

STATE OF MICHIGAN
 DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
 PROCUREMENT
 P.O. BOX 30026, LANSING, MI 48909
 OR
 525 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 4
 to
CONTRACT NO. 071B9200231
 between
THE STATE OF MICHIGAN
 and

NAME & ADDRESS OF CONTRACTOR	PRIMARY CONTACT	EMAIL
Windsor Solutions, Inc. 4386 SW Macadam Avenue, Suite 101 Portland, OR 97239	Craig Austin	Craig_austin@windsorsolutions.com
	PHONE	CONTRACTOR'S TAX ID NO. (LAST FOUR DIGITS ONLY)
	(505) 675-7833 ext215	5518

STATE CONTACTS	AGENCY	NAME	PHONE	EMAIL
PROGRAM MANAGER / CCI	DEQ	Lori Franz	(517) 335-3105	franzl@michigan.gov
CONTRACT ADMINISTRATOR	DTMB	Mike Breen	(517) 284-7002	breenm@michigan.gov

CONTRACT SUMMARY			
DESCRIPTION: Michigan Wellogic System Rewrite Project			
INITIAL EFFECTIVE DATE	INITIAL EXPIRATION DATE	INITIAL AVAILABLE OPTIONS	EXPIRATION DATE BEFORE CHANGE(S) NOTED BELOW
June 22, 2009	June 21, 2012	3, one year	December 21, 2015
PAYMENT TERMS		DELIVERY TIMEFRAME	
N/A		N/A	
ALTERNATE PAYMENT OPTIONS			EXTENDED PURCHASING
<input type="checkbox"/> P-card <input type="checkbox"/> Direct Voucher (DV) <input type="checkbox"/> Other			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
MINIMUM DELIVERY REQUIREMENTS			
N/A			

DESCRIPTION OF CHANGE NOTICE				
EXERCISE OPTION?	LENGTH OF OPTION	EXERCISE EXTENSION?	LENGTH OF EXTENSION	REVISED EXP. DATE
<input type="checkbox"/>		<input checked="" type="checkbox"/>	3 months	March 22, 2016
CURRENT VALUE		VALUE OF CHANGE NOTICE	ESTIMATED AGGREGATE CONTRACT VALUE	
\$861,309.80		\$5,000.00	\$866,309.80	

DESCRIPTION: Effective August 3, 2015, the contract is amended to extend per resolution 2015-1 and increased by \$5,000.00 for maintenance to the existing contract providing for maintenance support services. The new contract end date is March 22, 2016. All other terms, conditions, pricing and specifications remain the same. Per vendor and agency agreement and DTMB Procurement approval.

STATE OF MICHIGAN
 DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
 PROCUREMENT
 P.O. BOX 30026, LANSING, MI 48909
 OR
 530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 3
 to
CONTRACT NO. 071B9200231
 between
THE STATE OF MICHIGAN
 and

NAME & ADDRESS OF CONTRACTOR:	PRIMARY CONTACT	EMAIL
Windsor Solutions, Inc. 4386 SW Macadam Avenue, Suite #101 Portland, OR 97239	Craig Austin	Craig_austin@windsorsolutions.com
	TELEPHONE	CONTRACTOR #, MAIL CODE
	(505) 675-7833 ext 215	

STATE CONTACTS	AGENCY	NAME	PHONE	EMAIL
CONTRACT COMPLIANCE INSPECTOR	DEQ	Lori Franz	517-335-3105	franzl@michigan.gov
BUYER	DTMB	Mike Breen	517-284-7002	Breenm@michigan.gov

CONTRACT SUMMARY:			
DESCRIPTION: Michigan Wellogic System Rewrite Project			
INITIAL EFFECTIVE DATE	INITIAL EXPIRATION DATE	INITIAL AVAILABLE OPTIONS	EXPIRATION DATE BEFORE CHANGE(S) NOTED BELOW
June 22, 2009	June 21, 2012	3 – 1 Year Options	June 21, 2015
PAYMENT TERMS	F.O.B	SHIPPED	SHIPPED FROM
N/A	N/A	N/A	N/A
ALTERNATE PAYMENT OPTIONS:			AVAILABLE TO MiDEAL PARTICIPANTS
<input type="checkbox"/> P-card <input type="checkbox"/> Direct Voucher (DV) <input type="checkbox"/> Other			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
MINIMUM DELIVERY REQUIREMENTS:			
N/A			

DESCRIPTION OF CHANGE NOTICE:				
EXTEND CONTRACT EXPIRATION DATE	EXERCISE CONTRACT OPTION YEAR(S)	EXTENSION BEYOND CONTRACT OPTION YEARS	LENGTH OF OPTION/EXTENSION	EXPIRATION DATE AFTER CHANGE
<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	6 Months	Dec. 21, 2015
VALUE/COST OF CHANGE NOTICE:		ESTIMATED REVISED AGGREGATE CONTRACT VALUE:		
\$20,000.00		\$861,309.80		
Effective August 29 2014, per Ad Board Resolution 2014-1, this contract is hereby extended for six (6) months beyond the options years. The new contract end date is December 21, 2015. Contract is also increased by \$20,000.00. New contract value is \$861,309.80. Pricing per attached for maintenance for the period of 6/21/15-12/21/15. The CCI has been changed to Lori Franz; see above for new contact information. All other terms, conditions, pricing and specifications remain the same. Per vendor and agency agreement and DTMB Procurement approval.				

Windsor Solutions
4386 SW Macadam Ave
Portland, OR 97386v



WINDSOR
SOLUTIONS

Environmental +
Health Information
Systems

August 26th, 2014

Liane Shekter - Smith
Office of Drinking Water and Municipal Assistance
Constitution Hall
525, W. Allegan
Lansing, MI

Ms. Shekter - Smith:

Windsor Solutions, Inc agrees to the proposed 6 month extension of contract #071B9200231, for the maintenance of the Wellogic data system. We agree to extend the contract for the period of 06/21/2015 – 12/21/2015. The cost for maintenance till 12/21/2015 is \$20,000. All maintenance activities will continue to under the framework established in the contract.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Watson". The signature is written in a cursive, flowing style with a period at the end.

Vice President

STATE OF MICHIGAN
 DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
 PROCUREMENT
 P.O. BOX 30026, LANSING, MI 48909
 OR
 530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 2
 to
CONTRACT NO. 071B9200231
 between
THE STATE OF MICHIGAN
 and

NAME & ADDRESS OF CONTRACTOR:	PRIMARY CONTACT	EMAIL
Windsor Solutions, Inc. 4386 SW Macadam Avenue, Suite #101 Portland, OR 97239	Craig Austin	Craig_austin@windsorsolutions.com
	TELEPHONE	CONTRACTOR #, MAIL CODE
	(505) 675-7833 ext 215	

STATE CONTACTS	AGENCY	NAME	PHONE	EMAIL
CONTRACT COMPLIANCE INSPECTOR	DEQ	Peter Devlin	517-241-8515	
BUYER	DTMB	Mike Breen	517-284-7002	Breenm@michigan.gov

CONTRACT SUMMARY:			
DESCRIPTION: Michigan Wellogic System Rewrite Project			
INITIAL EFFECTIVE DATE	INITIAL EXPIRATION DATE	INITIAL AVAILABLE OPTIONS	EXPIRATION DATE BEFORE CHANGE(S) NOTED BELOW
June 22, 2009	June 21, 2012		June 21, 2014
PAYMENT TERMS	F.O.B	SHIPPED	SHIPPED FROM
N/A	N/A	N/A	N/A
ALTERNATE PAYMENT OPTIONS:			AVAILABLE TO MiDEAL PARTICIPANTS
<input type="checkbox"/> P-card <input type="checkbox"/> Direct Voucher (DV) <input type="checkbox"/> Other			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
MINIMUM DELIVERY REQUIREMENTS:			
N/A			

DESCRIPTION OF CHANGE NOTICE:				
EXTEND CONTRACT EXPIRATION DATE	EXERCISE CONTRACT OPTION YEAR(S)	EXTENSION BEYOND CONTRACT OPTION YEARS	LENGTH OF OPTION/EXTENSION	EXPIRATION DATE AFTER CHANGE
<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1 year	June 21, 2015
VALUE/COST OF CHANGE NOTICE:		ESTIMATED REVISED AGGREGATE CONTRACT VALUE:		
\$20,000.00		\$841,309.80		

Effective February 4, 2014, this contract hereby exercises a contract option year. The new contract end date is June 21, 2015. Contract is also increased by \$20,000.00. Please note that the buyer has been changed to Mike Breen. All other terms, conditions, pricing and specifications remain the same. Per vendor and agency agreement, DTMB Procurement approval and the approval of the State Administrative Board on February 4, 2014.



Ms. Liane Shekter-Smith.
Michigan Dept of Information Technology
Office of Drinking Water and Municipal Assistance
Constitution Hall
525 W. Allegan
Lansing, MI 48933

January 23, 2014

Subject: Wellogic Annual System Maintenance Proposal
(for period 2/1/2014 to 1/31/2015)
Contract Number 071B9200231

Dear Ms Shekter-Smith,

Windsor Solutions has performed the development, enhancement, support, and ongoing maintenance of the Wellogic system for the Michigan Department of Environmental Quality (MDEQ). MDEQ has requested that Windsor provide a quote for continued maintenance of the system for a period of 1 year, beginning on February 1, 2014. This proposal provides a cost estimate to acquire Windsor technical services for maintaining the Wellogic application from 2/1/2014 to 1/31/2015.

(I) SCOPE OF WORK:

The vendor will provide professional services to maintain and support the Wellogic system. The vendor will provide relevant patches, or corrective services to correct any error, malfunction or defect in the Wellogic system. The maintenance and support service will include Break/fix, help desk, performance maintenance and documentation updates.

Maintenance does not include professional services to modify or enhance software functionality to meet new business requests. Hardware maintenance is outside the scope of this project.

(II) TASKS:

Wellogic users will track errors and defects in the system using the iTest issue tracking tool. The tool will maintain issue logs accessible by all the project members. Each log will record the description of the issue, identified date, responsibility, priority, resources assigned, resolution date and description.

Once the Team has agreed on the items to be included, the vendor will fix and test the necessary components.

CONTACT

4386 SW Macadam Ave
Suite 101
Portland, OR 97239

TEL (503) 675-7833

FAX (503) 675-7804

MAIL info@windsorsolutions.com

www.windsorsolutions.com

The fixes will then be released to the acceptance test environment for DEQ review and approval. Once approved, the changes will be migrated to the production environment.

Any fatal issues that prevent the usage of the application or bring the system down will be addressed by the vendor immediately and a patch will be provided to fix the issue ASAP.

All other maintenance activities will be managed on a release basis.

Vendor will conduct status meetings with the team to review outstanding items and to prioritize these for inclusion in a maintenance release.

Any changes to the documentation due to the new release will be documented by them.

Status reports will be provided by the Vendor Project Manager.

(III) DELIVERABLES:

Deliverables for this project include:

- 1) Emergency Maintenance release, if necessary
- 2) Monthly maintenance releases to be tested in QA and implemented in production
- 3) Status reports to track the status of the bugs and issues in the system

(IV) COST PROPOSAL:

The annual cost is \$20,000. Windsor will bill on a fixed-bid basis. Billing will occur annually, in advance of the 1-year maintenance and support period.

Thank you for the opportunity to present this proposal for your consideration.

Sincerely,



Guy Outred
President

CONTACT

4386 SW Macadam Ave
Suite 101
Portland, OR 97239

TEL (503) 675-7833

FAX (503) 675-7804

MAIL info@windsorsolutions.com

www.windsorsolutions.com

STATE OF MICHIGAN
 DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
 PROCUREMENT
 P.O. BOX 30026, LANSING, MI 48909
 OR
 530 W. ALLEGAN, LANSING, MI 48913

April 30, 2012

CHANGE NOTICE NO. 1

To

CONTRACT NO. 071B9200231

Between

THE STATE OF MICHIGAN

And

NAME & ADDRESS OF CONTRACTOR:	PRIMARY CONTACT	EMAIL
Windsor Solutions, Inc. 4386 SW Macadam Avenue, Suite #101 Portland, OR 97239	Craig Austin	Craig_austin@windsorsolutions.com
	TELEPHONE	CONTRACTOR #, MAIL CODE
	(505) 675-7833 ext 215	

STATE CONTACTS	AGENCY	NAME	PHONE	EMAIL
CONTRACT COMPLIANCE INSPECTOR:	DEQ	Peter Devlin	(517) 241-8515	
BUYER:	DTMB	Joe Kelly	(517) 373-3993	Kellyj11@michigan.gov

INITIAL CONTRACT SUMMARY:			
DESCRIPTION: Michigan Wellogic System Rewrite Project			
INITIAL TERM	EFFECTIVE DATE	INITIAL EXPIRATION DATE	AVAILABLE OPTIONS
	June 22, 2009	June 21, 2012	
PAYMENT TERMS	F.O.B	SHIPPED	SHIPPED FROM
N/A	N/A	N/A	N/A
ALTERNATE PAYMENT OPTIONS:			AVAILABLE TO MiDEAL PARTICIPANTS
<input type="checkbox"/> P-card <input type="checkbox"/> Direct Voucher (DV) <input type="checkbox"/> Other			<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
MINIMUM DELIVERY REQUIREMENTS:			
N/A			

DESCRIPTION OF CHANGE NOTICE:	
OPTION EXERCISED: <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES	IF YES, NEW EXPIRATION DATE: January 1, 2014
Effective immediately, this contract is hereby EXTENDED to January 1, 2014. Please also note that the buyer has been CHANGED to Joe Kelly. Per vendor and agency agreement and the approval of DTMB Procurement.	
VALUE/COST OF CHANGE NOTICE:	\$0
ESTIMATED REVISED AGGREGATE CONTRACT VALUE:	\$821,309.80

**STATE OF MICHIGAN
 DEPARTMENT OF MANAGEMENT AND BUDGET
 PURCHASING OPERATIONS
 P.O. BOX 30026, LANSING, MI 48909
 OR
 530 W. ALLEGAN, LANSING, MI 48933**

June 17, 2009

**NOTICE
 OF
 CONTRACT NO. 071B9200231
 between
 THE STATE OF MICHIGAN
 and**

NAME & ADDRESS OF CONTRACTOR Windsor Solutions, Inc. 4000 Kruse Way Place, Bldg 2, Suite 285 Lake Oswego, OR 97035 Email: craig_austin@windsorsolutions.com	TELEPHONE Craig Austin (505) 675-7833 ext. 215
	CONTRACTOR NUMBER/MAIL CODE
	BUYER/CA (517) 241-0239 Joann Klasko
Contract Compliance Inspector: Peter Devlin (517) 241-8515 Michigan Wellogic System Rewrite Project	
CONTRACT PERIOD: From: June 22, 2009 To: June 21, 2012	
TERMS N/A	SHIPMENT N/A
F.O.B. N/A	SHIPPED FROM N/A
MINIMUM DELIVERY REQUIREMENTS N/A	
MISCELLANEOUS INFORMATION:	

Estimated Contract Value: \$821,309.80

**STATE OF MICHIGAN
 DEPARTMENT OF MANAGEMENT AND BUDGET
 PURCHASING OPERATIONS
 P.O. BOX 30026, LANSING, MI 48909
 OR
 530 W. ALLEGAN, LANSING, MI 48933**

CONTRACT NO. 071B9200231
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF CONTRACTOR Windsor Solutions, Inc. 4000 Kruse Way Place, Bldg 2, Suite 285 Lake Oswego, OR 97035 Email: craig_austin@windsorsolutions.com	TELEPHONE Craig Austin (505) 675-7833 ext. 215 CONTRACTOR NUMBER/MAIL CODE BUYER/CA (517) 241-0239 Joann Klasko
Contract Compliance Inspector: Peter Devlin (517) 241-8515 Michigan Wellogic System Rewrite Project	
CONTRACT PERIOD: From: June 22, 2009 To: June 21, 2012	
TERMS	SHIPMENT
N/A	N/A
F.O.B.	SHIPPED FROM
N/A	N/A
MINIMUM DELIVERY REQUIREMENTS	
N/A	
MISCELLANEOUS INFORMATION: The terms and conditions of this Contract are those of ITB #071I9200114, this Contract Agreement and the vendor's quote. In the event of any conflicts between the specifications, and terms and conditions, indicated by the State and those indicated by the vendor, those of the State take precedence.	
Estimated Contract Value: \$821,309.80	

All terms and conditions of the invitation to bid are made a part hereof.

FOR THE CONTRACTOR:

FOR THE STATE:

Windsor Solutions, Inc.

 Firm Name

 Authorized Agent Signature
Kevin Jeffery

 Authorized Agent (Print or Type)

 Date

 Signature
Greg Faremouth, Director

 Name/Title
IT Division

 Division

 Date



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DEFINITIONS

Days	Means calendar days unless otherwise specified.
24x7x365	Means 24 hours a day, seven days a week, and 365 days a year (including the 366th day in a leap year).
Abandoned Water Well	A water well that is no longer used and is plugged.
Additional Service	Means any Services/Deliverables within the scope of the Contract, but not specifically provided under any Statement of Work, that once added will result in the need to provide the Contractor with additional consideration.
Audit Period	See Section 2.110
Business Day	Whether capitalized or not, shall mean any day other than a Saturday, Sunday or State-recognized legal holiday (as identified in the Collective Bargaining Agreement for State employees) from 8:00am EST through 5:00pm EST unless otherwise stated.
Blanket Purchase Order	An alternate term for Contract as used in the States computer system.
Business Critical	Any function identified in any Statement of Work as Business Critical.
Chronic Failure	Defined in any applicable Service Level Agreements.
Contractor	The vendor who bids for this project. After RFP stage, one of the vendors will be selected to implement this project according to the Contract that will be established between the SOM and the vendor. The term vendor and contractor are sometimes used interchangeably in this RFP.
Deliverable	Physical goods and/or commodities as required or identified by a Statement of Work
Deleted – Not Applicable	This section is not applicable or included in this RFP. This is used as a placeholder to maintain consistent numbering.
DMB	Michigan Department of Management and Budget
Excusable Failure	See Section 2.244.
Geotechnical well	Well used for monitoring groundwater quality. It is not a water well and will not be part of this project.
Incident	Any interruption in Services.
ITB	A generic term used to describe an Invitation to Bid. The ITB serves as the document for transmitting the RFP to potential bidders
Key Personnel	Any Personnel designated in Article 1 as Key Personnel.
LHD	Local health department
MDEQ	Michigan Department of Environmental Quality
MDEQ- WB	Michigan Department of Environmental Quality, Water Bureau
MDIT	Michigan Department of Information Technology
MDMB	Michigan Department of Management and Budget
New Work	Any Services/Deliverables outside the scope of the Contract and not specifically provided under any Statement of Work, that once added will result in the need to provide the Contractor with additional consideration.
RFP	Request for Proposal designed to solicit proposals for services
Services	Any function performed for the benefit of the State.
Schema	Files that serve as the framework for defining the data elements and rules in an XML document. Schema express shared vocabularies and allow computers to carry out rules made by people.
SOM	State of Michigan
Source ID	An identification number or name used for public water supplies.
State Location	Any physical location where the State performs work. State Location may include state-owned, leased, or rented space.
Subcontractor	A company Contractor delegates performance of a portion of the Services to, but does not include independent contractors engaged by Contractor solely in a staff augmentation role.
Unauthorized Removal	Contractor's removal of Key Personnel without the prior written consent of the State.
Work in Progress	A Deliverable that has been partially prepared, but has not been presented to the State for Approval.
Work Product	Refers to any data compilations, reports, and other media, materials, or other objects or works of authorship created or produced by the Contractor as a result of an in furtherance of performing the services required by this Contract.



Well ID	An eleven digit number assigned to a water well or abandoned water well record in Wellogic. The first two digits are the county number.
Wellogic	An Internet based program that allows water well contractors to submit their well records. It is also referred to as the statewide groundwater database.
Well log	Record of information about a specific well.
Water well	An opening in the surface of the earth for the purpose of removing water.
Water well contractor	Individuals that install or plug water wells. This includes water well drilling, pump installation and licensed master plumbers.
WSSN	A water supply serial number used for public water supplies.
XML	aka eXtensible Markup Language. An open standard language used to create files for exchanging and displaying data. XML is an outgrowth of Standard Generalized Markup Language and provides a standard method for describing data based upon a syntax developed by the World Wide Web Consortium (W3C).



Article 1 – Statement of Work (SOW)

1.000 Project Identification

1.001 Project Request

The State of Michigan (SOM), through the Michigan Department of Management & Budget (MDMB), with assistance of the Michigan Department of Information Technology (MDIT) and the Michigan Department of Environmental Quality (MDEQ), has issued this contract to do a complete rewrite of the existing Wellogic software system.

The purpose of this contract is to rewrite the existing Wellogic application, bringing it into compliance with SOM architecture and software standards and to include some enhancements that the current Wellogic System does not have, which have been described herein. The contractor will manage the project from initiation to closing. This will include the full project life cycle, including business requirements, design, development, testing and production deployment of the new Wellogic system in a .NET and XML-based platform. This new system will be hosted and owned by the SOM.

The State seeks to have services begin by June 2009, with full implementation of the initial system to be completed by November 2010. This contract will have a term of three (3) years, with three additional one-year extensions to provide continued maintenance and implementation of enhancements of the product (as identified and authorized by the MDEQ) while in use by the SOM. Renewal of the contract will be at the sole discretion of the SOM and based upon the acceptable performance, and funding availability as determined by the SOM.

The SOM will assign one Project Manager to represent MDIT and MDEQ on this project. This Project Manager is the only person authorized to accept or reject work performed by the contractor. The project manager will be referred to as the "MDIT Project Manager". The MDIT Project Manager will designate a representative to assist with the managing of the day to day operations of the project, and will work closely with the MDEQ Subject Matter Experts, but only the MDIT Project Manager has the authority to approve or accept work by the Contractor.

1.002 Background

The MDEQ Water Bureau (WB) administers a diverse number of programs to protect public health and welfare. The responsibility for regulating water well construction is performed by Water Bureau's Drinking Water and Environmental Health Section (DWEHS). Several additional WB programs which regulate drinking water providers and water supply sources rely upon the water well construction data collected.

The existing web-based Wellogic system is a 3-tier application and database which has been in operation for approximately 8 years. It is one of MDEQ WB's fundamental applications. It contains information from the approximately 20,000 water wells that are drilled and/or plugged annually. This application is an internet based well log submittal program using HTML, Cascading Style Sheets, Microsoft Visual Basic, Microsoft Active Server Pages 2, and Microsoft SQL Server 2000. Besides web page data entry, the application also uses XML schema and an XML parser to upload XML files containing well construction information. Stored information is primarily reported out in PDF format.

The current application allows water well contractors to submit well construction records electronically. This increases efficiency, reduces errors and saves the WB time and money. The application features restricted access to water well contractors, local health department personnel, State of Michigan personnel, and consulting firms. The Wellogic administrators oversee and monitor the creation of user accounts, general operation of the system, XML data uploads, and general helpdesk tasks. The application is available 24 hours a day, 7 days a week.

The WB staff has worked diligently over the past 8 years to persuade water well contractors to switch from a paper-based to an electronic submittal process. Currently, electronic submissions account for approximately 55% of well logs. The new Wellogic system being requested herein aims to increase electronic water well log submissions to 90% or higher.



The Wellogic application must be replaced due to lack of support of the development software. The application is in its ninth year of service and, while many new features have been added, there has not been any significant upgrade to the core application or database model. It is expected that a new Wellogic system will promote the increased use of XML, have a new web interface, a new site navigation design, expanded and enhanced data storage and database auditing, along with certain other enhancements. The architecture and design of the new Wellogic system will emphasize modularization and ease of maintenance and deployment. The new version will be written using Microsoft .Net 2005 and Microsoft SQL Server 2005, and must comply with all MDIT development standards.

1.003 Purpose

The goal of this project is to develop a web-based interface to allow water well contractors, local health department staff, MDEQ staff and other users to enter, modify, and retrieve water well and abandoned water well data. Public users without secure accounts will be able to search the database and retrieve water well and abandoned water well records in PDF. All other users will need a secured account to update or retrieve data. Water well contractors will submit the water well construction and abandoned water well plugging records electronically. Local health department personnel will retrieve and print the records entered directly by the water well contractors. MDEQ staff will be the administrative users and will have the ability to create user accounts, extract data, update pick lists, create reports and perform the overall administration of the system.

The new system will have an upgraded look and feel from the existing Wellogic system with efficient data entry, record searching, and reporting functions. The new system will have the following key modules.

1. The **Login Module** will register new users and allow secured users to login. The users will have various level of access to the system depending on their roles.
2. The **Data Entry Module** will create, validate, and modify the water well and abandoned water well data. This module will include an efficient search component where users can search for records and modify them.
3. The **Administration Module** will be accessed only by the MDEQ staff who will administer the application. They will approve new users, create, delete or edit users profiles, maintain user groups and their permissions, maintain the pick lists, delete, restore and purge water well and abandoned water well records and monitor the application.
4. The **Reporting Module** will include a set of standard reports and an advanced query system to generate ad-hoc queries which can be stored and modified. These queries will be made available to users by permission.
5. The web interface will include an **XML Upload Module**. The system will provide the XML schema for water well and abandoned water well data. The users will have the option to submit the water well and abandoned water well data as an XML file that complies with the provided schema.

Additionally, this contract will include auditing procedures to track all database activity, including the creation, deletion, and modification of the water well and abandoned water well records.

The data from current Wellogic application must be migrated to a new SQL 2005 database. This database is comprised of water well, abandoned water well, geotechnical and abandoned geotechnical well records. However, for this contract, only the water well and abandoned water well records will be migrated. The geotechnical well and abandoned geotechnical well data will be preserved, and will not be migrated to the new system. The MDIT Agency Services staff will assume the lead role in long term maintenance and enhancement of the system.

1.100 Scope of Work and Deliverables

1.101 In Scope

The Contractor will provide services for the complete and successful new development, conversion of data, and add additional functionalities that do not exist in the current Wellogic system to the new Wellogic System for the SOM's business operations for the MDEQ-WB.



During the maintenance period there may be further enhancements that the SOM may request as funding is made available. The pricing for all enhancements will be defined by the hourly rates as provided in Exhibit E.

This project consists of the following high-level components:

1. Project Management
2. Business Requirements Analysis
 - a. Facilitated Joint Application Design (JAD) Sessions
 - b. Validation and verification
3. Technical requirements validation and verification
4. Design of the replacement system
5. Development of the replacement system including test plan and test scripts
6. Testing of replacement system in test environment
7. Production/Implementation
 - a. Conversion of data
 - b. Data Migration
 - c. Configuration
 - d. Interfaces/Integration
 - e. Testing
 - f. Load system to production environment
8. Training / Documentation
 - a. User training and documentation (Web Training)
 - b. System Administration training and documentation
9. Maintenance and Support
10. Knowledge Transfer/Transition
11. Reserve bank of hours for future enhancements, and/or legislative mandated enhancements
12. Hardware and Software

A more complete description of the services sought for this project is located in Section 1.104, Work and Deliverables.

1.102 Out Of Scope

Hardware installation or hardware maintenance, security administration within State's LAN/WAN networks and desktop support are out of the scope of this ITB.

The information gathered and managed by current Wellogic system is exported manually for use by many other applications (as shown below). **No interfaces to the following systems will be required or be a part of the scope of this project.**

1. WaterTrack - regulation of Non-community water supplies
2. Groundwater Inventory and Mapping (GWIM)
3. Michigan Interactive Groundwater for Wellhead Protection (MIGWWP)
4. SDWIS (Safe Drinking Water Information System) – regulation of Community water supplies
5. Water Well Viewer
6. Well Drillers Registration Program
7. Groundwater Dispute Resolution Program
8. MapImage Viewer
9. Michigan Water Withdrawal Legislation

1.103 Environment

The links below provide information on the State's Enterprise IT policies, standards and procedures which includes security policy and procedures, IT strategic plan, eMichigan web development and the State Unified Information Technology Environment (SUITE). The Contractor will be required to conform to these standards as a precursor to project deliverable acceptance by the MDIT Project Manager. All services and products provided as a result of this contract must comply with all applicable State IT policies and standards. The Contractor must request any exception to State IT policies and standards in accordance with MDIT processes. The State may deny the exception request or seek a policy or standards exception.

**(a) Enterprise IT Policies, Standards and Procedures:**

<http://www.michigan.gov/dit/0,1607,7-139-34305---,00.html>

All software and hardware items provided by the Contractor must run on and be compatible with the MDIT Standard Information Technology Environment. Additionally, the State must be able to maintain software and other items produced as the result of the Contract. Therefore, non-standard development tools may not be used unless approved by MDIT. The Contractor must request, in writing, approval to use non-standard software development tools, providing justification for the requested change and all costs associated with any change. The State's Project Manager and MDIT must approve any tools, in writing, before use on any information technology project.

It is recognized that technology changes rapidly. The Contractor may request, in writing, a change in the standard environment, providing justification for the requested change and all costs associated with any change. The State's Project Manager must approve any changes, in writing, and MDIT, before work may proceed based on the changed environment.

(b) Enterprise IT Security Policy and Procedures:

<http://www.michigan.gov/dit/0,1607,7-139-34305-108216--,00.html>

The State's security environment includes:

- MDIT Single Login.
- MDIT provided SQL security database.
- Secured Socket Layers.
- SecureID (State Security Standard for external network access and high risk Web systems)

MDIT requires that its single - login security environment be used for all new client-server software development. Where software is being converted from an existing package, or a client-server application is being purchased, the security mechanism must be approved in writing by the MDIT Project Manager and MDIT's Office of Enterprise Security.

Any additional Agency specific security requirements above and beyond the enterprise requirements and standard terms and conditions stated in Article 2 must be provided as part of the Agency Specific Technical Environment.

(c) IT Strategic Plan:

<http://www.michigan.gov/dit/0,1607,7-139-30637-135173--,00.html>

(d) IT eMichigan Web Development Standard Tools:

http://www.michigan.gov/documents/Look_and_Feel_Standards_2006_v3_166408_7.pdf

(e) The State Unified Information Technology Environment (SUITE):

Includes standards for project management, systems engineering, and associated forms and templates – must be followed: <http://www.michigan.gov/suite>. The Contractor must become familiar with SUITE. The Contractor will be required to complete or assist the MDIT Project Manager to complete additional SUITE related documentation which will be required deliverables. These may not be specifically identified in the Work and Deliverables section 1.104.

(f) Project Management Methodology Standards

The Project Management Methodology (PMM) to be use on all Information Technology (IT) based projects is described at <http://www.michigan.gov/projectmanagement>. The Contractor shall use the State's PMM to manage this Contract. If the Contractor requires training on the PMM, those costs shall be the responsibility of the Contractor, unless otherwise stated.

(g) MDEQ Technical Environment

The current and future MDEQ WB Application Environment is shown in Exhibit A.



Contractors that are compelled to use alternate tools must have received an exception from MDIT, Enterprise Application Services Office, e-Michigan Web Development team, before this Contract is effective. Application design, architecture, coding and implementation styles which incorporate practices and techniques which help ensure long-term support and maintenance by SOM MDIT employees will be given high priority. Architecture, coding style and development standards will adhere to industry standard best practices and patterns. The State reserves the right to modify any standards which it deems insufficient or in conflict with its IT standards.

To the extent that Contractor has access to the State computer system, The Contractor must comply with the State's Acceptable Use Policy, see <http://www.michigan.gov/ditservice/0,1607,7-179-25781-73760--,00.html>. All Contractor employees must be required, in writing, to agree to the State's Acceptable Use Policy before accessing the State system. The State reserves the right to terminate the Contractor's access to the State system if a violation occurs.

1.104 Work And Deliverable

This section includes:

- I. Services (work) To Be Provided and Deliverables;**
- II. Requirements**

I. Services (work) To Be Provided and Deliverables:

The services provided for this project will include initiation, planning, requirements gathering, design, development, testing, deployment and support of a new software application for the MDEQ-WB.

The Contractor should understand that the system will be installed and in operation by November 2010. These deliverables are not all inclusive. The contractor will need to review the SUITE/SEM processes for equivalent deliverable documents that need to be completed as a part of the contract. Contractors may propose other deliverables, as long as it does not conflict with the SUITE-SEM documentation.

Seven Phases of Work & Deliverables

The project is broken into seven (7) phases. Some of these phases have sub-phases for monitoring and payment purposes. Each of these phases has corresponding deliverables and milestone payments. [Maintenance and Future enhancements are priced and paid for separately from these 7 phases]. All 7 phases are discussed in greater detail in the section below.

Upon the conclusion of each phase and the submission of all deliverables required in the phase, the MDIT Project Manager will provide written acceptance if all the work and deliverables have been satisfactorily completed. The contractor may, after receipt of such acceptance, submit an invoice for the milestone payment associated with the completed phase. The contractor may commence work on the subsequent phase after acceptance of the prior phase or prior approval from MDIT Project Manager.

In the event that the work and deliverables are not acceptable to the MDIT Project Manager the contractor shall correct the issues noted and re-submit by a date, as specified by the MDIT Project Manager.

I (a) Phase I - Project Planning

The Work Description for Phase I Project Planning:

This work effort will include planning the project work, holding a kick-off meeting, and development of the planning documents for all the work phases.

The Contractor's Responsibilities for Phase I Project Planning:

- The Contractor will conduct one (1) face-to-face project kickoff meeting with the MDEQ-WB and MDIT staff representatives within 30 calendar days from execution of the Contract. The meeting will be held in Lansing, Michigan, at a date and time mutually acceptable to the State and the Contractor.
- The State shall bear no additional cost for the time and travel of the Contractor for attendance at the meeting



- The Contractor will develop the Project plan including a narrative description, the communications plan, the quality management plan, the change management plan, the risk management plan, and a staffing plan. If the contractor (and/or applicable sub-contractors) chose to utilize multiple work locations, the communication plan should describe how the project team will communicate between locations. The project plan will also provide an estimate of hours and timing of work required of the SOM staff for this project. See sections 1.103, 1.300 and 1.400 for further information. The Project Plan will be submitted to the MDIT Project Manager within thirty (30) business days of the award of the Contract for approval. The Project plan must be in agreement with the Work and Deliverables, and must include necessary substitutions due to change of employment status and other unforeseen circumstances and these changes may only be made with prior written approval of the MDIT Project Manager.
- The Contractor will also provide a Project Schedule using MS Project (or equivalent) with all work steps related to the services required. The Project Schedule will also include review and revision time frames for documentation (e.g., schedules, plans, and system documentation) and application testing. This should follow the review periods as outlined in Section 2.250. This may be adjusted as agreed upon between the Contractor and the MDIT Project Manager.
- The Contractor will host conference calls, facilitate discussions, issue minutes of conference calls & meetings, and provide Bi-weekly project status reports.
- If possible, the Contractor will establish an interactive web tracking system to be used by the Contractor and State staff that will have the ability to record the outcome for addressing project issues and testing results.
- The Contractor will develop a marketing plan for Wellogic as part of the planning phase of this project. The plan should lay out the overall strategy as well as define the schedule for launching specific outreach materials. The plan should address various types of media in an effort to reach as many well drillers as possible. Examples include newsletters, targeted informational emails, notices in industry or trade publications, conferences, special training sessions, and Web-based materials.

The State's Responsibilities for Phase I Project Planning:

- Assign a Project Manager to represent MDIT and MDEQ on this project. This Project Manager is the only person authorized to accept or reject work performed by the contractor. This project manager will be referred to as the "MDIT Project Manager"
- The MDIT Project Manager is responsible for accepting or rejecting the deliverables for work performed by the Contractor and for submitting payment authorization to the MDIT Contract Administrator (See 1.202)
- The MDIT Project Manager and the MDEQ-WB Project Coordinator will identify a team of subject matter experts in the technical area and the program area for the duration of the contract, respectively
- The MDIT Project Manager and the MDEQ-WB Project Coordinator will coordinate State resources as needed for the duration of the contract
- The MDIT Project Manager will establish goals and objectives for the system implementation
- The MDIT Project Manager will provide the work/meeting area for use during the Contractor site visits
- All required State staff will attend the project kickoff meeting
- Identify mode of delivery and training locations

Deliverables for Phase I Project Planning

The Contractor shall submit the following to the MDIT Project Manager:

1. Project Plan
2. Project Schedule

Acceptance Criteria for Phase I Project Planning

If the deliverable documents for this phase are in accordance with the SUITE methodology and templates (see section 1.103) and are acceptable to the MDIT Project Manager, in coordination with the MDEQ-WB Project Coordinator, the MDIT Project Manager will provide written acceptance. The Contractor shall not commence work on Phase II work until they have received written acceptance of all deliverables required under Phase I.



Upon receipt of the MDIT Project Manager's written acceptance of all Phase I work deliverables, the Contractor may submit an invoice for the milestone payment associated with this Phase.

I (b) Phase II - Requirements Verification and Validation

The Work Description for Phase II Requirements Verification and Validation:

Appendices A through E and Exhibit B, C & D are intended to represent a starting point for the contractor in the development of the new Wellogic system. These documents and lists are to be validated to determine if there are further business, technical, or functional requirements necessary for the new Wellogic system. The validation process should also include the review of the import and export of data from Wellogic to and from other systems.

The deliverables for this phase are as follows:

1) Business Requirements Document - This is a detailed description of the business requirements of the proposed new system based on the contractor's analysis of the existing system, the business requirements identified in Appendices A through E and Exhibit B, C & D and the contractor's experience with similar systems. This will include:

- detailed description of how business rules will be achieved and enforced
- validations and verification of the business rules presented herein
- description of the proposed application processes and flow
- application data flow including appropriate diagrams and data formats
- detailed description of application interaction with the database and any middle tier objects
- detailed description of on-line and server based data validations
- detailed description of error handling, logging and error recovery

This deliverable will demonstrate a complete understanding of the business process, functional requirements and rules using diagrams and use cases where appropriate.

2) Technical Requirements Documents - A detailed description of the technical requirements of the proposed new system including:

- description of the software, hardware, hosting, back-up and disaster recovery
- integration and operation with the State network.

In instances where multiple options are considered, the document should include a cost benefit analysis of each alternative and recommendations.

The Contractor's Responsibilities for Phase II Requirements Verification and Validation

- The contractor will hold Joint Application Development (JAD) sessions to verify and validate the documentation on the current system and to document potential enhancements for the new system. The JAD sessions will be held in Constitution Hall, Lansing, MI, Monday to Friday during the hours of 8 am to 5 pm. The number of sessions will be stated in the Project Plan, and can be amended based on the progress to date. The MDIT Project Manager will have authority to change the number and timing of the JAD sessions.
- The Contractor is to update the project plan to include a work plan for the design effort that will be based on the work priorities determined by the MDIT Project Manager
- The Contractor is to update the project schedule to more fully define the design effort and to include multiple review sessions wherein the Contractor will demonstrate their progress on the design of the new Wellogic system
- Identify any new functionality/enhancements that can delay the implementation of the new Wellogic system.
- Identify the software and hardware to be used

The State's Responsibilities for Phase II Requirements Verification and Validation

- Coordinate State of Michigan resources needed



- Provide work area for Contractor's staff when on site
- Provide conference rooms for JAD session(s), when needed
- Define project standards and controls required by the SOM
- The MDIT Project Manager, MDEQ-WB Project Coordinator and appropriate program and technical subject matter experts will participate in the JAD sessions
- The MDIT Project Manager will solicit comments from the stakeholders on the business and technical requirements considered during this phase

Deliverables for Phase II Requirements Verification and Validation

The Contractor shall submit the following to the MDIT Project Manager:

1. Business Requirements Document
2. Requirements Traceability Matrix (initial)
3. Technical Requirements Documents
4. Updated Project Plan (if needed)
5. Updated Project Schedule (if needed)

Acceptance Criteria for Phase II Requirements Verification and Validation

If the deliverable documents are in accordance with the SUITE methodology and templates (see section 1.103) and are acceptable to the MDIT Project Manager, in coordination with the MDEQ-WB Project Coordinator, the MDIT Project Manager will provide written acceptance. The Contractor shall not commence work on Phase III until they have received written acceptance of all deliverables required under Phase II.

Upon receipt of the MDIT Project Manager's written acceptance of a Phase II work the Contractor may submit an invoice for the milestone payment associated with this phase.

I (c) Phase III - Design of the New System

This phase of the project will involve taking all the requirements documents (business & technical), the SME, user and stakeholder comments generated during Phase II, knowledge gained of the SOM network and software hosting environment to produce a detailed design of the new system.

The Work Description for Design of the New System

This design document will include:

- A detailed description of the new system's functionality, in accordance with the Business Requirements Document, the Requirements Traceability Matrix and the Technical Requirements Document that were developed and accepted during Phase II.
- Connectivity to other applicable systems and/or data bases
- A full description of changes in functionality and enhancements proposed during Phase II and how they will be incorporated into the new design
- The prioritization of development activities as agreed upon between the MDIT Project Manager, the MDEQ-WB Project Coordinator and the Contractor's Project Manager.

This design will include a detailed description of the functioning of the new system, and the connectivity to others systems or databases. The following list is to be considered indicative but not all inclusive of the subjects covered by the system design:

- Mock-ups of all screens including their functionality.
- Use-case document with all business rules and calculations identified by data element and table
- A list and mock-up of all canned reports in the Wellogic report application with all business rules and calculations identified by data element and table.
- A description of all data flows to and from the new system including the output to desktop software such as Excel.
- Documentation of all interfaces to other data systems (if any)
- Metadata and database design - A detailed description of the database and any changes to be made to the existing database and tables. This will include diagrams, pseudo code and documents illustrating:



- detailed description and plan for any database modifications
- tables showing columns, data types and defaults
- views showing tables being combined
- relationship between tables and views
- stored procedures, triggers and user functions
- primary keys, foreign keys and constraints

The vendor will be expected to submit an updated version of the Requirements Traceability Matrix (refer SUITE SEM-0401) to the MDIT Project Manager. This will cover the completion of the column marked “Design Specifications”, where the vendor is expected to provide a reference to section numbers from the approved Design document. The Design document will not be considered complete until the vendor has provided an updated version of the Requirements Traceability Matrix.

During the design phase the contractor is to develop a training plan that incorporates the requirements stated in Phase II. In addition the Security Plan document should be updated in conjunction with the MDIT Project Manager and the MDIT OES Security Officer. A plan to address all security concerns should be developed here.

The Contractor’s Responsibilities for Phase III Design of the New System

- The Contractor will design the new Wellogig application and produce the design document.
- The Contractor shall update the project plan to include a work plan for the development effort (Phase IV).
- The contractor must also produce a technical training plan, training and technical knowledge transfer of the system production technical operations and maintenance to the MDIT staff for MDIT hosting support. This must include all applicable Web hosting and database system administration training for SOM MDIT personnel who will be responsible for ongoing maintenance and administration of the system, including network and system security.

The State’s Responsibilities for Phase III Design of the New System

- The MDIT Project Manager will determine if there is any functionality and/or enhancements proposed during Phase II that will not be implemented at this time, considering MDEQ-WB’s business needs and priorities
- Monitoring and oversight of the design work by the Contractor
- Answer questions and provide information when requested by the Contractor
- Review any interim deliverables as agreed upon between the MDIT Project Manager and the Contractor’s Project Manager
- To provide access to SOM specialists, such security and network, when requested by the Contractor and as agreed by the MDIT Project Manager
- The MDIT Project Manager and MDEQ- WB stakeholders will discuss Bi-weekly status reports with the Contractor’s Project Manager

Deliverables for Phase III Design of the New System

The Contractor shall submit the following to the MDIT Project Manager:

1. Functional Design Document
2. System Design Document
3. Database Design Document
4. Updated Requirements Traceability Matrix
5. Updated Project Plan (if applicable)
6. Updated Project Schedule (if applicable)
7. The Training Plan including the training schedule



Acceptance Criteria for Phase III Design of the New System

If these documents for this phase are in accordance with the SUITE methodology and templates (see section 1.103) and are acceptable to the MDIT Project Manager, in coordination with the MDEQ-WB Project Coordinator, the MDIT Project Manager will provide written acceptance. The Contractor shall not commence work on Phase IV until they have received written acceptance of all deliverables required under Phase III.

If a product and/or the documentation is not acceptable to the MDIT Project Manager, the SOM shall give the Contractor written notice stating why the product is unacceptable. The Contractor shall have five (5) business days from the receipt of such notice to correct the deficiencies, unless an extension is agreed upon with the MDIT Project Manager. The SOM shall then have ten (10) business days to inspect, and reevaluate the product. If the product and documentation still does not satisfy the acceptance criteria, the SOM shall have the option of either: (1) repeating the procedure set forth above, or (2) terminating this Contract pursuant to the section of this Contract entitled "Termination."

Upon receipt of the MDIT Project Manager's written acceptance of Phase III work, the Contractor may submit an invoice for the milestone payment associated with this Phase.

I (d) Phase IV - Development of the New System

This phase of the project will take the detailed design documents produced in Phase III and create the actual software product - a new functional Wellogic system. Unit and integration testing will be performed on the new software and the resulting, bug-free code will be installed on the State's Quality Assurance (AS) servers. Initial migration of the database will be performed with scripts and code provided by the contractor.

The Work Description for Development of the New System

Development of the new Wellogic System will be in accordance with the Design Document that was developed during Phase III and as accepted by the MDIT Project Manager. The new system will be documented and installed in a development environment. This development environment will reside on the vendor's servers and will be made accessible to SOM personal for viewing, evaluation and testing purposes.

The contractor will be required to create a Software document which will provide details of the system build and the source code. The document will include the description of all modules within the application, source code listing, versioning standards used, libraries/directories, database objects, and code dependencies. This document is intended to help the SOM development and testing staff to maintain the application efficiently.

A test plan to test the new system in the test environment will be developed and submitted to the MDIT Project Manager for use by SME's and other interested parties. The test plan will include user acceptance testing (UAT) by MDIT and MDEQ staff using test scripts developed by the contractor and approved by the MDIT Project Manager.

A copy of the relevant current Wellogic database will be made available to the contractor for use in development and conversion programming. A code review will be done soon after the commencement of actual coding. The vendor will submit representative samples of the code illustrating adherence and compliance with the coding standards referenced in Section 1.103. Environment. The State PM will (a) approve, (b) approve with modifications, or (c) disapprove of the vendor's coding style. The vendor will continue to use the approved coding style throughout the project. Any deviation from the approved coding style must be secured from the MDIT Project Manager in writing.

Additionally, the contractor will provide installation guides for installing the new Wellogic software in the SOM's QA hosting environments.

The Contractor's Responsibilities for Phase IV Development of the New System

- The contractor is to perform the development of the new Wellogic system (web pages and supporting code, database) and produce the development document(s).



- Within the first month of the development, the contractor is to update the project schedule to fully define the development effort and to include multiple review sessions wherein the contractor will demonstrate their progress on the development of the new Wellogic system.
- The contractor will provide access to source code as it is being developed to allow SOM staff to review the code in accordance with coding and development standards. The contractor shall ensure that a plan and schedule for the availability of the source code for review is provided in the project schedule. SOM will require the contractor to have at least three code reviews; initial, interim and final code reviews.
- The contractor shall work with SOM database and web hosting teams (along with the MDIT Project Manager) to define the configuration of the test and production environments.
- As the development of the new system progresses, the Contractor shall verify that the production system specifications in the Phase II technical requirement document remain accurate.
- The contractor shall develop the source code for the new Wellogic system such that the system is able to perform the functions as defined in Phase II and incorporated in the design in Phase III. The contractor will use a coding and annotating style which conforms to specifications listed in section 1.103. This code is to be written, organized and documented in accordance with accepted industry standards or as superseded by MDIT or this document. The contractor shall provide two paper copies and one electronic copy of the development document which details the code and describes the function each segment of code is performing and describes the operation of the code.
- As system components are developed and implemented, the Contractor will be required to provide comprehensive unit testing to validate functionality and performance. The contractor will develop a written test plan. This test plan will detail the test methodology and methods to be used and will include a schedule of the planned testing. At a minimum, the development testing on the vendor's servers is to include:
 - a) Unit testing - This involves testing every function individually and this will be done by the contractor prior to submitting code to the SOM to test. Unit testing will occur throughout the development of the actual software code by the vendor and should be completed by the contractor prior to delivery to the State. Documentation of successful unit testing will be submitted to the SOM Project Manager prior to initiation of the next phase of the project.
 - b) System testing - This involves validating that all of the functions work in unison. This will be done by the contractor prior to submitting code to the SOM to test.
 - c) Integration testing - This involves validating that all of the functions works in unison as the modules are developed. This testing will also be completed and documented by the contractor prior to submitting code to the SOM to install and test on the State's equipment. The State reserves the right to request validate the integration testing.
 - d) Functional testing - This occurs in conjunction with integration testing and is done to ensure that the new system handles data correctly, receiving inputs from users and files, performing data error checks and input validation, passes data between modules correctly, stores and retrieves data correctly, print reports, and presents the proper error messages to the user.
 - e) Stress testing - This occurs after integration and functional testing is complete and involves testing application procedures and functions with the increasing data and user load to ensure that the response time is within contract and user standards (see Service Level Agreements Exhibit D). Stress testing involves measuring how the application will perform in response to increasing demand by simulating the following: (1) increasing the number of users, (2) increasing the complexity of the tasks which the users are performing, and (3) increasing the number of tasks the users perform.
 - f) All changes shall result in testing the entire system (regression testing) to be sure all software functionality is maintained.
- The contractor will develop a conversion program to convert the data in the current active data base so that it matches the data structure of the data base in the new Wellogic system.
- The contractor will develop test scripts that will thoroughly test the workings of the new Wellogic system. In addition to testing every different type of transaction that the system would encounter in the normal course of business, the test scripts shall include the incorrect transactions that the system is designed to reject.

The State's Responsibilities for Phase IV Development of the New System

- Monitoring and oversight of the development work by the Contractor
- Answer questions and providing information when requested by the Contractor



- Make available a copy of the relevant Wellogic database for use in development and conversion programming.
- To review any interim deliverables as may be agreed upon among the MDEQ-WB Project Coordinator, the MDIT Project Manager and the Contractor's Project Manager
- SOM staff will review the source code in accordance with coding and development standards as it is being developed
- Participate in structured walkthroughs of deliverables for this phase
- Participate in the development of test plans, scripts and schedule
- To provide access to SOM specialists, such as security and network specialists, when requested by the Contractor and as agreed to by the MDIT Project Manager

Deliverables for Phase IV Development of the New System

The Contractor shall submit the following to the MDIT Project Manager:

1. Source Code (with Initial, Interim and Final Reviews)
2. Conversion Program
3. Test Plan, including test scripts and schedule,
4. Software document
5. Installation guides for loading the program into QA
6. Updated Requirements Traceability Matrix (if applicable)
7. Updated Project Plan (if applicable)
8. Updated Project Schedule (if applicable)

Acceptance Criteria for Phase IV Development of the New System

If the software code has been written according to SOM Standards and if the documents for this phase are in accordance with the SUITE methodology and templates (see section 1.103) and are acceptable to the MDIT Project Manager, in coordination with the MDEQ-WB Project Coordinator, the MDIT Project Manager will provide written acceptance for each deliverable. The contractor shall not commence work on Phase V until they have received written acceptance of all deliverables required under Phase IV.

If a product and/or the documentation is not acceptable to the MDIT Project Manager, the SOM shall give the Contractor written notice stating why the product is unacceptable. The Contractor shall have five (5) business days from the receipt of such notice to correct the deficiencies, unless an extension is agreed upon with the MDIT Project Manager. The SOM shall then have ten (10) business days to inspect, test and reevaluate the product. If the product and documentation still does not satisfy the acceptance criteria, the SOM shall have the option of either: (1) repeating the procedure set forth above, or (2) terminating this Contract pursuant to the section of this Contract entitled "Termination."

Upon receipt of the MDIT Project Manager's written acceptance of a Phase IV work for the specific application, the Contractor may submit an invoice for the milestone payment associated with this phase.

I (e) Phase V - Testing of the New System

The Work Description for Phase V - Testing the New System

- The Contractor will test the new Wellogic application in accordance with the test plan and schedule, developed in Phase IV for each application component and also test the integrated system. Unless directed in writing by the MDIT Project Manager, the Contractor will pre-test the application prior to MDEQ-WB program area subject matter experts beginning their testing. The contractor will establish and maintain a method for logging of all reported issues and their resolutions that is easily searchable. The Contractor will work with the program area subject matter experts and the MDIT Project Manager to address any errors or anomalies.



The Contractor's Responsibilities for Phase V - Testing the New System

- Prior to commencement of testing, the contractor will conduct a meeting with appropriate SOM staff in order to orient SOM staff on the test methodology and schedule. Due to the multiple responsibilities of SOM specialists it is critical that the contractor adhere to the test schedule as accepted and approved by the MDIT Project Manager in Phase IV.
- The contractor will conduct the test of the new system in accordance with the approved test plan and the test schedule. All tests will be conducted in the presence of the MDIT Project Manager or other person(s) as designated by the MDIT Project Manager. All changes to the application(s) shall result in testing the entire system (regression testing) to be sure all software functionality is maintained. The contractor shall utilize the test scripts, approved in Phase IV, to perform uniform system-wide testing.
- The Contractor will coordinate with the MDIT Project Manager to configure the application in the test environment after the Contractor has performed successful initial unit testing of the specific application. Then the MDEQ-WB program area subject matter experts will begin their user acceptance testing.
- The Wellogic system will be maintained by the contractor and the system will have the ability to document the following:
 - a) Production volume
 - b) Load balancing
 - c) Response time
 - d) Up time and down time of the Wellogic system
 - e) System/application errors
 - f) Errors in data transmission
 - g) Application functionality during this Phase of production
 - h) Analysis of errors and corrective action taken

The contractor will fully document the tests including a record of any test errors or anomalies. Errors will be reviewed to determine root cause and corrective action. The Contractor is responsible to correct the problem and request a re-test until the SOM is satisfied with the results. This review, its results, corrective action and re-test will be recorded in the Test Results document.

The contractor will be expected to submit an updated version of the Requirements Traceability Matrix to the MDIT Project Manager where they will complete the column marked "Test Report Number (s)." The Test "Report Number (s)" will only include section number references to the approved Test Results document. The Test Results document will not be considered complete until the contractor has provided an updated version of the Requirements Traceability Matrix.

The Contractor will coordinate with the MDIT Project Manager to set up the application in the test environment. Final quality assurance acceptance testing must be performed at the SOM hosting center and will mirror the SOM production environment. During testing, the SOM and the Contractor will work together to measure response time. The Contractor will make improvements to the application until the SOM is satisfied with the response time.

The State's Responsibilities for Phase V - Testing the New System

- The SOM will provide examples of data in the current system in order to assist the contractor in producing test data to enter into the data base during the test of the new system. Such example data may be altered in order to obscure the actual names and places
- Monitoring and oversight of the test work by the Contractor
- Answer questions and providing information when requested by the Contractor
- Validate system installation on test and production environments
- Perform user testing and participate in integration testing with the Contractor
- To provide access to SOM specialists, such security and network, when requested by the contractor and as agreed to by the MDIT Project Manager.
- The MDIT Project Manager will assemble the test team in coordination with the MDEQ-WB Project Coordinator and the Contractor. The test team will conduct acceptance testing



- The MDIT Project Manager will coordinate server access, security, or the network needed for testing and production environments

Deliverables for Phase V - Testing the New System

The contractor shall submit the following to the MDIT Project Manager:

1. Test Results document
 - a. Documented results of a conversion test wherein the current active data base will be test loaded into the new system in the test environment
 - b. Documented results of a test for data transfer and receipt from the other data systems
2. Data migration summary report including any errors encountered and corrective actions taken.
3. Updated Installation Guide for QA (if applicable)
4. Report on system performance and capabilities during this phase.
5. Updated test plan based on UAT results (if applicable)
6. Updated Requirements Traceability Matrix

Acceptance Criteria for Testing the New System

If the documents for this phase are in accordance with the SUITE methodology and templates (see section 1.103) and are acceptable to the MDIT Project Manager, in coordination with the MDEQ-WB Project Coordinator, the MDIT Project Manager will provide written acceptance for each deliverable. The contractor shall not commence work on Phase VI until they have received written acceptance of all deliverables required under Phase V.

If a product, results and/or the documentation is not acceptable to the MDIT Project Manager, the SOM shall give the Contractor written notice stating why the product is unacceptable. The Contractor shall have five (5) business days from the receipt of such notice to correct the deficiencies, unless an extension is agreed upon with the MDIT Project Manager. The SOM shall then have ten (10) business days to inspect, test and re-evaluate the product. If the product and documentation still does not satisfy the acceptance criteria, the SOM shall have the option of either: (1) repeating the procedure set forth above, or (2) terminating this Contract pursuant to the section of this Contract entitled "Termination."

Upon receipt of the MDIT Project Manager's written acceptance of Phase V work for the specific application, the Contractor may submit an invoice for the milestone payment associated with this phase.

I (f) Phase VI – Implementation (Placing the New System in Production)

The Work Description for Phase VI - Implementation

- This stage of the project will not commence until the new Wellogic application is complete, and bug-free. If the application is not operating successfully as described by the various approved requirements then this stage will be delayed until it is. The contractor will produce a test results document which records the test events, the dates of the events, the test results and the analysis of the results.
- The Wellogic application will be loaded onto the production platform and the data in the current system will be converted and loaded onto the production version of the database. A disaster recovery plan will be prepared and enacted for the new Wellogic system.
- The new Wellogic application will be run in the production environment for ninety (90) business days to verify that it performs in accordance with the specifications of the design and development documents. The Contractor and the State staff will monitor the new Wellogic system during the ninety (90) business day production run. A performance log will be maintained during this production run.

The Contractor's Responsibilities for Phase VI - Placing the New System in Production

- The contractor will conduct planning meetings with appropriate SOM staff regarding production and hosting of the application and database. The data migration plan will also be reviewed at this meeting to ensure a clear understanding of the tasks and sequencing of tasks.



- The contractor will provide installation guide for installing the new application in the MDEQ hosting environment. The installation guide will contain detailed, step by step instructions. The installation instructions will be summarized in the form of a check list separated into database and web-application server functions and tasks where possible.
- In coordination with the MDIT Project Manager, and SOM specialists, the Contractor will load the new system into the production environment in accordance with the approved development document.
- In coordination with the MDEQ-WB Project Coordinator, the MDIT Project Manager, and SOM specialists, the Contractor will convert the data in the current system to match the format of the new system and then load the data in the production version of the database.
- The contractor will document the performance of the system in a performance log. The performance log will record the following:
 - a) User Logins and User Work Load
 - b) Production volume
 - c) Load balancing
 - d) System Response Time under varying load conditions
 - e) Up time and down time of the Wellogic system
 - f) System/application errors in data entry
 - g) Errors in data transmission
 - h) The functioning of screens and reports
 - i) Analysis of errors and corrective action taken
 - j) Application functionality during this Phase of production
 - k) Dates and times of these events
- A copy of the performance log for the prior week shall be provided to the MDIT Project Manager each week in accordance with the project schedule.
- The contractor shall assist the State by performing the following:
 - a) Monitoring system performance.
 - b) Investigating any data processing errors/questions.
 - c) Monitoring computer resource usage in conjunction with MDIT Hosting.
 - d) Participating in problem review meetings.
 - e) Investigating problems and identifying potential problems.
 - f) Answering user questions about the system.
 - g) Generally helping the users execute tests and review results.
- In coordination with SOM hosting team specialists, a disaster recovery plan will be prepared and submitted for MDIT approval for the new Wellogic system.

The State's Responsibilities for Phase VI - Implementation

- Monitoring and oversight of the production run will be in coordination with the Contractor
- Answer questions and provide information when requested by the Contractor
- Provide access to SOM specialists when requested by the Contractor and as agreed to by the MDIT Project Manager
- Provide access to SOM facilities and equipment that is necessary to the production run of the new Wellogic system

Deliverables for Phase VI - Implementation

The Contractor shall submit the following to the MDIT Project Manager:

1. Installation and configuration of the new Wellogic application to the production environment
2. Installation Guide for Production
3. Performance log for the ninety (90) days production period
4. Disaster Recovery plan
5. Summary Report of Data Migration including any errors encountered and corrective actions taken.



Acceptance Criteria for Phase VI - Implementation

If the documents for this phase are in accordance with the SUITE methodology and templates (see section 1.103) and the new Wellogic system's performance is acceptable to the MDIT Project Manager, in coordination with the MDEQ-WHMD Project Coordinator, the MDIT Project Manager will provide written acceptance of the new Wellogic system.

If at any time during the ninety (90) business day production run, the new Wellogic system's performance or the interaction of all system components are not acceptable to the MDEQ-WB and the MDIT Project Manager; the SOM shall give the Contractor written notice stating why the product is unacceptable.

The Contractor shall have five (5) business days from the receipt of such notice to correct the deficiencies, unless an extension is agreed upon with the MDIT Project Manager. The State shall then have ten (10) business days to inspect, test and reevaluate the product. If the product and documentation still does not satisfy the acceptance criteria, the State shall have the option of either: (1) repeating the procedure set forth above, or (2) terminating this Contract pursuant to the section 2.150 of this Contract entitled "Termination/Cancellation."

In the event that the performance of the new Wellogic system is found unacceptable at any time during the ninety (90) business day production run and the contractor corrects the cause of the unacceptable performance, the MDIT Project Manager may accept the correction and elect to resume the production test run. If the production failure cannot be duplicated during this same period, the contractor shall provide an alternative testing methodology that is satisfactory to the MDIT Project Manager. In the event that the contractor is not able to provide an alternative testing methodology that is satisfactory to the MDIT Project Manager, the SOM shall have the option of either: (1) repeating the procedure set forth above, or (2) terminating this Contract pursuant to the section of this Contract entitled "Termination."

Upon receipt of the MDIT Project Manager's written acceptance of Phase VI work for the specific deliverables, the Contractor may submit an invoice for the milestone payment associated with this phase.

The maintenance period begins upon final written acceptance of the complete Wellogic system.

I (g) PHASE VII – Documentation, Training and Transition

The Work Description for Phase VII – Documentation, Training and Transition

(a) Documentation - This phase will involve drafting, editing, and finalizing all documentation related to this project. All documentation shall be submitted in electronic (Microsoft Word 2003) format on a CD and hard copy format of sufficient quality for reproduction purposes. The purpose of this phase is only to ensure that all documentation as submitted in Phases I through VI have been completed and are documented correctly. If there are any discrepancies with the documents submitted in earlier phases, then the Contractor will complete/correct before the project closing.

(b) Training - The contractor shall conduct Wellogic System user training and provide documentation in accordance with the training plan and training schedule delivered in Phase III, and as approved by the MDIT Project Manager. Timeline wise, the Training sessions should occur before the new Wellogic application goes into production.

This deliverable includes a scheduled technical training plan, training and technical knowledge transfer of the system production technical operations and maintenance to MDIT staff for MDIT hosting support. This plan is a critical component for successful completion of the training.

The Contractor's Responsibilities for Phase VII – Documentation, Training and Transition

- Make revisions to existing, or create new, Wellogic documentation for all documents listed below in the "Deliverables for Documentation and Training" section.



- Provide training (preferably on-line) and electronic manuals for the MDIT and other appropriate SOM staff in accordance with the training plan and training schedule delivered in Phase III, and as approved by the MDIT Project Manager. This could be up to 12 staff trained over a two-day period using either on-site or Webex-type teleconference options.
- Web hosting and database system administration training for SOM MDIT personnel who will be responsible for ongoing maintenance and administration of the system, including network and system security.

The State Staff Responsibilities Phase VII - Documentation, Training and Transition

- The MDIT Project Manager, in coordination with the MDEQ-WB Project Coordinator, will identify MDEQ-WB area experts for training
- The MDIT Project Manager will identify MDIT technical staff for training
- Provide and schedule training rooms, including all equipment for training needed.
- Review final versions of documentation as submitted by Contractor.
- Work with the Contractor to ensure accuracy and completeness of content.

Deliverables for Phase VII - Documentation, Training and Transition:

All training manuals, training plans and other documentation provided as deliverables become the property of the SOM.

(a) Documentation – Produce and update Wellogic document such as:

1. Separate User Guides for
 - a. Contractors
 - b. Local Health Departments
 - c. State of Michigan
2. Administration Guide
3. Debugging Guide
4. Updated Wellogic Technical documents including published Database scripts.
5. Wellogic APIs listing properties, methods, input and output parameters, detailed ERD, Use Cases and any documentation describing the process and data flows.
6. Draft Frequently Asked Questions (FAQ)
7. Tutorial CD

(b) Training and Transition – Conduct training and transition, with the following considerations:

1. Conduct a Training session for MDIT/MDEQ Wellogic Project Coordinators and subject area experts.
2. Conduct Web hosting and database system administration training for State MDIT personnel who will be responsible for ongoing maintenance and administration of the system, including network and system security
3. Create a Technical Training Plan that must contain the following:
 - A description of how the Contractor will prepare MDIT staff to assume responsibility for supporting the SOM production system hosting and operation including required MDIT roles and skills that will be needed. The Plan must also include the Contractor roles and responsibilities and knowledge base
 - A plan and schedule that specifies SOM resources required and specific high level tasks for the training and knowledge transfer
 - The training and knowledge transfer for quality assurance testing must be completed 60 business days before the system is released for production use
 - Documentation includes (A minimum of two (2) copies each of the documentation in electronic format and in hard copy must be provided):
 - a) Complete system documentation
 - b) User manuals (administrator and authorized user)
 - c) Training manuals
 - d) Glossary



4. The contractor will assist with transition for MDIT to assume full responsibility to support the solution by an agreed upon date before the contract expires. The contractor will perform maintenance and enhancement activities, and at the same time train the MDIT staff to gradually take over full support for the activities. The contractor will continue to assist MDIT as MDIT assumes responsibility for activities. The contractor will develop a transition and training plan to be agreed upon with the SOM.
5. **Promotional & Help CD** - The contractor will provide 500 CD's containing both a promotional demonstration of the new Wellogic application and a copy of the User Guide. The complete requirements will be defined in the Requirements gathering stage. However, for proposal purposes the contractor can consider that this would be some kind of automated Flash presentation or a Power Point promotional demonstration which will show some of the key functionalities of the application. The video shall be playable with media players compatible with Windows, Mac & Linux based operating systems. Additional content maybe added to the CD during the design and testing phases of the project. The cost of this deliverable should be included in the price shown in the Wellogic Rewrite Pricing (Exhibit E). The contractor will also provide a Web-hosted version of the promotional video. This video will have virtually no distribution costs, unlimited availability, fewer software dependencies, easier access, and would have the advantage of being instantly updateable if information changes.
6. All system, operational, user, change, and issue documentation must be available in electronic format, published to an intranet website, accessible to State users, updated regularly, with unique numerical identifiers for each section and be consistent with the most current version of the application(s) and three (3) previous versions
7. All system, operations, user, change and issue documentation is to be organized in a format, which is approved by the State and facilitates updating and allows for revisions to the documentation to be clearly identified including the three (3) previous versions
8. Project Closeout documentation and lessons learned as described by the following link:
<http://www.michigan.gov/suite>

Acceptance Criteria for Phase VII - Documentation, Training and Transition:

If the documentation for this phase are in accordance with the SUITE methodology and templates (see section 1.103) and upon approval of all documents and the required training, the MDIT Project Manager, in coordination with the MDEQ-WB Project Coordinator, will provide written acceptance for this Phase.

Upon receipt of the MDIT Project Manager's written acceptance of Phase VII work for the specific deliverables, the Contractor may submit an invoice for the milestone payment associated with this phase. All training manuals, training plans and other documentation provided become the property of the State.

I (h) Hardware and Software Requirements

For all Hardware and Software requirements refer to Section 2.301 and 2.302.

I (i) Maintenance and Support

The contractor will provide relevant copies, patches, or corrective services to correct any error, malfunction or defect in the new Wellogic system. Maintenance does not include professional services to modify, customize or enhance software functionality to meet specific SOM business requests. Hardware maintenance is outside the scope of this project.

The maintenance period will commence upon the completion of the ninety (90) days production run and final acceptance of the system by the MDIT Project Manager.

Software Maintenance and Support will include but are not limited to:

1. System Maintenance
2. Help Desk
3. Adaptive and Preventive Maintenance
4. Performance Maintenance
5. Documentation Update



I (j) Future Enhancements

The contractor shall commit to providing professional services to implement enhancements for the duration of the contract as it may be amended. The contractor shall commit to provide personnel in the staffing categories shown in Part 3 of Exhibit E.

Future enhancements shall be implemented as follows: The SOM will prepare a statement of work that describes the enhancement and present this to the contractor. The contractor will respond with a proposal of their work plan to implement the enhancement and the number of hours by staffing category to carry out that work. The SOM will review the proposal and, if acceptable, will issue a Change Order as approved by SOM if the amount approved is within the remaining contingency reserve (or enhancement monies), otherwise a Contract Change Notice and purchase order will need to be issued for the new scope of work.

II. Requirements

The requirements for this project are found in the following exhibits and appendices. Each of these appendixes describes in detail a fundamental portion of the desired application.

(a) Network Configuration – see Exhibit A

This provides a high level view of the current Wellogic network configuration and the proposed Wellogic network configuration.

(b) Technical Requirements - see Exhibit B

This document describes the conditions under which the system must run and function. It provides detail descriptions of architecture and function needs of the application so as to fit into the MDEQ-SOM network environment.

(c) Functional Requirements – see Exhibit C

This document provides a listing of requirements, processes, and outcomes to ensure that the application operates properly. When reviewed with “Appendix A- Current System with Enhancement” these fully explain what work tasks the system must do.

(d) Service Level Requirements - see Exhibit D

This document provides the requirements for ongoing maintenance and support and future enhancements

(e) Current System with Enhancements - see Appendix A

This document provides modifications, additions and deletions to the existing user interfaces to make the new application acceptable to MDEQ administrators and the user community.

(f) Metadata and Validations - see Appendix B

This document provides the details of the database tables and fields including naming conventions and individual field level validations.

(g) Business Logic - see Appendix C

This document provides a listing of operations, requirements, processes and dependencies needed to support, monitor and validate submitting data.

(h) User Permissions – see Appendix D

Listing of navigation options and subsequent functionality by user Group.

(i) Desired choices for on-screen Picklists and dropdowns - Appendix E

Listing of the picklist/dropdown choices for each field, this can vary by user Group.

1.200 Roles and Responsibilities

1.201 Contractor Staff, Roles, And Responsibilities

A. Contractor Staff

Refer to Section 2.062 Contractor Key Personnel for details



B. On Site Work Requirements

1. Location of Work

The work is to be performed, completed, and managed as follows: The Contractor will work out of their office. The SOM will provide workspace (work space, telephone, and access to a printer, copier, and fax machine) for the Contractor when on site at SOM offices. The Wellogic application will be hosted in the Greater Lansing area where the installation and testing of the new Wellogic system is to occur.

2. Hours of Operation:

- a. Normal State working hours are 8:00 a.m. to 5:00 p.m. EST, Monday through Friday, with work performed as necessary after those hours to meet project deadlines. No overtime will be authorized or paid.
- b. The State is not obligated to provide State management of assigned work outside of normal State working hours. The State reserves the right to modify the work hours in the best interest of the project.
- c. The State does not compensate for holiday pay.

3. Travel:

- a. No travel or related expenses will be reimbursed. This includes travel costs related to training provided to the State by Contractor.
- b. Travel time will not be reimbursed.

4. Additional Security and Background Check Requirements:

If the contractor personnel comes on State property, the contractor must present certifications evidencing satisfactory Michigan State Police Background checks ICHAT and drug tests for all staff identified for assignment to this project. In addition, the Contractor personnel will be required to complete and submit an RI-8 Fingerprint Card for the National Crime Information Center (NCIC) Finger Prints, if required by project. Contractor will pay for all costs associated with ensuring their staff meets all requirements.

1.202 State Staff, Roles, and Responsibilities

If needed, the State will provide the following resources for the Contractor's use on this project:

- Work space
- Minimal clerical support
- Desk
- Telephone
- PC workstation
- Printer
- Access to copiers and fax machine

The State project team will consist of

- **MDIT Project Manager – Stanley Samuel**
- **MDIT Subject Matter Expert (SME) – Saraswathi Raja**
- **MDEQ Project Executive Sponsor – James K. Cleland**
- **MDEQ-WB - Project Coordinator – Ronda Page**
- **MDEQ-WB – SME – Anita Ladouceur**

(a) MDEQ – Key Staff

The MDEQ Project Executive Sponsor shall be available on an as needed basis. The MDEQ Project Executive Sponsor will be solicited for decisions by the MDEQ-WB Coordinator and MDEQ-WB-SME when there is a need to:

- Resolve project issues in a timely manner
- Resolve deviations from project plan
- Utilize change control procedures



The MDEQ-WB Project Coordinator & MDEQ-WB-SME will provide the following services in cooperation with the MDIT Project Manager:

- Submit the adjustments in response to legislative or outside agency directives to the Contractor
- Provide SOM facilities, as needed
- Coordinate the SOM resources necessary for the project
- Facilitate communication between different SOM departments/divisions
- Milestone and deliverables acceptance and sign-off, with cooperation and approval of the MDIT project manager
- Resolution of project issues
- Escalation of outstanding/high priority issues to MDEQ Project Executive Sponsor
- Utilize change control procedures
- Conducting regular and ongoing review of the project to confirm that it meets original objectives and requirements
- Documentation and archiving of all important project decisions
- Arrange, schedule and facilitate SOM staff attendance at all project meetings
- Distribution of all documentation, where necessary, to MDEQ-WB and other agencies, such as MDIT (i.e., MDIT Project Manager).

The following resources have been assigned for the Wellogic System Rewrite project:

Name	Agency/Division	Title
James K. Cleland	MDEQ-WB	MDEQ Project Executive Sponsor
Ronda Page	MDEQ-WB	MDEQ-WB Project Coordinator
Anita Ladouceur	MDEQ-WB	MDEQ- SME

(b) MDIT Key Staff

MDIT will provide a MDIT Project Manager who will be responsible for the overall contract. The MDIT Project Manager will designate a representative to assist with the managing of the day to day operations of the project, and will work closely with the MDEQ Subject Matter Experts. But only the MDIT Project Manager has the authority to approve or accept work by the Contractor. The designated representative will be a **Senior Project Manager, Stanley Samuel**, who will provide the following services:

- Will be responsible for the State's infrastructure
- Coordinate with the Contractor in determining the system configuration.
- Provide State facilities, as needed
- Coordinate the State resources necessary for the project
- Facilitate coordination between various external contractors
- Facilitate communication between different State departments/divisions
- Provide acceptance and sign-off of deliverable/milestone
- Review and sign-off of timesheets and invoices
- Resolve project issues
- Escalate outstanding/high priority issues
- Utilize change control procedures
- Conduct regular and ongoing review of the project to confirm that it meets original objectives and requirements
- Document and archive all important project decisions
- Arrange, schedule and facilitate State staff attendance at all project meetings.

MDIT will provide a **Subject Matter Expert, Anita Ladouceur**, who will provide technical guidance in cooperation with the MDIT Project Manager:

- Review the project deliverables
- Conduct testing of the application
- Conduct code reviews
- Review use cases and its applicability to the business
- Advise on State of Michigan programming guidelines



The following resources have been assigned for the Wellogic System Rewrite project:

Name	Agency/Division	Title
Jeanne Irwin	MDIT/Agency Services	MDIT Client Services Director / MDIT Project Manager
Stanley Samuel	MDIT/Agency Services	Senior Project Manager- Operations
Saraswathi Raja	MDIT/ Agency Services	MDIT-SME

MDIT shall provide a Contract Administrator whose duties shall include, but not be limited to, supporting the management of the Contract.

Name	Agency/Division	Title
Peter Devlin	MDIT/Bureau of Strategic Policy	Contract Administrator

In addition, the following SOM personnel/resources may be required at various stages of the project. The Contractor’s Project Manager will make every effort to provide the SOM with advance notice of when their services may be required, as shown below:

- a) Systems Analyst
- b) Database Administrator
- c) Application Administrator
- d) User Implementation Coordinator
- e) Network Administrator
- f) Remote access to test and production database environment

1.203 Other Roles And Responsibilities

None

1.300 Project Plan

1.301 Project Plan Management

Preliminary Project Plan

A Preliminary Project Plan was submitted with the contractor’s proposal (as shown in Exhibit F). A Final Project Plan will be required as stated in Article 1, Section 1.301 Project Control.

Orientation Meeting

If requested by SOM, upon 30 calendar days from execution of the Contract, the Contractor will be required to attend an orientation meeting to discuss the content and procedures of the Contract. The meeting will be held in Lansing, Michigan, at a date and time mutually acceptable to the State and the Contractor. The State shall bear no cost for the time and travel of the Contractor for attendance at the meeting.

Performance Review Meetings

The State will require the Contractor to attend Bi-Weekly status meetings, at a minimum, to review the Contractor’s performance under the Contract. The meetings will be held in Lansing, Michigan, or by teleconference, as mutually agreed by the State and the Contractor. The State shall bear no cost for the time and travel of the Contractor for attendance at the meeting.

Project Control

1. The Contractor will carry out this project under the direction and control of MDIT.
2. Within 30 business days of the execution of the Contract, the Contractor will submit to the MDIT project manager(s) a final project plan for approval. This project plan must be in agreement with Article 1, Section 1.104 Work and Deliverables, and must include the following:
 - The Contractor’s project organizational structure.
 - The Contractor’s staffing table with names and title of personnel assigned to the project. This must be in agreement with staffing of accepted proposal. Necessary substitutions due to change of employment status and other unforeseen circumstances may only be made with prior approval of the State.



- The project work breakdown structure (WBS) showing sub-projects, activities and tasks, and resources required and allocated to each.
 - The time-phased plan in the form of a graphic display, showing each event, task, and decision point in the WBS.
3. The Contractor will manage the project in accordance with the State Unified Information Technology Environment (SUITE) methodology, which includes standards for project management, systems engineering, and associated forms and templates which is available at <http://www.michigan.gov/suite>. As stated in section 1.103, the contractor is required to review all information provided by this link and confirm compliance in their response.
- a. Contractor will use an automated tool for planning, monitoring, and tracking the Contract's progress and the level of effort of any Contractor personnel spent performing Services under the Contract. The tool shall have the capability to produce:
- Staffing tables with names of personnel assigned to Contract tasks
 - Project plans showing tasks, subtasks, deliverables, and the resources required and allocated to each (including detailed plans for all Services to be performed within the next 30 calendar days, updated semi-monthly)
 - Updates must include actual time spent on each task and a revised estimate to complete
 - Graphs showing critical events, dependencies and decision points during the course of the Contract
- b. Any tool(s) used by Contractor for such purposes must produce information of a type and in a manner and format that will support reporting in compliance with the State standards

1.302 Reports

A Bi-weekly Project Status report and a Monthly Updated Project Schedule will be required from the contractor from the Start of the project until the completion of the project or mutually agreed by the MDIT project manager and the contractor.

The Contractor shall include, within the Bi-weekly status reports, a statement that the project is on schedule or provide a proposed revised schedule. Each status report will include any key decisions and issues discussed during the previous week, if applicable. Each status report is to list any decisions or data that the Contractor is waiting for from the SOM or, if there is not anything that the contractor is waiting for the status report is to so state. The Contractor shall also include other pertinent information impacting the project as may be added by the MDIT Project Manager.

The Bi-weekly Status report will use the SUITE template to report the status, which may include the following sections or other sections as mutually agreed by the MDIT Project Manager and the contractor for the duration of the contract.

- Bi-Weekly Project Status
- Updated Project Plan (as needed)
- Summary of activity during the report period
- Accomplishments during the report period
- Deliverable status
- Schedule status
- Action Item status
- Issues and/or Risks
- Change Control
- Maintenance Activity (if any)

1.400 Project Management

1.401 Issue Management

An issue is an identified event that if not addressed may affect schedule, scope, quality, or budget.



The Contractor shall maintain an issue log for issues relating to the provision of services under this Contract. The issue log must be communicated to the MDIT Project Manager on an agreed upon schedule, with email notifications and updates. The issue log must be updated and must contain the following minimum elements:

- Description of issue
- Issue identification date
- Responsibility for resolving issue
- Priority for issue resolution (to be mutually agreed upon by the State and the Contractor)
- Resources assigned responsibility for resolution
- Resolution date
- Resolution description

Issues shall be escalated for resolution from level 1 through level 3, as defined below:

Level 1 – Contractor Team/Technical leads and MDEQ Subject Matter Experts (SME's)

Level 2 – Contractor Project Manager, MDIT Project Manager & MDEQ Project Coordinator

Level 3 – Executive Subject Matter Experts (SME's)

1.402 Risk Management

A risk is an unknown circumstance or event that, if it occurs, may have a positive or negative impact on the project. The Contractor is responsible for establishing a risk management plan and process, including the identification and recording of risk items, prioritization of risks, definition of mitigation strategies, monitoring of risk items, and periodic risk assessment reviews with the State.

The risk management plan will be developed during the initial planning phase of the project, and be in accordance with the State's SUITE methodology. Once both parties have agreed to the format of the plan, it shall become the standard to follow for the duration of the contract. The plan must be updated bi-weekly, or as agreed upon.

The Contractor shall use a tool like MS Excel, Word or any other contractor's products (subject to approval by MDIT Project Manager) to track risks. The Contractor will work with the State according to the Risk Management Plan, delivered as part of the Project Plan in Phase I, and will collaborate on the Identification, Qualitative and Quantitative Analysis, and the Response Planning of risks. (Refer to the following link for further information: http://www.michigan.gov/documents/PMM-06_159179_7.dot)

The Contractor is responsible for identification of risks for each phase of the project. Mitigating and/or eliminating assigned risks will be the responsibility of the Contractor. The State will assume the same responsibility for risks assigned to them.

1.403 Change Management

Change management is defined as the process to communicate, assess, monitor, and control all changes to system resources and processes. (Refer to the following link for further information on MDIT's change management standard: http://www.michigan.gov/documents/PMM-09_159187_7.dot)

The State also employs change management in its administration of the Contract.

Any change to the scope, schedule, budget or terms of the contract will first need to be reviewed and approved by the MDIT Project Manager. Thereafter, if the proposed contract change is approved by the Agency, the Contract Administrator will submit a request for change to the Department of Management and Budget, Purchasing Operations Buyer, who will make recommendations to the Director of Purchasing Operations regarding ultimate approval/disapproval of change request. If the DMB Purchasing Operations Director agrees with the proposed modification, and all required approvals are obtained (including State Administrative Board), the Purchasing Operations Buyer will issue an addendum to the Contract, via a Contract Change Notice.

Contractors who provide products or services prior to the issuance of a Contract Change Notice by the DMB Purchasing Operations, risk non-payment for the out-of-scope/pricing products and/or services.

The Contractor must employ change management procedures to handle such things as "out-of-scope" requests or changing business needs of the State while the migration is underway.



All Change Requests must receive approval of the MDIT Project Manager prior to beginning work on the requested change(s).

The Contractor will employ the change control methodologies to justify changes in the processing environment, and to ensure those changes will not adversely affect performance or availability.

1.500 Acceptance

1.501 Criteria

See the Acceptance Criteria identified in Section 1.104, Work and Deliverables for the seven Phases of the project. Acceptance Criteria is based upon the work agreed upon and the plan(s) developed for the work.

1.502 Final Acceptance

Along with the acceptance criteria identified in Section 1.104, Work and Deliverables, the following requirements of final acceptance apply:

- Documents are dated and in electronic format, compatible with State of Michigan software
- Requirements documents are reviewed and updated throughout the development process to assure requirements are delivered in the final product
- Draft documents are not accepted as final deliverables
- The documents will be reviewed and accepted in accordance with the requirements of the Contract and Appendices
- MDIT and MDEQ-WB will review documents within a mutually agreed upon timeframe
 - a) Approvals will be written and signed by the MDIT Project Manager
 - b) Issues will be documented and submitted to the Contractor
 - c) After issues are resolved or waived, the Contractor will resubmit documents for approval within 30 days of receipt
 - d) 90 days of successful production run

Final acceptance is expressly conditioned upon completion of all deliverables and/or milestones, completion of all tasks in the project plan as approved, completion of all applicable inspection and/or testing procedures, and the certification by the MDIT Project Manager that the Contractor has met the defined requirements of a successfully operating new Wellogis System.

1.600 Compensation and Payment

1.601 Compensation and Payment

Method of Payment

The project will be paid based on a firm, fixed-priced and will be deliverables based. All pricing information for the **Wellogis Rewrite project is provided in Exhibit E**. The contractor will need to adhere to the deliverables identified in Exhibit E.

The contractor must identify all information related, directly or indirectly, to the Contractor's proposed charges for services and deliverables including, but not limited to, costs, fees, prices, rates, or the identification of free services, labor or materials. The Contractor agrees the charges represent the total charge to the State, and that there are no other charges required to ensure successful Contract execution.

Payment to the Contractor will be made upon the completion and acceptance of the deliverable or milestone, not to exceed contractual costs of the phase. A milestone is defined as complete when all of the deliverables within the milestone have been completed and upon written acceptance by the MDIT Project Manager. Failure to provide deliverable/milestone by the identified date may be subject to liquidated damages as identified in Article 2.243.

State of Michigan encourages and appreciates completion of deliverables ahead of schedule. However, no payments will be made for completed deliverables from the next phase until all the deliverables from the current open phase are completed. For example, if there is a pending deliverable "Updated Project Plan" in



Phase II, but the contractor has completed a deliverable “System Design Document” from Phase III, then until the pending deliverable “Updated Project Plan” from Phase II is completed, the contractor will not be eligible for payment for “System Design Document” from Phase III.

Contractor agrees to all the prices, terms, warranties, and benefits provided in this Contract are comparable to or better than the terms presently being offered by Contractor to any other governmental entity purchasing the same quantity under similar terms. If, during the term of this Contract, the Contractor shall enter into contracts with any other governmental entity providing greater benefits or more favorable terms than those provided by this Contract, the Contractor shall be obligated to provide the same to the State for subsequent purchases.

The Contractor may be asked to provide additional hours, but not to exceed \$200,000.00 during the term of the contract for enhancements and modifications to the system resulting from state and federal legislative mandates, grant requirements, and changes to the network, security, or system platform. The additional work will be delineated under Change Management (See 1.403 Change Management).

The State shall pay maintenance and support charges on a yearly basis. Incorrect or incomplete invoices will be returned to Contractor for correction and reissue.

Travel

The State will not pay for any travel expenses, including hotel, mileage, meals, parking, etc. Travel time will not be reimbursed.

Out-of-Pocket Expenses

Contractor out-of-pocket expenses are not separately reimbursable by the State unless, on a case-by-case basis for unusual expenses, the State has agreed in advance and in writing to reimburse Contractor for such an expense at the State’s current travel reimbursement rates. In the event travel is required, all travel reimbursement will be paid according to the State of Michigan’s Standardized Travel Rates and Regulations. This information may be found at: http://www.michigan.gov/dmb/0,1607,7-150-9141_13132---,00.html

If Contractor reduces its prices for any of the software or services during the term of this Contract, the State shall have the immediate benefit of such lower prices for new purchases. Contractor shall send notice to the State’s MDIT Contract Administrator with the reduced prices within fifteen (15) Business Days of the reduction taking effect.

Statements of Work and Issuance of Purchase Orders

- Unless otherwise agreed by the parties, each Statement of Work will include:
 1. Background
 2. Project Objective
 3. Scope of Work
 4. Deliverables
 5. Acceptance Criteria
 6. Project Control and Reports
 7. Specific Department Standards
 8. Payment Schedule
 9. Travel and Expenses
 10. Project Contacts
 11. Agency Responsibilities and Assumptions
 12. Location of Where the Work is to be performed
 13. Expected Contractor Work Hours and Conditions
- The parties agree that the Services/Deliverables to be rendered by Contractor pursuant to this Contract (and any future amendments of it) will be defined and described in detail in Statements of Work or Purchase Orders (PO) executed under this Contract. Contractor shall not be obliged or authorized to commence any work to implement a Statement of Work until authorized via a PO issued against this Contract. Contractor shall perform in accordance with this Contract, including the Statements of Work/Purchase Orders executed under it.

**Invoicing**

Contractor will submit properly itemized invoices to the "Bill To" Address on the Purchase Order. Invoices must provide and itemize, as applicable:

- Contract number;
- Purchase Order number
- Contractor name, address, phone number, and Federal Tax Identification Number;
- Description of the completed phase;
- Date(s) of delivery and/or date(s) of installation and set up;
- Price for each item, or Contractor's list price for each item and applicable discounts;
- Maintenance charges;
- Net invoice price for each item;
- Shipping costs;
- Other applicable charges;
- Total invoice price; and
- Payment terms, including any available prompt payment discount.

Incorrect or incomplete invoices will be returned to Contractor for correction and reissue.

**1.602 Holdback
RESERVED**



Article 2, Terms and Conditions

2.000 Contract Structure and Term

2.001 Contract Term

This Contract is for a period of **three (3) years** commencing on June 22, 2009 through June 21, 2012.. All outstanding Purchase Orders must also expire upon the termination (cancellation for any of the reasons listed in **Section 2.150**) of the Contract, unless otherwise extended under the Contract. Absent an early termination for any reason, Purchase Orders issued but not expired, by the end of the Contract's stated term, will remain in effect for the balance of the fiscal year for which they were issued.

2.002 Renewal(s)

This Contract may be renewed, for maintenance and support and enhancements (as defined in the SOW – see Article 1) in writing by mutual agreement of the parties not less than 30 days before its expiration. The Contract may be **renewed** for up to **three (3) additional one (1) year periods**.

2.003 Legal Effect

Contractor shall show acceptance of this Contract by signing two copies of the Contract and returning them to the Contract Administrator. The Contractor shall not proceed with the performance of the work to be done under the Contract, including the purchase of necessary materials, until both parties have signed the Contract to show acceptance of its terms, and the Contractor receives a contract release/purchase order that authorizes and defines specific performance requirements.

Except as otherwise agreed in writing by the parties, the State assumes no liability for costs incurred by Contractor or payment under this Contract, until Contractor is notified in writing that this Contract (or Change Order) has been approved by the State Administrative Board (if required), approved and signed by all the parties, and a Purchase Order against the Contract has been issued.

2.004 Attachments & Exhibits

All Attachments and Exhibits affixed to any and all Statement(s) of Work, or appended to or referencing this Contract, are incorporated in their entirety and form part of this Contract.

2.005 Ordering

The State will issue a written Purchase Order, Blanket Purchase Order, Direct Voucher or Procurement Card Order, which must be approved by the Contract Administrator or the Contract Administrator's designee, to order any Services/Deliverables under this Contract. All orders are subject to the terms and conditions of this Contract. No additional terms and conditions contained on either a Purchase Order or Blanket Purchase Order apply unless they are also specifically contained in that Purchase Order or Blanket Purchase Order's accompanying Statement of Work.

2.006 Order of Precedence

The Contract, including any Statements of Work and Exhibits, to the extent not contrary to the Contract, each of which is incorporated for all purposes, constitutes the entire agreement between the parties with respect to the subject matter and supersedes all prior agreements, whether written or oral, with respect to the subject matter and as additional terms and conditions on the purchase order must apply as limited by **Section 2.005**.

In the event of any inconsistency between the terms of the Contract and a Statement of Work, the terms of the Statement of Work will take precedence (as to that Statement of Work only); provided, however, that a Statement of Work may not modify or amend the terms of the Contract, which may be modified or amended only by a formal Contract amendment.

2.007 Headings

Captions and headings used in the Contract are for information and organization purposes. Captions and headings, including inaccurate references, do not, in any way, define or limit the requirements or terms and conditions of the Contract.



2.008 Form, Function & Utility

If the Contract is for use of more than one State agency and if the Deliverable/Service does not meet the form, function, and utility required by that State agency, that agency may, subject to State purchasing policies, procure the Deliverable/Service from another source.

2.009 Reformation and Severability

Each provision of the Contract is severable from all other provisions of the Contract and, if one or more of the provisions of the Contract is declared invalid, the remaining provisions of the Contract remain in full force and effect.

2.010 Consents and Approvals

Except as expressly provided otherwise in the Contract, if either party requires the consent or approval of the other party for the taking of any action under the Contract, the consent or approval must be in writing and must not be unreasonably withheld or delayed.

2.011 No Waiver of Default

If a party fails to insist upon strict adherence to any term of the Contract then the party has not waived the right to later insist upon strict adherence to that term, or any other term, of the Contract.

2.012 Survival

Any provisions of the Contract that impose continuing obligations on the parties, including without limitation the parties' respective warranty, indemnity and confidentiality obligations, survive the expiration or termination of the Contract for any reason. Specific references to survival in the Contract are solely for identification purposes and not meant to limit or prevent the survival of any other section

2.013 Federal Grant Requirements

The following links contain certifications and terms which may be required for some purchases paid via Federal funds. They are included here to be utilized as required.

<http://www.archives.gov/federal-register/executive-orders/pdf/12869.pdf>

<http://www.archives.gov/federal-register/codification/executive-order/12549.html>

http://straylight.law.cornell.edu/uscode/html/uscode31/usc_sec_31_00001352----000-.html

2.020 Contract Administration

2.021 Issuing Office

This Contract is issued by the Department of Management and Budget, Purchasing Operations and Michigan Department of Environmental Quality (collectively, including all other relevant State of Michigan departments and agencies, the "State"). Purchasing Operations is the sole point of contact in the State with regard to all procurement and contractual matters relating to the Contract. The Purchasing Operations Contract Administrator for this Contract is:

Joann M Klasko,
Buyer
Purchasing Operations
Department of Management and Budget
Mason Bldg, 2nd Floor
Lansing, MI 48909
KlaskoJ@michigan.gov
(517) 241 7233

2.022 Contract Compliance Inspector

The Director of Purchasing Operations directs the person named below, or his or her designee, to monitor and coordinate the activities for the Contract on a day-to-day basis during its term. **Monitoring Contract activities does not imply the authority to change, modify, clarify, amend, or otherwise alter the prices, terms,**



conditions and specifications of the Contract. Purchasing Operations is the only State office authorized to change, modify, amend, alter or clarify the prices, specifications, terms and conditions of this Contract. The Contract Compliance Inspector for this Contract is:

Peter F. Devlin
MDIT Bureau of Strategic Policy, Contract Office
Constitution Hall, 1st Floor
525 W. Allegan
Lansing, MI 48913
DevlinP@michigan.gov
(517)241-8515

2.023 Project Manager

The following individuals will oversee the project:

(a) Senior Project Manager- Operations

Stanley Samuel, MBA, PMP
MI Department of Information Technology
Agency Services, MDEQ
Email: samuels@michigan.gov
Phone: 517 241 8011 (O)

(b) MDEQ Project Executive Sponsor

James K. Cleland
Michigan Department of Environmental Quality
Water Bureau
Constitution Hall, 3rd Floor
525 W. Allegan
Lansing, MI 48913
clelandj@michigan.gov
(517) 241-1287

2.024 Change Requests

The State reserves the right to request from time to time any changes to the requirements and specifications of the Contract and the work to be performed by the Contractor under the Contract. During the course of ordinary business, it may become necessary for the State to discontinue certain business practices or create Additional Services/Deliverables. At a minimum, to the extent applicable, the State would like the Contractor to provide a detailed outline of all work to be done, including tasks necessary to accomplish the Services/Deliverables, timeframes, listing of key personnel assigned, estimated hours for each individual per task, and a complete and detailed cost justification.

If the State requests or directs the Contractor to perform any Services/Deliverables that are outside the scope of the Contractor's responsibilities under the Contract ("New Work"), the Contractor must notify the State promptly, and before commencing performance of the requested activities, that it believes the requested activities are New Work. If the Contractor fails to notify the State before commencing performance of the requested activities, any such activities performed before the Contractor gives notice shall be conclusively considered to be in-scope Services/Deliverables, not New Work.

If the State requests or directs the Contractor to perform any services or provide deliverables that are consistent with and similar to the Services/Deliverables being provided by the Contractor under the Contract, but which the Contractor reasonably and in good faith believes are not included within the Statements of Work, then before performing such services or providing such deliverables, the Contractor shall notify the State in writing that it considers the services or deliverables to be an Additional Service/Deliverable for which the Contractor should receive additional compensation. If the Contractor does not so notify the State, the Contractor shall have no right to claim thereafter that it is entitled to additional compensation for performing



that service or providing that deliverable. If the Contractor does so notify the State, then such a service or deliverable shall be governed by the Change Request procedure in this Section.

In the event prices or service levels are not acceptable to the State, the Additional Services or New Work shall be subject to competitive bidding based upon the specifications.

(1) Change Request at State Request

If the State should require Contractor to perform New Work, Additional Services or make changes to the Services that would affect the Contract completion schedule or the amount of compensation due Contractor (a "Change"), the State shall submit a written request for Contractor to furnish a proposal for carrying out the requested Change (a "Change Request").

(2) Contractor Recommendation for Change Requests:

Contractor shall be entitled to propose a Change to the State, on its own initiative, should it be of the opinion that this would benefit the Contract.

(3) Upon receipt of a Change Request or on its own initiative, Contractor shall examine the implications of the requested Change on the technical specifications, Contract schedule and price of the Deliverables and Services and shall submit to the State without undue delay a written proposal for carrying out the Change. Contractor's proposal will include any associated changes in the technical specifications, Contract schedule and price and method of pricing of the Services. If the Change is to be performed on a time and materials basis, the Amendment Labor Rates shall apply to the provision of such Services. If Contractor provides a written proposal and should Contractor be of the opinion that a requested Change is not to be recommended, it shall communicate its opinion to the State but shall nevertheless carry out the Change as specified in the written proposal if the State directs it to do so.

(4) By giving Contractor written notice within a reasonable time, the State must be entitled to accept a Contractor proposal for Change, to reject it, or to reach another agreement with Contractor. Should the parties agree on carrying out a Change, a written Contract Change Notice must be prepared and issued under this Contract, describing the Change and its effects on the Services and any affected components of this Contract (a "Contract Change Notice").

(5) No proposed Change must be performed until the proposed Change has been specified in a duly executed Contract Change Notice issued by the Department of Management and Budget, Purchasing Operations.

(6) If the State requests or directs the Contractor to perform any activities that Contractor believes constitute a Change, the Contractor must notify the State that it believes the requested activities are a Change before beginning to work on the requested activities. If the Contractor fails to notify the State before beginning to work on the requested activities, then the Contractor waives any right to assert any claim for additional compensation or time for performing the requested activities. If the Contractor commences performing work outside the scope of this Contract and then ceases performing that work, the Contractor must, at the request of the State, retract any out-of-scope work that would adversely affect the Contract.

2.025 Notices

Any notice given to a party under the Contract must be deemed effective, if addressed to the party as addressed below, upon: (i) delivery, if hand delivered; (ii) receipt of a confirmed transmission by facsimile if a copy of the notice is sent by another means specified in this Section; (iii) the third Business Day after being sent by U.S. mail, postage pre-paid, return receipt requested; or (iv) the next Business Day after being sent by a nationally recognized overnight express courier with a reliable tracking system.

State:

State of Michigan
Purchasing Operations
Attention: Joann M Klasko
530 West Allegan
Mason Bldg., 2nd Floor
Lansing, Michigan 48913



with a copy to:

State of Michigan
 Department of Information Technology
 Attention: Peter F. Devlin
 Constitution Hall
 First Floor, North Tower
 525 West Allegan Street
 Lansing, Michigan 48913

Contractor:

Name:	Windsor Solutions, Inc.			Web Page:	www.windsorsolutions.com	
Attention:	Craig Austin			e-mail:	craig_austin@windsorsolutions.com	
Address:	4000 Kruse Way Place, Bldg 2, Ste 285	City:	Lake Oswego	State:	OR	Zip: 97035
Phone:	503-675-7833 Extension 215	Fax:	503-675-7804	Mobile:	n/a	

Either party may change its address where notices are to be sent by giving notice according to this Section.

2.026 Binding Commitments

Representatives of Contractor must have the authority to make binding commitments on Contractor’s behalf within the bounds set forth in the Contract. Contractor may change the representatives from time to time upon written notice.

2.027 Relationship of the Parties

The relationship between the State and Contractor is that of client and independent contractor. No agent, employee, or servant of Contractor or any of its Subcontractors must be or must be deemed to be an employee, agent or servant of the State for any reason. Contractor will be solely and entirely responsible for its acts and the acts of its agents, employees, servants and Subcontractors during the performance of the Contract.

2.028 Covenant of Good Faith

Each party must act reasonably and in good faith. Unless stated otherwise in the Contract, the parties will not unreasonably delay, condition or withhold the giving of any consent, decision or approval that is either requested or reasonably required of them in order for the other party to perform its responsibilities under the Contract.

2.029 Assignments

Neither party may assign the Contract, or assign or delegate any of its duties or obligations under the Contract, to any other party (whether by operation of law or otherwise), without the prior written consent of the other party; provided, however, that the State may assign the Contract to any other State agency, department, division or department without the prior consent of Contractor and Contractor may assign the Contract to an affiliate so long as the affiliate is adequately capitalized and can provide adequate assurances that the affiliate can perform the Contract. The State may withhold consent from proposed assignments, subcontracts, or novations when the transfer of responsibility would operate to decrease the State’s likelihood of receiving performance on the Contract or the State’s ability to recover damages.

Contractor may not, without the prior written approval of the State, assign its right to receive payments due under the Contract. If the State permits an assignment, the Contractor is not relieved of its responsibility to perform any of its contractual duties, and the requirement under the Contract that all payments must be made to one entity continues.



If the Contractor intends to assign the contract or any of the Contractor's rights or duties under the Contract, the Contractor must notify the State in writing at least 90 days before the assignment. The Contractor also must provide the State with adequate information about the assignee within a reasonable amount of time before the assignment for the State to determine whether to approve the assignment.

2.030 General Provisions

2.031 Media Releases

News releases (including promotional literature and commercial advertisements) pertaining to the RFP and Contract or project to which it relates shall not be made without prior written State approval, and then only in accordance with the explicit written instructions from the State. No results of the activities associated with the RFP and Contract are to be released without prior written approval of the State and then only to persons designated.

2.032 Contract Distribution

Purchasing Operations retains the sole right of Contract distribution to all State agencies and local units of government unless other arrangements are authorized by Purchasing Operations.

2.033 Permits

Contractor must obtain and pay any associated costs for all required governmental permits, licenses and approvals for the delivery, installation and performance of the Services. The State must pay for all costs and expenses incurred in obtaining and maintaining any necessary easements or right of way.

2.034 Website Incorporation

The State is not bound by any content on the Contractor's website, even if the Contractor's documentation specifically referenced that content and attempts to incorporate it into any other communication, unless the State has actual knowledge of the content and has expressly agreed to be bound by it in a writing that has been manually signed by an authorized representative of the State.

2.035 Future Bidding Preclusion

Contractor acknowledges that, to the extent this Contract involves the creation, research, investigation or generation of a future RFP; it may be precluded from bidding on the subsequent RFP. The State reserves the right to disqualify any bidder if the State determines that the bidder has used its position (whether as an incumbent Contractor, or as a Contractor hired to assist with the RFP development, or as a Vendor offering free assistance) to gain a competitive advantage on the RFP

2.036 Freedom of Information

All information in any proposal submitted to the State by Contractor and this Contract is subject to the provisions of the Michigan Freedom of Information Act, 1976 Public Act No. 442, as amended, MCL 15.231, et seq (the "FOIA").

2.037 Disaster Recovery

Contractor and the State recognize that the State provides essential services in times of natural or man-made disasters. Therefore, except as so mandated by Federal disaster response requirements, Contractor personnel dedicated to providing Services/Deliverables under this Contract will provide the State with priority service for repair and work around in the event of a natural or man-made disaster.

2.040 Financial Provisions

2.041 Fixed Prices for Services/Deliverables

Each Statement of Work or Purchase Order issued under this Contract shall specify (or indicate by reference to the appropriate Contract Exhibit) the firm, fixed prices for all Services/Deliverables, and the associated payment milestones and payment amounts. The State may make progress payments to the Contractor when requested as work progresses, but not more frequently than monthly, in amounts approved by the Contract Administrator, after negotiation. Contractor must show verification of measurable progress at the time of requesting progress payments.



2.042 Adjustments for Reductions in Scope of Services/Deliverables

If the scope of the Services/Deliverables under any Statement of Work issued under this Contract is subsequently reduced by the State, the parties shall negotiate an equitable reduction in Contractor's charges under such Statement of Work commensurate with the reduction in scope.

2.043 Services/Deliverables Covered

For all Services/Deliverables to be provided by Contractor (and its Subcontractors, if any) under this Contract, the State shall not be obligated to pay any amounts in addition to the charges specified in this Contract.

2.044 Invoicing and Payment – In General

- (a) Each Statement of Work issued under this Contract shall list (or indicate by reference to the appropriate Contract Exhibit) the prices for all Services/Deliverables, equipment and commodities to be provided, and the associated payment milestones and payment amounts.
- (b) Each Contractor invoice will show details as to charges by Service/Deliverable component and location at a level of detail reasonably necessary to satisfy the State's accounting and charge-back requirements. Invoices for Services performed on a time and materials basis will show, for each individual, the number of hours of Services performed during the billing period, the billable skill/labor category for such person and the applicable hourly billing rate. Prompt payment by the State is contingent on the Contractor's invoices showing the amount owed by the State minus any holdback amount to be retained by the State in accordance with **Section 1.602**.
- (c) Correct invoices will be due and payable by the State, in accordance with the State's standard payment procedure as specified in 1984 Public Act No. 279, MCL 17.51 et seq., within 45 days after receipt, provided the State determines that the invoice was properly rendered.
- (d) All invoices should reflect actual work done. Specific details of invoices and payments will be agreed upon between the Contract Administrator and the Contractor after the proposed Contract Agreement has been signed and accepted by both the Contractor and the Director of Purchasing Operations, Department of Management & Budget. This activity will occur only upon the specific written direction from Purchasing Operations.

The specific payment schedule for any Contract(s) entered into, as the State and the Contractor(s) will mutually agree upon. The schedule should show payment amount and should reflect actual work done by the payment dates, less any penalty cost charges accrued by those dates. As a general policy statements shall be forwarded to the designated representative by the 15th day of the following month.

The Government may make progress payments to the Contractor when requested as work progresses, but not more frequently than monthly, in amounts approved by the Contract Administrator, after negotiation. Contractor must show verification of measurable progress at the time of requesting progress payments.

2.045 Pro-ration

To the extent there are any Services that are to be paid for on a monthly basis, the cost of such Services shall be pro-rated for any partial month.

2.046 Antitrust Assignment

The Contractor assigns to the State any claim for overcharges resulting from antitrust violations to the extent that those violations concern materials or services supplied by third parties to the Contractor, toward fulfillment of this Contract.

2.047 Final Payment

The making of final payment by the State to Contractor does not constitute a waiver by either party of any rights or other claims as to the other party's continuing obligations under the Contract, nor will it constitute a waiver of any claims by one party against the other arising from unsettled claims or failure by a party to comply with this Contract, including claims for Services and Deliverables not reasonably known until after acceptance to be defective or substandard. Contractor's acceptance of final payment by the State under this Contract shall



constitute a waiver of all claims by Contractor against the State for payment under this Contract, other than those claims previously filed in writing on a timely basis and still unsettled.

2.048 Electronic Payment Requirement

Electronic transfer of funds is required for payments on State Contracts. Contractors are required to register with the State electronically at <http://www.cpexpress.state.mi.us>. As stated in Public Act 431 of 1984, all contracts that the State enters into for the purchase of goods and services shall provide that payment will be made by electronic fund transfer (EFT).

2.050 Taxes

2.051 Employment Taxes

Contractors are expected to collect and pay all applicable federal, state, and local employment taxes, including the taxes.

2.052 Sales and Use Taxes

Contractors are required to be registered and to remit sales and use taxes on taxable sales of tangible personal property or services delivered into the State. Contractors that lack sufficient presence in Michigan to be required to register and pay tax must do so as a volunteer. This requirement extends to: (1) all members of any controlled group as defined in § 1563(a) of the Internal Revenue Code and applicable regulations of which the company is a member, and (2) all organizations under common control as defined in § 414(c) of the Internal Revenue Code and applicable regulations of which the company is a member that make sales at retail for delivery into the State are registered with the State for the collection and remittance of sales and use taxes. In applying treasury regulations defining “two or more trades or businesses under common control” the term “organization” means sole proprietorship, a partnership (as defined in § 701(a) (2) of the Internal Revenue Code), a trust, an estate, a corporation, or a limited liability company.

2.060 Contract Management

2.061 Contractor Personnel Qualifications

All persons assigned by Contractor to the performance of Services under this Contract must be employees of Contractor or its majority-owned (directly or indirectly, at any tier) subsidiaries (or a State-approved Subcontractor) and must be fully qualified to perform the work assigned to them. Contractor must include a similar provision in any subcontract entered into with a Subcontractor. For the purposes of this Contract, independent contractors engaged by Contractor solely in a staff augmentation role must be treated by the State as if they were employees of Contractor for this Contract only; however, the State understands that the relationship between Contractor and Subcontractor is an independent contractor relationship.

2.062 Contractor Key Personnel

- (a) The Contractor must provide the Contract Compliance Inspector with the names of the Key Personnel.
- (b) Key Personnel must be dedicated as defined in the Statement of Work to the Project for its duration in the applicable Statement of Work with respect to other individuals designated as Key Personnel for that Statement of Work.
- (c) The State will have the right to recommend and approve in writing the initial assignment, as well as any proposed reassignment or replacement, of any Key Personnel. Before assigning an individual to any Key Personnel position, Contractor will notify the State of the proposed assignment, will introduce the individual to the appropriate State representatives, and will provide the State with a resume and any other information about the individual reasonably requested by the State. The State reserves the right to interview the individual before granting written approval. In the event the State finds a proposed individual unacceptable, the State will provide a written explanation including reasonable detail outlining the reasons for the rejection.
- (d) Contractor must not remove any Key Personnel from their assigned roles or the Contract without the prior written consent of the State. The Contractor’s removal of Key Personnel without the prior written consent of the State is an unauthorized removal (“Unauthorized Removal”). Unauthorized Removals does not include replacing Key Personnel for reasons beyond the reasonable control of Contractor, including illness, disability, leave of absence, personal emergency circumstances, resignation or for cause



termination of the Key Personnel's employment. Unauthorized Removals does not include replacing Key Personnel because of promotions or other job movements allowed by Contractor personnel policies or Collective Bargaining Agreement(s) as long as the State receives prior written notice before shadowing occurs and Contractor provides 30 days of shadowing unless parties agree to a different time period. The Contractor with the State must review any Key Personnel replacements, and appropriate transition planning will be established. Any Unauthorized Removal may be considered by the State to be a material breach of the Contract, in respect of which the State may elect to exercise its termination and cancellation rights.

- (e) The Contractor must notify the Contract Compliance Inspector and the Contract Administrator at least 10 business days before redeploying non-Key Personnel, who are dedicated to primarily to the Project, to other projects. If the State does not object to the redeployment by its scheduled date, the Contractor may then redeploy the non-Key Personnel.

The contractor's proposed personnel are included in Exhibit F and these names have been included in the Wellogig organization chart in Exhibit A along with the roles for each person.

The Contractor will update when changed, an organizational chart for the project team. This chart must identify all staff, their role on the project team and must include the contractor's project manager. The project manager must be a direct employee of the prime contractor. In the event that more than one firm is on the project team, the organization chart must identify the firm that each employee works for. It must also show lines of communication to the MDIT Project Manager. The organizational chart must also indicate lines of authority for personnel involved in performance of this Contract and relationships of this staff to other programs or functions of the firm. This chart must also show lines of authority to the next senior level of management and indicate who within the firm will have prime responsibility and final authority for the work.

The Contractor's staff must be able to pass a security clearance check conducted by the Contractor. The Contractor must present certifications evidencing satisfactory background checks and drug tests for all staff identified for assignment to this project. The Contractor is responsible for any costs associated with ensuring their staff meets all requirements.

The Contractor will identify a Single Point of Contact (SPOC), preferably the Project Manager. The duties of the SPOC shall include, but not be limited to:

- supporting the management of the Contract,
- facilitating dispute resolution, and
- advising the State of performance under the terms and conditions of the Contract.

The State reserves the right to require a change in the current SPOC if the assigned SPOC is not, in the opinion of the State, adequately serving the needs of the State.

The Contractor's Project Manager will work closely with the designated personnel from the State to ensure a smooth transition to the new system. The project manager will coordinate all of the activities of the Contractor personnel assigned to the project and create all reports required by State. The Contractor's project manager responsibilities include, at a minimum:

- Manage all defined Contractor responsibilities in this Scope of Services.
- Manage Contractor's subcontractors, if any
- Develop the project plan and schedule, and update as needed
- Serve as the point person for all project issues
- Coordinate and oversee the day-to-day project activities of the project team
- Assess and report project feedback and status
- Escalate project issues, project risks, and other concerns
- Review all project deliverables and provide feedback
- Proactively propose/suggest options and alternatives for consideration
- Utilize change control procedures
- Prepare project documents and materials
- Manage and report on the project's budget



The Contractor will provide sufficient qualified staffing to satisfy the deliverables of this Statement of Work. All Key Personnel may be subject to the State's interview and approval process. The State has identified the following as key personnel for this project:

Project Manager
Business Analyst
Technical Architect

Any key staff substitution must have the prior approval of the State. The following position requirements will be used as an evaluation criteria to replace the key staff. However, for non-key personnel the evaluation criteria will be same or better than the contractor's proposed personnel as included in Exhibit F.

Project Manager Requirements:

- a) The Project Manager must be a certified Project Management Professional (PMP), or be able to demonstrate a minimum of 10 years project management experience
- b) 7 -10+ years of recent IT project management experience managing large scale application development and implementation projects
- c) 3 - 5+ years experience working on projects involving interfacing with the State of Michigan IT network and hosting environment or that of a similar state-level system.
- d) Experience and/or familiarity with the requirements, tools, policies and standards as specified in Section 1.103, Environment
- e) Good communication and documentation skills
- f) Familiarity with Water Bureau/DEQ programs and water well construction would be preferable, but not required
- g) Experience in structured development process.
- h) Experience of working in a matrix environment, where team effort forms the key to success

Business Analyst Requirements:

- a) 5 - 7+ years of recent IT Business Analysis experience with large scale application development and implementation projects
- b) Experience in eliciting good requirements using JAD sessions, interviews, document analysis, requirements workshops, business process descriptions, use cases, scenarios, business analysis, task and workflow analysis.
- c) Experience in critically evaluating information gathered from multiple sources, reconcile conflicts, decompose high-level information into details, abstract up from low-level information to a general understanding, and distinguish user requests from the underlying true needs.
- d) Excellent verbal and written communication skills and the ability to interact professionally with a diverse group, executives, managers, and subject matter experts.
- e) Experience in collaborating with developers and subject matter experts to establish the technical vision and analyze tradeoffs between usability and performance needs.
- f) Experience and/or familiarity with the requirements, tools, policies and standards as specified in Section 1.103, Environment
- g) Familiarity with Water Bureau/DEQ programs and water well construction would be preferable, but not required
- h) 2+ years of experience working with .NET Applications using Microsoft Visual Studio.NET 2005

Technical Architect Requirements:

- a) 5+ years experience working on projects involving interfacing with the State of Michigan IT network and hosting environment or that of a similar state-level system.
- b) 2+ years of experience with developing .NET Applications using Microsoft Visual Studio.NET 2005
- c) 2+ years of experience with Microsoft SQL server 2005 development
- d) 5+ years of experience with converting legacy application to a more scalable web-based solution
- e) Advanced experience with .NET frameworks 2.0, 3.5 and C#, ADO.NET, ASP.NET, XML & Web Services
- f) Experience and/or familiarity with the requirements, tools, policies and standards as specified in Section 1.103



- g) Good communication and documentation skills
- h) Familiarity with Water Bureau/DEQ programs and water well construction would be preferable, but not required
- i) Experience in structured development process.
- j) Advanced experience of completing tasks/fixing errors in a timely manner (References will be checked).
- k) Experience of working in a matrix environment, where team effort forms as the key to success.

2.063 Re-assignment of Personnel at the State's Request

The State reserves the right to require the removal from the Project of Contractor personnel found, in the judgment of the State, to be unacceptable. The State's request must be written with reasonable detail outlining the reasons for the removal request. Additionally, the State's request must be based on legitimate, good faith reasons. Replacement personnel for the removed person must be fully qualified for the position. If the State exercises this right, and the Contractor cannot immediately replace the removed personnel, the State agrees to an equitable adjustment in schedule or other terms that may be affected by the State's required removal. If any incident with removed personnel results in delay not reasonably anticipatable under the circumstances and which is attributable to the State, the applicable SLAs for the affected Service will not be counted for a time as agreed to by the parties.

2.064 Contractor Personnel Location

All staff assigned by Contractor to work on the Contract will perform their duties either primarily at Contractor's offices and facilities or at State facilities. Without limiting the generality of the foregoing, Key Personnel will, at a minimum, spend at least the amount of time on-site at State facilities as indicated in the applicable Statement of Work. Subject to availability, selected Contractor personnel may be assigned office space to be shared with State personnel.

2.065 Contractor Identification

Contractor employees must be clearly identifiable while on State property by wearing a State-issued badge, as required. Contractor employees are required to clearly identify themselves and the company they work for whenever making contact with State personnel by telephone or other means.

2.066 Cooperation with Third Parties

Contractor agrees to cause its personnel and the personnel of any Subcontractors to cooperate with the State and its agents and other contractors including the State's Quality Assurance personnel. As reasonably requested by the State in writing, the Contractor will provide to the State's agents and other contractors reasonable access to Contractor's Project personnel, systems and facilities to the extent the access relates to activities specifically associated with this Contract and will not interfere or jeopardize the safety or operation of the systems or facilities. The State acknowledges that Contractor's time schedule for the Contract is very specific and agrees not to unnecessarily or unreasonably interfere with, delay or otherwise impeded Contractor's performance under this Contract with the requests for access.

2.067 Contract Management Responsibilities

Contractor shall be responsible for all acts and omissions of its employees, as well as the acts and omissions of any other personnel furnished by Contractor to perform the Services. Contractor shall have overall responsibility for managing and successfully performing and completing the Services/Deliverables, subject to the overall direction and supervision of the State and with the participation and support of the State as specified in this Contract. Contractor's duties will include monitoring and reporting the State's performance of its participation and support responsibilities (as well as Contractor's own responsibilities) and providing timely notice to the State in Contractor's reasonable opinion if the State's failure to perform its responsibilities in accordance with the Project Plan is likely to delay the timely achievement of any Contract tasks.

The Contractor will provide the Services/Deliverables directly or through its affiliates, subsidiaries, subcontractors or resellers. Regardless of the entity providing the Service/Deliverable, the Contractor will act as a single point of contact coordinating these entities to meet the State's need for Services/Deliverables. Nothing in this Contract, however, shall be construed to authorize or require any party to violate any applicable law or regulation in its performance of this Contract.

**2.068 Contractor Return of State Equipment/Resources**

The Contractor must return to the State any State-furnished equipment, facilities and other resources when no longer required for the Contract in the same condition as when provided by the State, reasonable wear and tear excepted.

2.070 Subcontracting by Contractor**2.071 Contractor full Responsibility**

Contractor shall have full responsibility for the successful performance and completion of all of the Services and Deliverables. The State will consider Contractor to be the sole point of contact with regard to all contractual matters under this Contract, including payment of any and all charges for Services and Deliverables.

2.072 State Consent to delegation

Contractor shall not delegate any duties under this Contract to a Subcontractor unless the Department of Management and Budget, Purchasing Operations has given written consent to such delegation. The State shall have the right of prior written approval of all Subcontractors and to require Contractor to replace any Subcontractors found, in the reasonable judgment of the State, to be unacceptable. The State's request shall be written with reasonable detail outlining the reasons for the removal request. Additionally, the State's request shall be based on legitimate, good faith reasons. Replacement Subcontractor(s) for the removed Subcontractor shall be fully qualified for the position. If the State exercises this right, and the Contractor cannot immediately replace the removed Subcontractor, the State will agree to an equitable adjustment in schedule or other terms that may be affected by the State's required removal. If any such incident with a removed Subcontractor results in delay not reasonable anticipatable under the circumstances and which is attributable to the State, the applicable SLA for the affected Work will not be counted for a time agreed upon by the parties.

2.073 Subcontractor bound to Contract

In any subcontracts entered into by Contractor for the performance of the Services, Contractor shall require the Subcontractor, to the extent of the Services to be performed by the Subcontractor, to be bound to Contractor by the terms of this Contract and to assume toward Contractor all of the obligations and responsibilities that Contractor, by this Contract, assumes toward the State. The State reserves the right to receive copies of and review all subcontracts, although Contractor may delete or mask any proprietary information, including pricing, contained in such contracts before providing them to the State. The management of any Subcontractor will be the responsibility of Contractor, and Contractor shall remain responsible for the performance of its Subcontractors to the same extent as if Contractor had not subcontracted such performance. Contractor shall make all payments to Subcontractors or suppliers of Contractor. Except as otherwise agreed in writing by the State and Contractor, the State will not be obligated to direct payments for the Services other than to Contractor. The State's written approval of any Subcontractor engaged by Contractor to perform any obligation under this Contract shall not relieve Contractor of any obligations or performance required under this Contract. A list of the Subcontractors, if any, approved by the State as of the execution of this Contract, together with a copy of the applicable subcontract is attached.

2.074 Flow Down

Except where specifically approved in writing by the State on a case-by-case basis, Contractor shall flow down the obligations in **Sections 2.031, 2.060, 2.100, 2.110, 2.120, 2.130, and 2.200** in all of its agreements with any Subcontractors.

2.075 Competitive Selection

The Contractor shall select subcontractors (including suppliers) on a competitive basis to the maximum practical extent consistent with the objectives and requirements of the Contract.

2.080 State Responsibilities



2.081 Equipment

The State will provide only the equipment and resources identified in the Statements of Work and other Contract Exhibits. Please see 1.202.

2.082 Facilities

The State must designate space as long as it is available and as provided in the Statement of Work, to house the Contractor's personnel whom the parties agree will perform the Services/Deliverables at State facilities (collectively, the "State Facilities"). The Contractor must have reasonable access to, and unless agreed otherwise by the parties in writing must observe and comply with all rules and regulations relating to each of the State Facilities (including hours of operation) used by the Contractor in the course of providing the Services. Contractor agrees that it will not, without the prior written consent of the State, use any State Facilities or access any State information systems provided for the Contractor's use, or to which the Contractor otherwise gains access in the course of performing the Services, for any purpose other than providing the Services to the State.

2.090 Security

2.091 Background Checks

On a case-by-case basis, the State may investigate the Contractor's personnel before they may have access to State facilities and systems. The scope of the background check is at the discretion of the State and the results will be used to determine Contractor personnel eligibility for working within State facilities and systems. The investigations will include Michigan State Police Background checks (ICHAT) and may include the National Crime Information Center (NCIC) Finger Prints. Proposed Contractor personnel may be required to complete and submit an RI-8 Fingerprint Card for the NCIC Finger Print Check. Any request for background checks will be initiated by the State and will be reasonably related to the type of work requested.

All Contractor personnel will also be expected to comply with the State's security and acceptable use policies for State IT equipment and resources. See <http://www.michigan.gov/dit>. Furthermore, Contractor personnel will be expected to agree to the State's security and acceptable use policies before the Contractor personnel will be accepted as a resource to perform work for the State. It is expected the Contractor will present these documents to the prospective employee before the Contractor presents the individual to the State as a proposed resource. Contractor staff will be expected to comply with all Physical Security procedures in place within the facilities where they are working.

2.092 Security Breach Notification

If the Contractor breaches this Section, the Contractor must (i) promptly cure any deficiencies and (ii) comply with any applicable federal and state laws and regulations pertaining to unauthorized disclosures. Contractor and the State will cooperate to mitigate, to the extent practicable, the effects of any breach, intrusion, or unauthorized use or disclosure. Contractor must report to the State in writing any use or disclosure of Confidential Information, whether suspected or actual, other than as provided for by the Contract within 10 days of becoming aware of the use or disclosure or the shorter time period as is reasonable under the circumstances.

2.093 PCI DATA Security Requirements

Contractors with access to credit/debit card cardholder data must adhere to the Payment Card Industry (PCI) Data Security requirements. Contractor agrees that they are responsible for security of cardholder data in their possession. Contractor agrees that data can ONLY be used for assisting the State in completing a transaction, supporting a loyalty program, supporting the State, providing fraud control services, or for other uses specifically required by law.

Contractor agrees to provide business continuity in the event of a major disruption, disaster or failure.

The Contractor will contact the Department of Management and Budget, Financial Services immediately to advise them of any breaches in security where card data has been compromised. In the event of a security intrusion, the Contractor agrees the Payment Card Industry representative, or a Payment Card Industry approved third party, will be provided with full cooperation and access to conduct a thorough security review.



The review will validate compliance with the Payment Card Industry Data Security Standard for protecting cardholder data.

Contractor agrees to properly dispose sensitive cardholder data when no longer needed. The Contractor will continue to treat cardholder data as confidential upon contract termination.

The Contractor will provide the Department of Management and Budget, Financial Services documentation showing PCI Data Security certification has been achieved. The Contractor will advise the Department of Management and Budget, Financial Services of all failures to comply with the PCI Data Security Requirements. Failures include, but are not limited to system scans and self-assessment questionnaires. The Contractor will provide a time line for corrective action.

2.100 Confidentiality

2.101 Confidentiality

Contractor and the State each acknowledge that the other possesses and will continue to possess confidential information that has been developed or received by it. As used in this Section, "Confidential Information" of Contractor must mean all non-public proprietary information of Contractor (other than Confidential Information of the State as defined below), which is marked confidential, restricted, proprietary, or with a similar designation. "Confidential Information" of the State must mean any information which is retained in confidence by the State (or otherwise required to be held in confidence by the State under applicable federal, state and local laws and regulations) or which, in the case of tangible materials provided to Contractor by the State under its performance under this Contract, is marked as confidential, proprietary or with a similar designation by the State. "Confidential Information" excludes any information (including this Contract) that is publicly available under the Michigan FOIA.

2.102 Protection and Destruction of Confidential Information

The State and Contractor will each use at least the same degree of care to prevent disclosing to third parties the Confidential Information of the other as it employs to avoid unauthorized disclosure, publication or dissemination of its own confidential information of like character, but in no event less than reasonable care. Neither Contractor nor the State will (i) make any use of the Confidential Information of the other except as contemplated by this Contract, (ii) acquire any right in or assert any lien against the Confidential Information of the other, or (iii) if requested to do so, refuse for any reason to promptly return the other party's Confidential Information to the other party. Each party will limit disclosure of the other party's Confidential Information to employees and Subcontractors who must have access to fulfill the purposes of this Contract. Disclosure to, and use by, a Subcontractor is permissible where (A) use of a Subcontractor is authorized under this Contract, (B) the disclosure is necessary or otherwise naturally occurs in connection with work that is within the Subcontractor's scope of responsibility, and (C) Contractor obligates the Subcontractor in a written Contract to maintain the State's Confidential Information in confidence. At the State's request, any employee of Contractor and of any Subcontractor having access or continued access to the State's Confidential Information may be required to execute an acknowledgment that the employee has been advised of Contractor's and the Subcontractor's obligations under this Section and of the employee's obligation to Contractor or Subcontractor, as the case may be, to protect the Confidential Information from unauthorized use or disclosure.

Promptly upon termination or cancellation of the Contract for any reason, Contractor must certify to the State that Contractor has destroyed all State Confidential Information.

2.103 Exclusions

Notwithstanding the foregoing, the provisions in this Section will not apply to any particular information which the State or Contractor can demonstrate (i) was, at the time of disclosure to it, in the public domain; (ii) after disclosure to it, is published or otherwise becomes part of the public domain through no fault of the receiving party; (iii) was in the possession of the receiving party at the time of disclosure to it without an obligation of confidentiality; (iv) was received after disclosure to it from a third party who had a lawful right to disclose the information to it without any obligation to restrict its further disclosure; or (v) was independently developed by the receiving party without reference to Confidential Information of the furnishing party. Further, the provisions of this Section will not apply to any particular Confidential Information to the extent the receiving party is required by law to disclose the Confidential Information, provided that the receiving party (i) promptly provides



the furnishing party with notice of the legal request, and (ii) assists the furnishing party in resisting or limiting the scope of the disclosure as reasonably requested by the furnishing party.

2.104 No Implied Rights

Nothing contained in this Section must be construed as obligating a party to disclose any particular Confidential Information to the other party, or as granting to or conferring on a party, expressly or impliedly, any right or license to the Confidential Information of the other party.

2.105 Respective Obligations

The parties' respective obligations under this Section must survive the termination or expiration of this Contract for any reason.

2.110 Records and Inspections

2.111 Inspection of Work Performed

The State's authorized representatives must at all reasonable times and with 10 days prior written request, have the right to enter Contractor's premises, or any other places, where the Services are being performed, and must have access, upon reasonable request, to interim drafts of Deliverables or work-in-progress. Upon 10 Days prior written notice and at all reasonable times, the State's representatives must be allowed to inspect, monitor, or otherwise evaluate the work being performed and to the extent that the access will not reasonably interfere or jeopardize the safety or operation of the systems or facilities. Contractor must provide all reasonable facilities and assistance for the State's representatives.

2.112 Examination of Records

For seven years after the Contractor provides any work under this Contract (the "Audit Period"), the State may examine and copy any of Contractor's books, records, documents and papers pertinent to establishing Contractor's compliance with the Contract and with applicable laws and rules. The State must notify the Contractor 20 days before examining the Contractor's books and records. The State does not have the right to review any information deemed confidential by the Contractor to the extent access would require the confidential information to become publicly available. This provision also applies to the books, records, accounts, documents and papers, in print or electronic form, of any parent, affiliated or subsidiary organization of Contractor, or any Subcontractor of Contractor performing services in connection with the Contract.

2.113 Retention of Records

Contractor must maintain at least until the end of the Audit Period all pertinent financial and accounting records (including time sheets and payroll records, and information pertaining to the Contract and to the Services, equipment, and commodities provided under the Contract) pertaining to the Contract according to generally accepted accounting principles and other procedures specified in this Section. Financial and accounting records must be made available, upon request, to the State at any time during the Audit Period. If an audit, litigation, or other action involving Contractor's records is initiated before the end of the Audit Period, the records must be retained until all issues arising out of the audit, litigation, or other action are resolved or until the end of the Audit Period, whichever is later.

2.114 Audit Resolution

If necessary, the Contractor and the State will meet to review each audit report promptly after issuance. The Contractor will respond to each audit report in writing within 30 days from receipt of the report, unless a shorter response time is specified in the report. The Contractor and the State must develop, agree upon and monitor an action plan to promptly address and resolve any deficiencies, concerns, and/or recommendations in the audit report.

2.115 Errors

If the audit demonstrates any errors in the documents provided to the State, then the amount in error must be reflected as a credit or debit on the next invoice and in subsequent invoices until the amount is paid or refunded in full. However, a credit or debit may not be carried for more than four invoices. If a balance remains after four invoices, then the remaining amount will be due as a payment or refund within 45 days of the last quarterly invoice that the balance appeared on or termination of the contract, whichever is earlier.



In addition to other available remedies, the difference between the payment received and the correct payment amount is greater than 10%, then the Contractor must pay all of the reasonable costs of the audit.

2.120 Warranties

2.121 Warranties and Representations

The Contractor represents and warrants:

- (a) It is capable in all respects of fulfilling and must fulfill all of its obligations under this Contract. The performance of all obligations under this Contract must be provided in a timely, professional, and workman-like manner and must meet the performance and operational standards required under this Contract.
- (b) The Contract Appendices, Attachments and Exhibits identify the equipment and software and services necessary for the Deliverable(s) to perform and Services to operate in compliance with the Contract's requirements and other standards of performance.
- (c) It is the lawful owner or licensee of any Deliverable licensed or sold to the State by Contractor or developed by Contractor under this Contract, and Contractor has all of the rights necessary to convey to the State the ownership rights or licensed use, as applicable, of any and all Deliverables. None of the Deliverables provided by Contractor to the State under neither this Contract, nor their use by the State will infringe the patent, copyright, trade secret, or other proprietary rights of any third party.
- (d) If, under this Contract, Contractor procures any equipment, software or other Deliverable for the State (including equipment, software and other Deliverables manufactured, re-marketed or otherwise sold by Contractor under Contractor's name), then in addition to Contractor's other responsibilities with respect to the items in this Contract, Contractor must assign or otherwise transfer to the State or its designees, or afford the State the benefits of, any manufacturer's warranty for the Deliverable.
- (e) The contract signatory has the power and authority, including any necessary corporate authorizations, necessary to enter into this Contract, on behalf of Contractor.
- (f) It is qualified and registered to transact business in all locations where required.
- (g) Neither the Contractor nor any Affiliates, nor any employee of either, has, must have, or must acquire, any contractual, financial, business, or other interest, direct or indirect, that would conflict in any manner or degree with Contractor's performance of its duties and responsibilities to the State under this Contract or otherwise create an appearance of impropriety with respect to the award or performance of this Agreement. Contractor must notify the State about the nature of the conflict or appearance of impropriety within two days of learning about it.
- (h) Neither Contractor nor any Affiliates, nor any employee of either has accepted or must accept anything of value based on an understanding that the actions of the Contractor or Affiliates or employee on behalf of the State would be influenced. Contractor must not attempt to influence any State employee by the direct or indirect offer of anything of value.
- (i) Neither Contractor nor any Affiliates, nor any employee of either has paid or agreed to pay any person, other than bona fide employees and consultants working solely for Contractor or the Affiliate, any fee, commission, percentage, brokerage fee, gift, or any other consideration, contingent upon or resulting from the award or making of this Contract.
- (j) The prices proposed by Contractor were arrived at independently, without consultation, communication, or agreement with any other bidder for the purpose of restricting competition; the prices quoted were not knowingly disclosed by Contractor to any other bidder; and no attempt was made by Contractor to induce any other person to submit or not submit a proposal for the purpose of restricting competition.
- (k) All financial statements, reports, and other information furnished by Contractor to the State as part of its response to the RFP or otherwise in connection with the award of this Contract fairly and accurately represent the business, properties, financial condition, and results of operations of Contractor as of the respective dates, or for the respective periods, covered by the financial statements, reports, other information. Since the respective dates or periods covered by the financial statements, reports, or other information, there have been no material adverse changes in the business, properties, financial condition, or results of operations of Contractor.



- (l) All written information furnished to the State by or for the Contractor in connection with this Contract, including its bid, is true, accurate, and complete, and contains no untrue statement of material fact or omits any material fact necessary to make the information not misleading.
- (m) It is not in material default or breach of any other contract or agreement that it may have with the State or any of its departments, commissions, boards, or agencies. Contractor further represents and warrants that it has not been a party to any contract with the State or any of its departments that was terminated by the State or the department within the previous five years for the reason that Contractor failed to perform or otherwise breached an obligation of the contract.
- (n) If any of the certifications, representations, or disclosures made in the Contractor's original bid response change after contract award, the Contractor is required to report those changes immediately to the Department of Management and Budget, Purchasing Operations.

2.122 Warranty of Merchantability

Goods provided by Contractor under this agreement shall be merchantable. All goods provided under this Contract shall be of good quality within the description given by the State, shall be fit for their ordinary purpose, shall be adequately contained and packaged within the description given by the State, shall conform to the agreed upon specifications, and shall conform to the affirmations of fact made by the Contractor or on the container or label.

2.123 Warranty of Fitness for a Particular Purpose

When the Contractor has reason to know or knows any particular purpose for which the goods are required, and the State is relying on the Contractor's skill or judgment to select or furnish suitable goods, there is a warranty that the goods are fit for such purpose.

2.124 Warranty of Title

Contractor shall, in providing goods to the State, convey good title in those goods, whose transfer is right and lawful. All goods provided by Contractor shall be delivered free from any security interest, lien, or encumbrance of which the State, at the time of contracting, has no knowledge. Goods provided by Contractor, under this Contract, shall be delivered free of any rightful claim of any third person by or infringement or the like.

2.125 Equipment Warranty

To the extent Contractor is responsible under this Contract for maintaining equipment/system(s), Contractor represents and warrants that it will maintain the equipment/system(s) in good operating condition and will undertake all repairs and preventive maintenance according to the applicable manufacturer's recommendations for the period specified in this Contract.

The Contractor represents and warrants that the equipment/system(s) are in good operating condition and operates and performs to the requirements and other standards of performance contained in this Contract, when installed, at the time of Final Acceptance by the State, and for a period of (1) one year commencing upon the first day following Final Acceptance.

Within **30** business days of notification from the State, the Contractor must adjust, repair or replace all equipment that is defective or not performing in compliance with the Contract. The Contractor must assume all costs for replacing parts or units and their installation including transportation and delivery fees, if any.

The Contractor must provide a toll-free telephone number to allow the State to report equipment failures and problems to be remedied by the Contractor.

The Contractor agrees that all warranty service it provides under this Contract must be performed by Original Equipment Manufacturer (OEM) trained, certified and authorized technicians.

The Contractor is the sole point of contact for warranty service. The Contractor warrants that it will pass through to the State any warranties obtained or available from the original equipment manufacturer, including any replacement, upgraded, or additional equipment warranties.



2.126 Equipment to be New

If applicable, all equipment provided under this Contract by Contractor shall be new where Contractor has knowledge regarding whether the equipment is new or assembled from new or serviceable used parts that are like new in performance or has the option of selecting one or the other. Equipment that is assembled from new or serviceable used parts that are like new in performance is acceptable where Contractor does not have knowledge or the ability to select one or other, unless specifically agreed otherwise in writing by the State.

2.127 Prohibited Products

If applicable, the State will not accept salvage, distressed, outdated or discontinued merchandise. Shipping of such merchandise to any State agency, as a result of an order placed against the Contract, shall be considered default by the Contractor of the terms and conditions of the Contract and may result in cancellation of the Contract by the State. The brand and product number offered for all items shall remain consistent for the term of the Contract, unless Purchasing Operations has approved a change order pursuant to **Section 2.024**.

2.128 Consequences for Breach

In addition to any remedies available in law, if the Contractor breaches any of the warranties contained in this section, the breach may be considered as a default in the performance of a material obligation of this Contract.

2.130 Insurance

2.131 Liability Insurance

The Contractor must provide proof of the minimum levels of insurance coverage as indicated below. The insurance must protect the State from claims that may arise out of or result from the Contractor’s performance of services under the terms of this Contract, whether the services are performed by the Contractor, or by any subcontractor, or by anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable.

The Contractor waives all rights against the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees and agents for recovery of damages to the extent these damages are covered by the insurance policies the Contractor is required to maintain under this Contract.

All insurance coverage provided relative to this Contract/Purchase Order is PRIMARY and NON-CONTRIBUTING to any comparable liability insurance (including self-insurances) carried by the State.

The insurance must be written for not less than any minimum coverage specified in this Contract or required by law, whichever is greater.

The insurers selected by Contractor must have an A.M. Best rating of A or better, or as otherwise approved in writing by the State, or if the ratings are no longer available, with a comparable rating from a recognized insurance rating agency. All policies of insurance required in this Contract must be issued by companies that have been approved to do business in the State.

See www.michigan.gov/dleg.

Where specific limits are shown, they are the minimum acceptable limits. If Contractor’s policy contains higher limits, the State must be entitled to coverage to the extent of the higher limits.

The Contractor is required to pay for and provide the type and amount of insurance checked below:

- 1. Commercial General Liability with the following minimum coverage:
 - \$2,000,000 General Aggregate Limit other than Products/Completed Operations
 - \$2,000,000 Products/Completed Operations Aggregate Limit
 - \$1,000,000 Personal & Advertising Injury Limit
 - \$1,000,000 Each Occurrence Limit

The Contractor must list the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees and agents as ADDITIONAL INSUREDS on the Commercial General Liability certificate.



The Contractor also agrees to provide evidence that insurance policies contain a waiver of subrogation by the insurance company.

- 2. If a motor vehicle is used to provide services or products under this Contract, the Contractor must have vehicle liability insurance on any auto including owned, hired and non-owned vehicles used in Contractor's business for bodily injury and property damage as required by law.

The Contractor must list the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees and agents as ADDITIONAL INSUREDS on the vehicle liability certificate. The Contractor also agrees to provide evidence that insurance policies contain a waiver of subrogation by the insurance company.

- 3. Workers' compensation coverage must be provided according to applicable laws governing the employees and employers work activities in the state of the Contractor's domicile. If a self-insurer provides the applicable coverage, proof must be provided of approved self-insured authority by the jurisdiction of domicile. For employees working outside of the state of qualification, Contractor must provide appropriate certificates of insurance proving mandated coverage levels for the jurisdictions where the employees' activities occur.

Any certificates of insurance received must also provide a list of states where the coverage is applicable.

The Contractor also agrees to provide evidence that insurance policies contain a waiver of subrogation by the insurance company. This provision must not be applicable where prohibited or limited by the laws of the jurisdiction in which the work is to be performed.

- 4. Employers liability insurance with the following minimum limits:
 \$100,000 each accident
 \$100,000 each employee by disease
 \$500,000 aggregate disease

- 5. Employee Fidelity, including Computer Crimes, insurance naming the State as a loss payee, providing coverage for direct loss to the State and any legal liability of the State arising out of or related to fraudulent or dishonest acts committed by the employees of Contractor or its Subcontractors, acting alone or in collusion with others, in a minimum amount of one million dollars (\$1,000,000.00) with a maximum deductible of fifty thousand dollars (\$50,000.00).

- 6. Umbrella or Excess Liability Insurance in a minimum amount of ten million dollars (\$10,000,000.00), which must apply, at a minimum, to the insurance required in Subsection 1 (Commercial General Liability) above.

- 7. Professional Liability (Errors and Omissions) Insurance with the following minimum coverage: three million dollars (\$3,000,000.00) each occurrence and three million dollars (\$3,000,000.00) annual aggregate.

- 8. Fire and Personal Property Insurance covering against any loss or damage to the office space used by Contractor for any reason under this Contract, and the equipment, software and other contents of the office space, including without limitation, those contents used by Contractor to provide the Services to the State, up to its replacement value, where the office space and its contents are under the care, custody and control of Contractor. The policy must cover all risks of direct physical loss or damage, including without limitation, flood and earthquake coverage and coverage for computer hardware and software. The State must be endorsed on the policy as a loss payee as its interests appear.

2.132 Subcontractor Insurance Coverage

Except where the State has approved in writing a Contractor subcontract with other insurance provisions, Contractor must require all of its Subcontractors under this Contract to purchase and maintain the insurance coverage as described in this Section for the Contractor in connection with the performance of work by those Subcontractors. Alternatively, Contractor may include any Subcontractors under Contractor's insurance on the coverage required in this Section. Subcontractor(s) must fully comply with the insurance coverage required in



this Section. Failure of Subcontractor(s) to comply with insurance requirements does not limit Contractor's liability or responsibility.

2.133 Certificates of Insurance and Other Requirements

Contractor must furnish to DMB Purchasing Operations, certificate(s) of insurance verifying insurance coverage or providing satisfactory evidence of self-insurance as required in this Section (the "Certificates"). The Certificate must be on the standard "accord" form or equivalent. **The Contract Number or the Purchase Order Number must be shown on the Certificate Of Insurance To Assure Correct Filing.** All Certificate(s) are to be prepared and submitted by the Insurance Provider. All Certificate(s) must contain a provision indicating that coverage afforded under the policies WILL NOT BE CANCELLED, MATERIALLY CHANGED, OR NOT RENEWED without 30 days prior written notice, except for 10 days for non-payment of premium, having been given to the Director of Purchasing Operations, Department of Management and Budget. The notice must include the Contract or Purchase Order number affected. Before the Contract is signed, and not less than 20 days before the insurance expiration date every year thereafter, the Contractor must provide evidence that the State and its agents, officers and employees are listed as additional insured under each commercial general liability and commercial automobile liability policy. In the event the State approves the representation of the State by the insurer's attorney, the attorney may be required to be designated as a Special Assistant Attorney General by the Attorney General of the State of Michigan.

The Contractor must maintain all required insurance coverage throughout the term of the Contract and any extensions and, in the case of claims-made Commercial General Liability policies, must secure tail coverage for at least three years following the expiration or termination for any reason of this Contract. The minimum limits of coverage specified above are not intended, and must not be construed; to limit any liability or indemnity of Contractor under this Contract to any indemnified party or other persons. Contractor is responsible for all deductibles with regard to the insurance. If the Contractor fails to pay any premium for required insurance as specified in this Contract, or if any insurer cancels or significantly reduces any required insurance as specified in this Contract without the State's written consent, then the State may, after the State has given the Contractor at least 30 days written notice, pay the premium or procure similar insurance coverage from another company or companies. The State may deduct any part of the cost from any payment due the Contractor, or the Contractor must pay that cost upon demand by the State.

2.140 Indemnification

2.141 General Indemnification

To the extent permitted by law, the Contractor must indemnify, defend and hold harmless the State from liability, including all claims and losses, and all related costs and expenses (including reasonable attorneys' fees and costs of investigation, litigation, settlement, judgments, interest and penalties), accruing or resulting to any person, firm or corporation that may be injured or damaged by the Contractor in the performance of this Contract and that are attributable to the negligence or tortious acts of the Contractor or any of its subcontractors, or by anyone else for whose acts any of them may be liable.

2.142 Code Indemnification

To the extent permitted by law, the Contractor shall indemnify, defend and hold harmless the State from any claim, loss, or expense arising from Contractor's breach of the No Surreptitious Code Warranty.

2.143 Employee Indemnification

In any claims against the State of Michigan, its departments, divisions, agencies, sections, commissions, officers, employees and agents, by any employee of the Contractor or any of its subcontractors, the indemnification obligation under the Contract must not be limited in any way by the amount or type of damages, compensation or benefits payable by or for the Contractor or any of its subcontractors under worker's disability compensation acts, disability benefit acts or other employee benefit acts. This indemnification clause is intended to be comprehensive. Any overlap in provisions, or the fact that greater specificity is provided as to some categories of risk, is not intended to limit the scope of indemnification under any other provisions.



2.144 Patent/Copyright Infringement Indemnification

To the extent permitted by law, the Contractor must indemnify, defend and hold harmless the State from and against all losses, liabilities, damages (including taxes), and all related costs and expenses (including reasonable attorneys' fees and costs of investigation, litigation, settlement, judgments, interest and penalties) incurred in connection with any action or proceeding threatened or brought against the State to the extent that the action or proceeding is based on a claim that any piece of equipment, software, commodity or service supplied by the Contractor or its subcontractors, or the operation of the equipment, software, commodity or service, or the use or reproduction of any documentation provided with the equipment, software, commodity or service infringes any United States patent, copyright, trademark or trade secret of any person or entity, which is enforceable under the laws of the United States.

In addition, should the equipment, software, commodity, or service, or its operation, become or in the State's or Contractor's opinion be likely to become the subject of a claim of infringement, the Contractor must at the Contractor's sole expense (i) procure for the State the right to continue using the equipment, software, commodity or service or, if the option is not reasonably available to the Contractor, (ii) replace or modify to the State's satisfaction the same with equipment, software, commodity or service of equivalent function and performance so that it becomes non-infringing, or, if the option is not reasonably available to Contractor, (iii) accept its return by the State with appropriate credits to the State against the Contractor's charges and reimburse the State for any losses or costs incurred as a consequence of the State ceasing its use and returning it.

Notwithstanding the foregoing, the Contractor has no obligation to indemnify or defend the State for, or to pay any costs, damages or attorneys' fees related to, any claim based upon (i) equipment developed based on written specifications of the State; (ii) use of the equipment in a configuration other than implemented or approved in writing by the Contractor, including, but not limited to, any modification of the equipment by the State; or (iii) the combination, operation, or use of the equipment with equipment or software not supplied by the Contractor under this Contract.

2.145 Continuation of Indemnification Obligations _____

The Contractor's duty to indemnify under this Section continues in full force and effect, notwithstanding the expiration or early cancellation of the Contract, with respect to any claims based on facts or conditions that occurred before expiration or cancellation.

2.146 Indemnification Procedures

The procedures set forth below must apply to all indemnity obligations under this Contract.

- (a) After the State receives notice of the action or proceeding involving a claim for which it will seek indemnification, the State must promptly notify Contractor of the claim in writing and take or assist Contractor in taking, as the case may be, any reasonable action to avoid the imposition of a default judgment against Contractor. No failure to notify the Contractor relieves the Contractor of its indemnification obligations except to the extent that the Contractor can prove damages attributable to the failure. Within 10 days following receipt of written notice from the State relating to any claim, the Contractor must notify the State in writing whether Contractor agrees to assume control of the defense and settlement of that claim (a "Notice of Election"). After notifying Contractor of a claim and before the State receiving Contractor's Notice of Election, the State is entitled to defend against the claim, at the Contractor's expense, and the Contractor will be responsible for any reasonable costs incurred by the State in defending against the claim during that period.
- (b) If Contractor delivers a Notice of Election relating to any claim: (i) the State is entitled to participate in the defense of the claim and to employ counsel at its own expense to assist in the handling of the claim and to monitor and advise the State about the status and progress of the defense; (ii) the Contractor must, at the request of the State, demonstrate to the reasonable satisfaction of the State, the Contractor's financial ability to carry out its defense and indemnity obligations under this Contract; (iii) the Contractor must periodically advise the State about the status and progress of the defense and must obtain the prior written approval of the State before entering into any settlement of the claim or ceasing to defend against the claim and (iv) to the extent that any principles of Michigan governmental or public law may be



involved or challenged, the State has the right, at its own expense, to control the defense of that portion of the claim involving the principles of Michigan governmental or public law. But the State may retain control of the defense and settlement of a claim by notifying the Contractor in writing within 10 days after the State's receipt of Contractor's information requested by the State under clause (ii) of this paragraph if the State determines that the Contractor has failed to demonstrate to the reasonable satisfaction of the State the Contractor's financial ability to carry out its defense and indemnity obligations under this Section. Any litigation activity on behalf of the State, or any of its subdivisions under this Section, must be coordinated with the Department of Attorney General. In the event the insurer's attorney represents the State under this Section, the insurer's attorney may be required to be designated as a Special Assistant Attorney General by the Attorney General of the State of Michigan.

- (c) If Contractor does not deliver a Notice of Election relating to any claim of which it is notified by the State as provided above, the State may defend the claim in the manner as it may deem appropriate, at the cost and expense of Contractor. If it is determined that the claim was one against which Contractor was required to indemnify the State, upon request of the State, Contractor must promptly reimburse the State for all the reasonable costs and expenses.

2.150 Termination/Cancellation

2.151 Notice and Right to Cure

If the Contractor breaches the contract, and the State in its sole discretion determines that the breach is curable, then the State will provide the Contractor with written notice of the breach and a time period (not less than 30 days) to cure the Breach. The notice of breach and opportunity to cure is inapplicable for successive or repeated breaches or if the State determines in its sole discretion that the breach poses a serious and imminent threat to the health or safety of any person or the imminent loss, damage, or destruction of any real or tangible personal property.

2.152 Termination for Cause

- (a) The State may terminate this contract, for cause, by notifying the Contractor in writing, if the Contractor (i) breaches any of its material duties or obligations under this Contract (including a Chronic Failure to meet any particular SLA), or (ii) fails to cure a breach within the time period specified in the written notice of breach provided by the State
- (b) If this Contract is terminated for cause, the Contractor must pay all costs incurred by the State in terminating this Contract, including but not limited to, State administrative costs, reasonable attorneys' fees and court costs, and any reasonable additional costs the State may incur to procure the Services/Deliverables required by this Contract from other sources. Re-procurement costs are not consequential, indirect or incidental damages, and cannot be excluded by any other terms otherwise included in this Contract, provided the costs are not in excess of 50% more than the prices for the Service/Deliverables provided under this Contract.
- (c) If the State chooses to partially terminate this Contract for cause, charges payable under this Contract will be equitably adjusted to reflect those Services/Deliverables that are terminated and the State must pay for all Services/Deliverables for which Final Acceptance has been granted provided up to the termination date. Services and related provisions of this Contract that are terminated for cause must cease on the effective date of the termination.
- (d) If the State terminates this Contract for cause under this Section, and it is determined, for any reason, that Contractor was not in breach of contract under the provisions of this section, that termination for cause must be deemed to have been a termination for convenience, effective as of the same date, and the rights and obligations of the parties must be limited to that otherwise provided in this Contract for a termination for convenience.

2.153 Termination for Convenience

The State may terminate this Contract for its convenience, in whole or part, if the State determines that a termination is in the State's best interest. Reasons for the termination must be left to the sole discretion of the State and may include, but not necessarily be limited to (a) the State no longer needs the Services or products specified in the Contract, (b) relocation of office, program changes, changes in laws, rules, or regulations make implementation of the Services no longer practical or feasible, (c) unacceptable prices for Additional Services



or New Work requested by the State, or (d) falsification or misrepresentation, by inclusion or non-inclusion, of information material to a response to any RFP issued by the State. The State may terminate this Contract for its convenience, in whole or in part, by giving Contractor written notice at least 30 days before the date of termination. If the State chooses to terminate this Contract in part, the charges payable under this Contract must be equitably adjusted to reflect those Services/Deliverables that are terminated. Services and related provisions of this Contract that are terminated for cause must cease on the effective date of the termination.

2.154 Termination for Non-Appropriation

- (a) Contractor acknowledges that, if this Contract extends for several fiscal years, continuation of this Contract is subject to appropriation or availability of funds for this Contract. If funds to enable the State to effect continued payment under this Contract are not appropriated or otherwise made available, the State must terminate this Contract and all affected Statements of Work, in whole or in part, at the end of the last period for which funds have been appropriated or otherwise made available by giving written notice of termination to Contractor. The State must give Contractor at least 30 days advance written notice of termination for non-appropriation or unavailability (or the time as is available if the State receives notice of the final decision less than 30 days before the funding cutoff).
- (b) If funding for the Contract is reduced by law, or funds to pay Contractor for the agreed-to level of the Services or production of Deliverables to be provided by Contractor are not appropriated or otherwise unavailable, the State may, upon 30 days written notice to Contractor, reduce the level of the Services or the change the production of Deliverables in the manner and for the periods of time as the State may elect. The charges payable under this Contract will be equitably adjusted to reflect any equipment, services or commodities not provided by reason of the reduction.
- (c) If the State terminates this Contract, eliminates certain Deliverables, or reduces the level of Services to be provided by Contractor under this Section, the State must pay Contractor for all Work-in-Process performed through the effective date of the termination or reduction in level, as the case may be and as determined by the State, to the extent funds are available. This Section will not preclude Contractor from reducing or stopping Services/Deliverables or raising against the State in a court of competent jurisdiction, any claim for a shortfall in payment for Services performed or Deliverables finally accepted before the effective date of termination.

2.155 Termination for Criminal Conviction

The State may terminate this Contract immediately and without further liability or penalty in the event Contractor, an officer of Contractor, or an owner of a 25% or greater share of Contractor is convicted of a criminal offense related to a State, public or private Contract or subcontract.

2.156 Termination for Approvals Rescinded

The State may terminate this Contract if any final administrative or judicial decision or adjudication disapproves a previously approved request for purchase of personal services under Constitution 1963, Article 11, § 5, and Civil Service Rule 7-1. In that case, the State will pay the Contractor for only the work completed to that point under the Contract. Termination may be in whole or in part and may be immediate as of the date of the written notice to Contractor or may be effective as of the date stated in the written notice.

2.157 Rights and Obligations upon Termination

- (a) If the State terminates this Contract for any reason, the Contractor must (a) stop all work as specified in the notice of termination, (b) take any action that may be necessary, or that the State may direct, for preservation and protection of Deliverables or other property derived or resulting from this Contract that may be in Contractor's possession, (c) return all materials and property provided directly or indirectly to Contractor by any entity, agent or employee of the State, (d) transfer title in, and deliver to, the State, unless otherwise directed, all Deliverables intended to be transferred to the State at the termination of the Contract and which are resulting from the Contract (which must be provided to the State on an "As-Is" basis except to the extent the amounts paid by the State in respect of the items included compensation to Contractor for the provision of warranty services in respect of the materials), and (e) take any action to mitigate and limit any potential damages, or requests for Contractor adjustment or termination settlement costs, to the maximum practical extent, including terminating or limiting as otherwise applicable those subcontracts and outstanding orders for material and supplies resulting from the terminated Contract.



- (b) If the State terminates this Contract before its expiration for its own convenience, the State must pay Contractor for all charges due for Services provided before the date of termination and, if applicable, as a separate item of payment under this Contract, for Work In Process, on a percentage of completion basis at the level of completion determined by the State. All completed or partially completed Deliverables prepared by Contractor under this Contract, at the option of the State, becomes the State's property, and Contractor is entitled to receive equitable fair compensation for the Deliverables. Regardless of the basis for the termination, the State is not obligated to pay, or otherwise compensate, Contractor for any lost expected future profits, costs or expenses incurred with respect to Services not actually performed for the State.
- (c) Upon a good faith termination, the State may assume, at its option, any subcontracts and agreements for services and deliverables provided under this Contract, and may further pursue completion of the Services/Deliverables under this Contract by replacement contract or otherwise as the State may in its sole judgment deem expedient.

2.158 Reservation of Rights

Any termination of this Contract or any Statement of Work issued under it by a party must be with full reservation of, and without prejudice to, any rights or remedies otherwise available to the party with respect to any claims arising before or as a result of the termination.

2.160 Termination by Contractor

2.161 Termination by Contractor

If the State breaches the Contract, and the Contractor in its sole discretion determines that the breach is curable, then the Contractor will provide the State with written notice of the breach and a time period (not less than 30 days) to cure the breach. The Notice of Breach and opportunity to cure is inapplicable for successive and repeated breaches.

The Contractor may terminate this Contract if the State (i) materially breaches its obligation to pay the Contractor undisputed amounts due and owing under this Contract, (ii) breaches its other obligations under this Contract to an extent that makes it impossible or commercially impractical for the Contractor to perform the Services, or (iii) does not cure the breach within the time period specified in a written notice of breach. But the Contractor must discharge its obligations under **Section 2.160** before it terminates the Contract.

2.170 Transition Responsibilities

2.171 Contractor Transition Responsibilities

If the State terminates this contract, for convenience or cause, or if the Contract is otherwise dissolved, voided, rescinded, nullified, expires or rendered unenforceable, the Contractor agrees to comply with direction provided by the State to assist in the orderly transition of equipment, services, software, leases, etc. to the State or a third party designated by the State. If this Contract expires or terminates, the Contractor agrees to make all reasonable efforts to effect an orderly transition of services within a reasonable period of time that in no event will exceed 30 (thirty) days. These efforts must include, but are not limited to, those listed in **Sections 2.141, 2.142, 2.143, 2.144, and 2.145.**

2.172 Contractor Personnel Transition

The Contractor must work with the State, or a specified third party, to develop a transition plan setting forth the specific tasks and schedule to be accomplished by the parties, to effect an orderly transition. The Contractor must allow as many personnel as practicable to remain on the job to help the State, or a specified third party, maintain the continuity and consistency of the services required by this Contract. In addition, during or following the transition period, in the event the State requires the Services of the Contractor's subcontractors or vendors, as necessary to meet its needs, Contractor agrees to reasonably, and with good-faith, work with the State to use the Services of Contractor's subcontractors or vendors. Contractor will notify all of Contractor's subcontractors of procedures to be followed during transition.



2.173 Contractor Information Transition

The Contractor agrees to provide reasonable detailed specifications for all Services/Deliverables needed by the State, or specified third party, to properly provide the Services/Deliverables required under this Contract. The Contractor will provide the State with asset management data generated from the inception of this Contract through the date on which this Contractor is terminated in a comma-delineated format unless otherwise requested by the State. The Contractor will deliver to the State any remaining owed reports and documentation still in Contractor's possession subject to appropriate payment by the State.

2.174 Contractor Software Transition

The Contractor must reasonably assist the State in the acquisition of any Contractor software required to perform the Services/use the Deliverables under this Contract. This must include any documentation being used by the Contractor to perform the Services under this Contract. If the State transfers any software licenses to the Contractor, those licenses must, upon expiration of the Contract, transfer back to the State at their current revision level. Upon notification by the State, Contractor may be required to freeze all non-critical changes to Deliverables/Services.

2.175 Transition Payments

If the transition results from a termination for any reason, the termination provisions of this Contract must govern reimbursement. If the transition results from expiration, the Contractor will be reimbursed for all reasonable transition costs (i.e. costs incurred within the agreed period after contract expiration that result from transition operations) at the rates agreed upon by the State. The Contractor will prepare an accurate accounting from which the State and Contractor may reconcile all outstanding accounts.

2.176 State Transition Responsibilities

In the event that this Contract is terminated, dissolved, voided, rescinded, nullified, or otherwise rendered unenforceable, the State agrees to reconcile all accounts between the State and the Contractor, complete any pending post-project reviews and perform any others obligations upon which the State and the Contractor agree.

- (a) Reconciling all accounts between the State and the Contractor;
- (b) Completing any pending post-project reviews.

2.180 Stop Work

2.181 Stop Work Orders

The State may, at any time, by written stop work order to Contractor, require that Contractor stop all, or any part, of the work called for by the Contract for a period of up to 90 calendar days after the stop work order is delivered to Contractor, and for any further period to which the parties may agree. The stop work order must be identified as a stop work order and must indicate that it is issued under this **Section 2.150**. Upon receipt of the stop work order, Contractor must immediately comply with its terms and take all reasonable steps to minimize incurring costs allocable to the work covered by the stop work order during the period of work stoppage. Within the period of the stop work order, the State must either: (a) cancel the stop work order; or (b) terminate the work covered by the stop work order as provided in **Section 2.130**.

2.182 Cancellation or Expiration of Stop Work Order

The Contractor must resume work if the State cancels a Stop Work Order or if it expires. The parties will agree upon an equitable adjustment in the delivery schedule, the Contract price, or both, and the Contract must be modified, in writing, accordingly, if: (a) the stop work order results in an increase in the time required for, or in Contractor's costs properly allocable to, the performance of any part of the Contract; and (b) Contractor asserts its right to an equitable adjustment within 30 calendar days after the end of the period of work stoppage; provided that, if the State decides the facts justify the action, the State may receive and act upon a Contractor proposal submitted at any time before final payment under the Contract. Any adjustment will conform to the requirements of **Section 2.024** and **2.040 Financial Provisions**.



2.183 Allowance of Contractor Costs

If the stop work order is not canceled and the work covered by the stop work order is terminated for reasons other than material breach, the termination must be deemed to be a termination for convenience under **Section 2.153**, and the State will pay reasonable costs resulting from the stop work order in arriving at the termination settlement. For the avoidance of doubt, the State is not liable to Contractor for loss of profits because of a stop work order issued under this Section.

2.190 Dispute Resolution

2.191 In General

Any claim, counterclaim, or dispute between the State and Contractor arising out of or relating to the Contract or any Statement of Work must be resolved as follows. For all Contractor claims seeking an increase in the amounts payable to Contractor under the Contract, or the time for Contractor's performance, Contractor must submit a letter, together with all data supporting the claims, executed by Contractor's Contract Administrator or the Contract Administrator's designee certifying that (a) the claim is made in good faith, (b) the amount claimed accurately reflects the adjustments in the amounts payable to Contractor or the time for Contractor's performance for which Contractor believes the State is liable and covers all costs of every type to which Contractor is entitled from the occurrence of the claimed event, and (c) the claim and the supporting data are current and complete to Contractor's best knowledge and belief.

2.192 Informal Dispute Resolution

(a) All disputes between the parties must be resolved under the Contract Management procedures in this Contract. If the parties are unable to resolve any disputes after compliance with the processes, the parties must meet with the Director of Purchasing Operations, DMB, or designee, for the purpose of attempting to resolve the dispute without the need for formal legal proceedings, as follows:

(1) The representatives of Contractor and the State must meet as often as the parties reasonably deem necessary to gather and furnish to each other all information with respect to the matter in issue which the parties believe to be appropriate and germane in connection with its resolution. The representatives must discuss the problem and negotiate in good faith in an effort to resolve the dispute without the necessity of any formal proceeding.

(2) During the course of negotiations, all reasonable requests made by one party to another for non-privileged information reasonably related to the Contract will be honored in order that each of the parties may be fully advised of the other's position.

(3) The specific format for the discussions will be left to the discretion of the designated State and Contractor representatives, but may include the preparation of agreed upon statements of fact or written statements of position.

(4) Following the completion of this process within 60 calendar days, the Director of Purchasing Operations, DMB, or designee, must issue a written opinion regarding the issue(s) in dispute within 30 calendar days. The opinion regarding the dispute must be considered the State's final action and the exhaustion of administrative remedies.

(b) This Section will not be construed to prevent either party from instituting, and a party is authorized to institute, formal proceedings earlier to avoid the expiration of any applicable limitations period, to preserve a superior position with respect to other creditors, or under **Section 2.193**.

(c) The State will not mediate disputes between the Contractor and any other entity, except state agencies, concerning responsibility for performance of work under the Contract.

2.193 Injunctive Relief

The only circumstance in which disputes between the State and Contractor will not be subject to the provisions of **Section 2.192** is where a party makes a good faith determination that a breach of the terms of the Contract by the other party is the that the damages to the party resulting from the breach will be so immediate, so large or severe and so incapable of adequate redress after the fact that a temporary restraining order or other immediate injunctive relief is the only adequate remedy.



2.194 Continued Performance

Each party agrees to continue performing its obligations under the Contract while a dispute is being resolved except to the extent the issue in dispute precludes performance (dispute over payment must not be deemed to preclude performance) and without limiting either party's right to terminate the Contract as provided in **Section 2.150**, as the case may be.

2.200 Federal and State Contract Requirements

2.201 Nondiscrimination

In the performance of the Contract, Contractor agrees not to discriminate against any employee or applicant for employment, with respect to his or her hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, religion, national origin, ancestry, age, sex, height, weight, and marital status, physical or mental disability. Contractor further agrees that every subcontract entered into for the performance of this Contract or any purchase order resulting from this Contract will contain a provision requiring non-discrimination in employment, as specified here, binding upon each Subcontractor. This covenant is required under the Elliot Larsen Civil Rights Act, 1976 PA 453, MCL 37.2101, et seq., and the Persons with Disabilities Civil Rights Act, 1976 PA 220, MCL 37.1101, et seq., and any breach of this provision may be regarded as a material breach of the Contract.

2.202 Unfair Labor Practices

Under 1980 PA 278, MCL 423.321, et seq., the State must not award a Contract or subcontract to an employer whose name appears in the current register of employers failing to correct an unfair labor practice compiled under section 2 of the Act. This information is compiled by the United States National Labor Relations Board. A Contractor of the State, in relation to the Contract, must not enter into a contract with a Subcontractor, manufacturer, or supplier whose name appears in this register. Under section 4 of 1980 PA 278, MCL 423.324, the State may void any Contract if, after award of the Contract, the name of Contractor as an employer or the name of the Subcontractor, manufacturer or supplier of Contractor appears in the register.

2.203 Workplace Safety and Discriminatory Harassment

In performing Services for the State, the Contractor must comply with the Department of Civil Services Rule 2-20 regarding Workplace Safety and Rule 1-8.3 regarding Discriminatory Harassment. In addition, the Contractor must comply with Civil Service regulations and any applicable agency rules provided to the Contractor. For Civil Service Rules, see <http://www.mi.gov/mdcs/0,1607,7-147-6877---,00.html>.

2.210 Governing Law

2.211 Governing Law

The Contract must in all respects be governed by, and construed according to, the substantive laws of the State of Michigan without regard to any Michigan choice of law rules that would apply the substantive law of any other jurisdiction to the extent not inconsistent with, or pre-empted by federal law.

2.212 Compliance with Laws

Contractor shall comply with all applicable state, federal and local laws and ordinances in providing the Services/Deliverables.

2.213 Jurisdiction

Any dispute arising from the Contract must be resolved in the State of Michigan. With respect to any claim between the parties, Contractor consents to venue in Ingham County, Michigan, and irrevocably waives any objections it may have to the jurisdiction on the grounds of lack of personal jurisdiction of the court or the laying of venue of the court or on the basis of forum non convenience or otherwise. Contractor agrees to appoint agents in the State of Michigan to receive service of process.



2.220 Limitation of Liability

2.221 Limitation of Liability

Neither the Contractor nor the State is liable to each other, regardless of the form of action, for consequential, incidental, indirect, or special damages. This limitation of liability does not apply to claims for infringement of United States patent, copyright, trademark or trade secrets; to claims for personal injury or damage to property caused by the gross negligence or willful misconduct of the Contractor; to claims covered by other specific provisions of this Contract calling for liquidated damages; or to court costs or attorney's fees awarded by a court in addition to damages after litigation based on this Contract.

The Contractor's liability for damages to the State is limited to two times the value of the Contract or \$500,000 which ever is higher. The foregoing limitation of liability does not apply to claims for infringement of United States patent, copyright, trademarks or trade secrets; to claims for personal injury or damage to property caused by the gross negligence or willful misconduct of the Contractor; to claims covered by other specific provisions of this Contract calling for liquidated damages; or to court costs or attorney's fees awarded by a court in addition to damages after litigation based on this Contract.

The State's liability for damages to the Contractor is limited to the value of the Contract.

2.230 Disclosure Responsibilities

2.231 Disclosure of Litigation

Contractor must disclose any material criminal litigation, investigations or proceedings involving the Contractor (and each Subcontractor) or any of its officers or directors or any litigation, investigations or proceedings under the Sarbanes-Oxley Act. In addition, each Contractor (and each Subcontractor) must notify the State of any material civil litigation, arbitration or proceeding which arises during the term of the Contract and extensions, to which Contractor (or, to the extent Contractor is aware, any Subcontractor) is a party, and which involves: (i) disputes that might reasonably be expected to adversely affect the viability or financial stability of Contractor or any Subcontractor; or (ii) a claim or written allegation of fraud against Contractor or, to the extent Contractor is aware, any Subcontractor by a governmental or public entity arising out of their business dealings with governmental or public entities. The Contractor must disclose in writing to the Contract Administrator any litigation, investigation, arbitration or other proceeding (collectively, "Proceeding") within 30 days of its occurrence. Details of settlements that are prevented from disclosure by the terms of the settlement may be annotated. Information provided to the State from Contractor's publicly filed documents referencing its material litigation will be deemed to satisfy the requirements of this Section.

If any Proceeding disclosed to the State under this Section, or of which the State otherwise becomes aware, during the term of this Contract would cause a reasonable party to be concerned about:

- (a) the ability of Contractor (or a Subcontractor) to continue to perform this Contract according to its terms and conditions, or
- (b) whether Contractor (or a Subcontractor) in performing Services for the State is engaged in conduct which is similar in nature to conduct alleged in the Proceeding, which conduct would constitute a breach of this Contract or a violation of Michigan law, regulations or public policy, then the Contractor must provide the State all reasonable assurances requested by the State to demonstrate that:
 - (1) Contractor and its Subcontractors will be able to continue to perform this Contract and any Statements of Work according to its terms and conditions, and
 - (2) Contractor and its Subcontractors have not and will not engage in conduct in performing the Services which is similar in nature to the conduct alleged in the Proceeding.
- (c) Contractor must make the following notifications in writing:
 - (1) Within 30 days of Contractor becoming aware that a change in its ownership or officers has occurred, or is certain to occur, or a change that could result in changes in the valuation of its capitalized assets in the accounting records, Contractor must notify DMB Purchasing Operations.
 - (2) Contractor must also notify DMB Purchasing Operations within 30 days whenever changes to asset valuations or any other cost changes have occurred or are certain to occur as a result of a change in ownership or officers.



- (3) Contractor must also notify DMB Purchase Operations within 30 days whenever changes to company affiliations occur.

2.232 Call Center Disclosure

Contractor and/or all subcontractors involved in the performance of this Contract providing call or contact center services to the State must disclose the location of its call or contact center services to inbound callers. Failure to disclose this information is a material breach of this Contract.

2.233 Bankruptcy

The State may, without prejudice to any other right or remedy, terminate this Contract, in whole or in part, and, at its option, may take possession of the "Work in Process" and finish the Works in Process by whatever appropriate method the State may deem expedient if:

- (a) the Contractor files for protection under the bankruptcy laws;
- (b) an involuntary petition is filed against the Contractor and not removed within 30 days;
- (c) the Contractor becomes insolvent or if a receiver is appointed due to the Contractor's insolvency;
- (d) the Contractor makes a general assignment for the benefit of creditors; or
- (e) the Contractor or its affiliates are unable to provide reasonable assurances that the Contractor or its affiliates can deliver the services under this Contract.

Contractor will fix appropriate notices or labels on the Work in Process to indicate ownership by the State. To the extent reasonably possible, materials and Work in Process must be stored separately from other stock and marked conspicuously with labels indicating ownership by the State.

2.240 Performance

2.241 Time of Performance

- (a) Contractor must use commercially reasonable efforts to provide the resources necessary to complete all Services and Deliverables according to the time schedules contained in the Statements of Work and other Exhibits governing the work, and with professional quality.
- (b) Without limiting the generality of **Section 2.241**, Contractor must notify the State in a timely manner upon becoming aware of any circumstances that may reasonably be expected to jeopardize the timely and successful completion of any Deliverables/Services on the scheduled due dates in the latest State-approved delivery schedule and must inform the State of the projected actual delivery date.
- (c) If the Contractor believes that a delay in performance by the State has caused or will cause the Contractor to be unable to perform its obligations according to specified Contract time periods, the Contractor must notify the State in a timely manner and must use commercially reasonable efforts to perform its obligations according to the Contract time periods notwithstanding the State's failure. Contractor will not be in default for a delay in performance to the extent the delay is caused by the State.

2.242 Service Level Agreement (SLA)

- (a) SLAs will be completed with the following operational considerations:
 - (1) SLAs will not be calculated for individual Incidents where any event of Excusable Failure has been determined; Incident means any interruption in Services.
 - (2) SLAs will not be calculated for individual Incidents where loss of service is planned and where the State has received prior notification or coordination.
 - (3) SLAs will not apply if the applicable Incident could have been prevented through planning proposed by Contractor and not implemented at the request of the State. To invoke this consideration, complete documentation relevant to the denied planning proposal must be presented to substantiate the proposal.
 - (4) Time period measurements will be based on the time Incidents are received by the Contractor and the time that the State receives notification of resolution based on 24x7x365 time period, except that the time period measurement will be suspended based on the following:
 - (i) Time period(s) will not apply where Contractor does not have access to a physical State Location and where access to the State Location is necessary for problem identification and resolution.



- (ii) Time period(s) will not apply where Contractor needs to obtain timely and accurate information or appropriate feedback and is unable to obtain timely and accurate information or appropriate feedback from the State.
- (b) Chronic Failure for any Service(s) will be defined as three unscheduled outage(s) or interruption(s) on any individual Service for the same reason or cause or if the same reason or cause was reasonably discoverable in the first instance over a rolling 30 day period. Chronic Failure will result in the State's option to terminate the effected individual Service(s) and procure them from a different vendor for the chronic location(s) with Contractor to pay the difference in charges for up to three additional months. The termination of the Service will not affect any tiered pricing levels.
- (c) Root Cause Analysis will be performed on any Business Critical outage(s) or outage(s) on Services when requested by the Contract Administrator. Contractor will provide its analysis within two weeks of outage(s) and provide a recommendation for resolution.
- (d) All decimals must be rounded to two decimal places with five and greater rounding up and four and less rounding down unless otherwise specified.

2.243 Liquidated Damages

The parties acknowledge that late or improper completion of the Work will cause loss and damage to the State, and that it would be impracticable and extremely difficult to fix the actual damage sustained by the State as a result. Therefore, Contractor and the State agree that if there is late or improper completion of the Work and the State does not elect to exercise its rights under **Section 2.141**, the State is entitled to collect liquidated damages in the amount of \$5,000.00 and an additional \$100.00 per day for each day Contractor fails to remedy the late or improper completion of the Work.

Unauthorized Removal of any Key Personnel

It is acknowledged that an Unauthorized Removal will interfere with the timely and proper completion of the Contract, to the loss and damage of the State, and that it would be impracticable and extremely difficult to fix the actual damage sustained by the State as a result of any Unauthorized Removal. Therefore, Contractor and the State agree that in the case of any Unauthorized Removal in respect of which the State does not elect to exercise its rights under **Section 2.141**, the State may assess liquidated damages against Contractor as specified below.

For the Unauthorized Removal of any Key Personnel designated in the applicable Statement of Work, the liquidated damages amount is \$25,000.00 per individual if the Contractor identifies a replacement approved by the State under **Section 2.060** and assigns the replacement to the Project to shadow the Key Personnel who is leaving for a period of at least 30 days before the Key Personnel's removal.

If Contractor fails to assign a replacement to shadow the removed Key Personnel for at least 30 days, in addition to the \$25,000.00 liquidated damages for an Unauthorized Removal, Contractor must pay the amount of \$833.33 per day for each day of the 30 day shadow period that the replacement Key Personnel does not shadow the removed Key Personnel, up to \$25,000.00 maximum per individual. The total liquidated damages that may be assessed per Unauthorized Removal and failure to provide 30 days of shadowing must not exceed \$50,000.00 per individual.

2.244 Excusable Failure

Neither party will be liable for any default, damage or delay in the performance of its obligations under the Contract to the extent the default, damage or delay is caused by government regulations or requirements (executive, legislative, judicial, military or otherwise), power failure, electrical surges or current fluctuations, lightning, earthquake, war, water or other forces of nature or acts of God, delays or failures of transportation, equipment shortages, suppliers' failures, or acts or omissions of common carriers, fire; riots, civil disorders; strikes or other labor disputes, embargoes; injunctions (provided the injunction was not issued as a result of any fault or negligence of the party seeking to have its default or delay excused); or any other cause beyond the reasonable control of a party; provided the non-performing party and its Subcontractors are without fault in causing the default or delay, and the default or delay could not have been prevented by reasonable precautions and cannot reasonably be circumvented by the non-performing party through the use of alternate sources, workaround plans or other means, including disaster recovery plans.



If a party does not perform its contractual obligations for any of the reasons listed above, the non-performing party will be excused from any further performance of its affected obligation(s) for as long as the circumstances prevail. But the party must use commercially reasonable efforts to recommence performance whenever and to whatever extent possible without delay. A party must promptly notify the other party in writing immediately after the excusable failure occurs, and also when it abates or ends.

If any of the above-enumerated circumstances substantially prevent, hinder, or delay the Contractor's performance of the Services/provision of Deliverables for more than 10 Business Days, and the State determines that performance is not likely to be resumed within a period of time that is satisfactory to the State in its reasonable discretion, then at the State's option: (a) the State may procure the affected Services/Deliverables from an alternate source, and the State is not be liable for payment for the unperformed Services/ Deliverables not provided under the Contract for so long as the delay in performance continues; (b) the State may terminate any portion of the Contract so affected and the charges payable will be equitably adjusted to reflect those Services/Deliverables terminated; or (c) the State may terminate the affected Statement of Work without liability to Contractor as of a date specified by the State in a written notice of termination to the Contractor, except to the extent that the State must pay for Services/Deliverables provided through the date of termination.

The Contractor will not have the right to any additional payments from the State as a result of any Excusable Failure occurrence or to payments for Services not rendered/Deliverables not provided as a result of the Excusable Failure condition. Defaults or delays in performance by Contractor which are caused by acts or omissions of its Subcontractors will not relieve Contractor of its obligations under the Contract except to the extent that a Subcontractor is itself subject to an Excusable Failure condition described above and Contractor cannot reasonably circumvent the effect of the Subcontractor's default or delay in performance through the use of alternate sources, workaround plans or other means.

2.250 Approval of Deliverables

2.251 Delivery of Deliverables

A list of the Deliverables to be prepared and delivered by Contractor including, for each Deliverable, the scheduled delivery date and a designation of whether the Deliverable is a document ("Written Deliverable") or a Custom Software Deliverable is provided in Article 1.104. All Deliverables shall be completed and delivered for State review and written approval and, where applicable, installed in accordance with the State-approved delivery schedule and any other applicable terms and conditions of this Contract. If there are any disagreements between these provisions and Article 1, then the statements provided in Article 1 will prevail.

Prior to delivering any Deliverable to the State, Contractor will first perform all required quality assurance activities, and, in the case of Custom Software Deliverables, System Testing to verify that the Deliverable is complete and in conformance with its specifications. Before delivering a Deliverable to the State, Contractor shall certify to the State that (1) it has performed such quality assurance activities, (2) it has performed any applicable testing, (3) it has corrected all material deficiencies discovered during such quality assurance activities and testing, (4) the Deliverable is in a suitable state of readiness for the State's review and approval, and (5) the Deliverable/Service has all Critical Security patches/updates applied.

In discharging its obligations under this Section, Contractor shall be at all times (except where the parties agree otherwise in writing) in compliance with Level 3 of the Software Engineering Institute's Capability Maturity Model for Software ("CMM Level 3") or its equivalent.

2.252 Contractor System Testing

Contractor will be responsible for System Testing each Custom Software Deliverable in Contractor's development environment prior to turning over the Custom Software Deliverable to the State for User Acceptance Testing and approval. Contractor's System Testing shall include the following, at a minimum, plus any other testing required by CMM Level 3 or Contractor's system development methodology:

Contractor will be responsible for performing Unit Testing and incremental Integration Testing of the components of each Custom Software Deliverable.



Contractor's System Testing will also include Integration Testing of each Custom Software Deliverable to ensure proper inter-operation with all prior software Deliverables, interfaces and other components that are intended to inter-operate with such Custom Software Deliverable, and will include Regression Testing, volume and stress testing to ensure that the Custom Software Deliverables are able to meet the State's projected growth in the number and size of transactions to be processed by the Application and number of users, as such projections are set forth in the applicable Statement of Work.

Contractor's System Testing will also include Business Function Testing and Technical Testing of each Application in a simulated production environment. Business Function Testing will include testing of full work streams that flow through the Application as the Application will be incorporated within the State's computing environment. The State shall participate in and provide support for the Business Function Testing to the extent reasonably requested by Contractor. Within ten (10) days before the commencement of Business Function Testing pursuant to this Section, Contractor shall provide the State for State review and written approval Contractor's test plan for Business Function Testing.

Within five (5) Business Days following the completion of System Testing pursuant to this **Section**, Contractor shall provide to the State a testing matrix establishing that testing for each condition identified in the System Testing plans has been conducted and successfully concluded. To the extent that testing occurs on State premises, the State shall be entitled to observe or otherwise participate in testing under this Section as the State may elect.

2.253 Approval of Deliverables, In General

All Deliverables (Written Deliverables and Custom Software Deliverables) require formal written approval by the State, in accordance with the following procedures. Formal approval by the State requires that the Deliverable be confirmed in writing by the State to meet its specifications, which, in the case of Custom Software Deliverables, will include the successful completion of State User Acceptance Testing, to be led by the State with the support and assistance of Contractor. The parties acknowledge that the approval process set forth herein will be facilitated by ongoing consultation between the parties, visibility of interim and intermediate Deliverables and collaboration on key decisions.

The State's obligation to comply with any State Review Period is conditioned on the timely delivery of Deliverables being reviewed. If Contractor fails to provide a Deliverable to the State in a timely manner, the State will nevertheless use commercially reasonable efforts to complete its review or testing within the applicable State Review Period.

Before commencement of its review or testing of a Deliverable, the State may inspect the Deliverable to confirm that all components of the Deliverable (e.g., software, associated documentation, and other materials) have been delivered. If the State determines that the Deliverable is incomplete, the State may refuse delivery of the Deliverable without performing any further inspection or testing of the Deliverable. Otherwise, the review period will be deemed to have started on the day the State receives the Deliverable and the applicable certification by Contractor in accordance with this Section.

The State will approve in writing a Deliverable upon confirming that it conforms to and, in the case of a Custom Software Deliverable, performs in accordance with, its specifications without material deficiency. The State may, but shall not be required to, conditionally approve in writing a Deliverable that contains material deficiencies if the State elects to permit Contractor to rectify them post-approval. In any case, Contractor will be responsible for working diligently to correct within a reasonable time at Contractor's expense all deficiencies in the Deliverable that remain outstanding at the time of State approval.

If, after three (3) opportunities (the original and two repeat efforts), Contractor is unable to correct all deficiencies preventing State approval of a Deliverable, the State may: (i) demand that Contractor cure the failure and give Contractor additional time to cure the failure at the sole expense of Contractor; or (ii) keep this Contract in force and do, either itself or through other parties, whatever Contractor has failed to do, in which event Contractor shall bear any excess expenditure incurred by the State in so doing beyond the contract price for such Deliverable and will pay the State an additional sum equal to ten percent (10%) of such excess



expenditure to cover the State's general expenses without the need to furnish proof in substantiation of such general expenses; or (iii) terminate this Contract for default, either in whole or in part by notice to Contractor (and without the need to afford Contractor any further opportunity to cure). Notwithstanding the foregoing, the State shall not use, as a basis for exercising its termination rights under this Section, deficiencies discovered in a repeat State Review Period that could reasonably have been discovered during a prior State Review Period.

The State, at any time and in its own discretion, may halt the UAT or approval process if such process reveals deficiencies in or problems with a Deliverable in a sufficient quantity or of a sufficient severity as to make the continuation of such process unproductive or unworkable. In such case, the State may return the applicable Deliverable to Contractor for correction and re-delivery prior to resuming the review or UAT process and, in that event, Contractor will correct the deficiencies in such Deliverable in accordance with the Contract, as the case may be.

Approval in writing of a Deliverable by the State shall be provisional; that is, such approval shall not preclude the State from later identifying deficiencies in, and declining to accept, a subsequent Deliverable based on or which incorporates or inter-operates with an approved Deliverable, to the extent that the results of subsequent review or testing indicate the existence of deficiencies in the subsequent Deliverable, or if the Application of which the subsequent Deliverable is a component otherwise fails to be accepted pursuant to **Section 2.080**.

2.254 Process for Approval of Written Deliverables

The State Review Period for Written Deliverables will be the number of days set forth in the applicable Statement of Work following delivery of the final version of the Written Deliverable (failing which the State Review Period, by default, shall be five (5) Business Days for Written Deliverables of one hundred (100) pages or less and ten (10) Business Days for Written Deliverables of more than one hundred (100) pages). The duration of the State Review Periods will be doubled if the State has not had an opportunity to review an interim draft of the Written Deliverable prior to its submission to the State. The State agrees to notify Contractor in writing by the end of the State Review Period either stating that the Written Deliverable is approved in the form delivered by Contractor or describing any deficiencies that must be corrected prior to approval of the Written Deliverable (or at the State's election, subsequent to approval of the Written Deliverable). If the State delivers to Contractor a notice of deficiencies, Contractor will correct the described deficiencies and within five (5) Business Days resubmit the Deliverable in a form that shows all revisions made to the original version delivered to the State. Contractor's correction efforts will be made at no additional charge. Upon receipt of a corrected Written Deliverable from Contractor, the State will have a reasonable additional period of time, not to exceed the length of the original State Review Period, to review the corrected Written Deliverable to confirm that the identified deficiencies have been corrected.

2.255 Process for Approval of Custom Software Deliverables

The State will conduct UAT of each Custom Software Deliverable in accordance with the following procedures to determine whether it meets the criteria for State approval – i.e., whether it conforms to and performs in accordance with its specifications without material deficiencies.

Within thirty (30) days (or such other number of days as the parties may agree to in writing) prior to Contractor's delivery of any Custom Software Deliverable to the State for approval, Contractor shall provide to the State a set of proposed test plans, including test cases, scripts, data and expected outcomes, for the State's use (which the State may supplement in its own discretion) in conducting UAT of the Custom Software Deliverable. Contractor, upon request by the State, shall provide the State with reasonable assistance and support during the UAT process.

For the Custom Software Deliverables listed in an attachment, the State Review Period for conducting UAT will be as indicated in the attachment. For any other Custom Software Deliverables not listed in an attachment, the State Review Period shall be the number of days agreed in writing by the parties (failing which it shall be forty-five (45) days by default). The State Review Period for each Custom Software Deliverable will begin when Contractor has delivered the Custom Software Deliverable to the State accompanied by the certification required by this **Section** and the State's inspection of the Deliverable has confirmed that all components of it have been delivered.



The State's UAT will consist of executing test scripts from the proposed testing submitted by Contractor, but may also include any additional testing deemed appropriate by the State. If the State determines during the UAT that the Custom Software Deliverable contains any deficiencies, the State will notify Contractor of the deficiency by making an entry in an incident reporting system available to both Contractor and the State. Contractor will modify promptly the Custom Software Deliverable to correct the reported deficiencies, conduct appropriate System Testing (including, where applicable, Regression Testing) to confirm the proper correction of the deficiencies and re-deliver the corrected version to the State for re-testing in UAT. Contractor will coordinate the re-delivery of corrected versions of Custom Software Deliverables with the State so as not to disrupt the State's UAT process. The State will promptly re-test the corrected version of the Software Deliverable after receiving it from Contractor.

Within three (3) business days after the end of the State Review Period, the State will give Contractor a written notice indicating the State's approval or rejection of the Custom Software Deliverable according to the criteria and process set out in this **Section**.

2.256 Final Acceptance

"Final Acceptance" shall be considered to occur when the Custom Software Deliverable to be delivered has been approved by the State and has been operating in production without any material deficiency for fourteen (14) consecutive days. If the State elects to defer putting a Custom Software Deliverable into live production for its own reasons, not based on concerns about outstanding material deficiencies in the Deliverable, the State shall nevertheless grant Final Acceptance of the Project.

2.260 Ownership

2.261 Ownership of Work Product by State

The State owns all Deliverables, as they are work made for hire by the Contractor for the State. The State owns all United States and international copyrights, trademarks, patents or other proprietary rights in the Deliverables.

2.262 Vesting of Rights

With the sole exception of any preexisting licensed works identified in the SOW, the Contractor assigns, and upon creation of each Deliverable automatically assigns, to the State, ownership of all United States and international copyrights, trademarks, patents, or other proprietary rights in each and every Deliverable, whether or not registered by the Contractor, insofar as any the Deliverable, by operation of law, may not be considered work made for hire by the Contractor for the State. From time to time upon the State's request, the Contractor must confirm the assignment by execution and delivery of the assignments, confirmations of assignment, or other written instruments as the State may request. The State may obtain and hold in its own name all copyright, trademark, and patent registrations and other evidence of rights that may be available for Deliverables.

2.263 Rights in Data

The State is the owner of all data made available by the State to the Contractor or its agents, Subcontractors or representatives under the Contract. The Contractor will not use the State's data for any purpose other than providing the Services, nor will any part of the State's data be disclosed, sold, assigned, leased or otherwise disposed of to the general public or to specific third parties or commercially exploited by or on behalf of the Contractor. No employees of the Contractor, other than those on a strictly need-to-know basis, have access to the State's data. Contractor will not possess or assert any lien or other right against the State's data. Without limiting the generality of this Section, the Contractor must only use personally identifiable information as strictly necessary to provide the Services and must disclose the information only to its employees who have a strict need-to-know the information. The Contractor must comply at all times with all laws and regulations applicable to the personally identifiable information.

The State is the owner of all State-specific data under the Contract. The State may use the data provided by the Contractor for any purpose. The State will not possess or assert any lien or other right against the Contractor's data. Without limiting the generality of this Section, the State may use personally identifiable information only as strictly necessary to utilize the Services and must disclose the information only to its



employees who have a strict need to know the information, except as provided by law. The State must comply at all times with all laws and regulations applicable to the personally identifiable information. Other material developed and provided to the State remains the State's sole and exclusive property.

2.264 Ownership of Materials

The State and the Contractor will continue to own their respective proprietary technologies developed before entering into the Contract. Any hardware bought through the Contractor by the State, and paid for by the State, will be owned by the State. Any software licensed through the Contractor and sold to the State, will be licensed directly to the State.

2.270 State Standards

2.271 Existing Technology Standards

The Contractor will adhere to all existing standards as described within the comprehensive listing of the State's existing technology standards at <http://www.michigan.gov/dit>.

2.272 Acceptable Use Policy

To the extent that Contractor has access to the State computer system, Contractor must comply with the State's Acceptable Use Policy, see <http://www.michigan.gov/ditservice>. All Contractor employees must be required, in writing, to agree to the State's Acceptable Use Policy before accessing the State system. The State reserves the right to terminate Contractor's access to the State system if a violation occurs.

2.273 Systems Changes

Contractor is not responsible for and not authorized to make changes to any State systems without written authorization from the Project Manager. Any changes Contractor makes to State systems with the State's approval must be done according to applicable State procedures, including security, access and configuration management procedures.

2.280 Extended Purchasing

2.281 MiDEAL (Michigan Delivery Extended Agreements Locally

Public Act 431 of 1984 permits DMB to provide purchasing services to any city, village, county, township, school district, intermediate school district, non-profit hospital, institution of higher education, community, or junior college. A current listing of approved program members is available at: www.michigan.gov/buymichiganfirst. Unless otherwise stated, the Contractor must ensure that the non-state agency is an authorized purchaser before extending the Contract pricing.

The Contractor will supply Contract Services and equipment to these local governmental agencies at the established State of Michigan contract prices and terms to the extent applicable and where available. The Contractor must send its invoices to, and pay the local unit of government, on a direct and individual basis.

To the extent that authorized local units of government purchase quantities of Services and/or equipment under this Contract, the quantities of Services and/or equipment purchased will be included in determining the appropriate rate wherever tiered pricing based on quantity is provided.

Act Number 431 of the Public Acts of 1984 permits the State of Michigan, Department of Management and Budget, to provide purchasing services to any city, village, county, township, school district, intermediate school district, non-profit hospital, institution of higher education, community, or junior college. As a result of the enactment of this legislation, the MIDEAL Program has been developed. This program extends the use of state contracts to program members. The governmental agency must enter into an agreement with the State of Michigan to become authorized to participate, thus ensuring that local units of government secure a greater return for the expenditure of public funds.

In those cases, contract vendors supply merchandise at the established State of Michigan contract prices and terms. The Bidder must submit invoices and pay the authorized MIDEAL member on a direct and individual basis according to contract terms.



2.300 Deliverables

2.301 Software

Exhibit A provides a list of all software required to complete the Contract and make the Deliverables operable; if any additional software is required in order for the Deliverables to meet the requirements of this Contract, such software shall be provided to the State by Contractor at no additional charge (except where agreed upon and specified in a Statement of Work or Contract Change Notice).

2.302 Hardware

Exhibit A provides a list of all hardware required to complete the Contract and make the Deliverables operable; if any additional hardware is required in order for the Deliverables to meet the requirements of this Contract, such hardware shall be provided to the State by Contractor at no additional charge (except where agreed upon and specified in a Contract Change Notice).

2.303 Equipment to be New

If applicable, all equipment provided under this Contract by Contractor shall be new where Contractor has knowledge regarding whether the equipment is new or assembled from new or serviceable used parts that are like new in performance or has the option of selecting one or the other. Equipment that is assembled from new or serviceable used parts that are like new in performance is acceptable where Contractor does not have knowledge or the ability to select one or other, unless specifically agreed otherwise in writing by the State.

2.304 Equipment to be New and Prohibited Products

If applicable, the State will not accept salvage, distressed, outdated or discontinued merchandise. Shipping of such merchandise to any State agency, as a result of an order placed against the Contract, shall be considered default by the Contractor of the terms and conditions of the Contract and may result in cancellation of the Contract by the State. The brand and product number offered for all items shall remain consistent for the term of the Contract, unless Purchasing Operations has approved a change order pursuant to **Section 2.024**.

2.310 Software Warranties

2.311 Performance Warranty

The Contractor represents and warrants that Deliverables, after Final Acceptance, will perform and operate in compliance with the requirements and other standards of performance contained in this Contract (including all descriptions, specifications and drawings made a part of the Contract) for a period of (90) ninety days. In the event of a breach of this warranty, Contractor will promptly correct the affected Deliverable(s) at no charge to the State.

2.312 No Surreptitious Code Warranty

The Contractor represents and warrants that no copy of licensed Software provided to the State contains or will contain any Self-Help Code or any Unauthorized Code as defined below. This warranty is referred to in this Contract as the "No Surreptitious Code Warranty."

As used in this Contract, "Self-Help Code" means any back door, time bomb, drop dead device, or other software routine designed to disable a computer program automatically with the passage of time or under the positive control of a person other than the licensee of the software. Self-Help Code does not include Software routines in a computer program, if any, designed to permit an owner of the computer program (or other person acting by authority of the owner) to obtain access to a licensee's computer system(s) (e.g. remote access via modem) for purposes of maintenance or technical support.

As used in this Contract, "Unauthorized Code" means any virus, Trojan horse, spyware, worm or other Software routines or components designed to permit unauthorized access to disable, erase, or otherwise harm software, equipment, or data; or to perform any other such actions. The term Unauthorized Code does not include Self-Help Code. Unauthorized Code does not include Software routines in a computer program, if any, designed to permit an owner of the computer program (or other person acting by authority of the owner) to



obtain access to a licensee's computer system(s) (e.g. remote access via modem) for purposes of maintenance or technical support.

In addition, Contractor will use up-to-date commercial virus detection software to detect and remove any viruses from any software prior to delivering it to the State.

2.313 Calendar Warranty

The Contractor represents and warrants that all software for which the Contractor either sells or licenses to the State of Michigan and used by the State prior to, during or after the calendar year 2000, includes or shall include, at no added cost to the State, design and performance so the State shall not experience software abnormality and/or the generation of incorrect results from the software, due to date oriented processing, in the operation of the business of the State of Michigan.

The software design, to insure calendar year rollover compatibility, shall include, but is not limited to: data structures (databases, data files, etc.) that provide 4-digit date century; stored data that contain date century recognition, including, but not limited to, data stored in databases and hardware device internal system dates; calculations and program logic (e.g., sort algorithms, calendar generation, event recognition, and all processing actions that use or produce date values) that accommodates same century and multi-century formulas and date values; interfaces that supply data to and receive data from other systems or organizations that prevent non-compliant dates and data from entering any State system; user interfaces (i.e., screens, reports, etc.) that accurately show 4 digit years; and assurance that the year 2000 shall be correctly treated as a leap year within all calculation and calendar logic.

2.314 Third-party Software Warranty

The Contractor represents and warrants that it will disclose the use or incorporation of any third-party software into the Deliverables. At the time of Delivery, the Contractor shall provide in writing the name and use of any Third-party Software, including information regarding the Contractor's authorization to include and utilize such software. The notice shall include a copy of any ownership agreement or license that authorizes the Contractor to use the Third-party Software.

2.315 Physical Media Warranty

Contractor represents and warrants that each licensed copy of the Software provided by the Contractor is free from physical defects in the media that tangibly embodies the copy. This warranty does not apply to defects discovered more than (30) thirty days after that date of Final Acceptance of the Software by the State. This warranty does not apply to defects arising from acts of Excusable Failure. If the Contractor breaches this warranty, then the State shall be entitled to replacement of the non-compliant copy by Contractor, at Contractor's expense (including shipping and handling).

2.320 Software Licensing

2.321 Cross-License, Deliverables Only, License to Contractor

The State grants to the Contractor, the royalty-free, world-wide, non-exclusive right and license under any Deliverable now or in the future owned by the State, or with respect to which the State has a right to grant such rights or licenses, to the extent required by the Contractor to market the Deliverables and exercise its full rights in the Deliverables, including, without limitation, the right to make, use and sell products and services based on or incorporating such Deliverables.

2.322 Cross-License, Deliverables and Derivative Work, License to Contractor

The State grants to the Contractor, the royalty-free, world-wide, non-exclusive right and license under any Deliverable and/or Derivative Work now or in the future owned by the State, or with respect to which the State has a right to grant such rights or licenses, to the extent required by the Contractor to market the Deliverables and/or Derivative Work and exercise its full rights in the Deliverables and/or Derivative Work, including, without limitation, the right to make, use and sell products and services based on or incorporating such Deliverables and/or Derivative Work.



2.323 License Back to the State

Unless otherwise specifically agreed to by the State, before initiating the preparation of any Deliverable that is a Derivative of a preexisting work, the Contractor shall cause the State to have and obtain the irrevocable, nonexclusive, worldwide, royalty-free right and license to (1) use, execute, reproduce, display, perform, distribute internally or externally, sell copies of, and prepare Derivative Works based upon all preexisting works and Derivative Works thereof, and (2) authorize or sublicense others from time to time to do any or all of the foregoing.

2.324 License Retained by Contractor

Contractor grants to the State a non-exclusive, royalty-free, site-wide, irrevocable, transferable license to use the Software and related documentation according to the terms and conditions of this Contract. For the purposes of this license, "site-wide" includes any State of Michigan office regardless of its physical location.

The State may modify the Software and may combine such with other programs or materials to form a derivative work. The State will own and hold all copyright, trademarks, patent and other intellectual property rights in any derivative work, excluding any rights or interest in Software other than those granted in this Contract.

The State may copy each item of Software to multiple hard drives or networks unless otherwise agreed by the parties.

The State will make and maintain no more than one archival copy of each item of Software, and each copy will contain all legends and notices and will be subject to the same conditions and restrictions as the original. The State may also make copies of the Software in the course of routine backups of hard drive(s) for the purpose of recovery of hard drive contents.

In the event that the Contractor shall, for any reason, cease to conduct business, or cease to support the Software, the State shall have the right to convert these licenses into perpetual licenses, with rights of quiet enjoyment, but subject to payment obligations not to exceed the then current rates.

2.325 Pre-existing Materials for Custom Software Deliverables

Neither Contractor nor any of its Subcontractors shall incorporate any preexisting materials (including Standard Software) into Custom Software Deliverables or use any pre-existing materials to produce Custom Software Deliverables if such pre-existing materials will be needed by the State in order to use the Custom Software Deliverables unless (i) such pre-existing materials and their owners are identified to the State in writing and (ii) such pre-existing materials are either readily commercially available products for which Contractor or its Subcontractor, as the case may be, has obtained a license (in form and substance approved by the State) in the name of the State, or are materials that Contractor or its Subcontractor, as the case may be, has the right to license to the State and has licensed to the State on terms and conditions approved by the State prior to using such pre-existing materials to perform the Services.

2.330 Source Code Escrow

2.331 Definition

"Source Code Escrow Package" shall mean:

- (a) A complete copy in machine-readable form of the source code and executable code of the Licensed Software, including any updates or new releases of the product;
- (b) A complete copy of any existing design documentation and user documentation, including any updates or revisions; and/or
- (c) Complete instructions for compiling and linking every part of the source code into executable code for purposes of enabling verification of the completeness of the source code as provided below. Such instructions shall include precise identification of all compilers, library packages, and linkers used to generate executable code.



2.332 Delivery of Source Code into Escrow

The Contractor shall deliver a Source Code Escrow Package to the Escrow Agent, pursuant to the Escrow Contract, which shall be entered into on commercially reasonable terms subject to the provisions of this Contract within (30) thirty days of the execution of this Contract.

2.333 Delivery of New Source Code into Escrow

If at anytime during the term of this Contract, the Contractor provides a maintenance release or upgrade version of the Licensed Software, Contractor shall within ten (10) days deposit with the Escrow Agent, in accordance with the Escrow Contract, a Source Code Escrow Package for the maintenance release or upgrade version, and provide the State with notice of the delivery.

2.334 Verification

The State reserves the right at any time, but not more than once a year, either itself or through a third party contractor, upon thirty (30) days written notice, to seek verification of the Source Code Escrow Package.

2.335 Escrow Fees

The Contractor will pay all fees and expenses charged by the Escrow Agent.

2.336 Release Events

The Source Code Escrow Package may be released from escrow to the State, temporarily or permanently, upon the occurrence of one or more of the following:

- (a) The Contractor becomes insolvent, makes a general assignment for the benefit of creditors, files a voluntary petition of bankruptcy, suffers or permits the appointment of a receiver for its business or assets, becomes subject to any proceeding under bankruptcy or insolvency law, whether domestic or foreign;
- (b) The Contractor has wound up or liquidated its business voluntarily or otherwise and the State has reason to believe that such events will cause the Contractor to fail to meet its warranties and maintenance obligations in the foreseeable future;
- (c) The Contractor voluntarily or otherwise discontinues support of the provided products or fails to support the products in accordance with its maintenance obligations and warranties.

2.337 Release Event Procedures

If the State desires to obtain the Source Code Escrow Package from the Escrow Agent upon the occurrence of an Event in this **Section**, then:

- (a) The State shall comply with all procedures in the Escrow Contract;
- (b) The State shall maintain all materials and information comprising the Source Code Escrow Package in confidence in accordance with this Contract;
- (c) If the release is a temporary one, then the State shall promptly return all released materials to Contractor when the circumstances leading to the release are no longer in effect.

2.338 License

Upon release from the Escrow Agent pursuant to an event described in this **Section**, the Contractor automatically grants the State a non-exclusive, irrevocable license to use, reproduce, modify, maintain, support, update, have made, and create Derivative Works. Further, the State shall have the right to use the Source Code Escrow Package in order to maintain and support the Licensed Software so that it can be used by the State as set forth in this Contract.

2.339 Derivative Works

Any Derivative Works to the source code released from escrow that are made by or on behalf of the State shall be the sole property of the State. The State acknowledges that its ownership rights are limited solely to the Derivative Works and do not include any ownership rights in the underlying source code.

2.400 Other Provisions



2.411 Forced Labor, Convict Labor, or Indentured Servitude Made Materials

Bidder represents and certifies that, to the best of its knowledge and belief no foreign (outside of the U.S.) made equipment, materials, or supplies, will be furnished to the State under any resulting Contract, that have been produced in whole or in part by forced labor, convict labor, or indentured servitude.

_____ (Initial)

2.421 Knowledge of Child Labor for Listed End Products

- (a) "Forced or indentured child labor" means all work or service:
 - (i) Exacted from any person under the age of 18 under the menace of any penalty for its nonperformance and for which the worker does not offer himself voluntarily; or
 - (ii) Performed by any person under the age of 18 under a contract the enforcement of which can be accomplished by process or penalties.

(b) *Listed end products.* The following end product(s) being acquired under this solicitation is (are) included in the List of Products Requiring Contractor Certification as to Forced or Indentured Child Labor, identified by their country of origin. There is a reasonable basis to believe that listed end products from the listed countries of origin may have been mined, produced, or manufactured by forced or indentured child labor.

Listed End Product	Listed Country of Origin

(c) *Certification.* The State will not make award to a Bidder unless the Bidder, by checking the appropriate block, certifies to one of the following:

- () The Bidder will not supply any end product listed in paragraph (b) of this provision that was mined, produced, or manufactured in a corresponding country as listed for that end product.
- () The Bidder may supply an end product listed in paragraph (b) of this provision that was mined, produced, or manufactured in the corresponding country as listed for that product. The Bidder certifies that it has made a good faith effort to determine whether forced or indentured child labor was used to mine, produce, or manufacture the end product. On the basis of those efforts, the Bidder certifies that it is not aware of any the use of child labor.

_____ (Initial)

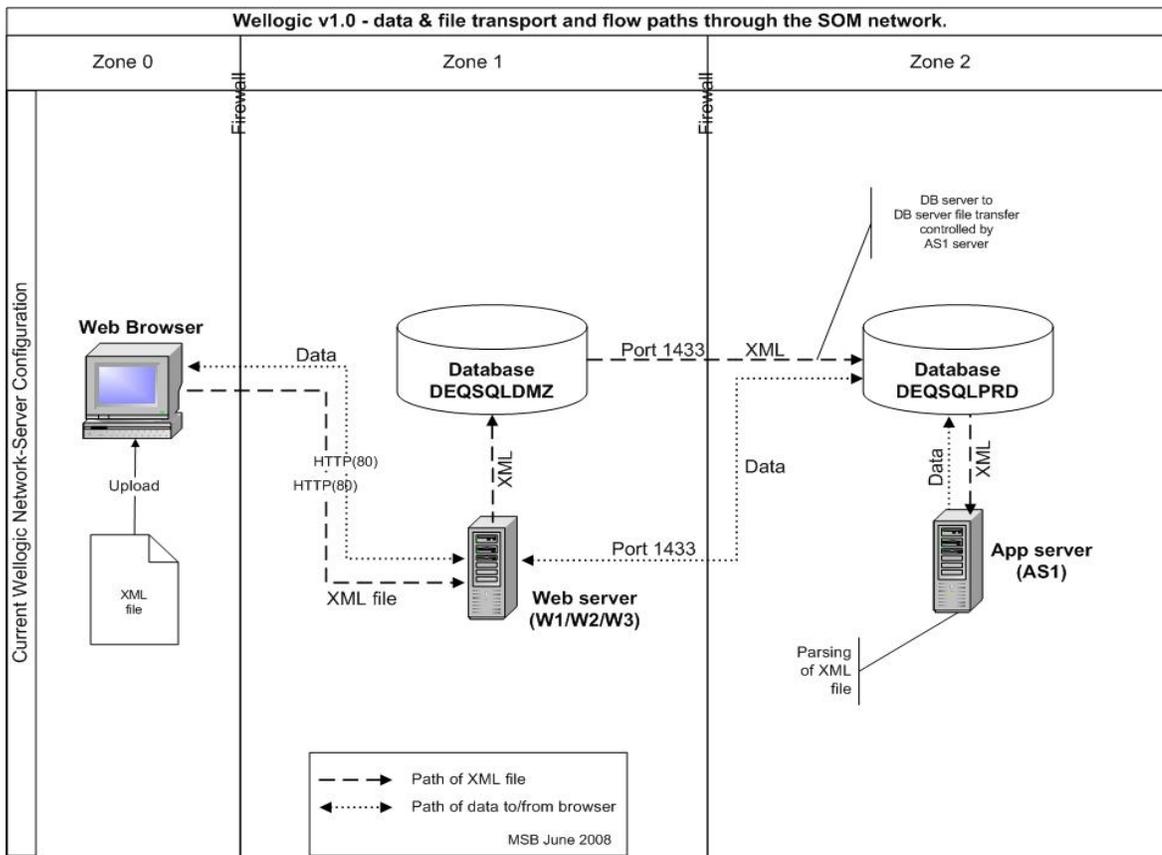


Exhibit A

Network Configuration

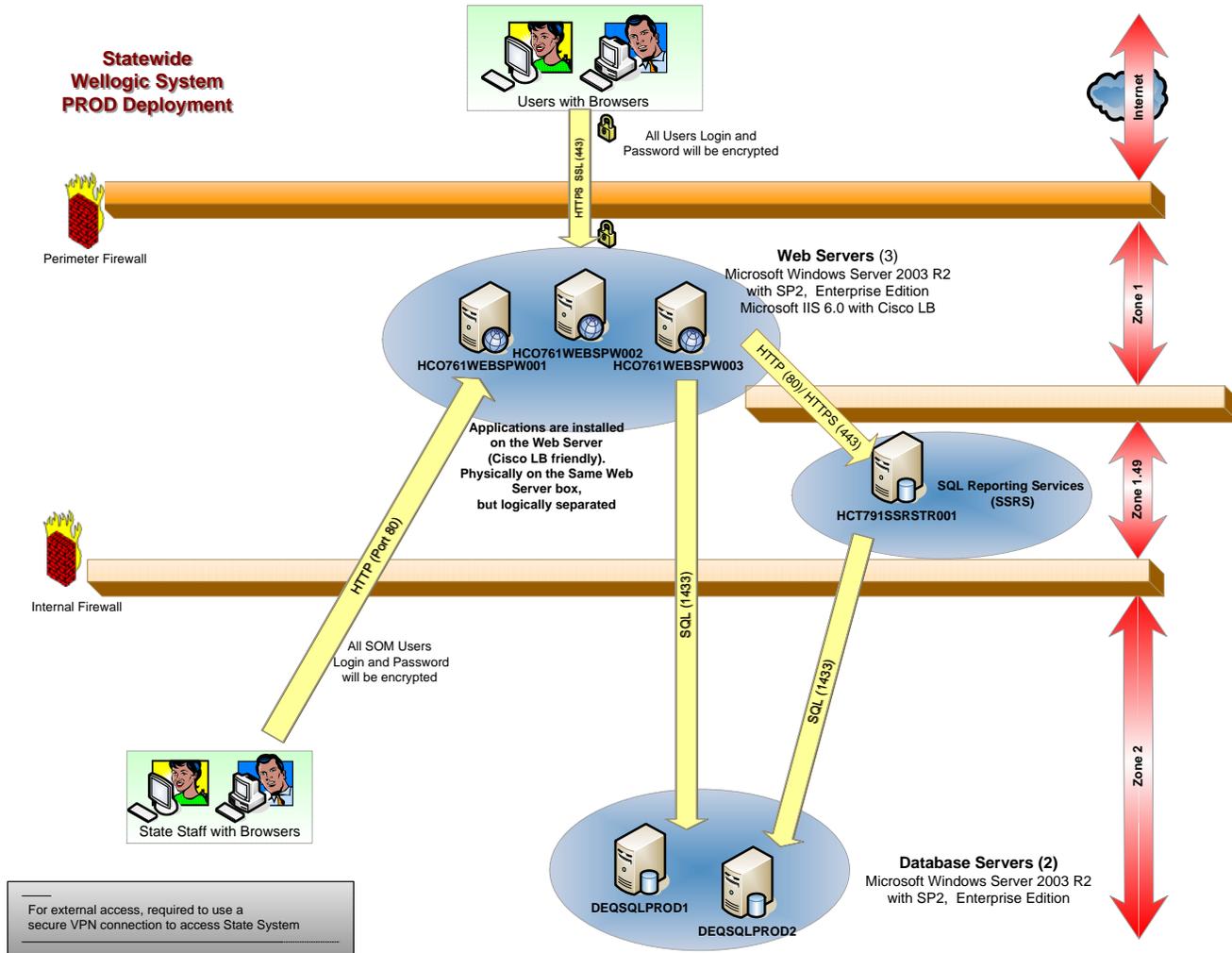
(a) The **current Wellogic network** configuration (all Microsoft products unless specified)

Component	Description	Purpose	Location
Database server(s)	SQL Server 2000 on 2003 Server	Database layer Store/Retrieve all data	DIT HC z1 and z2
Web server	IIS 6.0 on 2003 Server	Presentation layer Render web pages, send and receive data	DIT HC zone 1
Application server	2003 Server	Business logic layer	DIT HC zone 2
XML file upload	SQL Server 2000 on 2003 Server	Store XML file in database of processing and archiving	DIT HC z1 and z2





(b) The proposed Wellogic network configuration (all Microsoft products unless specified)



All final specifications for implementation will be approved by the Enterprise Architecture Group and MDIT Hosting Group at MDEQ.

Hardware requirements

- o Three Web Servers (with Cisco Load Balancing) – Web & Application Servers will be installed on the same box
- o Two Database Servers (with Microsoft Cluster Service-MSCS – Active & Passive)

Web Server Requirements

Web Server	Minimum Requirements
Model	Dell PowerEdge 2850
Processor	Dual Core Intel Xeon Processor 3.00 GHz or higher
Memory	4 GB of RAM
Internal Hard Drive Configuration	RAID 1 – 36 Gb used for OS only
SAN	As needed



Web Server	Minimum Requirements
Operating System	Microsoft Windows Server 2003 R2 with SP2, Enterprise Edition .NET Framework 3.0 or higher
Software	Internet Information Server (IIS) 6.0
Security	Server Certificate/SSL (128 bit encryption)

Database Server Requirements

Database Server	Minimum Requirements
Model	Dell PowerEdge 2950
Processor	Dual Core Intel Xeon Processor 2.33 GHz
Clustering	Windows 2003 Enterprise Edition SP2
Memory	4 GB of RAM
Internal Hard Drive Configuration	RAID 1 – 146 Gb for OS only
SAN	As needed
Operating System	Microsoft Windows Server 2003 R2 with SP2, Enterprise Edition
Software	Microsoft SQL Server 2005 with SP2, Standard Edition

Software requirements

- o Microsoft Windows Server 2003 R2 with SP2, Enterprise Edition
- o Microsoft SQL Server 2005 with SP2, Standard Edition
- o SQL Server Reporting Services (Expected to be implemented in 2009)

Network requirements (per DIT standards)

- o T1 connection or higher
- o 100 mbps LAN connection or higher
- o Internet connection with 128-bit SSL certificate



Exhibit B

Technical Requirements

Technical requirements identify what the solution or product must run on or integrate with, including any standards that must be met, security requirements, and interfaces. Technical requirements will also identify the general framework in which the system or product must work, such as: capacity requirements (number of users, concurrent users, number of transactions to be handled, peak usage), documentation, audit and backup and recovery.

TECHNICAL REQUIREMENTS	MANDATORY (M) OR OPTIONAL (O)	YES/NO	WINDSOR'S COMMENTS
1) System Architecture			
a. The system must employ a web-based architecture with a web client accessing a central database through a browser on the user's PC.	M	YES	
b. The system must have unlimited record size.	M	YES	Windsor's solution will allow record sizes limited only by the limitations of the underlying technology (e.g., SQL Server and Windows).
c. The application must be scalable.	M	YES	Windsor will address scalability during requirements, design, build, and test phases of the project. Scalability will be demonstrated during performance testing.
d. The system must be fully self-contained and capable of being operated by State staff with no dependency on Vendor services for its routine operation.	M	YES	Windsor's standard solutions are built with "X-Copy deployment" as a goal. Third party system components do not require vendor services for routine operation unless the need for such a component is agreed upon during requirements and/or design.
e. The system must not contain any third party applications, software solutions or software code.	M	YES	See comments to 1d. If any third party applications, software solutions, or code is proposed, this will be presented to SOM and agreed upon in advance. Windsor's solutions occasionally make use of industry standard, open source solutions such as Microsoft Application Blocks, jQuery, Spring.NET, nHibernate, and log4net based on the value these components provide. Specific recommendations will be presented based on analysis of the final requirements.
f. Development of the system must be structured. It must be possible to make use of version control and a fully scriptable build and deployment process.	M	YES	Source code is maintained in Subversion source control in house. Windsor's solutions are designed to be X-Copy deployed with scriptable build and deployment.
g. The system must keep a log of each transaction which alters the database including the User ID, timestamp and IP address, previous field value and current field value.	M	YES	Full auditing support will be provided. Specific auditing requirements will be verified during the requirements phase.
2) Software Licensing			
a. Upon acceptance, the SOM will have full authority/ownership over the source code. Source code must be delivered to	M	YES	



TECHNICAL REQUIREMENTS	MANDATORY (M) OR OPTIONAL (O)	YES/NO	WINDSOR'S COMMENTS
the State upon demand, including code in any stage of development.			
3) Programming Language			
a. The application must be developed in Microsoft .NET environment and programmed using C# and ASP.NET	M	YES	Some components of the system are anticipated to be built using Javascript (enabling a richer user experience) and T-SQL for data access (see requirement 3b).
b. Data access must be by SQL stored procedures.	M	YES	All data manipulation will be performed through parameterized stored procedures, but it may be necessary to allow direct read access to some tables for the purposes of the ad hoc query building functions. Windsor understands the importance of using stored procedures for system security, performance and maintainability reasons.
c. All code written for SQL Server will belong to the State.	M	YES	
d. Software architecture and coding style must be based on industry Best Practices agreed upon in advance of commencement of coding. The vendor will be provided with MDIT/MDEQ C# Coding Standards upon award, against which vendor's code will be evaluated.	M	YES	
e. The software architecture must be clearly divided into presentation, business logic and data access layers.	M	YES	
f. All source code must contain internal comments clearly explaining the purpose, process flow and dependencies of each function, method and property.	M	YES	
g. Vendor must provide complete and clearly understandable diagrams, charts, use-cases and text-based explanations of how each part of the application works.	M	YES	
4) Hardware			
a. The developed application will run on existing State hardware and within the State network. No hardware will be purchased to make the application run as described.	M	YES	
b. Vendor's application architecture/platform/topology must provide for optimal functioning in the following areas:			
i. Communication line speed for distributed entry functions and major online processes of departments and offices located in various areas of the State.	M	YES	Characterization testing will be performed during the performance testing project phase
ii. Processing the volumes presented and any increases in volume that can be expected through the implementation of the	M	YES	Stress testing will be performed during the performance testing project phase



TECHNICAL REQUIREMENTS	MANDATORY (M) OR OPTIONAL (O)	YES/ NO	WINDSOR'S COMMENTS
proposed system.			
iii. Remote access and administration	M	YES	
iv. Application installation, administration and support	M	YES	
v. Support for a variety of TCP/IP network configurations	M	YES	
5) Application Performance			
a. Response times for displaying complete web pages with data must not exceed 3 seconds (broadband and higher).	M	YES	<p>Windsor will design the application to optimize the use of server processing and bandwidth through efficient coding and optimization of request/response sizes.</p> <p>Provided that MDIT's hardware meets or exceeds Windsor's recommendations, Windsor's solution will exceed the stated performance goals.</p> <p>However, the SOM should be aware that user response time can be affected greatly by factors outside the application. Given that performance is based on available bandwidth and server resources, both of which can be influenced by external network and server activity, the SOM should take these items into account when assessing application performance.</p>
b. Some users are still using dialup connections to use this system. The response time for displaying complete web pages with data must not exceed 5 seconds for 56K dialup	M	YES	<p>Windsor will design the application to optimize the use of server processing and bandwidth through efficient coding and optimization of request/response sizes.</p> <p>Provided that MDIT's hardware meets or exceeds Windsor's recommendations, Windsor's solution will exceed the stated performance goals.</p> <p>However, the SOM should be aware that user response time can be affected greatly by factors outside the application. Given that performance is based on available bandwidth and server resources, both of which can be influenced by external network and server activity, the SOM should take these items into account when assessing application performance.</p>
c. Response times for saving data entered by users must not exceed 5 seconds based on a 2 MB/sec line speed.	M	YES	<p>Windsor will design the application to optimize the use of server processing and bandwidth through efficient coding and optimization of request/response sizes.</p> <p>Provided that MDIT's hardware meets or exceeds Windsor's recommendations, Windsor's solution will exceed the stated performance goals.</p> <p>However, the SOM should be aware that</p>



TECHNICAL REQUIREMENTS	MANDATORY (M) OR OPTIONAL (O)	YES/ NO	WINDSOR'S COMMENTS
			user response time can be affected greatly by factors outside the application. Given that performance is based on available bandwidth and server resources, both of which can be influenced by external network and server activity, the SOM should take these items into account when assessing application performance.
d. For response times exceeding 1 second the user must be presented with a "wait" screen indicating that the system is busy, "Please wait."	M	YES	
6) RDBMS / Applications / Database Management			
a. The system must be fully compatible with State's standard relational database management system - Microsoft SQL Server 2005.	M	YES	
b. The application must support Transaction-based processing and must be ACID compliant (Atomicity, Consistency, Isolation, Durability).	M	YES	
c. Full-text indexing and a full-text database search feature must be available to provide easy retrieval of records.	M	YES	
d. All database tables must have "createdby", "creationdate", "modifiedby", "modifieddate" on columns.	M	YES	
e. Each table must have a unique self generating numeric identifier as Primary Key	M	YES	
7) SQL Stored Procedures			
a. Embedded SQL statements must not be used in the compiled source code. All SQL statements must be coded in the Stored Procedure	M	YES	
b. The system must avoid or minimize the use of Dynamic SQL in Stored Procedures	M	YES	One exception to this will be the dynamic ad hoc query builder function, which must assemble SQL at runtime. The system design will ensure that updates to database structure will not require changing compiled code in the dynamic query builder module.
c. All SQL statements must be optimized for better performance	M	YES	
d. All SQL statements must be clearly commented for a DBA or developer to quickly understand procedure logic and flow.	M	YES	
e. SQL statements must have input data as parameters or arrays (parameterized queries only)	M	YES	
f. The parameters must be validated before	M	YES	



TECHNICAL REQUIREMENTS	MANDATORY (M) OR OPTIONAL (O)	YES/ NO	WINDSOR'S COMMENTS
being passed to the stored procedure and also validated within the stored procedure to prevent SQL injection-style attacks			
g. All errors originating within a stored procedure must be handled by the program and appropriate error message is displayed to the user	M	YES	
8) Security			
a. The system must ensure that the integrity and confidentiality of data is protected by safeguards to prevent release of information without proper consent.	M	YES	Web application security will be verified during the testing phase using a combination of manual and automated testing.
b. The system must enforce password complexity requirements	M	YES	
c. The system must either provide a secure password reset capability (for when users forget their password) or a secure password reset process must be developed.	M	YES	
d. System must ensure a secure sign-on through user ID and password.	M	YES	
9) Security / Access Control			
a. The system must provide security at database, workstation, and individual operator levels.	M	YES	
b. The system must provide secure access control based upon unique user login, for types of record as well as by function performed upon the record (e.g., View, Add, Modify, Delete)	M	YES	
c. The system must check each user's access privileges at login, and automatically disables or enables client functions (in real time) based upon the user's profile	M	YES	
d. The system must provide varying levels of access within the application, such as administrators, view only, or data entry.	M	YES	
10) Security/Password Controls			
a. The system must provide an enforced minimum length for passwords.	M	YES	
b. The system must provide for password aging based upon the users login ID. Password aging is configurable by individual user ID.	M	YES	
c. The system must provide an enforced requirement for user passwords to be automatically prompted for change after a defined period has passed, such as 30, 60 or 90 days. An option for no password aging must also be included.	M	YES	
d. Passwords may be reused on the third password change event.	M	YES	
e. The system must provide users with the capability to change their own passwords.	M	YES	
f. The system must disable user IDs after a		YES	



TECHNICAL REQUIREMENTS	MANDATORY (M) OR OPTIONAL (O)	YES/ NO	WINDSOR'S COMMENTS
specified number (5) of consecutive invalid login attempts.	M		
g. The system must allow passwords to be entered in a non-display field.	M	YES	
h. The system must encrypt passwords when they are routed over the network.	M	YES	Encryption capabilities between browser and web server will require a MDIT-supplied SSL certificate be installed on the web server.
i. The system must encrypt passwords in system storage.	M	YES	
11) Security/Activity Logging			
a. The system must log the user login activity by date, time, user ID, device and location (IP address).	M	YES	
b. The system must maintain an audit trail of all security maintenance performed by date, time, user ID, device and location, with easy access to information.	M	YES	
c. The system must provide security reports of users and access levels.	M	YES	Requirements for security reports will be determined during the requirements gathering phase of the project.
12) Software Package Specifications			
a. The software must operate effectively on State/MDEQ hardware platform(s).	M	YES	
b. The software must allow the user to access and update all necessary information to complete a transaction from a web browser	M	YES	
c. The software must provide identified data reporting capabilities.	M	YES	
d. The software must provide a friendly web interface that is user-friendly and provides data, calculation, reporting, and communication capabilities to all users.	M	YES	
e. The system must be modular in design to accommodate phased implementation and future expansion.	M	YES	Windsor's solutions typically include inversion of control techniques to more cleanly separate components of the system and allow better separation of concerns. This provides a high degree of flexibility and modularity of the total solution.
f. All modules of the system must be integrated and designed to work together using a single web input and a common database with no redundant data entry or data storage.	M	YES	
g. The system must have the ability to accept and output transactions in XML and delimited file formats.	M	YES	Specific formats will be detailed during the requirements phase of the project.
h. The system must have the ability to accept XML files from external sources ensuring that the same edits and validations as the online system are available once imported.	M	YES	Specific formats will be detailed during the requirements phase of the project.
i. The software must provide the capability of exporting data based on query from	M	YES	Specific export requirements will be detailed during the requirements phase



TECHNICAL REQUIREMENTS	MANDATORY (M) OR OPTIONAL (O)	YES/ NO	WINDSOR'S COMMENTS
the database to the client for downloading to the local hard disk drive.			of the project.
13) Reporting			
a. The software must deliver standard reports as specified in the requirements definitions.	M	YES	Specific report requirements will be detailed during the requirements phase of the project.
b. The system must include ad-hoc query and reporting tools.	M	YES	See above
c. The online query capability must enable non-technical end-users to extract information for viewing in the browser and for downloading in either XML or delimited format files.	M	YES	
d. The standard (e.g., regularly scheduled, recurring) reporting environment must allow:			
i. Standard reports to be scheduled, executed, viewed on-line, printed (centrally or remotely)	M	YES	
ii. Control standard reports through administrative module and user-group functionality.	M	YES	
e. The system must provide i. Methods for retaining and modifying previously built queries	M	YES	Previously built queries can be maintained on a group or individual basis. Specific requirements will be detailed during the requirements phase of the project.
ii. Security and control mechanisms that limit the abuse of ad hoc queries (e.g., attempted access to restricted data, attempted execution of a query that would run for several hours, etc.)	M	YES	Depending on the specific needs involved, separation of reporting data from online transactional data may be designed into Windsor's solution. This and other security/performance control mechanisms, such as limiting the number of records returned, will be discussed and agreed upon during requirements gathering.
iii. The use of transaction databases, external files, or a "data warehouse" for ad-hoc reporting	M	YES	
iv. Support for XML, CSV, Excel, and other helpful data download formats	M	YES	See comments on requirement 12i.
14) Audit Trail			
a. The system must enable the user to modify data entry transactions that have already been posted to the database while maintaining an audit trail of the change.	M	YES	
b. The system's internal control functionality must ensure that the data entry and processing associated with a business event has been completed before updating the database.	M	YES	
c. The system must create triggers in the	M	YES	



TECHNICAL REQUIREMENTS	MANDATORY (M) OR OPTIONAL (O)	YES/ NO	WINDSOR'S COMMENTS
database tables to record the changes to audit tables.			
15) Edit and Validation Control			
a. The system must include comprehensive field edits and warnings to prevent incomplete or incorrect data from entering the system	M	YES	Specific validations and warnings will be detailed during requirements gathering.
b. The system must ensure data integrity and controls processing without hard-coded logic	M	YES	
c. The errors resulting from field level validations must be communicated to the user immediately	M	YES	Windsor can provide a common user experience paradigm for communication of issues requiring the user's attention, regardless of the source of the validation error (javascript, server validation, or database validation).
d. Server side validation must be done and the system must highlight the missing required fields and incorrect data fields.	M	YES	In addition to server-side input validation, Windsor recommends also implementing some input validation functions on the client-side. This can create a better user experience and quicker response times. Specific requirements will be detailed during requirements gathering.
16) Graphical User Interface			
a. The outside links within the application must open in new browser instances	M	YES	
b. Clear, user friendly messages must be displayed for every successful or unsuccessful process	M	YES	See comment on 15c.
c. The system must have on-line general context and field-level help	M	YES	Requirements will be detailed through the requirements gathering process.
d. The system must show brief explanation of the object when mouse is hovering over it.	M	YES	Some hover-over limitations may exist based on the browser used and specific user options chosen. Windsor will not have complete control, but hover-over explanations will be available in all common scenarios.
17) Interfaces			
a. The system must have the ability to exchange data with other systems using the following mechanisms: direct database to database connections, web services interface.	M	YES	Specific interface requirements will be detailed during requirements gathering.
b. The system must provide real-time data transfer of identified data.	M	YES	
18) Capacity			
a. The system must be able to support 1.5x the peak number of concurrent users in the current system in order to provide sufficient capacity for growth. Current requirement lists 100 users; the standard would be 150 users.	M	YES	This requirement will be met and demonstrated through stress testing in the MDIT test environment, scheduled to take place during system test phase; however, system capacity will ultimately depend on specific hardware and



TECHNICAL REQUIREMENTS	MANDATORY (M) OR OPTIONAL (O)	YES/ NO	WINDSOR'S COMMENTS
			network configuration in the production environment.
b. The system administrators must have the ability to limit the number of public (i.e. non-authenticated) users accessing the system concurrently.	M	YES	
19) System Auditing			
a. The system must have the ability to maintain a historical record of all changes made to any item within the system, the ID of the person or process that made the change, the before and after images of the affected data records, and the date and time the change was made.	M	YES	
b. The system must store a copy of the well log data, as originally submitted (data entry or XML upload) by water well contractors, in XML format in the database. A date and time stamp shall record the storage event.	M	YES	
c. The system must have the ability to query, view, filter, and sort the system audit trail. The system is able to store the queries.	M	YES	
d. The system must have the ability to track data back to its original state at time of entry.	M	YES	
e. The system must have the ability to audit all override of edits and audits and identify the user ID, date, and time.	M	YES	
20) Error Handling			
a. The system must maintain an error log.	M	YES	
b. The error log must record the error details including the timestamp, detailed error description, error type, code/module causing the error and user ID to assist the programmer to diagnose and debug the error	M	YES	Windsor typically implements the standard, open source library log4net. This library offers robust logging and auditing, allows dynamic adjustment of logging detail, log file rotation and other features. The specific logging tools for this project will be determined during the requirements gathering phase.
c. The system must allow for an administrator to view, filter, sort, and search the error log.	M	YES	See comment on 20b
d. The system must allow for an administrator to archive error log entries based upon user-defined criteria.	M	YES	
e. The system must present errors to the user in a format and by a method which makes them easy to understand and communicate to a help desk.	M	YES	
21) Backup and Recovery			
a. The system must have the ability to allow for continued use of the system during backup.	M	YES	
b. During Requirements validation stage,			



TECHNICAL REQUIREMENTS	MANDATORY (M) OR OPTIONAL (O)	YES/NO	WINDSOR'S COMMENTS
the vendor must work with MDIT to outline the Backup & Recovery process and ensure that the application is created within the SOM standards for Backup & Recovery.	M	YES	



Exhibit C

Functional Requirements

Functional requirements identify the mandatory requirements of the new Wellogic system. However, the contractor will need to review Appendices A, B, C, D & E to understand the complete Wellogic Functional Requirements.

FUNCTIONAL REQUIREMENTS	MANDATORY (M) OR OPTIONAL (O)	YES/N O	WINDSOR'S COMMENTS
1) Login Function			
a. Login screen will restrict access to the main application to only registered users. The registered users will be authenticated using a User ID and password.	M	YES	
b. The Login screen will provide a link for the General Public (non-registered users) to search, view and print the PDF Wellogic well logs.	M	YES	
c. New users may request a login account by filling out an account request on the website. An email will be sent to the Wellogic Administrators notifying them of the request. On approval, the registered user will be emailed a User ID and password.	M	YES	
d. On successful login, the system will display the Home Page and links to various Modules depending on the access rights and user group assigned to the user's account.	M	YES	
e. After 5 unsuccessful login attempts, the user's account will be disabled. The Wellogic Administrators must be able to re-enable the account upon the user's request	M	YES	Windsor suggests that a new temporary password be assigned when the account is re-enabled. Specific functionality will be determined during the requirements phase.
f. Login Module will allow the users to reset their password by clicking on the Forgot Password link.	M	YES	See comment on requirement 1f.
g. Login Module will allow the users to receive their User ID by email on clicking the Forgot User ID link.	M	YES	
h. Home Page will include on-line help which includes links to Tutorial Document, FAQ and links to other water well websites and downloads.	M	YES	
i. Home Page will display any general announcements to the users.	M	YES	
j. The system must provide the logout link on the top of the screen to exit the application from any screen.	M	YES	
2) General Public Module			
a. The system will provide a module where the General Public can view and print limited information from the Wellogic database without secure access.	M	YES	
3) Navigation			



FUNCTIONAL REQUIREMENTS	MANDATORY (M) OR OPTIONAL (O)	YES/NO	WINDSOR'S COMMENTS
a. The left Navigation Panel will be used to navigate to different modules within the application.	M	YES	Please see the sample well Detail screen provided in the RFP response that demonstrates an example of a possible approach to this design. Specific functionality will be determined during the requirements phase.
b. The left Navigation Panel will display only those access rights assigned to the user.	M	YES	
c. System Administrators will have full application access and the ability to navigate to all sections in the application.	M	YES	
4) Search and Data Entry Function			
a. Data Entry screens will be provided to input Water Well and Abandoned Water Well data.	M	YES	
b. Data Entry screens will enable the users to add or modify a Water Well or Abandoned Water Well record, depending upon access rights based on user group.	M	YES	
c. In the Water Well Data Entry module, data pertaining to Water Well details, Geology, Casing and Grouting, Screen and Water Level, Completion and Pump, Latitude and Longitude, and Contractor/Abandonment/ Remarks will be grouped under tabs for easy and efficient data capture.	M	YES	Please see the sample well Detail screen provided in the RFP response that demonstrates an example of a possible approach to this design. Specific functionality will be determined during the requirements phase.
d. In the Abandoned Water Well Data Entry screen, data pertaining to Abandoned Well Details, Plugging, and Contractor/Abandonment will be grouped under tabs for easy and efficient data capture.	M	YES	
e. All the data entered for a Water Well and Abandoned Water Well must be completed in one user session and saved to the database with a unique Well ID.	M	YES	
f. The Geology and Plugging screens must be in grid view where rows can be added on demand. The data must be sorted by layer sequence and the in-cell dropdowns will become active on entry. Rows can also be deleted, modified, or inserted.	M	YES	
g. Search screens will be used to search for water well and abandoned water well records. After a successful search, the users will be able to retrieve the entire record. The ability to modify records will depend upon the module, access rights, and user group.	M	YES	
h. The Administrators must be able	M	YES	



FUNCTIONAL REQUIREMENTS	MANDATORY (M) OR OPTIONAL (O)	YES/N O	WINDSOR'S COMMENTS
configure the search results to display from 10 to 250 records.			
i. The system will allow the users to show all the records on the page or display 25 records at a time.	M	YES	Windsor suggests using a paging mechanism that only causes the grid data to refresh as opposed to a full screen refresh.
j. The records in the search results can be generated as PDF according to the limit set by the Administrators.	M	YES	
5) Local Health Department (LHD) Review			
a. LHD users will be able to search for and print well records entered by Water Well Contractors.	M	YES	One possible feature that could be added would be the ability to retrieve well records within the LHD jurisdiction that have been added or changed since the last LHD review. Specific functionality will be determined during the requirements phase.
b. Once printed, the records will be cleared-out by the LHD. However, the LHD will be allowed to retrieve the reviewed records for reprinting, if needed.	M	YES	
c. The system will allow printing up to 150 records and have the ability to narrow the search.	M	YES	
6) Administration function			
a. Administrators must be capable of maintaining the user accounts with the following features:			
i. Approve the new account requests from the registered users and assign them appropriate access rights.	M	YES	
ii. Add new users directly to the system.	M	YES	
iii. Edit the User Profile which includes setting the users to active or inactive status.	M	YES	
iv. List and search users using filters.	M	YES	Specific filter criteria to be determined during the requirements phase.
v. Delete or archive inactive users.	M	YES	
b. Administrators must be capable of creating and maintaining User Groups with the following features:			
i. Create new user groups depending on the access rights.	M	YES	
ii. Assign users to user groups and add county permissions to access their county data.	M	YES	
iii. Search for users and groups using filters.	M	YES	Specific filter criteria to be determined during the requirements phase.
c. Administrators must be able to show a temporary page with an appropriate message (which can be edited) to alert the users when the system is shut down.	M	YES	Windsor will meet this requirement in the event of a scheduled system outage; however, such a message cannot be displayed if the web server software or hardware is offline. Events such as these are out of the control of the application itself and therefore,



FUNCTIONAL REQUIREMENTS	MANDATORY (M) OR OPTIONAL (o)	YES/N O	WINDSOR'S COMMENTS
			custom messages cannot be displayed.
d. Administrators must be able to send email messages to all users or by groups.	M	YES	
e. Administrators must be able to edit the text announcements to be displayed on the Home Page.	M	YES	
f. Administrators must be able to add to or edit all of the help documents.	M	YES	MDIT has historically maintained a special web-accessible directory to store documentation for all web-based systems. This directory has historically only been accessible to certain privileged users. Windsor can meet this requirement if the documentation is stored within the database or the Wellogic system is given necessary permissions to manage documents within the common documents directory.
7) Reporting Function			
a. The users will be able to generate reports based on their access rights.	M	YES	
b. Reports will be generated and downloaded in PDF, XML and delimited format.	M	YES	
c. In addition to the reports listed in the Appendix C - Business Logic (Tab 4), the Reporting Function will also include water well and abandoned water well logs.	M	YES	
8) Query Function			
a. The Query Module will include an advanced query system to generate Ad-hoc queries which will be managed by the Administrators.	M	YES	
b. These queries can be made available to other users by access rights.	M	YES	For consistency with Permissions management for other aspects of the Wellogic system, it is suggested that query permissions be group-based, not user-based. Specific requirements will be determined during the requirements phase.
c. The data generated by the queries will be downloaded in PDF, XML and delimited format.	M	YES	
9) XML Upload Function			
a. The system will allow the users to upload the data for water wells and abandoned water wells in XML.	M	YES	
b. User ID and IP address will be saved along with the XML file.	M	YES	
c. An email will be sent to the users on the receipt of the XML file.	M	YES	
d. A batch program will validate the XML	M	YES	



FUNCTIONAL REQUIREMENTS	MANDATORY (M) OR OPTIONAL (o)	YES/N O	WINDSOR'S COMMENTS
data against the schema, parse it and insert the data into the Wellogic database.			
e. The status of database update (success or failure) will be emailed back to the user.	M	YES	
f. Error messages must be in a user-friendly format.	M	YES	
g. If the water well or abandoned water well data is uploaded by a water well contractor, an original copy of the data must be saved in the database as an XML file.	M	YES	
h. The water well and abandoned water well XML schema will be available for the users to download.	M	YES	
i. The system will use style sheets to format the XML file into well log forms.	M	YES	
10) Data Migration			
a. Current data in SQL 2000 database will be migrated to SQL 2005.	M	YES	
b. Inactive users and groups in the current database will be not be migrated to the new database.	M	YES	
c. Data pertaining to Geotechnical well logs will not be transferred to the new database.	M	YES	
d. View Only accounts will not be migrated to the new database.	M	YES	



Exhibit D

Service Levels Agreements

The Service Level Agreements identify the mandatory requirements of the new Wellogic system.

REQUIREMENTS	MANDATORY (M) OR OPTIONAL (O)	YES/ No	WINDSOR'S COMMENTS
SERVICE LEVEL REQUIREMENTS			
<p>1) The new Wellogic systems update and changes must meet all MDIT requirements for system security. These requirements will be provided upon request. See Article 1.103(b).</p>	M	YES	Windsor understands that new system architecture must adhere to MDIT security standards. The MDIT Office of Enterprise Security will be provided the opportunity to review the application architecture design.
<p>2) Both online inquiry and online update of single transactions must be fifteen (15) seconds or less ninety percent (90%) of the time.</p> <ul style="list-style-type: none"> a. Measurement – Time will be measured from the time the request arrives in the application server until the final response leaves the application server. b. Acceptable Performance – 99.7% compliance with target service level. c. Period of Review – Monthly. 	M	YES	Windsor will work with MDIT to ensure that the designed application architecture adheres to these responsiveness standards within the agreed-upon hosting environment. Any exceptions will be documented and agreed upon with MDIT.
<p>3) During the production period, the vendor will provide three (3) months maintenance. This support is to resolve any implementation issues, defects and/or problems that the new Wellogic system may encounter. Yearly maintenance will commence after this three month cycle.</p>	M	YES	Accepted as stated.
<p>4) All maintenance will be performed by qualified personnel familiar with the newly developed system.</p>	M	YES	Windsor agrees to involve the assigned technical architect and/or lead developer in all maintenance activities.
<p>5) The diagnostic capabilities used by the Contractor are to be provided to the SOM with training.</p>	M	YES	Should Windsor utilize any tools to diagnose reported system defects, these tools and appropriate guidance will be provided to the State of Michigan. Windsor will endeavor to use toolsets with which State of Michigan personnel are familiar (where appropriate) to minimize support impacts.
<p>6) The application maintenance includes all future source code and related functionality updates and system enhancements applicable to system modules.</p>	M	YES	Accepted as stated.
<p>7) All source code for future enhancements will be owned by the SOM</p>	M	YES	Accepted as stated.



REQUIREMENTS	MANDATORY (M) OR OPTIONAL (O)	YES/NO	WINDSOR'S COMMENTS
<p>8) The vendor agrees to provide technical support available during SOM business hours with escalation as necessary.</p>	<p>M</p>	<p>YES</p>	<p>Accepted as stated.</p>
<p>9) Calls for service will be returned within 4 hours.</p>	<p>M</p>	<p>YES</p>	<p>Accepted as stated.</p>
<p>10) Error Correction. Upon notice by State of a problem with the Software (such that the problem can be verified), staff will be provided to respond within 2 (two) hours to correct or provide a working solution for the problem utilizing the SOM Project Management Methodology.</p>	<p>M</p>	<p>YES</p>	<p>Under normal circumstances, Windsor staff will be able to respond to high-priority system defects within one hour of being reported. Windsor and MDIT will prioritize each system defect when reported, and response time expectations will be clearly set. Note that the time required to fully address and fix the reported system defect may exceed 2 hours.</p>
<p>11) Updates. All new releases and bug fixes (collectively referred to as "Changes") for any software deliverable developed or published by Contractor and made generally available to its other customers at no additional charge will be provided to the State at no additional charge.</p>	<p>M</p>	<p>YES</p>	<p>Accepted as stated.</p>



Exhibit E

Wellogic Rewrite Pricing

Firm Fixed Price for each of the following:

1. Work and deliverables Phases I through VII
3. Maintenance and support (fixed annual cost)
4. Future enhancements.

The price for Item 1, "Work and Deliverables Phases I through VII" will be allocated by the percentages shown below to arrive at the milestone payment for that deliverable. In addition to these above mentioned fixed prices, the contractor is to provide fully loaded hourly rates for staff that are committed for future enhancements. See notes below for further detail on these rates.

#	Work and Deliverables Services to be Provided	Estimated Percent of Total Cost (Phase 1 –VII)	Milestone Payment for Deliverable
Phase I: Project Planning (Refer to Section 1.104)			
1	Project Plan		\$9,000.00
2	Project Schedule		\$10,575.00
Phase I Total		3.52%	\$19,575.00
Phase II: Requirements Verification and Validation (Refer to Section 1.104)			
1	Business Requirements Document		\$28,800.00
2	Requirements Traceability Matrix (initial)		\$28,800.00
3	Technical Requirements Document		\$28,076.40
Phase II Total		15.40%	\$85,676.40
Phase III: Design of the New System (Refer to Section 1.104)			
1	Functional Design Document		\$31,141.80
2	System Design Document		\$31,141.80
3	Database Design Document		\$31,141.80
4	Training Plan		\$957.60
5	Technical Operations and Maintenance documentation for supporting the production environment		\$3,240.00
Phase III Total		17.55%	\$97,623.00
Phase IV: Development of the New System (Refer to Section 1.104)			
1	Software Document		\$4,788.00
2	Source Code (with Initial review)		\$66,012.68
3	Source Code (with Interim review)		\$66,012.68
4	Source Code (with Final review)		\$66,012.68
5	Conversion Program		\$7,027.20
6	Installation Guides (for QA & Prod)		\$3,060.00
7	Test Plan		\$1,436.40



#	Work and Deliverables Services to be Provided	Estimated Percent of Total Cost (Phase 1 –VII)	Milestone Payment for Deliverable
Phase IV Total		38.53%	\$214,349.64
Phase V: Testing of the New System (Refer to Section 1.104)			
1	Test Results Document		\$21,021.68
2	Data Migration summary report		\$2,181.60
3	Report on system performance and capabilities		\$4,435.20
Phase V Total		4.97%	\$27,638.48
Phase VI: Placing the New System in Production (Refer to Section 1.104)			
1	Installation and configuration of the new Wellogic application to the production environment		\$5,508.00
2	Performance log for the ninety (90) day production period		\$83,446.48
3	Disaster Recovery plan		\$1,090.80
4	Updated Data Migration summary report		\$957.60
Phase VI Total		16.36%	\$91,002.88
Phase VII: Training and Documentation (Refer to Section 1.104)			
1	Produce or update Wellogic documents as described in Section 1.104, Phase VII		\$2,920.50
2	Training session for MDIT/MDEQ Wellogic Project Coordinators and subject area experts as described in Section 1.104, Phase VII		\$2,920.50
3	Training session for Web hosting and database system administrators (State MDIT personnel) as described in Section 1.104, Phase VII		\$2,920.50
4	Technical Training Plan as described in Section 1.104, Phase VII		\$2,920.50
5	500 copies of Promotional/Help CD		\$2,920.50
6	Transition to MDIT to assume full responsibility to support the solution.		\$2,920.50
7	Project Closeout documentation and lessons learned as described in Section 1.104, Phase VII.		\$2,921.40
Phase VII Total		3.67%	\$20,444.40
Total for Phases I to VII		100%	\$556,309.80

2. Maintenance and Support: Annual cost of the maintenance and support of the Wellogic system. The maintenance period will commence upon the completion of the ninety (90) business days production run and final acceptance of the system by the MDIT Project Manager.

1	Year One Maintenance	\$30,000.00
2	Year Two Maintenance	\$20,000.00
3	Year Three Maintenance	\$15,000.00
Maintenance and Support Total		\$65,000.00



3. Future Enhancements: The Contractor may be asked to provide additional hours, but not to exceed \$200,000.00, during the term of the contract for enhancements and modifications to the system resulting from state and federal legislative mandates, grant requirements, and changes to the network, security, or system platform such as service packs that require changed in the Wellogic system for continued functionality. The additional work will be delineated under Change Management (See 1.403 Change Management)

	Staffing Category	Firm Fixed Hourly Rate	(See Notes
		1+2)	
1	Project Manager	\$ 150.00	
2	Business Analyst	\$ 125.00	
3	Architect	\$ 150.00	
4	Senior Programmer	\$ 115.00	
5	Programmer	\$ 95.00	
6	Technical Writer	\$ 75.00	

Total Not to Exceed Amount for Future Enhancements of \$200,000.00

Grand Total (Phases I – VII, Maintenance & Future Enhancements for \$200K)	\$821,309.80
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Notes:

- Hourly rates quotes are firm, fixed rates for the duration of the contract. Travel and other expenses will not be reimbursed. "Estimated Hours" are non-binding and will be used at the State's discretion to determine best value to the State. The State will utilize the fully loaded hourly rates detailed above for each staff that will be utilized as fixed rates for responses to separate statements of work.
- The State intends to establish funding for up to \$200,000 over the life of the contract. Actual funding for enhancements will occur on a yearly basis and there is no guarantee as to the level of funding available to the project, if any.



Exhibit F

Windsor's Project Plan

The following project plan was submitted by Windsor Solutions with the RFP. A final version of the project schedule will be submitted by Windsor as part of the Phase 1 Deliverables.

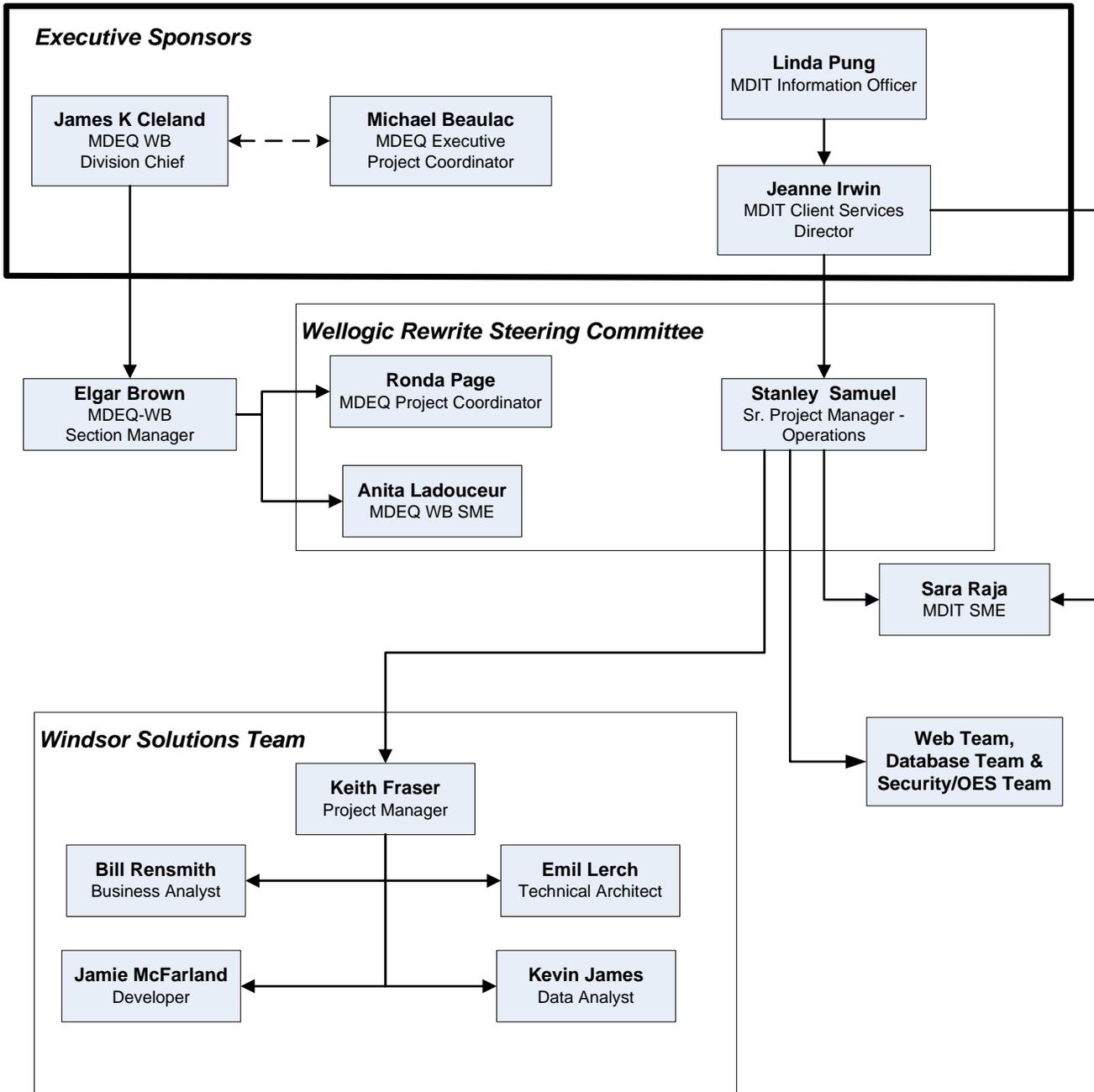
ID	Task Name	Duration	Start	Finish	Predecessors	2
1	MI Wellogic Re-write	3760 hrs	Mon 6/22/09	Fri 4/8/11		
2	Phase I – Project Planning	210 hrs	Mon 6/22/09	Tue 7/28/09		
3	Conduct Project Orientation Meeting	4 hrs	Mon 6/22/09	Mon 6/22/09		
4	Establish Project Web Site	2 hrs	Mon 6/22/09	Mon 6/22/09	3	
5	Prepare Draft Project Plan	24 hrs	Mon 6/22/09	Thu 6/25/09	4	
6	Prepare for and Conduct Project Kickoff Meeting	4 hrs	Thu 7/2/09	Fri 7/3/09	5FS+5 days	
7	Revise Draft Project Plan	8 hrs	Fri 7/3/09	Mon 7/6/09	6	
8	Prepare Final Project Plan	8 hrs	Mon 7/13/09	Tue 7/14/09	7FS+5 days	
9	Review Phase I Deliverables	80 hrs	Tue 7/14/09	Tue 7/28/09	8	
10	Phase I Sign-off	0 hrs	Tue 7/28/09	Tue 7/28/09	2	
11	Phase II - Requirements Verification and Validation	472 hrs	Tue 7/28/09	Mon 10/19/09	10	
12	Review Background Materials and Extract Current Requirements	80 hrs	Tue 7/28/09	Tue 8/11/09		
13	Conduct External Stakeholder Input Sessions	16 hrs	Tue 8/11/09	Thu 8/13/09	12	
14	Prepare for Requirements Gathering Workshops	8 hrs	Thu 8/13/09	Fri 8/14/09	13	
15	Conduct Requirements Gathering Workshops	32 hrs	Fri 8/21/09	Thu 8/27/09	14FS+5 days	
18	Develop Draft Requirements Documents	80 hrs	Thu 8/27/09	Thu 9/10/09	15	
19	Review Draft Requirements Documents	8 hrs	Thu 9/10/09	Fri 9/11/09	18	
20	Prepare for Requirements Confirmation Workshops	8 hrs	Fri 9/18/09	Mon 9/21/09	19FS+5 days	
21	Conduct Requirements Confirmation Workshops	24 hrs	Mon 9/28/09	Thu 10/1/09	20FS+5 days	
22	Develop Final Requirements Documents	8 hrs	Thu 10/1/09	Fri 10/2/09	21	
23	Review Phase II Deliverables	80 hrs	Fri 10/2/09	Fri 10/16/09	22	
24	Project Checkpoint	8 hrs	Fri 10/16/09	Mon 10/19/09	23	
27	Phase II Sign-off	0 hrs	Mon 10/19/09	Mon 10/19/09	11	
28	Phase III – Design of the New System	484 hrs	Mon 10/19/09	Mon 1/11/10	27	
29	Develop Wellogic Prototype	80 hrs	Mon 10/19/09	Mon 11/2/09		
30	Prepare for Initial Design Workshops	16 hrs	Mon 11/2/09	Wed 11/4/09	29	
31	Conduct Initial Design Workshops	24 hrs	Wed 11/4/09	Mon 11/9/09	30	
32	Develop Draft System Design	100 hrs	Mon 11/9/09	Wed 11/25/09	31	
36	Review Draft System Design	4 hrs	Wed 11/25/09	Thu 11/26/09	32	
37	Prepare for Final Design Workshops	16 hrs	Thu 12/3/09	Mon 12/7/09	36FS+5 days	
38	Conduct Final Design Workshops	24 hrs	Mon 12/14/09	Thu 12/17/09	37FS+5 days	
39	Develop Final System Design	40 hrs	Thu 12/17/09	Thu 12/24/09	38	
40	Develop Training Plan	8 hrs	Thu 12/24/09	Fri 12/25/09	39	
41	Review Phase III Deliverables	80 hrs	Fri 12/25/09	Fri 1/8/10	40	
42	Project Checkpoint	12 hrs	Fri 1/8/10	Mon 1/11/10	41	
46	Phase III Sign-off	0 hrs	Mon 1/11/10	Mon 1/11/10	28	
47	Phase IV – Development of the New System	1090 hrs	Mon 1/11/10	Tue 7/20/10	46	
48	Migrate and Update Database Components	32 hrs	Mon 1/11/10	Fri 1/15/10		
49	Develop Data Conversion Scripts	64 hrs	Fri 1/15/10	Wed 1/27/10	48	
50	Develop Test Plan	24 hrs	Mon 1/11/10	Thu 1/14/10		
51	Develop Wellogic System	790 hrs	Mon 1/11/10	Fri 5/28/10		
60	Perform Internal Testing	128 hrs	Fri 5/28/10	Mon 6/21/10	51	
65	Develop Installation and Configuration Guide	40 hrs	Mon 6/21/10	Mon 6/28/10	60	
66	Develop Software Document	80 hrs	Mon 6/21/10	Mon 7/5/10	60	
67	Review Phase IV Deliverables	80 hrs	Mon 7/5/10	Mon 7/19/10	66	
68	Project Checkpoint	12 hrs	Mon 7/19/10	Tue 7/20/10	67	
72	Phase IV Sign-off	0 hrs	Tue 7/20/10	Tue 7/20/10	47	
73	Phase V – Testing of the New System	436 hrs	Wed 7/21/10	Tue 10/5/10	72	
74	Review Testing Methodology	4 hrs	Wed 7/21/10	Wed 7/21/10		
75	Deploy in System to Test Environment	16 hrs	Wed 7/28/10	Fri 7/30/10	74FS+5 days	
76	Conduct System Testing	40 hrs	Fri 7/30/10	Fri 8/6/10	75	
77	Resolve System Testing Issues	80 hrs	Fri 8/6/10	Fri 8/20/10	76	
78	Prepare System Testing Summary Report	8 hrs	Fri 8/20/10	Mon 8/23/10	77	
79	Conduct User Acceptance Testing	80 hrs	Mon 8/23/10	Mon 9/6/10	78	
80	Resolve User Acceptance Testing Issues	40 hrs	Mon 9/6/10	Mon 9/13/10	79	
81	Conduct Performance Testing	16 hrs	Mon 9/13/10	Wed 9/15/10	80	
82	Resolve Performance Testing Issues	16 hrs	Wed 9/15/10	Fri 9/17/10	81	
83	Update System Documentation	16 hrs	Fri 9/17/10	Tue 9/21/10	82	
84	Review Phase V Deliverables	80 hrs	Tue 9/21/10	Tue 10/5/10	83	
85	Phase V Sign-off	0 days	Tue 10/5/10	Tue 10/5/10	73	
86	Phase VI – Implementation (Placing the New System in Production)	892 hrs	Thu 11/4/10	Fri 4/8/11	101	
87	Prepare Production Implementation Plan	16 hrs	Thu 11/4/10	Mon 11/8/10		
88	Prepare and Enact Disaster Recovery Plan	8 hrs	Mon 11/15/10	Tue 11/16/10	87FS+5 days	
89	Update Installation Guide	4 hrs	Tue 11/16/10	Tue 11/16/10	88	
90	Deploy in Production Environment	16 hrs	Wed 11/17/10	Thu 11/18/10	89	
91	Conduct Data Migration	8 hrs	Fri 11/19/10	Fri 11/19/10	90	
92	Monitor Performance (90 Business Days)	90 days	Mon 11/22/10	Fri 3/25/11	91	
93	Resolve Production Issues	90 days	Mon 11/22/10	Fri 3/25/11	91	
94	Review Phase VI Deliverables	80 hrs	Mon 3/28/11	Fri 4/8/11	93	
95	Production Deployment	0 hrs	Thu 11/18/10	Thu 11/18/10	90	
96	Phase VI Sign-off	0 hrs	Fri 4/8/11	Fri 4/8/11	86	
97	Phase VII – Documentation, Training and Transition	176 hrs	Tue 10/5/10	Thu 11/4/10	85	
98	Produce Updated Documentation	16 hrs	Tue 10/5/10	Thu 10/7/10		
99	Perform Training and Transition	80 hrs	Thu 10/7/10	Thu 10/21/10	98	
100	Review Phase VII Deliverables	80 hrs	Thu 10/21/10	Thu 11/4/10	99	
101	Phase VII Sign-off	0 hrs	Thu 11/4/10	Thu 11/4/10	97	



Exhibit G

Wellogic Project Organization

Organization Chart





Windsor Staff Skill Matrix:

The following matrix illustrates how each of the proposed personnel is able to satisfy the various skill areas required by the RFP.

RFP Desired Expertise	Windsor STAFF					
	Team	Keith Fraser	Bill Geake Rensmith	Emil Lerch	Jaime McFarland	Kevin James
The Project Manager must be a certified Project Management Professional (PMP), or be able to demonstrate a minimum of 10 years project management experience	✓	✓				
7-10 years of recent IT project management experience managing large scale application development and implementation projects	✓	✓				
3 - 5+ years (PM) and 5+ years (Technical Architect/Senior Programmer) experience working on projects involving interfacing with the State of Michigan IT network and hosting environment or that of a similar state-level system.	✓	✓	✓	✓		
Experience and/or familiarity with the requirements, tools, policies, and standards as specified in Section 1.103, Environment	✓	✓	✓	✓	✓	✓
Excellent verbal and written communication skills and the ability to interact professionally with a diverse group, executives, managers, and subject matter experts.	✓	✓	✓	✓	✓	✓
Familiarity with Water Bureau/DEQ programs and water well construction would be preferable, but not required	✓		✓			
Experience in structured development process.	✓	✓	✓	✓		
Experience of working in a matrix environment, where team effort forms the key to success	✓	✓	✓	✓	✓	✓
5 - 7+ years of recent IT Business Analysis experience with large scale application development and implementation projects	✓	✓	✓			
Experience in eliciting good requirements using JAD sessions, interviews, document analysis, requirements workshops, business process descriptions, use cases, scenarios, business analysis, task and workflow analysis.	✓	✓	✓	✓		
Experience in critically evaluating information gathered from multiple sources, reconcile conflicts, decompose high-level information into details, abstract up from low-level information to a general understanding, and distinguish user requests from the underlying true needs	✓	✓	✓	✓		
Experience in collaborating with developers and subject matter experts to establish the technical vision and analyze tradeoffs between usability and performance needs.	✓	✓	✓	✓		
2+ years of experience working with .NET Applications using Microsoft Visual Studio.NET 2005	✓	✓	✓	✓	✓	✓
5+ years of experience with converting legacy application to a more scalable web-based solution	✓	✓		✓		
Advanced experience with .NET frameworks 2.0, 3.5 and C#, ADO.NET, ASP.NET, XML & Web	✓	✓	✓	✓	✓	✓



RFP Desired Expertise	Windsor STAFF					
	Team	Keith Fraser	Bill Geake Rensmith	Emil Lerch	Jaime McFarland	Kevin James
Services						
Advanced experience of completing tasks/fixing errors in a timely manner	✓	✓	✓	✓	✓	✓

Contractor Roles and Responsibilities:

The following is a brief summary of the proposed key staff of Windsor, including the role that each individual will perform on the project. Additionally, the non-key staff and their roles have been identified. The project team members will be located in Windsor’s office in Lake Oswego, Oregon with occasional visits onsite at State of Michigan’s offices as project tasks dictate. Additional staff will be included in the Windsor project team as required during the course of the project subject to approval by MDIT Project.

(1) Keith Fraser

Project Role: Project Manager

Key Individual: Yes

Percentage of time resource will be allocated to project: 40%

Keith is proposed as Project Manager for the Wellogic System Rewrite project. He will be responsible for the development of all project planning and communication materials for the project and will work in collaboration with the Business Analyst, Technical Architect, and other Project Team representatives.

Keith is exceptionally well qualified to manage this project given his extensive experience with the development of information systems in several states for a variety of Windsor clients. Keith brings a combination of both information systems development skills and extensive experience working with government agencies. Keith is a PMP-certified Project Manager with deep business analysis and systems design skills and possesses a strong background in the use of facilitated workshops to capture business requirements, and has the knowledge and perspective needed to understand regulatory analysis and implementation.

(2) Bill Geake Rensmith,

Project Role: Business Analyst

Key Individual: Yes

Percentage of time resource will be allocated to project: 75%

Bill will act in the capacity of Business Analyst for the Wellogic project and will act at the direction of the Project Manager to assist him in running the project effectively and efficiently. Bill has an extensive information systems background, with over 8 years of experience as a Business Lead and 3 years experience as a Project Manager. Bill has extensive analysis experience in large-scale environmental data information systems, many of which include public access and secure, public-facing Web-based data collection systems.

Bill’s background as a programmer/analyst with the State of Michigan from 2000-2004 positions him well for the Wellogic project. During his tenure as a member of the MDIT/MDEQ Web Team, he gained first-hand experience with SOM procedures, processes, personnel, and the technical environment. He served to collect business requirements, model data, develop and implement over a dozen systems, including several MDIT-hosted public-facing Web sites that continue to operate today. Bill built an excellent rapport with MDIT and MDEQ staff as a solution-focused analyst and highly-competent developer. Bill was also an analyst, designer, and developer for the Michigan BeachGuard System. BeachGuard is comparable to Wellogic in both scope and function, collecting data from external partners via secure login for use by MDEQ.

Since joining Windsor in 2004, Bill has served as a lead analyst for many medium and large scale implementation projects for over a dozen states as well as US EPA. Bill has led many detailed design and implementation projects for environmental water programs in multiple states. Furthermore, Bill’s extensive development and implementation experience using SQL Server, ASP.NET and C# uniquely positions him to



efficiently communicate with developers and understand the potential technological implications of design decisions.

(3) Emil Lerch

Project Role: Technical Architect

Key Individual: Yes

Percentage of time resource will be allocated to project: 20%

Emil is proposed as Technical Architect for the Wellogic System Rewrite. He will be responsible for the development of the technical architecture to support the Wellogic system, and will also direct all technical software development activities.

As a very senior and experienced Microsoft development specialist, Emil is ideally suited to structure and organize sophisticated and multi-faceted technical solutions such as Wellogic. Emil will ensure that the Wellogic is architected using progressive and best of breed techniques while also deferring to MDIT's existing standards, infrastructure and IT capabilities, so that the resulting application improves upon the shortcomings of the existing application, performs well, can be extended without loss of integrity, and requires only a reasonable level of maintenance effort to support.

Emil has 14 years of experience as a software engineer and technical architect. He is currently serving as Technical Architect on another important Michigan project, the Waste Data System rebuild. Emil is intimately familiar with the needs and requirements of Michigan DEQ and MDIT.

Non-Key Staff from Windsor Solutions:

(4) Jaime McFarland

Project Role: Developer

Key Individual: No

Percentage of time resource will be allocated to project: 33%

(5) Kevin James

Project Role: Data Analyst

Key Individual: No

Percentage of time resource will be allocated to project: 33%

Sub-Contractors:

Windsor does not have any subcontractors for the Wellogic project. If the need for subcontractors arises during the course of the project, Windsor will comply with the terms and conditions in section 2.070 of the RFP as well as Michigan's subcontracting policies.



Appendix A

Current Wellogic System with Enhancements

1. Introduction:

This document provides information about the existing Wellogic application and outlines some of the changes/enhancements that need to be included in the new application. This document is for illustration purposes only. Final product with all the changes and enhancements will be determined jointly by the State of Michigan and the selected Vendor during the JAD Sessions.

The screen shots from the existing Wellogic application are edited to reflect the required changes. Each screen has a brief description and more details are referenced in Appendix B - Metadata and Appendix C- Business Logic.

Appendix B – Metadata document provides a list of data fields (individual fields in the screen), their validations rules and references to database objects.

Appendix C - Business logic document provides more details on the business rules, search criteria and lists the reports. An entire list of customized reports is listed in this document.

Samples of reports (Water Wells, Replacement Well and Abandoned Wells) are also provided in this document.



2. Example of Homepage/Log-in

Overview Homepage would look similar to this with log-in box, navigation panel on lefthand side and text on the homepage.

Welcome to the MiTAPS e-Permit System - Michigan's single point of entry that streamlines permitting and licensing for Michigan businesses by providing a consolidated, easier to use and more efficient application process. The MiTAPS e-Permit System offers new ways to access permitting and licensing services 24-hours a day, seven days a week - all from a single website.

This one-stop source for online permitting simplifies the permitting process by providing:

- Ability to determine needed permits/licenses based on user defined search criteria - search by key words, permit name, form or authority;
- Online account management - enter company or personal data once and use it in multiple applications - eliminates duplicate data entry;
- Customized account profiling - include the permits/licenses that are used most frequently;
- Payment of fees online;
- Ability to monitor permit/license application status;
- E-mail notifications for each major milestone during the application process.

Improving the permitting/licensing processes is just one way that Michigan agencies are working to secure Michigan's current position as a leader in job growth and online services.

As MiTAPS services continue to expand, the system will provide increasing opportunities to meet business needs through the ease and convenience of Michigan's online e-Permit services.

Provide warning message for when Wellogic is offline.

Purpose of screen:

- home page for entire application
- logon screen controlling secure access
- general announcements
- links for public searching and viewing of Wellogic records
- on-line help system
- links to other web sites

Detailed description of screen:

- This is the 1st page of the application
- This screen restricts full application access to registered users only. Registered users are allowed view, enter or modify data.
- The announcement text on the homepage is used to convey important information to the users.
- The links control access to public searching and viewing of records.
- The links control access to request account creation, forgot password.
- On-line help includes documents, downloads, and FAQ.
- Additional links to other DEQ, water well web sites.

List of data fields:

User ID
Password

Mandatory data entry fields:

User ID
Password

Wildcard search fields:

None



Administrative functions:

DEQ system admin need:

1. editing ability of text announcements
2. to add, delete documents in help section.
3. editing ability of links to other applications / web pages

Business Logic:

- In order to log in the user must possess a valid user id and password. The user ID and password must comply with DIT/SOM security requirements and any additional requirements as specified in Exhibit C1 –Technical requirements and Exhibit C2 - Functional requirements.
- The general public can link to a record search, view and print screen accessible without login through this screen.
- The general public can link to help / tutorial documents.

Other Links:

- Water well viewer
- Scanned well records
- Center for Geographic Information
- Groundwater inventory and mapping project (GWIM)
- Other links TBD

**3. Homepage Following Log-in
Current Page**

The screenshot shows the homepage of the Wellogic State Wide Ground Water Database. The page header includes the Michigan Department of Environmental Quality logo and the Michigan.gov domain. The main content area features the Wellogic logo and a navigation menu with items like 'Wellogic News', 'User Manuals', 'Other Well Log Info', 'Downloads & Links', and 'Help'. A prominent announcement reads 'It's Here!' followed by text about the new version of Wellogic and a link to 'New Wellogic Instructions'. Annotations in red text provide specific requirements: 'Add 'Hide/Show Navigation Panel' button' points to the navigation menu; 'Change to tabs' points to the menu items; 'Tabbed items would also appear on left navigation panel.' points to the right side of the page; and 'Allow editing of homepage from Admin module.' is located at the bottom of the page.



Desired appearance

Michigan.gov Home MITAPS Michigan Timely Application and Permit Service Michigan.gov MITAPS | Contact e-Permit Sys

e-Permit Home Help Hide Navigation Panel Logout (admin)

NAVIGATION PANEL

Permit Management

- Create a New Application
- Edit an Open Application
- Favorite Application(s)
- Submitted Application(s)
- Issued Permit(s)
- Retrieve an Existing Permit

Admin Tools

My Account

- Basic Information
- Password and PIN

Create a New Application

Permit Management > Create a New Application > Introduction

Introduction Browse Search Category

Below are the search options you can use to locate an application/permit administered by the State.

- You may browse the list of all of the departments/permits sorted by the administering state departments. To browse, please go to the **Browse** tab or click the **Browse** link below.
- You may locate an application/permit by searching for it by name, form number, or regulatory citation. To search, please go to the **Search** tab or click the **Search** link below.
- You may also locate an application/permit by selecting its associated category or nature of business. To do this, please go to the **Category** tab or click on the **Category** link below.

Three ways to find desired applications:

Browse
From the Browse page, you can view the applications/permits from different state departments, or view the applications/permits alphabetically.

Search
From the Search page, you can search for an application/permit by the form name, form number or regulatory citation. You can also search for an application/permit by entering a sentence or keywords.

Purpose of screen:

- Home page after login.
- General Announcements

Detailed description of screen:

- This is the first page after a user logs in.
- The announcement text on this page is used to convey important information to registered users.
- Logout button will be available.
- Tab options will also be available as left panel menu.
- 'Submit' button always needs to be visible on top of screen just below upper navigation panel.

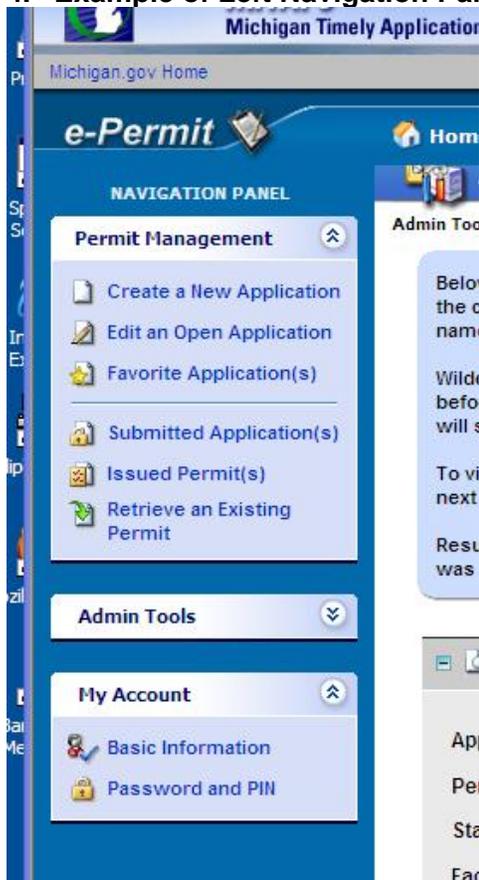
Administrative functions:

DEQ system admin need:

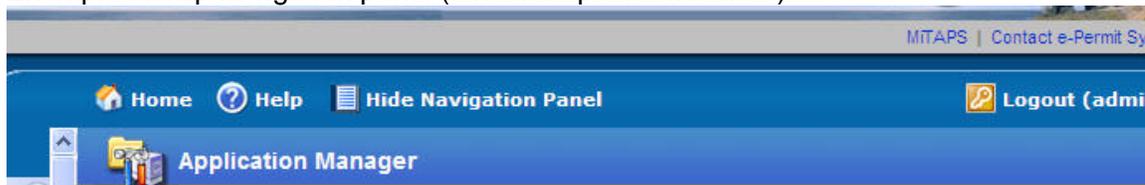
- editing ability of text announcements
- to add, delete documents in help section.
- editing ability of links to other applications / web pages



4. Example of Left Navigation Panel



Example of Top navigation panel (text and options will differ)



Purpose of screen:

- Provides navigation for registered users based on group and roles.

Detailed description of screen:

- Refer to navigation panel and security/permissions documents for specific permissions based on groups.
- Will include Well Log, Administrative Tools, My Account, Help sections.
- Panel will have hide/show options
- Panel will always be visible (if show panel option selected)
- Options grouped by function
- Grouping/sections can be expanded/collapsed by user
- Only sections coinciding with permissions shown

Administrative functions:

DEQ system admin need:

1. to add, delete documents in help section.
2. editing ability of links to other applications / web pages



Business logic:

- Registered users can enter, modify and search for records.
- Administrators will have full application access.

Other links:

- Water well viewer
- Scanned well records
- CGI
- Groundwater inventory and mapping project (GWIM)
- Other links TBD

5. Well Details (Water Well)

The screenshot shows a web form titled "WATER WELL AND PUMP RECORD" from the Michigan Department of Environmental Quality. The form includes a navigation menu on the left with options like "Home", "Water Well", "Geotechnical Well", and "ABD Water Well". The main form area contains several sections: "Tax No.", "Permit No.", "County" (Alcona), "Township" (Alcona), "Town/Range" (28N 07E), "Section", and "Fraction". There are also fields for "Well Address", "Well Owner Address", "Distance and Direction from Road Intersection", "Street Address", "City", "State", and "Zip". Further down, there are fields for "Source ID/Well No.", "WSSN", "Well Depth", "Well Type", "Well Use", "Well Status", and "Date Well Completed". At the bottom, there are tabs for "Geology", "Well Features", "Completion / Pump", "Geographical Positioning & Elevation", and "Contractor".

Annotations on the form include:

- "Move Section after Town/Range" with an arrow pointing to the Section field.
- "Remove 2 lines" with an arrow pointing to the Fraction field.
- "Remove fraction fields" with an arrow pointing to the Fraction field.
- "Reorder so well use comes before WSSN and SID. Also make WSSN come before SID." with an arrow pointing to the Well Use field.
- "WSSN & 'Source ID/Well No.' only active if 'Type I' or 'Type II' chosen" with an arrow pointing to the Source ID/Well No. field.
- "Rename 'G P & E' to 'Latitude & Longitude'." with an arrow pointing to the Geographical Positioning & Elevation tab.
- "Change look and feel, tab format replaces popup windows" with an arrow pointing to the Save button.
- "Rename 'Save' to 'Ok'" with an arrow pointing to the Save button.

Purpose of screen:

- Data entry screen for a Water Well.
- First tab for tabbed browsing.

Detailed description of screen:

- Same screen is used when adding or modifying a Water Well.
- Must be completed in one user session (no save and return later).
- Arrange controls to minimize scrolling. If scrolling needed then vertical scrolling preferred over horizontal.
- Layout needs to closely resemble this screen.



- This screen must be filled out (based on required fields) for the record to be saved.

6. Geology (Water Well)

S. No	Primary Color	Primary Material	Descriptor / Secondary	Descriptor / Formation	Thickness of Stratum	Depth to Bottom of Stratum
-------	---------------	------------------	------------------------	------------------------	----------------------	----------------------------

Comments

Primary Color

Primary Material

Descriptor/Secondary

Descriptor/Formation

Depth to Bottom of Stratum ft.

All 5 fields will be relocated up to the top under the appropriate column heading. Each row of geology will be added one at a time. The thickness of stratum will be automatically calculated.

Both the Geology (water well) and Plugging (abandoned well) screens will function this way.

Purpose of screen:

- Data entry screen for a Water Well.
- Second tab for tabbed browsing.

Detailed description of screen:

- Same screen is used when adding or modifying a Water Well.
- Must be completed in one user session (no save and return later).
- Arrange controls to minimize scrolling. If scrolling needed then vertical scrolling preferred over horizontal.
- Layout needs to closely resemble this screen.
- This screen must be filled out (based on required fields) for the record to be saved.

Business logic:

- Geology layers are added one by one from surface to bottom of well.
- User will have ability to Insert, Modify or Delete each layer.
- Thickness will be calculated automatically – user must only enter the depth to the bottom of each layer.



7. Casing & Grouting (Water Well)

Casing

Casing Type

Diameter in. to ft. depth SDR

in. to ft. depth SDR

in. to ft. depth SDR

Casing Joint

Height ft. Above Grade

Casing Fittings

Centralizer

Drive shoe

None

~~Bore Hole~~ **Rename 'Bore Hole' to "Borehole"**

Diameter in. to ft. depth

in. to ft. depth

in. to ft. depth

Grouting

Well Grouted Yes No

Grouting Method

No. of Bags

Additives

Grouting Materials

From ft. to ft. depth

From ft. to ft. depth

From ft. to ft. depth

Move 'No. of Bags' and 'Additives' fields after each line of grout materials and depths.

Purpose of screen:

- Data entry screen for a Water Well.
- Third tab for tabbed browsing.

Detailed description of screen:

- Same screen is used when adding or modifying a Water Well.
- Must be completed in one user session (no save and return later).
- Arrange controls to minimize scrolling. If scrolling needed then vertical scrolling preferred over horizontal.
- Layout needs to closely resemble this screen.
- This screen must be filled out (based on required fields) for the record to be saved.



8. Screen & Water Level (Water Well)

~~Water level~~ Capitalize the 'l' in "Water level"

Static Water Level ft. ← Change well flow picklist to a radio button ('Flowing yes/no') and have it default to no.

Screen Add 'G.P.M. (Unrestricted Flow)' field after radio button.

Screen Installed Yes No

Well Intake

Filter Packed Yes No

Screen Material

Name this field 'Screen Installation'

Screen Diameter in. Length ft.

Slot in. Set Between ft. and ft. Allow for 3 screen installations. 'Slot', 'Length', and 'From' and 'To' fields will repeat 3 times.

Blank ft. Flipflop 'Slot' and 'Length' fields

~~Fittings~~ Rename 'Fittings' to 'Screen Fittings'

Blank above screen
 Blank below screen

~~Depth to Water While Pumping~~ Rename 'Depth to Water While Pumping' to 'Well Yield Test'

~~Measurement taken During Pump Test~~ Yes No

ft. After hrs. Pumping at G.P.M.
 ft. After hrs. Pumping at G.P.M.
 ft. After hrs. Pumping at G.P.M.

Yield Test Method

Remove 'Measurement Taken During Pump Test'

Name this field 'Pumping Level'

Purpose of screen:

- Data entry screen for a Water Well.
- Fourth tab for tabbed browsing.

Detailed description of screen:

- Same screen is used when adding or modifying a Water Well.
- Must be completed in one user session (no save and return later).
- Arrange controls to minimize scrolling. If scrolling needed then vertical scrolling preferred over horizontal.
- Layout needs to closely resemble this screen.
- This screen must be filled out (based on required fields) for the record to be saved.



9. Completion & Pump (Water Well)

Well Head Completion
 12 inches above grade
 Basement offset
 Pitless adapter
 Pump mount to casing

Rename 'Well Head' to 'Wellhead'.

Below statement no longer needed.
 Please use more than one option to describe the control requirements you want.

Nearest Source of Possible Contamination

Type: [] Distance: [] ft. Direction: []
 Type: [] Distance: [] ft. Direction: []

Pump

Pump Installed: Yes No
 Pump Installation Only: Yes No
 Pump Installation Date (mm/dd/yyyy): []
 Manufacturer: []
 Model Number: []
 Diameter of Drop Pipe: [] in.
 Length of Drop Pipe: [] ft.
 Drawn Down Seal Used: Yes No

Rename 'ID of Well' to 'Link to Drilling Record', allow user to type in well ID without searching for it, and remove the red 'X'.

Add more characters to pump model number field.

Add new field = 'Volts'

HP: []
 ID of Well: []
 Pump Capacity: [] G.P.M.
 Pump Type: []

Pressure Tank

Rename 'Drawn Down Seal Used' to 'Drawdown Seal Used'.

Pressure Tank Installed: Yes No
 Buried: Yes No
 Pressure Tank Type: []
 Manufacturer: []
 Model Number: []
 Total Tank Capacity: [] Gallons
 Pressure Relief Valve Installed: Yes No

OK Cancel Reset Help

Purpose of screen:

- Data entry screen for a Water Well.
- Fifth tab for tabbed browsing.

Detailed description of screen:

- Same screen is used when adding or modifying a Water Well.
- Must be completed in one user session (no save and return later).
- Arrange controls to minimize scrolling. If scrolling needed then vertical scrolling preferred over horizontal.
- Layout needs to closely resemble this screen.
- This screen must be filled out (based on required fields) for the record to be saved.



10. Latitude & Longitude (Water Well & Abandoned Water Well)

Latitude

Longitude

Method of Collection

Accuracy Value

Accuracy Value Unit

Horizontal Datum

Elevation ft.

Elevation Accuracy ft.

Point Line Area

Date of Collection (mm/dd/yyyy)

Description

Comments

Horizontal Datum, Elevation, Elevation Accuracy, Point Line Area

Description Category

Map Scale

Elevation Method of Collection

Elevation Datum

Source

Get Map

Rename 'Get Map' button to 'Check Latitude & Longitude Accuracy'.

Add an 'Advanced' button to click on to complete additional fields.

'Description Category' and 'Point Line Area' will default in the database and not be visible on this screen.

'Horizontal Datum', 'Map Scale', and all 'Elevation' fields to be visible after clicking on the 'Advanced' button.

OK Cancel Reset Help

Purpose of screen:

- Data entry screen for a Water Well.
- Sixth tab for tabbed browsing.

Detailed description of screen:

- Same screen is used when adding or modifying a Water Well.
- Must be completed in one user session (no save and return later).
- Arrange controls to minimize scrolling. If scrolling needed then vertical scrolling preferred over horizontal.
- Layout needs to closely resemble this screen.
- This screen must be filled out (based on required fields) for the record to be saved.

Business logic:

- Screen will only have certain fields visible in basic mode. Users can enter more data if they click on the 'Advanced' button.



11. Contractor & Abandonment & Remarks (Water Well)

Abandonment

Abandoned Well Plugged Yes No Reason for not Plugging Well

~~Well ID~~

~~Casing Diameter~~ Well Depth ft.

Plugging Material No. of Bags

Casing Removed Yes No

Rename 'Casing Diameter' to 'Well Diameter'

Add 'Latitude' and 'Longitude' (for the plugged well) in this area.

Drilling Machine Operator

Name Employment

Pump Installer

Pump Installer different from Drilling Machine Operator Yes No

Pump Installer Name

Rename 'ID of Old Well' to 'Link to Original Drilling Record', allow user to type well ID in that field, and remove the red 'X'.

Contractor

Certification Business Name

Registration Number Address

Registered Contractor

OK Cancel Reset Help

General Remarks

Purpose of screen:

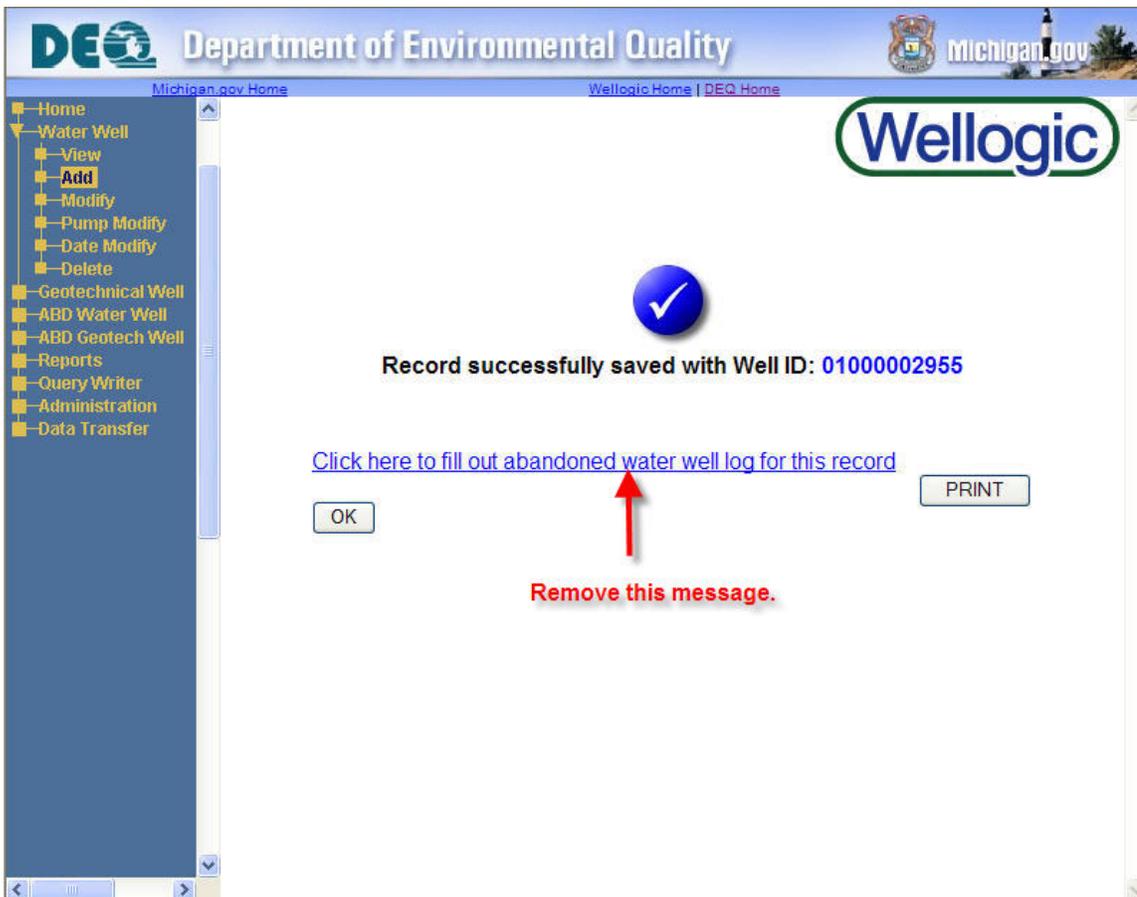
- Data entry screen for a Water Well.
- Seventh tab for tabbed browsing.

Detailed description of screen:

- Same screen is used when adding or modifying a Water Well.
- Must be completed in one user session (no save and return later).
- Arrange controls to minimize scrolling. If scrolling needed then vertical scrolling preferred over horizontal.
- Layout needs to closely resemble this screen.
- This screen must be filled out (based on required fields) for the record to be saved.



12. Saved Record Confirmation (Water Well and Abandoned Water Well)



Purpose of screen:

- Confirmation screen for successful saved record.

Detailed description of screen:

- Well ID displayed for user on this screen.
- User can click OK to add new record or click Print to generate PDF.
- This screen notifies the user that the record was successfully saved. If the record was not saved correctly an error screen should be displayed in place.



13. Well Details (Abandoned Water Well)

The screenshot shows a web-based form for an 'ABANDONED WATER WELL AND PUMP RECORD'. The form is titled 'New Record' and includes a 'Log Off' button. The left sidebar contains a navigation menu with options like 'Home', 'Water Well', 'Geotechnical Well', 'ABD Water Well', and 'Reports'. The main form area is divided into several sections: 'Well Address', 'Well Owner Address', 'Distance and Direction from Road Intersection', 'Source ID/Well No.', 'Well Use', and 'Remarks'. Annotations in red text provide instructions for modifications, such as 'Move Section after Town/Range', 'Rename - Abandoned Water Well & Pump Record' to 'Abandoned Well Plugging Record', 'Remove 2 lines', 'Remove fraction fields', 'Make Well Use come before WSSN and SID and make WSSN come before SID. Make WSSN and SID active only if Type I or Type II are chosen on well use.', 'Remove Drilling Method and replace with Date Plugged', 'Rename Construction Type to Well Intake', 'Rename Date Completed to Date Drilled', 'Remove import Data button', 'Rename Save to OK', 'Change look and feel, tab format replaces pop-up windows', and 'Rename G P & E to Latitude & Longitude'. The 'Save' button is highlighted in red, and the 'Import Data' button is crossed out with a red line. The 'Geographical Positioning & Elevation' tab is selected.

Purpose of screen:

- Data entry screen for an Abandoned Water Well.
- First tab for tabbed browsing.

Detailed description of screen:

- Same screen is used when adding or modifying an Abandoned Water Well.
- Must be completed in one user session (no save and return later).
- Arrange controls to minimize scrolling. If scrolling needed then vertical scrolling preferred over horizontal.
- Layout needs to closely resemble this screen.
- This screen must be filled out (based on required fields) for the record to be saved.



14. Plugging (Abandoned Water Well)

S. No	Plugging Material	From (ft.)	To (ft.)	Quantity	Unit	
*) Indicates a required field						
WSSN*	Lab Sample Number*	Collector	Sample Type	Sample Purpose	Original Lab-Sampling Number (required if repeat)	Sit
03760	MSB001	Mark	Public System Well (Raw) Select Public System Well (Raw) Public System Surface Water (Raw) Untreated Public Distribution System Treated Public Distribution System Pressure Tank/Plant Tap Other Select	Routine Monitoring Select		

Date of Plugging (mm/dd/yyyy)

Comments

Rename 'Date of Plugging' to 'Date Plugged' and move it to the well details screen.

Append OK Cancel Reset Help

Plugging Material

From ft.

To ft.

Quantity

All 4 fields will be moved up to the top under the appropriate column. See example (from water sample data).

Append Cancel

Purpose of screen:

- Data entry screen for an Abandoned Water Well.
- Second tab for tabbed browsing.

Detailed description of screen:

- Same screen is used when adding or modifying an Abandoned Water Well.
- Must be completed in one user session (no save and return later).
- Arrange controls to minimize scrolling. If scrolling needed then vertical scrolling preferred over horizontal.
- Layout needs to closely resemble this screen.
- This screen must be filled out (based on required fields) for the record to be saved.

Business logic:

- Plugging layers are added one by one from surface to bottom of well.
- User will have ability to Insert, Modify or Delete each layer.



15. Contractor/Abandonment (Abandoned Water Well)

Add "Well Diameter" and "Measured Well Depth" as first fields on this screen.

Rename 'Active Well ID' to 'Link to Original Drilling Record', allow user to type well ID in the field, and remove the 'X'.

Abandonment

Casing Status After Plugging ft.

Abandonment Method

Pumping Equipment Removed Yes No

Reason for Abandoning Well

~~Active Well ID~~ X

* Equipment Removed

- Bremer check valve
- Check valve
- Drawdown seal

Remove locational remarks

~~Locational Remarks~~

Reference Point

Direction Distance ft.

Contractor Contractor information should auto-fill when Group = Contractor

Certification

Registration Number

Registered Contractor

Business Name

Address

* To choose more than one Equipment Removed, hold down the "Control key" when you click.

Remarks screen will be added to this screen and that screen eliminated.

Purpose of screen:

- Data entry screen for a Water Well.
- Third tab for tabbed browsing.

Detailed description of screen:

- Same screen is used when adding or modifying an Abandoned Water Well.
- Must be completed in one user session (no save and return later).
- Arrange controls to minimize scrolling. If scrolling needed then vertical scrolling preferred over horizontal.
- Layout needs to closely resemble this screen.
- This screen must be filled out (based on required fields) for the record to be saved.



16. Search (Water Well)

The screenshot shows a web application titled 'Department of Environmental Quality' with a 'Well Search' form. The form includes fields for Well ID, Import ID, Tax No., Permit No., County, Township, Town/Range, Section (From/To), French Claim Number, Well Street Address, Well City, Owner of Well, Well Owner Address, Well Depth, Source ID/Well No., WSSN, Well Use, Well Type, Created By, Cont Reg No., and Construction Date. Annotations in red text provide instructions: 'Rename 'Well Search' to 'Water Well Search'', 'Allow 1 or more discontinuous section numbers, range of section numbers.', 'Include online, in-page search hints and examples.', 'Add wildcard to: import ID, well city, well street address, owner of well, permit #, source ID, well no.', 'Remove Tax #, french claim #, and well owner address.', 'Indicate which fields have wildcards. Restrict user input to integers, letters, """, """, "<single quote>".', and 'Automatically add wildcard to search parameters (i.e. use charindex() SQL function)'. Buttons for Search, Cancel, Reset, and Help are visible at the bottom.

Purpose of screen:

Search screen for water wells.

Detailed description of screen:

- This screen is used to search for water well records. The user can then view or modify water well records, based on permissions.
- Scrolling must be minimized. If scrolling necessary then vertical is preferred over horizontal.
- Search results are displayed at the bottom of the screen.
- Records returned limits configurable by admin for 10 to 250
- Users can use any combination of fields to search.

Wildcard search fields:

- Import ID
- Well street address
- Well city
- Owner of well
- Permit No.
- Source ID/Well No.

Business logic:

If well ID is used to search, it negates any other search parameters chosen.



17. Search Results (Water Well)

Well Search

Well ID: Import ID: (%)

Tax No: Permit No.:

County: Township:

Town/Range: Section: From To

Search Results

Number of Matching Records: 71 [Print All](#)

S. No	Well ID	County	Well Address	Permit No.	Township	Section	Well Depth	Static Water Level	Construction Date	New/Historic
1	19000002290	Clinton	FRANCISE ROAD	W-19-99-369	Bengal	33	125	40	4/6/2000	Historic
2	19000002301	Clinton		W19 99 281	Bengal	15	320	46	4/10/2000	Historic
3	19000002321	Clinton	3321 S. LOWELL ROAD	W19-99-332	Bengal	26	150	15	4/10/2000	Historic
4	19000002368	Clinton	5458 w. taft rd.	W1901313	Bengal	26	108	60	8/15/2001	New
5	19000002417	Clinton	7905 KINLEY ROAD	W1999393	Bengal	4	335	37	5/27/2000	Historic

Allow Wellogic to use all of white space on right-hand of page.

Have ability to sort search results by column

Allow 'show all' for search results or '1-25', '26-50', etc.

Rename 'New/Historic' column to 'Group' and have the Group type listed in column.

Add 'WSSN' & 'Source ID/Well No.' columns to search results after 'Well Address'.

Purpose of screen:

Search results at bottom of water well search screen.

Detailed description of screen:

- This screen displays the search results.
- Scrolling must be minimized. If scrolling necessary then vertical is preferred over horizontal
- Search results are displayed at the bottom of the screen.
- Users can sort the search results by column.
- Records returned limits configurable by admin for 10 to 250.
- The first 25 records of the search will be displayed.
- Users can click on 'show all' to show all records or '1-25', '26-50', '51-75', etc
- Users can click on the well ID to retrieve that one record or they can click on 'print all' to print all records displayed.
- Records printed by PDF engine limit can be set by admin to between 10 and 100.



18. Search (Abandoned Water Well)

The screenshot shows a web application titled 'Department of Environmental Quality' with a 'Well Search' form. The form includes fields for Well ID, Import ID, Tax No., Permit No., County, Township, Town/Range, Section (with 'From' and 'To' sub-fields), French Claim Number, Well Street Address, Well City, Owner of Well, Well Depth, Well Owner Address, Source ID/Well No., WSSN, Well Use, Well Type, Created By, Cont Reg No., Construction Date, and Date Plugged. Annotations in red text provide instructions: 'Change 'Well Search' to Abandoned Well Search', 'Allow 1 or more discontinuous section numbers, range of section numbers.', 'Include online, in-page search hints and examples.', 'Add new search field = "Date Plugged"', 'Remove "Construction Date" range and replace with "Date Plugged" range.', 'Remove tax #, french claim #, and well owner address.', 'Add wildcard to: import ID, well city, well street address, owner of well, permit #, source ID/well no.', 'Automatically add wildcard to search parameters (i.e. use charindex() SQL function)', and 'Indicate which fields have wildcards. Restrict user input to integers, letters, "-", ".", "<single quote>".' Buttons for Search, Cancel, Reset, and Help are visible at the bottom of the form.

Purpose of screen:
Search screen for abandoned water wells.

- Detailed description of screen:**
- This screen is used to search for abandoned water well records. The user can then view or modify abandoned water well records, based on permissions.
 - Scrolling must be minimized. If scrolling necessary then vertical is preferred over horizontal.
 - Search results are displayed at the bottom of the screen.
 - Records returned limits configurable by admin for 10 to 250.
 - Users can use any combination of fields to search.

- Wildcard search fields:**
- Import ID
 - Well street address
 - Well city
 - Owner of well
 - Permit No.
 - Source ID/Well No.

Business logic:
If well ID is used to search, it negates any other search parameters chosen.



19. Search Results (Abandoned Water Well)

Search Cancel Reset Help

Search Results **Have ability to sort search results by column.** [Print All](#)

Number of Matching Records: 3

S. No.	Well ID	County	Well Address	Permit No.	Township	Section	Well Depth	Static Water Level	Construction Date	New/Historic
1	56000000573	Midland	6465 Water Rd		Edenville	11				Historical
2	56000001587	Midland	5828 LAKE ST.		Edenville	14	50			Historical
3	56000002510	Midland	1145 Curtis Road	05-130	Edenville	10				New

Rename 'New/Historic' column to 'Group' and have the Group type listed in column.

Replace 'SWL' in search results with "Date Plugged". 'Construction Date' will be renamed 'Date Drilled'. "Well Depth' will be replaced with "Measured Well Depth' (depth on Contractor/Abandonment screen).

Purpose of screen:

Search results at bottom of abandoned water well search screen.

Detailed description of screen:

- This screen displays the search results.
- Scrolling must be minimized. If scrolling necessary then vertical is preferred over horizontal
- Search results are displayed at the bottom of the screen.
- Users can sort the search results by column.
- Records returned limits configurable by admin for 10 to 250.
- The first 25 records of the search will be displayed.
- Users can click on 'show all' to show all records or '1-25', '26-50', '51-75', etc
- Users can click on the well ID to retrieve that one record or they can click on 'print all' to print all records displayed.
- Records printed by PDF engine limit can be set by admin to between 10 and 100.



20. PDF Reports (Water Well Replacement)

Have 'Well Status' print on log.
2nd line on top would be
Town/range, then 'Section',
then 'Well Status'

WATER WELL AND PUMP RECORD

Flip flop town/range
& section boxes

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Well ID: 0800009219

Tax No:	Permit No: B32775	County: Barry	Township: Baltimore
Well ID: 0800009219	Section: 2	Town Range: 02N 05W	WSSN: Source ID/Well No:

Remove fractions

Distance and Direction from Road Intersection: 1/4 mile West of Bird Road on North side of Roush Road.

Elevation:

Latitude: 42.588083
Longitude: -85.226056

Well Owner: Dorotha Roush

Well Address: 3105 Roush Road
Hastings MI 49058

Owner Address: 3105 Roush Road
Hastings MI 49058

Drilling Method: Rotary	Well Use: Household	Pump Installed: Yes	Pump Installation only: No
Well Depth: 115.00 ft	Date Completed: 8/18/2005	Pump Installation date: 11/11/2005	HP: 0.50
Well Type: Replacement	Casing Type: PVC plastic	Manufacturer: Goulds	Pump Type: Submersible
Casing Joint: Solvent welded/glued	Diameter: 5.00 in. to 107.00 ft depth	Model Number: 10LS05	Pump Capacity: 12.00 GPM
Bore Diameter 1: 8.00 in. to 115.00 ft. depth	Height: 1.50 ft. above grade	Length of Drop Pipe: 100.00 ft.	Id of Well:
2nd & 3rd borehole info should only show up if data is entered.	Casing Fitting: None	Diameter of Drop Pipe: 1.00 in.	If 'buried' is chosen for pressure tank, it needs to print on pdf.
Reason for not plugging well should only show up if abandoned well plugged is 'no'.	Abandoned Well Plugged: Yes	Draw Down Seal Used: No	Extra space behind:
Reason for not plugging well:	Abandoned well ID:	Pressure Tank Installed: Yes	Tank Capacity: 44 Gallons
Screen Installed: Yes	Well Intake:	Pressure Tank Type: Diaphragm/bladder	
Filter Packed: No	Screen Diameter: 4.00 in. Length: 8.00 ft.	Manufacturer: Champion	
Screen Material Type: Stainless steel-slotted	Slot: 12.00 in. Set Between 107.00 ft. and 115.00 ft.	Model Number: 050	
Blank:	Fittings: Bottom plug	Pressure Relief Valve Installed: No	
Well Grouted: Yes	Grouting Method: Grout pipe outside casing		
No. of Bags: 8	Additives: None		
Grouting Materials: Bentonite slurry	From 0.00 ft. to 105.00 ft.		
Well Head Completion: Pileless adapter	Abandonment Details		
Nearest source of possible contamination:	Casing Diameter: 3		Well Depth: 90ft
Type: Fuel tank	Plugging Material: Bentonite chips/pellets		No. of Bags: 6
Distance: 50.00 ft. West	Casing Removed: No		
Direction: 100.00 ft. West	Contractor Type: Water well drilling contractor		
Drilling Machine Operator Name: Matt Kleinfelt	Registration Number: 1657		
Employment: Subcontractor	Business Name: Potter Water Works		
Well Pump Installer Name: Mark Potter	Business Address: 7311 Bivens Road, Nashville MI 49073		
General Remarks:	WATER WELL CONTRACTOR'S CERTIFICATION:		
OTHER REMARKS	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.		
EQP 2017C (2/2000)	Signature of Registered Contractor	Date	

11/14/2005 18:50

ATTENTION WELL OWNER: FILE WITH DEED

Add «Group name» under or next to date/time stamp to let users know which type of user entered the record.

'Pump Added' with a second date/time stamp will show under original group/date/time stamp when the pump information is added under 'pump modify' ONLY.

Page 1 of 1

Detailed description of screen:

This is the report (well log) that is generated when a replacement water well record is entered.

Business logic:

- This report will print to 2 pages if more than 14 lines of 'formation description' are entered.
- The 2nd and 3rd lines of casing, borehole, screen, grouting, and well yield test do not print on PDF unless they are completed.



21. PDF Reports (Water Well New)



WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Well ID: 08000007846

Tax No:	Permit No: B31580	County: Barry	Township: Baltimore
Well ID: 08000007846		Fraction: NW¼ SW¼ NW¼	Section: 2
Elevation:		Town/Range: 02N 08W	WSSN:
Latitude:		Source ID/Well No:	
Longitude:		Distance and Direction from Road Intersection: 1/8 MILE SOUTH OF SAGER - 1/8 MILE EAST OF HICKORY HILL LANE - 200' N.E. OF PHEASANT RIDGE.	
Well Owner: Thomas Svatora		Owner Address: 9777 JORDAN RIVER DR. ALTO MI 49030 9678	
Well Address: 818 PHEASANT RIDGE HASTINGS MI 49058			

Drilling Method: Rotary Well Depth: 87.00 ft Well Type: New Casing Type: PVC plastic Casing Joint: Solvent welded/glued Diameter: 5.00 in. to 77.00 ft. depth Bore Diameter 1: 8.75 in. to 90.00 ft. depth Bore Diameter 2: Bore Diameter 3: Height: 1.00 ft. above grade Casing Fitting: Centraflex	Pump Installed: Yes Pump Installation date: 2/2/2004 Manufacturer: Grundfos Model Number: 16S07-8 Length of Drop Pipe: 80.00 ft. Diameter of Drop Pipe: 1.25 in. Draw Down Seal Used: No Pressure Tank Installed: Yes Pressure Tank Type: Diaphragm/bladder Manufacturer: Amtrol Model Number: WX 105 P.S Pressure Relief Valve Installed: Yes	Pump Installation only: No HP: 1.50 Pump Type: Submersible Pump Capacity: 20.00 GPM Id of Well: Tank Capacity: 4.4 Gallons																																																			
Static Water Level: 50.00 ft. below Grade(Not Flowing) Yield Test Method: Air Measurement Taken During Pump Test: 70.00 ft. after 3.00 hrs. pumping at 25.00 GPM	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;">Formation Description</th> <th style="width: 15%;">Thickness</th> <th style="width: 15%;">Depth to Bottom</th> </tr> </thead> <tbody> <tr><td>Brown Clay</td><td>22.00</td><td>22.00</td></tr> <tr><td>Sand</td><td>3.00</td><td>25.00</td></tr> <tr><td>Gray Clay</td><td>20.00</td><td>45.00</td></tr> <tr><td>Gray Clay & Gravel</td><td>7.00</td><td>52.00</td></tr> <tr><td>Sand & Gravel</td><td>35.00</td><td>87.00</td></tr> <tr><td>Gray Clay & Gravel</td><td>3.00</td><td>90.00</td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>		Formation Description	Thickness	Depth to Bottom	Brown Clay	22.00	22.00	Sand	3.00	25.00	Gray Clay	20.00	45.00	Gray Clay & Gravel	7.00	52.00	Sand & Gravel	35.00	87.00	Gray Clay & Gravel	3.00	90.00																														
Formation Description	Thickness	Depth to Bottom																																																			
Brown Clay	22.00	22.00																																																			
Sand	3.00	25.00																																																			
Gray Clay	20.00	45.00																																																			
Gray Clay & Gravel	7.00	52.00																																																			
Sand & Gravel	35.00	87.00																																																			
Gray Clay & Gravel	3.00	90.00																																																			
Abandoned Well Plugged: No Reason for not plugging Well: Abandoned well ID:	<p style="color: red; font-weight: bold;">AW plugged, Reason for not plugging, and AW ID should not show up for a 'new' well.</p>																																																				
Screen Installed: Yes Filter Packed: Yes Screen Diameter: 4.50 in. Length: 10.00 ft. Screen Material Type: Stainless steel-wire wrapped Slot: 12.00 in. Set Between 77.00 ft. and 87.00 ft. Blank: 0.00 ft. Fittings: Other	Well Intake: Well Grouted: Yes Grouting Method: Grout pipe outside casing No. of Bags: 8 Additives: None Grouting Materials: Bentonite slurry From 0.00 ft. to 75.00 ft. Well Head Completion: Pitless adapter																																																				
Nearest source of possible contamination: Type: Septic tank Distance: 95.00 ft. Direction: West None	Contractor Type: Water well drilling contractor Registration Number: 2055 Business Name: Raymer Company Business Address: 1357 Comstock Street, Marne, MI 49435 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my supervision and this report is true to the best of my knowledge and belief.																																																				
Drilling Machine Operator Name: JAMES MORSE Employment: Employee	Signature of Registered Contractor _____ Date _____																																																				
General Remarks: DRILLED FOR FALCON HOMES - PUMP INSTALLED BY C.VISSER - HICKORY HILL SUBDIVISION - LOT #4 OTHER REMARKS: Screen Fittings: 5" X 4.5" REDUCING COUPLING																																																					

ATTENTION WELL OWNER: FILE WITH DEED

2/5/2004 11:08

Detailed description of screen:

This is the report (well log) that is generated when a new (well type) water well record is entered.

Business logic:

- This report will print to 2 pages if more than 14 lines of 'formation description' are entered.
- The 2nd and 3rd lines of casing, borehole, screen, grouting, and well yield test do not print on PDF unless they are completed.



23. PDF Reports footer (Abandoned Water Well)

	Signature of Registered Contractor	Date
EQP 2044C (2/2000)	ATTENTION WELL OWNER: FILE WITH DEED	3/4/2008 09:35
<p>'ABD Water Well and Pump Record' moves to bottom of previous pdf when viewing more than 1 pdf.</p>		<p>ABANDONED WATER WELL AND PUMP RECORD</p>
		Page 1 of 19

DEQ

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Well ID: 41000020891					
Tax No:	Permit No:	County: Kent	Township: Caledonia		
<p>Well ID: 41000020891</p> <p>Elevation:</p> <p>Latitude: 42.47442</p> <p>Longitude: -85.30774</p>	Fraction:	Section:	Town/Range:	WSSN:	Source ID/Well No:
	<p>Distance and Direction from Road Intersection: 186' EAST OF CHURCH ST AND 36' NORTH OF EMMONS</p>				
Well Owner: Tim Mc Gavin					
Well Address:			Owner Address:		
313 EMMONS ST CALEDONIA MI 49316			313 EMMONS ST CALEDONIA MI 49316		

Purpose of screen:

Abandoned well header and footer.

Detailed description of screen:

The title (renamed 'Abandoned Well Plugging Record') needs to be at the top of the page



24. Run Query (Query Writer)

The screenshot shows the 'Run Query' screen within the Department of Environmental Quality system. The interface features a navigation menu on the left with categories like 'Reports', 'Query Writer', and 'Administration'. The main content area is titled 'Run Query' and includes a 'Queries' dropdown menu with a 'Load' button. Below this is a large text area for the 'SQL Query'. At the bottom of the main area are three buttons: 'Run Query', 'Cancel', and 'Help'. The Wellogic logo is positioned in the top right corner of the main content area.

Purpose of screen:

Users view this screen to run pre-set queries.

Detailed description of screen:

- Users chose query from dropdown list and click 'load query'.
- Users are given a clear understanding of any fields they need to enter data to run query.

Note: The Run Query/Query writer screen displays the current ad-hoc query feature available in the System. The new system will be designed with an efficient ad-hoc Query Reporting with enhanced features.



25. Query Manager (Query Writer)

Department of Environmental Quality

Michigan.gov Home | Welllogic Home | DEQ Home

Welllogic

~~Delete Query~~

Query ID	Description	
1	New Wells by County and Date	Delete
2	ReplacementWellsbyCountyDate	Delete
COUNT	User Record Count	Delete
FLOW	Active Flowing Wells	Delete
KZOO	Kalamazoo Count	Delete
TYPEII	Type II Well Search	Delete

Cancel Help

Add functionality to load query, edit query, rename query, save query, run query, and delete query.

Rename 'Delete Query' to 'Query Manager'.

Purpose of screen:

Management of queries by Administrators only

Detailed description of screen:

Allows administrators to create, modify, rename, delete, load and run queries.

List of data fields:

Query ID
Description



26. User Maintenance (Administration)

User Maintenance

Buttons: Add, Cancel, Help

Alphabetical Index: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

User Id	User Name	Group	
*ADMIN	Administrator	Administrators	Delete
A2WELL	Ann Arbor Well Drilling	Driller	Delete
AAAWD	AAA Well Drilling	Driller	Delete
AARDVARK	Aardvark Well Drilling	Driller	Delete
ABONMAR	Abonmarche Consultants	Consult	Delete
ABWD	A&B Well Drilling	Driller	Delete
ACEWELL	Ace Water Well Services	Driller	Delete
ADAMSJ	Adams Well & Pump	Driller	Delete
ADAMSWD	Adam's Well Drilling	Driller	Delete
AFFILIAT	Affiliated Eng	Consult	Delete
AGRIBUS	Agri-Business Const	Consult	Delete
AGRIBUS2	Agri-Business Consulting, Inc.	Consult	Delete
AHAMBLEY	Adeline Hambley	LHD	Delete
AHIIPAKK	Amy Hiipakka	LHD	Delete
AKTPEER	AKT Peerless Environmental Ser	Consult	Delete
ALCOCK	Aqua Tech	Driller	Delete
ALCOCKD	Alcock Drilling, Inc.	Driller	Delete
ALDRICHK	Northern Drilling	Driller	Delete
ALESIE	Ann Leslie	LHD	Delete
ALLEND	Drusilla Allen	LHD	Delete

Annotations:

- Allow hiding of inactive accounts and box to check to show all accounts or just active accounts.
- Ability to sort by headers.

Purpose of screen:
Initial user account screen

- Detailed description of screen:**
- Allows administrators to view all accounts by user ID, user name, and Group
 - Allows administrators to view, add or delete accounts
 - Administrators can sort each column by heading
 - Administrators can hide inactive accounts or view all accounts

List of data fields:
 User ID
 User name
 Group



27. User Maintenance Details (Administration)

User ID	<input type="text"/>	User Name	<input type="text"/>
Password	<input type="text"/>	Confirm Password	<input type="text"/>
Group	<input type="text"/>	Address	<input type="text"/>
E-Mail	<input type="text"/>	Telephone	<input type="text"/>
Fax	<input type="text"/>	Validity Period	<input type="text"/> days
Certification	<input type="text"/>	Business Name	<input type="text"/>
Registration Number	<input type="text"/>	Address	<input type="text"/>
<input type="checkbox"/> Change Password at next Logon		<input type="checkbox"/> Account Disabled	

Remove this 'Address' field.

Capitalize 'next' and rename 'Logon' to "Log-on"

Rename 'Business Name' to 'Company Name'

Add 'Registered Contractor' to this screen.

Purpose of screen:

Detailed account information

Detailed description of screen:

- Administrators creates a new account by completing all necessary fields
- Administrators can add, view or modify account details
- Administrators can assign individual access rights and add county permissions
- Administrators can disable accounts

List of data fields:

User ID
 User Name
 Password
 Confirm Password
 Group
 Email
 Telephone
 Fax
 Validity Period
 Certification
 Company Name
 Registration Number
 Registered Contractor
 Address

Mandatory data entry fields:

User ID
 User Name
 Password
 Confirm Password
 Group
 Validity Period



28. Group Maintenance (Administration)

Group Maintenance

Buttons: Add, Cancel, Help

Group Id	Group Description	
*ADMIN	Administrators	Delete
IOA	StandAlone Users	Delete
CONSULT	Consult	Delete
DRILLER Contractor	Driller	Delete
GEM	GEM	Delete
GUEST	Guest Ac	Delete
HISTDRILL	HDriller	Delete
LHD	LHD	Delete
LOE	LOE	Delete
MSUDATA	MSUDATA	Delete
SOM	StateMI	Delete
STUDENT	Student	Delete
VIEW	View onl	Delete

Allows only these 5 user groups: Admin, Contractor (renamed from driller), Guest, LHD, and SOM.

Purpose of screen:
Initial group maintenance account screen

Detailed description of screen:

- Allows administrators to add, view or delete groups

List of data fields:
Group ID
Group Description



29. Group Maintenance Details (Administration)

Purpose of screen:
Detailed group information

- Detailed description of screen:**
- Administrators creates a new group
 - Administrators can assign individual access rights and add county permissions
 - Administrators can add, view or modify group details

List of data fields:
Group ID
Group Description

Mandatory data entry fields:
Group ID
Group Description



30. Restore Records (Administration)

Well Search

Well ID Import ID

County Township

Town/Range Section From To

French Claim Number Well Use

Deleted By Deletion Date From To

Created By New/Historic

Creation Date From To

Search Cancel Reset Help

Delete import ID, township, town/range, section, french claim number, well user, created by, creation date.

Change 'deleted by' picklist to text field.

Purpose of screen:

Allows administrators to restore records that have been deleted.

Detailed description of screen:

Administrators can choose which ever fields they want to search on to retrieve the records.

List of data fields:

- Well ID
- County
- Deleted By
- Deletion Date From & To
- New/Historic



31. Lookup Maintenance (Administration)

Lookup Maintenance Wellogic

Lookup: Abandonment Method Select

Add Cancel Help

Code	Description	Default	
POUSR	Poured from surface	No	Delete
POURGP	Poured through grout pipe	No	Delete
PUMPGP	Pumped through grout pipe	No	Delete
*OTH	Other	No	Delete

Wellogic: Add Lookup Record - Micros...

Code:

Description:

Default: Yes No

OK Cancel Reset Help

Purpose of screen:

Allows administrators to update dropdown lists.

Detailed description of screen:

- Administrators choose the field from the dropdown list and click 'select'.
- Administrators can create new or modify existing lookups.
- Updated lookups should be updated where ever they exist in the database.

List of data fields:

- Code
- Description
- Default

Mandatory data entry fields:

- Code
- Description
- Default



32. LHD Review (Administration)

- User Maint
- Group Maint
- Data Entry Mode
- Restore Records
- Purge Records
- Import Well Data
- Export Lookups
- Lookup Maint
- Generate Lookup
- Import GPS Data
- **LHD Review**
- Unauthenticate
- Data Transfer

Well Search Wellogic

Well ID County

Driller Registration Number Township

Search Results Rename 'New/Historic' to 'Group' and have Group type listed in column.

Number of Matching Records: 2

Water Well Records [Print All](#)

S.No	Well ID	County	Well Address	Permit No.	Township	Section	Well Depth	Static Water Level	Construction Date	New/Historic	Pe
1	26000005080 (W)	Gladwin	1183 Maxsom Manor	7432	Billings	26	45	10	3/7/2008	New	Nc
2	26000005082 (W)	Gladwin	239 Badger	08071	Tobacco	1	32	18	4/19/2008	New	Nc

Purpose of screen:
 Retrieve driller-entered records out of Wellogic

- Detailed description of screen:**
- Local health departments will be able to choose their search criteria and click search
 - Driller entered records (new records) will appear at the bottom in the search results
 - LHDs print the records and then 'review' them, which removes them from LHD Review.

List of data fields:
 Well ID
 Driller Registration Number
 County
 Township

Mandatory data entry fields:
 Well ID OR Contractor Registration OR County AND Township



33. Reprint Records (LHD)

Well Search

Well ID Import ID

County Township

Town/Range Section From To

French Claim Number Well Use

Authenticated By Authentication Date From To

Created By New/Historic

Creation Date From To

Search Cancel Reset Help

Delete import ID, township, town/range, section, french claim number, well use, created by, new/historic, creation date.

Change 'Authenticated By' picklist to a test field.

Rename 'Unauthenticate' to 'Reprint Records'

Purpose of screen:

Allows administrators and users in LHD group to un-authenticate records that have been removed from LHD Review.

Detailed description of screen:

Administrators can choose which ever fields they want to search on to retrieve the records.

List of data fields:

- Well ID
- County
- Authenticated By
- Authentication Date From and To



34. Upload XML (Data Transfer)

DEQ Department of Environmental Quality Michigan.gov

Michigan.gov Home Wellogic Home DEQ Home Wellogic

Change Password Log Off

- Home
- Water Well
- Geotechnical Well
- ABD Water Well
- ABD Geotech Well
- Reports
- Query Writer
- Administration
- Data Transfer
 - Upload XML

Upload File

Select an XML file to upload:

Browse...

Upload Cancel Help

Purpose of screen:

Used to upload XML well record files into Wellogic

Detailed description of screen:

- Users browse for the file to upload.
- Once the file is found, users click upload.
- The file uploads into Wellogic.
- User receives an email stating the file was uploaded.
- If uploaded successfully, user receives a second email stating its success.
- If upload was unsuccessfully, user receives a second email stating its failure.



35. Forgot Password

There is no screen shot available.
This is new functionality.

Purpose of screen:

For users to request their password sent to them.

Detailed description of screen:

- Users will click on the 'Forgot Password' link on left navigation panel to get to this screen.
- Users will enter their user ID and Email address or choose 1 of 3 secret questions to answer.
- Users will then click 'Submit'.
- A message will appear stating their request has been sent to the DEQ, and their password will be emailed to them within 5 minutes.
- The user's current password will automatically be sent to their email address.

List of data fields:

- User ID
- Email address
- Secret question

Mandatory data entry fields:

- User ID
- Email address or Secret question

36. Forgot User ID

There is no screen shot available.
This is new functionality.

Purpose of screen:

For users to request their User ID sent to them.

Detailed description of screen:

- Users will click on the 'Forgot User ID' link on left navigation panel to get to this screen.
- Users will enter a valid Email address and choose 1 of 3 secret questions to answer.
- Users will then click 'Submit'.
- A message will appear stating their request has been sent to the DEQ, and their user ID will be emailed to them within 5 minutes.
- The user's current user ID will automatically be sent to their email address.

List of data fields:

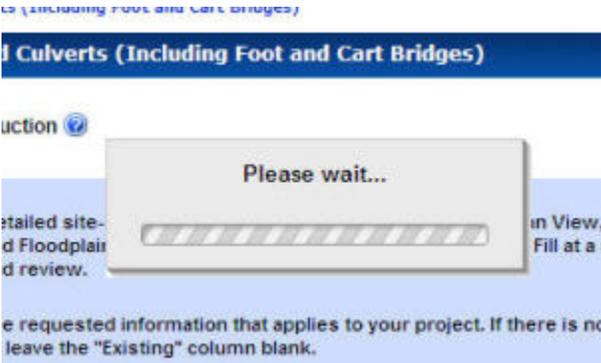
- Email address
- Secret question



Mandatory data entry fields:

- Email address
- Secret question

37. "Please Wait..."



Purpose of screen:

Inform user system is busy

Detailed description of screen:

Show when saving, submitting, refreshing, navigating, generating report, searching, etc.



Appendix B

Wellogic Requirements Documents

(a) Data Entry

Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Comments
AW	Contractor/Abandonment	Abandonment	Casing Status After Plugging	AbBlgrade	varchar(6)	choose from dropdown	must choose value from dropdown	
AW	Contractor/Abandonment	Abandonment	Equipment Removed	EquipRemoved	varchar(6)	choose from multi-select list	must choose value from multi-select list	
AW	Contractor/Abandonment	Abandonment	Equipment Removed Remarks	CompRemovedR	varchar(50)	any integers & characters		use when Equipment Removed = Other
AW	Contractor/Abandonment	Abandonment	Pumping Equipment Removed	PumpComp	bit	0 or 1	characters	
AW	Contractor/Abandonment	Abandonment	Reason for Abandoning Well	RsnABNWell	varchar(6)	choose from dropdown	must choose value from dropdown	
AW	Contractor/Abandonment	Abandonment	Reason for Abandoning Well Remarks	RsnABNWellR	varchar(50)	any integers & characters		
AW	Contractor/Abandonment	Abandonment	Measured Well Depth	MsdWellDepth	numeric(6,2)	0000.01 to 9999.99	characters	
AW	Contractor/Abandonment	Abandonment	Abandonment Method	ABNMtd	varchar(6)	choose from dropdown	must choose value from dropdown	
AW	Contractor/Abandonment	Abandonment	Casing Status After Plugging Depth	CasingStatus	numeric(5,2)	000.01 to 999.99	characters	
AW	Contractor/Abandonment	Abandonment	Link to Original Drilling Record	<New>	char(11)	11 digit Well ID	characters	string equivalent of 11 integer, left padded
AW	Contractor/Abandonment	Abandonment	Well Diameter	DiaCasing1	numeric(6,2)	0000.01 to 9999.99	characters	
AW	Contractor/Abandonment	Contractor	Address	ContAddress	varchar(70)	any integers & characters		



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Comments
AW	Contractor/Abandonment	Contractor	Business Name	ContName	varchar(30)	any integers & characters		
AW	Contractor/Abandonment	Contractor	Certification	ContCert	varchar(6)	choose from dropdown	must choose value from dropdown	
AW	Contractor/Abandonment	Contractor	Registration Number	ContRegNo	numeric(4,0)	0 to 9999	characters	
AW	Contractor/Abandonment	Contractor	Registered Contractor	RegRep	varchar(30)	any integers & characters		
AW	Contractor/Abandonment	Remarks	Remarks	WellR	varchar(255)	any integers & characters		
AW	Plugging	Plugging	Comments	PluggingR	varchar(255)	any integers & characters		
AW	Plugging	Plugging	From	DepthFrom	numeric(6,2)	0000.01 to 9999.99	characters	
AW	Plugging	Plugging	Plugging Material	MaterialCode	varchar(6)	choose from dropdown	must choose value from dropdown	
AW	Plugging	Plugging	Plugging Material Remarks	MaterialR	varchar(30)	any integers & characters		
AW	Plugging	Plugging	Quantity	Quantity	numeric(6,2)	0000.01 to 9999.99	characters	
AW	Plugging	Plugging	To	DepthTo	numeric(6,2)	0000.01 to 9999.99	characters	
AW	Plugging	Plugging	Unit	Unit	varchar(6)	choose from dropdown	must choose value from dropdown	
AW	Well Details	(bottom section)	Date Drilled	DateWellConst	datetime	date/time	future date	
AW	Well Details	(bottom section)	Date Plugged	PluggingDate	datetime	date/time	future date	
AW	Well Details	(bottom section)	Well Intake	WellStatus	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Casing & Grouting	Borehole	Borehole Diameter1	DiaBoreHole1	numeric(6,2)	0000.01 to 9999.99	characters	1 of 3 possible entries



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Comments
WW	Casing & Grouting	Borehole	Borehole Diameter2	DiaBoreHole2	numeric(6,2)	0000.01 to 9999.99	characters	2 of 3 possible entries
WW	Casing & Grouting	Borehole	Borehole Diameter3	DiaBoreHole3	numeric(6,2)	0000.01 to 9999.99	characters	3 of 3 possible entries
WW	Casing & Grouting	Borehole	to [xx] ft. depth1	DepthBoreHole1	numeric(6,2)	0000.01 to 9999.99	characters	1 of 3 possible entries
WW	Casing & Grouting	Borehole	to [xx] ft. depth2	DepthBoreHole2	numeric(6,2)	0000.01 to 9999.99	characters	2 of 3 possible entries
WW	Casing & Grouting	Borehole	to [xx] ft. depth3	DepthBoreHole3	numeric(6,2)	0000.01 to 9999.99	characters	3 of 3 possible entries
WW	Casing & Grouting	Casing	Casing Diameter1	DiaCasing1	numeric(6,2)	0000.01 to 9999.99	characters	1 of 3 possible entries
WW	Casing & Grouting	Casing	Casing Diameter2	DiaCasing2	numeric(6,2)	0000.01 to 9999.99	characters	2 of 3 possible entries
WW	Casing & Grouting	Casing	Casing Diameter3	DiaCasing3	numeric(6,2)	0000.01 to 9999.99	characters	3 of 3 possible entries
WW	Casing & Grouting	Casing	Casing Fittings	CasingFitting	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Casing & Grouting	Casing	Casing Fittings Remarks	CasingFittingR	varchar(30)	any integers & characters		use when Casing Fittings = Other
WW	Casing & Grouting	Casing	Casing Joint	CasingJt	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Casing & Grouting	Casing	Casing Type	CasingType	varchar(6)	choose from dropdown	must choose value from dropdown	



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Comments
WW	Casing & Grouting	Casing	Casing Type Remarks	CasingTypeR	varchar(30)	any integers & characters		use when Casing Type = Other
WW	Casing & Grouting	Casing	Height [xx] ft. Above Grade	CasingHt	numeric(4,2)	00.01 to 99.99	characters	
WW	Casing & Grouting	Casing	SDR1	WeightCasing1	numeric(6,2)	0000.01 to 9999.99	characters	Standard Dimension Ratio - thickness of the pipe
WW	Casing & Grouting	Casing	SDR2	WeightCasing2	numeric(6,2)	0000.01 to 9999.99	characters	Standard Dimension Ratio - thickness of the pipe
WW	Casing & Grouting	Casing	SDR3	WeightCasing3	numeric(6,2)	0000.01 to 9999.99	characters	Standard Dimension Ratio - thickness of the pipe
WW	Casing & Grouting	Casing	to [xx] ft. depth1	DepthCasing1	numeric(6,2)	0000.01 to 9999.99	characters	1 of 3 possible entries
WW	Casing & Grouting	Casing	to [xx] ft. depth2	DepthCasing2	numeric(6,2)	0000.01 to 9999.99	characters	2 of 3 possible entries
WW	Casing & Grouting	Casing	to [xx] ft. depth3	DepthCasing3	numeric(6,2)	0000.01 to 9999.99	characters	3 of 3 possible entries
WW	Casing & Grouting	Grouting	Additives Remarks1	AdditivesR	varchar(30)	any integers & characters		Use when Additives = Other
WW	Casing & Grouting	Grouting	Additives Remarks2	<New>	varchar(30)	any integers & characters		Use when Additives = Other
WW	Casing & Grouting	Grouting	Additives Remarks3	<New>	varchar(30)	any integers & characters		Use when Additives = Other



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Comments
WW	Casing & Grouting	Grouting	Additives1	Additives	varchar(6)	choose from dropdown	must choose value from dropdown	Use when WellGrouted = Yes
WW	Casing & Grouting	Grouting	Additives2	<New>	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Casing & Grouting	Grouting	Additives3	<New>	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Casing & Grouting	Grouting	From [xx] ft1	WellGroutedFrom1	numeric(6,2)	0000.01 to 9999.99	characters	1st of 3 possible entries
WW	Casing & Grouting	Grouting	From [xx] ft2	WellGroutedFrom2	numeric(6,2)	0000.01 to 9999.99	characters	2nd of 3 possible entries
WW	Casing & Grouting	Grouting	From [xx] ft3	WellGroutedFrom3	numeric(6,2)	0000.01 to 9999.99	characters	3rd of 3 possible entries
WW	Casing & Grouting	Grouting	Grouting Material1	GroutingMat1	varchar(6)	choose from dropdown	must choose value from dropdown	Use when WellGrouted = Yes; 1st of 3 possible entries for grout material
WW	Casing & Grouting	Grouting	Grouting Material2	GroutingMat2	varchar(6)	choose from dropdown	must choose value from dropdown	Use when WellGrouted = Yes; 2nd of 3 possible entries for grout material
WW	Casing & Grouting	Grouting	Grouting Material3	GroutingMat3	varchar(6)	choose from dropdown	must choose value from dropdown	Use when WellGrouted = Yes; 3rd of 3 possible entries for grout material
WW	Casing & Grouting	Grouting	Grouting Materials 1 Remarks	GroutingMatR1	varchar(30)	any integers & characters		remarks for GroutingMat1
WW	Casing & Grouting	Grouting	Grouting Materials 2 Remarks	GroutingMatR2	varchar(30)	any integers & characters		remarks for GroutingMat2
WW	Casing & Grouting	Grouting	Grouting Materials 3 Remarks	GroutingMatR3	varchar(30)	any integers & characters		remarks for GroutingMat3
WW	Casing & Grouting	Grouting	Grouting Method	GroutingMtd	varchar(6)	choose from dropdown	must choose value from dropdown	



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Comments
WW	Casing & Grouting	Grouting	Grouting Method Remarks	GroutingMtdR	varchar(30)	any integers & characters		Use when GroutingMtd = Yes
WW	Casing & Grouting	Grouting	No. of Bags1	NoOfBags	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Casing & Grouting	Grouting	No. of Bags2	<New>	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Casing & Grouting	Grouting	No. of Bags3	<New>	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Casing & Grouting	Grouting	to [xx] ft. depth1	WellGroutedTo1	numeric(6,2)	0000.01 to 9999.99	characters	match with WellGroutedFrom1
WW	Casing & Grouting	Grouting	to [xx] ft. depth2	WellGroutedTo2	numeric(6,2)	0000.01 to 9999.99	characters	match with WellGroutedFrom2
WW	Casing & Grouting	Grouting	to [xx] ft. depth3	WellGroutedTo3	numeric(6,2)	0000.01 to 9999.99	characters	match with WellGroutedFrom3
WW	Casing & Grouting	Grouting	Well Grouted	WellGrouted	bit	0 or 1	characters	Yes/No radio button
WW	Casing & Grouting	Casing	Casing Joint Remarks	CasingJtR	varchar(30)	any integers & characters		use when Casing Joint = Other
WW	Completion/Pump	Nearest Source of Possible Contamination	Direction1	ContDirSrc1	varchar(6)	choose from dropdown	must choose value from dropdown	use with ContTypeSrc1; 16 cardinal compas points
WW	Completion/Pump	Nearest Source of Possible Contamination	Direction2	ContDirSrc2	varchar(6)	choose from dropdown	must choose value from dropdown	use with ContTypeSrc2; 16 cardinal compas points
WW	Completion/Pump	Nearest Source of Possible Contamination	Distance1	ContDistSrc1	numeric(4,0)	0 to 9999	characters	use with ContTypeSrc1
WW	Completion/Pump	Nearest Source of Possible Contamination	Distance2	ContDistSrc2	numeric(4,0)	0 to 9999	characters	use with ContTypeSrc2
WW	Completion/Pump	Nearest Source of Possible Contamination	Type1	ContTypeSrc1	varchar(6)	choose from dropdown	must choose value from dropdown	16+ choices



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Comments
WW	Completion/Pump	Nearest Source of Possible Contamination	Type Remarks1	ContTypeSrcR1	varchar(30)	any integers & characters		use when ContTypeSrc1 = Other
WW	Completion/Pump	Nearest Source of Possible Contamination	Type2	ContTypeSrc2	varchar(6)	choose from dropdown	must choose value from dropdown	16+ choices
WW	Completion/Pump	Nearest Source of Possible Contamination	Type Remarks2	ContTypeSrcR2	varchar(30)	any integers & characters		use when ContTypeSrc2 = Other
WW	Completion/Pump	Pressure Tank	Buried	PressTankBuried	bit	0 or 1	characters	
WW	Completion/Pump	Pressure Tank	Manufacturer Remarks	PressTankManuR	varchar(30)	any integers & characters		
WW	Completion/Pump	Pressure Tank	Model Number	PressTankModelNo	varchar(20)	any integers & characters		
WW	Completion/Pump	Pressure Tank	Pressure Relief Valve Installed	PressVallnst	bit	0 or 1	characters	
WW	Completion/Pump	Pressure Tank	Pressure Tank Installed	PressTankInst	bit	0 or 1	characters	
WW	Completion/Pump	Pressure Tank	Pressure Tank Type	PressTankType	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Completion/Pump	Pressure Tank	Pressure Tank Type Remarks	PressTankTypeR	varchar(30)	any integers & characters		
WW	Completion/Pump	Pressure Tank	Total Tank Capacity	PressTankCapacity	numeric(5,1)	0000.1 to 9999.9	characters	
WW	Completion/Pump	Pressure Tank	Manufacturer	PressTankManu	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Completion/Pump	Pump	Diameter of Drop Pipe	DiaDropPipe	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Completion/Pump	Pump	Drawdown Seal Used	DrawnDownSeal	bit	0 or 1	characters	
WW	Completion/Pump	Pump	HP	PumpHP	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Completion/Pump	Pump	Volts			0000.01 to	characters	



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Comments
						9999.99		
WW	Completion/Pump	Pump	Length of Drop Pipe	LenDropPipe	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Completion/Pump	Pump	Link to Drilling Record	LinkWellID	char(11)	string equivalent of numeric	characters	Allows user to enter the WellID of the water well record onto the Pump Installation only Record.
WW	Completion/Pump	Pump	Manufacturer	PumpManu	varchar(6)	choose from dropdown	must choose value from dropdown	use when PumpInstalled = Yes;
WW	Completion/Pump	Pump	Manufacturer Remarks	PumpManuR	varchar(30)	any integers & characters		use when PumpInstalled = Yes and PumpManu = Other
WW	Completion/Pump	Pump	Model Number	PumpModelNo	varchar(20)	any integers & characters		expand to varchar(20)
WW	Completion/Pump	Pump	Pump Capacity	PumpCapacity	numeric(4,0)	0000 to 9999	characters	
WW	Completion/Pump	Pump	Pump Installation Date	PumpInstDate	datetime	date/time	future date	use when PumpInstalled = Yes;
WW	Completion/Pump	Pump	Pump Installation Only	PumpInstOnly	bit	0 or 1	characters	use when PumpInstalled = Yes; Yes/No radio button
WW	Completion/Pump	Pump	Pump Installed	PumpInst	bit	0 or 1	characters	
WW	Completion/Pump	Pump	Pump Type	PumpType	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Completion/Pump	Pump	Pump Type Remarks	PumpTypeR	varchar(30)	any integers & characters		use when PumpType = Other
WW	Completion/Pump	Wellhead Completion	Wellhead Completion	WellHeadComp	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Completion/Pump	Wellhead Completion	Wellhead Completion Remarks	CompletionR	varchar(30)	any integers & characters		use when Wellhead Completion = Other
WW	Contractor/Abandonment	Abandonment	Abandoned Well Plugged	ABNWellPlugged	bit	0 or 1	characters	



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Comments
WW	Contractor/Abandonment	Abandonment	Well Diameter	CasingDia	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Contractor/Abandonment	Abandonment	Casing Removed	CasingRmvd	bit	0 or 1	characters	
WW	Contractor/Abandonment	Abandonment	Latitude	<New>	numeric(13,10)	000.0000000001 to 999.9999999999	characters	
WW	Contractor/Abandonment	Abandonment	Link to Original Drilling Record	<New>	char(11)	string equivalent of numeric	characters	string equivalent of integer
WW	Contractor/Abandonment	Abandonment	Longitude	<New>	numeric(13,10)	000.0000000001 to 999.9999999999	characters	
WW	Contractor/Abandonment	Abandonment	No. of Bags	Bags	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Contractor/Abandonment	Abandonment	Plugging Material	PlugMat	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Contractor/Abandonment	Abandonment	Plugging Material Remarks	PlugMatR	varchar(255)	any integers & characters		
WW	Contractor/Abandonment	Abandonment	Reason for not Plugging Well	RsnNotPluggWell	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Contractor/Abandonment	Abandonment	Reason for not Plugging Well Remarks	RsnNotPluggWellR	varchar(50)	any integers & characters		
WW	Contractor/Abandonment	Abandonment	Well Depth	WellDepth	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Contractor/Abandonment	Contractor	Address	ContAddress	varchar(70)	any integers & characters		
WW	Contractor/Abandonment	Contractor	Business Name	ContName	varchar(30)	any integers & characters		
WW	Contractor/Abandonment	Contractor	Certification	ContCert	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Contractor/Abandonment	Contractor	Employment	DrillMachOpr	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Contractor/Abandonment	Contractor	Registration Number	ContRegNo	numeric(4,0)	0 to 9999	characters	



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Comments
WW	Contractor/Abandonment	Contractor	Registered Contractor	RegRep	varchar(30)	any integers & characters		
WW	Contractor/Abandonment	Drilling Machine Operator	Name	DrillMachOprName	varchar(30)	any integers & characters		
WW	Contractor/Abandonment	Pump Installer	Pump Installer Different from DMO	PumpInstallOpr	bit	0 or 1	characters	
WW	Contractor/Abandonment	Pump Installer	Pump Installer Name	PumpInstallOprName	varchar(30)	any integers & characters		
WW	Contractor/Abandonment	Remarks	Remarks	WellR	varchar(255)	any integers & characters		
WW	Geology	Geology	Comments	GeologyR	text	any integers & characters		
WW	Geology	Geology	Depth to Bottom of Stratum	Depth	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Geology	Geology	Description/Formation	Desc4	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Geology	Geology	Description/Secondary	Desc3	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Geology	Geology	[calculated thickness]	Thickness	numeric(6,2)	0000.01 to 9999.99	characters	application calculated value from depth 2 - depth 1
WW	Geology	Geology	Primary Color	Desc1	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Geology	Geology	Primary Material	Desc2	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Screen & Water Level	Screen	to [xx] ft3	<New>	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Screen & Water Level	Screen	to [xx] ft2	<New>	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Screen & Water Level	Screen	to [xx] ft1	ScrSetTo	numeric(6,2)	0000.01 to 9999.99	characters	use when ScrInst = Yes
WW	Screen & Water Level	Screen	From [xx] ft3	<New>	numeric(6,2)	0000.01 to 9999.99	characters	



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Comments
WW	Screen & Water Level	Screen	From [xx] ft2	<New>	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Screen & Water Level	Screen	From [xx] ft1	ScrSetFrom	numeric(6,2)	0000.01 to 9999.99	characters	use when ScrInst = Yes
WW	Screen & Water Level	Screen	Blank	LenScrBlank	numeric(4,2)	00.01 to 99.99	characters	ft.
WW	Screen & Water Level	Screen	Filter Packed	FilterPacked	bit	0 or 1	characters	Yes/No; use when ScrInst = No
WW	Screen & Water Level	Screen	Fittings Remarks	ScrFittingsR	varchar(30)	any integers & characters		use when Fittings = Other
WW	Screen & Water Level	Screen	Screen Length1	ScrLength	numeric(4,2)	00.01 to 99.99	characters	use when ScrInst = Yes
WW	Screen & Water Level	Screen	Screen Length2	<New>	numeric(4,2)	00.01 to 99.99	characters	
WW	Screen & Water Level	Screen	Screen Length3	<New>	numeric(4,2)	00.01 to 99.99	characters	
WW	Screen & Water Level	Screen	paired with LenScrBlank	BlankScr	varchar(6)	choose from dropdown	must choose value from dropdown	Above, Below, Between
WW	Screen & Water Level	Screen	Screen Diameter	ScrDiameter	numeric(6,2)	0000.01 to 9999.99	characters	use when ScrInst = Yes
WW	Screen & Water Level	Screen	Screen Fittings	ScreenFitting	varchar(6)	choose from dropdown	must choose value from dropdown	use when ScrInst = Yes
WW	Screen & Water Level	Screen	Screen Installation	ScrDiaMeas	varchar(6)	choose from dropdown	must choose value from dropdown	use when ScrInst = Yes
WW	Screen & Water Level	Screen	Screen Installed	ScrInst	bit	0 or 1	characters	Yes/No radio button
WW	Screen & Water Level	Screen	Screen Material	ScrMaterialType	varchar(50)	choose from dropdown	must choose value from dropdown	use when ScrInst = Yes
WW	Screen & Water Level	Screen	Screen Material Remarks	ScrMaterialTypeR	varchar(50)	any integers & characters		use when Screen Material = Other
WW	Screen & Water Level	Screen	Slot1	ScrSlot	numeric(6,2)	0000.01 to 9999.99	characters	use when ScrInst = Yes
WW	Screen & Water Level	Screen	Slot2	<New>	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Screen & Water Level	Screen	Slot3	<New>	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Screen & Water Level	Screen	Well Intake	WellIntake	varchar(6)	choose from dropdown	must choose value from dropdown	use when ScrInst = No
WW	Screen & Water Level	Static Water Level	G.P.M (Unrestricted Flow)	<New>	numeric(4,0)	0000 to 9999	characters	



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Comments
WW	Screen & Water Level	Static Water Level	Flowing	Flowing	varchar(6)	0 or 1	characters	
WW	Screen & Water Level	Static Water Level	Static Water Level	SWL	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Screen & Water Level	Well Yield Test	GPM1	PumpingCapacity1	numeric(4,0)	0000 to 9999	characters	1 of 3 possible entries
WW	Screen & Water Level	Well Yield Test	GPM2	PumpingCapacity2	numeric(4,0)	0000 to 9999	characters	2 of 3 possible entries
WW	Screen & Water Level	Well Yield Test	GPM3	PumpingCapacity3	numeric(4,0)	0000 to 9999	characters	3 of 3 possible entries
WW	Screen & Water Level	Well Yield Test	hrs.1	PumpingTime1	numeric(5,2)	000.01 to 999.99	characters	1 of 3 possible entries
WW	Screen & Water Level	Well Yield Test	hrs.2	PumpingTime2	numeric(5,2)	000.01 to 999.99	characters	2 of 3 possible entries
WW	Screen & Water Level	Well Yield Test	hrs.3	PumpingTime3	numeric(5,2)	000.01 to 999.99	characters	3 of 3 possible entries
WW	Screen & Water Level	Well Yield Test	Pumping Level1	DepthWhilePump1	numeric(6,2)	0000.01 to 9999.99	characters	1 of 3 possible entries
WW	Screen & Water Level	Well Yield Test	Pumping Level2	DepthWhilePump2	numeric(6,2)	0000.01 to 9999.99	characters	2 of 3 possible entries
WW	Screen & Water Level	Well Yield Test	Pumping Level3	DepthWhilePump3	numeric(6,2)	0000.01 to 9999.99	characters	3 of 3 possible entries
WW	Screen & Water Level	Well Yield Test	Yield Test Method	YieldTestMtd	varchar(6)	choose from dropdown	must choose value from dropdown	5 choices
WW	Screen & Water Level	Well Yield Test	Yield Test Method Remarks	YieldTestMtdR	varchar(30)	any integers & characters		use when YieldTestMtd = Other
WW	Well Details	(bottom section)	Date Well Completed	DateWellConst	datetime	date format mm/dd/yyyy	future date	calendar tool
WW	Well Details	(bottom section)	Drilling Method	DrillingMtd	varchar(6)	choose from dropdown	must choose value from dropdown	
WW	Well Details	(bottom section)	Drilling Method Remarks	DrillingMtdR	varchar(30)	any integers & characters		use when Drilling Method = Other
WW	Well Details	(bottom section)	Status	WaterWellStatus	varchar(30)	choose from dropdown	must choose value from dropdown	
WW	Well Details	(bottom section)	Status Remarks	WaterWellStatusR	varchar(255)	any integers & characters		



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Comments
WW	Well Details	(bottom section)	Well Depth	WellDepth	numeric(6,2)	0000.01 to 9999.99	characters	
WW	Well Details	(bottom section)	Well Type	WellType	varchar(6)	choose from dropdown	must choose value from dropdown	
WW/AW	Latitude & Longitude	Advanced	Elevation	Elevation	numeric(7,2)	00000.01 to 99999.99	characters	
WW/AW	Latitude & Longitude	Advanced	Elevation Accuracy	VertAccVal	numeric(5,2)	000.01 to 999.99	characters	
WW/AW	Latitude & Longitude	Advanced	Elevation Datum	VertDatum	varchar(6)	choose from dropdown	must choose value from dropdown	
WW/AW	Latitude & Longitude	Advanced	Elevation Datum Remarks	VertDatumR	varchar(30)	any integers & characters		
WW/AW	Latitude & Longitude	Advanced	Elevation Method of Collection	VertMtdOfCollection	varchar(6)	choose from dropdown	must choose value from dropdown	
WW/AW	Latitude & Longitude	Advanced	Elevation Method of Collection Remarks	VertMtdOfCollectionR	varchar(30)	any integers & characters		
WW/AW	Latitude & Longitude	Advanced	Horizontal Datum	HorizontalDatum	varchar(6)	choose from dropdown	must choose value from dropdown	
WW/AW	Latitude & Longitude	Advanced	Horizontal Datum Remarks	HorizontalDatumR	varchar(30)	any integers & characters		
WW/AW	Latitude & Longitude	Advanced	Map Scale	SourceScale	varchar(6)	choose from dropdown	must choose value from dropdown	
WW/AW	Latitude & Longitude	Advanced	Map Scale Remarks	SourceScaleR	varchar(30)	any integers & characters		
WW/AW	Latitude & Longitude	Auto-Fill In	Description Category	DescCategory	varchar(6)	well	user input not allowed, auto filled	automatically populate DB with Well
WW/AW	Latitude & Longitude	Auto-Fill In	Point Line Area	PointLineArea	varchar(6)	point	user input not allowed, auto filled	automatically populate DB with Point
WW/AW	Latitude & Longitude	Basic	Accuracy Value	AccValue	numeric(6,2)	0000.01 to 9999.99	characters	
WW/AW	Latitude & Longitude	Basic	Accuracy Value Unit	AccValueUnit	varchar(6)	choose from dropdown	must choose value from dropdown	
WW/AW	Latitude & Longitude	Basic	Date of Collection	CollectionDate	datetime	mm/dd/yyyy	no future date allowed, must enter date in mm/dd/yyyy	
WW/AW	Latitude & Longitude	Basic	Description Comments	DescComments	varchar(100)	any integers & characters		



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Comments
WW/AW	Latitude & Longitude	Basic	Latitude	Latitude	numeric(13,10)	000.0000000001 to 999.9999999999	characters	
WW/AW	Latitude & Longitude	Basic	Longitude	Longitude	numeric(13,10)	-000.0000000001 to -999.9999999999	characters	
WW/AW	Latitude & Longitude	Basic	Method of Collection	MtdOfCollection	varchar(6)	choose from dropdown	must choose value from dropdown	
WW/AW	Latitude & Longitude	Basic	Source	Source	varchar(6)	choose from dropdown	must choose value from dropdown	
WW/AW	Latitude & Longitude	Basic	Source Remarks	SourceR	varchar(30)	any integers & characters		
WW/AW	Well Details	(bottom section)	Source ID/Well No.	WellName	varchar(30)	any integers & characters		
WW/AW	Well Details	(bottom section)	Well Use	WellUse	varchar(6)	choose from dropdown	must choose value from dropdown	9 choices
WW/AW	Well Details	(bottom section)	Well Use Remarks	WellUser	varchar(30)	any integers & characters		use when WellUse = Other
WW/AW	Well Details	(bottom section)	WSSN	WSSN	numeric(7,0)	0000010 to 2999999 or 00010 to 99999	characters	
WW/AW	Well Details	(top section)	County	County	char(2)	choose from dropdown	must choose value from dropdown	internal to database; dropdown index number
WW/AW	Well Details	(top section)	Permit No	PermitNo	varchar(20)	any integers & characters		created by LHD
WW/AW	Well Details	(top section)	Tax No	TaxNo	varchar(30)	any integers & characters		parcel tax number created by twp/cnty
WW/AW	Well Details	(top section)	Town/Range	TownRange	char(4)	choose from dropdown	must choose value from dropdown	



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Comments
WW/AW	Well Details	(top section)	Township	Township	char(4)	choose from dropdown	must choose value from dropdown	unique township number
WW/AW	Well Details	(top section)	Section	SectionNo	numeric(2,0)	1 to 36	characters	valid section number
WW/AW	Well Details	Well Address	City	WellCity	varchar(30)	any integers & characters		
WW/AW	Well Details	Well Address	Distance and direction from road intersection	DistDirRoad	varchar(150)	any integers & characters		
WW/AW	Well Details	Well Address	State	WellState	char(2)	MI	any other state code	
WW/AW	Well Details	Well Address	Street Address	WellAddress	varchar(50)	any integers & characters		
WW/AW	Well Details	Well Address	Zip	WellZip	numeric(5)	integers only	characters	
WW/AW	Well Details	Well Address	Zip+4	WellZip4	numeric(4)	integers only	characters	
WW/AW	Well Details	Well Owner Address	Address	OwnAddress	varchar(50)	any integers & characters		
WW/AW	Well Details	Well Owner Address	City	OwnCity	varchar(30)	any integers & characters		
WW/AW	Well Details	Well Owner Address	Owner address same as well location	OwnSameAsWell	bit	0 or 1	characters, any integers other than 0 or 1	
WW/AW	Well Details	Well Owner Address	Owner of Well	OwnName	varchar(30)	any integers & characters		
WW/AW	Well Details	Well Owner Address	State	OwnState	char(2)	characters only	integers	
WW/AW	Well Details	Well Owner Address	Zip	OwnZip	numeric(5)	integers only	characters	
WW/AW	Well Details	Well Owner Address	Zip+4	OwnZip4	numeric(4)	integers only	characters	

(b) Admin



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Default Value	Comments
Admin	Group Maintenance		Group Description	GroupDesc	varchar(30)	any integers & characters			
Admin	Group Maintenance		Group ID	GroupID	varchar(8)	any integers & characters			
Admin	GroupRights, UserRights, SysFunction		Function ID	FunctionID	varchar(8)	any integers & characters			
Admin	Groups/Users DB		N/A	ValidationMode	char(1)	F, B, H			not quite sure what this field means. Most records are NULL. Perhaps it relates to the NEW and Historic checkboxes?
Admin	Lookup Maintenance		Code	LookupCode	varchar(6)	any integers & characters			
Admin	Lookup Maintenance		Description	LookupDesc	varchar(50)	any integers & characters			
Admin	Lookup Maintenance		N/A	Mask	varchar(5)	(a,b)			
Admin	Lookup Maintenance		N/A	Maintainable	bit	0 or 1	characters	0	Indicates whether a lookup is maintainable.
Admin	Lookup Maintenance		N/A	TableName	varchar(30)	any integers & characters			
Admin	N/A		N/A	ShutdownTime	datetime				
Admin	N/A		N/A	SystemShutdown	bit	0 or 1	characters	0	
Admin	SysFunctions		Function Description	FunctionDesc	varchar(30)	any integers & characters			
Admin	SysFunctions		N/A	Message	varchar(1000)	any integers & characters			never used
Admin	User Maintenance		Account Disabled	AcctDisabled	bit	0 or 1	characters	0	
Admin	User Maintenance		Address	Address	varchar(200)	any integers & characters			street number and name
Admin	User Maintenance		Company Name	BusinessName	varchar(30)	any integers & characters			
Admin	User Maintenance		Certification	ContType	varchar(6)	choose from dropdown			
Admin	User Maintenance		Change Password at Next Logon	ChPwdAtNextLogon	bit	0 or 1	characters	0	



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Default Value	Comments
Admin	User Maintenance		Email	EMail	varchar(40)	any integers & characters			
Admin	User Maintenance		Fax	FaxNo	varchar(15)	any integers & characters			
Admin	User Maintenance		Password	Pwd	varchar(8)	expand to meet security standards?			
Admin	User Maintenance		Registration Number	RegNo	numeric(5,0)	00000 to 99999	characters		
Admin	User Maintenance		Telephone	TelNo	varchar(15)	any integers & characters			
Admin	User Maintenance		User ID	UserID	varchar(8)	any integers & characters			
Admin	User Maintenance		User Name	UserName	varchar(30)				
Admin	User Maintenance		Validity Period	PwdValidityPeriod	numeric(3,0)	000 to 999	characters		
Admin	User Maintenance		Registered Contractor	<New>	varchar(30)	any integers & characters			
Admin	User Maintenance		Confirm Password						
Admin	User Maintenance		Group						
Query Writer	Create Query		SQL Text	QueryText	varchar(2000)				
Query Writer	Create Query - Save		Query Name	Description	varchar(30)	any integers & characters			
User	Account Request	Account Request	Address						
User	Account Request	Account Request	Certification						
User	Account Request	Account Request	Company Name						
User	Account Request	Account Request	Email						
User	Account Request	Account Request	Fax						
User	Account Request	Account	Group						



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Default Value	Comments
		Request							
User	Account Request	Account Request	Registration Number						
User	Account Request	Account Request	Telephone						
User	Account Request	Account Request	User Name						

(c) DB Only

Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Default Value	Comments
DB	audit tables		n/a	wellid	varchar(11)	11 integers	characters		audit tables, wellogic unique ID
DB	DB Only		Well ID	WellID	char(11)	11 integers	characters		data tables, wellogic unique ID
DB	DB Only - ANLookups		N/A	Code	varchar(6)				
DB	DB Only - ANLookups		N/A	Decode	varchar(50)				
DB	DB Only - ANLookups, Nlookups, PluggingMaterials			Dflt	bit	0 or 1	characters		
DB	DB Only - Counties		N/A	Peninsula	char(1)	1,2 or 3	characters		not sure what this field is used for
DB	DB Only - Counties table		N/A	CountyDesc	varchar(30)				choose from dropdown
DB	DB Only - Geology Details		N/A	SeqNo	numeric(3,0)	000 to 999	characters		assigned automatically by application
DB	DB Only - GPS		N/A	LastUpdateDate	datetime				
DB	DB Only - GPS		N/A	Imported	bit	0 or 1	characters	0	
DB	DB Only - GPS		N/A	LastUpdatedBy	varchar(8)	any integers & characters			populated with userid that is updating record.
DB	DB Only - NLookups		N/A	Code	varchar(7)				
DB	DB Only - NLookups		N/A	Decode	nvarchar(30)				
DB	DB Only - Plugging Details		N/A	SeqNo	numeric(4,0)	0000 to 9999	characters		assigned automatically by application
DB	DB Only - Plugging Details		N/A	Unit	varchar(6)				assigned automatically based on material selected.
DB	DB Only - Serialnos		N/A	SequenceNo	numeric(9,0)	000000000 to 999999999	characters		import field?
DB	DB Only -		Town/Range	TownRangeDesc	varchar(30)	xx[N,S] xx[E,W]			



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Default Value	Comments
	TownRange								
DB	DB Only - Townships		N/A	FrenchClaim	bit	0 or 1	characters	0	
DB	DB Only - Townships			TownshipDesc	varchar(30)	MI township name			township name
DB	DB Only - user table		N/A	PwdSetDate	datetime	date/time			
DB	DB Only - welldetails		Import ID	ImportID	char(11)	any integers & characters			created through Migration or XML upload
DB	DB Only - welldetails		N/A	CreatedBy	varchar(8)				
DB	DB Only - welldetails		N/A	CreationDate	datetime				
DB	DB Only - welldetails		N/A	Deleted	bit	0 or 1	characters	0	
DB	DB Only - welldetails		N/A	DeletedBy	varchar(8)				
DB	DB Only - welldetails		N/A	DeletionDate	datetime				
DB	DB Only - welldetails		N/A	Historical	bit	0 or 1	characters	0	Designated based on Data Entry Mode: 1 = Historic 0 = New
DB	DB Only - welldetails		N/A	LastUpdateDate	datetime	date/time	no future date allowed		established when record updated
DB	DB Only - welldetails		N/A	LastUpdatedBy	varchar(8)	any integers & characters			populated with userid that is updating record.
DB	DB Only - welldetails		N/A	LogCreated	bit	0 or 1	characters	0	well log archive
DB	DB Only - welldetails		N/A	Warnings	numeric(2,0)	00 to 99	characters		Counts warning messages encountered when saving record.
DB	DB Only - welldetails		Remarks	DeletionR	varchar(255)	any integers & characters			Entered by user when deleting a record.
DB	DB Only - welldetails		N/A	VerificationDate	datetime	datetime			
DB	DB Only - welldetails		N/A	Verified	bit	0 or 1	characters	0	
DB	DB Only - welldetails		N/A	VerifiedBy	varchar(8)				
DB	DB Only - welldetails		N/A	WellCategory	varchar(2)	W or AW			assigned based on what type of well record is being entered.
DB	DB Only - welldetails		Well Status	WellStatus	varchar(6)	Drift, Rock, *U, NULL			
DB	DB Only - welldetails		Well Status Remarks	WellStatusR	varchar(30)	any integers & characters			
DB	DB Only - XML		N/A	DateCreated	datetime				
DB	DB Only - XML		N/A	DateEMailSent	datetime				
DB	DB Only - XML		N/A	DateProcessed	datetime				
DB	DB Only - XML		N/A	EMailID	varchar(150)	any integers & characters			
DB	DB Only - XML		N/A	EmailProcessed	bit	0 or 1	characters	0	



Module	Data Entry Screen	Screen Section	Screen Caption	DB Column Name	DB Data Type	Valid values	Prohibited values	Default Value	Comments
DB	DB Only - XML		N/A	FileID	int				
DB	DB Only - XML		N/A	FileID	int IDENTITY(1,1)				
DB	DB Only - XML		N/A	FileName	varchar(50)	any integers & characters			
DB	DB Only - XML		N/A	FileProcessed	bit	0 or 1	characters	0	
DB	DB Only - XML		N/A	StatusMessage	varchar(5000)	canned messages			
DB	DB Only - XML		N/A	Success	bit	0 or 1	characters	0	
DB	DB Only - XML		N/A	UserID	varchar(50)				
DB	DB Only - XML		N/A	WellKey	varchar(15)	alphanumeric			import ID from source program (WellMagic, WellDreams, OCHD)
DB	DB Only - XML		N/A	XMLFile	image				
DB	DB Only- Well Details		N/A	RorAWellID	char(11)	11 numbers - WellID	characters		This field seems to store the wellid of a water well record that is inputed on an abandoned well record. The abandoned well record id is in the Well ID field. However, sometimes both fields contain a water well id - 02000002214 & 02000001032 are an example of this.
DB	Value Added Field DB Only		N/A	Aqtype	char(1)				
DB	Value Added Field DB Only		N/A	Class	char(3)				
DB	Value Added Field DB Only		N/A	Code	nvarchar(6)				
DB	Value Added Field DB Only		n/a	Kmax	float				
DB	Value Added Field DB Only		n/a	Kmin	float				
DB				cntm_direc	varchar(50)				
DB				cntyCode	char(2)				
DB				Effect	smallint				
DB				ErrorNumber	smallint				
DB	DB Only		N/A	Group	varchar(50)	Contractor, Local Health Department, State of Michigan, Administrator)	Anything else		New field - populated based on the group the user account is in. Only populated when the record is initially entered. Shows on search results screens and pdf well log (see screen shots).



Appendix C

Wellogic Business Logic

(a) Data Entry

Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
AW	Contractor & Abandonment	Abandonment	Abandonment Method	Yes	Yes	blank	Required when Group = Contractor			
AW	Contractor & Abandonment	Abandonment	Casing Status After Plugging	Yes	No	blank	N/A			
AW	Contractor & Abandonment	Abandonment	Casing Status After Plugging Depth	Yes	No	blank	N/A			
AW	Contractor & Abandonment	Abandonment	Equipment Removed	Contingent	Contingent	blank	Only active and required when Pumping Equipment Removed = Yes. Allow multi-select.			
AW	Contractor & Abandonment	Abandonment	Equipment Removed Remarks	Contingent	Contingent	blank	Only required when Equipment Removed = Other			
AW	Contractor & Abandonment	Abandonment	Link to Original Drilling Record	No	No	blank	Active only when Abandoned Well Plugged = Yes. Allows user to search for Original Drilling Record or type Well ID directly into field.		X	
AW	Contractor & Abandonment	Abandonment	Measured Well Depth	No	No	blank	N/A			
AW	Contractor & Abandonment	Abandonment	Pumping Equipment Removed	Yes	Yes	No	N/A			
AW	Contractor & Abandonment	Abandonment	Reason for Abandoning Well	Yes	Yes	blank	N/A			
AW	Contractor & Abandonment	Abandonment	Reason for Abandoning Well Remarks	Contingent	Contingent	blank	Only required when Reason for Abandoning Well = Other			
AW	Contractor & Abandonment	Abandonment	Well Diameter	Yes	No	blank	N/A			
AW	Contractor & Abandonment	Contractor	Address	Yes	No	blank	Automatically filled in from User Maintenance when Group = Contractor			



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
AW	Contractor & Abandonment	Contractor	Business Name	Yes	No	blank	Automatically filled in from User Maintenance when Group = Contractor			
AW	Contractor & Abandonment	Contractor	Certification	Yes	Yes	blank	Automatically filled in from User Maintenance when Group = Contractor			
AW	Contractor & Abandonment	Contractor	Registered Contractor	Yes	No	blank	Automatically filled in from User Maintenance when Group = Contractor			
AW	Contractor & Abandonment	Contractor	Registration Number	Yes	No	blank	Automatically filled in from User Maintenance when Group = Contractor			
AW	Contractor & Abandonment	Remarks	Remarks	No	No	blank	N/A			
AW	Plugging	Plugging	Comments	No	No	blank	N/A			
AW	Plugging	Plugging	From	Yes	Yes	blank	Must be greater than or equal to previous Plugging Material Depth To and less than current Plugging Material Depth To.			
AW	Plugging	Plugging	Plugging Material	Yes	Yes	blank	N/A			
AW	Plugging	Plugging	Plugging Material Remarks	Contingent	Contingent	blank	Required only when Plugging Material = Other			
AW	Plugging	Plugging	Quantity	Yes	No	blank	N/A			
AW	Plugging	Plugging	To	Yes	Yes	blank	Must be greater than current Plugging Material Depth From.			
AW	Well Details	(bottom section)	Date Drilled	No	No	blank	Can't be future date or after Date Plugged			X
AW	Well Details	(bottom section)	Date Plugged	Yes	Yes	blank	Can't be future date or before Date Drilled.			
AW	Well Details	(bottom section)	Well Intake	Yes	Yes	blank	Only active if Screen Installed = No			
WW	Casing & Grouting	Borehole	Bore Hole Diameter1	No	No	blank	Always active			
WW	Casing & Grouting	Borehole	Bore Hole Diameter2	No	No	blank	Always active			
WW	Casing &	Borehole	Bore Hole Diameter3	No	No	blank	Always active			



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
	Grouting									
WW	Casing & Grouting	Borehole	to [xx] ft. depth1	No	No	blank	Always active			
WW	Casing & Grouting	Borehole	to [xx] ft. depth2	No	No	blank	Always active			
WW	Casing & Grouting	Borehole	to [xx] ft. depth3	No	No	blank	Always active			
WW	Casing & Grouting	Casing	Casing Fittings	Contingent	No	blank	Not required when (Well Type = Dry Hole or Boring No Casing) or (Pump Installation Only = Yes) Always active. Allow multi-select.			
WW	Casing & Grouting	Casing	Casing Fittings Remarks	No	No	blank	Required only when Casing Fittings = Other			
WW	Casing & Grouting	Casing	Casing Joint	Contingent	No	blank	Not required when (Well Type = Dry Hole or Boring No Casing) or (Pump Installation Only = Yes) Always active.			
WW	Casing & Grouting	Casing	Casing Joint Remarks	No	No	blank	Required only if Casing Joint = Other			
WW	Casing & Grouting	Casing	Height [xx] ft. Above Grade	Yes	No	blank	Allow negative numbers.			
WW	Casing & Grouting	Casing	SDR1	No	No	blank	Only active when Casing Type = PVC Plastic			X
WW	Casing & Grouting	Casing	SDR2	No	No	blank	Only active when Casing Type = PVC Plastic			
WW	Casing & Grouting	Casing	SDR3	No	No	blank	Only active when Casing Type = PVC Plastic			
WW	Casing & Grouting	Casing	to [xx] ft. depth1	Contingent	No	blank	Not required when (Well Type = Dry Hole, Boring No Casing or Deepening) or (Pump Installation Only = Yes) Always active.			
WW	Casing & Grouting	Casing	to [xx] ft. depth2	No	No	blank	Always active			
WW	Casing &	Casing	to [xx] ft. depth3	No	No	blank	Always active			



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
	Grouting									
WW	Casing & Grouting	Casing	Casing Diameter1	Contingent	No	blank	Not required when (Well Type = Dry Hole or Boring No Casing) or (Pump Installation Only = Yes) Always active.			
WW	Casing & Grouting	Casing	Casing Diameter2	No	No	blank	Always active.			
WW	Casing & Grouting	Casing	Casing Diameter3	No	No	blank	Always active.			
WW	Casing & Grouting	Casing	Casing Type	Contingent	Contingent	blank	Not required when (Well Type = Dry Hole or Boring No Casing) or (Pump Installation Only = Yes) Always active.			
WW	Casing & Grouting	Casing	Casing Type Remarks	No	No	blank	Required only if Casing Type = Other			
WW	Casing & Grouting	Grouting	Additives Remarks1	No	No	blank	Required only when Additives1 = Other			
WW	Casing & Grouting	Grouting	Additives Remarks2	No	No	blank	Required only when Additives2 = Other			
WW	Casing & Grouting	Grouting	Additives Remarks3	No	No	blank	Required only when Additives3 = Other			
WW	Casing & Grouting	Grouting	Additives1	Contingent	Contingent	blank	Active and required only if Well Grouted = Yes. Inactive if Grouted = No.		X	
WW	Casing & Grouting	Grouting	Additives2	Contingent	Contingent	blank	Active and required only if Well Grouted = Yes and a value is entered for Grouting Material2. Inactive when Grouted = No.			
WW	Casing & Grouting	Grouting	Additives3	Contingent	Contingent	blank	Active and required only if Well Grouted = Yes and a value is entered for Grouting Material3. Inactive when Grouted = No.			



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
WW	Casing & Grouting	Grouting	From [xx] ft1	Contingent	No	blank	Active and required only if Well Grouted = Yes. Required when Drilling Method = Rotary, Hollow Rod. Must be less than to [xx] ft. depth1			
WW	Casing & Grouting	Grouting	From [xx] ft2	No	No	blank	Active only when Well Grouted = Yes. Required when Drilling Method = Rotary, Hollow Rod and when Grouting Material2 is filled in. Must be less than to [xx] ft. depth2			
WW	Casing & Grouting	Grouting	From [xx] ft3	No	No	blank	Active only when Well Grouted = Yes. Required when Drilling Method = Rotary, Hollow Rod and when Grouting Material3 is filled in. Must be less than to [xx] ft. depth3			
WW	Casing & Grouting	Grouting	Grouting Material1	Contingent	Contingent	blank	Active and required only if Well Grouted = Yes			
WW	Casing & Grouting	Grouting	Grouting Material2	No	No	blank	Active only when Well Grouted = Yes			
WW	Casing & Grouting	Grouting	Grouting Material3	No	No	blank	Active only when Well Grouted = Yes			
WW	Casing & Grouting	Grouting	Grouting Materials 1 Remarks	No	No	blank	Required only when Grouting Material1 = Other			
WW	Casing & Grouting	Grouting	Grouting Materials 2 Remarks	No	No	blank	Required only when Grouting Material2 = Other			
WW	Casing & Grouting	Grouting	Grouting Materials 3 Remarks	No	No	blank	Required only when Grouting Material3 = Other			
WW	Casing & Grouting	Grouting	Grouting Method	Contingent	Contingent	blank	Active and required only if Well Grouted = Yes.			



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
WW	Casing & Grouting	Grouting	Grouting Method Remarks	No	No	blank	Required only when Grouting Method = Other			
WW	Casing & Grouting	Grouting	No. of Bags1	Yes	No	blank	Only active when Grouted = Yes			
WW	Casing & Grouting	Grouting	No. of Bags2	Contingent	No	blank	Active and required only when Grouted = Yes and a value is entered for Grouting Material2. Inactive when Grouted = No.			
WW	Casing & Grouting	Grouting	No. of Bags3	Contingent	No	blank	Active and required only when Grouted = Yes and a value is entered for Grouting Material3. Inactive when Grouted = No.			
WW	Casing & Grouting	Grouting	to [xx] ft. depth1	Contingent	No	blank	Active only when Well Grouted = Yes. Required when Drilling Method = Rotary, Hollow Rod. Must be more than from [xx] ft1			
WW	Casing & Grouting	Grouting	to [xx] ft. depth2	No	No	blank	Active only when Well Grouted = Yes. Required when Drilling Method = Rotary, Hollow Rod and when Grouting Material2 is filled in. Must be more than from [xx] ft2			
WW	Casing & Grouting	Grouting	to [xx] ft. depth3	No	No	blank	Active only when Well Grouted = Yes. Required when Drilling Method = Rotary, Hollow Rod and when Grouting Material3 is filled in. Must be more than from [xx] ft3			
WW	Casing & Grouting	Grouting	Well Grouted	Yes	Yes	No	N/A			
WW	Completion & Pump	Nearest Source of Possible Contamination	Direction1	Contingent	No	blank	Required only when a value is entered for Type1 and that value is not = None.	X		



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
WW	Completion & Pump	Nearest Source of Possible Contamination	Direction2	Contingent	No	blank	Required only when a value is entered for Type2 and that value is not = None.	X		
WW	Completion & Pump	Nearest Source of Possible Contamination	Distance1	Contingent	No	blank	Required only when a value is entered for Type1 and that value is not = None.	X		
WW	Completion & Pump	Nearest Source of Possible Contamination	Distance2	Contingent	No	blank	Required only when a value is entered for Type2 and that value is not = None.	X		
WW	Completion & Pump	Nearest Source of Possible Contamination	Type Remarks1	Contingent	Contingent	blank	Required only when Type1 = Other	X		
WW	Completion & Pump	Nearest Source of Possible Contamination	Type Remarks2	Contingent	Contingent	blank	Required only when Type2 = Other	X		
WW	Completion & Pump	Nearest Source of Possible Contamination	Type1	Yes	Yes	blank	Not required when (Well Type = Dry Hole or Boring No Casing). Always active.	X		
WW	Completion & Pump	Nearest Source of Possible Contamination	Type2	No	No	blank	N/A	X		
WW	Completion & Pump	Pressure Tank	Buried	Yes	Yes	No	Only active when Pressure Tank Installed = Yes	X		
WW	Completion & Pump	Pressure Tank	Manufacturer	Yes	Yes	blank	Only active when Pressure Tank Installed = Yes	X		
WW	Completion & Pump	Pressure Tank	Manufacturer Remarks	Contingent	Contingent	blank	Only required when Manufacturer = Other	X		
WW	Completion & Pump	Pressure Tank	Model Number	Yes	No	blank	Only active when Pressure Tank Installed = Yes	X		
WW	Completion & Pump	Pressure Tank	Pressure Relief Valve Installed	Yes	Yes	No	Only active when Pressure Tank Installed = Yes	X		
WW	Completion & Pump	Pressure Tank	Pressure Tank Installed	Yes	Yes	No	N/A	X		
WW	Completion & Pump	Pressure Tank	Pressure Tank Type	Yes	Yes	blank	Only active when Pressure Tank Installed = Yes	X		
WW	Completion & Pump	Pressure Tank	Pressure Tank Type Remarks	Contingent	Contingent	blank	Only required when Pressure Tank Type = Other	X		
WW	Completion & Pump	Pressure Tank	Total Tank Capacity	Yes	No	blank	Only active when Pressure Tank Installed = Yes	X		



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
WW	Completion & Pump	Pump	Diameter of Drop Pipe	Yes	No	blank	Only active when Pump Installed = Yes	X		
WW	Completion & Pump	Pump	Drawdown Seal Used	Yes	Yes	No	Only active when Pump Installed = Yes	X		
WW	Completion & Pump	Pump	HP	Yes	No	blank	Only active when Pump Installed = Yes	X		
WW	Completion & Pump	Pump	Volts	No	No	blank	Only active when Pump Installed = Yes	X		
WW	Completion & Pump	Pump	Length of Drop Pipe	Yes	No	blank	Active only when Pump Installed = Yes	X		
WW	Completion & Pump	Pump	Link to Drilling Record	No	No	blank	Only active when Pump Installation Only = Yes	X	X	
WW	Completion & Pump	Pump	Manufacturer Remarks	Contingent	Contingent	blank	Only required when Pump Manufacturer = Other	X		
WW	Completion & Pump	Pump	Model Number	Yes	No	blank	Only active when Pump Installed = Yes	X		
WW	Completion & Pump	Pump	Pump Capacity	Yes	No	blank	Only active when Pump Installed = Yes	X		
WW	Completion & Pump	Pump	Pump Installation Date	Contingent	No	blank	Only active and required when Pump Installation Only = Yes. Not required for Historic mode.	X		
WW	Completion & Pump	Pump	Pump Installation Only	Yes	Yes	No	Only active when Pump Installed = Yes	X		
WW	Completion & Pump	Pump	Pump Installed	Yes	Yes	No	N/A	X		
WW	Completion & Pump	Pump	Pump Type	Yes	Yes	blank	Only active when Pump Installed = Yes	X		
WW	Completion & Pump	Pump	Pump Type Remarks	Contingent	Contingent	blank	Only required when Pump Type = Other	X		
WW	Completion & Pump	Wellhead Completion	Wellhead Completion	Yes	Yes	blank	Not required when (Well Type = Dry Hole or Boring No Casing). Always active. Allow multi-select.	X		
WW	Completion & Pump	Wellhead Completion	Wellhead Completion Remarks	No	No	blank	Required only when Wellhead Completion = Other	X		



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
WW	Contractor & Abandonment	Abandonment	Abandoned Well Plugged	Yes	Yes	No	Entire Abandonment section active only when Well Type = Replacement, Dry Hole, or Boring No Casing			
WW	Contractor & Abandonment	Abandonment	Casing Removed	Contingent	Contingent	No	Required and active only when Abandoned Well Plugged = Yes.			
WW	Contractor & Abandonment	Abandonment	Latitude	No	No	blank	Always active			X
WW	Contractor & Abandonment	Abandonment	Link to Original Drilling Record	No	No	blank	Active only when Abandoned Well Plugged = Yes. Allows user to search for Original Drilling Record or type Well ID directly into field.		X	
WW	Contractor & Abandonment	Abandonment	Longitude	No	No	blank	Always active			X
WW	Contractor & Abandonment	Abandonment	No. of Bags	Contingent	No	blank	Required and active only when Abandoned Well Plugged = Yes. Not required in Historic Mode.			
WW	Contractor & Abandonment	Abandonment	Plugging Material	Contingent	Contingent	blank	Required and active only when Abandoned Well Plugged = Yes.			
WW	Contractor & Abandonment	Abandonment	Plugging Material Remarks	Contingent	Contingent	blank	Required only when Plugging Material = Other			
WW	Contractor & Abandonment	Abandonment	Reason for not Plugging Well	Yes	Yes	blank	Required and active only when Abandoned Well Plugged = No and Abandonment section is active.			
WW	Contractor & Abandonment	Abandonment	Reason for not Plugging Well Remarks	Contingent	Contingent	blank	Required only when Reason for not Plugging Well = Other			
WW	Contractor & Abandonment	Abandonment	Well Depth	No	No	blank	Active only when Abandoned Well Plugged = Yes			



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
WW	Contractor & Abandonment	Abandonment	Well Diameter	Contingent	No	blank	Required and active only when Abandoned Well Plugged = Yes. Not required in Historic Mode.			
WW	Contractor & Abandonment	Contractor	Address	Yes	No	blank	Automatically filled in from User Maintenance when Group = Contractor			
WW	Contractor & Abandonment	Contractor	Business Name	Yes	No	blank	Automatically filled in from User Maintenance when Group = Contractor			
WW	Contractor & Abandonment	Contractor	Certification	Yes	Yes	blank	Automatically filled in from User Maintenance when Group = Contractor			
WW	Contractor & Abandonment	Contractor	Registered Contractor	Yes	No	blank	Automatically filled in from User Maintenance when Group = Contractor			
WW	Contractor & Abandonment	Contractor	Registration Number	Yes	No	blank	Automatically filled in from User Maintenance when Group = Contractor			
WW	Contractor & Abandonment	Drilling Machine Operator	Employment	Yes	Yes	blank	N/A			
WW	Contractor & Abandonment	Drilling Machine Operator	Name	Yes	No	blank	N/A			
WW	Contractor & Abandonment	Pump Installer	Pump Installer Different from DMO	Yes	Yes	No	N/A	X		
WW	Contractor & Abandonment	Pump Installer	Pump Installer Name	Contingent	No	blank	Active and required only when Pump Installer Different from DMO = Yes. Not required in Historic Mode.	X		
WW	Contractor & Abandonment	Remarks	Remarks	No	No	blank	N/A			
WW	Geology	Geology	[calculated thickness]	Yes	Yes	blank	Calculated automatically based on Depth to Bottom of Stratum.			
WW	Geology	Geology	Comments	No	No	blank	N/A			



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
WW	Geology	Geology	Depth to Bottom of Stratum	Yes	Yes	blank	Must be greater than previous Depth to Bottom of Stratum. Final stratum must be equal to or greater than well depth.			
WW	Geology	Geology	Description/Formation	No	No	blank	N/A			
WW	Geology	Geology	Description/Secondary	No	No	blank	N/A			
WW	Geology	Geology	Primary Color	No	No	blank	N/A			
WW	Geology	Geology	Primary Material	Yes	Yes	blank	N/A		X	
WW	Screen & Water Level	Screen	Blank	No	No	blank	Active only when Screen Installed = Yes. Inactive when Screen Installed = No.			
WW	Screen & Water Level	Screen	Filter Packed	Contingent	Contingent	No	Active and required only when Screen Installed = Yes. Inactive when Screen Installed = No.			
WW	Screen & Water Level	Screen	Fittings Remarks	No	No	blank	Required only when Screen Fittings = Other			
WW	Screen & Water Level	Screen	From [xx] ft1	Contingent	No	blank	Active and required only when Screen Installed = Yes. Inactive when Screen Installed = No.			
WW	Screen & Water Level	Screen	From [xx] ft2	Contingent	No	blank	Active and required only when Screen Installed = Yes and a value is entered for Slot2. Inactive when Screen Installed = No.			
WW	Screen & Water Level	Screen	From [xx] ft3	Contingent	No	blank	Active and required only when Screen Installed = Yes and a value is entered for Slot3. Inactive when Screen Installed = No.			
WW	Screen & Water Level	Screen	paired with LenScrBlank	Contingent	No	blank	Active and required only when Screen Installed = Yes. Inactive when Screen Installed = No.			



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
WW	Screen & Water Level	Screen	Screen Diameter	Contingent	No	blank	Active and required only when Screen Installed = Yes. Inactive when Screen Installed = No.			
WW	Screen & Water Level	Screen	Screen Fittings	Contingent	No	blank	Active and required only when Screen Installed = Yes. Inactive when Screen Installed = No. Allow multi-select.			
WW	Screen & Water Level	Screen	Screen Installation	Contingent	Contingent	blank	Active only when Screen Installed = Yes. Inactive when Screen Installed = No. Required only when a value is entered for Blank.			
WW	Screen & Water Level	Screen	Screen Installed	Yes	Yes	No				
WW	Screen & Water Level	Screen	Screen Length1	Contingent	No	blank	Active and required only when Screen Installed = Yes. Inactive when Screen Installed = No.			
WW	Screen & Water Level	Screen	Screen Material	Contingent	Contingent	blank	Active and required only when Screen Installed = Yes. Inactive when Screen Installed = No.			
WW	Screen & Water Level	Screen	Screen Material Remarks	No	No	blank	Required only when Screen Material = Other			
WW	Screen & Water Level	Screen	ScreenLength2	Contingent	No	blank	Active and required only when Screen Installed = Yes and a value is entered for Slot2. Inactive when Screen Installed = No.			
WW	Screen & Water Level	Screen	ScreenLength3	Contingent	No	blank	Active and required only when Screen Installed = Yes and a value is entered for Slot3. Inactive when Screen Installed = No.			



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
WW	Screen & Water Level	Screen	Slot1	Contingent	No	blank	Active and required only when Screen Installed = Yes. Inactive when Screen Installed = No.			X
WW	Screen & Water Level	Screen	Slot2	No	No	blank	Active only when Screen Installed = Yes			
WW	Screen & Water Level	Screen	Slot3	No	No		Active only when Screen Installed = Yes			
WW	Screen & Water Level	Screen	to [xx] ft1	Contingent	No	blank	Active and required only when Screen Installed = Yes. Inactive when Screen Installed = No.			
WW	Screen & Water Level	Screen	to [xx] ft2	Contingent	No	blank	Active and required only when Screen Installed = Yes and a value is entered for Slot2. Inactive when Screen Installed = No.			
WW	Screen & Water Level	Screen	to [xx] ft3	Contingent	No	blank	Active and required only when Screen Installed = Yes and a value is entered for Slot3. Inactive when Screen Installed = No.			
WW	Screen & Water Level	Screen	Well Intake	Contingent	Contingent	blank	Active and required only when Screen Installed = No. Inactive when Screen Installed = Yes. Not required when (Well Type = Dry Hole or Boring No Casing) or (Pump Installation Only = Yes)			
WW	Screen & Water Level	Static Water Level	Flowing	Yes	Yes	No	N/A			
WW	Screen & Water Level	Static Water Level	G.P.M (Unrestricted Flow)	No	No	blank	Only active when Flowing = Yes		X	X
WW	Screen & Water Level	Static Water Level	Static Water Level	Yes	No	blank	N/A		X	X
WW	Screen & Water Level	Well Yield Test	Yield Test Method	No	No	blank	Always active.			



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
WW	Screen & Water Level	Well Yield Test	Yield Test Method Remarks	No	No	blank	Required only when Yield Test Method = Other			
WW	Screen & Water Level	Well Yield Test	GPM1	No	No	blank	Always active.			
WW	Screen & Water Level	Well Yield Test	hrs.1	No	No	blank	Always active.			
WW	Screen & Water Level	Well Yield Test	Pumping Level1	No	No	blank	Always active.		X	
WW	Screen & Water Level	Well Yield Test	GPM2	No	No	blank	Active only when value entered for Pumping Level1, hrs.1 or GPM1.			
WW	Screen & Water Level	Well Yield Test	hrs.2	No	No	blank	Active only when value entered for Pumping Level1, hrs.1 or GPM1.			
WW	Screen & Water Level	Well Yield Test	Pumping Level2	No	No	blank	Active only when value entered for Pumping Level1, hrs.1 or GPM1.			
WW	Screen & Water Level	Well Yield Test	GPM3	No	No	blank	Active only when value entered for Pumping Level2, hrs.2 or GPM2.			
WW	Screen & Water Level	Well Yield Test	hrs.3	No	No	blank	Active only when value entered for Pumping Level2, hrs.2 or GPM2.			
WW	Screen & Water Level	Well Yield Test	Pumping Level3	No	No	blank	Active only when value entered for Pumping Level2, hrs.2 or GPM2.			
WW	Well Details	(bottom section)	Date Well Completed	Yes	No	blank	Can't be future date.		X	
WW	Well Details	(bottom section)	Drilling Method	Yes	Yes	blank	N/A			
WW	Well Details	(bottom section)	Drilling Method Remarks	No	No	blank	Only required if Drilling Method = Other			
WW	Well Details	(bottom section)	Status	Yes	Yes	Active	N/A	X		
WW	Well Details	(bottom section)	Status Remarks	No	No	blank	Only required if Status = Other	X		



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
WW	Well Details	(bottom section)	Well Depth	Yes	No	blank	N/A			
WW	Well Details	(bottom section)	Well Type	Yes	Yes	blank	N/A			
WW	Completion & Pump	Pump	Manufacturer	Yes	Yes	blank	Only active when Pump Installed = Yes			
WW/AW	Latitude & Longitude	Advanced	Elevation	No	No	blank	Available only on Advanced Screen (opened with button)			
WW/AW	Latitude & Longitude	Advanced	Elevation Accuracy	No	No	blank	Available only on Advanced Screen (opened with button)			
WW/AW	Latitude & Longitude	Advanced	Elevation Datum	No	No	blank	Available only on Advanced Screen (opened with button)			
WW/AW	Latitude & Longitude	Advanced	Elevation Datum Remarks	Contingent	Contingent	blank	Only required when Elevation Datum = Other. Available only on Advanced Screen (opened with button)			
WW/AW	Latitude & Longitude	Advanced	Elevation Method of Collection	No	No	blank	Available only on Advanced Screen (opened with button)			
WW/AW	Latitude & Longitude	Advanced	Elevation Method of Collection Remarks	Contingent	Contingent	blank	Only required when Elevation Method of Collection = Other. Available only on Advanced Screen (opened with button)			
WW/AW	Latitude & Longitude	Advanced	Horizontal Datum	No	No	blank	Available only on Advanced Screen (opened with button)			
WW/AW	Latitude & Longitude	Advanced	Horizontal Datum Remarks	Contingent	Contingent	blank	Only required when Horizontal Datum = Other. Available only on Advanced Screen (opened with button)			
WW/AW	Latitude & Longitude	Advanced	Map Scale	No	No	blank	Available only on Advanced Screen (opened with button)			
WW/AW	Latitude & Longitude	Advanced	Map Scale Remarks	Contingent	Contingent	blank	Only required when Map Scale = Other. Available only on Advanced Screen (opened with button)			
WW	Latitude & Longitude	Basic	Accuracy Value	Yes	No	blank	N/A			
AW	Latitude & Longitude	Basic	Accuracy Value	No	No	blank	N/A			



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
WW	Latitude & Longitude	Basic	Accuracy Value Unit	Yes	No	blank	N/A			
AW	Latitude & Longitude	Basic	Accuracy Value Unit	No	No	blank	N/A			
WW	Latitude & Longitude	Basic	Date of Collection	Yes	No	blank	N/A			
AW	Latitude & Longitude	Basic	Date of Collection	No	No	blank	N/A			
WW/AW	Latitude & Longitude	Basic	Description Comments	No	No	blank	N/A			
WW	Latitude & Longitude	Basic	Latitude	Yes	No	blank	N/A			X
AW	Latitude & Longitude	Basic	Latitude	No	No	blank	N/A			X
WW	Latitude & Longitude	Basic	Longitude	Yes	No	blank	N/A			X
AW	Latitude & Longitude	Basic	Longitude	No	No	blank	N/A			X
WW	Latitude & Longitude	Basic	Method of Collection	Yes	Contingent	blank	Historic Mode - Required only when a value is entered for Latitude and Longitude.		X	
AW	Latitude & Longitude	Basic	Method of Collection	No	Contingent	blank	Historic Mode - Required only when a value is entered for Latitude and Longitude.		X	
WW	Latitude & Longitude	Basic	Source	Yes	Contingent	blank	Historic Mode - Required only when a value is entered for Latitude and Longitude.			
AW	Latitude & Longitude	Basic	Source	No	Contingent	blank	Historic Mode - Required only when a value is entered for Latitude and Longitude.			
WW/AW	Latitude & Longitude	Basic	Source Remarks	Contingent	Contingent	blank	Only required when Source = Other			
WW/AW	Well Details	(bottom section)	Source ID/Well No.	No	No	blank	Only active when Well Use = Type I or Type II		X	
WW/AW	Well Details	(bottom section)	Well Use	Yes	Yes	blank	N/A		X	
WW/AW	Well Details	(bottom section)	Well Use Remarks	No	No	blank	Only required if Well Use = Other			



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic/Contingency	Field Available in Pump Modify	Online Help	MouseOver Help
WW/AW	Well Details	(bottom section)	WSSN	No	No	blank	Only active when Well Use = Type I or Type II		X	
WW/AW	Well Details	(top section)	Section	Yes	Yes	blank	Between 1 and 36			X
WW/AW	Well Details	(top section)	County	Yes	Yes	blank	N/A			
WW/AW	Well Details	(top section)	Permit No	No	No	blank	N/A			
WW/AW	Well Details	(top section)	Tax No	No	No	blank	N/A			
WW/AW	Well Details	(top section)	Town/Range	Yes	Yes	first in list	Based on Township selected			
WW/AW	Well Details	(top section)	Township	Yes	Yes	first in list	Based on County selected			
WW/AW	Well Details	Well Address	City	Yes	No	blank	N/A			
WW/AW	Well Details	Well Address	Distance and direction from road intersection	Yes	No	blank	N/A			
WW/AW	Well Details	Well Address	State	Yes	Yes	MI	N/A			
WW/AW	Well Details	Well Address	Street Address	No	No	blank	N/A			
WW/AW	Well Details	Well Address	Zip	No	No	blank	N/A			
WW/AW	Well Details	Well Address	Zip+4	No	No	blank	N/A			
WW/AW	Well Details	Well Owner Address	Address	Yes	No	blank	N/A			
WW/AW	Well Details	Well Owner Address	City	Yes	No	blank	N/A			
WW/AW	Well Details	Well Owner Address	Owner address same as well location	Yes	Yes	No	Choosing Yes copies over Street Address, City, State Zip, Zip+4 from Well Address			
WW/AW	Well Details	Well Owner Address	Owner of Well	Yes	No	blank	N/A			
WW/AW	Well Details	Well Owner Address	State	No	No	blank	N/A			
WW/AW	Well Details	Well Owner Address	Zip	Yes	No	blank	N/A			
WW/AW	Well Details	Well Owner Address	Zip+4	No	No	blank	N/A			
AW	Plugging	Plugging	Unit	Yes	Yes	blank	N/A			



(b) Admin

Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic
Admin	User Maintenance	User Maintenance	Account Disabled	N/A	N/A	Account Enabled	N/A
Admin	User Maintenance	User Maintenance	Address	N/A	N/A	blank	Required
Admin	User Maintenance	User Maintenance	Company Name	N/A	N/A	blank	Required
Admin	User Maintenance	User Maintenance	Certification	N/A	N/A	blank	Required only when Group = Contractor
Admin	User Maintenance	User Maintenance	Change Password at Next Logon	N/A	N/A	Yes	For new accounts
Admin	User Maintenance	User Maintenance	Confirm Password	N/A	N/A	blank	Must be same as Password
Admin	User Maintenance	User Maintenance	Email	N/A	N/A	blank	Optional
Admin	User Maintenance	User Maintenance	Fax	N/A	N/A	blank	Optional
Admin	User Maintenance	User Maintenance	Group	N/A	N/A	blank	Required, choose from list (LHD, SOM, Contractor, Guest, Administrator)
Admin	User Maintenance	User Maintenance	Password	N/A	N/A	blank	Required
Admin	User Maintenance	User Maintenance	Registration Number	N/A	N/A	blank	Required only when Group = Contractor
Admin	User Maintenance	User Maintenance	Telephone	N/A	N/A	blank	Required
Admin	User Maintenance	User Maintenance	User ID	N/A	N/A	blank	Required, assigned by Admin, no duplicates allowed.
Admin	User Maintenance	User Maintenance	User Name	N/A	N/A	blank	Required
Admin	User Maintenance	User Maintenance	Validity Period	N/A	N/A	blank	Required
Admin	User Maintenance	User Maintenance	Registered Contractor	N/A	N/A	blank	Required
Admin	Account Request	Account Request	Address	N/A	N/A	blank	Required
Admin	Account Request	Account Request	Certification	N/A	N/A	blank	Required only when Group = Contractor
Admin	Account Request	Account Request	Company Name	N/A	N/A	blank	Required
Admin	Account Request	Account Request	Email	N/A	N/A	blank	Required
Admin	Account Request	Account Request	Fax	N/A	N/A	blank	Optional
Admin	Account Request	Account Request	Group	N/A	N/A	blank	Required, choose from list (LHD, SOM, Contractor, Guest)
Admin	Account Request	Account Request	Registration Number	N/A	N/A	blank	Required only when Group = Contractor
Admin	Account Request	Account Request	Telephone	N/A	N/A	blank	Required



Module	Data Entry Screen	Screen Section	Screen Caption	Req. New	Req. Historic	Default State	Business Logic
Admin	Account Request	Account Request	User Name	N/A	N/A	blank	Required

(c) Search

Module	Screen Caption	Water Well	Abandoned Well	Default State	Wild Card	Business Logic	Comments
Search	Well ID	X	X	blank		If Well ID has a value entered, all other search parameters are ignored.	
Search	Import ID	X	X	blank	X		
Search	Permit No.	X	X	blank	X		
Search	County	X	X	blank		Based on County selected	
Search	Township	X	X	blank		Based on Township selected	
Search	Town/Range	X	X	blank		Allow 1 or more non-sequential section numbers and/or range of section numbers	
Search	Section	X	X	blank			
Search	Well Street Address	X	X	blank	X		
Search	Well City	X	X	blank	X		
Search	Owner of Well	X	X	blank	X		
Search	Well Depth From	X	X	blank		Must be less than Well Depth To	
Search	Well Depth To	X	X	blank		Must be greater than Well Depth From	
Search	Source ID/Well No.	X	X	blank	X		
Search	WSSN	X	X	blank			
Search	Well Use	X	X	blank			
Search	Well Type	X	X	blank			
Search	Created By	X	X	blank		UserID	
Search	Group	X	X	blank		Contractor, Local Health Department, State of Michigan, Administrator	Who entered record based on what Group they are in.
Search	Contractor Reg. No.	X	X	blank			
Search	Creation Date From	X	X	blank		Can't be future date or later than Creation Date To	
Search	Creation Date To	X	X	blank		Can't be future date or earlier than Creation Date From	



Module	Screen Caption	Water Well	Abandoned Well	Default State	Wild Card	Business Logic	Comments
Search	Construction Date From	X		blank		Can't be future date or later than Construction Date To	
Search	Construction Date To	X		blank		Can't be future date or earlier than Construction Date From	
Search	Date Plugged From		X	blank		Can't be future date or later than Date Plugged To	
Search	Date Plugged To		X	blank		Can't be future date or earlier than Date Plugged From	

(d) Reports

REPORT NAME	REPORT DESCRIPTION	PERMISSIONS	INPUT	OUTPUT	COMMENTS
Contractor Data Entry	contractors who have entered a record in a certain date range	admin	creation date range	contractor's reg. no. and contractor name	
Contractor Activity	number of wells drilled and pumps installed by contractor	all users	cont. reg. no. and const. date range	well ID (link), contractor reg. no. , contractor name, total number of records at bottom	# wells drilled taken from drilling record; # pumps installed will be from pump installed 'yes' or pump installation only ' yes'
Well Record History	track all changes to a well record	admin	well ID	user ID, wellid, date modified, and what fields were changed (field name, before, after state)	
Contractor Record History	track all changes made to records under a registration number	admin	Cont. Reg. No. and either Construction Date Range or Modify Date Range.	reg no, user ID, wellid, date modified, and what fields were changed (field name, before, after state)	
User Activity History	track all changes made to records by unique user id	admin	user ID (createdby and lastupdatedby fields) and date range	user ID, wellid, date modified, and what fields were changed (field name, before, after state)	



REPORT NAME	REPORT DESCRIPTION	PERMISSIONS	INPUT	OUTPUT	COMMENTS
User Log-In	list of user IDs who have logged-in in a certain date range	admin	date range	user ID, user name, date last logged-in	
County Activity	number of wells by county	all users	construction date range and county number (include ability to choose all counties)	total number by county	
Large Quantity Well	retrieves large quantity wells	admin	county, township, section, construction date range, pump capacity	List of well ids, owner, owner address, pump capacity, latitude, longitude, and all input fields, with ability to print the well logs and download the data.	
Flowing Wells	retrieves flowing wells	all users	county, construction date range	well ID (link), well address, well city, construction date	
Statistics	relevant information regarding application usage	admin	date range, statistic type	report of statistics	#logins (by group); #well logs submitted (by data entry mode); #drillers entering records;
Compare Well Logs	compare information between one or more well logs	admin	series of well ids	print individual well logs or summary of differences between all well logs selected	
Duplicate Well Logs	find duplicate well logs based on fields currently used to screen for duplicate well logs when importing XML files.	admin	construction date range (optional); county (optional)	list of duplicate records with relevant information to visually check results.	



Appendix D

Wellogic Navigation Panel

NAVIGATION PANEL for ADMINISTRATION GROUP

- Home
- Water Well
 - View
 - Add
 - Modify
 - Pump Modify
 - Date Modify
 - Delete
- ABD Well
 - View
 - Add
 - Modify
 - Date Modify
 - Delete
- Reports
 - Well Logs
 - Water Well
 - ABD Water Well
 - Other Reports TBD
- Query Writer
 - Run Query
 - Query Manager
- Administration
 - User Maintenance
 - Group Maintenance
 - Lookup Maintenance
 - Restore Records
 - LHD Review
 - Unauthenticate
 - Email Users
- Data Transfer
 - Upload XML

NAVIGATION PANEL for CONTRACTOR GROUP

- Home
- Water Well
 - View
 - Add
 - Pump Modify
 - Date Modify
- ABD Well
 - View
 - Add
 - Date Modify
- Reports
 - Well Logs
 - Water Well
 - ABD Water Well
 - Other Reports TBD



NAVIGATION PANEL for GENERAL PUBLIC

Home

Search for Well Records

Water Well

Abandoned Well

Help

Forgot Password?

Submit Wellogic account request

Email Wellogic Helpdesk

Downloads

How to search and print well records

Troubleshooting Guide

Links

Scanned Well Records (1999 and older)

Wellviewer (retrieve well records from a map)

Groundwater Inventory & Mapping Project

Center for Geographic Information (download Wellogic data)

WaterTrack (for Local Health Departments)

Other links TBD

NAVIGATION PANEL for GUEST GROUP

Home

Water Well

View

ABD Well

View

Reports

Well Logs

Water Well

ABD Water Well

Other Reports TBD

NAVIGATION PANEL for LOCAL HEALTH DEPARTMENT GROUP

Home

Water Well

View

Add

Modify

ABD Well

View

Add

Modify

Reports

Well Logs

Water Well

ABD Water Well

Other Reports TBD

Query Writer

Run Query

Administration

LHD Review

Print Records

Restore/Reprint Records



NAVIGATION PANEL for STATE OF MICHIGAN GROUP

Home

Water Well

View

Add

Modify

Delete

ABD Well

View

Add

Modify

Delete

Reports

Well Logs

Water Well

ABD Water Well

Other Reports TBD

Query Writer

Run Query



Appendix E

Welllogic Picklist

<u>Abandonment Method</u>		
Code	Description	Default
POUSR	Poured from surface	No
POURGP	Poured through grout pipe	No
PUMPGP	Pumped through grout pipe	No
*OTH	Other	No
*U	Unknown (Historic Only)	No

<u>Accuracy Value</u>		
Code	Description	Default
1	Degrees	No
5	Feet	No
6	Kilometers	No
4	Meters	No
7	Miles	No
2	Minutes	No
3	Second	No

<u>Additives</u>		
Code	Description	Default
CALCHL	Calcium chloride	No
LOSCR	Lost circulation mat.	No
NONE	None	No
*OTH	Other	No

<u>Casing Fitting</u>		
Code	Description	Default
CENTR	Centralizer	No
DRVSHO	Drive shoe	No
NONE	None	No
ROTSHO	Rotary shoe	No
SHAPAC	Shale packer/trap	No



*OTH	Other	No
----------------------	-------	----

<u>Casing Joint</u>		
Code	Description	Default
FLUJOI	Flush joint	No
SOLWED	Solvent welded/glued	No
SPLJOI	Spline joint/CertaLok	No
THRCOU	Threaded & coupled	No
WELD	Welded	No
*OTH	Other	No

<u>Casing Status after Plugging</u>		
Code	Description	Default
ABVGRA	Above Grade	No
BLWGRA	Below Grade	No
CSPULL	Casing Pulled	No

<u>Casing Type</u>		
Code	Description	Default
PVCPLA	PVC plastic	No
STEBLA	Steel - black	No
STEGAL	Steel - galvanized	No
STEUNK	Steel - unknown	No
*OTH	Other	No

<u>Contractor Certification</u>		
Code	Description	Default
DEWAT	Dewatering Well Drilling Contractor	No
PUMINS	Pump Installer	No
WELDRI	Water well drilling contractor	No
LIMWDC	Limited Water Well Drilling Contractor	No
MASPLUM	Licensed Master Plumber	No



<u>Contamination Type</u>		
Code	Description	Default
ANIYA	Animal yard/Feedlot	No
CHETER	Chemical/Fertilizer storage	No
DRAINP	Drainfield/Dry well	No
FUELTK	Fuel tank	No
GASWEL	Gas well	No
INDUS	Industry	No
LAGOON	Lagoon	No
NONE	None	No
OILWEL	Oil well	No
PRIVOU	Outhouse/Privy	No
SEPTNK	Septic tank	No
SEWPUM	Sewage pump chamber	No
SURWAT	Surface water	No
STRMSWR	Storm Sewer	No
SANSWR	Sanitary Sewer	No
UNABWE	Unplugged abandoned well	No
*OTH	Other	No

<u>Description Category</u>		
Code	Description	Default
WM	Water Monitoring Station	No
WL	Well	No
WA	Well Protection Area	No
*OTH	Other	No
*U	Unknown (Historic & New)	No

<u>Descriptor Formation</u>		
Code	Description	Default
480100	Alpena Ls	No
480200	Amherstburg Fm	No
480300	Antrim Shale	No
480500	Bass Island Group	No



480400	Bayport Ls	No
480600	Bedford Shale	No
480700	Bell Shale	No
480800	Berea Ss	No
100000	Black	No
101000	Black & Gray	No
102000	Black & White	No
480900	Black River Group	No
103000	Blue	No
481000	Bois Blanc Fm	No
470000	Broken	No
104000	Brown	No
481100	Burnt Bluff Group	No
481200	Cabot Head Shale	No
481300	Cataract Group	No
470100	Cemented	No
470200	Clayey	No
470300	Coarse	No
481400	Coldwater Shale	No
481500	Collingwood Shale	No
105000	Cream	No
106000	Dark Gray	No
470400	Dense	No
481600	Detroit River Group	No
470500	Dolomitic	No
481700	Dresbach Ss	No
470600	Dry	No
481800	Dundee Ls	No
481900	Eau Claire Member	No
482000	Ellsworth Shale	No
482100	Engadine Dol	No
470700	Fill	No
470800	Fine	No
470900	Fine To Coarse	No



471000	Fine To Medium	No
471100	Firm	No
471200	Fractured	No
482200	Franconia Ss	No
482300	Freda Ss	No
482400	Garden Island Fm	No
482500	Glenwood Member	No
482600	Grand Rapids Group	No
482700	Grand River Fm	No
471300	Gravelly	No
107000	Gray	No
108000	Gray & White	No
109000	Green	No
471400	Gummy	No
471500	Hard	No
471600	Heaving/Quick	No
482800	Jacobsville Ss	No
482900	Jordan Ss	No
471700	Karst	No
483000	Lake Superior Group	No
483050	Layered	No
110000	Light Brown	No
111000	Light Gray	No
483100	Lodi Member	No
483200	Lucas Fm	No
483300	Manistique Group	No
483400	Manitoulin Dol	No
483500	Marshall Ss	No
471800	Medium	No
471900	Medium To Coarse	No
483600	Michigamme Fm	No
483700	Michigan Fm	No
483800	Mt. Simon Ss	No
483900	Munising Fm	No



484000	Napoleon Ss	No
484100	New Richmond Ss	No
484200	Niagara Group	No
484300	Nonesuch Shale	No
484400	Oneota Dol	No
112000	Orange	No
472000	Organic	No
484500	Parma Ss	No
472100	Porous	No
484600	Prairie Du Chien Group	No
484700	Precambrian	No
484800	Queenston Shale	No
113000	Red	No
480000	Red Beds	No
484900	Richmond Group	No
485000	Rogers City Ls	No
114000	Rust	No
485100	Saginaw Fm	No
485200	Salina Group	No
472200	Sandy	No
485300	Shakopee Dol	No
472300	Silty	No
472400	Soft	No
485400	Squaw Bay Ls	No
485500	St. Lawrence Member	No
485600	St. Peter Ss	No
472500	Sticky	No
472600	Stoney	No
472700	Stringers	No
472450	Strips	No
485700	Sunbury Shale	No
472800	Swelling	No
485800	Sylvania Ss	No
115000	Tan	No



485900	Traverse Group	No
486000	Trempealeau Fm	No
486100	Trenton Group	No
486200	Utica Shale	No
472900	Very Coarse	No
473000	Very Fine	No
473100	Very Hard	No
473200	W/Boulders	No
473300	W/Clay	No
473400	W/Coal	No
473500	W/Cobbles	No
473600	W/Dolomite	No
473700	W/Gravel	No
473800	W/Limestone	No
473900	W/Sand	No
474000	W/Sandstone	No
474100	W/Shale	No
474200	W/Silt	No
474300	W/Stones	No
474400	Water Bearing	No
474500	Weathered	No
474600	Wet/Moist	No
117000	White	No
474700	Wood	No
118000	Yellow	No

<u>Descriptor Secondary</u>		
Code	Description	Default
470000	Broken	No
470100	Cemented	No
470200	Clayey	No
470300	Coarse	No
470400	Dense	No
470500	Dolomitic	No



470600	Dry	No
470700	Fill	No
470800	Fine	No
470900	Fine To Coarse	No
471000	Fine To Medium	No
471100	Firm	No
471200	Fractured	No
471300	Gravelly	No
471400	Gummy	No
471500	Hard	No
471600	Heaving/Quick	No
471700	Karst	No
483050	Layered	No
471800	Medium	No
471900	Medium To Coarse	No
472000	Organic	No
472100	Porous	No
472200	Sandy	No
472300	Silty	No
472400	Soft	No
472500	Sticky	No
472600	Stoney	No
472700	Stringers	No
472450	Strips	No
472800	Swelling	No
472900	Very Coarse	No
473000	Very Fine	No
475100	Very Fine-Coarse	No
474900	Very Fine-Fine	No
475000	Very Fine-Medium	No
473100	Very Hard	No
473200	W/Boulders	No
473300	W/Clay	No
473400	W/Coal	No



473500	W/Cobbles	No
473600	W/Dolomite	No
473700	W/Gravel	No
474800	W/Gypsum	No
473800	W/Limestone	No
473850	W/Pyrite	No
473900	W/Sand	No
474000	W/Sandstone	No
474100	W/Shale	No
474200	W/Silt	No
474300	W/Stones	No
474400	Water Bearing	No
474500	Weathered	No
474600	Wet/Moist	No
474700	Wood	No

	<u>Direction</u>	
Code	Description	Default
E	East	No
ENE	East-Northeast	No
ESE	East-Southeast	No
N	North	No
NNE	North-Northeast	No
NNW	North-Northwest	No
NE	Northeast	No
NW	Northwest	No
S	South	No
SSE	South-Southeast	No
SSW	South-Southwest	No
SE	Southeast	No
SW	Southwest	No
W	West	No
WNW	West-Northwest	No
WSW	West-Southwest	No



<u>Drilling Machine Operator</u>		
Code	Description	Default
EMPLOY	Employee	No
SUBCON	Subcontractor	No
UNKNOWN	Unknown	No

<u>Drilling Method</u>		
Code	Description	Default
AUGBOR	Auger/Bored	No
CABTOO	Cable Tool	No
CASHAM	Casing Hammer	No
DRIVEN	Driven Hand	No
HOLROD	Hollow Rod	No
JETTIN	Jetted	No
ROTARY	Rotary	No
*OTH	Other	No

<u>Elevation Datum</u>		
Code	Description	Default
3	Elevation from Mean Sea-Level	No
4	Local Tidal Datum	No
1	NAVD88	No
2	NGVD29	No
*U	Unknown (Historic & New)	No
N	Not Applicable	No
*OTH	Other	No

<u>Elevation Method of Collection</u>		
Code	Description	Default
A1	Altimetry	No
S1	Classical Surveying Techniques	No
G2	GPS Carrier Phase Kinetic Relative Position Tech.	No
G1	GPS Carrier Phase Static Relative Position Tech.	No
G4	GPS Code Meas. Precise Positioning Service	No



G3	GPS Differential (DGPS)	No
G5	GPS Std Positioning Svc SA Off	No
G6	GPS Std Positioning Svc SA On	No
L2	Leveling between Non Bench Mark Control Points	No
P1	Photogrammetric	No
L1	Precise Leveling from a Bench Mark	No
T1	Topographic Map Interpolation	No
L3	Trigonometric Leveling	No
*U	Unknown (Historic & New)	No
*OTH	Other	No

<u>Equipment Removed</u>		
Code	Description	Default
BRECHK	Bremer check valve	No
CHECK	Check valve	No
DRASEA	Drawdown seal	No
DRPIPE	Drop pipe	No
ELEWIR	Electrical wiring	No
DRTBOT	Obstruction driven to bottom	No
PACK	Packer	No
PITADA	Pitless adapter spool	No
PMPCYR	Pump cylinder	No
PMPRDS	Pump rods	No
STODEB	Stones/debris	No
SUBPUM	Submersible pump	No
TURPBO	Turbine pump bowls	No
UNOBS	Unknown obstruction	No
*OTH	Other	No

<u>Grouting Material</u>		
Code	Description	Default
BENDRG	Bentonite dry granular	No
BENSLU	Bentonite slurry	No
CONCRE	Concrete	No



NEATCE	Neat cement	No
NECEBE	Neat cement/bentonite	No
*OTH	Other	No

<u>Grouting Method</u>		
Code	Description	Default
DISPL	Displacement plug	No
DRVDRG	Driven/dry grout	No
GRPINC	Grout pipe inside casing	No
GRPIO	Grout pipe outside casing	No
*OTH	Other	No

<u>Horizontal Datum</u>		
Code	Description	Default
0	NAD27	No
1	NAD83	No
*U	Unknown (Historic & New)	No
*OTH	Other	No

<u>Map Scale</u>		
Code	Description	Default
9	<1:100,000	No
1	>=1:500	No
A	1:10,000	No
4	1:10,001-1:15,000	No
J	1:100,000	No
B	1:12,000	No
K	1:125,000	No
5	1:15,001-1:20,000	No
C	1:15,840	No
D	1:20,000	No
6	1:20,001-1:25,000	No
E	1:24,000	No
F	1:25,000	No
Z	1:25,001-1:50,000	No



L	1:250,000	No
G	1:50,000	No
g	1:50,000-1:100,000	No
M	1:500,000	No
3	1:5001-1:10,000	No
2	1:501-1:5,000	No
H	1:62,000	No
I	1:63,360	No
N	None	No
*U	Unknown (Historic & New)	No
*OTH	Other	No

Method of Collection		
Code	Description	Default
A5	Address Matching -Primary Name	No
A2	Address Matching-Block Face	No
A6	Address Matching-Digitized	No
A1	Address Matching-House Number	No
A4	Address Matching-Nearest Intersection	No
AO	Address Matching-Other	No
A3	Address Matching-Street Centerline	No
C3	Census Block Tract-1990-Centroid	No
C1	Census Block-1990-Centroid	No
C2	Census Block/Group-1990-Centroid	No
CO	Census-Other	No
S1	Classical Surveying Techniques	No
G2	GPS Carrier Phase Kinematic Relative Position Tech	No
G1	GPS Carrier Phase Static Relative Position Tech.	No
G3	GPS Differential (DGPS)	No
G4	GPS Precise Positioning Service	No
G5	GPS Std Positioning Svc SA Off	No
G6	GPS Std Positioning Svc SA On	No
I1	Interpolation-Map	No
IO	Interpolation-Other	No



I2	Interpolation-Photo	No
I3	Interpolation-Satellite	No
L1	Loran C	No
P2	Public-Land-Survey-Footing	No
P1	Public-Land-Survey-Quartering	No
Z1	Zipcode-Centroid	No
*U	Unknown (Historic & New)	No

<u>Plugging Material</u>		
Code	Description	Default
BENCHI	Bentonite chips/pellets	No
BENSLU	Bentonite slurry	No
CLESO	Clean soil fill	No
CONCR	Concrete	No
LSTCIM	Lost circulation material	No
NEABEN	Neat cement w/bentonite	No
NEATCE	Neat cement	No
*OTH	Other	No

<u>Plugging Units</u>		
Code	Description	Default
BAGS	Bags	No
YARDS	Yards	No
*OTH	Other	No

<u>Point/Line/Area</u>		
Code	Description	Default
P	Point	No
L	Line	No
A	Area	No

<u>Pressure Tank Manufacturer</u>		
Code	Description	Default
AOSMTH	A.O. Smith	No
AIRPA	Air-Pak	No



AMTROL	Amtrol	No
AQPOD	Aqua-Pod	No
BERKLE	Berkeley	No
CHALL	Challenger	No
CHAMP	Champion	No
CLAMAR	Clayton Mark	No
ELBI	Elbi	No
MYERS	F. E. Myers	No
FLINTW	Flint & Walling	No
GOU	Goulds	No
HYDRO	Hydro-Pro	No
JETRIT	Jet-Rite	No
PERAI	Perma-Air	No
PERTA	Perma-Tank	No
PROSOR	Pro-Source	No
PROLIN	Proline	No
QUICK	Quick	No
STARIS	Sta-Rite Signature	No
STIND	State Industries	No
TITAN	Titan	No
USTANK	US Tank	No
WELMAT	Well-Mate	No
WRITL	Well-Rite-Flexcon	No
WEXTR	Well-X-Trol	No
WELLFL	Wellflo	No
WESSEL	Wessels	No
WHIPAT	Whitewater PAT	No
ZILMET	Zilmet	No
*OTH	Other	No

<u>Pressure Tank Type</u>		
Code	Description	Default
DIABLA	Diaphragm/bladder	No
GALSTE	Galvanized steel	No



*OTH	Other	No
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	<u>Primary Color</u>	
Code	Description	Default
100000	Black	No
101000	Black & Gray	No
102000	Black & White	No
103000	Blue	No
104000	Brown	No
105000	Cream	No
106000	Dark Gray	No
107000	Gray	No
108000	Gray & White	No
109000	Green	No
110000	Light Brown	No
111000	Light Gray	No
112000	Orange	No
119000	Pink	No
113000	Red	No
114000	Rust	No
115000	Tan	No
116000	Tan & Gray	No
117000	White	No
118000	Yellow	No

	<u>Primary Material</u>	
Code	Description	Default
200000	Basalt	No
210000	Boulders	No
230000	Clay	No
230100	Clay & Boulders	No
230200	Clay & Cobbles	No
230300	Clay & Gravel	No
230400	Clay & Sand	No



230500	Clay & Silt	No
230600	Clay & Stones	No
230700	Clay Gravel Sand	No
230800	Clay Gravel Silt	No
230900	Clay Gravel Stones	No
231000	Clay Sand Gravel	No
231100	Clay Sand Silt	No
231200	Clay Silt Gravel	No
231300	Clay Silt Sand	No
240000	Coal	No
250000	Cobbles	No
260000	Conglomerate	No
570000	Debris	No
270000	Dolomite	No
270100	Dolomite & Limestone	No
270200	Dolomite & Sandstone	No
270300	Dolomite & Shale	No
280000	Dry Hole	No
290000	Granite	No
300000	Gravel	No
300100	Gravel & Boulders	No
300200	Gravel & Clay	No
300300	Gravel & Cobbles	No
300400	Gravel & Sand	No
300500	Gravel & Silt	No
300600	Gravel & Stones	No
300700	Gravel Clay Sand	No
300800	Gravel Clay Silt	No
300900	Gravel Sand Clay	No
301000	Gravel Sand Silt	No
301100	Gravel Silt Clay	No
301200	Gravel Silt Sand	No
310000	Greenstone	No
320000	Gypsum	No



330000	Hardpan	No
340000	Interval Not Sampled	No
350000	Iron Formation	No
360100	Limestone	No
360200	Limestone & Dolomite	No
360300	Limestone & Sandstone	No
360400	Limestone & Shale	No
370000	Lithology Unknown	No
380000	Loam	No
390000	Marl	No
400000	Muck	No
410000	Mud	No
000000	No Lithology Information	No
420000	No Log	No
430000	Peat	No
440000	Quartz	No
450000	Quartzite	No
460000	Sand	No
460100	Sand & Boulders	No
460200	Sand & Clay	No
460300	Sand & Cobbles	No
460400	Sand & Gravel	No
460500	Sand & Silt	No
460600	Sand & Stones	No
460700	Sand Clay Gravel	No
460800	Sand Clay Silt	No
460900	Sand Gravel Clay	No
461000	Sand Gravel Silt	No
461100	Sand Silt Clay	No
461200	Sand Silt Gravel	No
470000	Sandstone	No
470100	Sandstone & Limestone	No
470200	Sandstone & Shale	No
480000	Schist	No



490000	See Comments	No
500000	Shale	No
500100	Shale & Coal	No
500200	Shale & Limestone	No
500300	Shale & Sandstone	No
500400	Shale Sandstone Limestone	No
510000	Silt	No
510100	Silt & Boulders	No
510200	Silt & Clay	No
510300	Silt & Cobbles	No
510400	Silt & Gravel	No
510500	Silt & Sand	No
510600	Silt & Stones	No
510700	Silt Clay Gravel	No
510800	Silt Clay Sand	No
510900	Silt Gravel Clay	No
511000	Silt Gravel Sand	No
511100	Silt Sand Clay	No
511200	Silt Sand Gravel	No
520000	Slate	No
530000	Soapstone (Talc)	No
540000	Stones	No
550000	Topsoil	No
560000	Unidentified Consolidated Fm	No
580000	Void	No

<u>Pump Manufacturer</u>		
Code	Description	Default
AYMC	A.Y. McDonald	No
AERM	Aermotor	No
AQUAD	AquaDuty	No
BAKERM	Baker Monitor	No
BARON	Baron	No
BERK	Berkeley	No



BURK	Burks	No
DEMPST	Dempster	No
EAGLE	Eagle	No
FEMY	F.E. Myers	No
FAIRMO	Fairbanks-Morse	No
FLWALL	Flint & Walling	No
FLOTEC	Flo Tec	No
FRAELE	Franklin Electric	No
GENER	General	No
GOUL	Goulds	No
GRDFOS	Grundfos	No
JACU	Jacuzzi	No
MCDERM	McDermott	No
MILAN	Milan	No
MONARC	Monarch	No
PENT	Pentair	No
REDJAC	Red Jacket	No
STARIT	Sta-Rite	No
STIND	State Industries	No
STRFIB	Structural Fibers	No
TAIT	Tait	No
USFLOW	U.S. Flow	No
USPUMP	U.S. Pump	No
WEB	Webtrol	No
WILO	Wilo	No
*OTH	Other	No

	<u>Pump Type</u>	
Code	Description	Default
HAND	Hand	No
JET	Jet	No
SUBM	Submersible	No
VERTUR	Vertical turbine	No
*OTH	Other	No



<u>Reason for Abandoning – Abandoned Water Well</u>		
Code	Description	Default
DRYH	Dry hole	No
MUWACO	Public water connection	No
UNCOMW	Uncompleted well	No
WPORE	Well in disrepair	No
WENLNE	Well no longer needed	No
*OTH	Other	No

<u>Reason for not plugging – Water Well</u>		
Code	Description	Default
OWPLWE	Owner is plugging well	No
PLANDR	Well being plugged by another driller	No
INUSE	Well still in use for drinking purposes	No
NONDRK	Well still in use for non-drinking water purposes	No
UNLOC	Unable to locate well	No
WELLINACC	Well inaccessible for plugging	No
*OTH	Other	No

<u>Screen Blank</u>		
Code	Description	Default
ABOVE	Above	No
BELOW	Below	No
BETW	Between	No

<u>Screen Diameter Measurement</u>		
Code	Description	Default
PIPE	Attached	No
TELES	Telescoped	No

<u>Screen Fittings</u>		
Code	Description	Default
BOTPLU	Bottom plug	No
BRCVAL	Bremer check valve	No



COUPL	Coupling	No
NEOPLU	Neoprene packer	No
NONE	None	No
THRPOI	Threaded point	No
WASPLU	Washdown plug	No
*OTH	Other	No

<u>Screen Material Type</u>		
Code	Description	Default
PVCP	PVC-slotted	No
PVCSC	PVC-saw cut	No
PVCWR	PVC-wire wrapped	No
SSG	Stainless steel-gauze	No
SSSLOT	Stainless steel-slotted	No
SSWP	Stainless steel-well point	No
SSWR	Stainless steel-wire wrapped	No
*OTH	Other	No

<u>Source</u>		
Code	Description	Default
CONSUL	Consultant	No
GEM	GEM center	No
LOHDEP	Local health department	No
STAMIC	State of Michigan	No
WELLDR	Well driller	No
*OTH	Other	No

<u>Water Well Status</u>		
Code	Description	Default
ACT	Active	Yes
INACT	Inactive	No
PLU	Plugged	No
*OTH	Other	No



<u>Wellhead Completion</u>		
Code	Description	Default
12AG	12 inches above grade	No
BASOFT	Basement offset	No
PITADA	Pitless adapter	No
PUMOCA	Pump mount to casing	No
WEHOU	Well house	No
*OTH	Other	No

<u>Well Intake</u>		
Code	Description	Default
BEDWEL	Bedrock Well	No
UNSCWE	Unscreened Sand/Gravel Well	No

<u>Well Intake ABD Well</u>		
Code	Description	Default
DRIFT	Sand/Gravel Well	No
DRYHOL	Dry hole	No
ROCK	Bedrock well	No
*U	Unknown	No
*OTH	Other	No

<u>Well Type</u>		
Code	Description	Default
DRYHOL	Dry Hole	No
BORING	Boring (No Casing)	No
NEW	New	No
REPLAC	Replacement	No
DEEPEN	Deepening	No

<u>Well Use</u>		
Code	Description	Default
HEATP	Heat Pump-Open Loop	No
HOSHLD	Household	No



INDUS	Industrial	No
IRRI	Irrigation	No
TESTW	Test well	No
TY1PU	Type I public	No
TY2PU	Type II public	No
TY3PU	Type III public	No
*U	Unknown (for ABD Well Only)	
*OTH	Other	No

<u>Yield Test Method</u>		
Code	Description	Default
AIR	Air	No
BAIL	Bailer	No
PLUGR	Plunger	No
TSTPUM	Test pump	No
*OTH	Other	No

County, Township, TownRange picklists are based on tables in the database (Counties, Townships, TownRange). The Township list is limited based on which County is chosen. The TownRange list is limited based on which Township is chosen.

There are several numeric based picklists. The fields can be populated either by typing in a number in decimal form or by choosing a number off of a picklist. A picklist is used in order to be able to choose Unknown when the field is required in historic mode.

Diameter of Drop Pipe (WW)

- .75
- 1.0
- 1.25
- 2.0
- 3.0
- 4.0
- 6.0
- 8.0
- Unknown (historic Only)

Bore Hole Diameter (1,2,3)

- 3.88
- 4.25
- 4.50
- 4.75
- 5.88
- 6.00
- 7.88
- 8.00
- 8.75
- 9.50

Casing Diameter(1,2,3 and Abandonment)(WW&AW)

- 9.88



1.25	10.63
2.00	Unknown (historic only)
3.00	
4.00	<u>Screen Diameter</u>
5.00	1.25
6.00	2.00
8.00	3.00
10.00	4.00
12.00	5.00
14.00	6.00
16.00	8.00
18.00	10.00
Unknown (historic only)	12.00
	14.00
	16.00
	18.00
	24.00
	Unknown (historic only)

<u>Slot</u>	<u>Horsepower (HP)</u>
5.00	.50
6.00	.75
7.00	1.00
8.00	1.50
10.00	2.00
12.00	3.00
15.00	5.00
18.00	7.50
20.00	10.00
25.00	15.00
30.00	20.00
35.00	25.00
50.00	30.00
Unknown (historic only)	40.00
	Unknown (historic only)