



Solicitation Information

January 15, 2019

RFI # 7598562

**TITLE: Department of Environment Management (DEM) -
Modernization of Permitting Program Databases in the Office
of Water Resources**

Submission Deadline: February 13, 2019 at 2:30 PM (ET)

Questions concerning this solicitation must be received by the Division of Purchases at gail.walsh@purchasing.ri.gov no later than **Monday, January 28, 2019 at 5:00 PM (ET)**. Questions should be submitted in a *Microsoft Word attachment*. Please reference the RFI / LOI # on all correspondence. Questions received, if any, will be posted on the Internet as an addendum to this solicitation. It is the responsibility of all interested parties to download this information.

SURETY REQUIRED: No

BOND REQUIRED: No

**GAIL WALSH
CHIEF BUYER**

Vendors must register on-line at the State Purchasing Website at www.purchasing.ri.gov

Note to Applicants:

Offers received without the entire completed four-page RIVIP Generated Bidder Certification Form attached may result in disqualification.

THIS PAGE IS NOT A BIDDER CERTIFICATION FORM

The Rhode Island Department of Administration, Division of Purchases, on behalf of the Department of Environmental Management (DEM), Office of Water Resources (OWR) is soliciting responses from qualified entities to enable DEM and Division of Information Technology (DoIT) to identify and assess options for acquiring a new database platform to replace an existing MS Visual FoxPro system used by regulatory programs in the DEM-OWR. The goal is to gather information regarding system solutions available through vendors who could provide either (1) a complete Commercial Off the Shelf (COTS) system with some customization or (2) services to work with the DEM/DoIT team to provide components of a system which would be integrated into the DEM database system referred to as Permit Licenses and Other Vital Environmental Records (PLOVER).

This is a Request for Information (RFI). No award will be made as a result of this solicitation. DEM and DoIT anticipate a separate state procurement action in the form of an RFP may result from review of the information being solicited in this RFI.

INSTRUCTIONS AND NOTIFICATIONS TO OFFERORS:

- Potential respondents are advised to review all sections of this Request carefully and to follow instructions completely, as failure to make a complete submission as described elsewhere herein may result in rejection of the proposal.
- Alternative approaches and/or methodologies to accomplish the desired or intended results of this request are solicited.
- All costs associated with developing or submitting a response to this Request, or to provide oral or written clarification of its content, shall be borne by the offeror. The State assumes no responsibility for these costs.
- All pricing submitted will be for estimation purposes only.
- Responses misdirected to other State locations or which are otherwise not present in the Division of Purchases at the time of opening for any cause will be determined to be late and will not be considered. The “Official” time clock is in the reception area of the Division of Purchases.
- In accordance with Title 7, Chapter 1.1 of the General Laws of Rhode Island, no foreign corporation shall have the right to transact business in the state until it shall have procured a Certificate of Authority to do so from the Rhode Island Secretary of State (401-222-3040). This will be a requirement only of the successful bidder (s).
- Respondents are advised that all materials submitted to the State of Rhode Island for consideration in response to this RFI will be considered to be public records, as defined in Title 38 Chapter 2 of the Rhode Island General Laws, without exception, and will be released for inspection immediately upon request, once an award has been made.

- The State of Rhode Island has a goal of ten per cent (10%) participation by MBE's in all State procurements. For further information, visit the web site www.mbe.ri.gov. To speak with an M.B.E. Officer, call (401) 574-8670.
- Interested parties are instructed to peruse the Division of Purchases web site on a regular basis, as additional information relating to this solicitation may be released in the form of an addendum to this RFI.
- **Equal Employment Opportunity (RIGL 28-5.1)**
§ 28-5.1-1 Declaration of policy. – (a) Equal opportunity and affirmative action toward its achievement is the policy of all units of Rhode Island state government, including all public and quasi-public agencies, commissions, boards and authorities, and in the classified, unclassified, and non-classified services of state employment. This policy applies in all areas where the state dollar is spent, in employment, public service, grants and financial assistance, and in state licensing and regulation. For further information, contact the Rhode Island Equal Employment Opportunity Office, at (401) 222-3090.

Request for Information

REQUIREMENTS AND DEADLINES FOR QUESTIONS AND RESPONSES

Please provide a description of your software's capability to address the Key Features and Future Enhancements as described in the Data System Requirements below. Please share any other information you feel the State should take into consideration as it pertains to any of the items below and any additional or modified system capabilities the State should consider.

Please include any screen shots, a URL, catalogs, etc. to assist in visualization of your system. The attachments will not count towards the page limit of your response however the State requests that any attachment provided be concise to supporting your response and not to inundate the review team with too many attachments.

Depending on the responses received to this RFI and how they align to the State's vision, the State may call upon a Vendor for a live interview and web demonstration to further understand the proposed software capabilities. If a Vendor is selected for a live interview and demonstration, the State will contact the vendor and schedule accordingly. We do not expect an in-person demonstration in Rhode Island but prefer a web demo. Any expenses incurred for a live interview and web demonstration with the State, will be at the Vendor's sole expense.

Submissions should be typed, single spaced on 8 ½" by 11" pages with 1" margins using Calibri or Times New Roman 12 font. Responses should be limited to twenty-five (25) pages. All pages of the Response are to be sequentially numbered in the footer, starting with number 1 on the first page of the narrative (this does not include the cover page or table of contents) through to the end, including all forms and attachments. The Respondent's name should appear on every page, including attachments. Each attachment should be referenced appropriately within the proposal section and the attachment title should reference the proposal section it is applicable to. Printed copy is to be only bound with removable binder clips.

All questions regarding this RFI must be in written form, pursuant to the terms & conditions expressed on page one of this solicitation.

Respondents desiring to reply to this RFI must do so, in writing, providing two (2) originals and one (1) electronic copy in PDF on a CD-R, by the date & time indicated on page one of this solicitation. (Note: USB Drives or other electronic formats, will not be accepted.) Submit responses to this RFI, marked **“RFI # 7598562: DEM Modernization of Permitting Program Databases in the Office of Water Resources** to:

RI Department of Administration
Division of Purchases, 2nd Floor
One Capitol Hill
Providence, RI 02908-5855

Note: Responses received after the above-referenced due date and time will not be considered. Responses misdirected to other State locations or which otherwise not presented in the Division of Purchases by the scheduled due date and time will be determined to be late and will not be considered. Responses faxed or emailed, to the Division of Purchases will not be considered. The “official” time clock for this solicitation is located in the Reception Area of the Department of Administration/Division of Purchases, One Capitol Hill, Providence, RI

Disclaimer

This Request for Information is solely for information and planning purposes and does not constitute a Request for Proposal. Responses will be considered public records in accordance Rhode Island general laws. All information received in response to the RFI and marked as “Proprietary” will be handled accordingly. Responses to the RFI will not be returned. Respondents are solely responsible for all expenses associated with replying to this RFI.

Purpose of This Request for Information (RFI)

The purpose of this RFI is to enable Department of Environmental Management (DEM) Office of Water Resources (OWR) and the Division of Information Technology (DoIT) to identify and assess options for acquiring a new database information system to replace an existing 30-year-old MS Visual FoxPro system used by regulatory permitting programs in the DEM-OWR. The goal is to gather information regarding system solutions available through vendors who could provide either (1) a complete Commercial Off the Shelf (COTS) system with some customization or (2) services to work with the DEM/DoIT team to provide components of a system which would be integrated into another existing DEM database system referred to as Permit Licenses and Other Vital Environmental Records (PLOVER) which is further described below. Based on our review of the RFI submissions, DEM may request a web demo of the system or components described in the submission. Our goal is to provide an evaluation of the possible cost-effective system solutions to the DEM Management Team to support future decision making on the approach to replace the existing OWR FoxPro database system. A separate procurement action is anticipated to obtain the products and services necessary to proceed with implementation; e.g. future Request for Proposals.

RFI – Database System Requirements

The solutions will be reviewed based on two phases and will be evaluated for the following **Key Features and Future Enhancements**:

Required Functionality Phase 1 – Key Features

Describe how well the product/solution serves the permitting program needs:

1. Centralized Site-based Information System - fit all permitting programs
2. Integration with other databases; i.e. PLOVER
3. Workflow Event Tracking – maintain existing enhanced workflow
4. Program Specific Home Pages
5. Document Management
6. Reporting
7. Data Exchanges with EPA – data sharing
8. Geographic Information System (GIS) Integration
9. Robust Search Engine(s)
10. Public Access

Required Functionality Phase 2 – Future Enhancements

Describe how well the product prepares the State to meet future requirements:

1. Best Management Practices (BMPs) Database
2. Post-Permit Compliance Monitoring
3. ePermitting (eApplications, eReporting, Inspection Scheduler)
4. Tablets Applications for Field Work
5. Publishing (Public Notices, Permits, email contacts)
6. Reporting Dashboards
7. Data flows to other state agencies i.e. Department of Health (DOH), Coastal Resources Management Council (CRMC), Department of Business Regulation (DBR)

The systems will also be evaluated based on how well the product or solution address required functionality described below;

1. Open Exchange – any of the platforms will be immediately rejected if open data exchange with the State is not possible. Proprietary containers of data or encrypted tables that do not easily allow data exchange will not be evaluated further.
2. User Experience – ease of use
3. Data Entry - Speed to enter and retrieve data
4. Time – time required for implementation
5. Reliability – consistent performance over time
6. Adaptability – ability to easily adapt to new workflows i.e. due to regulation changes
7. Development Costs – define software and programming cost range estimate
8. DEM Maintenance Resources and Costs – define maintenance cost range estimate
9. Legacy Data Migration – 30 years of data must be migrated so that staff and the public can search and review historical information. To assist in this effort, extensive documentation has been created to assist in this effort.

Goal of the New Database System

The primary goal is to fully replace the FoxPro systems in a timely and cost-effective manner and provide enhanced support to meet the immediate needs of the OWR permitting programs. The agencies are seeking a system that includes the **Phase 1 Key Features**.

Looking ahead, respondents are also asked to describe how their products or services would support **Phase 2 Future Enhancements** which have been identified as desirable system enhancements by the agencies. These include use of tablets for inspections, electronic receipt of permit applications, management of reporting or post permit monitoring requirements, online scheduling of inspections, publishing of public notices, permits and other documents via the web, reporting dashboards and data exchanges with other agencies including the US Environmental Protection Agency (EPA).

Background

The scope of the project involves replacing the existing functionality of the FoxPro system which supports the day to day operations of the following DEM OWR regulatory permitting programs:

- Freshwater Wetlands (FWW),
- Onsite Waste Treatment Systems (OWTS),
- Underground Injection Control (UIC),
- Stormwater and Water Quality Certifications (WQC)
- RI Pollution Discharge Elimination Systems (RIPDES) Construction General Permit (CGP).

The DEM-OWR is also required to populate certain federally mandated data systems drawing from data managed in the FoxPro system; e.g. RIPDES Stormwater permitting (National Pollutant Discharge Elimination System (NPDES-ICIS), and large-scale OWTS/UIC through the National Environmental Information Exchange Network (NEIEN) data exchanges. Information in the system is also routinely shared on the web via existing RI.GOV applications. Some functionality outside of the current FoxPro system (manual processes, or Access or Excel solutions), will be brought into the new system.

As noted above, in replacing its FoxPro database system DEM will consider both off-the-shelf products as well as collaborations with DoIT to integrate components of custom systems with the DEM PLOVER system which is currently utilized in other DEM permitting programs. The PLOVER system has been developed internally by DoIT in SQL with C # front end.

Description of Current OWR Systems

The current FoxPro system has individual database applications developed specifically for the Onsite Wastewater Treatment Systems (OWTS), Freshwater Wetland permitting (FWW), Water Quality Certification (WQC), Underground Injection Control permitting (UIC), and Complaint/Enforcement data. The current applications for each program area are described below along with additional needed system enhancements that have been identified by DEM as system requirements.

Onsite Wastewater Treatment Systems (OWTS)

In Rhode Island, the authority to permit on-site wastewater systems, including individual septic systems serving residential properties, is primarily assigned to DEM. Permitting activities are divided into three main stages: site-suitability, design review, and construction inspection. Annually, the program undertakes approximately 2,300 suitability assessments, 2,100 permit reviews and 4,500 inspections. There are currently 71,000 applications; each with an average of 15 events detailing the entire work flow for each application. The program has also developed a process for approving innovative septic system technologies, but the existing FoxPro database has not been able to meet all the needs to track these technologies. See Alternative Experimental (A/E) Technology Database requirement later in this document.

Requirements Not Currently integrated into the FoxPro System

There are two Access databases (described below) that have been developed outside of the FoxPro system but are key components of the permitting process. These are new component requirements.

Designer/Installer Reporting Tool (DIRT)

The OWTS program requires licensed designers and installers to install systems. The FoxPro system has two tables used to record licensed designers and installers. The DIRT tool was created several years ago to automate the licensing process. Extracts are pulled from DIRT and updated in the FoxPro databases when changes in licensing occur.

Enhancements to the licensing system will be needed to record designer proof of training for A/E systems and requirements for Continuing Education (CE) requirements. This is currently tracked manually.

Alternative/Experimental (A/E) Technology Database

DEM's Onsite Wastewater Treatment System (OWTS) Rules provide the basis for approval of Alternative/Experimental (A/E) Technologies in Rhode Island which began in the 1990s. An Access database was created to record vendors certified by DEM to distribute their products in RI. Some products have expiration dates, limits to the number that can be installed, and in some cases, complex post monitoring requirements. These are currently being tracked manually. Licensed designers and installers have training requirements to install these systems which is also currently being tracked manually.

A mechanism to record the type(s) of A/E approved system for an OWTS permit is required. Preliminary analysis of the data element requirements are as follows: date system approved, approved A/E technology(s), distribution

component and leach field. If a redesign is submitted for approval, the previous A/E technology data must be flagged as inactive.

Freshwater Wetland Permitting (FWW)

For a majority of the State, property owners who propose projects or activities in or near freshwater wetlands must obtain a permit from the Department pursuant to state Freshwater Wetlands Regulations. There are eleven DEM wetland application types with the application required dependent on the nature of the request. Through RI.GOV, the Department maintains an online searchable database of wetland applications to assist in determining if there is a file with specific information pertaining to a property.

The Program generally completes 500 to 600 application reviews per year. The database is used to track the progress and status of all reviews and is used to effectively distribute the workload to staff. The database contains applications dating back to the 1970s. There are currently 26,000 applications; each with an average of 20 events detailing the entire work flow for each application.

Water Quality Certification (WQC)

DEM administers a Water Quality Certification Program pursuant to Section 401 of the Clean Water Act. This program reviews projects that involve dredge, fill, or flow alterations as well as some coastal. WQC reviews are coordinated with other programs within the Office of Water Resources that may also have jurisdiction over such projects including wastewater treatment discharges under RIPDES, Underground Injection Control, and Stormwater Management. This program is often part of a joint permit review with the freshwater wetlands program and RI Coastal Resource Management (CRMC) projects. The WQC database contains applications dating back to the 1990s with approximately 1600 applications, 50% with joint approval of FWW and/or CRMC.

Stormwater Management Permitting

DEM regulates the management of stormwater runoff associated with construction and other land disturbance through several permitting programs. DEM has internally organized the review of the stormwater-related aspects of various permit applications into a single stormwater review. Typically, an application is reviewed to ensure requirements for low impact development and best management practices for stormwater management are employed to prevent and minimize impacts from stormwater runoff including but not limited to the discharge of pollutants into groundwater, wetlands, and surface waters such as rivers, streams, lakes, ponds or coastal waters. As of 2016, these application requests have been stored in the WQC database as there was no readily available information system available. Most of the application requests are part of a joint review with the FWW, WQC, RIPDES and/or UIC programs. In these cases, the single stormwater review process results in populating multiple database applications with the appropriate information in order to document compliance with the multiple rules that may apply to stormwater management for a project (federal and state).

To date, there are 389 applications submitted for UIC stormwater and RIPDES construction general permits. The simultaneous reviews of these applications is one of the major areas where more robust workflow models are necessary for the efficient management of these projects.

Underground Injection Control (UIC) Permitting

The DEM OWR implements the federally delegated Underground Injection Control Program through its broader Groundwater Discharge Program (GWD). With some exemptions, this program applies to the discharge of wastewater and stormwater into the ground. UIC permit database contains specific data on subsurface discharges that occur through structures such as drywells, galleys, drain fields among other subsurface systems. A facility may have more than one well system that requires permitting. To date, there are approximately 1600 facilities in the database. Some systems are required to report monitoring data.

Complaint/Enforcement Data

The FoxPro data system currently houses historical data on enforcement/complaint actions related to the OWTS and FWW programs dating back to the 1980s. In 1996, as part of a DEM re-organization, complaints and formal enforcement management was centralized and is now handled by the Office of Compliance and Inspection (OCI). This office is currently using the PLOVER system to track complaint and enforcement activities.

The OWTS and FWW FoxPro data was not migrated into the PLOVER system but is widely used as a historical search database. The new system requires legacy data to be migrated into the new system with an associated search tool. The new system must also integrate with the PLOVER enforcement database. Violations that occur during the permitting process, are referred to OCI for resolution and must be tracked by both the Program and OCI. The permitting program must be informed when the violation has been resolved. Violations identified by OCI that require an application be submitted to DEM to resolve a violation, must have the ability to track when an application has been submitted to the related Program.

Required Functionality Phase 1 – Key Features of the New Information System

1. Centralized Site-based Information System

Each program in the FoxPro system has its own “silo” application data system. Prior to 2012, applicants were required to submit multiple applications when more than one permit was required. As noted above, in 2016, efforts were made by DEM to streamline the process by creating a single stormwater application review for freshwater wetland, water quality certification, RIPDES CGP and UIC applications. The FoxPro system “links” data to populate multiple databases in order to satisfy requirements related to joint permits. FoxPro

legacy data will be migrated to the new system, with every effort to identify duplicate sites, but this may prove to be a challenging task. The new system will require a de-duping utility to assist in identifying duplicate sites.

Integrated site information is the foundation for a range of capabilities for environmental management issues such as joint permitting, consolidated reporting, targeted outreach, targeted enforcement, and geographically based management. The Environmental Protection Agency (EPA) has recognized the necessity to standardize the identification information on facilities/sites that are subject to federal environmental reporting requirements.

DEM has begun working with the concept of super sites to identify large sites such as a campus or complexes with related contiguous parcels. Examples are universities, hospitals, military and subdivision locations. Both super sites and parcels within the super sites (e.g. subdivided lots) can apply for permits. For example, subdivisions consisting of multiple plats and lots often begin an OWR permit application process as one super site with one permit application. Individual applications can be submitted for each lot within the super site once overall project approval has been granted. See attachment 1 - FoxPro Entity Relationship (ER) diagram and proposed ER diagram for a new system.

2. PLOVER Integration

The new system must have the ability to be integrated with the PLOVER system and PLOVER Public Search so that information for a single site can be reconciled and presented to the public and DEM staff. The PLOVER system has been developed internally by DoIT in SQL with C # front end. DoIT has worked with other consulting companies to integrate systems or components of systems into PLOVER. We need to link or identify and display a site or facility that has shared program interests.

3. Workflow Event Tracking

The system must track a permit from the application submission, staff review, public notices, hearings, inspections, permit issuance, post permit compliance monitoring to permit disposition; either expiration, renewal or completion. The system will feature the ability to pre-define the normal course of events, automatically assign tasks, generate documents (including correspondence, site inspection forms, and permit terms and conditions). Workflow templates are required for each application type with multiple outcomes for each task (the outcome is the next task). Each task contains the receipt date, start date, and completion date and a defined number of original days to complete the task (deadline). These key data elements are required to produce key performance indicators required by Management (See Attachment 3)

In addition, specific people and organizations are routinely notified of permits or steps in the process. Communication may be via a copy of a letter, a memo, electronic mail or updates to a staff "To Do" list. A task's "ownership" is identified in the template as being DEM or the applicant to count response time metrics as the applications move through the review cycle. Details can be added to tasks as needed to track other information for reporting that may occur as part of that task such as penalties, fees or wetland losses and gains.

The new system must have functionality embedded in workflow to complete most permitting and post permit monitoring and tracking work such as creating documents, sending emails, notifications to inhouse staff, applicants and/or their consultants.

Due to the complexity of coordinated permitting in OWR, where one Program may take primacy over the coordinated process, the new workflow must be able to link or refer workflows as the applications move through the process (similar to e sub-workflow). Each application will have its own workflow but some tasks must be referred or linked to another workflow. There are critical points during the review process where coordination between programs is essential. The workflow should provide the mechanism to assist in this coordination/notification.

Joint permits require several Programs to review a project. An application may require a freshwater wetland preliminary determination (FWW), a stormwater drainage systems (UIC) and a construction general permit (CGP). One Program is determined to be the lead which is referred to as “primacy”, and a project manager is assigned. The primacy program is responsible to determine what permits are required and what Program reviews are necessary. Primacy order is as follows:

Program	Permit
Freshwater Wetlands (FWW)	FWW Permits
Stormwater Program (SP)	Water Quality Certification (WQC)
Stormwater Program (SP)	Underground Injection Control (UIC)
Stormwater Program (SP)	Construction General Permit (CGP) under the RI Pollution Discharge Elimination System (RIPDES)

The Program with primacy is responsible for coordination of the review process and issues the final permit. In this example, the Freshwater Wetland Program is the primacy. The FWW project manager determines that a review for a construction general permit (CGP) and stormwater drainage systems (UIC) review is required of the Stormwater Program in addition to a FWW program review (three permits may be issued). Each Program (SP) conducts their review and issues their findings to the primacy program (FWW). During the review, additional information may be required of the applicant. All reviewer comments are collected, and the primacy project manager notifies the applicant and the reviews stop. When the additional information is received, the reviews begin again. Some type of notification should be sent to the SP reviewer indicating that a response has been received. This process continues until final permits are issued. (Reporting Requirements – see Attachment 3)

4. Program Specific Home Pages

Program specific home pages should be filtered to include only sites that have applications submitted to that program for ease of use. If joint permits exist, there should be a way to identify the other applications submitted for a joint permit. For example, a freshwater wetland application may also require a RIPDES Construction General Permit, water quality certification, etc. The FoxPro system has “linked” the applications, with each program

having its own workflow, but must coordinate with the program that has “primacy” as they move forward in their reviews. The new system should be able to handle this feature in a more seamless way.

DEM anticipates that each program’s homepage will be highly specialized. These Programs choose to have information rich home pages to increase the ability to see all corresponding data and decrease the number of mouse clicks necessary to get to information or perform work. Each home page should have a similar look and feel like the FoxPro forms (See Attachment 2). This form is data rich providing the user a single-entry point for both look up and data entry, tabs for related data entry, embedded links to view related files and to do lists. Ease of use is of the utmost importance.

5. Document Management

Imaging and Electronic Document Folder

Supporting documentation often accompanies a permit application. The new system should feature the ability to attach images and scanned documents to the electronic application folder, so that an authorized person would have the ability to view related documents. This feature will enable multiple people to review a file simultaneously.

Also, all information pertaining to the permit, including applications, site inspections, and supporting documentation, will be made available electronically to be viewed by multiple staff and the public (as appropriate). This application must allow for document search capability by site, application number, document type, description or title, date, author, and security level.

Integrated Word Processing/Electronic Documents

The system must provide the ability to generate documents using boilerplate templates. This feature should be available as a stand-alone feature and also be included as part of a workflow feature with the ability to send notifications or publish to the web.

6. Reporting

The new system should feature standard formatted reports, queries and custom (ad hoc) reporting available as .csv or excel files. The Department must have the capability to retrieve data across permit applications, programs, and divisions.

Reports are provided to OWR programs, Office of Management and Budget, the University of Rhode Island (URI), vendors, data exchanges with EPA and other parties. There are approximately 300 reports available from the FoxPro system. Attachment 3 contains a sampling of a few of the more complex report requirements.

7. Data Exchanges with EPA

DEM requires the ability to report to EPA using DEM's NEIEN node 2.0. While there are changes underway at the federal level, DEM anticipates specifically exchanging UIC data to EPA and eventually the RIPDES stormwater CGP data to ICIS. EPA has made a commitment, in partnership with the states, to develop data standards to facilitate electronic reporting for the national reporting systems. The EPA has already defined the data standards for the key data elements to identify facilities/sites. These data standards will be incorporated in the design of the new system for DEM. More information about the current NEIEN UIC data exchange can be found at <http://www.exchangenetwork.net/data-exchange/underground-injection-controls/> Be advised EPA is planning changes to this reporting process.

8. Geographic Information System (GIS) Integration

Because the system is based on identifying facilities or sites, DEM would like a GIS data entry tool to identify latitude and longitude and record it in the system. This is particularly important for wetland sites that often do not have an address. The DEM staff need the ability to search a Google map in satellite view to assist in locating a site. Once the site location is identified, the associated latitude and longitude will be saved into the database. In addition, the ability to use Google address matching to auto-calculate and populate locational information for historical data where an address exists is needed. DEM will also need the ability to pull extracts of information into ArcInfo GIS and pull information from the GIS into the database.

9. Robust Search Engine(s)

Described below are several search tools currently in use by the FoxPro System. The goal is to combine the best of all the tools into a robust search engine. The Freshwater wetland applications and wetland complaints use a location field to identify and store the location of the site. Many of these sites are undeveloped land and do not have an actual street address and often no specific street identifier. A FoxPro memo field is used to store the location information. Site location information can include intersecting streets, directional references and utility pole numbers. This location data field is a key search requirement. FoxPro is also used to assist the wetland reviewers in locating the site for their site reviews. The other databases usually have a specific street where the project is located.

DEM Global Search (DGS)

The DGS engine allows users to search one or several databases with the results compiled and displayed as a "list" with the ability to view all data for a site.

PhDbase Phonetic Search Tool

PhDbase, which was developed for MS FoxPro in the 80s, is a utility that allows phonetic searching of data. This feature is used by the wetland and OWTS application search engines.

Due to lack of quality data entry, a similar tool is a critical as there are often misspellings and inconsistent data entry.

GIS Location Mapping Tool

The ability to search a map (such as Google maps) using a known address to view sites falling within a radius is required. This search is helpful for inspectors to pinpoint a new application without a clear address or other locational information. They can also view other sites in the area to review before going into the field.

10. Public Access

The new system must support the public sharing of information via the Internet. Key searches currently available from the RI.GOV web site must be replicated. This must also be expanded to include the other OWR programs from the FoxPro system that are currently not available from the web site. Data currently available on the RI.GOV web site are:

The Freshwater Wetland (FWW) Data Search

Link: [RI.GOV: DEM Wetlands Permit Application Search](#)

The Onsite Wastewater Treatment System (OWTS) Data Search

Link: [RI.GOV: DEM Onsite Wastewater Treatment Systems application search form](#)

Required Functionality Phase 2 – Future Enhancements

Phase 1 focuses on capabilities that exist in the current FoxPro system and replacing that system “like for like” with perhaps minor enhancements. Phase 2 focuses on adding capabilities that are currently lacking.

1. Best Management Practices (BMPs) Database

DEM has an interest in understanding and evaluating the effectiveness of stormwater best management practices (BMPs) especially in relation to ambient water quality. Tracking details about stormwater BMPs is a desired new requirement. The goal is to capture BMPs required in the permits and the monitoring of those systems to assist DEM programs to monitor changes in water quality conditions in surface waters at various scales. This information is also of known interest to researchers. Data collection would include the general type of BMP, location, area treated based on drainage area calculations and type of area (impervious vs. pervious).

2. Post-Permit Compliance Monitoring

Permits have requirements that should be tracked. These can be monitoring, reporting, inspection or construction requirements; some require notification and others require data or corroborated actions. DEM has limited ability to track post permit requirements such as;

- Start/Completion of Construction
- “As built” identifying what is actually built
- Recording of Permits in Land Evidence Records
- Excavation and Grading Certifications
- Planting Completion Notifications
- Monthly Progress Reports
- On-site Inspection Requirements
- Analytical Monitoring Reports
- Deed Restrictions
- Operation & Maintenance monitoring

We are looking for both electronic submission for post permit information from permittees and for field staff to track the accuracy of this information via field inspections.

3. ePermitting

DEM would like to replace the existing FoxPro system with the intention of moving toward an electronic permitting system; moving as much business process as possible to a web-based environment for submittal of applications and communication to various applicants, collaborators and the public. It is recognized that this would involve review and revisions to existing business practices, staff training and potential changes in our technology base. As currently envisioned, the desired new system would support electronic filing of applications including large scale plans, electronic scheduling for inspections, emailing final permits and electronically collecting post permit monitoring information. Issues to be addressed in moving to ePermitting include but are not limited to the acceptance of eSignatures, ePlans and eDocuments, authentication and authorization and security requirements, the ability to work with large scale electronic plans in the office and the field and version control.

Currently OWTS designers/installers are required to call the DEM office to make appointments for DEM field staff to inspect their work as they move through construction. DEM would like a scheduling tool that would give applicants the ability to make appointments via the web and for that information to populate a calendar, To Do List and create the appropriate field inspection forms for the field staff.

4. Tablets for Field Work

DEM has growing interest is optimizing the use of tablets in field inspection work. In the OWTS program, the inspection form is used as a turnaround document that is provided to the installer in the field. There is interest in being able to automatically generate and print forms in the field as well as have the information integrated with the permitting database. Respondents should describe how well their system solution would support the use of tablets for accessing and transmitting information.

5. Publishing

DEM requires the ability to electronically publish public notices, and email public notices, requests for application information and final permits to all interested parties. The system must be able to retain email (contact) information for interested parties and town officials.

6. Reporting Dashboards

We would like to have the capability to publish public reporting information to a web site dashboard and create dashboard reports for internal DEM use. These have not been designed.

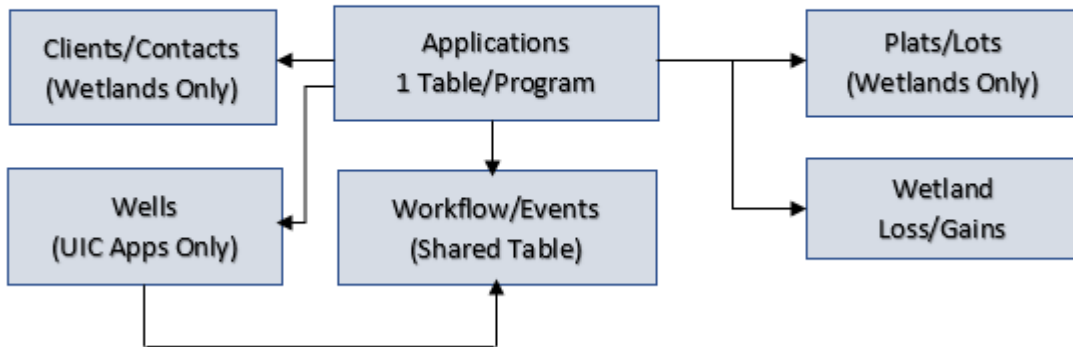
7. Data Flows to Other State Agencies

DEM anticipates the need to share data directly with other state agencies such as Department of Health (DOH), Coastal Resources Management Council (CRMC), Department of Business Regulation (DBR), a part of our permitting or water quality process. These data flows have not been designed.

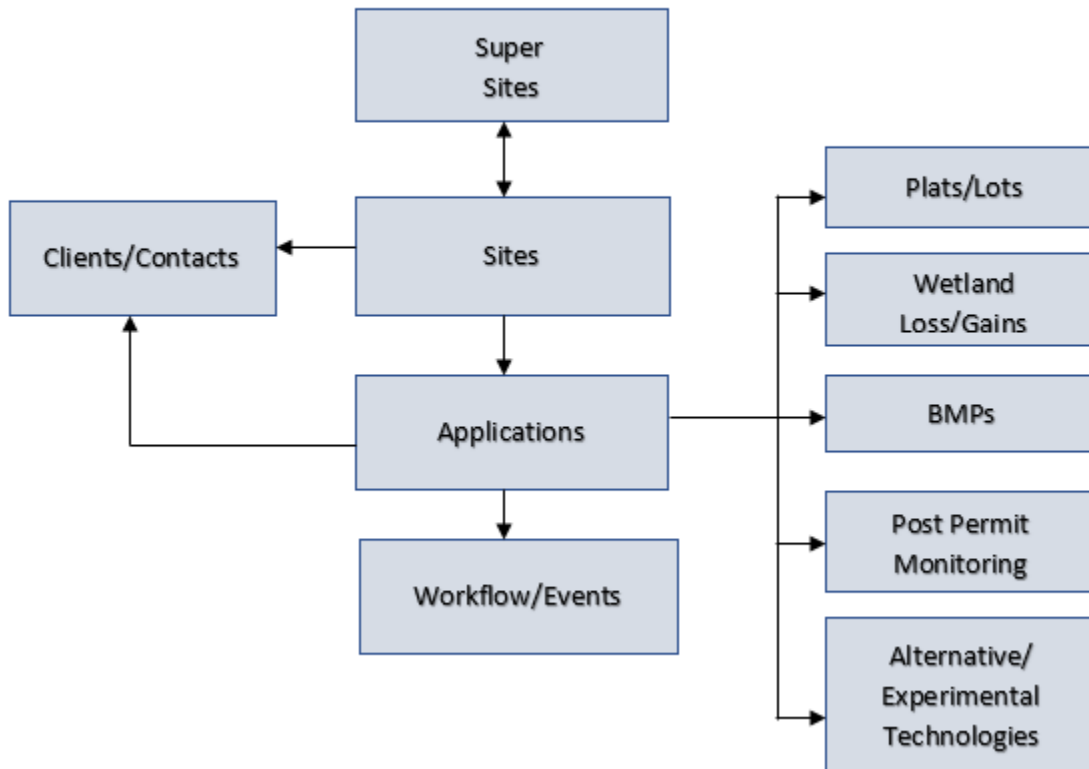
END

Attachment 1

Existing FoxPro ER Diagram (simplified version)



New System ER Diagram (simplified version)



Attachment 2

Form Toolbar (each feature described below)



Wetland Application Form

Applications
Log Entries
Plat/Lots
Loss/Gains
Summary

Application No. 17-0035 Town Providence

Applicant ID West River Commerce Center Annex, LLC
21989 Cumberland, RI 02864/

Cross Refs

Plat(s) 100,74

Lot(s) 15,48,368

Set / Clear XY Values X SPF Y SPF

Street 148 West River Street

Site Location
148 West River Street, approximately 315 feet west-northwest of West River Street (148 West River Street); approximately 615 feet west-southwest of Corliss and West River Streets; and approximately 90 feet west of West River Street; approximately 330 feet north-northwest of the intersection of Corliss and West River Streets; Assessor's Plat 100, Lots 15 & 49, and Assessor's Plat 74, Lot 368, Providence, RI.

Type of App. PREDET Copy Mailing Info to Clipboard

Project Name West River Center Addition

Project Type OFFICES/COMMERCIAL (DEVELOPED)

Project Amount sq ft

Application Reviewers: Admin. Supervisor MDW
Biologist DMK Engineer NP

Wetland Enforcement No. View Record

PGP I STW / WQC No. 17-036
 PGP II FWW/5.09D View Record
 STW Individual Permit

RIPDES UIC

Log Entries Recorded for this Application (Read Only): All Projects ToDo List Project Manager ToDo List My ToDo List

Code	Description	Actual Date	Target Date	Review Target	Staff	Notes
LANDRECOR	Permit Recorded in Land Evidence Record	05/16/2017	05/29/2017	/ /	DMK	memo
INSIGALT	Insignificant Alteration Permit Issued	05/09/2017	/ /	05/19/2017	MDW	memo
SUPREV	Application Review by Supervisor	05/09/2017	05/12/2017	05/19/2017	MDW	memo
BIOREV	Application Review by Biologist	05/08/2017	05/09/2017	05/19/2017	DMK	memo
SWREVIEW	Stormwater Review	04/24/2017	03/08/2017	/ /	NP	memo



Custom Find - used when multiple search criteria are needed to find a site.

Key Feature - This custom search can search the site location field (which is a FoxPro memo field). Many sites do not have a street address as it is usually undeveloped land. The site location field contains a detailed description of where the property is located which may include intersecting streets, pole numbers and plat/lot numbers. This field is used to search an embedded street name.

A FoxPro phonetic search utility (PhDbase) is used to not only search the site location field, but to also find matches that may not be found without the phonetic feature as the data is not always recorded with the correct spelling. This tool is extremely powerful and is used in all program custom searches.

Custom Result Form

The screenshot shows a window titled "Found List for Wetlands Applications". It contains a main table with columns: App No, City/Town, Street, App Name, App Org, and Project Name. Below the main table, there is a text area for site location and a smaller table titled "Log Entries Recorded for this Application" with columns: Log Entry Code, Actual Date, Target Date, Review Target, and Staff. Buttons for "Select" and "Return to Search" are at the bottom.

App No	City/Town	Street	App Name	App Org	Project Name
16-0023	Charlestown	Kings Factory Road	Jackson, Donald W.		
14-0170	Charlestown	Kings Factory Road	Botka, Charles		Hillside Acres
13-0019	Charlestown	Kings Factory Road	.	RI Department of Tr	Kings Factory Rd. Bridge #542
06-0262	Charlestown	Kings Factory Road	Botka, Charles N. & Sheila		Hillside Acres
05-0556	Charlestown	Kings Factory Rd and N	Botka, Charles		
05-0046	Charlestown	Kings Factory Road & N		C. Botka Constructi	

Log Entry Code	Actual Date	Target Date	Review Target	Staff
WEIVER	02/29/2016	03/01/2016	02/29/2016	CAH
WORDPROC	02/29/2016	03/01/2016	02/29/2016	KHM
SUPREV	02/29/2016	02/29/2016	02/29/2016	CAH
BIOREV	02/23/2016	02/22/2016	02/29/2016	KHM
SUPASSIGN	02/02/2016	02/01/2016	02/29/2016	CAH
SUPCOVER	02/01/2016	02/01/2016	02/29/2016	

The top grid is linked to the site location field (displayed directly below the top grid). The site location information and the associated events “Log Entries Recorded for this Application” grid is displayed below the results grid. As the user moves the cursor up and down the top grid, the data below changes allowing the user to view the results for each site displayed. Note that log entries (or events) are always displayed in descending chronological order to display most recent events at the top of the grid.

A picklist grid with incremental search and sortable columns for finding records quickly and easily is enabled when selecting this option. This is the most widely used feature when file number or applicant name is known.

The screenshot shows a dialog box titled "List" with a table containing application records. Below the table are buttons for "OK", "Cancel", and a checkbox for "Rows".

Application No.	Town	Applicant Name	Applicant Organization Name
00-0001	Warwick	.	F. Paolino Homes, Inc.
00-0003	Charlestown	Kohler, Nancy	
00-0005	Glocester	DePetrillo, Anthony	
00-0006	Cranston	Martino, Ron	

Filter control – user can filter the data and save filter criteria for future use.

Printer control prints an image of the screen

Navigates to first, next, previous and last record on the form.

Add New Records

Copy data – not used

Delete Record

Save or Cancel

Close Form

Attachment 3

Sample Reports

OWTS Application Status Report – this report requires program to capture the different key components of a permit. We look for all those applications that have been approved and then monitor when they enter the construction phase (STARTCON Column) and when they are conformed (CONFORM column). These entries are recorded as separate events and require programming to populate.

appno	app_type	cstat	alot	aplat	streetno	street	town	owner	oaddress1	omail	APPROVED	STARTCON	CONFORM
1427-1187	RPR	APPROVED	75	21	634	Park Avenue	Portsmouth	Drake Robert	634 Park Avenue	Portsmouth, RI 0	08-Jan-18		
1327-1273	RPR	CONSTRUCTI	73	21	624	Park Avenue	Portsmouth	Moriarty Dan	624 Park Avenue	Portsmouth, RI 0	14-Dec-17	14-Dec-17	
1327-0123	RPR	APPROVED	27	42	55	Bayside Ave	Portsmouth	Venaucio Pe	167 Mithells Lane	Middletown, RI C	28-Nov-17		
1627-0212	RPR	APPROVED	150	20	196 & 202	Riverside Str	Portsmouth	McLaughlin \	1640 Fish Road	Tiverton, RI 0287	02-Nov-17		
1727-0255	RED/REV	APPROVED	117	21	157	Seaconnet Bk	Portsmouth	Cummings J	2320 Summit Drive	Bridgewater, MA	18-Oct-17		
1527-0050	RPR	APPROVED	124	21	115	Seaconnet bl	Portsmouth	Ekeblad Russ	115 Seaconnet Blvc	Portsmouth, RI 0	07-Sep-17		
1336-0473	NBC	APPROVED	46	155	457	Atlantic Ave	Westerly	Payne John	46 Granite Street	Westerly, RI 0285	25-Aug-17		
1527-0172	RPR	CONFORM	7	15	15	Seaconnet A	Portsmouth	Bottari Elizab	57 Rhode Island Av	Newport, RI 0284	22-Aug-17	28-Sep-17	07-Nov-17
1723-0770	RPR	APPROVED	46	142	587	Shore Acres	North Kings	Kolling Karer	587 Shore Acres Av	North Kingstown	04-Aug-17		
1627-0379	RPR	CONSTRUCTI	164	69		North Road	Portsmouth	Tognetti Dav	8 Dominion Avenue	Bristol, RI 02809-	20-Jul-17	05-Aug-16	
1727-0269	RPR	APPROVED	168	24	48	Aquidneck A	Portsmouth	Concab Realtc/o	Diane Gotta	Lincoln, RI 02865	26-Jun-17		
0327-1419	RPR	APPROVED	165	24	30	Aquidneck A	Portsmouth	Fradj Joyce I	7 Hoot Owl Lane	Little Compton, I	06-Jun-17		
1719-0503	RPR	CONSTRUCTI	113	108SE	144	Green End Av	Middletowr	Duke Patricia	144 Green End Ave	Middletown, RI C	27-Apr-17		
1520-0290	RPR	APPROVED	48	1/J	1113	Succotash Ro	Narraganset	Browning Loi	1113 Succotash Roa	Narragansett, RI	13-Apr-17		
1333-0710	NBC	CONSTRUCTI	104	702	362	Seapowet Av	Tiverton	Natalie Pang	4 Jamaica Street	Jamaica Plain, M	11-Apr-17	21-Aug-17	
1427-1087	RPR	CONFORM	47	21	25	Cedar Avenu	Portsmouth	Regan Kevin	P O Box 6172	Providence, RI 0	30-Mar-17	14-Jun-17	28-Nov-17
1327-1651	RPR	CONSTRUCTI	80	29	29	Atlantic Ave	Portsmouth	DeSenna Ani	60 Pine Street	Rehoboth, MA 0	15-Mar-17	21-Sep-17	
1627-1308	RPR	APPROVED	31	21	15	Beach Street	Portsmouth	Chaves Jose	10 Manning Street	Hudson, MA 0174	24-Feb-17		
1427-0209	RPR	APPROVED	59	21	36	Blue Bill Way	Portsmouth	Ceem Prope	34 Wedgewood Dri	North Eaaston, M	16-Feb-17		
1336-1594	VAPPRED	CONFORM	51	143	10	Snowberry L	Westerly	Woods Regir	195 Hubbard Avenue	Stamford, CT 069	16-Feb-17	31-Aug-17	29-Sep-17

Freshwater Wetland Key Performance Indicators

Freshwater Wetland Application Processing Statistics	
Number of New Applications Received	
Number of Final Decisions	
*Average Decision Time (days)	
% decisions made <30 days	
% decisions made <65 days	
% that had 0 deficiencies Expect 45%	
% <30 days Goal 100%	
Number decisions <30 days	
Average decision time (days)	
% that had 1 deficiency Expect 35%	
% with 1 deficiency - decision made in <65 days GOAL 100%	
% with 1 deficiency - response received <21 days	
Average decision time (days)	
Average # days for applicant response to ALL deficiencies	
% of ALL applicant deficiency responses within <21 days	
% of ALL deficiency responses received within <60 days	
*Number of days from receipt of application until final decision (included back and forth time to applicant)	
**Number of days with DEM for review/decision (excludes time with applicant)	

Underground Injection Control (UIC) Program Reporting Requirements to EPA	
Permit Applications	Number of Permit Applications Received
Permit Determination	A1. Number of Individual Permits Issued - New Wells A2. Number of Individual Permits Issued - Existing Wells
Permit Not Issued	D. Number of Permits Denied/Withdrawn
Modifications Issued	E. Number of Major Permit Modifications Approved
Summary of Violations	B1. Number of Unauthorized Injection Violations B3. Number of Operation and Maintenance Violations B5. Number of Monitoring and Reporting Violations
Summary of Enforcement	A. Total Number of Wells with Enforcement Actions B1. Number of Notices of Violation
Number of Wells Returned to Compliance	A. This Quarter B. This Year
Summary of Enforcement Against SNC	B1. Number of NOV's B8. Number of other Enforcement Actions Against SNC Violations (LODs)
Number of Wells in SNC Returned to Compliance	A. This Quarter B. This Year
Well Closures	Involuntary Well Closure Voluntary Well Closure
Summary of Inspections	B2. Number of Emergency Response or Compliance Response Inspections B5. Number of Routine/Periodic Inspections
Summary of Enforcement	B. Number of Other Enforcement Actions
Summary of SNC	A. Total Number of Wells with SNC Violations B1. Number of Unauthorized Injection SNC Violations
Summary of Enforcement Against SNC	A. Number of Wells with Enforcement Actions Against SNC
Summary of Inspections	A. Number of Wells Inspected
Summary of Violations	A. Number of Wells with Violations

Joint Permit Process Statistics

RIDEM Office of Water Resources Stormwater Construction and 401 Permitting							
Permitting Data - 2017					Total per Year	FWW vs Others	
Primacy Permitting Program		Jan-17	Feb-17	Mar-17		#	%
FWW	FWW	9	9	4	22	22	39%
WQC	WQC	4	1	3	8	34	61%
UIC	UIC	4	2	2	8		
RIPDES	RIPDES	4	4	10	18		
Total # of All Stormwater Applications RECEIVED	Received	21	16	19	56	56	100%
Total # of All Stormwater Applications REVIEWED	Reviewed	28	28	27	83		
Total # of All Stormwater Permits ISSUED	Issued	17	16	16	49		
Average Monthly Decision Time for All Stormwater Construction Permits [days]	Decision Time (days)	62	80	98	80		

Stormwater applications may include review & approval by one or more permitting programs. Each application, listed by primacy program, is counted once.

Program:	Permit Type:	Description:
FWW (Freshwater Wetland Applications)	ENG/WQC	Wetland Stormwater Application
	FWW/9.05D	FWW formal WQ Review/Dredge Material in FWW
	PGP2	FWW w/ Fill >5000 sf
WQC (Water Quality Certification Requests)	STATEWQC	State Water Quality Certificate Request
	EA/EIS	Env. Assessment/ Env. Impact Statement
	IP/DP	401/Dredge Permit Request
	SWQC/DP	State WQC/Dredge Permit Request
UIC (Underground Injection Control Apps)	UIC_STW	UIC Stormwater Permit Review
RIPDES (Construction Grant Permit Apps)	CGP_STW	Construction General Permit Review

OWTS Alternative/Experimental Technology Report

RIDEM OWTS Alternative or Experimental Technology Approved Permit Count by Year																			
A/E Technology	< 2000	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
ADVANTECH	1	18	59	192	290	254	171	60	2										1,047
AX-20			5	6	4	69	182	330	440	459	306	302	323	288	380	325	287	376	4,082
AX-100						2	5	8	8	11	7	4	3	6	8	4	2	6	74
AX-RT															14	68	44	57	183
AX-RT-DEN															12	18	15	5	50
HYDRO-KIN															1	6	4		11
NAT-DEN	42					1										1	1		45
NAT-PRE	20	1		1															22
NATS	53	13	17	19	11	8	6	5	2	1		5			10				150
SING-D									1			1	9	23	46	11	28	35	154
SING-TNT																3	2	3	8
SING-TNT-D															7	40	2	2	51
FAST	28	72	88	136	81	60	31	31	23	38	25	28	17	11	19	18	10	12	728
SEPTITEC				2								3	9	33	40	47	45	51	298
INTERMSAND	20	20	16	5	2	1							2						66
RECIRC-SAND	26	17	11	5	1	1	1	4	2										68
AMPHIDROME										1									1
BIOBARRIER																	1	1	2
BIOC	13	2	1	1	1			2	1										21
BIOCYCLE				1								1							2
CHROMA															1				1
COMP	5	2		1				4	4	2		1	2	2		6	5	2	36
NITREX											1	3	4						8
PEAT			1	5															6
RUCK	21	11	3			1		1	1									1	39
SOILAIR								8				1		1					10
UV		5	5	6	9	7	5	5	8	3	5		2	2	1	1	12	13	89
WATLOO-BIO	11			2				1											14
WISCON	11		1																12
WK										3	3	13	10	5	1	2	1		38
Total Advanced Treatment Systems	251	162	206	382	399	404	401	459	492	518	350	368	405	378	546	543	468	584	7,316
INDRN-1A	374	419	538	581	680	753	645	607	560	444	418	549	627	590	615	636	597	770	10,403
INFILT	10	8	17	4	18	26	30	20	25	16	11	6	9	2	5	28	21	20	276
BOTOMSAND	11	19	74	266	332	334	335	332	340	348	242	245	263	212	270	282	238	273	4,416
DRIP		1																1	2
GEOMAT-12														2	4	3			11
GEOMAT-39													10	30	59	91	81	154	425
HOLD	8	2	2	3	3	1	3	1	8	9		3	2	7	22	24	17	13	128
PDOSEHTR	49	46	56	47	25	43	52	39	38	46	25	33	56	47	40	41	26	29	738
Total Leachfield Systems	452	495	687	901	1058	1157	1065	999	971	863	696	836	967	890	1015	1105	960	1262	16,399
TOTAL A/E TECHNOLOGY	703	657	893	1283	1457	1561	1466	1458	1463	1381	1046	1204	1372	1268	1561	1648	1448	1846	23,715