TO: **SOUTHERN NEVADA DISTRICT BOARD OF HEALTH**   DATE: June 25, 2009

RE: *Approval of Proposal for the VAX Replacement Solution from Decade*

PETITION #27-09

That the Southern Nevada District Board of Health *approve the attached business case (attachment A) for the VAX Replacement Solution.*

PETITIONERS:

Ed Larsen, *Information Technology Manager*
Glenn Savage, *Director of Environmental Health*
Scott Weiss, *Director of Administration*
Lawrence Sands, DO, MPH, *Chief Health Officer*

DISCUSSION:

Southern Nevada Health District has identified that deficiencies present in the existing systems supporting the Environmental Health (EH) Division are severely hampering their ability to provide service. The goal of this project is to implement Decade's EnvisionConnect, the recommended solution of choice, to replace EHAS and, thereby, realize substantial service level efficiencies.

Following the evaluation of Commercial Off the Shelf (COTS) solutions for the management of Environmental Health agencies, the District engaged Accent Business Services to develop a Business Case supporting the recommendation of the organizations and to help present the findings to the SNHD Board of Health. District personnel collaborated closely with Accent consultants to evaluate the current circumstances and risks, considering the pros and cons of each of their options.

FUNDING:

For fiscal year 2010, the approved Capital Budget included $1,000,000 for hardware, software and implementation costs. The following FY 2011 Capital Budget needs will be $800,000 for the hardware, software and implementation costs.

SN*h*D
Southern Nevada Health District

ENVIRONMENTAL HEALTH

Business Case for Southern Nevada Health District, Environmental Health Division

Last Updated: June 16, 2009

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1. PROJECT IDENTIFICATION

Environmental Health Data Management System Evaluation

Agency Unit/Program Area	Environmental Health Division
Executive Sponsors	Glenn Savage – Director of Environmental Health
Steering Team Members	Dennis Campbell - EH Manager - Solid Waste; Mars Patricio - Finance Manager; Steve Goode - EH Manager – Food; Eddie Larsen - IT Manager; Glenn Savage - Director of Environmental Health; Scott Weiss - Director of Administration
Project Manager	Steve Youles
Date Submitted	June 25, 2009

2. EXECUTIVE SUMMARY

2.1. BACKGROUND

Southern Nevada Health District has identified that deficiencies present in the existing systems supporting the Environmental Health (EH) Division are severely hampering their ability to provide service. The goal of this project is to implement Decade's EnvisionConnect, the recommended solution of choice, to replace EHAS (Environmental Health Administration System) and, thereby, realize substantial service level efficiencies.

Following the evaluation of Commercial Off the Shelf (COTS) solutions for the management of Environmental Health agencies, the District engaged Accent Business Services to develop a Business Case supporting the recommendation of the organizations and to help present the findings to the SNHD Board of Health. District personnel collaborated closely with Accent consultants to evaluate the current circumstances and risks, considering the pros and cons of each of their options.

2.2. CURRENT SITUATION

Environmental Health Division (EH) operations are supported by outdated technology that is limited in functionality, flexibility, usability, and future viability. Major concerns expressed include the following issues:

-   The system of record for most District Environmental Health business functions, EHAS, is a collection of older technology files maintained with considerable cost and effort by Information Technology on a VAX Mainframe computer.

-   Access to data is poor. The non-relational nature of VAX severely limits the ability to access historical information and prepare timely and effective reports.

-   Data quality is questionable. The system inflexibility and the absence of necessary data validation have resulted in incomplete and unreliable information.

-   EH cannot readily respond to internal or external information requests with Environmental Health data distributed across multiple applications, without ad-hoc reporting and data analysis tools, and without addressing the previously noted issues with data.

-   Current solutions provide incomplete functionality; therefore, many key processes are accomplished using off-system desktop tools, such as Excel spreadsheets, Access, and Word. Because they are "home grown" and desktop-oriented, these off-system tools introduce significant risk to critical District processes.

-   There is significant reliance on a single Contractor, John Stephens, a retired District IT resource for EHAS system operation and maintenance. The aging technology used to maintain VAX along with the heavy dependence on one individual for maintenance, makes replacement with a more modern and externally supported application all the more critical.

-   The Environmental Health Division continues to grow in program scope and complexity. The current systems do not promote additions or modifications to programs without significant time and IT intervention.

- No development or test environment exists for EHAS. Each additional program or expansion of an existing program requires customization to the Production database and application.

- Virtually none of the legacy Environmental Health systems is integrated. The non-relational nature of the database discourages interfacing; therefore, migration of data to external systems is largely manual.

2.3. CONCLUSIONS

This analysis concludes that the existing systems will not adequately support the District into the future. The review revealed gaps in available functionality, significant risks to future system viability, significant inefficiencies, and considerable manual effort on behalf of all parties to create, maintain, and share data. Efforts by Environmental Health and Information Technology staff have temporarily compensated for the noted deficiencies; however, further delay increases the likelihood that these issues will be exposed to the community at large.

An evaluation team, consisting of representatives from Environmental Health, Finance, and Information Technology unanimously concluded that the risks, costs and limitations of the current system make "doing nothing" unacceptable. The key reasons include:

- Core systems that are 20+ years old, and are built on legacy technology

- Significant costs and effort needed just to maintain the older technology

- Looming loss of critical support staff

- Serious functional limitations and extensive workarounds

- Inability to respond to upcoming legislated changes

- The increasing risk exposure caused by fragile systems

- Issues that will increase as the District grows

This project currently has substantial momentum and support. Previous efforts to evaluate and procure a Commercial Off the Shelf (COTS) solution have been unsuccessful with uneven participation and support. The recent software selection effort featured balanced involvement and a consensus recommendation of Decade's EnvisionConnect.

Although it is difficult to represent the exact efficiencies that will be introduced by the implementation of EnvisionConnect, it is the judgment of the team that a new system would eliminate the risks associated with the existing system, present significant opportunities to improve and enhance the level of service provided, prepare the Health District to respond to new legislation, and exploit functionality and access to data to realize greater effectiveness and capacity.

It is the recommendation of the team that the District: 1) dedicate the $1,800,000 for this project; 2) establish for FY10 a capital budget expenditure of $1,000,000 for the software, services and hardware required to implement EnvisionConnect, and 3) establish the remaining $800,000 capital expenditure for FY11, and 4) establish an annual budget item for the ongoing maintenance of EnvisionConnect.

3. BUSINESS NEED

3.1. BACKGROUND

The legacy system supporting tax administration, EHAS, was initially implemented within Southern Nevada Health District in 1989. Since this time, it has been continuously modified and enhanced to address the expanding demands of the District. The original technology on which EHAS is based has remained essentially unchanged.

Since 2001, the District has mounted several efforts to procure and implement a commercial off-the-shelf (COTS) Environmental Health solution. Most of these efforts were unsuccessful.

In 2003, the District contracted with Envision Technology Partners to develop a custom EH solution (WebEHS). The intent was to leverage WebIZ, an existing vendor product and the District's application for managing immunization registries. The data structure for WebIZ proved to be a poor match for the model required to appropriately support Environmental Health. This mismatch meant that each program required a greater allocation of IS and EH resources than originally estimated. Over the course of three years, only two programs were migrated from EHAS to WebEHS. In June 2006, the District formally withdrew the backing for WebEHS.

In early 2008, the District engaged Accent Business Services, Inc. (Accent) to facilitate a software selection project. A team representing stakeholders from EH, Finance, and IS collaborated with Accent to author and issue a Request for Proposals (RFP). A comprehensive evaluation resulted in the recommendation of Decade Software's solution, EnvisionConnect.

In July 2008, John Stephens, the VAX computer programmer and a key IS resource supporting EHAS, retired. Subsequently, the position was designated a Critical Labor Shortage Position by the Board of Health at the July 24, 2008 meeting, allowing Mr. Stephens to return on a limited contract basis.

3.1.1 Current Programs and Volumes

The Environmental Health Division administers 19 programs enforcing State and Health District regulations governing food service establishments; swimming pools and spas; hotels and motels; mobile home parks; child care facilities; schools; correctional facilities; tattoo, body piercing, and permanent makeup artistry; subdivisions; recycling plants; underground storage tanks; and hazardous waste management.

Headcount		163
Permits		~26,500
	General Food (including Plan Review)	~19,100
	Pool (including Plan Review)	~5,000
	Waste Audits	~2,400
Complaints		~6,500
	West Nile Virus	~4,000
	Illegal Dumping	~2,000
	Facility/Nuisance	~500
Inspections		~43,500

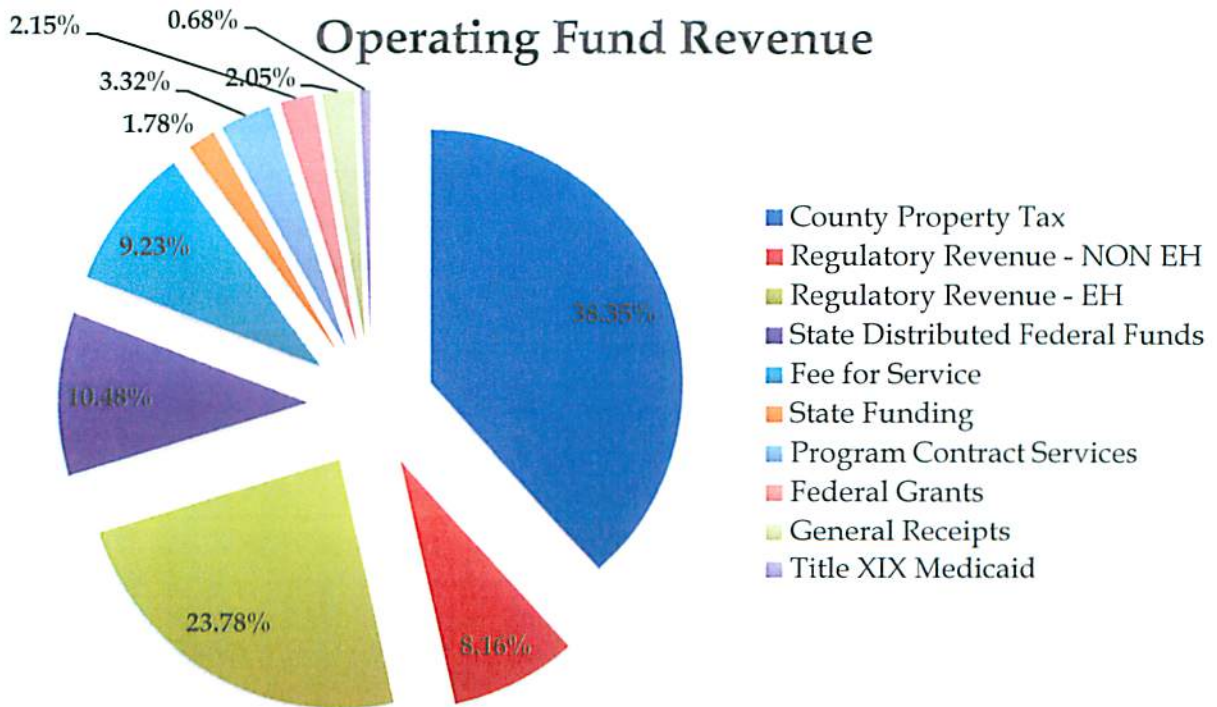#### 3.1.2 Economic Considerations

The recent economic downturn has considerably impacted Clark County businesses and community, which, in turn, is felt by the Environmental Health Division. In general, public health risks increase as the economy

falters. The activities under the purview of EH continue to increase, though marginally slowed and migrating from legal to illegal.
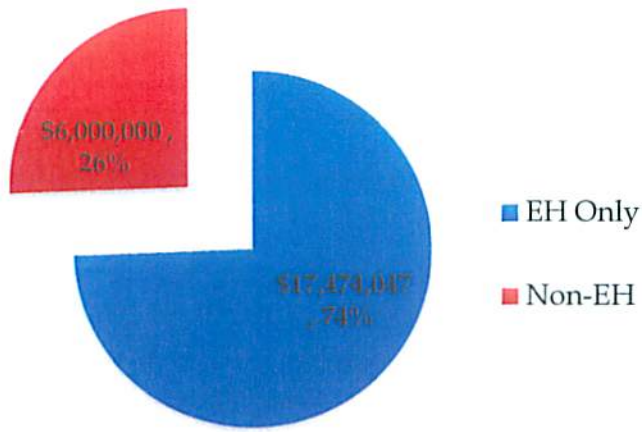
- **Decrease in the volume of applications for new facilities**, resulting in a reduction of the load on Plan Review.

- **Continued increase in the volume of new permits in the General Food Program**, though at a slightly reduced rate. Over the previous five years, the volume has averaged ~1,000 new permits per year. Projections for 2009 estimate growth at 600 new permits.

- **Increase in complaints for Solid Waste and Illegal Dumping**, resulting in an increase in complaint investigations.

- **Increase in applications for recycling centers, materials recovery facilities, and other solid waste disposal facilities.** This results in a greater load on Plan Review and a greater volume of inspections.

- **Reduced rate of collection on penalties assessed by hearing officers in Solid Waste.** Annual revenue from these penalties was estimated at $400,000, but current projections suggest something closer to $200,000.

The Environmental Health Division processed regulatory revenue of $11.3 million in the 2006-2007 budget year and will process an estimated $17.2 million for 2008-2009. If we assume the total capital cost of procuring and implementing EnvisionConnect be around $784,650, we can state that the risk mitigation cost (which would be spread across several years), is roughly 4.7% of a single year's regulatory revenues. The following financial information is intended to provide context for the subsequent risk scenarios. All numbers refer to information included in the Tentative Budget – Fiscal 2009-2010.

Operating Fund Revenue

- County Property Tax — 38.35%
- Regulatory Revenue - NON EH — 8.16%
- Regulatory Revenue - EH — 23.78%
- State Distributed Federal Funds — 10.48%
- Fee for Service — 9.23%
- State Funding — 1.78%
- Program Contract Services — 3.32%
- Federal Grants — 2.15%
- General Receipts — 0.68%
- Title XIX Medicaid — 2.05%

Regulatory Revenue

- EH Only
- Non-EH

$6,000,000, 26%

$17,474,047, 74%

Distribution By Division

$7,883,644, 10.74%

$15,697,086, 21.39%

$24,051,944, 32.77%

$25,762,849, 35.10%

- Nursing and Clinics
- Administration
- Environmental Health
- Community Health
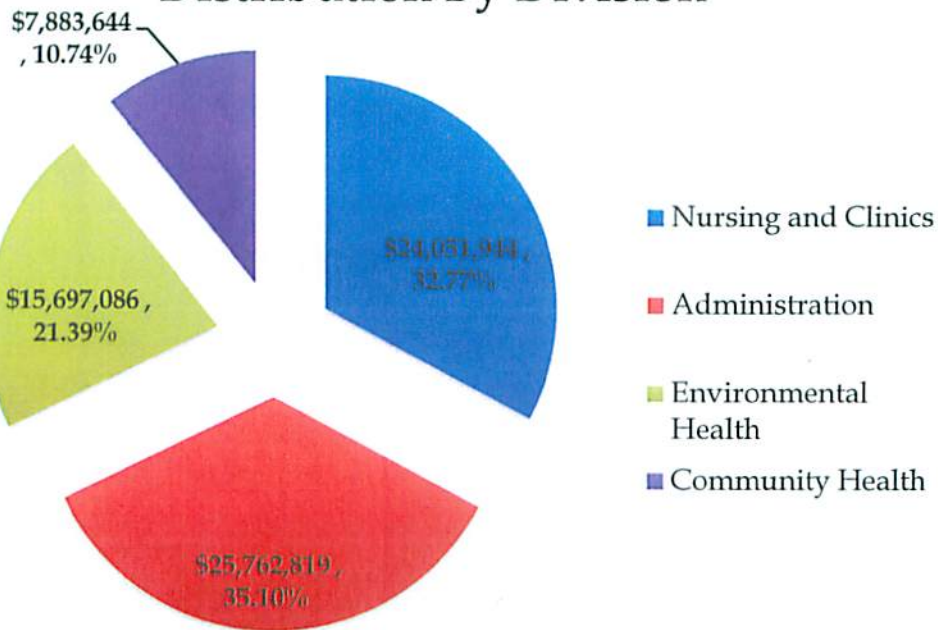
3.2. SERVICE NEEDS AND ISSUES

3.2.1   The current EH systems do not provide an adequate means for extending functionality or enhance service offerings to District customers. The lack of flexibility may prove to be a factor in terms of maintaining the current level of service.

3.2.2   There is limited ability to respond to internal and external information requests. This is highly dependent on IT expertise;

3.2.3   Existing systems do not promote online public access to data:

3.2.4   Existing systems do not provide a secure, cost-effective means to provide internet functionality to facilitate online information and forms requests and filing.

3.3. PROCESS NEEDS AND ISSUES

3.3.1   Existing systems do not provide or support productivity measurement tools;

3.3.2   Existing systems do not support the collection or reporting of EH program performance measures for budgeting, resource, and program management;

3.3.3   Current reporting capabilities are limited, restricting access by leadership to management data;

3.3.4   Lacking a single system of record, EH cannot publish and promote consistent processes or internal best practices;

3.3.5   All inspections and complaint investigations are paper-based, with limited information available in the field to support emergent activities;

3.3.6   Off-system tools are employed to compensate for functional gaps. They are generally user-created, contain redundant data, and are not maintained by any recognized support resource.

3.4. SYSTEM NEEDS AND ISSUES

3.4.1   EH lacks a single system-of-record; therefore, data is scattered across a number of non-integrated databases, spreadsheets, and other non-system tools. This distribution of data prohibits accurate and timely reporting and analysis.

3.4.2   The District must be able to accommodate emergent legislative changes. This ability is severely limited in the current environment.

3.4.3   The District cannot create new programs or modify current programs in a complete, accurate, and timely manner. Existing systems do not provide the flexibility and adaptability required.

3.4.4   EHAS current data structure does not encourage integration between other District applications. Lacking integration, the exchange of data between systems is primarily manual. This is most evident in financial transactions. For example, payments are received by cashiers, who produce a handwritten receipt, which are then manually posted to the District financial application

3.5. TECHNOLOGY NEEDS AND ISSUES

In general, the combination of diminishing resources, system workarounds, complexity and poor system documentation make EHAS exceedingly hard to support in the future.

3.5.1   IT wishes to reduce the reliance on those resources supporting the current solution. Knowledge of the processes/routines is not well-documented and generally resides with one individual who has expertise in that particular area of the system. Issue is further documented in 3.6. Impact of Loss of Critical IT Resource

3.5.2   EH is facing the sunset of technology with the VAX. Because this platform is rarely found in production today, maintaining the current system will be difficult.

3.5.3   Applications that reside on the VAX exist only as a single instance: the production environment. Other Health District applications, which reside on modern platforms, allow IS to designate additional environments for development and testing. In the case of EHAS, any and all modification must be made to the production system, which does not provide opportunity to sufficiently test. Every time the production system is modified, there are risks of unintended results including loss or corruption of data. In addition, updates cannot be "staged" in anticipation of foreseeable needs such as rate changes or accommodation of legislative changes.

3.5.4   The administrative overhead of the VAX has prevented IT resources from addressing other Health District projects and requests. The following are examples of projects delayed because the necessary IT staff was allocated to the support of the VAX:

- Replacement of ID Maker with EPI Suite
- WebEHS West Nile Virus. Performing necessary process improvements in WebEHS to accommodate West Nile Virus complaints.
- DSR module for WebIZ. Replacing STDMIS, an MS-DOS legacy application in Nursing, with Dynamic Source Routing (DSR) module.
- Laserfiche for ISDS upgrade to Laserfiche 7.2 / SQL 2005.
- Subdivision Review Database Enhancements. Modify data structure and interface to accommodate Improvement Plans.
- Env Health Mobile GIS. Vector Control in need of a mobile GIS solution.

3.6. IMPACT OF LOSS OF CRITICAL IT RESOURCE

The risk that presents the greatest exposure to SNHD is the departure of John Stephens, the contractor and former Health District employee, who administers the VAX. He has irreplaceable knowledge of the VAX platform, programming language, and EHAS data structure. In the event of his departure, IT lacks the requisite knowledge to perform certain tasks related to the VAX platform and EHAS.

3.6.1   VAX Administrator Responsibilities

The following EHAS application tasks are performed by VAX Administrator:

- Modification of programs to accommodate legislative changes (e.g. Virginia Graeme Baker Act)
- Updates to fee schedule
- Preparation of ad-hoc reports
- Initiates billing cycle for EHAS-based programs
- Facilitates collections activities for EHAS-based programs
- Administration of application security

Other key skills unique to VAX Administrator:

- Configures and manages VAX print queues (software, not hardware)
- Manages VAX user accounts (separate from EHAS security)
- Performs VAX hardware maintenance
- Configures parameters for daily and weekly back-up

3.6.2   Response

To address the loss of John Stephens' services, we expect the Health District will need to recruit and train a replacement; however, the pool of available mainframe support specialists is dwindling. Most of the

mainframe experts have retired or are headed for retirement, and are increasingly costly and difficult to find. Unfortunately, skilled programmers tend to avoid legacy technologies that can be career dead-ends.

It is possible to partially mitigate this risk by immediately beginning the recruitment effort for a replacement; however, the risk and overhead associated with maintaining outmoded technology will not recede. The pool of available resources will continue to diminish until the VAX is essentially unsupportable.

Response activities include the following:

1. **Recruit a qualified replacement.** The requisite skill-set is highly-specialized and difficult to find in the marketplace. In addition, to attract such a candidate, the Health District should expect to pay 30-50% above the salary for a comparable IT position. We anticipate a nationwide search lasting three-to-six months.

2. **Train the VAX Administrator.** If there is overlap between resources, the estimated duration for training duration is three months. With no overlap, the familiarization would be self-directed and hampered by the lack of documentation. In this case, the estimated duration is no less than one year.

3. **Address backlog of administrative activities.** The size of the backlog will depend upon the duration of recruitment and training but will likely require a minimum of three months to complete.

While the effort to recruit and train a replacement is underway, the Health District will be impacted in the following ways:

-   **Increased effort to administer programs.** Though most EHAS functionality remains intact in this scenario, certain administrative functions will be pushed to paper or will require duplicate entry into redundant data sources. The additional burden would be difficult to absorb by an EH staff already stretched to the limit of their capacity.

-   **Service reduction.** Because of the additional strain on EH to administer programs, it is likely that current service levels will be difficult to sustain. This would be evidenced in a reduced frequency/volume of inspections, complaint investigations, etc. It is not unreasonable to assume a reduction in services increases the potential for public health risks. For example, unapproved food sources will go unchecked and increase potential for an outbreak in a communicable disease.

-   **Inability to add or modify programs.** The fee schedule cannot be updated, enhancements to programs cannot occur, and reports cannot be created or updated. Legislative mandates will not be accommodated.

3.7. IMPACT OF FAILURE OF VAX

The VAX platform is generally considered very stable; however, as an aging technology, it is increasingly exposed to the risk of hardware failure. The impact of such a failure to EH operations is not insignificant.

Non-VAX-based operations and manual processes could continue. These include Plan Review, programs deployed to WebEHS, and face-to-face billing. For those EH activities managed on EHAS, however, the process would become entirely paper-based. It is estimated that the time to administer programs would increase substantially.

This additional workload would initially result in a decrease in services and an increase in overtime hours and associated payroll expenses. As recovery activities are performed, the Health District is increasingly exposed

to the risk of staff attrition, an increase in cost to recruit/train replacement staff, a decrease in revenue associated with the reduction of services, and an increase in the likelihood of public exposure.

Activities required to recover from VAX Failure (duration unknown) include the following:

1. **Replace Hardware.** The technology is near-obsolete and challenging to locate. Once procured, the environment must be reconfigured, including the re-creation of print queues.

2. **Purchase OS and Programming Software.** EHAS cannot function on an operating system other than that currently running on the VAX. Also, EHAS is programmed in a non-compiled language; therefore, VAX Basic, the programming language employed, must be present on the server. Neither piece of software is available from the manufacturer.

3. **Restore Data and Application.** A differential back-up of data is performed nightly with a weekly tape back-up. The weekly back-up includes a copy of the EHAS source code. This activity assumes both the OS and programming software were procured.

3.8. IMPACT OF POTENTIAL LEGISLATIVE CHANGES

EH must frequently respond to legislative changes. New legislation will almost always result in additional complexity and administrative overhead to the operations of effected programs. In addition, there is potential that systemic changes necessary to accommodate the legislation will prove beyond the capabilities of the current EH applications. Regardless, the existing systems only prove to hinder and do not facilitate the manner in which EH addresses legislative changes.

The team investigated the following three examples of recent legislative changes.

Example A) Virginia Graeme Baker Act: This federal act, effective December 19th, 2008, strengthens safety standards for the nation's swimming pools and spas. The act increased the average load of current Pool Plan Review from 500 pools to 1200.

Example B) Nevada Clean Indoor Air Act (NCIAA): This initiative, which became law on December 8, 2006, prohibits smoking tobacco in any form within indoor places of employment, including all indoor areas within restaurants and all areas of grocery stores. For EHAS to accommodate NCIAA, the VAX administrator required 80 programming hours at a cost of ~$6,400.

Example C) Energy Policy Act of 2005: This law is aimed at reducing underground storage tank releases to our environment. It significantly affects federal and state underground storage tank programs, it includes provisions regarding inspections, operator training, delivery prohibition, secondary containment and financial responsibility, and cleanup of releases that contain oxygenated fuel additives.

3.9. CONSEQUENCES OF INACTION

The following describes the most probable risks/costs associated with continuing with the current EH system environment. In general, a disruption caused by a system failure or departure of key IT resources in upcoming years is a distinct possibility. Though we cannot state specific risk probabilities, the risk factors exist and will grow more severe over time. There is no scenario where inaction transforms the existing systems to a low-risk, modern technology.

3.9.1   The dependence on the VAX programmer will not diminish but will likely force EH to revert entirely to manual processes for the administration of EH programs until a replacement solution is procured and implemented.

3.9.2   EHAS will become increasingly difficult to maintain and support. The technology is uncommon; therefore, fewer qualified resources are available. If the current support resource leaves, maintenance and enhancement will become progressively complex and ineffective.

3.9.3   Access to timely, accurate data will continue to be an issue that will impact the decision-making ability of all stakeholder organizations and other external agencies. If access to this data and quality of this data is not improved, it will introduce risk beyond operational and tactical concerns.

3.9.4   If a major system crisis occurs resulting in downstream issues, it will almost certainly become visible to the public. The team is concerned about the potential political consequences of SNHD tacitly accepting these risks by failing to move forward with a mitigation strategy. An intangible cost is the long-term loss of confidence in the Health District's management ability and capacity to handle fiduciary responsibilities.

3.10.   CONSIDERATIONS FOR TERMINATION

The project should be terminated if:

-    New information indicates that Decade is no longer viable as a company or presents such a risk that further engagement is unwise.
-    New information indicates that EnvisionConnect is significantly lacking is key functional areas and cannot adequately support Environmental Heath.
-    Vendor deliverables are of such a poor quality so as to render the product unusable or to suggest Decade will be unlikely to perform at the level required by the District.

4. BUSINESS OBJECTIVES

The primary business objective is to achieve greater operational efficiency and revenue enhancement while maintaining or improving accuracy and compliance for EH business functions. Alternatives for implementing a new EH system must address these business objectives.

4.1. SERVICE ENHANCEMENT OBJECTIVES

First and foremost, the solution must improve environmental health services to District customers through extensive access to data, superior customer service responsiveness and accountability, and greater assurance and data integrity. Specific objectives include the following:

- Improve public visibility, accessibility, and convenience of EH services via Web-based electronic and online resources, while maintaining appropriate control over publicly sensitive personal information;
- Increase the ability of the District to respond to internal and external requests for information;
- Create online public access to data that is appropriate to display, but is not available in a timely manner elsewhere;
- To the extent allowed by law and being cost effective, provide internet functionality for information and forms requests and filing, etc;
- Provide online bill payment functionality.

4.2. PROCESS IMPROVEMENT OBJECTIVES

- Integrate electronic images for property drawings, photos and other documents with data operations and system-wide access;
- Support the effective use of productivity measurement tools;
- Support the collection and reporting of program performance measures for budgeting and program management;
- Realize operational efficiencies such that District growth can be addressed with minimal increase to costs associated with fees and services;
- Improve reporting capabilities such that leadership can able to effectively and easily manage with accurate report information;
- Enhance computer assisted workflow management throughout EH operations, with context-driven electronic access to all of the data needed at each step of the flow;
- Utilize field data collection devices where it is productive to do so in order to reduce processing steps in the office;
- Provide more effective tools that allow EH to accommodate an increasing workload and assure operations consistency;
- Reduce staff hours spent on reconciliation and quality assurance cross-reference checking;
- Where possible, adopt industry-standard / best business practices provided by the System.

4.3. QUALITY ASSURANCE OBJECTIVES

- Provide assurance of data quality, consistency and accountability;
- Provide adequate and effective financial controls and audit capabilities;
- Improve efficiency and accuracy in the sharing of data between District divisions;
- Allow robust ad-hoc reporting capabilities;

- Provide audit trails and internal controls for data changes.

4.4. SYSTEM OBJECTIVES

- Consolidate Environmental Health programs and functions onto a central, flexible and highly-functional solution;
- Provide long-term utility, including the flexibility and adaptability to change with new laws, codes, methods, and practices and to respond to changes in a complete, accurate and timely manner.
- Facilitate integration such that interfaces are designed and implemented, improving links to other databases and applications, and automated in a manner that minimizes human intervention;
- Provide transparent integration with District's existing GIS system allowing for view and retrieval of location and EH information;
- Support an open-interface environment for integration or interfacing with other systems, such as the District's financial system and document imaging;
- Consolidate and/or replace functions of existing non-integrated databases, spreadsheets, reports and other non-system tools.

4.5. INFORMATION TECHNOLOGY OBJECTIVES

- Transition to a solution using modern, sustainable, and ubiquitous technology with proven standards for infrastructure and data management, providing a stable and expandable platform;
- Decrease the reliance on unsupported or uncommon technology by replacing legacy mainframe applications;
- Identify and reduce systemic gaps, overlaps, and fragmented/duplicated data;
- Accommodate the Microsoft Windows desktop environment and operate in the District's Information Technology (IT) Framework;
- Be constructed so EH data resides in a single, comprehensive database with minimal or preferably no duplication;
- Be architected using a server, data storage and application platform sufficient to handle significant growth in the number of accounts, transactions and concurrent users for the foreseeable future;
- Align with strategic direction of IT group;
- Support the use of digital field devices and provide the hardware and software interface capability with tablet PCs for data input (as the technology matures);
- Exceed current Internet and networking functionality;
- Ensure adequate and timely updating of network infrastructures.

5. PROPOSED SOLUTION / PROJECT PLAN

The recommended solution involves the replacement of legacy Environmental Health applications with a packaged EH system, Decade Software's EnvisionConnect, configured to meet the needs of SNHD's Environmental Health Division.

Specifically, the solution contains the following components:

Procure EnvisionConnect. This will involve validating business requirements with Decade and developing the necessary contract documents.

Develop business processes. In order to get maximum benefit from capabilities provided by EnvisionConnect, EH will need to develop its existing business processes. This will involve identifying gaps between current business processes and those expected by the selected system, then designing and implementing revised business processes.

Convert historical environmental health data. Select historical data from the current system, separate databases, and paper files maintained by EH are critical to analysis and operations going forward. Conversion of electronic files will involve automated conversion to EnvisionConnect's format as well as electronic and manual data cleansing. Conversion of paper files will involve manual entry of data in EnvisionConnect's format.

Implement EnvisionConnect with necessary custom functionality. In order to implement the selected EnvisionConnect as quickly as possible, the Health District will work collaboratively with Decade to configure the solution and to define and develop only the additional functionality required to support current EH processes.

Train EH personnel in EnvisionConnect functionality and revised business procedures. In order to leverage the expenditure on the new system as effectively as possible, formal training of all EH office and field staff will be undertaken to develop skills in the use of the new software and hardware and expertise in all new and revised business processes associated with the implementation of EnvisionConnect

Implement EnvisionConnect Portal and additional custom functionality. EH will delay the implementation of the Portal, selected custom functions, and non-critical reports until four-to-six months after the successful rollout of EnvisionConnect. Delaying provides EH the opportunity to fully adjust to systemic and process changes. Also, because the Portal is a significant customer-facing component, the additional time will allow supplementary quality assurance activities prior to exposing this service enhancement to the public.

5.1. RECOMMENDED APPROACH

The proposed solution places the District in the best position to fully address the needs, issues and risks presented in this report. By performing a comprehensive evaluation of available solutions, the District effectively reduced costs frequently associated with flawed similar efforts. The team concluded that purchasing EnvisionConnect, as contrasted with the other three alternatives, has the following major advantages:

- Solution provides the most functionality for the total cost of ownership;
- Project cost and total cost fit within potential budget;

- Solution is sustainable;
- Solution fits the strategic direction of District Information Services;
- Vendor is stable
- Solution provides EH with an operational system that meets is primary needs as soon as possible;
- Solution provides District leadership with the data and tools necessary to effectively manage the Environmental Health Division;
- Solution minimizes cost. Implementation of a packaged solution is typically much less expensive than custom development, as the development costs of the packed product features are effectively spread over many customers;
- Solution minimizes risk. Implementing a proven, packaged solution minimizes risk by lessening the likelihood of implementation delays and reducing the necessity for major modifications.
- EnvisionConnect is a mature product specifically developed to support environmental health agencies;
- The functionality has been proven at other agencies, under multiple legislative requirements;
- Solution allows the Health District to "share" development/maintenance costs with other jurisdictions using EnvisionConnect;
- Solution exposes the Health District to best practices realized by other jurisdictions using EnvisionConnect.

5.2. PROJECT MILESTONES AND DATES

The following represents the high-level activities and approximate dates/durations associated with the typical implementation of EnvisionConnect, assuming no major delays or gaps in functionality. With the requested additional functionality requested by EH, the project is expected to extend an additional six months.

Baseline Project Backlog	Estimated Duration
Remote Project Kick-Off (Est. August 31, 2009)	1 Day
SNHD Receives and Installs Hardware/ Software Install Smart Client on All Workstations	5 Days
Configure EnvisionConnect	30 Days
Configure EnvisionConnect Portal	15 Days
Onsite Confirmation and Planning Meeting	5 Days
Data Conversion (Multiple Systems)	60 Days
Configure Extender Interface (If Required)	5 Days
Configure Batch Payment Export (BPE) Interface	TBD
Configure Batch Payment Import (BPI) Interface	TBD
Custom Report Development	30 Days
Onsite System Training	6 Days
Remote System Training	46 Hours
System Testing	5 Days
Go Live (Est. April 5, 2010)	
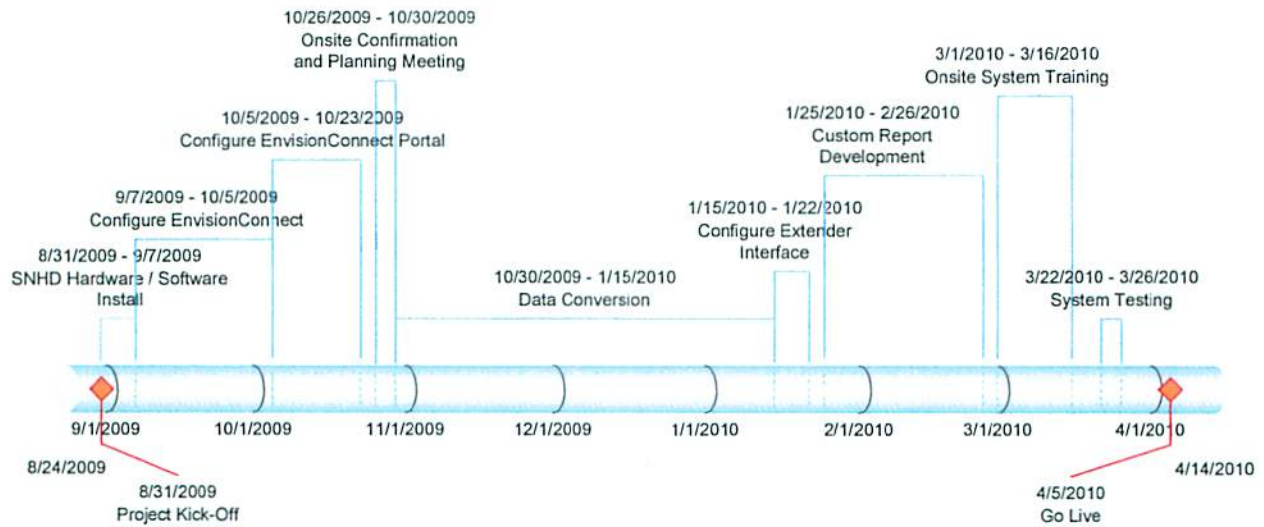
5.3. RESEARCH

The team analyzed processes and systems supporting Environmental Health operations at Southern Nevada Health District and the ability of various alternatives to address those needs. Activities included the following:

- The performance of a high-level assessment of stakeholder organization processes;
- Preparation of an inventory of the legacy application environment;
- Evaluation and reconciliation of SNHD EH operational requirements with those of similar environmental health agencies;
- Assessment of vendors providing COTS solutions for Environmental Health in terms of their ability to meet SNHD needs.

Accent observed that the SNHD Environmental Health requirements are unique among EH organizations supporting metropolitan areas of similar size in the following areas:

- SNHD administers a broader scope of programs;
- Plan Review services are broader and represent a greater portion of EH operations;
- Permits are consolidated in a dense geographical area;
- SNHD supports the permitting and compliance of thousands of limited-duration events in the Las Vegas area;
- Due to the high volume of tourism, the number of stakeholders is exponentially larger than the Health District boundaries indicate;
- SNHD operations are highly exposed, both locally and nationally, due to the prominence of Las Vegas as a tourist and event destination.

Research performed by Accent in collaboration with subject matter experts in all involved District departments served as the foundation for this business case.

6. OTHER SOLUTIONS CONSIDERED

All alternatives evaluated by the District are described in the following section. Each option was considered in regard to its ability to address the business needs or issues described previously in the document. If the option failed to fulfill the need or would produce a result in opposition to desired results, it was awarded a score of "0". If the option only partially addressed the need, it was awarded a score of "1". If the option would result in a significant improvement to existing processes or produced the best of available options, it was awarded a score of "2". Cumulative scores were calculated for strategic and tactical needs.

Option 1 – Maintain: this option consists of continuing the present arrangements for support and use of the VAX and additional off-system tools

Option 2 – Build: this option is predicated upon the concept of developing a custom application to replace (but not enhance) the functionality present in the present EHAS system.

Option 3: WebEHS Redux: this option consists of resuming the failed implementation of WebEHS as the vessel intended to replace the VAX, despite WebEHS's known shortcomings in terms of difficult workflow and lack of management reporting capability.

Option 4: EnvisionConnect: this option consists of purchase and implementation of EnvisionConnect to provide a single solution for all SHND's environmental health requirements.

The following table represents the comparative scoring of each option:

Business Need/Issue	Option 1 - Maintain	Option 2 - Build	Option 3 - WebEHS Redux	Option 4 - EnvisionConnect
Strategic (Cumulative)	○	◕	◕	●
Improved Access to Data	○	◐	◐	●
Improved Customer Service Responsiveness	○	●	●	●
Improved Data Integrity	○	◐	◐	●
Modern, Ubiquitous Technology	○	●	●	●
Ability to Respond to Internal/External Information Requests	○	◐	◐	●
Improve efficiency/accuracy in data sharing	○	◐	◐	●
Tactical (Cumulative)	○	◐	◕	●
Ability to Respond to Changes in Policy (Configurability)	○	◐	◐	●
Provides reliable data and tools for definition and measurement of KPIs.	○	◐	◐	●
Consolidation of operations to central solution	○	◐	●	●
Improved Reporting Capabilities	○	◐	◐	●
Positions District to address growth without additional staff	○	○	◐	●
Reduction in systemic gaps, overlaps fragmented/duplicated data	○	◐	◐	●
Decrease reliance on unsupported/obsolete technology	○	●	●	●
Reduction of off-system tools	○	◐	◐	●
Improved normalization, reliability and accuracy of data	○	◐	◐	●
Automated Interfaces (not requiring human intervention)	○	◐	◐	●
Short-Term Cost (lowest project cost)	◐	○	○	○
Long-Term Cost (lowest ongoing cost)	○	○	◐	◐
Overall	○	◐	◕	●

6.1. OPTION 1 – CONTINUE TO OPERATE EHAS

6.1.1   Description

The District continues to manage Environmental Health programs via VAX and WebEHS. The current applications are maintained, functionality is enhanced where required.

6.1.2   Evaluation

Business Need/Issue	Score	Comment
Strategic (Cumulative)	**0**	
Improved Access to Data	0	No change or improvement
Improved Customer Service Responsiveness	0	No change or improvement
Improved Data Integrity	0	No change or improvement
Modern, Ubiquitous Technology	0	No change or improvement
Ability to Respond to Internal/External Information Requests	0	No change or improvement
Improve efficiency/accuracy in data sharing	0	No change or improvement
Tactical (Cumulative)	**0**	
Ability to Respond to Changes in Policy (Configurability)	0	No change or improvement
Provides reliable data and tools for definition and measurement of KPIs	0	No change or improvement
Consolidation of operations to central solution	0	No change or improvement
Improved Reporting Capabilities	0	No change or improvement
Positions District to address growth without additional staff	0	No change or improvement
Reduction in systemic gaps, overlaps fragmented/duplicated data	0	No change or improvement
Decrease reliance on unsupported/obsolete technology	0	No change or improvement
Reduction of off-system tools	0	No change or improvement
Improved normalization, reliability and accuracy of data	0	No change or improvement
Automated Interfaces (not requiring human intervention)	0	No change or improvement
Short-Term Cost (lowest project cost)	1	Because this option does not consist of development or implementation effort, project costs will be minimal
Long-Term Cost (lowest ongoing cost)	0	Examination of current ongoing cost of maintaining the existing environment, this is expected to be one of the more costly options available.
Other: Familiarity		Resources are familiar with technology and processes.

The following table compares the annual cost of administering VAX <u>without</u> modification to the annual cost of administering a COTS solution in an Environmental Health agency of comparable size and business need. The District numbers below <u>do not</u> include the labor costs to the District for system workarounds, duplicate efforts and inefficiencies, which are considerable.

Entity	Current	COTS
Server Hardware Support	$15,000.00	$0
Software Support	$8,000.00	$209,400.00
Printer Support	$4,000.00	$0
Form Printing	$50,000.00	$0
IS Support (Internal)	$32,408.64	$98,208.00
IS Support (Contract)	$75,000.00	$0
Total	$184,408.64	$307,608.00

6.1.3   Risks

- The District will experience increased difficulty and expense associated with modifications/enhancements to support new business requirements or new government regulations due to older technologies.
- Departure of support resources (retirement, resignation, termination) will challenge the District to recruit replacements with the requisite experience.
- Unless a significant effort occurs to document the mainframe systems and supporting procedures, departure of support resources leaves the District without the knowledge required to perform some daily operations.
- Failure of the VAX will require Environmental Health to revert to a paper-based process until a replacement is built/procured is implemented.

6.2. OPTION 2 – REBUILD EHAS

6.2.1 Description

The District initiates a project to design, develop and implement a custom solution with the specific intent to replicate the functionality existing in EHAS and to provide flexibility necessary to address emergent needs.

6.2.2 Evaluation

Business Need/Issue	Score	Comment
Strategic (Cumulative)	**8**	
Improved Access to Data	1	Some improvement. Custom build introduces quality risk that may impact this area.
Improved Customer Service Responsiveness	2	As an application developed specifically to support District processes, Customer Service responsiveness should improve.
Improved Data Integrity	1	Some improvement. Custom build introduces quality risk that may impact this area.
Modern, Ubiquitous Technology	2	Expect significant improvement as the District migrates to modern technology.
Ability to Respond to Internal/External Information Requests	1	Uncertain. Potential to respond to information requests is greater with modern technology and higher quality data; however, the tools and reports required to leverage the data must be developed.
Improve efficiency/accuracy in data sharing	1	Some improvement. Custom build introduces quality risk that may impact this area.
Tactical (Cumulative)	**10**	
Ability to Respond to Changes in Policy (Configurability)	**1**	Some improvement. Custom build introduces quality risk that may impact this area
Provides reliable data and tools for definition and measurement of KPIs.	1	Uncertain. Data reliability should improve, but tools for defining and measuring K(ey) P(erformance) I(ndicator)s do not exist.
Consolidation of operations to central solution	1	Some improvement. Custom build introduces quality risk that may impact this area.
Improved Reporting Capabilities	1	Some improvement. Improvements to normalization should allow reports to be more efficiently created and more accurate; however, developing and testing reports will be a significant effort.
Positions District to address growth without additional staff	0	Expect the custom build will result in additions to staff to support the application.
Reduction in systemic gaps, overlaps fragmented/duplicated data	1	Some improvement. Custom build introduces quality risk that may impact this area.
Decrease reliance on unsupported/obsolete technology	2	Migration to modern technology should limit issues in this area.
Reduction of off-system tools	1	Some improvement. Any gaps in functionality will result in proliferation of off-system tools.
Improved normalization, reliability and accuracy of data	1	Some improvement. Custom build introduces quality risk that may impact this area.
Automated Interfaces (not requiring human intervention)	1	Some improvement. Custom build introduces quality risk that may impact this area.
Short-Term Cost (lowest project cost)	0	This option requires significant project expense over an uncertain period. District must address costs of recruiting additional resources, training existing resources, development of business-required reports
Long-Term Cost (lowest ongoing cost)	0	Modification of the solution (additional functionality,

		development of reports, and related support activities) will require the District to retain adequate support staff.

The following table provides a very rough estimate of the cost of a custom build of a system to support Environmental Health. We should assume that this system would be fairly rudimentary compared to a COTS solution, which will have evolved over time, with input, expertise and continuing funding from multiple organizations.

Phase	Work (Hours)	Duration (Days)	Cost
Scope	225	28	$ 14,231.25
Preliminary Analysis/Software Requirements	2105	90	$ 133,141.25
Complete Analysis/Software Requirements	3218	180	$ 203,538.50
Design	3215	210	$ 203,348.75
Development	9280	410	$ 586,960.00
Testing	3350	174	$ 211,887.50
Training	3002	150	$ 189,876.50
Documentation	756	250	$ 47,817.00
Pilot	506	150	$ 32,004.50
Deployment	120	5	$ 7,590.00
Post Implementation Review	24	3	$ 1,518.00
Subtotal			$ 1,631,913.25
Standard 50% margin of error			$ 815,956.63
Total			$ 2,447,869.88

6.2.3 Other Considerations

In general, the design and development of a custom application is rarely the best available option. In the event that District operations were determined to be sufficiently unique that a COTS solution could not possibly accommodate it, a custom build would be a viable option. These endeavors are frequently the most expensive and rarely produce the results available from a mature product produced by a software development company.

Our analysis suggests that the recent build of an application to support mileage tracking (WebMileage) met with reasonable success and addresses the specific business need. This was a very focused development effort, limited in scope of functionality and not intended to provide the flexibility to address emergent needs or changes in policy. The project lasted one year with a dedicated IT developer and an analyst/trainer. It required 1,928 hours of IT labor and 482 hours from the analyst/trainer to complete. Using a loaded rate of $50/hour, the cost to deliver WebMileage was ~$122,760. This cost does not consider any hours of involvement from other divisions for participation in business analysis, testing, and training.

Using the cost and effort to deliver WebMileage as a yardstick and assuming it represents 5% of functionality required to be built, it is estimated that it will cost the District $2.45 million to deliver a replacement to EHAS. Not considered in this estimate are the costs to recruit and train IT resources, cost

of non-personal services (hardware, software, supplies), or the development and delivery of training to end users.

6.2.4   Risks

- The quality of the end-result is uncertain. Factors affecting the quality include: participation of subject matter experts from each business area, the expertise of the technical resources supporting the build, and the time allotted for producing the application.
- The cost of the solution is uncertain. Additions to the scope of functionality, the effort to migrate data, the development of interfaces, and the number of resources allocated to the effort are possible cost impacts.
- Results will be unproven. Bug fixes and required enhancements are potentially expensive and difficult to anticipate.
- The duration of the development project is uncertain. Factors affecting the duration of the project include the scope of functionality and the number of resources allocated to the effort. Delivery of the solution may not occur in such a time as to avoid exposure to risk associated with technology and those supporting the technology.
- Does not incorporate best practices that will have been assimilated into a COTS solution. Organization will likely be able to support existing processes but find it difficult to improve processes and build efficiencies.
- The District will not be able to reproduce the full functionality of a COTS solution, which will have been funded by many agencies over many years. To equal the investment in a COTS solution, the District would need to spend significantly more money than identified above.

6.3. OPTION 3 – REINITIATE WEbEHS

6.3.1   Description

The District resurrects the WebEHS project with additional resources and greater sponsorship. All programs are migrated from the VAX to WebEHS as the system of record for Environmental Health.

6.3.2   Evaluation

Business Need/Issue	Score	Comment
Strategic (Cumulative)	**8**	
Improved Access to Data	1	Some improvement. Data model may limit the potential benefit.
Improved Customer Service Responsiveness	2	Some improvement in ability to respond, though not to the extent expected with functionality provided by COTS solution.
Improved Data Integrity	1	Some improvement. Quality of existing data and limitations of the data model may impact this area.
Modern, Ubiquitous Technology	2	Notable improvement. WebEHS is a .Net application running on SQL Server.
Ability to Respond to Internal/External Information Requests	1	Some improvement. Limitations of the data model may impact this area.
Improve efficiency/accuracy in data sharing	1	Some improvement. Limitations of the data model may impact this area.
Tactical (Cumulative)	**13**	
Ability to Respond to Changes in Policy (Configurability)	1	Some improvement. Modification to programs in the previous attempt to implement WebEHS has proven to be

		onerous.
Provides reliable data and tools for definition and measurement of KPIs	1	Uncertain. Data reliability should improve, but tools for defining and measuring K(ey) P(erformance) I(ndicator)s do not exist.
Consolidation of operations to central solution	2	Some consolidation of operations will occur, though not to the level expected with the procurement of a fully-integrated solution.
Improved Reporting Capabilities	1	Some improvement. Improvements to normalization should allow reports to be more efficiently created and more accurate; however, the effort to develop and test reports will be an effort similar to the custom build option.
Positions District to address growth without additional staff	1	Uncertain. If the programs are well-defined and the interfaces maintained, the District could see significant improvement.
Reduction in systemic gaps, overlaps fragmented/duplicated data	1	Some improvement. Integration of systems and the limitation of the data model could impact this area.
Decrease reliance on unsupported/obsolete technology	2	Notable improvement assuming all programs are successfully migrated off of the VAX.
Reduction of off-system tools	1	Some improvement. Gaps in functionality and the limitation of the data model might encourage some programs to continue use of off-system tools.
Improved normalization, reliability and accuracy of data	1	Some improvement. Integration of systems and the limitation of the data model could impact this area.
Automated Interfaces (not requiring human intervention)	1	Uncertain. Considerable effort would be necessary to design, develop, and maintain the interfaces. .
Short-Term Cost (lowest project cost)	0	This option requires moderate to significant project expense. With previous WebEHS efforts as a benchmark, the project cost for this option is comparable to a custom build.
Long-Term Cost (lowest ongoing cost)	1	Long term cost will be defined by the maintenance paid annually to vendors, effort required to modify programs, and human resources allocated to administering the solution.

6.3.3   Risk

- The previous effort to implement WebEHS resulted in the deployment of only two programs. The cost, accounting for payments to Envision and IT resources allocated to the project, was nearly $500,000. It is not certain that the District can deploy additional programs more efficiently to avoid similar expense. To provision the remaining 16 EHS programs, assuming some level of improvement in proficiency to reduce duration and effort, we estimate the cost would be comparable to a custom build.

- The WebIZ data model (on which WebEHS is built) is intended to support immunizations and not environmental health. The limitation of the data model impacts most aspects of the potential project including program definition, reporting, and interfaces. This will likely prove a handicap for WebEHS as a long-term EH solution.

- Without sufficient executive sponsorship and business participation, an inappropriate proportion of the responsibility for configuring WebEHS will reside with Information Technology. Though technologically capable, IT does not have the requisite environmental health expertise to produce a fully-realized EH application.

- The duration of the configuration effort and implementation is uncertain. Though likely more quickly realized than a custom-build, there is still risk that delivery would not occur in such a time as to avoid exposure to risk associated with technology.

- As with a custom build, WebEHS does not incorporate best practices assimilated into EnvisionConnect. Current EH processes may be sufficiently supported; however, it does not promote future improvement or efficiencies.
- WebEHS does not possess the full functionality of a COTS EH solution. To match the level of functionality available in EnvisionConnect, the District would need to invest considerable time and resources in customization to the core WebEHS product.

7. PROJECT OBJECTIVES

The proposed solution is intended to meet the business objectives and address those issues detailed previously in this document. Specific objectives of the implementation project include the following:

- Implement EnvisionConnect with core functionality by April 5, 2010;
- Deploy EnvisionConnect Portal by October 1, 2010;
- Implement with minimum impact to customers;
- Assess and plan for the on-going staffing needs necessary to maintain and operate the new system, including the knowledge, skills, and abilities of staff, and the number, training, and timing of staffing resources;
- Procure and install hardware necessary to support the application and mobile functionality;
- Administer training to all EH staff and associated Finance and IT resources sufficient to leverage available functionality and to provide for ongoing application administration;
- Forecast and prepare for future customers and expanded customer use;
- Accomplish implementation project within the approved budget.

7.1. CONSISTENCY / FIT WITH ORGANIZATION'S MISSION AND STRATEGIC PLAN

The recommended project aligns with the District's strategic plans in the following ways:

7.1.1 Environmental Health

- Promotes Environmental Health best practices;
- Consolidates EH administration to a single application.

7.1.2 Board Requests

- Provides new means for the request public records and the fulfillment of these requests (ref. Board Minutes, 09/24/08);
- Provides improved access to higher quality data (ref. Board Minutes, 10/23/08);
- Provides mechanism for measuring employee performance without imposing additional effort (ref. Board Minutes, 02/24/09).

7.1.3 Information Technology

- Provides a solution running on MS SQL Server, identified as the District's relational database standard;
- Allows IT to retire outdated VAX technology;
- Solution deploys on a ubiquitous platform, simplifying administration by existing IT personnel and limiting necessity to seek outside assistance for information technology functions.

7.2. ANTICIPATED BENEFITS

Both internal and external entities will benefit from the implementation of EnvisionConnect. In addition to the Environmental Health Division, stakeholders include the community at large, permit holders, District Finance, and District Information Technology. Many of the benefits to be recognized will result from analysis of the complete and accurate data maintained and made accessible by the new system. Other benefits will result from the automation of Environmental Health processes, facilitating the collection and distribution

of supporting information. Finally, benefits will accrue as the District migrates to a system that is readily supportable and technically viable long term.

7.2.1 Tangible Benefits

Because existing systems lack the tools required to measure productivity and produce baseline performance metrics, benefits from process efficiencies cannot be estimated. At this time, the quantifiable benefits are limited to the cost savings associated with the retirement of the VAX. This is currently estimated at $698,000 after five years as indicated in the table below.

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
VAX hardware support	$0	$15,000	$15,000	$15,000	$15,000	$60,000
VAX software support	$0	$8,000	$8,000	$8,000	$8,000	$32,000
Printronics printer support	$0	$4,000	$4,000	$4,000	$4,000	$16,000
Graphics West form printing	$0	$50,000	$50,000	$50,000	$50,000	$200,000
VAX programmer salary	$0	$75,000	$75,000	$75,000	$75,000	$300,000
Workstation TRP savings	$18,000	$18,000	$18,000	$18,000	$18,000	$90,000
Total	$18,000	$170,000	$170,000	$170,000	$170,000	$698,000

7.2.2 Intangible Benefits

Several anticipated benefits of the implementation of EnvisionConnect are significant though they may not directly result in measurable cost saving or avoidance of costs. These benefits include the following:

- **Service Level Improvements.** Above all other benefits to be realized, the Health District anticipates the level of service provided to the constituents will be considerably enhanced. Some of these service level efficiencies will be transparent to the public.

- **Public-Facing Tools.** The proposed solution delivers several tools to stakeholders outside the District. Leveraging functionality provided by the EnvisionConnect Portal, the District can web-enable Plan Review submissions, application submittal and approval, permit and complaint payment, and publishing results of inspections of permitted facilities.

- **Access to Timely, Accurate Data.** Workflows and District-defined data validation checks will ensure Environmental Health data is complete and correct. A library of out-of-the-box reports and integrated query tools facilitate management decision-making and the definition/measurement of key productivity indicators.

- **Operational Efficiencies.** Use of a common solution based on industry best practices allows EH to realize process efficiencies and to implement procedural standards. Resources will be trained on a single application.

- **Integration.** Adoption of open standards and technologies encourages integration and allows for a reduction of manual processes and redundant data entry.

- **Ease of Support of Technology Platform.** EHAS employs outdated technology and is difficult to maintain, let alone enhance. A modern technology platform benefits the District by easing support requirements and ensuring necessary modifications (e.g. legislative changes) can be readily accommodated.

- **Validation of Accuracy of Rates.** Data-mining tools provided in EnvisionConnect enable EH leadership to understand the cost to administer programs at a level of granularity impossible with legacy systems. Awareness of actual costs allows the Heath District to validate the current fee schedule and/or justify proposed adjustments to fees.
- **Standardized Processes.** EnvisionConnect will allow for standardization of processes with measurable milestones. This benefit is most acutely observed in Plan Review components. District leadership will be aware of a given task, its current status, anticipated time to complete, and associated resources.

7.3. COST / RESOURCE ESTIMATE SUMMARY

The following cost/resource estimate summarizes the anticipated personal service and non-personal service costs associated with executing the recommended project.

7.3.1 Personal Services

An **Executive Steering Committee** (ESC). This committee consists of the Director of Administration, Director of Environmental Health, Environmental Health Engineering Manager, Environmental Health Food Operations Manager, Environmental Health Solid Waste Manager, Information Technology Manager and Finance Manager. Their allocation will vary throughout the evaluation, but is estimated at less than 10% overall.

A **Project Team** comprised of subject matter experts to represent District IS, Finance, and the core EH processes. Their allocation will vary throughout the project, but is estimated at 10% overall.

A **Project Manager** to serve as a member of the Project Team, including participation in all noted activities, and to act as the coordinator of District activities throughout the implementation project. This individual should be allocated **25%** to the project.

The **Vax Programmer** to provide requisite knowledge of the VAX and EHAS data structure during the migration of data to EnvisionConnect. Overall allocation is estimate at 10% overall but with significant peaks immediately before and during data migration activities.

Decade will provide **Professional Services** during the initial implementation project and, if necessary, for subsequent phases. Services include needs analysis, configuration, training, data migration, interface development, design and development of custom functionality, and deployment support. Decade currently estimates this at 7,869 hours of labor at $126/hour.

7.3.2 Non-Personal Services

Hardware, including

- Panasonic Toughbook laptops to support field activities on EnvisionConnect. Includes extended warranty and related accessories (docking station, batteries, AC adapter, carrying case).
- AirCard to support mobile access to production database while in the field.
- Field printers to support generation of necessary reports while mobile. Includes extended warranty.
- Dedicated Web server for computer-based training

Software, including

- EnvisionConnect

- EnvisionConnect Remote (mobile application)
- EnvisionConnect Portal (application to extend online services to external customers)
- Extender Interface Tool
- Mobile Vector Control Management (mVCM)
- Joomla Learning Management System (to support computer-based training)

7.3.3 Costs to External Organizations

We anticipate no costs that need to be incurred by external organizations.

7.4. DETAILED COST / RESOURCE ESTIMATE – PERFORMING ORGANIZATION

The following cost/resource estimates represent those costs and resources associated with the implementation of EnvisionConnect (rough order of magnitude). The allocations noted above are used to estimate hours.

7.4.1 Personal Resources

Resources	Hours	Rate	#	Extended
Project Manager	520	$47.22	1	$24,554.40
Team Members	208	$44.10	5	$45,864.00
Executive Steering Committee	624	$62.95	6	$39,280.80
Professional Services (Decade)	7,869	$126	1	$991,548.00
VAX Programmer	208	$80	1	$16,640.00
Personal Resources Total				**$1,117,887.20**

Assumptions:

- The duration of the implementation project will be one year
- Project Team consists of five team members, not including the Project Manager
- Loaded Rate for Project Manager is $47.22/hour
- Loaded Rate for Project Team resources is $44.10/hour
- Executive Steering Committee consists of six team members
- Loaded Rate for Executive Steering resources is $62.95/hour
- VAX Programmer (Contracting) will be allocated 10% of the time for assistance with data migration and translation of business rules

7.4.2 Non-Personal Resources

Resources	Extended
HARDWARE:	
Panasonic Toughbook laptop (x 110)	$440,000
Panasonic Toughbook extended warranty	$22,000
Ruggedized laptop accessories	$44,000
AirCard	$5,500
Field printer (x 110)	$27,500
Field printer extended warranty	$2,750

Hardware Subtotals:	**$541,750**
SOFTWARE:	
EnvisionConnect (main application)	$138,600
EnvisionConnect Remote (field application)	$69,300
MS SQL Server 2005 Enterprise license	$25,000
ESRI Map Objects 2.4 (x 10)	$1,000
Crystal Reports XI Server	$7,500
Crystal Reports XI maintenance	$1,500
Software Subtotals:	**$242,900**
Non-Personal Resource Total:	**$784,650**

7.5. DETAILED COST / RESOURCE ESTIMATE – EXTERNAL ORGANIZATIONS

No costs or resources from external organizations are anticipated for the implementation project.

7.6. COST / BENEFIT ANALYSIS

As noted previously, the benefits of the proposed project are qualitative and are not expected to provide a directly measureable return on investment. All costs associated with the project will be realized within nine months of initiation. Considering both of these factors, a traditional cost/benefit analysis is not warranted at this time and would provide little value in determining the value of the endeavor.

7.6.1   Benefits Summary

As indicated in 7.2. Anticipated Benefits, only savings associated with the retirement of the VAX are included in this analysis. Additional tangible benefits are expected to be realized as a result of the implementation of EnvisionConnect but cannot be measured at this time.

|	Year 1	Year 2	Year 3	Year 4	Year 5
VAX Retirement	$18,000	$170,000	$170,000	$170,000	$170,000

7.6.2   Cost Summary

With this project, the Health District is making an investment of approximately $1.8 million to implement, configure, and populate EnvisionConnect. Annual costs for operation and technology updates are estimated at $234,400.

	Year 1	Year 2	Year 3	Year 4	Year 5
Non-Personal Subtotals:	$784,650	$234,150	$234,150	$234,150	$234,150
Personal Subtotals:	$1,055,821	$17,800	$17,800	$17,800	$17,800
Total Estimated Cost	$1,840,471	$251,950	$251,950	$251,950	$251,950

7.6.3   Cost/Benefit Analysis

Using the information presented above, the table and chart below directly compare the estimated costs and anticipated benefits of each of the five years following the beginning of system implementation. As shown in Year 1, costs substantially exceed benefits. For each subsequent year, however, the net cost equals approximately the expense for one full-time equivalent employee. Once implemented, process efficiencies are expected to be realized such that an increase in services (notably inspections and complaint investigations) will offset the indicated net cost.

	Year 1	Year 2	Year 3	Year 4	Year 5
Costs:	$1,840,471	$251,950	$251,950	$251,950	$251,950
Benefits:	$18,000	$170,000	$170,000	$170,000	$170,000
Net Cost:	($1,822,471)	($81,950)	($81,950)	($81,950)	($81,950)

Cost/Benefit Analysis:
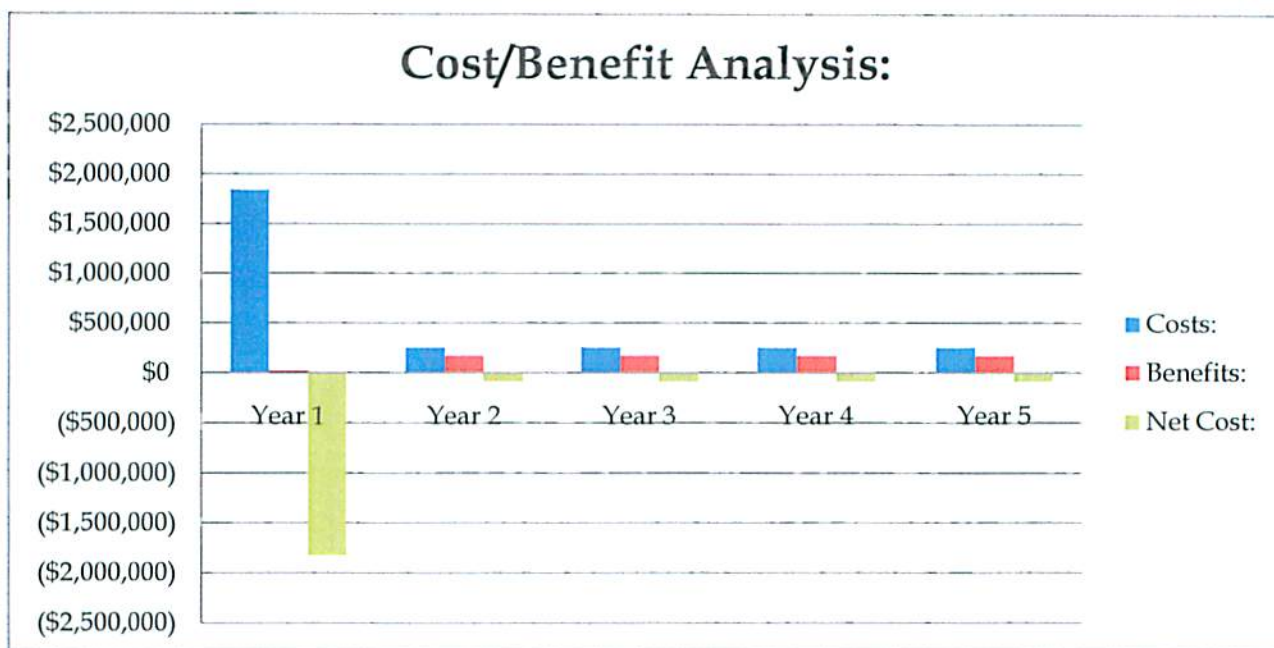
7.7. SPECIAL FUND SOURCES

No special funding sources are required for this project.

7.8. RISKS

The following risks represent those with some potential of occurring while engaging in the recommended implementation of EnvisionConnect.

The risk ratings provided are based on information available and the current understanding of the business environment. These ratings have been provided for comparison purposes only. They are subjective and are intended to be a relative measure of risk at this point in time. As the project progresses, these risks, their ratings and mitigation approach will be revised to reflect knowledge and changes in circumstance.

Risk ratings are assigned according to the following scale:

- 5 indicates a very high risk – this risk is very likely to occur and will have a large impact.

- 4 indicates a medium- high risk – the risk may be likely to occur with a significant impact
- 3 indicates a medium risk – this risk is likely to occur and will impact project scope, schedule, cost, or quality.
- 2 indicates a low-medium risk – this risk may not be very likely but if it did occur would have a significant impact, or the risk is likely to occur but the impact would be more significant
- 1 indicates a very low risk – this risk is not likely to occur and if it did, impact would be minimal

Risk Category and Comments	Risk Rating
CUSTOMER RISK	**3**
1. Lack of a Change Management Strategy/Plan to ensure a smooth transition from the "as is" to the "to be" business operating environment. 2. Inaccurate data due to implementation and data conversion errors 3. Lack of internal customer buy-in and resistance to change.	
CONTRACT RISK	**3**
1. Software and Integration Services contracts not adequately negotiated to offer enough remedy and protection for the District. 2. Terms of contract are so unfavorable to vendor as to disincent their participation in the project	
PROJECT SCHEDULE RISK	**4**

1. Unrealistic timeline
 2. Scope of the project is not completely defined
    • Required work is missing
    • Scope creep
    • Confusion among project team members
    • Project delays
 3. Scope of the project is not properly managed
 4. Decision making is not timely enough in the context of project timeline
 5. The actual effort may be higher/lower than initially estimated
 6. Business requirements are not properly defined
 7. Project resources (vendor and key Health District staff) are not available as planned
    • Vendor juggles resources for other projects/clients
    • Vendor and key Health District staff might become unavailable due to attritions, reassignments and unplanned leaves
    • Vendor and/or Health District assign unqualified resources for the job
    • Key Health District staff need to perform their regular duties in addition to project implementation
    • Resource and backfill strategy/plan not in place
 8. Training strategy/plan is not in place or not effective for the business users.
 9. Technical environments not setup in time. Some of the factors that might cause delays include:
    • Prolonged contract negotiation with hardware vendors
    • Delay in finalizing hardware solution
    • Hardware vendor's response time and availability of stock on hand
 10. Functional and system tests strategy/plan are not adequate
 11. The data quality on the source systems is of a poor quality requiring multiple rounds of data	

migration test runs; thereby leading to a delay in data migration.	

PROJECT DURATION RISK	3

1. If project duration extends beyond estimate, it could result in any of the following:
   - Increase exposure to risks associated with aging technology
   - Drive up the cost of the project.
   - Cause team members to lose project momentum and focus.
   - Compete with other Health District initiatives and resources.
   - Change key project members due to attrition, transfers, or leaves.
   - Impact morale of key project members due to heavy workload for the extended period of time.
   - Increase risk of project being discontinued.
   - Encounter major software product patches and upgrades, which results in increased workload.
2. If duration is too short:
   - Users do not have sufficient time to perform all the necessary system tests.
   - Fatigue of key project members.
   - Users are not adequately trained to perform their work.
   - Loss of productivity.
   - Users do not fully utilize all the functionalities of the new system.

PROJECT COMPLEXITY RISK	3

1. Insufficient evaluation of full scope of all programs could result in the following:
   - Processes, as configured, are incomplete or do not address required steps
   - Program attributes are missing
   - Business rules are not accurately captured and implemented
   - Missing or inaccurate required reports

PROJECT MANAGEMENT RISK	4

1. The interest and priority of each Health District organization may be different.
2. Lack of centralized chain of commands
3. Executive Sponsors not fully committed to support the program
4. Communication strategy/plan is not in place to manage expectations and change
5. Communication is not effective in managing expectations and gaining buy-in from users and customers
6. Insufficient availability or allocation of Project Manager

PROCUREMENT RISK	

No procurement risk is associated with the implementation project. Procurement activities have completed, resulting in a unanimous recommendation.

COST SENSITIVITY RISK	3

1. Project funding does not include contingencies. Project contingencies typically account for 10 to 20 percent of implementation services costs.
2. Gap analysis between the Health District's requirements and the capabilities of the new system not conducted thoroughly, causing delays and additional costs.
3. Scope of the project not clearly identified in the contract, causing change orders and delays.
4. The Disaster & Recovery and possible network infrastructure upgrade strategies/plans for the new project are not in place.

5. The Health District may overlook internal costs associated with the project. These may include backfilling key positions, additional training, facility costs, recruiting fees, travel associated with additional training, etc.

CULTURAL / ORGANIZATIONAL RISK	2

1. EnvisionConnect implementation may introduce the following cultural/organizational changes:
   - Adding "self service" functionalities to automate paper-based processes.
   - Re-organization due to business process re-engineering
   - Business processes change to leverage the full functionality of the new system
2. Employee Morale
   - District may experience higher than usual turn-over ratio during implementation
   - Employee's perception of job security
3. Additional work load may result in employee fatigue

NOT DOING IT - RISK	4

Risks associated with not implementing EnvisionConnect are described previously in the document in 3.9. Consequences of Inaction.

SECURITY RISK	

No security risks are introduced as a result of the recommendation in this business case.

TECHNICAL RISK	1

1. IT staff's readiness for implementation and support due to new technologies
   - Other projects competing for resources
   - Experience higher than usual production support activities during implementation
   - Hiring and transitioning staff to support new technologies
2. Users' adaptability to the new platform and solution. Certain high-volume users may find particular tasks are less efficient in a browser-based system than in a mainframe environment, that group of employees may complain that data entry is slower in a new system. This is due to the nature of the technology, which inherently trades-off keystroke efficiency for improved data retrieval, management and analysis.
3. Cross platforms data integration may present technical difficulties, i.e. Non relational DBMS vs. relational DBMS, handling complex data sources, legacy data types, electronic data interchange (EDI), electronic funds transfer (EFT) protocols, etc.

EXTERNAL FACTORS RISK	

No external risks are introduced as a result of the recommendation in this business case.

Total risk scores / number of risks identified	30 / 10 risks
Total Risk Rating (1 to 5):	3

7.9. ADDITIONAL ASSUMPTIONS

No assumptions have been made in the preparation of this business case beyond those previously noted related to cost and risk.

7.10. ORGANIZATIONAL IMPACT

The following ratings represent the estimated impact to the District departments presenting this business case and the estimated impact to other areas.

The impact ratings provided are based on information available and the current understanding of the business environment. As the project progresses, these impacts and their ratings will be revised to reflect knowledge and changes in circumstance. Generally, 1 is recognized as a relatively minor impact where 5 is a high impact that warrants substantial proactive response.

Organizational Impact	Impact Rating
INFRASTRUCTURE/TECHNOLOGY	2
• Implementing EnvisionConnect, which deploys on SQL Server 2005, allows the District to retire the VAX server and removes the current dependence on aging technology and associated resources. • IT skills will shift from modifications of program source code to the configuration of functionalities • More business users will be able to create ad-hoc reports from a centralized database, resulting in less reliance on IT resources.	
ORGANIZATIONAL CULTURE	3
• The District may experience higher than usual attrition rate during and post implementation • Users will need to adjust to using WUI (Web User Interface) vs. TUI (Text User Interface) • More users will be introduced to the new system including employees who do not currently operate a computer for his/her job • District employees will have to concurrently adjust to not only a new system and also new business processes. • Through the use of dashboard technology, more District leaders will be able to play a more active 'hands-on' role for making decisions, without relying on their staff to run reports and perform inquiries.	
BUSINESS PROCESS	3
• EnvisionConnect will expose the EH Division to best practices employed by peer health agencies. Business processes will necessarily evolve with the available functionality and technology. • Efficiency will likely initially suffer until the division acclimates to the application and finds opportunities to leverage it more fully. • New policies and procedures will need to be created and communicated to manage new business processes	
ORGANIZATIONAL STRUCTURE	1
The pursuit of this recommendation should result in no impact to the organizational structure of the Performing Organization.	
FACILITIES	1
• Training facilities with network connections and workstations will be required for classroom training, project meetings, conference room pilot, and system testing during project implementation as well as on-going and new staff training post project implementation.	

• Extra work space for external consultants will be needed	
Organizational Impact Rating (1 to 5):	2

7.11. DEPENDENCIES

Aside from securing funding and Board of Health approval, the success of this project is not dependent upon the accomplishment of any internal or external factors, work or projects.