

# Proposal to Provide Risk and Resilience Assessment Work Order No. 15

**Services to be provided by:** Hazen and Sawyer (Hazen)

**Services provided to (“Village”):** Village of Wellington (Village)

**Proposal Date:** June 11, 2019

## Proposal Terms

### PROJECT DESCRIPTION

America’s Water Infrastructure Act of 2018 requires that community water systems serving populations greater than 3,300 persons shall assess risks to, and resilience of, its system (referred to hereinafter as the Risk and Resilience Assessment or “RRA”). The RRA shall include the following elements:

- The risk to the system from malevolent acts and natural hazards
- The resilience of the infrastructure, including SCADA/cyber resilience
- The monitoring practices of the system
- The financial infrastructure of the system
- The use, storage, or handling of various chemicals by the system
- The operation and maintenance of the system

The detailed RRA shall culminate with an implementation plan for capital and operational needs for risk and resilience management of the system. The assessment shall be finalized and then certified to the Administrator of the Environmental Protection Agency (EPA) by December 31, 2020, (in the case of systems serving a population of 50,000 or more but less than 100,000).

The RRA must be reviewed every five years to determine if the assessment shall be revised. Upon review, the water system shall recertify the original assessment or certify a revision to the assessment to EPA.

The Village of Wellington (Village) requested that Hazen and Sawyer (Hazen) conduct the RRA for its water systems, including treatment facilities, storage tanks, pump stations and pipelines. Hazen shall conduct the RRA in compliance with the ANSI/AWWA J100 standard. Hazen shall retain the services of a Subconsultant, Launch! Consulting, Inc. (Launch), who specializes in conducting utility risk assessments that comply with the J100 standard.

Results of the RRA shall be documented in a report with critical asset summaries and an implementation plan for mitigation measures. Village will be responsible for integrating the resulting information into the Capital Improvement Plan, policies, and procedures.

The seven-step process outlined in the J100 standard provides the framework for the scope of work. The steps are as follows:

1. Asset characterization
2. Threat characterization
3. Consequence analysis
4. Vulnerability analysis
5. Threat analysis
6. Risk/resilience analysis
7. Risk/resilience management

The RRA involves a series of workshops with leaders from utility departments, field inspections of critical assets, and development of a report that is “for official use only.” The detailed scope of work follows below;

## **SCOPE OF SERVICES**

### **Task 1 – Project Management and Coordination**

Hazen shall conduct a kickoff meeting with Village staff to introduce the Hazen project team, establish lines of communication, and review the scope of services and project schedule. The kickoff meeting shall also include a discussion of the background/history related to vulnerability and resiliency for Village. Hazen shall provide a summary of the meeting within seven days to summarize major discussion items, issues, and action items.

During the kickoff meeting Hazen shall meet with the Village to determine their RRA team participants, needs, and schedule. The following items shall be discussed during the meeting:

- Project goals and schedule,
- Outside agency partners (with staff names) to participate in the project (such as law enforcement, regulatory agencies, etc.),
- Coordination and information flow for the project,
- Identified existing information to be reviewed by Hazen.

Village will provide a list of staff (name, role, phone, email) to participate in the project. Participants in the RRA should include, but are not limited to, the Director and senior staff in the areas of Communications, Engineering, Finance, Human Resources, Operations, Customer Service, IT, and Safety. A field staff representative is also helpful on the RRA team. Additional

participants on the RRA team may include representatives from local law enforcement, the local hazardous materials team and fire department, state and local regulatory agencies, and a local Department of Homeland Security representative. Including the additional participants in some of the project workshops provides critical information about threats to the utility and promotes an understanding of the water system to all participants, particularly first responders.

### **Data Collection and Review**

Village will provide the following documents electronically to Hazen for review:

1. Existing security plans and procedures,
2. Previous vulnerability and risk assessments,
3. Emergency response plans, including hurricane plans,
4. Business continuity plans (Continuity of Operations Plans),
5. SCADA system information,
6. Human resources policies,
7. Door lock/key policies,
8. Security camera use and policies,
9. Source water protection plans,
10. Local natural hazard mitigation plan(s),
11. Other documents that may be related to the vulnerability and resiliency of the water system or the utility.
12. GIS layers of all water infrastructure elements

Hazen shall review the documents in preparation for the Chartering Workshop.

#### **Deliverable(s):**

##### **1.1 – Kickoff Meeting Minutes**

### **Task 2 – Project Chartering Workshop**

Hazen shall conduct a Project Chartering Workshop (Workshop No. 1) with the participants identified during the Kickoff Meeting. Hazen shall prepare an agenda to include project purpose and goals, J100 standard process, utility expectations and metrics for a successful project, project logistics, information confidentiality, document review process, roles of project participants, identification of potentially critical assets (refine the list), identification of potential threats, next steps and project schedule.

The RRA shall include an assessment of the following water system assets to be refined during the workshop:

- Water system components (such as Water Treatment Plants, pump stations, storage tanks, etc.)
- Main office locations, supply warehouses, etc.

Hazen shall review these potentially critical assets as the workshop basis to determine the critical assets throughout the water system. The assets will be reviewed and ranked until the most critical assets are determined. By the J100 Standard definition, a critical asset is an item of value to the utility that, if incapacitated, could result in significant damage to the utility or community to the extent that the utility would be unable to meet its mission. Assets include physical elements, cyber elements, and human elements (critical knowledge or functions of people).

Deliverable(s):

2.1 – Workshop No. 1 Summary

**Task 3 – Threat Characterization and Consequence Levels**

Hazen shall meet with the Village in Workshop No. 2 to discuss and choose the most viable threats to the area's water systems. Development of the list of threats begins with the previous vulnerability assessment, the regional natural hazard mitigation plan, the list of threats from J100, knowledge of threats by the Hazen team from past projects, and utility staff historical knowledge. From the list of threats resulting from Workshop No. 2, Hazen shall develop probability of occurrence values for each threat, based on J100 information and historic values.

This scope and fee is based on up to 15 threats to be used in the J100 analysis, and other threats identified may be considered in the RRA report.

During the second part of Workshop No. 2, attendees will establish the consequence levels to consider if an asset is lost. These are typically categorized by:

1. Environmental impact
2. Sickness/Injury and loss of life
3. Cost to remediate and economic loss
4. Public perception
5. Loss of service

Deliverable(s):

3.1 – Workshop No. 2 Summary

**Task 4 – Asset Characterization: Field Visits, Data Collection and Asset Summaries**

Hazen shall conduct Workshop No. 3 with Village to develop an overall consequence of loss value and monetary amount for loss of each potentially critical asset (based on the consequence table developed in Workshop No. 2). The assets will be ranked by consequence and the list of critical

assets to be considered in the risk analysis will be approved by the Village. Up to twelve critical assets for further analysis have been assumed for development of this scope and fee.

Hazen shall visit the critical assets to determine potential vulnerabilities, security issues, and mitigation measures. The field visit will be conducted with Village operational staff. For some assets, a night visit may also be conducted to assess lighting at the facility and to better observe potential vandal/criminal activity in the area.

Through the field visit and meetings with Village staff, Hazen shall gather information on physical and personnel security, access control, systems controls, protection of the source water, and hiring/firing/Human Resources procedures.

Hazen shall assist the Village to request Computer-Aided Dispatch (CAD) crime information for the utility area from the local police department.

Hazen shall compile individual asset sheets summarizing field and risk analysis results for use in the RRA report.

Deliverable(s):

4.1 – Workshop No. 3 Summary

**Task 5 – Risk Calculations and Results, Mitigation Measures for Critical Assets and Cost-Benefit Analysis**

Hazen shall pair each threat with each critical asset (e.g., 12 assets paired with 15 threats yields 180 threat-asset pairs) in an electronic table.

The calculation of risk is a function of threat likelihood, vulnerability, and consequence. During Workshop No. 4, Hazen and Village shall develop the threat and vulnerability values, to complement the consequence of loss values from Workshop No. 3, such that a risk value can be developed for each critical asset.

Hazen shall assist the Village to develop these values during Workshop No. 4, along with potential mitigation measures that can lower risk. The work and discussions during this workshop will result in risk information to focus mitigation strategies on critical assets with the highest risk. With the understanding of which threat-asset pairs have the greatest risk, the RRA Team will discuss and develop mitigation measures for critical assets. Mitigation measures may include policy and procedure changes, physical security improvements, general changes at facilities, needs for additional hires, etc.

The resulting list of critical assets ordered by risk (from highest to lowest) shall be provided to the Village for approval.

Hazen shall document the suggested mitigation measures for each of the high-risk threat-asset pairs, and the overall mitigation measures in the draft RRA report. Village will select which mitigation measures are most practical and efficient to retain in the final RRA report. Hazen shall develop order-of-magnitude conceptual costs to implement the mitigation strategies.

Hazen shall estimate the benefit of each mitigation measure for high risk threat-asset pairs in terms of risk reduction. Hazen shall summarize the simple cost-benefit analysis for each of the mitigation strategies based on the J100 Standard in the RRA report.

Hazen shall also develop a Utility Resilience Index (URI) from J100 Standard Appendix H, through research and staff discussions. The URI results shall be included in the RRA report.

Deliverable(s):

5.1 – Workshop No. 4 Summary

**Task 6 – SCADA/Cyber Assessment**

Hazen shall utilize a software tool to review Village’s cyber vulnerabilities, particularly as they relate to the SCADA system. Hazen will meet with the IT/SCADA leaders from Village to conduct the assessment with the tool. The report from the software tool will be included in the RRA report appendix.

Deliverable(s):

6.1 – Cyber Meeting Summary

**Task 7 – Asset Management Component: Operation and Maintenance of the System**

The requirements of the RRA include a limited overview of the operation and maintenance of the water system. Hazen shall meet with the Village Operations Manager and other staff to discuss the status of an asset management program, chemical storage and handling, and any gaps that could be improved to make the Village more resilient. These meetings will also include discussion of source water, source water protection, and source water alternatives should a contamination event occur.

The results of the assessment shall be included in the RRA Report. Information resulting from these meetings will be included in the RRA report.

**Task 8 – RRA Report and Implementation Plan**

Hazen shall prepare the RRA report to describe the information from the J100 process and provide the data and results of the assessment. The mitigation measures chosen by Village shall be established in an implementation plan, which can be used by the Village to prioritize and schedule implementation of the mitigation measures. The report shall include summaries (typically two-page) for each critical asset.

Hazen shall review the draft RRA report and implementation plan with the Village during a Workshop No. 5. It is assumed that Village’s comments will be received within two weeks after receipt of the draft. Hazen shall revise the report and provide the final document in electronic format with 1 paper copy.

Village will certify by letter to the Administrator of the Environmental Protection Agency (EPA), that the RRA has been completed and forward a copy to Hazen. Such certification will remain valid for five years. It is recommended that Village perform a review after four years, such that

updates can be incorporated (under future work authorization) and the Village can recertify to EPA that the RRA has been updated.

Deliverable(s):

8.1 – DRAFT RRA Report and Implementation Plan

8.2 – FINAL RRA Report and Implementation Plan

## **ASSUMPTIONS**

1. Village will coordinate with non-utility agency staff (such as from police or fire departments) who are part of the RRA Team, and arrange for their attendance at necessary workshop meetings.
2. Village will provide available documents listed in Task 1 for review electronically.
3. The Village (with Hazen assistance) to request Computer-Aided Dispatch (CAD) crime information for the utility area from the local police department.
4. Village will provide staff to accompany on field visits as necessary.
5. For some assets, a night visit may also be conducted to assess lighting at the facility and to better observe potential vandal/criminal activity in the area.
6. Village will file certification by letter to the Administrator of the EPA, copying Hazen, following completion of the RRA.

## **SCHEDULE**

<b>Task</b>	<b>Description</b>	<b>Time of Completion from NTP</b>
1	Kickoff Meeting Minutes	1 month
2	Workshop No. 1 Summary Report	2 months
3	Workshop No. 2 Summary Report	3 months
4	Workshop No. 3 Summary Report	3 months
5	Workshop No. 4 Summary Report	4 months
6	Cyber Meeting Summary Report	4 months
8	DRAFT RRA Report and Implementation Plan	6 months
8	FINAL RRA Report and Implementation Plan	7 months

## **COMPENSATION**

Compensation for all tasks, unless specifically noted below, will be billed on a lump sum basis based on percent of work complete and total project fees presented in Attachment A.

## AUTHORIZATION

Work described in this proposal will commence upon authorization to proceed and receipt of a signed agreement.

### Hazen and Sawyer, D.P.C.

Signed: Albert Muniz

Name: Albert Muniz, PE

Title: Vice President

Date: June 11, 2019

### Village of Wellington

Signed: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

[Please return one original to Hazen and Sawyer]



### BUDGET SUMMARY - Lump Sum

Task No.	Description	BUDGET SUMMARY for Work Order No. 3							
		Vice President	Senior Associate	Associate	Engineer/ Asst Engr	Principal Designer	Office	Total Labor	Sub-Consultant
1	J100 Risk Assessment for the Water System								
1.1	Project Management and Coordination	2	4	8	0	0	0	14	
1.2	Project Chartering Workshop	2	4	16	8	4	4	38	
1.3	Threat Characterization and Consequence Levels	2	4	16	16	4	4	46	
1.4	Asset Characterization, Field Visits, Data Collection, and Asset Summaries	2	2	32	32	4	4	76	
1.5	Risk Calculations and Results; Mitigation Measures for Critical Assets; Cost-Benefit Results	2	2	24	20	4	4	56	
1.6	SCADA/Cyber Assessment	2	2	6	0	0	0	10	
1.7	Asset Management Component - Operation and Maintenance of the System	2	4	22	0	0	0	28	
1.8	RRA Report and Implementation Plan	2	4	24	16	4	4	54	
	<b>SUB-TOTAL</b>	<b>16</b>	<b>26</b>	<b>148</b>	<b>92</b>	<b>20</b>	<b>20</b>	<b>322</b>	<b>\$85,017</b>
	Labor Raw Costs	\$218	\$196	\$165	\$105	\$114	\$73		
	Labor Sub-Total	\$3,488	\$5,096	\$24,420	\$9,660	\$2,280	\$1,460		
	<b>Labor Total</b>							<b>\$46,404</b>	
	Subconsultant Labor Total								\$85,017
	Subconsultant Multiplier								1.0
	<b>Subconsultant Total</b>								<b>\$85,017</b>
	<b>Reimbursable Expenses</b>								
	<b>Project Total</b>								<b>\$131,421</b>



## **SCOPE OF WORK FOR RISK AND RESILIENCE ASSESSMENT FOR Village OF WELLINGTON, FLORIDA**

**April 15, 2019**

### **BACKGROUND**

America's Water Infrastructure Act of 2018 requires that all community water systems serving populations greater than 3,300 persons shall assess the risks to, and resilience of, its system (referred to hereinafter as the Risk and Resilience Assessment or "RRA"). The RRA shall include the following elements:

- The risk to the system from malevolent acts and natural hazards
- The resilience of the infrastructure, including SCADA/cyber resilience
- The monitoring practices of the system
- The financial infrastructure of the system
- The use, storage, or handling of various chemicals by the system
- The operation and maintenance of the system

The detailed RRA shall culminate with an implementation plan for capital and operational needs for risk and resilience management of the system. The assessment shall be finalized and then certified to the Administrator of the Environmental Protection Agency (EPA) by December 31, 2020, in the case of systems serving a population of 50,000 or more but less than 100,000.

The RRA must be reviewed at least every five years to determine if the assessment shall be revised. Upon review, the water system shall recertify the original assessment or certify a revision to the assessment.

Within six months of completion of the RRA, America's Water Infrastructure Act of 2018 also requires a letter of certification to EPA that the Emergency Response Plan (ERP) for a utility is updated, and at least every 5 years thereafter. For the Village of Wellington, ERP certification is required by June 30, 2021. The ERP must contain the following elements:

- Strategies and resources to improve the resilience of the system, including the physical security and cybersecurity of the system
- Plans and procedures that can be implemented, and identification of equipment that can be utilized, in the event of a malevolent act or natural hazard that threatens the ability of the community water system to deliver safe drinking water
- Actions, procedures, and equipment which can obviate or significantly lessen the impact of a malevolent act or natural hazard on the public health and the safety and supply of drinking water provided to communities and individuals, including the development of alternative source water options, relocation of water intakes, and construction of flood protection barriers; and
- Strategies that can be used to aid in the detection of malevolent acts or natural hazards that threaten the security or resilience of the system.

The ERP can be developed based on existing emergency plans such as the Hurricane Plan, but is required to include response protocols for any type of emergency or event identified as a threat during the RRA. The suggested format for the ERP is based on the Federal Emergency Management Agency Comprehensive Preparedness Guide (CPG101) and on American Water Works Association guidance M19, with sections including the basic plan, hazard-specific procedures, and communication/coordination information.

## **SCOPE OF SERVICES**

The Village of Wellington (Village) requested that Launch! Consulting conduct the RRA for the water and wastewater systems, including treatment facilities, storage tanks, pump stations and pipelines. Launch! Consulting shall conduct the RRA in compliance with the ANSI/AWWA J100 standard.

Results of the RRA shall be documented in a report with critical asset summaries and an implementation plan for mitigation measures. Village will be responsible for integrating the resulting information into the Capital Improvement Plan, policies, and procedures.

The seven-step process outlined in the J100 standard provides the framework for the scope of work. The steps are as follows:

1. Asset characterization
2. Threat characterization
3. Consequence analysis
4. Vulnerability analysis
5. Threat analysis
6. Risk/resilience analysis
7. Risk/resilience management

The RRA involves a series of workshops with leaders from utility departments, field inspections of critical assets, and development of a report that is “for official use only.” Summaries of the project workshops shall be provided to Village electronically, through upload to a secure file-sharing platform. Confidential documents will not be emailed.

Following completion of the RRA, Launch! Consulting shall then revise the Village’s ERP through a series of workshops with the Village, to include results of the RRA.

The detailed scope of work follows.

## **TASK 1 – PROJECT MANAGEMENT and COORDINATION**

### **Subtask 1.1 Project Management and Coordination**

Launch! Consulting shall conduct a 3-hour kickoff meeting with Village staff to introduce the Launch! Consulting project team establish lines of communication, and review the scope of services and project schedule. The kickoff meeting shall also include a discussion of the background/history related to vulnerability

and resiliency for Village. Launch! Consulting shall provide a summary of the meeting within seven days to summarize major discussion items, issues, and action items.

During the kickoff meeting Launch! Consulting shall meet with the Village to determine their RRA team participants, needs, and schedule. The following items shall be discussed during the meeting:

- Project goals and schedule,
- Outside agency partners (with staff names) to participate in the project (such as law enforcement, regulatory agencies, etc.),
- Coordination and information flow for the project,
- Identified existing information to be reviewed by Launch! Consulting.

Village will provide a list of staff (name, role, phone, email) to participate in the project. Participants in the RRA should include, but are not limited to, the Director and senior staff in the areas of Communications, Engineering, Finance, Human Resources, Operations, Customer Service, IT, and Safety. A field staff representative is also helpful on the RRA team. Additional participants on the RRA team may include representatives from local law enforcement, the local hazardous materials team and fire department, state and local regulatory agencies, and a local Department of Homeland Security representative. Including the additional participants in some of the project workshops provides critical information about threats to the utility and promotes an understanding of the water and wastewater system to all participants, particularly first responders.

#### **Subtask 1.2 - Data Collection and Review**

Village will provide the following documents electronically to Launch! Consulting for review:

1. Existing security plans and procedures,
2. Previous vulnerability and risk assessments,
3. Emergency response plans, including hurricane plans,
4. Business continuity plans (Continuity of Operations Plans),
5. SCADA system information,
6. Human resources policies,
7. Door lock/key policies,
8. Security camera use and policies,
9. Source water protection plans,
10. Local natural hazard mitigation plan(s),
11. Other documents that may be related to the vulnerability and resiliency of the water/wastewater systems or the utility.

**HAZEN ASSUMPTIONS**

- Hazen shall provide a summary of the meeting within seven days to summarize major discussion items, issues, and action items.
- Hazen is responsible for workshop logistics, including scheduling, refreshments (if needed), and location.
- Hazen will verify that Launch! Consulting can attend all workshop dates before finalizing them.
- Hazen shall review any documents provided by the Village with Launch! Consulting.

**LAUNCH! ASSUMPTIONS**

- Launch! Consulting shall review any documents provided by the Village with Hazen.

**TASK 2 – PROJECT CHARTERING WORKSHOP**

Launch! Consulting shall conduct a Project Chartering Workshop (Workshop No. 1) with the participants identified during the Kickoff Meeting. Launch! Consulting shall prepare an agenda to include project purpose and goals, J100 standard process, utility expectations and metrics for a successful project, project logistics, information confidentiality, document review process, roles of project participants, identification of potentially critical assets (refine the list), identification of potential threats, next steps and project schedule.

The RRA shall include an assessment of the following water and wastewater system assets to be refined during the workshop:

- Water system components (such as Water Treatment Plants, pump stations, storage tanks, etc.)
- Wastewater system components (Wastewater Treatment Plant, master lift stations, etc.)
- Reclaimed water system components
- Main office locations, supply warehouses, etc.

Launch! Consulting shall review these potentially critical assets as the workshop basis to determine the critical assets throughout the water and wastewater system. The assets will be reviewed and ranked until the most critical assets are determined. By the J100 Standard definition, a critical asset is an item of value to the utility that, if incapacitated, could result in significant damage to the utility or community to the extent that the utility would be unable to meet its mission. Assets include physical elements, cyber elements, and human elements (critical knowledge or functions of people).

**HAZEN ASSUMPTIONS**

- Hazen shall provide a workshop summary within two weeks of workshop completion to the Village.
- Hazen will research the list of the threats from Workshop 1 and provide threat probabilities and associated information on a worksheet to be reviewed by Launch! Consulting at least 5 business days before Workshop 2.
- Hazen shall have an engineer present at the workshop to take detailed notes.
- Hazen shall provide list of potential critical assets and associated information in an Excel workbook to reviewed by Launch! Consulting at least 5 business days before Workshop 2.

**LAUNCH! ASSUMPTIONS**

- Launch! Consulting shall provide agenda for the workshop.
- Launch! Consulting shall have one facilitator present at workshop.

**TASK 3 -THREAT CHARACTERIZATION and CONSEQUENCE LEVELS**

Launch! Consulting shall meet with the Village in Workshop No. 2 for 6 hours to discuss and choose the most viable threats to the area's water and wastewater systems. Development of the list of threats begins with the previous vulnerability assessment, the regional natural hazard mitigation plan, the list of threats from J100, knowledge of threats by the Launch! Consulting team from past projects, and utility staff historical knowledge. From the list of threats resulting from Workshop No. 2, Launch! Consulting shall develop probability of occurrence values for each threat, based on J100 information and historic values.

This scope and fee is based on up to 15 threats to be used in the J100 analysis, and other threats identified may be considered in the RRA report.

During the second part of Workshop No. 2, attendees will establish the consequence levels to consider if an asset is lost. These are typically categorized by:

1. Environmental impact
2. Sickness/Injury and loss of life
3. Cost to remediate and economic loss
4. Public perception
5. Loss of service

**HAZEN ASSUMPTIONS**

- Hazen shall provide a workshop summary within two weeks of workshop completion to the Village.
- Hazen shall provide a finalized threat list.
- Hazen shall provide a finalized Consequence Table from Workshop 2.
- Hazen shall have an engineer present at the workshop to take detailed notes.

**LAUNCH! ASSUMPTIONS**

- Launch! Consulting shall provide agenda for the workshop.
- Launch! Consulting shall have one facilitator present at workshop.

**TASK 4 – ASSET CHARACTERIZATION: FIELD VISITS, DATA COLLECTION and ASSET SUMMARIES**

Launch! Consulting shall conduct Workshop No. 3 with Village to develop an overall consequence of loss value and monetary amount for loss of each potentially critical asset (based on the consequence table developed in Workshop No. 2). The assets will be ranked by consequence and the list of critical assets to be considered in the risk analysis will be approved by the Village. Up to twelve critical assets for further analysis have been assumed for development of this scope and fee.

Launch! Consulting shall visit the critical assets to determine potential vulnerabilities, security issues, and mitigation measures. The field visit will be conducted with Village operational staff. For some assets, a night visit may also be conducted to assess lighting at the facility and to better observe potential vandal/criminal activity in the area.

Through the field visit and meetings with Village staff, the Launch! Consulting shall gather information on physical and personnel security, access control, systems controls, protection of the source water, and hiring/firing/Human Resources procedures.

Launch! Consulting shall assist the Village to request Computer-Aided Dispatch (CAD) crime information for the utility area from the local police department.

#### **HAZEN ASSUMPTIONS**

- Hazen shall provide a workshop summary within two weeks of workshop completion to the Village.
- Hazen shall provide a finalized list of the up to 12 critical assets.
- Hazen shall provide two engineers present at all field visits; one to take detailed notes and one that is familiar with the assets.
- Hazen shall provide an engineer for Village meetings with Launch! Consulting to take detailed notes.
- Hazen shall compile individual asset sheets summarizing field and risk analysis results for use in the RRA report to be reviewed by Launch! Consulting.
- Hazen will input data/information from Workshop 3 into J100 Analysis worksheets for review by Launch! Consulting in preparation of Workshop 4.

#### **LAUNCH! ASSUMPTIONS**

- Launch! Consulting shall provide agenda for the workshop.
- Launch! Consulting shall have one facilitator present at workshop.
- Launch! Consulting Subject Matter Experts (SME) will facilitate meetings with Village staff for information collection.
- Launch! Consulting shall provide up to two SMEs to visit the assets.

#### **TASK 5 – RISK CALCULATIONS and RESULTS, MITIGATION MEASURES for CRITICAL ASSETS and COST-BENEFIT ANALYSIS**

Launch! Consulting shall pair each threat with each critical asset (e.g. 12 assets paired with 15 threats yields 180 threat-asset pairs) in an electronic table.

The calculation of risk is a function of threat likelihood, vulnerability, and consequence. During Workshop No. 4, Launch! Consulting and Village shall develop the threat and vulnerability values, to complement the consequence of loss values from Workshop No. 3, such that a risk value can be developed for each critical asset.

Launch! Consulting shall assist the Village to develop these values during Workshop No. 4, along with potential mitigation measures that can lower risk. The work and discussions during this workshop will result in risk information to focus mitigation strategies on critical assets with the highest risk. With the understanding of which threat-asset pairs have the greatest risk, the RRA Team will discuss and develop mitigation measures for critical assets. Mitigation measures may include policy and procedure changes, physical security improvements, general changes at facilities, needs for additional hires, etc.

The resulting list of critical assets ordered by risk (from highest to lowest) shall be provided to the Village for approval.

Launch! Consulting shall document the suggested mitigation measures for each of the high risk threat-asset pairs, and the overall mitigation measures in the draft RRA report. Village will select which mitigation measures are most practical and efficient to retain in the final RRA report. Hazen shall develop order-of-magnitude conceptual costs to implement the mitigation strategies.

Launch! Consulting shall estimate the benefit of each mitigation measure for high risk threat-asset pairs in terms of risk reduction. Launch! Consulting shall summarize the simple cost-benefit analysis for each of the mitigation strategies based on the J100 Standard in the RRA report.

#### **HAZEN ASSUMPTIONS**

- Hazen shall provide a workshop summary within two weeks of workshop completion to the Village.
- Hazen shall provide a draft implementation plan for mitigation measures.
- Hazen shall provide an engineer to take detailed notes.
- Hazen shall provide order of magnitude costs for each mitigation measure.

#### **LAUNCH! ASSUMPTIONS**

- Launch! Consulting shall provide agenda for the workshop.
- Launch! Consulting shall have one facilitator present at workshop.
- Launch! Consulting shall provide to Hazen a list of information needed for mitigation measures, such as costs.
- Launch! Consulting (SME) will work with a Hazen engineer to determine the suggested mitigation measures for each asset and the utility as a whole.
- Launch! Consulting shall provide the Utility Resilience Index results.

#### **TASK 6 - SCADA/CYBER ASSESSMENT**

Launch! Consulting shall utilize a software tool to review Village's cyber vulnerabilities, particularly as they relate to the SCADA system. Launch! Consulting will meet with the IT/SCADA leaders from Village (for 4 to 6 hours) to conduct the assessment with a cyber assessment tool either from AWWA or from MGS+. The report from the software tool will be included in the RRA report appendix.

#### **LAUNCH! ASSUMPTIONS**

- Launch! Consulting (SME) will meet with the Village's IT/SCADA representative to assist in completing the cyber-security questionnaire.

#### **TASK 7 – ASSET MANAGEMENT COMPONENT: OPERATION and MAINTENANCE of the SYSTEM**

The requirements of the RRA include a limited overview of the operation and maintenance of the water/wastewater system. Launch! Consulting shall meet with the Village Operations Manager and other staff to discuss the status of an asset management program, chemical storage and handling, and any gaps that could be improved to make the Village more resilient. These meetings will also include discussion of source water, source water protection, and source water alternatives should a contamination event occur. The results of the assessment shall be included in the RRA Report. Information resulting from these meetings will be included in the RRA report.

#### **HAZEN ASSUMPTIONS**



- Hazen will interview Village staff to develop a description of the Asset Management Program to be included in the RRA Report.

**LAUNCH! ASSUMPTIONS**

- Launch! Consulting will review Hazen description for use in the Report.

**TASK 8 – RRA REPORT and IMPLEMENTATION PLAN**

Launch! Consulting shall prepare the RRA report to describe the information from the J100 process and provide the data and results of the assessment. The mitigation measures chosen by Village shall be established in an implementation plan, which can be used by the Village to prioritize and schedule implementation of the mitigation measures. The report shall include summaries (typically two-page) for each critical asset.

Launch! Consulting shall review the draft RRA report and implementation plan with the Village during Workshop No. 5. It is assumed that Village's comments will be received within two weeks after receipt of the draft. Launch! Consulting shall revise the report and provide the final document in electronic format with 1 paper copy.

Village will certify by letter to the Administrator of the Environmental Protection Agency (EPA), that the RRA has been completed and forward a copy to Launch! Consulting. Such certification will remain valid for five years. It is recommended that Village perform a review after four years, such that updates can be incorporated (under future work authorization) and the Village can recertify to EPA that the RRA has been updated.

**HAZEN ASSUMPTIONS**

- Hazen shall provide a workshop summary within two weeks of workshop completion to the Village.
- Hazen will input data/information from Workshop 5 into J100 Analysis worksheets.
- Hazen shall provide an engineer to take detailed notes.
- Hazen will review draft RRA Report and provide graphics/formatting.

**LAUNCH! ASSUMPTIONS**

- Launch! Consulting shall provide agenda for the workshop.
- Launch! Consulting shall have one facilitator present at workshop.
- Launch! Consulting will develop draft and final RRA reports.

**Deliverables:**

- DRAFT RRA Report and Implementation Plan
- FINAL RRA Report and Implementation Plan

**KEY ASSUMPTIONS**

1. Village will coordinate with non-utility agency staff (such as from police or fire departments) who are part of the RRA Team. Village will provide documents for review electronically.
2. All existing documents will be provided by Village in electronic files which can be utilized in the RRA.

3. Village will file certification by letter to the Administrator of the EPA following completion of the RRA.

### **SCHEDULE**

<b>Subtask</b>	<b>Description</b>	<b>Time of Completion from NTP</b>
1	Kickoff Meeting Minutes	1 month
2	Workshop No. 1 Summary Report	2 months
3	Workshop No. 2 Summary Report	3 months
4	Workshop No. 3 Summary Report	3 months
5	Workshop No. 4 Summary Report	4 months
6	Workshop No. 5 Summary Report	4 months
7	List of Critical Assets	5 months
8	DRAFT RA Report and Implementation Plan	6 months
8	FINAL RA Report and Implementation Plan	7 months

### **COMPENSATION**

Compensation for all tasks, unless specifically noted below, will be billed on a lump sum basis based on percent of work complete and total project fees of \$85,017.

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