reporting system must establish the advisory calculations that must meet the following requirements 4.1.1.2.1-4.1.1.2.3
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Comments: See Proposal for details

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
4	SCALES Specification 4.1.1.3	0.00000			\$45,000.00

Comm Code	Manufacturer	Specification	Model #
80111713			

Extended Description :	The e-reporting system must contain an interactive web mapping application to be built and called of Fish Advisory Map Explorer FAME this web mapping application must meet the following requirements 4.1.1.31-4.1.1.3.3
------------------------	---

Comments: See Proposal for details

**State of West Virginia
Department of Health and Human Resources
Bureau for Public Health
Office of Environmental Health Services**

Web-Based e-Reporting System Proposal

CRFQ 0506 EHS1800000003

November 9, 2017



WINDSOR
SOLUTIONS

Environmental +
Health Information
Systems

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Proc Folder: 360133			
Doc Description: Web Based E- Reporting Systems			
Proc Type: Central Contract - Fixed Amt			
Date Issued	Solicitation Closes	Solicitation No	Version
2017-10-26	2017-11-09 13:30:00	CRFQ 0506 EHS1800000003	1

BID RECEIVING LOCATION			
BID CLERK DEPARTMENT OF ADMINISTRATION PURCHASING DIVISION 2019 WASHINGTON ST E CHARLESTON WV 25305 US			

VENDOR
Vendor Name, Address and Telephone Number: Windsor Solutions, Inc. 4386 SW Macadam Ave, Suite 101 Portland, OR 97239 503-675-7833

FOR INFORMATION CONTACT THE BUYER		
April Battle (304) 558-0067 april.e.battle@wv.gov		
Signature X	FEIN # 93-1245518	DATE 11/7/17
All offers subject to all terms and conditions contained in this solicitation		

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

CRAG AUSTIN, Communications Manager
(Name, Title)
Craig Austin, Communications Manager
(Printed Name and Title)
4386 SW Macadam Ave, Suite 101 Portland, OR 97239
(Address)
503-675-7833 / 503-675-7804
(Phone Number) / (Fax Number)
Craig_austin@windsorsolutions.com
(email address)

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

Windsor Solutions, Inc.
(Company)
[Signature]
(Authorized Signature) (Representative Name, Title)
Simon Watson, Vice President
(Printed Name and Title of Authorized Representative)
11/7/2017
(Date)
503-675-7833 / 503-675-7804
(Phone Number) (Fax Number)

Revised 08/31/2017



ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: CRFQ 0506 EHS1800000003

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

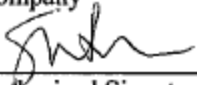
(Check the box next to each addendum received)

- | | |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6 |
| <input type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Windsor Solutions, Inc.

Company



Authorized Signature

11/7/2017

Date

NOTE: This addendum acknowledgment should be submitted with the bid to expedite document processing.

Revised 08/31/2017



WINDSOR
SOLUTIONS

Environmental +
Health Information
Systems

STATE OF WEST VIRGINIA
Purchasing Division
PURCHASING AFFIDAVIT

CONSTRUCTION CONTRACTS: Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

ALL OTHER CONTRACTS: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: Windsor Solutions, Inc.

Authorized Signature: [Signature] Date: November 7, 2017

State of Oregon

County of Multnomah, to-wit:

Taken, subscribed, and sworn to before me this 7 day of November, 2017.

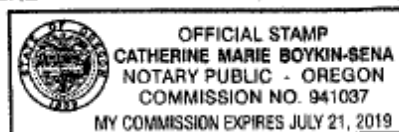
My Commission expires July 21, 2019

AFFIX SEAL HERE

NOTARY PUBLIC

[Signature]

Purchasing Affidavit (Revised 07/07/2017)



Introduction

Windsor Solutions, Inc. (Windsor) is pleased to submit this proposal to the West Virginia Department of Health and Human Resources (WVDHHR) Bureau for Public Health (BPH) Office of Environmental Health Services (OEHS) for the Sportfish Consumption Advisory Limit System (SCALES).

SCALES will allow sportfish consumption data to be collected and shared between interested entities and will utilize the National Environmental Information Exchange Network (Exchange Network) infrastructure for data sharing. This new Web-based system will make information on public health advisories issued for sportfish consumption available to the public through a map-based inquiry tool. The SCALES system will include three main components:

1. An import process will receive tissue sample analysis results from the West Virginia Department of Environmental Protection (WVDEP) over the Exchange Network and will load that information into the SCALES database.
2. The analytical information will be processed to determine whether consumption advisories are appropriate for a given sportfish species and waterbody using calculations based on safe consumption thresholds.
3. The resulting advisories will then be made available through a public map-based inquiry tool, the Fish Advisory Map Explorer (FAME).

The selected vendor for this project must have an in-depth understanding of the Exchange Network and how it can be utilized to share information, as well as practical experience with the development of information systems that provide efficient management of, and public access to environmental quality data.

Windsor is the leading Exchange Network consultancy in the US, having developed the underlying Exchange Network Node infrastructure including OpenNode2, the node software used by OEHS, as well as data exchange plugins used by the vast majority of Exchange Network partners across the country. In addition, we have nearly two decades of experience in building information systems exclusively for public-sector environmental agencies at the state, federal, county, and tribal level. Our systems are successful because they work well, but also because we consider the needs of the target user groups.

Windsor's public-sector information technology projects range from a few thousand to several million dollars in size and cover the full breadth of environmental programs. Windsor is a Silver-Tier partner with ESRI, and nearly all our projects include a spatial component.

As directed by the CRFQ, this proposal contains Windsor's responses to the required items in the Specifications document, particularly Section 3 (Qualifications) and Section 4 (Mandatory Requirements), as clarified by the questions and answers issued in the addenda. Windsor's cost estimates for each of the line items are included in the Pricing Page in Exhibit A in a separate Cost Proposal document as required by the CRFQ.

Section 3. – Windsor Qualifications

Offeror Identification and Information

Windsor Solutions is a privately held S-Corporation, incorporated May 20, 1998 in Oregon. There have been no name changes since the company was founded.

Our headquarters address is:

Windsor Solutions, Inc.
4386 SW Macadam Ave, Suite 101
Portland, OR 97239
503-675-7833
www.windsorsolutions.com

Windsor's primary contact for all matters related to this proposal is:

Craig Austin, Communications Manager
503-675-7833, ext. 215
craig_austin@windsorsolutions.com

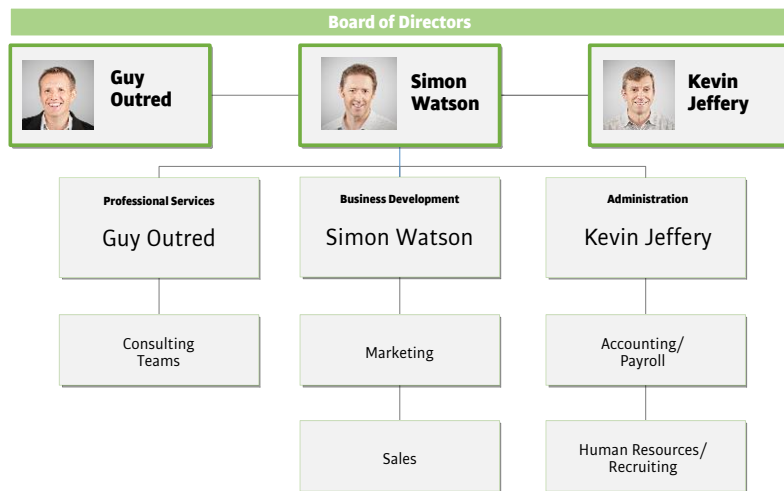
Since our establishment, Windsor has enjoyed steady, sustained growth to its current level of 45 employees. Windsor's organizational structure is shown in the accompanying chart.

A full service information systems consulting firm, Windsor is headquartered in Portland, Oregon, with a large regional office in Northampton, Massachusetts, from which this project will be managed. We are proud to have developed an exceptional national reputation for the delivery of high quality solutions, on time and within budget, that span most environmental program areas.

As a systems integrator specializing in environmental information management, Windsor is able to bring extensive and relevant experience to this initiative. Our business knowledge and technical expertise allow us to design and implement solutions that address an agency's specific needs in regard to critical data collection, appropriate analysis, and timely information sharing.

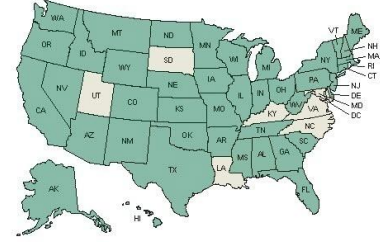
Windsor is in a relatively unique position having designed and built both fully integrated environmental management systems along with program-specific systems..

Windsor currently employs 45 software engineers, developers, analysts, and project managers in our Portland, Oregon, Northampton, Massachusetts, and Honolulu, Hawaii offices. Windsor experiences very low staff turnover in comparison to the industry as a whole, and strives to maintain staff continuity throughout the life of a project.



Customer Base

Windsor was founded in 1998 to specialize in the provision of environmental information systems to federal, state, local, and tribal government organizations. Since that time, we are proud to have developed an exceptional national reputation for the delivery of high quality solutions on time and within budget.



As shown on the accompanying map, Windsor has successfully completed projects for agencies in nearly every state. We focus exclusively on the management and sharing of environmental and natural resources data with public-sector agencies at the federal, state, county, local, and tribal level. Our projects have ranged from a few thousand to several million dollars. Relevant projects can be viewed on our website at www.windsorsolutions.com.

Public Environmental Agency Focus

Windsor has conducted successful projects for dozens of state agencies, in addition to county, tribal, municipal, and regional governmental agencies. Some of our clients include:

Alaska Department of Environmental Conservation	Minnesota Department of Natural Resources
Arizona Department of Environmental Quality	Missouri Department of Natural Resources
Arkansas Department of Environmental Quality	Montana Department of Environmental Quality
California Environmental Protection Agency	Nebraska Department of Environmental Protection
California State Water Resources Control Board	Nevada Department of Conservation and Natural Resources
Colorado Department of Public Health and Environment	New Hampshire Department of Environmental Conservation
Connecticut Department of Energy and Environmental Protection	South Carolina Department of Health and Environmental Control
Environmental Council of States	New York Department of Environmental Conservation
Georgia Department of Natural Resources	New York Department of Health
Hawaii Department of Health	North Dakota Department of Health
Indiana Department of Environmental Management	Northwest Indian Fisheries Commission
Iowa Department of Natural Resources	Oregon Department of Environmental Quality
Kansas Department of Health and Environment	South Carolina Department of Health and Environmental Control
Massachusetts Department of Environmental Protection	Vermont Department of Environmental Conservation
Michigan Department of Environmental Quality	Washington Department of Ecology
Minnesota Department of Public Safety	Wyoming Department of Environmental Quality

Change of Ownership

Windsor has not changed ownership over the life of the company. Windsor is 100% privately owned by the officers of the company.

Overview of Business Units/Service Lines/Products

Windsor is a full service IT consulting firm that specializes in developing custom and off-the-shelf information systems exclusively for public health and environmental agencies. As a specialist in this arena, Windsor brings a deep understanding of the business practices and information management needs of public sector agencies that manage health and environmental data.

Windsor has recently introduced several software products that provide much-needed functionality for environmental agencies. These products are detailed on our website at www.windsorsolutions.com and include the following:

- nSITE, a data warehouse/repository for managing and reconciling site records across multiple programs
- nSPECT, a mobile inspection application for tablets and other mobile devices
- nFORM, an innovative online e-Permitting solution
- SLEIS, a state and local emissions inventory system

Along with our software product line, we've built our outstanding reputation on services. Windsor provides the full range of information-technology-related services required for environmental and natural resource agencies, including:

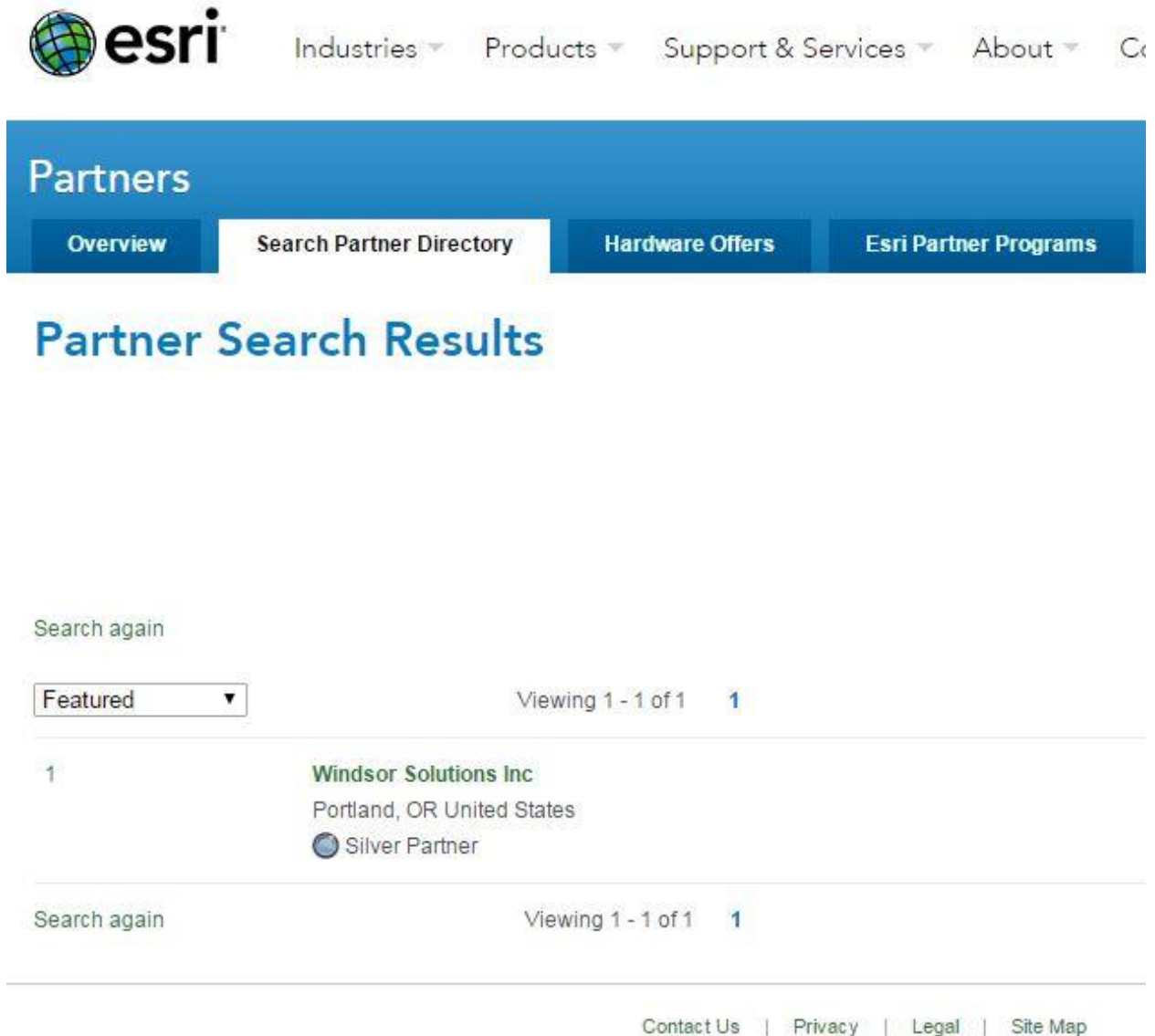
- Electronic reporting
- Data warehouse
- Spatial information systems
- Exchange Network
- System re-engineering
- Technology migration
- Current systems/infrastructure assessment
- Cross-program data integration
- Information strategy planning
- Program area analysis

Windsor's consultants are experts in the following disciplines:

- Air Quality
- Water Quality
- Land Quality
- Environmental Health
- Natural Resources
- Cross-Discipline Services

Section 3.1 – ESRI Certification

Windsor Solutions will maintain ESRI Silver Partner status, requested by the RFP (screenshot below):



The screenshot shows the Esri Partners website. At the top is the Esri logo and navigation links: Industries, Products, Support & Services, About, and Contact. Below this is a blue header with the word "Partners" and four tabs: Overview, Search Partner Directory (which is active), Hardware Offers, and Esri Partner Programs. The main heading is "Partner Search Results". Below this is a search bar with a "Search again" link. A dropdown menu shows "Featured" and "Viewing 1 - 1 of 1" results. The search results list one entry: "Windsor Solutions Inc" located in "Portland, OR United States", with a "Silver Partner" badge. At the bottom of the search results section is another "Search again" link and "Viewing 1 - 1 of 1" results. The footer contains links for Contact Us, Privacy, Legal, and Site Map.

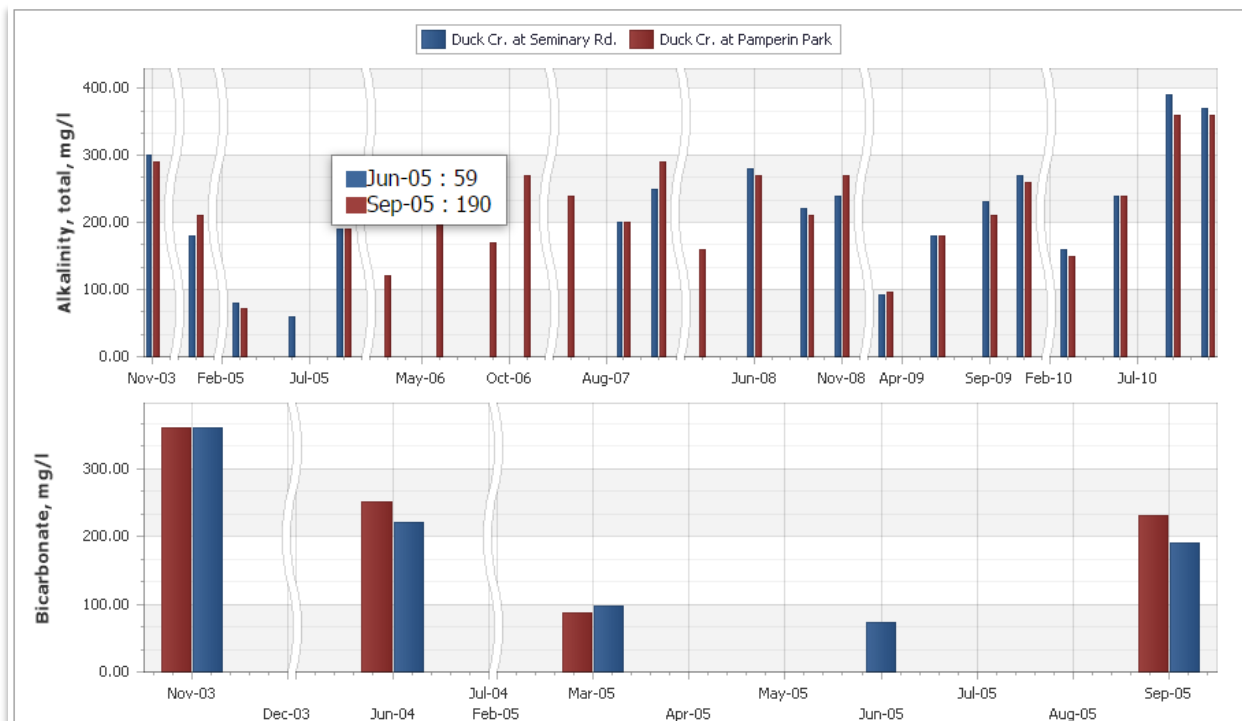
Section 3.2 – Government Environmental Project Portfolio

Oneida Tribe of Indians of Wisconsin Data Management Application

In 2013, the Oneida Tribe of Indians of Wisconsin (Oneida) completed a project with Windsor Solutions, implementing the OpenNode2 Exchange Network Node and the Water Quality Exchange (WQX) data flow. In conjunction with the exchange components, Windsor incorporated a data entry application (Tribal Water Quality Data – TWQD) for ambient water quality data, and a spatial mapping application (WQX Spatial Viewer).

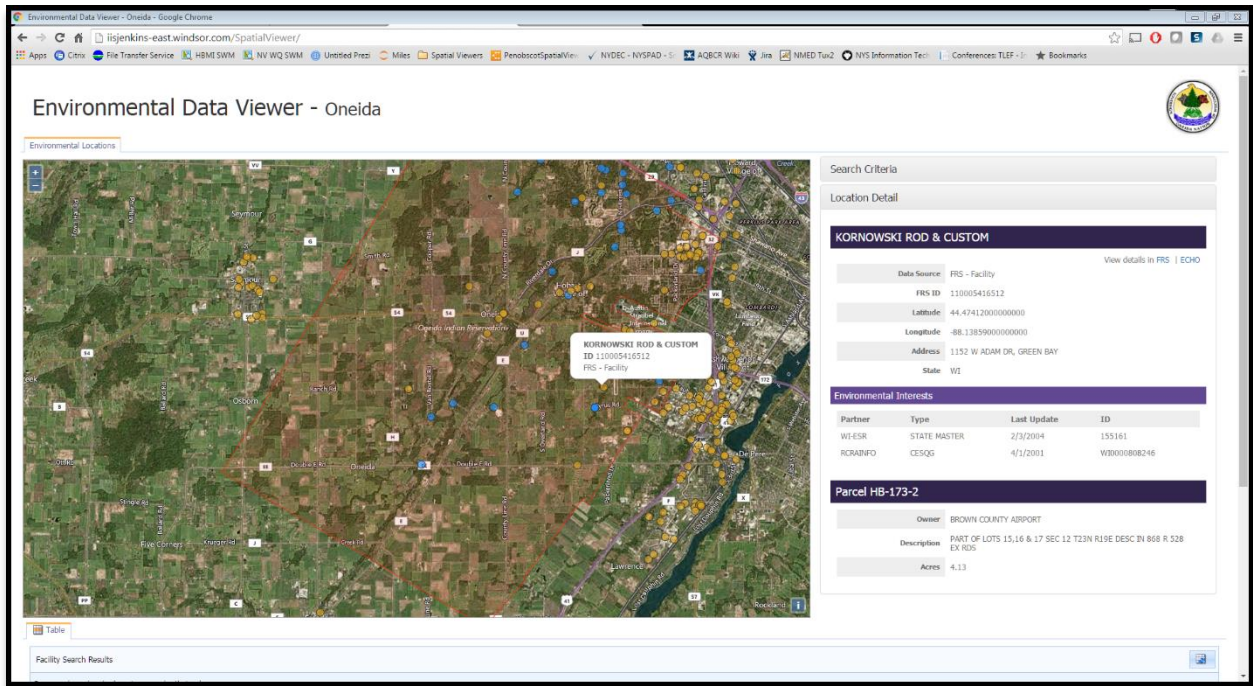
The data was integrated to provide Oneida with a tightly coupled suite of applications. The water quality data managed in TWQD was made available to both OpenNode2 and the Spatial Viewer.

OpenNode2 assisted with the flow of WQX XML to EPA, and the Spatial Viewer provided a tool for Oneida tribal members to search for and find details related to water quality within their tribal lands.



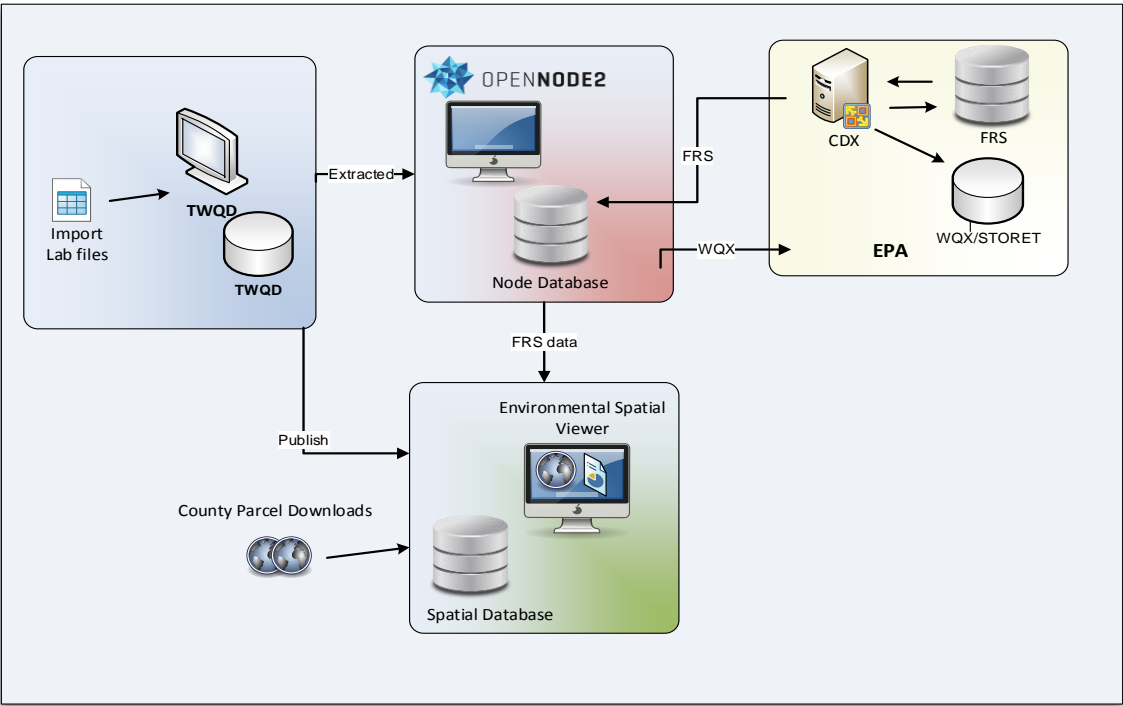
Viewing sampling results in a graphic format for two monitoring locations

In 2016 an upgrade project was initiated. Oneida worked with Windsor to expand the information displayed in Spatial Viewer to include the FRS dataset in and around Oneida land. The viewer now displays the Tribe's collected water quality reporting station and result data on the same map as all facility data that is available from the EPA's CDX exchange. Any EPA partner that reports data via the Exchange Network, from RCRAInfo to ICIS (and many others) becomes visible on the map. Users can click on any point on the map to see detailed information in the right-hand panel. Windsor and Oneida went a step further, by also including on the map Parcel data, Tribal boundaries, and links to source data systems such as FRS and ECHO.



Identifying a facility record in the Spatial Viewer

Oneida is embarking a new project to download Toxics Release Inventory data from the EPA using OpenNode2. As Oneida continues to obtain additional environmental data it provides the Tribe the ability to make informed decisions when issuing permits, starting new projects, purchasing land and providing environmental impact analysis and restoration activities.



The combined Oneida system architecture

Seldovia Village Tribe Environmental Data Viewer Application

Windsor worked with the Seldovia Village Tribe of Alaska to design, build, and implement a rich-Web based geographic water quality application that allows users to search for, review, and analyze water quality information in both a spatial and tabular manner.



This was a highly collaborative project with the Seldovia Village Tribe (SVT) of Alaska and the United South and Eastern Band of Tribes, Inc. (USET), who provides support and economies of scale to 25 member Tribes from Texas to Maine.

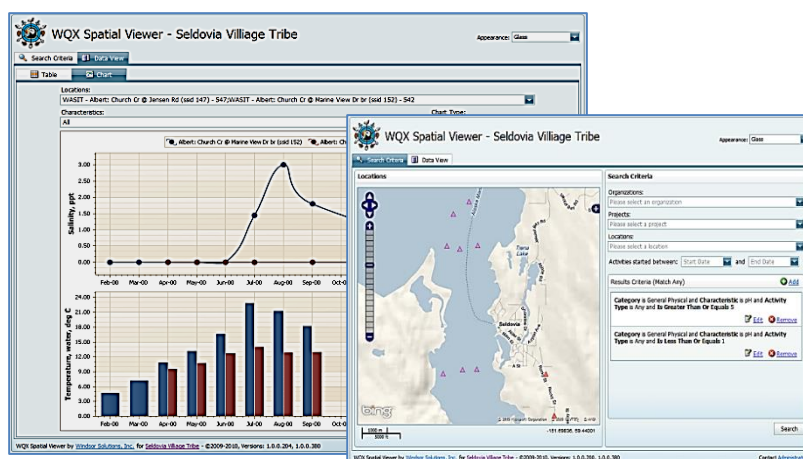
By aligning their goals and combining resources, these two Tribal communities were able to establish an intuitive, yet powerful, new water quality tool with a modest budget.

This application utilizes OpenLayers to broker all mapping capabilities. The OpenLayers tool allows each party to determine the specific map layers to be utilized and displayed on the map (Google Street Maps, ESRI Imagery, Bing Imagery, etc.) providing a nimble interface that is highly configurable to meet the needs of each organization.

This list highlights some of the features found in the system:

- Spatial Searching
- Tabular Searching
- Spatial Data Viewing
- Tabular Data Viewing
- Graphing/Charting
- Data Exporting
- Configurable Spatial Layers
- Intuitive User Experience
- Configurable Security
- Customizable Branding

As is true with many systems developed to support the Exchange Network, these communities exemplified the decree of “build once, use many times.” This system was developed upon the foundational components previously developed by other Exchange Network partners and enriched in this project in many ways. In addition, this tool has evolved over the years, being incrementally improved by each new partner who implements the tool.



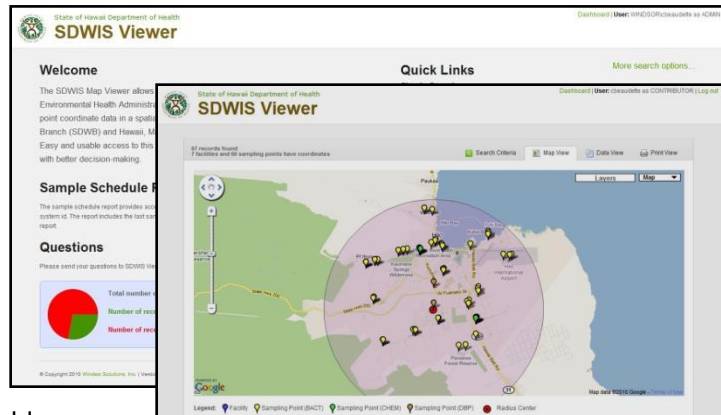
Seldovia recently upgraded to the latest version of the Environmental Data Viewer, which now supports many different media, including the presentation of both Water Quality and Air quality information. This is a testament to the fact that partners who made the initial investment and provided foundational components are now able to realize the benefits of the enhanced system. As evidence of its success, multiple other organizations have implemented the Spatial Viewer in their environment and have made incremental improvements to the tool.

This Environmental Data Viewer provides these partners with data visibility, improved data quality and the ability to analyze water quality and air quality results as well data sharing among the Tribal communities.



Hawaii DOH - Safe Drinking Water Information System Viewer

The Hawaii Department of Health Environmental Health Administration (EHA) contracted Windsor to design and implement a custom Safe Drinking Water Information System (SDWIS) viewer application. The application provides users the ability to query SDWIS data and return results in a spatially enabled and/or tabular format. The viewer provides county and environmental health specialists the ability to access and use the state's SDWIS information; it also provides field users with a way to improve GPS-collected coordinate data and import it into SDWIS.



The SDWIS Viewer is a moderately complex system comprised of Web applications, Web services and Mobile applications. The GIS technologies used for the application include the GoogleMaps API and the ArcGIS Extension for the GoogleMaps API for the Web interface, and the Windows Mobile SDK for the handheld GPS application.

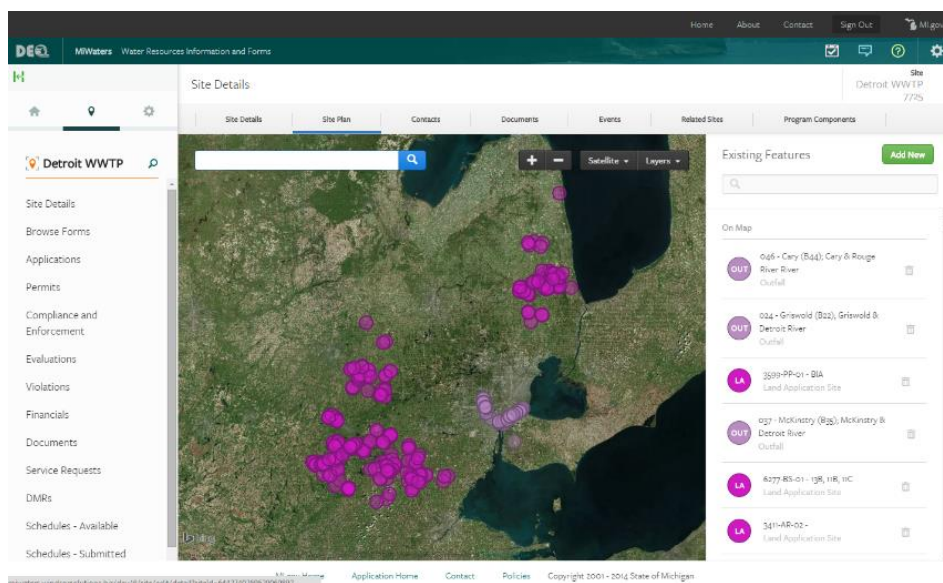
The mobile application was designed to make the process of improving location data as simple as possible. When field users use the one-click synchronize feature, it verifies whether or not it needs an updated catalog of sampling point sites that must be collected and automatically downloads it if necessary. Field users can then collect and tag coordinates to a sampling point site in two clicks. New sampling points can also be collected and added to the catalog. Uploading sampling point data is performed automatically with a one-click synchronize. If the GPS readings are not within acceptable tolerances, there are mechanisms to allow for post-processing the collected and uploaded coordinates.

The Water Quality Data (WQD) Viewer provides public access to water quality data in the state and allows agency staff to post advisories warning of hazardous water conditions to a public Web site. These viewers offer many features, including:

- Spatial and Tabular Searching
- Spatial Data and Tabular Data Viewing
- ArcGIS Server overlay layers for spatial data viewing
- Data Exporting
- GPS application to collect coordinates and “tag” to sampling points
- Web service-based upload of GPS data to SDWIS database
- Automatic download of SDWIS data catalog to handheld device

Michigan DEQ MiWaters Online Water Resources Permitting and Compliance System

The Michigan Department of Environmental Quality (MDEQ) Water Resources Division (WRD), like many regulatory organizations, has increasingly become dependent upon information systems to manage regulatory compliance. Over many years, legacy applications were developed in a non-integrated fashion resulting in disjointed and redundant data across multiple systems. In addition, the fragmentation of the legacy applications could not support consistent permitting and compliance processes across program areas.



The MiWaters system is being built to consolidate and replace over 25 existing systems used by WRD, to bring consistency to permitting and compliance processes, and to significantly enhance WRD's capabilities through advanced technologies (e.g. GIS), enhanced public access to information, and improved data integrity.

The core of the MiWaters solution is comprised of a custom developed web application based on the Microsoft .NET framework, with data being managed and reported upon using Microsoft's SQL Server platform. However, significant functionality is also being provided by integrating Windsor Solutions products into the MiWaters solution:

- **nFORM** – supports online electronic form submission and management
- **nSPECT** – provides mobile inspections and data collection
- **nSITE Explorer** – delivers powerful GIS based data inquiry for both internal staff, the regulated community and the general public.

Primary capabilities provided by the MiWaters system include:

- **Site Management**
 - Management of Site Plans related to environmental interests (e.g. Permitted)
 - Integration with GIS for mapping of Site Plan Features as points, lines, or polygons.
 - Site centric view of environmental activities (Permits, Enforcement Actions, Inspections, Complaints)
- **Service Request Processing**
 - Integration with nSpect for submission of Permit Applications, Service Requests, and Complaints
 - Request processing and fulfillment
 - Permit development and/or modifications

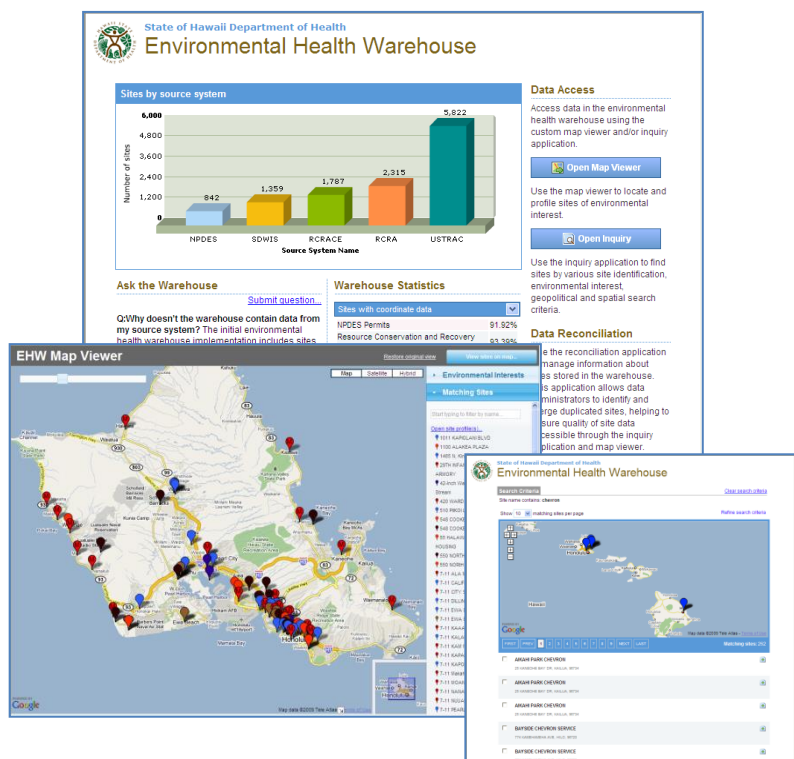
- Request fulfillment
 - Tracking of Complaints
- Public Notice of proposed permit Applications and/or newly issued Permits
- Processing paper-based Applications, Requests, Submissions
- Permit Maintenance
 - Schedules of Compliance
 - Permitted Features (e.g., Outfalls) and Feature Limits
 - Dynamic program-specific data components based on permit type
 - Contact Management
 - Related Documents
- Permittee Reporting Requirements
 - Electronic submission of Permit required reporting (via nForm) based on Schedules of Compliance specified in the Permit or Compliance/Enforcement Action
 - **Electronic Submission of Discharge Monitoring Reports (DMRs)**
- Compliance and Enforcement
 - Evaluation of permit reporting submissions
 - Automatic violation generation for late / missing permit report submissions
 - Planning and scheduling of Site Inspections
 - Field Inspection data capture, reporting and violation generation (via nSpect)
 - Tracking of Compliance and Enforcement Actions including escalations
- Complaints/Incidents
 - Recording and processing of Complaints or Incidents
 - Instantiation of Inspections, Permitting, or Compliance/Enforcement Actions from Complaints
- Financial Tracking
 - Application Fee Assessment
 - Invoice Generation
 - Payment Processing
 - Payment Status Tracking
 - Refund Request Processing
- Other Water Resources related functionality
 - Financial Instruments
 - Conservation Easements
 - Mitigation Banks
- EPA Reporting (ICIS / NPDES)

Other general features and capabilities of MiWaters include:

- External site for regulated community (registered users)
- Public Inquiry including GIS based inquiry
- Workflow and Tasking
- Automated Document Generation from user-defined document templates
- Integrated Document Management (upload/download)
- User Notifications – to both internal staff and registered external users (regulated community)
- Extensive configuration and administrative functions

- Contact Management
- User management
- System Announcements
- Online help

Hawaii DOH EHA - Environmental Data Warehouse



The Hawaii Department of Health engaged Windsor to assist with planning, designing, and implementing information management systems in close cooperation with the Environmental Health Administration (EHA) and its environmental programs.

Windsor was tasked with understanding EHA's information management systems, initiatives, and objectives in order to develop a mutually agreeable approach that helps meet the information technology needs of the various divisions, offices and branches.

Windsor reviewed various EHA documents to obtain valuable information including the status of existing information technology systems, initiatives, and the EHA

information management vision. Further, current information systems within each branch, division, and program were reviewed in preparation for the onsite interviews. Windsor also reviewed the administration's business process improvement plan to provide additional background.

Windsor then conducted a series of onsite meetings with EHA divisions, branches, and offices to explore the current information management situation of each program. These interviews aimed to discover new, merged, or retired information management systems within the programs as well as to understand any information technology initiatives currently in progress plus those specific information management or technology challenges that presently face each program.

Using the findings from these meetings and an assessment of existing information technology materials and artifacts, along with an understanding of how environmental agencies in other states have addressed similar challenges, Windsor was able to recommend an achievable integration approach for the EHA. This chosen approach was the implementation of a data warehouse to support the integration of environmental interest information across the administration in such a manner that provided accessibility to this valuable dataset without disrupting the functioning legacy applications.

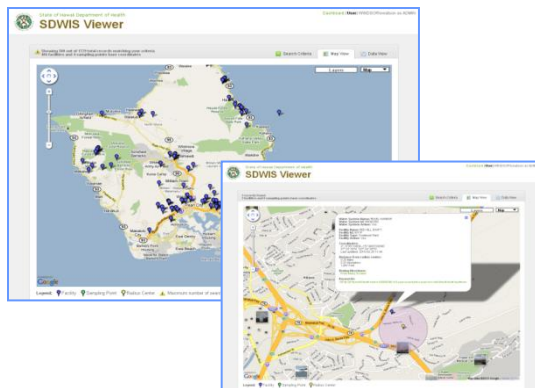
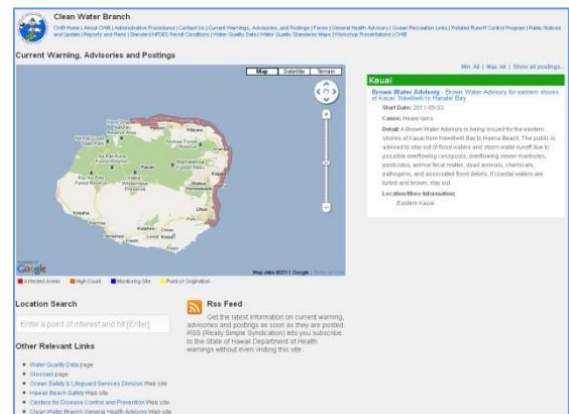
Windsor's solution for the Hawaii Department of Health made extensive use of the knowledge and experience gained through the design, development and implementation of several environmental data warehouses for other clients.

The implemented Environmental Health Warehouse (EHW) aggregates and centralizes information about facilities that are stored in separate, mutually exclusive systems within EHA. Naturally, some facilities are duplicated in multiple systems. Information about these facilities is most likely stored in separate databases operated by different programs within EHA. When the information is loaded into the EHW database, the facility is also then listed twice. Windsor's implemented solution allows for the reconciliation of any duplicate facilities. This is advanced capability that allows the agency to make sure the best information is presented to the systems users. Most users will access the EHW using the Inquiry or Map Viewer applications that reflects the final, cleaned and corrected view of facility information.

The major components of the EHW are:

- Enterprise level geospatial information system
- Sophisticated tabular and geospatial search engine
- Graphing capabilities
- Data reconciliation engine
- Application administration
- ETL Sub-system

Following the EHW implementation, Windsor also built the Water Quality Data (WQD) Viewer application for the EHA. Implementation of this application provides users with the ability to query water quality information and return results in a spatially enabled and/or tabular format. The WQD Viewer also includes the ability to view beach warnings, advisories and postings, and it offers drill-down capabilities to find sampling result data. The WQD Viewer is designed in such a way that it provides additional detail about water monitoring locations for when agency staff wishes to explore that detail. Integration with the EHW is in progress, but is as simple as incorporating the environmental interest within EHW and establishing the hyperlink between the monitoring location and the WQD Viewer.



Similarly Windsor created the Safe Drinking Water Information System (SDWIS) Viewer application that gives the agency staff visibility into SDWIS data. The SDWIS Viewer application provides users with the ability to query SDWIS data and return results in a spatially enabled and/or tabular format. The viewer also allows EHA to enable county and environmental health specialists to access and use the state's SDWIS information, and it provides users with the means to import and improve GPS-collected coordinate data into SDWIS through a mobile GPS collector. The initial

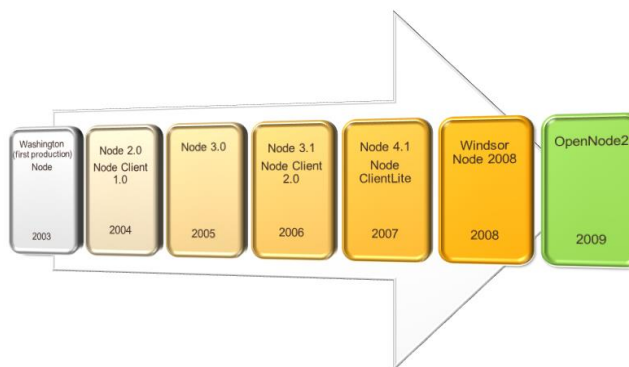
reporting capabilities include sampling scheduling, violations, and sanitary surveys.

The environmental warehousing initiative for the Hawaii Department of Health demonstrates Windsor's ability to work with a client to establish the appropriate strategic direction and infrastructure that will

satisfy their needs for integrated data access based upon available funding and to do so with the foresight for future development and integration of new Web-based enterprise solutions.

Section 3.3 – EPA Exchange Network Experience

A key factor in the success of an Exchange Network project is an in-depth knowledge of the program. In this respect, no other firm can match the depth and breadth of expertise that Windsor brings to the table. Windsor has been developing and implementing Network Nodes for partners since 2003, for both .NET and Java environments. During that time, our Node has evolved through multiple iterations to accommodate the advances in the underlying technologies, as well as Windsor's ever expanding experience with challenging and new and innovative data exchanges. The following figure illustrates this version evolution.



As a recognized leader in existing Exchange Network Node and data flow deployments, we believe that Windsor is able to bring the necessary experience and skills to successfully provide the services required for any NEIEN project. Windsor has been closely involved with the design and implementation of the Exchange Network from its inception through to the current functional revisions. Some of Windsor's specific achievements have been:

- The first engineers to successfully implement a fully functional production Node and the company with the most experience with production Node operation. The majority of the Exchange Network is now powered by Windsor developed tools and applications.
- The first company selected from among all leading Network Node providers to support the open-source Exchange Network Node. Windsor's OpenNode2, already powering the majority of state Exchange Network partners, is now freely available as an open-source product.
- Implementation of many regulatory environmental program data flows including RCRAInfo, EIS, AQS, OWIR-ATT, Beaches, FacID, ICIS-NPDES, SDWIS, TRI, UIC and WQX.
- Implementation of many innovative new data exchanges between partners that have served to dramatically illustrate the potential and power of the Exchange Network, including eManifest, the Homeland Emergency Response Exchange (HERE), the Juvenile Migrant Salmon Exchange (JMX) and the Pacific Northwest Water Quality Data Exchange (PNWWQX).
- Leaders in the advanced technologies and practical application of Web services, XML data exchange, data warehousing, and automated data cleansing.
- Recent implementers of a Tribal "SuperNode" for the Northwest Indian Fisheries Commission (NWIFC), as well as the United South and Eastern Tribes (USET).

Experience with OpenNode2 Installations

Windsor's latest Network Node solution was selected by a broad consortium of leading Network agencies during an open and competitive bid process that included all the leading Network Node solutions available. Windsor's latest generation open source Node, coined "OpenNode2," was funded

through a 2008 multi-state Challenge Grant and allows states, counties, and tribal groups to exchange data with EPA and other Exchange Network partners at a substantially reduced cost. OpenNode2 is currently in production operation with a large number of Exchange Network partners and has proven to be a robust and reliable engine in a variety of configurations. OpenNode2 simultaneously supports both the 1.1 and 2.0 versions of the Node Specifications, and works in either .NET or Java environments and with a wide range of supporting databases including Oracle and SQL Server. OpenNode2 was officially announced and released to all Network Partners at the Exchange Network User Conference in Atlanta in April 2009 and has since been available for download.

OpenNode2 builds upon Windsor's long-standing support for the Exchange Network. The "build once – share many times" approach is consistent with Windsor's philosophy of encouraging reuse and collaboration among Network Partners. The selection of Windsor's solution validates our long-standing approach to the implementation challenges over the last several years and is another reason Windsor is behind the majority of Exchange Network Node deployments throughout the United States.

The table below lists selected deployments of Windsor Nodes on the Exchange Network. As the Node has been available as an open source product for several years now, other agencies and tribes unknown to Windsor have self-deployed OpenNode2, and these numbers are constantly increasing. The following table presents some (but by no means all) of the Exchange Network partners utilizing OpenNode2:

Selected Exchange Network Partners Utilizing Windsor's Node (OpenNode2)	
Alaska Department of Environmental Conservation	Nebraska Department of Environmental Quality
Arizona Department of Environmental Quality	Montana Department of Environmental Quality
Arkansas Department of Environmental Quality	Nevada Division of Environmental Protection
California Climate Action Registry	New Hampshire Department of Environmental Services
California Environmental Protection Agency	New Mexico Environment Department
Colorado Department of Public Health and Environment	New York Department of Environmental Conservation
Connecticut Department of Environmental Protection	New York Department of Health
Delaware Department of Natural Resources and Environmental Control	North Dakota Department of Health
Georgia Department of Natural Resources	Northwest Indian Fisheries Commission
Gulf of Maine Ocean Observing System	Ohio Environmental Protection Agency
Hawaii Department of Health	Oklahoma Department of Agriculture
Idaho Department of Water Resources	Oregon Department of Environmental Quality
Iowa Department of Natural Resources	Pollution Prevention Resource Council
Illinois Environmental Protection Agency	Snohomish County, Washington
Kansas Department of Agriculture	Stillaguamish Tribe of Indians
Kansas Department of Health and Environment	United South and Eastern Tribes
Marianas Islands Department of Environmental Quality	US Geological Survey

Massachusetts Department of Environmental Protection	Vermont Department of Environmental Conservation
Minnesota Pollution Control Authority	Washington Department of Ecology
Missouri Department of Natural Resources	West Virginia DHHR
Navajo Nation EPA	Wyoming Department of Environmental Quality

Experience Implementing Data Flows

Not only has Windsor been on the forefront of Node development but they have also been heavily involved in flow innovation, having being responsible for the development of several of the most successful data exchanges on the Network. Many of these exchanges are now available along with OpenNode2, which is provided along with plugins needed to implement the ICIS-NPDES, ICIS-Air, FRS, EIS, AQS, WQX, SDWIS, and RCRAInfo Handler, and many other data flows. Other more creative data flows that have been developed by Windsor include the HERE Network, the Pacific Northwest Water Quality Exchange, and e-Manifest.

Northwest Indian Fisheries Commission Super-Node and Various Data Exchanges

Of particular relevance to this effort, Windsor has successfully completed a multi-phase Exchange Network project for the Northwest Indian Fisheries Commission (NWIFC). NWIFC is a consortium of twenty Indian tribes in western Washington whose role is to assist the tribes' natural resource activities and to provide efficiencies that would not otherwise be realized by the tribes when working independently. As such, the NWIFC applied for and received an Exchange Network Grant to develop a "Super-Node" of sorts which would allow tribes to exchange ambient water quality information amongst themselves as well as directly with the EPA or other partners.

The resulting system allows tribes to participate in a much greater level of data sharing than was previously available. The solution has helped to prove to some of the smaller partners that exchanging data on the Exchange Network does not require a complex or expensive system.

Designed specifically to meet the needs of the commission and its member tribes, this powerful exchange solution allows data providers to package and supply data to identified partners utilizing a number of methods and techniques, depending on the provider's technical environment, as well as being able to receive data back. All at a fraction of the cost it would take to deploy and test fully functional Nodes in all these locations.

Essentially Tribes and other smaller exchange participants can now cost-effectively participate in the Exchange Network.



Juvenile Migrant Fish Data Exchange

Under the sponsorship of the Puget Sound Partnership (PSP), Windsor worked with representatives from the NWIFC, Tribal Nations and the Washington Department of Fish & Wildlife (WDFW) to design and establish the Juvenile Migration Data Exchange (JMX). Using the National Environmental Information Exchange Network, participants collaborated to standardize, integrate and exchange information as part of their shared efforts to monitor and restore the health of the Puget Sound watershed. The Exchange Network provided tools and approaches for data to be shared efficiently and securely over the Internet, providing real-time access to higher-quality data while saving time and resources for the partners.

The WDFW and various Tribes throughout the State of Washington are the primary collectors of this juvenile migrant salmon information. The NWIFC and WDFW aggregate this information from all the partners and provide access to the aggregated information to inform decisions and activities designed to restore and protect the Puget Sound watershed.

This JMX focused on the use of the Exchange Network to collect and integrate Washington State's juvenile migrant salmon information. As part of the project, Windsor created a desktop client that allows the Tribal Partners to aggregate and share JMX data amongst participating partners and share this with Tribal Nations, NWIFC, WDFW, PSP and the National Oceanic and Atmospheric Administration's (NOAA's) National Marine Fisheries Service (NMFS).



Adult Fish Data Exchange

Following the successful implementation of the JMX data exchange, Windsor and NWIFC expanded the exchange to include adult fish data.

Nearshore Data Exchange

Windsor and the NWIFC also successfully completed the development of the Nearshore Data Exchange system. This system will help organizations in western Washington document, manage, analyze, and share species presence data and information about the health of nearshore areas. This includes information such as the type of species found (fish, shellfish, and vegetation), life stage, as well as environmental information such as water quality, sediment and weather observations.

This Nearshore Data Exchange is a brand new regional exchange designed, developed and implemented for the region's scientists and managers to share data in a timely and effective manner to assist in our understanding of the State's nearshore environment.

This project included developing a desktop client to manage and share this dataset as well as development of the supporting XML Schema and OpenNode2 plug-in to support the exchange components. The framework that had been established for the existing Juvenile Migrant Exchange (JMX) and Water Quality Exchange (WQX) was utilized and enhanced with additional high value features (e.g., data import, dynamic reporting, etc.) to incrementally improve the tool set.

Environmental Council of States – General Support Contract

Windsor has been engaged by ECOS since 2004 to support the Network Steering Board (NSB) with various Exchange Network implementation efforts. As part of this engagement, Windsor has conducted many activities, including:

- Development of the ICIS-Air plugin for OpenNode2 (.NET and Java versions)

- Development of much of the Network's technical flow design policy and guidance documentation
- Design of the Flow Configuration for the FRS data flow,
- Design of the Flow Configuration for the RCRAInfo data flow,
- Design of the Flow Configuration for the NEI data flow,
- Design of an XML schema for the Toxics Release Inventory (TRI) data flow,
- Design of an XML schema for the Concentrated Animal Feeding Operations (CAFO) data flow,
- Development of marketing materials,
- Representing ECOS and providing expert technical assistance to the development of the Network Node 2.0 Specifications.
- General support to Network Steering Board institutions such as the Technical Resource Group.
- Assisting EPA with the development of flow capabilities, such as a RCRAInfo XML translator component

References

The following client references are provided as requested. Additional references are available on request.

Reference 1

Name:	Sarah Ehinger
Agency:	Michigan Department of Environmental Quality
Telephone:	269-216-1341
Email:	Ehingers1@michigan.gov
Description of Project:	MiWaters online Permitting and Compliance System

Reference 2

Name:	Kevin Weiss
Agency:	Nevada Department of Environmental Protection
Telephone:	775-687-9324
Email:	kweiss@ndep.nv.gov
Description of Project:	Exchange Network projects and multiple Data Flows

Reference 3

Name:	Bruce Jones
Agency:	Northwest Indian Fisheries Commission
Telephone:	(360) 528-4369
Email:	bjones@nwifc.org
Description of Project:	Exchange Network projects and multiple Data Flows

Section 4. – Mandatory Requirements

Windsor proposes to employ our existing Spatial Data Viewer application as the foundation for the SCALES system. The Spatial Data Viewer system is currently used by a number of environmental regulatory agencies to manage and provide public access to environmental quality information. Leveraging this existing solution to provide the functions envisioned for the SCALES system will allow Windsor to cost-effectively meet OEHS requirements for the new system.

The Spatial Data Viewer tool is a map-based Web application which provides access to sampling data (e.g, ambient water quality, air quality samples, fish samples, etc.). The mapping tool allows the user to view waterbodies and sample locations on a map and to review the analytical sample results and field measurements taken over time at that location.

Result data received from WVDEP in the WQX data format will be stored in the OpenNode2 WQX staging database tables along with the contaminant thresholds necessary to calculate the consumption advisories. This data will be used to calculate fish consumption advisories which will then be loaded into the Spatial Data Viewer database on a nightly basis.

The Spatial Data Viewer map interface will allow the public to view the calculated advisories by sampling location and species.

Windsor understands the scope of the SCALES development project to include the following main components:

Exchange Network data flow from WVDEP

WVDHHR currently operates Windsor's .Net OpenNode2 Exchange Network Node solution. A new data flow will be established on the WVDHHR Node to receive tissue sample and analytical result data from WVDEP in the standard EPA WQX XML schema format. Data to be received from DEP will include the sampling location, the sample event details, including the fish species taken, and the results received from laboratory analysis of the sampled tissue.

The received data will be stored by the WVDHHR Node in the standard WQX staging database tables used by OpenNode2 in SQL Server format.

Advisory Calculations

Consumption advisories will be calculated using the analytical result data stored in the OpenNode2 staging database tables together with predefined calculation parameters which will indicate the recommended consumption by pollutant level.

Advisories will be calculated daily to reflect the latest information available in the OpenNode2 staging database tables. The calculated advisories will be stored in Windsor's Spatial Viewer SQL Server database.

Public Data Inquiry System

Windsor's Spatial Viewer application will be implemented to provide a publicly accessible display of current advisories at the sampling locations around the State. Data will be searchable by species and sampling location.

The Spatial Viewer SQL Server database will fulfil the functions envisioned for the SCALES database and will store monitoring location and advisory information.

Section 5.2 - Pricing Page

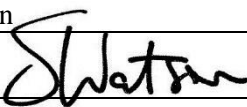
Exhibit A – Pricing Page

Windsor's estimated costs for building the SCALES system are presented below in the format required by the CRFQ.

Contract Item #	Item Description	Total
4.1.1	Construct a web based e-reporting system to be called Sportfish Consumption Advisory Limit System (SCALES). SCALES will allow Sportfish Consumption Data for West Virginia to be collected and shared between the various program partners more efficiently using the EN infrastructure.	
4.1.1.1	The e-reporting system must establish an Extract, Transform, and Load (ETL) process that must meet the following requirements: <ul style="list-style-type: none"> • Establish a new data flow from WV DEP node to WV DHHR Node. • Flow will use the EPA WQX XML Schema format. • Data includes sampling locations and date time, fish species and laboratory results. 	\$20,000
	<u>Activities</u> <ul style="list-style-type: none"> – <i>The .Net OpenNode2 will be installed at WVDHHR.</i> – <i>Install and configure the WQX inbound data flow processor plugin.</i> – <i>Validate WQX data file submissions from WVDEP.</i> 	
4.1.1.2	The e-reporting system must establish the advisory calculations that must meet the following requirements: <ul style="list-style-type: none"> • Using data from the ETL process generate the Sportfish Consumption advisories for designated water bodies and fish species based on the current West Virginia Sportfish Consumption Advisory guide. • Advisories will be generated daily as new data is received. • Advisory history will be kept in SQL Server Database. 	\$25,000
	<u>Activities</u> <ul style="list-style-type: none"> – <i>Install the Spatial Data Viewer database.</i> – <i>A new database function will be developed to automatically calculate consumption advisories based on lab and field result data received from WVDEP.</i> – <i>Advisory calculation parameters will be stored in the WQX staging database.</i> – <i>Calculated advisories will be loaded into the Spatial Data Viewer database for display through the map interface.</i> 	
4.1.1.3	The e-reporting system must contain an interactive web mapping application to be built and called of Fish Advisory Map Explorer (FAME) this web mapping application must meet the following requirements:	\$45,000

Contract Item #	Item Description	Total
	<ul style="list-style-type: none"> • An online GIS mapping viewer for public accessibility. • Viewer must display advisories by fish species and sampling location. • Viewer should allow viewing of advisory data in tabular and chart format as well. 	
	Activities <ul style="list-style-type: none"> – <i>Install the Spatial Data Viewer mapping and inquiry application.</i> – <i>Configure the system to display advisory data calculated by species and monitoring location.</i> – <i>Enhance the Spatial Data Viewer to better meet the specific needs of the stakeholders.</i> 	
	Grand Total	\$90,000

VENDOR SECTION:

Vendor Name: Windsor Solutions, Inc.	
Physical Address: 4386 SW Macadam Ave, Suite 101 Portland, OR 97239	
Remit to Address: 4386 SW Macadam Ave, Suite 101 Portland, OR 97239	
Telephone: 503-675-7833	
Fax: 503-675-7804	
Email: simon_watson@windsorsolutions.com	
Vendor Representative (print name): Simon Watson	
Signature: 	Date: 11/7/2017

Assumptions

- The data provided by WVDEP will meet the standards and validation requirements required by the WQX XML schema. WVDEP and WVDHHR will be responsible for data cleaning activities required to pass WQX validation.
- The production spatial viewer web application will be on a server that is accessible to the public.
- The spatial viewer database will be accessible to/from the OpenNode2 staging database, in both the test and production environments.
- A single multi-day onsite trip by Windsor staff to WVDHHR offices is included as part of the project budget to confirm requirements and design.
- Waterbody spatial boundaries for the State will be made available in the form of KML or an ESRI ArcGIS REST service endpoint.
- Hardware (including servers and virtual servers) costs are not included in the estimates.
- Windsor will have remote access to any test or development environments during development, testing and implementation periods.

Section 11.1 – Contract Manager

Contract Manager: Craig Austin
Telephone Number: 503-675-7833
Fax Number: 503-675-7804
Email address: craig_austin@windsorsolutions.com