



**MICHIGAN DEPARTMENT OF TECHNOLOGY,
MANAGEMENT AND BUDGET
IT SERVICES
STATEMENT OF WORK**

Project Title: eBeaches Data Flow Enhancement	Period of Coverage: April 28, 2015 to September 30, 2016
Requesting Department: Environmental Quality	Date: April 28, 2015
Agency Project Manager: Shannon Briggs	Phone: 517-284-5526
DTMB Project Manager: Dan Sellepak	Phone: 517-241-7701

Brief Description of Services to be provided:

BACKGROUND:

The Water Resources Division (WRD) of the Michigan Department of Environmental Quality (DEQ) received federal funds from the USEPA Exchange Network in 2013 for the eBeaches Data Flow Enhancement project. This project is designed to submit beach monitoring data on a daily basis via the State of Michigan's nodes to the federal databases. WRD staff would like to use the Software Modernization Program (SMP) to select a vendor for the contractual work in this project. There is one vendor in the SMP that has access to the nodes, created Beachguard, and has 14 years experience working with the BeachGuard database, Web site, and data submission to the USEPA.

PROJECT OBJECTIVE:

Contractual Services are required by the WRD-DEQ that received a grant to report beach monitoring data on a daily basis to the USEPA's National Beach Monitoring web site. The services will create a tool that will automatically push data on a daily basis from Michigan's BeachGuard data base to the USEPA's system. The goals of this project are to:

1. Design data publishing services to the Beach Notification data exchange.
2. Develop and release an enhanced Beach Notification component for the Environmental Council of States Exchange Channel.
3. Implement the sustained data flow of Water Quality Exchange and Beach Notification from Michigan's Beach data management system to US Environmental Protection Agency.

SCOPE OF WORK:

The Scope of Work is attached to the end of this form on pages 4-7.

TASKS:

Technical support is required to assist with the following tasks:

1. The data flow components will be deployed to the DEQ test environment. Tests will be conducted to ensure that the components are operating as expected for both the WQX and Beach Notification data flows.
2. The data flow will be monitored closely by Dr. Shannon Briggs and DTMB staff for a period immediately following the release to production to ensure it is operating as expected.

DELIVERABLES:

Deliverables will not be considered complete until the Agency Project Manager has formally accepted them. Deliverables for this project include:

1. A sustained data flow of WQX and Beach Notification from Michigan's Beach data management system to the USEPA.

ACCEPTANCE CRITERIA:

1. Confirmation from the USEPA that beach data were received using the sustained data flow of WQX and Beach Notification from Michigan's Beach data management system.

PROJECT CONTROL AND REPORTS:

A bi-weekly progress report must be submitted to the Agency and DTMB Project Managers throughout the life of this project. This report may be submitted with the billing invoice. Each bi-weekly progress report must contain the following:

1. **Hours:** Indicate the number of hours expended during the past two weeks, and the cumulative total to date for the project. Also state whether the remaining hours are sufficient to complete the project.
2. **Accomplishments:** Indicate what was worked on and what was completed during the current reporting period.
3. **Funds:** Indicate the amount of funds expended during the current reporting period, and the cumulative total to date for the project.

SPECIFIC DEPARTMENT STANDARDS:

Agency standards, if any, in addition to DTMB standards.

none

PAYMENT SCHEDULE:

Payment will be made on a time and materials basis. DTMB will pay CONTRACTOR upon receipt of properly completed invoice(s) which shall be submitted to the billing address on the State issued purchase order not more often than monthly. DTMB Accounts Payable area will coordinate obtaining Agency and DTMB Project Manager approvals. All invoices should reflect actual work completed by payment date, and must be approved by the Agency and DTMB Project Manager prior to payment. The invoices shall describe and document to the State's satisfaction a description of the work performed, the progress of the project, and fees. When expenses are invoiced, receipts will need to be provided along with a detailed breakdown of each type of expense.

Payment shall be considered timely if made by the DTMB within forty-five (45) days after receipt of properly completed invoices.

EXPENSES:

The State will NOT pay for any travel expenses, including hotel, mileage, meals, parking, etc.

PROJECT CONTACTS:

The designated Agency Project Manager is:

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The designated DTMB Project Manager is:

Dan Sellepak
PM for DTMB
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AGENCY RESPONSIBILITIES:

LOCATION OF WHERE THE WORK IS TO BE PERFORMED:

Consultants will work at their own local office.

EXPECTED CONTRACTOR WORK HOURS AND CONDITIONS:

Work hours are not to exceed eight (8) hours a day, forty (40) hours a week. Normal working hours of 8:00 am to 5:00 pm are to be observed unless otherwise agreed to in writing.

No overtime will be permitted.

This purchase order is a release from Contract Number _____. This purchase order, statement of work, and the terms and conditions of Contract Number _____ constitute the entire agreement between the State and the Contractor.

Attached SCOPE OF WORK

Project Goals, Target Dates, Outputs, and Outcomes

This project has identified the following three goals as explained in this section and as shown in Table 1 with the target dates, outputs, outcomes, and environmental results.

Goal 1: Design data publishing web services to the Beach Notification data exchange

The current version of the Beach Notification data flow does not include any data publishing services defined as part of the exchange. The Michigan Department of Environmental Quality (DEQ) believes that the definition of data services will greatly increase the utility of the exchange, allowing partners to share current beach notification activities (swim bans, swimming advisories, or beach closures) via Query and Solicit services to network partners. The DEQ does not intend for these services to be implemented at United States Environmental Protection Agency's (USEPA's) Central Data Exchange (CDX) as part of this project. Rather, the intent is to provide a definition for such services to allow beach data stewards and consumers with a standard service definition for sharing this data over the Exchange Network for the first time.

Goal 2: Develop and release an enhanced Beach Notification plugin for ECOS OpenNode2

The ECOS OpenNode2 is the most widely used node software on the Network. Each data exchange is implemented as a distinct piece of "plugin" software. Currently, OpenNode2 offers a plugin for the Beach Notification v2.1 data exchange. The USEPA recently announced the release of the Beach Notification v2.2 exchange to support additional data elements.

The DEQ proposes enhancing the existing v2.1 plugin to be compliant with the new v2.2 schema. In addition, the plugin will be enhanced to include the new, optional data services defined in Goal 1 above. The enhanced version of the plugin will be released with a revised implementation guide to the OpenNode2 source code repository for use by other exchange network partners. Implementers would have the option of implementing the new services or using only the core functionality for beach notification data submittal to CDX.

Goal 3: Implement the sustained data flow of WQX and Beach Notification from Michigan's Beach data management system to USEPA

Currently, the DEQ beach program submits data manually on an annual basis to the USEPA as required by the BEACH Act reporting requirements. The DEQ proposes implementing the existing WQX OpenNode2 plugin and the newly-built Beach Notification plugin from Goal 2 above in the DEQ technical environment.

The DEQ beach data management system will be mapped to the WQX and Beach Notification schema. After completion of testing and verification activities, the exchanges will be implemented in the DEQ production environment. The flow of WQX and Beach Notification data will be regular and sustained, offering frequent (daily or weekly) updates of the USEPA WQX and PRaWN systems with the latest data from the DEQ system, improving the availability of data to the USEPA.

Since three other Great Lakes states use the same beach database as Michigan (Illinois, Indiana and Ohio), the mapping logic and code could be transferred to and implemented by these other states, should they wish to implement them. The implementation of these services beyond the DEQ is out of scope for this project, although these other states have expressed interest in obtaining and implementing these routines if this project is funded.

Table 1. Goals, Outputs, Outcomes, and Environmental Results to be achieved over the two-year project period: start date as early as August 1, 2013 and an estimated end date of September 30, 2014.

Goal	Outputs	Target Date	Outcomes
			Environmental Results
1. Design data publishing web services to the Beach Notification Data Exchange	a) Conduct data service use case analysis b) Develop draft data service definitions c) Review and finalize data service definitions and documentation d) Final Data Service Documentation	“a-c” by Nov. 2013 “d” by Dec 2013	<ul style="list-style-type: none"> •Updated definitions and draft of documentation •Defined list of data services for Beach Notification data flow
			<ul style="list-style-type: none"> •Data improvements and news shared with beach managers •Improve completeness and accuracy of environmental data
2. Develop and release an enhanced Beach Notification plugin for ECOS OpenNode2	a) Develop modifications to support v2.2 elements b) Develop modifications to support new data services c) Test modified plugin d) Develop documentation e) Release plugin and documentation f) Beach Notification v2.2 plugin g) Beach Notification v2.2 installation and configuration documentation	“a-f” by March 2014 “g” by April 2014	<ul style="list-style-type: none"> •Solutions for troubleshooting and documentation made available •Network community has access to updated plugin to support latest schema and new data services
			<ul style="list-style-type: none"> •New data tools and function introduced to beach managers •Improve completeness and accuracy of environmental data •Reduce burden and costs associated with data management and reporting •Provide high quality locational data to facilitate place-based approaches such as community-oriented initiatives and web based and mobile applications (e.g., MyBeachcast application hosted by Great Lakes Commission)
3. Implement sustained WQX data flow and Beach Notification from Michigan’s Beach data management system to the USEPA	a) Develop data flow components b) Test data flow components c) Implement data flow components d) Present sustained WQX and beach notification data flows during one of the USEPA’s e) Production sustained WQX and Beach Notification data flows. biweekly beach data conference calls.	“a-d” by May 2014 “e” by June 2014	<ul style="list-style-type: none"> •Explanation of data flow components and presentation prepared •High-frequency data submissions with reduced manual effort
			<ul style="list-style-type: none"> •State and local beach coordinators will be educated with the use of new data tools •Improve timeliness of complete and accurate environmental data •Reduced burden and cost for data delivery •Support improved environmental decision making by enhancing data access for environmental professionals and the public

Work Plan (Project Roles, Responsibilities, and Programmatic Involvement)

The tasks described in Table 1 are described in greater detail in this section. The DEQ (Dr. Shannon Briggs, project manager) will be the lead for all tasks and will work with staff from the Michigan Department of Technology, Management, and Budget (DTMB) that are familiar with eNode2.0 functionality and assigned to support the systems for beach data.

Dr. Briggs has worked with the Beach Monitoring program since 1999 and has been actively involved with the USEPA's Beach Monitoring and Notification program. She participates regularly on the biweekly beach data conference calls, helps plan and provide training at the USEPA's National Beach Conferences, and is a member, advisor, and Past-President of the Great Lakes Beach Association. Dr. Briggs is a leader in providing cost-effective tools for managing beach data for local and state programs.

Dr. Briggs will work with staff from the DTMB Web Team that have previously worked on Exchange Implementation. Dr. Briggs will work closely with a suitable contractor that has demonstrated successful Exchange Network experience. The contractor will be selected with an open bid process. Dr. Briggs will track and report progress towards the 3 goals as measured by the date of completion and description for each output. This information will be provided in reports to the USEPA on a quarterly and semi-annual basis. Dr. Briggs has successfully managed several projects funded by the USEPA for the past 10 years and met all required reporting deadlines.

Output 1.a) Conduct data service use case analysis

Dr. Briggs will perform an inquiry of various beach notification data stakeholders to determine what data services would be of most potential benefit to be made available via the Beach Notification data flow. Various data usage scenarios will be considered as part of this analysis. Dr. Briggs will ensure that each usage scenario is supported by the data elements present in the Beach Notification schema to ensure that the proposed data services are achievable given the data elements available.

Output 1.b) Develop draft data service definitions

Using the information gathered from the use case analysis, Dr. Briggs (with staff from the DTMB and suitable contractor) will develop a draft definition of proposed data services. The data service definitions will be thoroughly documented using the data service definition template provided in the Exchange Network Flow Configuration Document (FCD) Template published by Network governance. The service definitions will be augmented with narrative describing potential usage scenarios where the data service may be implemented.

Output 1.c) Review and finalize data service definitions and documentation

Dr. Briggs will circulate the draft data service definitions to beach notification data stakeholders for review and comment. Dr. Briggs (with staff from the DTMB and a suitable contractor) will consolidate, review and process all feedback received and incorporate the changes into a final data service definition document.

Output 2.a) Develop modifications to support v2.2 elements

Dr. Briggs and staff from the DTMB will analyze the changes to the Beach Notification v2.2 schema to determine how the plugin needs to be modified. Staff from the DTMB and a suitable contractor will then update the source code for the existing Beach Notification v2.1 plugin (available through the OpenNode2 project web site) to implement the new data elements introduced in USEPA's latest version of the Beach Notification v2.2 schema.

Output 2.b) Develop modifications to support new data services

Using the new service definitions produced during Goal 1 of this project, the plugin will be further modified to support the inclusion of defined data publishing services. This will make beach notification data available to network partners via the EN Browser or other ad hoc query mechanisms.

Output 2.c) Test modified plugin

The enhanced Beach Notification plugin will be tested to ensure it produces XML documents that are fully compliant with the v2.2 schema. The data publishing services will also be tested in the development environment to ensure they respond to all different defined query scenarios.

Output 2.d) Develop documentation

Since the plugin will be released to the Exchange Network community on the web based OpenNode2 source code repository, an implementation and configuration guide will be developed to guide potential implementers in implementing the plugin software.

Output 2.e) Release plugin and documentation

After finalization of the software and documentation, it will be released to the ECOS OpenNode2 source code repository for download and implementation by any Network partner.

Output 3.a) Develop data flow components

Next, Dr. Briggs and DTMB staff will map the internal beach database to the revised Beach Notification plugin and also to the most current version of the WQX OpenNode2 plugin staging database tables. The mapping will be used to guide the development of the data exchange routines. The routines will be developed in such a manner that they can detect new or changed data in an incremental fashion, ensuring that only the latest data is prepared for submittal to CDX for deposit into the WQX and PRaWN back-end databases.

Output 3.b) Test data flow components

The data flow components will be deployed to the DEQ test environment. Tests will be conducted to ensure that the components are operating as expected for both the WQX and Beach Notification data flows.

Output 3.c) Implement data flow components

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After completion of testing, the data flow components will be migrated to the production the DEQ technical environment. The flows will begin submittal of WQX and Beach Monitoring data in a regular, sustained fashion. The data flow will be monitored closely by Dr. Briggs and DTMB staff for a period immediately following the release to production to ensure it is operating as expected.

Output 3.d) Present data flow components

Dr. Briggs and a suitable contractor will present the data flow components and demonstrate the process for the submittal of WQX and Beach Monitoring data in a regular, sustained fashion during one of the USEPA's biweekly beach data conference calls.

Commitment (Re-Use existing EN tools and share new tools with EN partners)

The DEQ commits to reusing existing EN tools for this project and will search the Exchange Network Discovery Services or Reusable Component Services for existing tools. The Beach Notification plug in for the ECOS Open Node 2 as developed in this project by the DEQ will be registered with the Exchange Network Discovery Services or Reusable Component Services as appropriate.

Business Need

The DEQ has identified advantages in saving staff time and financial resources while providing high quality data by developing and releasing an enhanced Beach Notification plug in for the ECOS Open Node 2. The DEQ will implement the sustained data flow of WQX and Beach Notification from Michigan's Beach data management system to the USEPA. These improvements will resolve the annual delay in data submission from a state (Michigan) to the USEPA and provide high quality data on a daily basis. The USEPA completed major improvements for the BEACON website and timely data submission from states will further enhance the usefulness of this resource. The DEQ has not previously received an Exchange Network grant that supported this effort for an eBeaches data flow.