

**CITY OF NORTH MIAMI
LEAK DETECTION SERVICES AGREEMENT
(EMERGENCY PURCHASE – 27-11-12 SA)**

THIS LEAK DETECTION SERVICES AGREEMENT (“Agreement”) is made and entered into this ____ day of _____, 2012, by and between the **City of North Miami**, a Florida municipal corporation, located at 776 NE 125th Street, North Miami, FL (“City”) and **M.E. Simpson Company, Inc.**, a foreign for-profit corporation registered and authorized to do business in the State of Florida, having its principal office at 3406 Enterprise Avenue, Valparaiso, IN 46383 (“Contractor”). The City and Contractor shall collectively be referred to as the “Parties”.

RECITALS

WHEREAS, leak detection of the City’s water distribution and wastewater collection system (“Distribution System”) is an integral part of the City’s Potable Water Supply Annual Operating Permit #1300059-W, as issued and regulated by Miami-Dade County Permitting, Environmental and Regulatory Affairs (“PERA”); and

WHEREAS, PERA is requiring a Water Accounting Data Form to be completed and submitted by May 1, 2012, including the implementation of a leak detection program to identify and quantify sources of water losses in the City’s Distribution System (“Services”); and

WHEREAS, City administration finds the existence of an emergency procurement pursuant to Section 7-144 of the City Code, due to the limited time-frame available to comply with PERA requirements, to prevent or minimize serious disruption of water services to consumers; and

WHEREAS, City administration has obtained a proposal from Contractor, to provide the City with Services as required by PERA, and Contractor has expressed the capability, willingness and expertise to perform such Services; and

WHEREAS, the City desires to obtain the Services from Contractor, in accordance with the technical specifications, terms, and conditions contained in the Proposal; and

WHEREAS, the City Manager finds that executing an Agreement with Contractor for the provision of Services in order to timely comply with PERA permit requirements, is in the best interest of the City.

NOW, THEREFORE, in consideration of the mutual terms and conditions set forth herein and other good and valuable consideration, the Parties hereto agree as follows:

ARTICLE 1 - RECITALS

1.1 The recitals are true and correct and are hereby incorporated into and made a part of this Agreement.

ARTICLE 2 - CONTRACT DOCUMENTS

2.1 The following documents are incorporated into and made a part of this Agreement (collectively referred to as the "Contract Documents"):

2.1.1 Contractor's Proposal dated December 16, 2011, in response to the City's request for Services in accordance with PERA requirements, attached hereto as Exhibit A;

2.1.2 Any additional documents which are required to be submitted by Contractor under this Agreement.

ARTICLE 3 - TERM

3.1 Subject to authorized adjustments, the Term of this Agreement shall be for three (3) years from the effective date. The Contractor agrees that Services shall be performed on schedule, diligently and uninterrupted at a rate of progress which will reasonably ensure full completion within the agreed Term period. Failure to achieve timely completion shall be regarded as a material breach of this Agreement and shall be subject to the appropriate remedies available at law.

ARTICLE 4 - COMPENSATION

4.1 Contractor shall be compensated an amount not to exceed Twenty Five Thousand and no/100 Dollars per each year of the Term period. Funding for this Agreement is contingent on the availability of funds and the Agreement is subject to amendment or termination due to lack of funds or a reduction of funds.

ARTICLE 5 - SCOPE OF SERVICES

5.1 Contractor agrees to perform professional Services as more particularly described in Exhibit A, and in accordance with that degree of care and skill ordinarily exercised by reputable members of its profession.

5.2 Contractor shall supervise and direct the Services competently and efficiently, devoting such attention and applying Contractor's best skills and expertise. Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures over the performance of Services. Contractor shall ensure that the finished work complies accurately with the Contract Documents.

5.3 Contractor has fully inspected the worksite and agrees to accept the worksite in an "as is" physical condition, without representation or warranty by the City of any kind. Further, the Contractor and any other entity claiming by, through or under Contractor, release and discharge the City from any claim, demand, or cause of action arising out of or relating to the Contractor's use, handling, storage, release, discharge, treatment, removal, transportation, decontamination, cleanup, disposal and/or presence of any hazardous substances on, under, from or about the worksite.

5.4 Any material or waste generated by Contractor or its subcontractors shall be removed and disposed of, as necessary, by the Contractor, at the Contractor's expense, to the satisfaction of the City.

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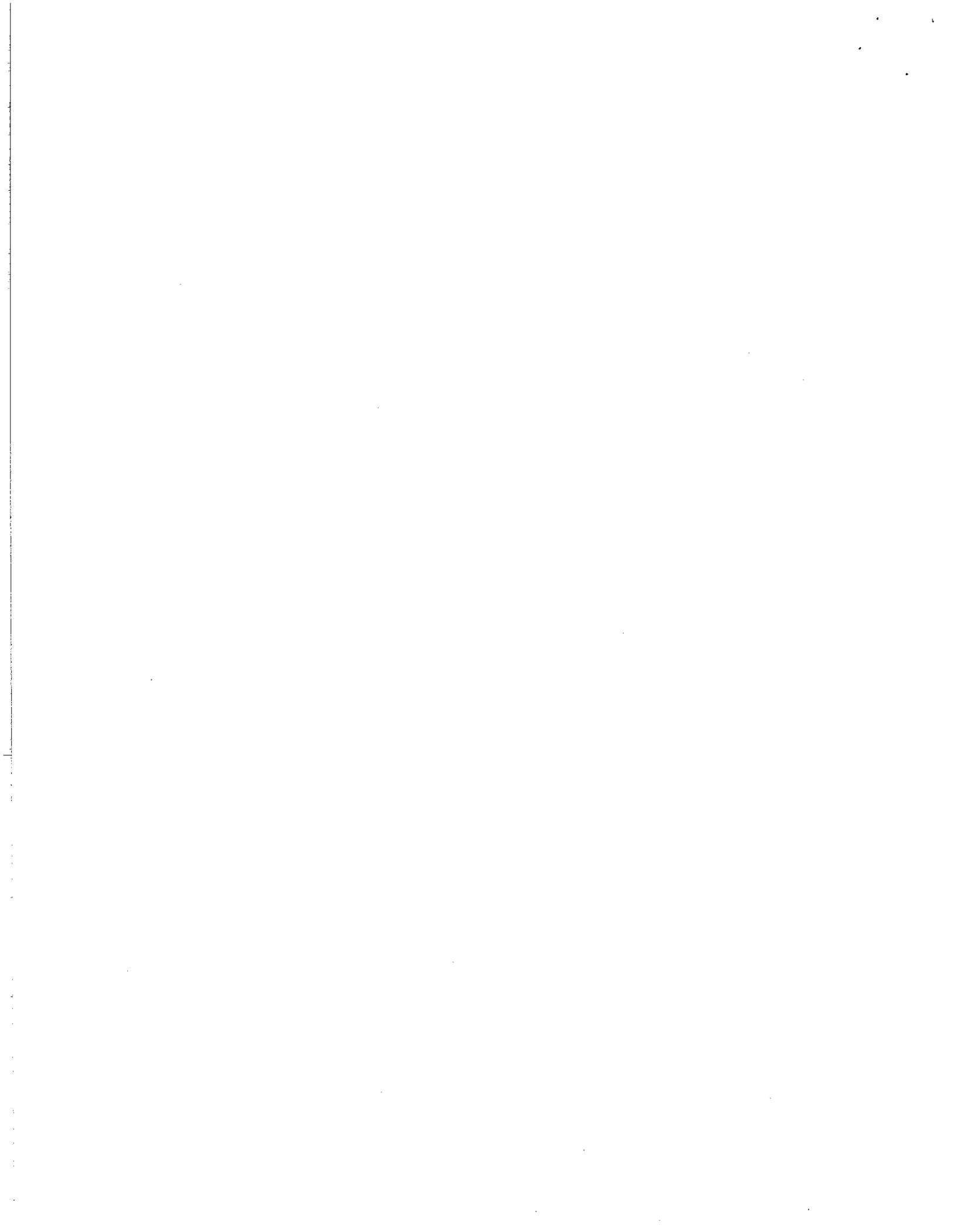
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5.4 Any material or waste generated by Contractor or its subcontractors shall be removed and disposed of, as necessary, by the Contractor, at the Contractor's expense, to the satisfaction of the City.



5.5 Contractor represents and warrants to the City that: (i) Contractor possesses all qualifications, licenses and expertise required in the provision of Services, with personnel fully licensed by the State of Florida; (ii) Contractor is not delinquent in the payment of any sums due the City, including payment of permit fees, local business taxes, or in the performance of any obligations to the City; (iii) all personnel assigned to perform work shall be, at all times during the term hereof, fully qualified and trained to perform the tasks assigned to each; (iv) the Services will be performed in the manner as described in the Contract Documents for the budgeted amounts, rates and schedules; and (v) the person executing this Agreement on behalf of Contractor is duly authorized to execute same and fully bind Contractor as a party to this Agreement.

5.6 Contractor agrees and understands that: (i) any and all subcontractors used by Contractor shall be paid by Contractor and not paid directly by the City; and (ii) any and all liabilities regarding payment to or use of subcontractors for any of the work related to this Agreement shall be borne solely by Contractor. Any work performed for Contractor by a subcontractor will be pursuant to an appropriate agreement between Contractor and subcontractor which specifically binds the subcontractor to all applicable terms and conditions of the Contract Documents.

5.7 Contractor shall maintain suitable and sufficient guards and barriers and, at night, suitable and sufficient lighting for the prevention of accidents. The Contractor shall comply with all applicable minimum safety standards required by local, county, state and federal regulations.

ARTICLE 6 - CITY'S TERMINATION RIGHTS

6.1 The City shall have the right to terminate this Agreement, in its sole discretion at any time, with or without cause. In such event, the City shall pay Contractor compensation for Services rendered prior to the effective date of termination. The City shall not be liable to Contractor for any additional compensation, or for any consequential or incidental damages.

ARTICLE 7 - INDEPENDENT CONTRACTOR

7.1 The Contractor, its employees and agents shall be deemed to be independent contractors and not agents or employees of the City and shall not attain any rights or benefits under the civil service or pension ordinances of the City, or any rights generally afforded to classified or unclassified employees. The Contractor shall not be deemed entitled to the Florida Workers' Compensation benefits as an employee of the City.

ARTICLE 8 - DEFAULT

8.1 In the event the Contractor fails to comply with any provision of this Agreement, the City may declare the Contractor in default by written notification. The City shall have the right to terminate this Agreement if the Contractor fails to cure the default within five (5) days after receiving notice of default from the City. If the Contractor fails to cure the default, the Contractor will only be compensated for completed Services. The Contractor understands and agrees that termination of this Agreement under this section shall not release Contractor from any obligations accruing prior to the effective date of termination.

ARTICLE 9 - INDEMNIFICATION

9.1 Contractor agrees to indemnify, defend, save and hold harmless the City its officers, agents and employees, from and against any and all claims, liabilities, suits, losses, claims, fines, and/or causes of action that may be brought against the City, its officers, agents and employees, on account of any negligent act or omission of Contractor, its agents, servants, or employees in the performance of Services under this Agreement and resulting in personal injury, loss of life or damage to property sustained by any person or entity, caused by or arising out of Contractor's negligence within the scope of this Agreement, including all costs, reasonable attorneys fees, expenses, including any appeal, and including the investigations and defense of any action or proceeding and any order, judgment, or decree which may be entered in any such action or proceeding, except for damages specifically caused by or arising out of the negligence, strict liability, intentional torts or criminal acts of the City, its officer, agents, employees or contractors, which claims are lodged by any person, firm, or corporation.

9.2 Nothing contained in this Agreement is any way intended to be a waiver of the limitation placed upon the City's liability as set forth in Chapter 768, Florida Statutes. Additionally, the City does not waive sovereign immunity, and no claim or award against the City shall include attorney's fees, investigative costs or pre-judgment interest.

ARTICLE 10 - INSURANCE

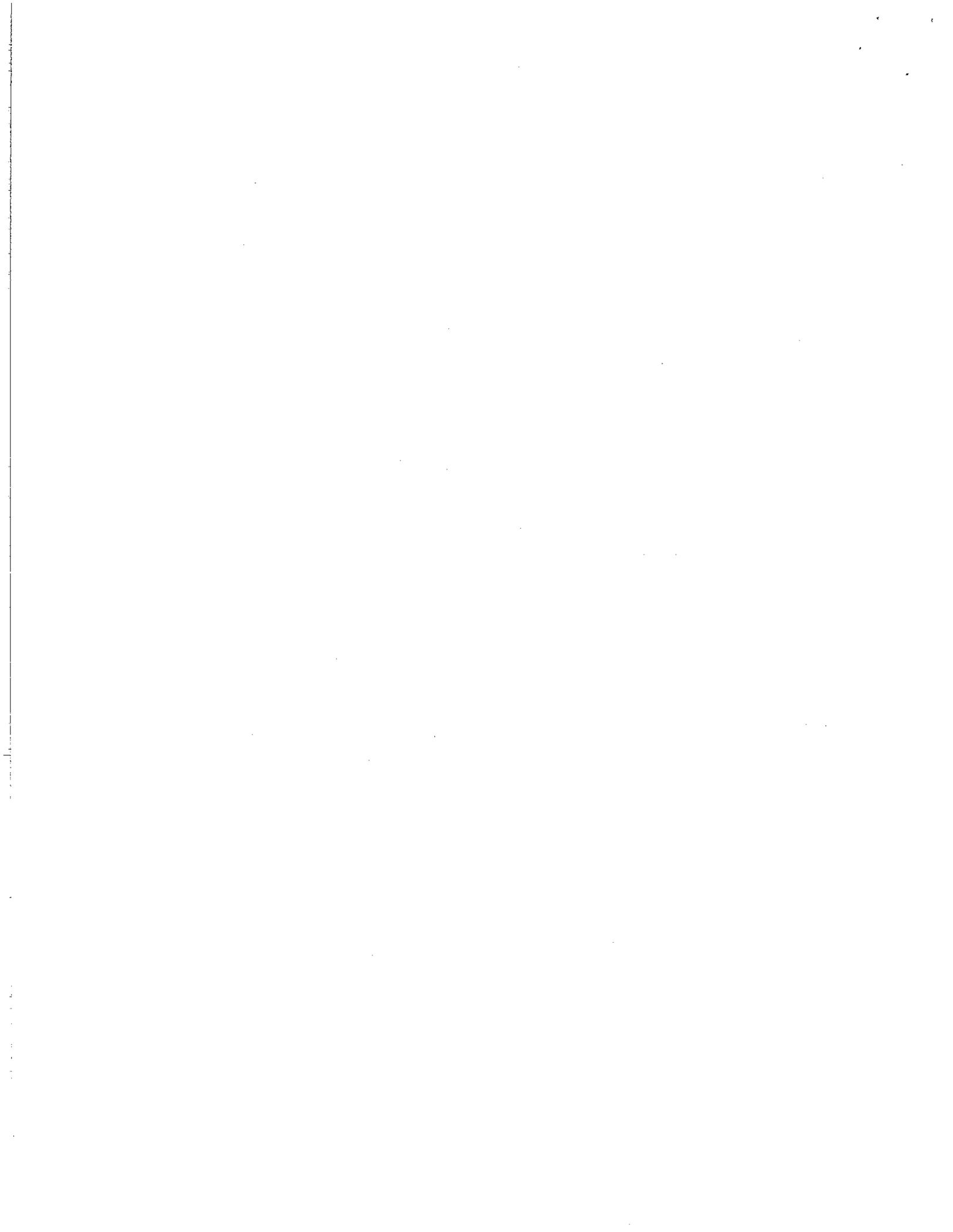
10.1 Prior to the execution of this Agreement, the Contractor shall submit certificate(s) of insurance evidencing the required coverage and specifically providing that the City is an additional named insured or additional insured with respect to the required coverage and the operations of the Contractor under this Agreement. Contractor shall not commence work under this Agreement until after Contractor has obtained all of the minimum insurance described in the RFQ and the policies of such insurance detailing the provisions of coverage have been received and approved by the City. Contractor shall not permit its subcontractor to begin work until after similar minimum insurance to cover subcontractor has been obtained and approved.

10.2 All insurance policies required from Contractor shall be written by a company with a Best rating of B+ or better and duly authorized and licensed to do business in the State of Florida and be executed by duly licensed agents upon whom service of process may be made in Miami-Dade County, Florida.

ARTICLE 11 - OWNERSHIP OF DOCUMENTS

11.1 All documents and deliverables developed by Contractor under this Agreement shall be delivered to the City by the Contractor upon completion of the Services and shall become property of the City, without restriction or limitation of its use. The Contractor agrees that all documents generated hereto shall be subject to the applicable provisions of the Public Records Law, Chapter 119, Florida Statutes. In the event the Agreement is terminated, Contractor agrees to provide the City all such documents within 10 days from the date the Agreement is terminated.

11.2 It is further understood by and between the Parties that any information, writings, tapes, Contract Documents, reports or any other matter whatsoever which is given by the City to the Contractor pursuant to this Agreement shall at all times remain the property of the City and shall not be used by the Contractor for any other purposes whatsoever without the written consent of the City.



ARTICLE 12 - CONFLICTS OF INTEREST

12.1 Contractor represents and warrants to the City that it has not employed or retained any person or company employed by the City to solicit or to secure this Agreement and that it has not offered to pay, paid, or agreed to pay any person any fee, commission, percentage, brokerage fee, or gift of any kind contingent upon or in connection with, the award of this Agreement.

12.2 Contractor covenants that no person under its employ who presently exercises any functions or responsibilities on behalf of the City in connection with this Agreement has any personal financial interest, directly or indirectly, with contractors or vendors providing professional services on work assigned to the Contractor, except as fully disclosed and approved by the City. Contractor further covenants that, in the performance of this Agreement, no person having such conflicting interest shall be employed.

ARTICLE 13 - NOTICES

13.1 All notices, demands, correspondence and communications between the City and Contractor shall be deemed sufficiently given under the terms of this Agreement when delivered by personal service, faxed, or dispatched by mail or certified mail, addressed as follows:

To Contractor: M.E. Simpson Company, Inc.
 Attn: John H. Van Arsdel
 3406 Enterprise Avenue
 Valparaiso, IN 46383
 Phone: (800) 255-1521
 Fax: (888) 531-2444

To City: City of North Miami
 Attn: City Manager
 776 N.E. 125th Street
 North Miami, Florida 33161

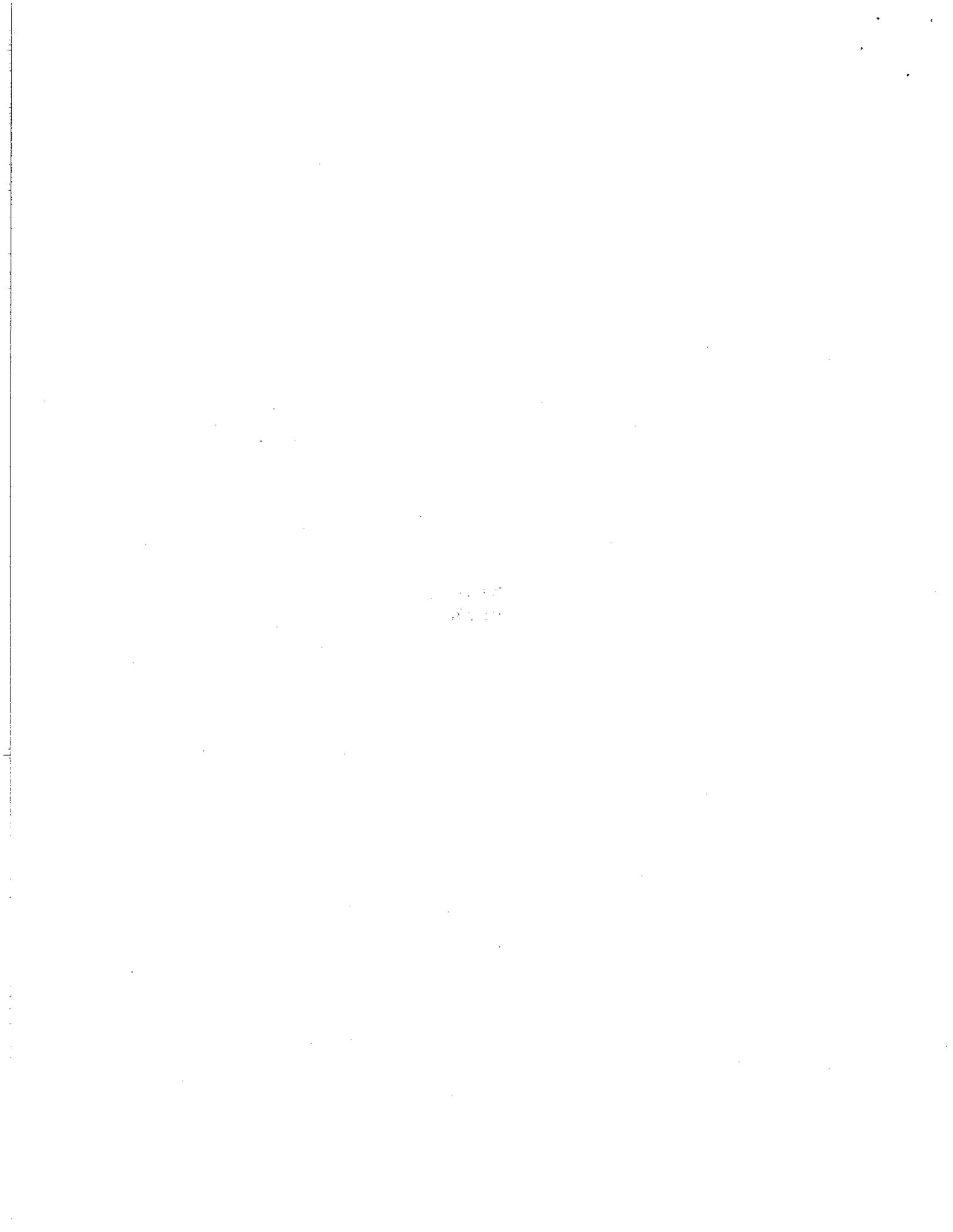
With a copy to: City Attorney
 City of North Miami
 776 N.E. 125th Street
 North Miami, Florida 33161

13.2 Either Party may at any time designate a different address and/or contact person by giving notice as provided above to the other Party. Such notices shall be deemed given upon receipt by the addressee.

13.3 In the event there is a change of address and the moving Party fails to provide notice to the other Party, then notice sent as provided in this Article shall constitute adequate notice.

ARTICLE 14 - MISCELLANEOUS PROVISIONS

14.1 No waiver or breach of any provision of this Agreement shall constitute a waiver of any subsequent breach of the same or any other provision hereof, and no waiver shall be effective unless made in writing.



14.2 All representations, indemnifications, warranties and guarantees made in, required by, or given in accordance with this Agreement, as well as all continuing obligations indicated in the Contract Documents, shall survive final payment, completion and acceptance of the Services and termination or completion of the Agreement.

14.3 Should any provision, paragraph, sentence, word or phrase contained in this Agreement be determined by a court of competent jurisdiction to be invalid, illegal or otherwise unenforceable under the laws of the State of Florida, such provision, paragraph, sentence, word or phrase shall be deemed modified to the extent necessary in order to conform with such laws, or if not modifiable, then same shall be deemed severable, and in either event, the remaining terms and provisions of this Agreement shall remain unmodified and in full force and effect or limitation of its use.

14.4 This Agreement constitutes the sole and entire agreement between the Parties. No modification or amendments to this Agreement shall be binding on either Party unless in writing and signed by both Parties.

14.5 This Agreement shall be construed and enforced according to the laws of the State of Florida. Venue in any proceedings between the Parties shall be in Miami-Dade County, Florida.

14.6 The City reserves the right to audit the records of the Contractor covered by this Agreement at any time during the provision of Services and for a period of three years after final payment is made under this Agreement.

14.7 The Contractor agrees to comply with and observe all applicable federal, state, and local laws, rules, regulations, codes and ordinances, as they may be amended from time to time.

14.8 Services shall not be subcontracted, transferred, conveyed, or assigned under this Agreement in whole or in part to any other person, firm or corporation without the prior written consent of the City.

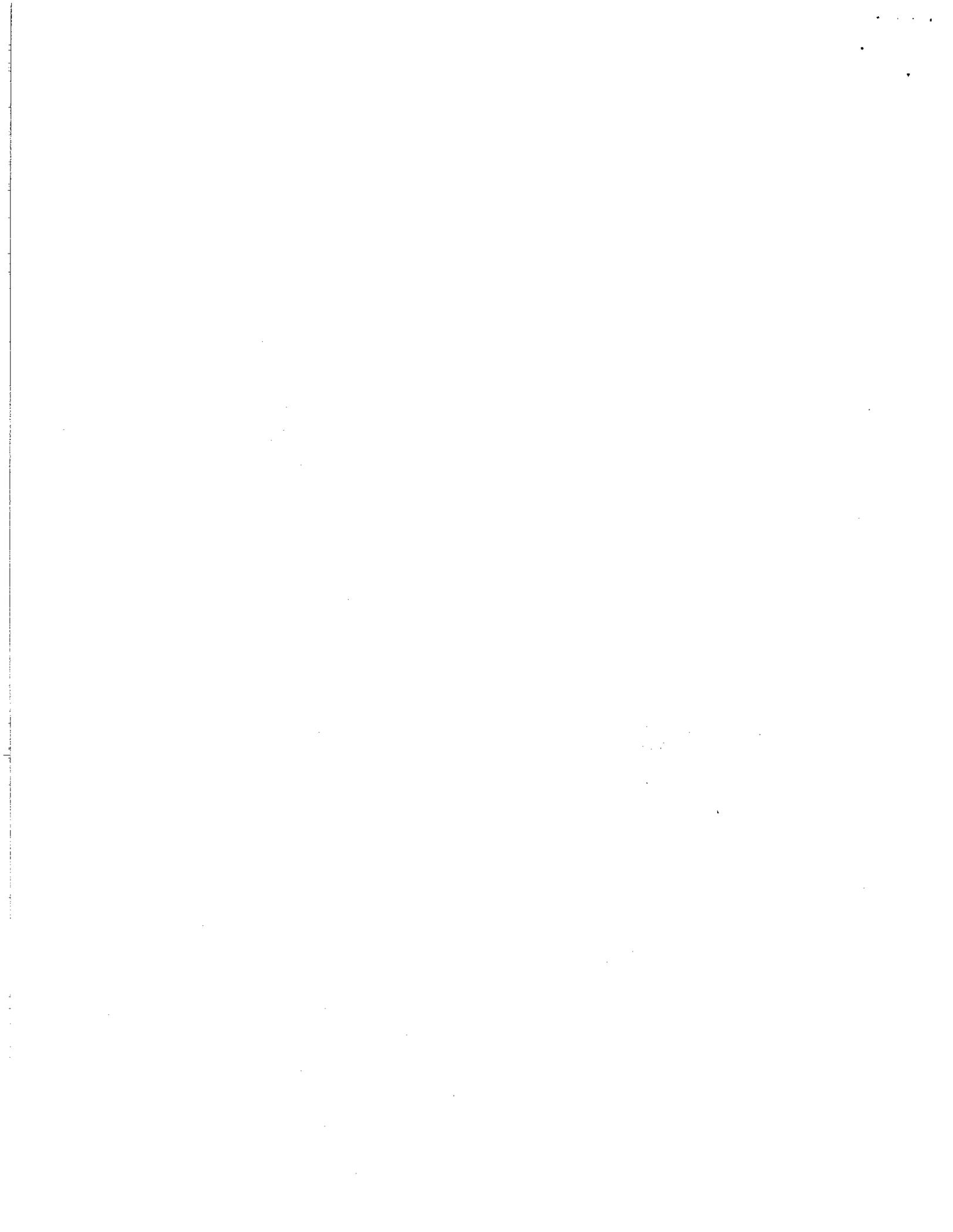
14.9 The City of North Miami is exempt from Federal Excise and State taxes. The applicable tax exemption number or certificate shall be made available upon request.

14.10 The professional Services to be provided by Contractor pursuant to this Agreement shall be non-exclusive, and nothing herein shall preclude the City from engaging other firms to perform Services.

14.11 This Agreement shall be binding upon the Parties herein, their heirs, executors, legal representatives, successors and assigns.

14.12 The Contractor agrees that it shall not discriminate as to race, sex, color, creed, national origin, or disability, in connection with its performance under this Agreement.

14.13 Contractor understands that the public shall have access, at all reasonable times, to all documents and information pertaining to City contracts, subject to the provisions of Chapter 119,



Florida Statutes, and agrees to allow access by the City and the public to all documents subject to disclosure under applicable law.

14.14 All other terms, conditions and requirements contained in the Contract Documents, which have not been modified by this Agreement, shall remain in full force and effect.

14.15 This Agreement may be executed in two or more counterparts, each of which shall constitute an original but all of which, when taken together, shall constitute one and the same Agreement.

IN WITNESS WHEREOF, the Parties have executed this Agreement by their respective proper officers duly authorized the day and year first written above.

ATTEST:
Corporate Secretary or Witness:

M.E. Simpson Company, Inc., foreign for
profit corporation:
"Contractor"

By: Carolanne - Emerick

By: John H. Van Arsdale

Print Name: Carolanne - Emerick

Print Name: John H. VAN ARSDEL Vice President

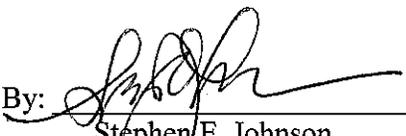
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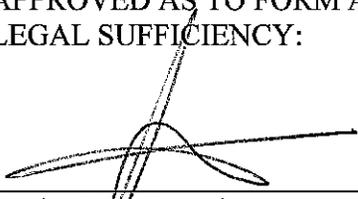
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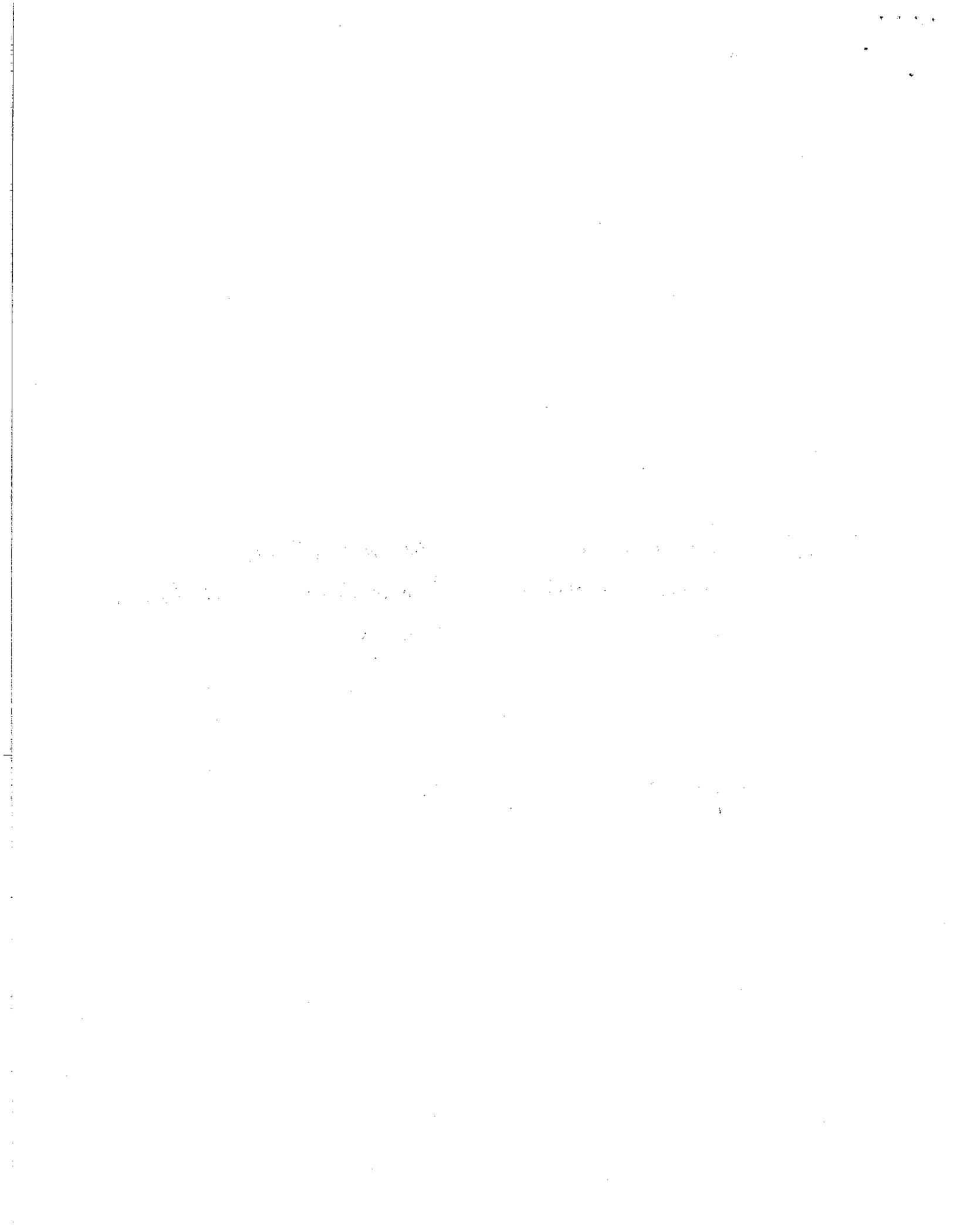
City of North Miami, a Florida municipal
corporation: "City"

By: 
Michael A. Etienne
City Clerk

By: 
Stephen E. Johnson
City Manager 

APPROVED AS TO FORM AND
LEGAL SUFFICIENCY:


Regine M. Monestime
City Attorney





www.mesimpson.com

3406 Enterprise Avenue
Valparaiso, IN 46383

Phone: (800) 255-1521
Fax: (888) 531-2444

December 16, 2011

Mr. Aleem A. Ghany, PE, CFM, CGC
Director of Public Works
City of North Miami
776 N.E. 125th Street
North Miami, Florida 33161

Dear Mr. Ghany,

M.E. Simpson Co., Inc. is pleased to present our response for the Request for Proposal for a **"Leak Detection Survey in the Distribution System"**, for the City of North Miami, Florida, water utility.

M.E. Simpson Co., Inc. is a **Technical Services** firm dedicated to developing and providing programs and services designed to maximize peak performance for our clients' water distribution and wastewater collection systems. Many of these programs are universally recognized as a part of "Best Management Practices" (BMP's) for utilities. We provide our clients the highest quality Technical and Professional Services, with highly skilled and trained professionals using state-of-the art technologies.

These services were developed and refined to provide Utilities with programs that can be customized to meet their needs. From complete "Turn-Key" services to assisting with the development of "In-House" programs utilized by a utility, M.E. Simpson Co., Inc. provides our services to our clients knowing that the public has the implicit faith that *"the water is always safe to drink"*.

M.E. Simpson Co., Inc. submits this proposal with our approach to identify and quantify sources of real water losses in the distribution system for the Regional Water Authority. Our work will provide the Authority with several key benefits:

- ◆ A Nationally recognized firm that is a leader in water loss management and control
- ◆ Innovative, cost effective technology coupled with over 25 years of using well developed field methodologies proven to identify and quantify real water losses under some of the most challenging conditions
- ◆ A project approach that incorporates flexibility, interim reporting and continuous input opportunity.
- ◆ An experienced Field Project Team with individual team members having several years of honed leak survey and leak detection experience in a variety of severe environmental conditions and temperature extremes.
- ◆ Experience with water systems ranging in size from a few miles to over 3,400 miles with multiple pipe materials.

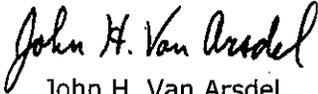
This **Proposal** is being submitted as follows:

- ◆ **Firm History**
- ◆ **Related Project Experience, References**
- ◆ **Employee Qualifications, Project Staffing**
- ◆ **Project Understanding and Approach**
QA/QC, Equipment to be used
- ◆ **Scope of Services / Proposed Schedule**
- ◆ **Proposal Fee**
- ◆ **Leak Survey Report Example**

We understand the City of North Miami has many choices it can make selecting a project team for this worthy project. The process of selecting a team for such a critical project is a daunting task. We hope our proposal will allow for an educated and informed decision to be made that will benefit the City for many years to come. M.E. Simpson Co., Inc. truly appreciates the time and consideration afforded to us regarding our Leak Detection Services.

If there are any inquiries regarding this proposal, please do not hesitate to contact us. We look forward to hearing from you soon.

Sincerely yours,



John H. Van Arsdel
Vice President

FIRM HISTORY

M.E. Simpson Co., Inc. was founded in 1979 by Marvin E. Simpson. Our firm has become the industry leader in developing and providing programs and services aiding our clients in maximizing their peak performance for their water distribution and wastewater collection systems. We offer our clients the highest quality Technical and Professional Services, using state-of-the art technologies and highly skilled and trained professionals. Our staff has developed a host of high tech programs that will insure that your Utility will be proactive in dealing with both your water distribution and waste water collection systems.

"Crumbling infrastructure, inaccurate records, conservation, sustainability, water quality, water loss, economic conditions, revenue shortfalls, being green, having enough water"; these are all statements and buzz words in today's society. Currently in the water and wastewater industry, these words are our reality, thus making them our responsibility.

Since our humble beginnings over thirty years ago, we have provided services that have improved water accountability and increased revenues for both water and wastewater Utilities. We've also maximized distribution system performance and optimized distribution system data, records, and mapping. To date we have provide Water Loss Control programs that have included over 50,000 Large Water Meters serviced and 100,000 miles of Leak Detection services. Our Asset Management services have documented over 400,000 valves located and exercised. Our Fire Hydrant Flow testing program has recorded 70,000 fire hydrants flowed and water main capacity information developed.

Though our Wastewater Services are much newer, they have given us the opportunity to optimize collection system, collection system data, records and mapping. Our Manhole Inspection services have located, documented and mapped over 15,000 manholes. We have provided Smoke Testing services to over 25 collection systems, discovering hundred's of documented infractions. This service continues to be a steady area of growth for our firm.

We know service and we can assist you with your Utility's service needs. M.E. Simpson Co., Inc. provides its clients with water and wastewater system service technologies for the 21st Century.

The company began operations in Rochester, Indiana. The corporate headquarters moved to Valparaiso, Indiana in 1988. In 1989 the Indiana Section of the American Water Works Association honored Marvin with the "Water Wheel Award" for his outstanding service to his profession. In 1995 Marvin was honored as a lifetime Member of the American Water Works Association.

Marvin's belief in service to our Industry and our Country has established M.E. Simpson Co., Inc.'s commitment to community and organizations such as the United Way, Abused Women and Children, Mental Health Association, Boys and Girls Club, Kiwanis and Jaycees (Junior Chamber of Commerce) for example, as well as local Police and Fire organizations. We encourage all of our employees to be active within their own communities serving with various organizations such as the Boys and Girls Club, Jaycees and Kiwanis.

M.E. Simpson Co., Inc. is active in Water Works Organizations at the national and state levels such as American Water Works Association, Water Environment Federation, Water Operators Association, Rural Water Association, American Backflow Prevention Association, American Public Works Association as well as local Districts, Branches, and Suburban Groups.

FIRM HISTORY

Our support of these groups goes beyond Membership to truly taking an active role by allowing employees to fill elected and appointed positions as officers and committee chairpersons. M.E. Simpson Co., Inc. has always taken an active role in education by making presentations at no charge at meetings, training seminars, and providing continuing education credits for water operators through the various water groups. We have presented programs on Water Meter Evaluation and Maintenance, Water Distribution System Leak Surveys, Water Distribution System Valve Location, Exercising and Computerized Mapping, and Best Management Practices for distribution system maintenance at state and national AWWA conventions.

Leak Detection History

M.E. Simpson Co., Inc. developed its Leak Detection program in 1986. Since that time we've improved the program that it is now a fundamental asset management and condition assessment program for our clients. We've also developed a Microsoft Access leak database with leak location drawings showing all the pertinent information needed to readily recreate leak locations from field data. Today the database is being developed into an internet based program to be accessible by clients online.

M.E. Simpson Co., Inc. is proud of the work we have performed and the maintenance programs that we have developed utilizing the latest technology and meeting the needs of "our customer" the Water Works Industry. We have played an important role in educating utilities about the need for and efficiency of annual maintenance programs; including the development of Polcon Pro-Valve® our computer software program for valve location and exercising records, Pro-Hydrant® a computer software program for fire hydrant flow testing records, and the continuing development and manufacturing of the Polcon® Flow Monitoring Equipment. We have moved beyond the competition in flow / pressure recording, computerization and record management.

Our leak detections services have been employed since 1986 in a majority of municipalities around the Chicago metro area. Currently we have crews stationed at other metro areas throughout the United States providing our services. Additionally, our crews have been deployed to locations throughout the United States, including Alaska, as well as American Samoa, Guantanamo Bay, Cuba, and Sigonella, Italy. Our crews have the unique ability to be able to respond to individual Utility requests because of the cross training they have received performing all the services M.E. Simpson Co. Inc. provides.

RELATED PROJECT EXPERIENCE, REFERENCES

South Central Connecticut Regional Water Authority (2011)

In 2011, a leak survey was performed on **1,139** miles of water main for the South Central Connecticut Regional Water Authority's distribution system. The 2011 program discovered **60** leaks. There were **10** main breaks, **10** service line leaks, **32** hydrant leaks, and **6** valve leaks (packing and bonnet bolts) and **2** "Other" leaks which will require more investigation by the Utility. The estimate of the annualized water losses in dollars was **\$519,629.318** based on the average costs of pumpage and water treatment (retail costs) for this 1,139 mile survey. The payoff for this survey was estimated at 5.5 months.

Project Completion: October 2011
Contact info: Mr. Brian Lakin
Project Engineer
Regional Water Authority
90 Sargent Drive
New Haven, Connecticut
(203) 401-2677
blakin@rwater.com

The City of Manchester, CT (2009)

In late 2009, a leak survey was performed on **261** miles of water main in the City of Manchester's distribution system. This program was based on an RFP issued by the City for the leak survey program. The 2009 program discovered **16** leaks. There was **1** main break (28,800 GPD), **2** service line leaks (**1** on the customer side of the shut off valve), **12** hydrant leaks, and **1** valve leaks (packing and bonnet bolts). The majority of these leaks did not surface because the local geology is limestone and the area is hilly. The estimate of the annualized water losses in dollars was **\$50,757.19** based on the average costs of pumpage and water treatment (wholesale costs) for this 261 mile survey. The payoff for this survey was estimated at 14 months.

Project Completion: November 2009 to December 2009
Contact info: Mr. Ed Soper, P.E.
Administrator
Water and Sewer Department
125 Spring Street
Manchester, CT 06045-0191
(860) 647-3115
esoper@ci.manchester.ct.us

RELATED PROJECT EXPERIENCE, REFERENCES

City of Baltimore, Maryland (Current - 2012)

M.E. Simpson Co., Inc. is currently teamed with KCI Technologies on a system wide Water Audit and Leak Detection Program for the City of Baltimore. This project was implemented as a result of water losses (both apparent and real) that are occurring in the City and County water systems. This project is involved with the verification of master meter accuracies to obtain the true water produced and input into the system, leak detection survey, "24-hour on call" response for leak locations, prioritizing leak status for repair work, development of standards for leak repairs for contractors, analysis of water consumption, selected meter testing, billing record review, Condition Assessment modeling and field analysis, and updating the GIS from field conditions. Important aspects of this program include "real time" reporting from the field via GIS for leak locations and the implementation of a Dashboard application of the GIS to monitor system field maintenance work in real time.

Project Completion: March 2010 to March 2012
Contact info: Mr. Timothy W. Wolfe, P.E., BCEE
Vice President, Chief, Environmental Group
KCI Technologies, Inc.
936 Ridgebrook Rd.
Sparks, Maryland 21152
(410) 316-7849

City of West Bend, Wisconsin (1997, 1999, 2001, 2003, 2005, 2007, 2009, 2011)

M.E. Simpson Co., Inc. has been conducting a Leak Survey on the **125 mile distribution system** every other year as a way for the West Bend Water Utility to reduce water losses occurring in the distribution system. The Utility owns Leak detection equipment; however, the staff of M.E. Simpson Co., Inc. performs leak detection work daily and has a greater understanding of the parameters of detection and locating leaks. The leak surveys have found numerous leaks on this system since the start of the leak detection program; however, because of the vigilance of the program, these water losses have subsided to a point of regular distribution system preventative maintenance.

Project Completion: February into March
Contact info: Mr. James Kell
Supervisor, Water
251 Municipal Drive
City of West Bend, WI 53095
(414) 335-5040
wusup@ci.west-bend.wi.us

RELATED PROJECT EXPERIENCE, REFERENCES

Town of Medley, Florida (2007, 2009, 2010, 2011)

M.E. Simpson Co., Inc. has been conducting a Leak Survey on approximately **42 miles of the distribution system** as a way for the Town to reduce water losses occurring in the distribution system. The staff of M.E. Simpson Co., Inc. performs leak detection work daily and has a greater understanding of the parameters of detection and locating leaks especially on this system due to the number of years performing work of various types on this system along with knowledge of the pipe material used in this system. The leak surveys have found numerous leaks on this system. During the Leak Detection Programs leaks found in the system were costing the Utility in excess of \$47.58 per day or \$17,365.00 annually.

Contract Length: One Year
Project Completion: February 2010
Contact info: Mr. Walter Wernke
Department Head, Water & Sewer Department
Town of Medley
10776 N.W. South River Drive
Medley, Florida 33178
wwernke@townofmedley.com

City of Joliet, IL (2008-2009, 2010)

In early 2009, a leak survey was performed on **180** miles of water main out of an estimated 375 miles of water main in the City of Joliet's distribution system and continued in 2010. This program was based on an RFP issued by the City for the leak survey program. In years past, low bid was used to solicit leak detection vendors. The 2009 program discovered 149 leaks. There were **33** main breaks, **59** service line leaks (7 on the customer side of the shut off valve), **46** hydrant leaks, and **11** valve leaks (packing and bonnet bolts). The majority of these leaks did not surface because the local geology of Joliet is limestone. The estimate of the annualized water losses in dollars was **\$918,354** based on the average costs of pumpage and water treatment (wholesale costs) for this 180 mile survey. GPS coordinates were taken for each leak location as a part of this contract. The City has since extended the contract for the remainder of the system with a renewal of the contract for the next year.

Project Completion: December 2008 to February 2009
Contact info: Mr. James Eggen, P.E.
Director of Utilities
921 East Washington Street
Joliet, Illinois 60433
(815) 724-4222
jeggen@jolietcity.org

RELATED PROJECT EXPERIENCE, REFERENCES

Town of Plainfield, Indiana (2010)

M.E. Simpson Co., Inc. has been conducting a Leak Survey on approximately **171 miles of the distribution system** as a way for the Town to reduce water losses occurring in the distribution system. The leak surveys have found numerous leaks on this system. During the 2010 Leak Detection Program, 60 leaks were found in the system were costing the Utility in excess of \$745.63 per day or \$272,155.68 annually.

Contract Length: One Year
Project Completion: June 2010
Contact info: Mr. Kurt Wirth
Utility Manager
Town of Plainfield
1090 S. Center Street
Plainfield, Indiana 46168

City of Princeton, Indiana (2010)

M.E. Simpson Co., Inc. has conducted a Leak Survey on approximately **65 miles of the distribution system** as a way for the City to reduce water losses occurring in the distribution system. The leak surveys have found numerous leaks on this system. During the 2010 Leak Detection Program, 64 leaks were found in the system were costing the Utility in excess of \$351.36 per day or \$128,246.40 annually.

Contract Length: One Year
Project Completion: July 2010
Contact info: Mr. J.B. Brines
Water Distribution Superintendent
City of Princeton
P.O. Box 15
Princeton, Indiana 47670

RELATED PROJECT EXPERIENCE, REFERENCES

Miami-Dade Water and Sewer Division (WASD), Miami, Florida (2006-2008)

M.E. Simpson Co., Inc. worked with Malcolm Pirnie Engineers to conduct a Water Loss Assessment and Reduction Plan for Miami-Dade WASD. M.E. Simpson Co. Inc. worked with Malcolm Pirnie in the assessment of water loss issues within the WASD distribution system. This consisted of the development of a 20 year Water Loss Reduction Plan that was submitted and accepted by the South Florida Water Management Agency. M.E. Simpson Co., Inc. provided a critical analysis and review of current leak detection methods and equipment employed by WASD leak crews on the **5,600 mile** distribution system. This also involved random sample field testing of areas for leaks and providing a statistical analysis of the overall effectiveness of the efforts to reduce leakage by WASD field staff over the last 10 years. Recently efforts were completed to provide an analysis of flow meter accuracies for the water supply of the distribution system. Additionally wholesale and commercial meters were sampled for proper meter applications and accuracy levels.

Project Completion:	2006 through 2008	
Contact info:	Mr. Dave Bridges Asst. Distribution Supt. Miami-Dade County Water and Sewer Division (WASD) 7301 N.W. 70 th St. Medley, FL 33166 (305) 460-4908 DBRID@miamidade.gov	Mr. Steve Davis, P.E., DEE Vice President Malcolm Pirnie, Inc. 4646 Van Buren St. Suite 400 Phoenix, AZ 85008-6945 (949) 232-4230 sdavis@pirnie.com

City of Lebanon, Ohio (2005, 2009 - 2010)

M.E. Simpson Co., Inc. performed a leakage assessment program a **77-mile water distribution system**. During the course of this survey, several leaks were located that had remained undetected for a few years. The estimated cost saving over one year in lost water production was close to \$400,000, and the payback period for the investment of the leak survey was approximately two weeks. This project ran approximately 8 days for completion.

Mr. John Habig
Water Superintendent
Lebanon, Ohio
(513) 228-3601

RELATED PROJECT EXPERIENCE, REFERENCES

Gwinnett County Department of Water Resources, Gwinnett County, Georgia (2006-2007)

M.E. Simpson Co., Inc. worked with HDR Engineers (local Atlanta, Georgia office) to conduct a Water Distribution Leak Detection Study for Gwinnett County Georgia. M.E. Simpson Co., Inc. provided the field services expertise, field supervision, leak detection equipment, vehicles and half the field personnel for a Leak Survey project. This project was developed to assist the County in controlling the water losses in its **3,400 mile distribution system**. The entire system was surveyed and all leaks found were pin-pointed. All leak locations had GPS coordinates taken and a Leak Database was created to be used with the County's GIS system. The field work was completed in 11.5 months, ahead of schedule and under budget. After the field work had been completed, selected County Field staff attended leak detection classes presented by the Project Team so the County could take over a regular leak detection program. Since completion of the leak field work, additional water loss prevention work is being pursued such as commercial/ industrial large meter testing and repair, master meter testing and wholesale meter testing and repair. This region has come under scrutiny due to the water use issues in the metro Atlanta area and the drought of 2007-2008. The following are the basic particulars:

Contract Length:	2006 - 2007	
Project Completion:	March 2006 through February 2007	
Contact info:	Mr. James Henderson Construction Manager Gwinnett County Dept. Water Recourses 684 Winder Highway Lawrence, GA 30045-5012 (678) 376-7127 (678) 376-6717 fax james.henderson@gwinnettcountry.com	Mr. Tom Jakubowski, P.E. Project Engineer HDR, Inc. 301 Perimeter Center N. Suite 400 Atlanta, GA 30346 (262) 853-8142 mobile thomas.jakubowski@hdrinc.com

Navajo Indian Reservation, Chinle, AZ for Tetra Tech (2009)

M.E. Simpson Co., Inc. conducted a Leak Survey on approximately 144 **miles** as a way for Tetra Tech reduce water losses occurring in the Navajo Indian Reservation in Chinley, Arizona. The most recent completed Leak Survey Program covering 144 miles resulted in the location of leaks costing the Utility in excess of \$10,249.20 annually.

Contract Length:	One Year
Project Completion:	November 2009
Contact info:	Mr. Doug Brimhall, P.E. Tetra Tech 1801 W. Deuce of Clubs, Suite 230 Show Low, Arizona 85901

RELATED PROJECT EXPERIENCE, REFERENCES

City of Waukegan, Illinois (1991 through 2009 - 2010)

M.E. Simpson Co., Inc. has been conducting a Leak Survey on one third of the **350 mile distribution system** every year as a way for the Waukegan Water Utility to reduce water losses occurring in the distribution system. The staff of M.E. Simpson Co., Inc. performs leak detection work daily and has a greater understanding of the parameters of detection and locating leaks especially on this system due to the number of years performing work of various types on this system along with knowledge of the pipe material used in this system. The leak surveys have found numerous leaks on this system since the start of the leak detection program in 1989 but the program had stopped after 1994. In 1997 the program was restarted and because of the results of the program, these water losses have subsided to a point of regular distribution system preventative maintenance.

Contract Length: Annual since 1997
Project Completion: October of each year
Contact info: Tom Hagerty
Public Works Superintendent
Public Works Department
1700 N. McAree Road 60085
Waukegan, IL 60085
(847) 360-0944

Fluid Conservation Systems, Inc. -- City of Phoenix, AZ Water Services Department Logger Program (2006 - 2007)

M.E. Simpson Co., Inc. provided a leaks survey team for the Fluid Conservation System's leak logger program for the City of Phoenix. The program consisted of placing loggers, reading loggers, addressing issues with the loggers, interpolating the data from the loggers, performing leak detection and leak pinpointing in the areas the loggers heard noise and reporting results to the client so that leaks could be repaired. We also surveyed specific areas and pinpointed leaks as we found them as a part of the project. The project was conducted from July of 2006 through January of 2007. Several areas throughout the Water Services Departments water distribution system. Approximately 500 to 800 loggers were "lifted and shifted" to predetermined areas and were allowed to listen for at least 7 consecutive days before they were moved again. 30 leaks were located during this process. The protocols, staff training and schedule developed allowed the City to assume control and operation of the program In February of 2007.

Project Completion: July 2006 to January 2007
Contact info: Mr. Tim O'Connor
Regional Program Consultant
Fluid Conservation Systems, Inc.
502 Technecenter Drive, Suite B
Milford, OH 45150
(877) 655-1699

RELATED PROJECT EXPERIENCE, REFERENCES

ADDITIONAL REFERENCES

Below are several references that use our services. Please feel free to call any of these gentlemen and ask them about our services and us.

Mr. Gale Gerber
Water Superintendent
Town of Nappanee, IN
(574) 773-4623
ggerber_46550@yahoo.com

Mr. Chuck McIntire
Superintendent
Valparaiso Water Works
(219) 462-3800
cmcintire@valpo.us

Mr. Dan Lueder
Utilities Director
City of Cottonwood, AZ
(928) 634-8033 ex 11
dlueder@ci.cottonwood.az.us

Mr. Scott Ham
Water Superintendent
Silver Creek Water Corp.
(812) 246-2889
scott@silvercreekwater.com

Mr. Steve Gerdes
Director of Water
City of Normal, IL
(309) 454-9564
sgerdes@normal.org

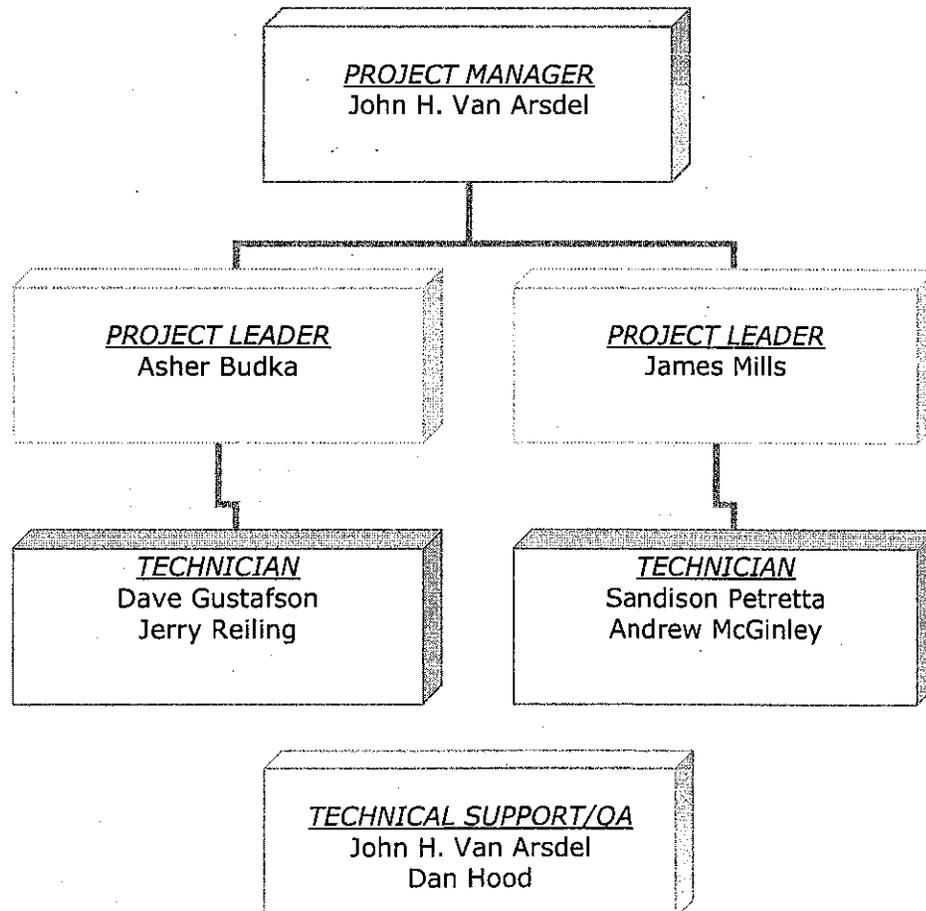
Mr. John Crooks
Director of Utilities
City of Shakopee, MN
(952) 445-1988
jcrooks@shakopeeutilites.com

EMPLOYEE QUALIFICATIONS, PROJECT STAFFING

The chart below outlines the **Project Team** to be used during the Water Distribution System Leak Survey for the City of North Miami, Florida. One of the two Project Managers listed will lead the **Project Team** in the field. **Two-Man Project Teams will be used at all times during the course of the Project for reasons of Safety and Quality Assurance.**

The **Project Manager (John H. Van Arsdel)** shall be on site at project startup, make periodic inspections of the worksite, meet with the Utility periodically to monitor the progress of the program, be responsible for the QA/QC of the field work, and be responsible for the production of field reports. He will be in communication with the Director of Utilities and the Project Leader throughout the project. He shall be responsible for the overall success of the Leak Survey Program.

The **Field Leader (Asher Budka and/or James Mills)** will lead the **Project Team** in the field and will be responsible for the day to day operations of the project. Daily contact with the Director of Utilities or appointed Utility personnel shall be maintained and progress of the day to day operations discussed. The **Field Leader** will be responsible for performing work done in the field, including locations of leaks, field paperwork, supervision of field crews, daily production records, and serve as liaison between the field crew and Project Manager. He will report any problem areas that need the immediate attention of the Utility during the course of the project. This shall be done to assure direct quality control in the field for the Leak Survey Program.



EMPLOYEE QUALIFICATIONS, PROJECT STAFFING

Qualifications of Staff for Leak Detection Services

PROJECT MANAGER/SUPERVISOR RECENT LEAK DETECTION PROJECT EXPERIENCE

John H. Van Arsdel, Vice President

John was the Project Manager for the following selected Leak projects.

- ◆ (2010-2011) City of Baltimore – Baltimore, MD
- ◆ (2011) South Central Connecticut Regional Water Authority - CT
- ◆ (2009) Offutt Air Force Base(AECOM) – Offutt, NB
- ◆ (2010) Vance Air Force Base (AECOM) – Vance, OK
- ◆ (2009 - 2010) Town of Medley – Medley, FL
- ◆ (2009 - 2010) Village of Hickory Hills – Hickory Hills, IL
- ◆ (2008, 2010-2011) Village of Lombard – Lombard, IL
- ◆ (2008 - 2009) Village of Mokena – Mokena, IL
- ◆ (2009) City of Manchester – Manchester, CT
- ◆ (2009) Town of Medley – Madly, FL
- ◆ (2008 - 2009) City of Joliet – Joliet, IL
- ◆ (2008) Miami-Dade Water and Sewer Division (WASD) - Miami, FL.
- ◆ (2009) Village of Richton Park – Richton Park, IL
- ◆ (2008 - 2009) Village of Hinsdale – Hinsdale, IL
- ◆ (2007, 2009) Village of South Holland – South Holland, IL
- ◆ (2006 - 2009) Village of Palos Hills – Palos Hills, IL
- ◆ (2006 - 2007) Gwinnett County Water Authority - Lawrenceville GA.
- ◆ (2009) Village of Glenwood – Glenwood, IL

PROJECT LEADER RECENT LEAK DETECTION PROJECT EXPERIENCE

Asher Budka, Project Leader

Asher was the Project Leader for the following selected Leak projects.

- ◆ (2010-2011) City of Baltimore – Baltimore, MD
- ◆ (2011) South Central Connecticut Regional Water Authority - CT
- ◆ (2009) City of Manchester – Manchester, CT
- ◆ (2007, 2009) City of South Bend Water Department – South Bend, IN
- ◆ (2008) City of Woodhaven - Woodhaven, MI

Jimmy Mills, Project Leader

Jimmy was the Project Leader for the following selected Leak projects.

- ◆ (2009 - 2011) Town of Medley – Medley, FL
- ◆ (2007, 2011) City of South Bend Water Department – South Bend, IN
- ◆ (2010) City of Country Club Hills – County Club Hills, IL
- ◆ (2009) City of Manchester – Manchester, CT
- ◆ (2009) City of Angola – Angola, IN
- ◆ (2008) Village of Westmont – Westmont, IL
- ◆ (2008) Village of Evergreen Park – Evergreen Park, IL
- ◆ (2007 - 2008) City of Auburn – Auburn, IN
- ◆ (2008) Blumfield Reese Water Authority - Michigan

TECHNICAL SUPPORT/QUALITY ASSURANCE

Dan E. Hood, President

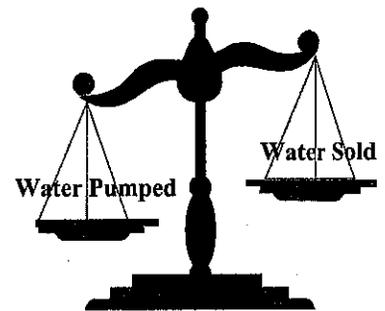
John H. Van Arsdel, Vice President

PROJECT UNDERSTANDING AND APPROACH

This Leak Detection program is needed to be able to help the Utility control the water losses in the distribution system. Therefore, it is imperative the selection of a qualified Project Team be conducted with the utmost care with thorough research. Any team selected should have no trouble finding large leaks. When the first large leak is located, it will be impressive and the project team will look great. However, it is especially important to be able to locate all the leaks that can be possibly located, including all the small leaks that possibly can be masked by the larger leaks. That will be the real true test of the mettle and ability of the leak detection crew. In addition, gathering field data for the general condition of the distribution system is something the project team will need to be well versed in. Flowmeter maintenance and flowmeter testing is also a practical way of controlling real water losses in the system. Therefore, a practical project management plan with a proven QA/QC plan is needed to insure that this happens.

M.E. Simpson Co., Inc.'s philosophy behind water distribution system leak surveys and leak detection services as incorporated in this work plan is to provide the Utility the following benefits:

- ◆ Conserve freshwater resources
- ◆ Reduce the cost of lost water through leakage
- ◆ Conserve energy and reducing treatment costs by reducing pumpage
- ◆ Help in monitoring potential system operation and maintenance problems
- ◆ Promote proper accounting and financial reporting (GASB 34)
- ◆ Reduce the risk of water shortage and customer hardship (drought management)
- ◆ Ensure a sound and reliable water service for customers of the Utility



A number of items uniquely qualify M.E. Simpson Co., Inc. in performing this leak detection program. The Project Team's extensive practical experience in leak detection methodology coupled with other extensive Water Loss Assessment Program experience such as Water Audits, Meter Testing, and Master Meter Assessments, will allow for a thorough examination of the Distribution system to help reduce the total water loss occurring in the distribution system. From start up to completion, our firm is committed to furnishing a quality service in a timely manner.

Project Management Approach

M.E. Simpson Co., Inc.'s project management approach is what leads to our proven track record to complete projects on time and within the budget established. Based on our past experience, we have developed a project approach that will insure the Utility of effective communication throughout this project.



Asher Budka
Project Leader
Valparaiso, Indiana

Experience:

Asher Budka has been with the Company since August 2007. Asher has attended numerous classes and lectures on the operation and maintenance of water meters. He has experience in the maintenance and installation of water meters, valve location, exercising and mapping, and the use of state of the art leak detection equipment. Asher is experienced in the operation and maintenance of water meters, fire hydrant and main capacity flow testing, and the operation of our Polcon® Flow Testing equipment.

Professional Certifications:

- ◆ 10 Hour OSHA Certified for General Industry
- ◆ American Red Cross First Aid and CPR with AED Certified
- ◆ American Traffic Safety Services Association Flagging Certified
- ◆ Extensive traffic control training
- ◆ Extensive confined space training

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**James Mills
Field Leader
Valparaiso, Indiana**

Experience:

James (Jimmy) Mills has been with the Company since October of 2004. Jimmy has attended numerous classes and lectures related to the operation, maintenance, and installation of water meters, and completed classes in plumbing. Jimmy has experience in the following: maintenance and installation of water meters; valve location, exercising and mapping; fire hydrant and main capacity flow testing; and the use of state of the art leak detection equipment. He is also experienced in the use of all of our Polcon® Flow Testing equipment.

Professional Certifications:

- ◆ 10 Hour OSHA Certified for General Industry
- ◆ American Red Cross First Aid and CPR with AED Certified
- ◆ American Traffic Safety Services Association Flagging Certified, Traffic Technician
- ◆ Extensive traffic control training
- ◆ Extensive confined space training

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**Andrew McGinley
Field Leader
Valparaiso, Indiana**

Experience:

Andrew McGinley has been with the Company since May of 2008. Andrew has completed classes and attended lectures and training on water meter testing and repair; on leak detection practices / water loss reduction programs, valve assessment programs and GPS location programs. Andrew is experienced in the following: valve location, exercising and mapping, GPS locating and use of the state of the art leak detection equipment

Professional Certifications:

- ◆ 10 Hour OSHA Certified for General Industry
- ◆ Extensive confined space training
- ◆ American Traffic Safety Services Association – Flagging Certified
- ◆ American Traffic Safety Services Association – Traffic Technician
- ◆ American Red Cross First Aid and CPR with AED Certified

Experience:

John H. Van Arsdel has been with M.E. Simpson Co., Inc. since May 1989. He graduated from Valparaiso University with a B.A. in Geography with an emphasis in Locational Evaluation and Research Design. He has completed water operators classes and seminars on Water Filtration and Distribution, Vulnerability Assessment Class for the Sandia Labs RAM-W method and the RAM-W "modified" for small to medium systems (*currently licensed to use the Sandia Labs RAM-W Method, and licensed to teach the RAM-W "modified" for small to medium water systems*), along with classes related to the operation and maintenance of water meters, system hydraulics specifically related to the Polcon® Flow Testing equipment, and backflow prevention.

John has over 22 years experience directing projects for water utilities concerning water loss prevention and audits, leak detection programs, meter evaluation and maintenance, flow testing using the Polcon® Flow Testing method (C-factors, pump curves, zone flow measurements), mainline valve assessments (location, exercising and mapping programs), and fire hydrant and main capacity flow testing programs. John has been responsible for the analysis, evaluation, and CAD updating of Water Distribution, Sanitary, and Storm Sewer Atlases using GPS locating. He developed the Company's Unidirectional Main Flushing Program and Utility Atlas Updating Program. He has presented classes for continuing education credits for water operators for over fifteen years to several local and state Water Works Organizations on Water Loss Reduction including Water Audits, Leak Detection, Meter Testing and Flow Testing. At 2007 ACE, he presented a paper on "Best Management Practices for Distribution System Maintenance". At 2009 ACE, he presented a paper on "Unequal sized Meters in Parallel Settings". Since 2003, he has conducted classes on Vulnerability Assessments and Emergency Response Planning for water utilities as well as conducting several VA and ERP projects.

John has maintained an active role in several water works organizations including holding offices on various Boards of Directors. As Vice President of M.E. Simpson Co., Inc., John serves as the main point of contact for client development, business sales and customer relations for the Eastern U.S.

Professional Certifications:

- ◆ 10 Hour and 30 Hour OSHA Certified for General Industry
- ◆ American Red Cross First Aid and CPR with AED Certified
- ◆ American Traffic Safety Services Association Flagging Certified

Professional Associations:

- ◆ American Water Works Association (AWWA)
Chair, 2010-2012 Water Loss Control Committee
Apparent Water Loss Sub Committee
- ◆ Illinois Section AWWA
2011, Board of Directors, Vice Chair
2009, 2010 Board of Directors, Secretary/Treasurer
2006-2009 Chair, Membership Committee
Education Committee, Water For People Committee, Water Efficiency Committee
- ◆ Indiana, Michigan, Wisconsin, North Carolina, South Carolina, Georgia, and Florida Sections AWWA
- ◆ Illinois Rural Water Association
- ◆ Wisconsin Rural Water Association
- ◆ North Suburban Water Works Association
1999-2001 Past President, Past Vice President, Past Secretary
- ◆ West Shore Water Producers Association
- ◆ Water Environment Federation

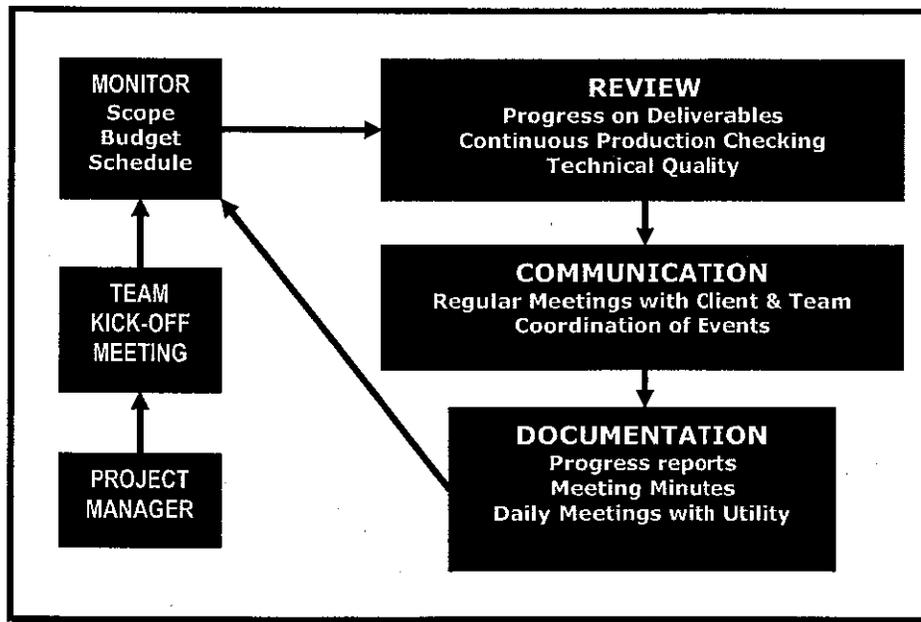
Awards:

- ◆ 2006 and 2008 National AWWA Zenno Gorder Membership Award for recruitment
- ◆ 2006 and 2008 Diamond Pin for National AWWA membership
- ◆ 2010-2011 Water Professional of the Year, Illinois Section AWWA

PROJECT UNDERSTANDING AND APPROACH

Our project management system establishes - the single project manager - who has the responsibility and authority to act on behalf of M.E. Simpson Co., Inc. This project manager will stay with the project from beginning to the successful completion. The project manager's specific responsibilities include:

- ◆ Coordination of all activities in this project
- ◆ Establishing key decisions and review milestones during this project
- ◆ Preparing an initial project development plan identifying the schedule of work tasks and key personnel to perform the work in the field to meet the milestones and objectives
- ◆ Coordinate communications and meetings with the Utility as needed or required to review technical concepts and alternatives, soliciting staff input and coordinating activities with the project team
- ◆ Prepare periodic reports as needed and meet with the Utility on a regular basis summarizing project scheduling, progress and maintaining the project within the budget stipulated
- ◆ Oversee the execution and development of the project deliverables



Project management remains an important activity during the course of the project and does not stop with the project manager. Each project team deployed into the field is dedicated to providing the best leak survey coverage that can be attained using the state of the art leak detection equipment, tools, field experience and knowledge. Each field team will be made up of two experienced leak detection technicians that also have been cross trained in other disciplines of water loss control such as water meter assessments (residential, commercial, wholesale, and production meters), and water distribution system field maintenance such as distribution flow testing, valve exercising and locational assessments, and Unidirectional water main flushing. It is this combination of experience and knowledge that has helped shape our approach to water loss assessments in distribution systems because the technicians have the capacity to make on the spot decisions regarding any fine tuning of the leak detection program while in the field. They will maintain constant communication with the Utility and the project manager regarding their daily progress as well as any major issues needing immediate attention and discussion.

PROJECT UNDERSTANDING AND APPROACH

M.E. Simpson Co., Inc. believes that the selection of our team to perform this survey will provide the Utility with exceptional experience, sound decision making, and a level of service providing the following advantages:

- ◆ A professional leak detection team with a specialized expertise in water loss management
- ◆ An experienced team with the capacity to provide the highest quality work for the Utility
- ◆ A project approach that incorporates interim reporting and continuous input opportunities
- ◆ Innovative proven analysis techniques developed from the completion of several hundred similar projects that sought the same scope and results as this project

Project Quality Assurance/Quality Control

Quality is of the utmost importance to M.E. Simpson Co., Inc. – not merely because of the Utility's and other client's requirements, but because it is vital to our continued success and viability. Quality management and services bring to all of us the rewards of jobs well done, satisfied Utility staff, and successful projects.

M.E. Simpson Co., Inc.'s QA/QC program is built around several key elements of M.E. Simpson Co., Inc.'s mission and values which consist of:

- ◆ Maintaining a reputation for quality performance
- ◆ Client satisfaction
- ◆ Continuous process improvement
- ◆ Open communication with the field staff and the Utility
- ◆ Team Work

The QA/QC plan for this project is very simple. No work will leave M.E. Simpson Co., Inc. until it has been verified that all the requirements and objectives of the project as well as the requirements of the project QA/QC managers have been met. During the course of the project, the project manager and/or the QA/QC manager will meet with the Utility to ensure that the work product is technically correct, but also meets the needs and expectations of the Utility.



PROJECT UNDERSTANDING AND APPROACH

M.E. Simpson Co., Inc.'s professional services are grounded in sound principles that meet the tests of time from past successes of hundreds of water loss projects and will satisfy the quality requirements of the Scope of Service. Each member of the project team will have a thorough understanding of the project objectives. They will apply sound methodology and principles, and are expected to produce quality, accurate and complete documents. The QA/QC procedure has been developed and implemented based on tried and proven methodologies. The prevention of poor quality service is based on four sound principles:

- ◆ Quality management of the project by using experienced personnel committed to excellence.
- ◆ Conformance to requirements by being knowledgeable of all local conditions in the field and keeping abreast of new cutting edge leak detection methods.
- ◆ Prevention of rework and errors by using teamwork in the field, cross checking the procedure every step of the way, and having data entry staff knowledgeable in all aspects of leak detection projects.
- ◆ Quality is built in - not added on. The project management and field staff have shown that a quality service is produced when the project tasks are properly sequenced and carried out to the final termination of the program using the built in system of checks and balances.



The above images were taken of a main break discovered by M.E. Simpson Co., Inc. in Princeton, Indiana in June of 2010. This leak, along with 64 others, was costing the utility upwards of \$128,246.40 a year.

PROJECT UNDERSTANDING AND APPROACH

Equipment to be used

The following equipment will be used for acoustic leak detection work during the leak survey. All material listed will be on the job site at all times.

- ◆ **FCS Accu Call Leak Correlator, FCS AC Digital Leak Correlator or Vivax-Metrotech HL6000 Leak Correlator.**
- ◆ **FCS S-30 electronically enhanced listening device or L-Mic electronically enhanced listening device.**
- ◆ **RADIO DETECTION LINE LOCATORS.**
- ◆ **SCHONSTEDT or CHICAGO TAPE magnetic locator.**



The first items listed are Leak Correlators manufactured by Fluid Conservation Systems, of Milford, Ohio. These Correlators have a proven record of achievement in locating leaks on water distribution systems under some very extreme circumstances. M.E. Simpson Co., Inc. uses FCS equipment exclusively in its leak detection programs for water utilities.

The FCS S-30 or FCS L-Mic will be used during the initial surveying process. Both units use highly sensitive transducers to detect leak noise along the pipe or appurtenances attached to the pipe. There is an adapter plate that can be used with the transducer as a "ground microphone" so that this type of leak detection method is available for the crew to use if needed.

The FCS Correlators, amplifiers, and related equipment are sent in to the manufacturer annually for software upgrades as well as system checks to insure the equipment is operating at optimum levels. Records of these system checks and calibrations are kept on file and are available upon request. Furthermore, stamps have been attached by FCS to the Correlators and amplifiers indicating dates of the last calibration.

The Radio Detection Line Locator is used to locate buried metallic water pipe. Line locating the water main and services in areas of suspected leaks is necessary so that the layout of the pipe and correct distances of the pipe can be verified. When a leak correlation is being performed on a suspected leak, the proper distance will be entered into the leak correlator. If the water lines are not properly located, it is possible that incorrect pipe distances could be entered into the correlator, thus the leak location could be inaccurate causing the digging of a dry hole. Also, when the Utility crews are ready to dig up the leak area for repair, having the proper location of the pipe is necessary.

The Magnetic locator is a required tool so that buried mainline valves and curb-stops can be located for listening and /or leak correlation if needed.

PROJECT UNDERSTANDING AND APPROACH

If the Utility selects the option of having the leak locations documented with GPS, M.E. Simpson Co., Inc. would use Trimble equipment for this purpose. The state of the art Trimble GPS GeoExplorer GeoXH (sub-meter accuracy) hand held receiver is a twelve channel GPS receiver designed to provide real time GPS locations. It also has the ability with post processing of the data to be able to provide sub-foot accuracy locations. GPS locations of leaks allow for tracking the leaks over time for a utility using a GIS program. This will allow the utility to monitor areas of pipe prone to leakage over time to determine a pipe rehabilitation or replacement schedule.

Project Field Approach

When leaks occur on a water pipe, the water escaping the pipe under pressure produces friction, and thus "leak noise." The ability to detect, and then pinpoint leaks on water pipe is dependent on several variables. All these variables need to be analyzed by the Project Team during the course of the Leak Survey in order for successful leak locations to occur. These variables include:

- ◆ *Pipe Material* - different pipe materials cause sound waves to travel at different velocities
- ◆ *Pipe sizes* - different pipe sizes cause sound waves to travel at different velocities. Larger pipes will cause the sound to travel slower than on smaller pipe due to the amount of pipe material for the sound to be absorbed into
- ◆ *Water pressure on the pipe* - lower pressure will not produce as much leak noise as higher pressure
- ◆ *Flow velocity in the pipe* - water moving through the pipe can affect the transmission of leak noise on the pipe and the ability to detect leakage
- ◆ *Water table* - high levels of ground water can affect ability to hear leaks on the pipe. *Soil conditions*- types of soils can affect ability to detect leaks due to the density of the soil surrounding the pipe
- ◆ *Size of the leak in the pipe* - larger leaks can in some circumstances produce lower noise levels than smaller leaks
- ◆ *Mechanical noise* - Pump noise from a nearby pump station can affect the ability to detect leaks as well as noise from electrical transformers

"M.E. Simpson Co., Inc.'s extensive field experience in leak detection methodology will allow for a thorough examination of the Utility's distribution system"

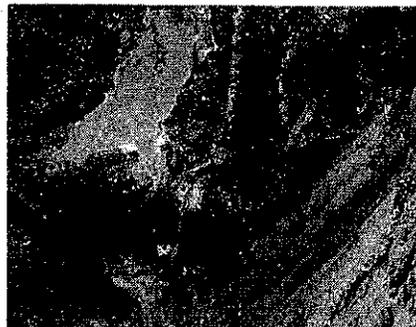
The success of this program will be dependent upon reviewing all available data regarding the operation of the distribution system. The following will need to be gathered; all as-built drawings of the water distribution system, all original atlases, all books, field cards, notes, computer copies of the distribution system, valve cards, hydrant cards and a copy of a digital map of the Utility, if available.

Additionally, other records such as amounts pumped into the system will need to be reviewed. The field verification of leaks and associated locations, along with the records being reviewed, shall yield updated location records of the Utility's leak locations as well as supplying valuable information regarding the general condition of the distribution system.

PROJECT UNDERSTANDING AND APPROACH

An organized field approach to this Leak Survey project will include the following:

- ◆ **Introduce and maintain an interactive role** with the Utility Staff for the Leak Survey Program. Conduct short interviews with staff about particulars of the distribution system such as problem areas prone to leaks, age of pipe, pressure problems in the distribution system. This will allow for a greater understanding of how the distribution system is functioning allowing priorities to be assigned to particular segments of the work
- ◆ **Divide areas of the distribution system** into geographic areas that can be surveyed in progression and leak areas pinpointed in an orderly fashion. This would include setting a schedule and maintaining a level of Field Staffing that will insure completion of the Leak Survey within the schedule and budget allotted. This will require all maps of the distribution system to be examined during the course of the planning sessions to formulate a workable plan of action
- ◆ **Perform a Leak Survey on the distribution system** and document confirmed leak locations in a manner that will allow a prioritized list of leak repairs to be pursued according the described "Scope of Work"
- ◆ **Locate** all confirmed leaks in a manner that will allow their positions to be known and readily re-creatable by Utility personnel upon demand
- ◆ **Document** each located leak to such an extent as to provide information characteristic to each specific attribute as defined by the Utility including GPS locations of each leak.
- ◆ **Provide constant communication** with the Utility staff so located leaks can be addressed in a timely manner
- ◆ **Provide instruction and council to Utility staff** during the course of the Leak Survey so once the program is concluded, the Utility staff will have a complete understanding of all the parameters of conducting leak surveys with the established goal of reducing the total water loss in the system
- ◆ **Provide daily reporting** during the course of the project as well as a final report indicating all the pertinent details regarding the leak survey program.
- ◆ **Provide recommendations for future leak survey programs** such as a methodology and frequency for surveying the distribution system



PROJECT UNDERSTANDING AND APPROACH

Potential Problems

Problems can occur at any point during the course of the leak survey. As outlined above, all variables need to be accounted for so these issues can be mitigated. This is done with having a good QA/QC program built into the project. Despite all precautions, things can and do go wrong.



When a major leak has been located, the Utility will need to excavate as soon as is prudent while the field team is performing the remainder of the leak survey. It is rare that a leak is missed and the Utility digs a dry hole. However, when this happens, M.E. Simpson Co., Inc. will assist in any way possible to determine why the pinpoint of the leak was off. It is imperative that if a leak is missed, that the Utility contact the project field team immediately so the field team can mobilize to the open excavation to be able to assess if a mistake was made because incorrect information was used in the initial evaluation such as; incorrect pipe material, incorrect distance between points used for correlation, size of pipe, pipes not line located correctly, or some other issue. The field team will retrace all steps used for the initial leak pinpoint and re-locate the leak. This may involve placing one or both of the transducer microphones directly on the pipe in the open excavation and performing a leak correlation to obtain a pinpoint. What matters is correctly locating the leak so it can be repaired and service restored. Once the leak has been located and confirmed, then a determination of how the pinpoint was miscalculated can be determined and rectified.

Other issues that can cause potential problems can be avoided by simply following the established field procedure described under the "Scope of Service" as well as the established QA/QC procedure. These procedures have established sequences, that when followed, yields accurate leak locations. Leak pinpointing becomes inaccurate when some or all of the variables cannot be accounted for or mitigated.

SCOPE OF SERVICES

The Field Scope of Service for the Leak Survey is understood to be the following:

M.E. Simpson Co., Inc. will furnish all labor, material, transportation, tools, and equipment necessary to survey the water distribution system areas selected by the Utility. M.E. Simpson Co., Inc. shall be required to provide such skilled and trained personnel and equipment necessary to complete the work herein specified. **There will be a minimum of Two Persons per team working on the survey at all times for safety and quality assurance.**



Leak Detection has come a long way since the early 1900's.

- ◆ Work in an orderly and **safe** manner to insure protection of the local residents, Utility employees, and the Field Staff so that no **avoidable** accidents occur.
- ◆ All Field Staff will have readily observable identification badges worn while in the field.
- ◆ The leak detection equipment to be used will be that which was described in the "Equipment to be used" section.
- ◆ Initially listen to **all fire hydrants, all main line valves**, and when necessary, selected service connections in the entire distribution system with the **S30** electronic listening device or the **L-Mic**, by making physical contact with the valve, hydrant, pipe, or B-box. (Listening points that are not accessible will be given to the Utility and when corrected they will be listened to.) This will be done on the Utility's distribution system.
- ◆ Listening distances will not exceed 500' between points. I.E.: valves, hydrants, service valves or meter settings will be used with preference of listening points in order as follows; direct contact with the pipe, main line valves, hydrant valves, hydrants, then service valves or meter settings.
- ◆ Valve vaults full of water may be pumped out to facilitate listening. Sometimes full vaults can mask leak noise.
- ◆ Large diameter pipe (18"-36") may need to have additional listening performed by listening directly above the pipe at intervals of 6-10 feet.
- ◆ **All accessible points** along PVC water mains will be physically listened to including services, main line valves, and hydrants.

SCOPE OF SERVICES

- ◆ A "suspected leak" log shall be maintained indicating all areas where suspected leak noise was heard. This log will be reviewed when the Project Team is verifying the suspected leak area for confirmation of the actual existence of a leak. This log will be a part of the periodic reports turned into the Utility regardless of an actual leak located in the area or not, with an explanation of the noise source.
- ◆ When leak noise has been detected and or suspected, the Project Team will verify the suspected area a second time to confirm the noise. At least four hours will pass between the initial listening of the area before a second listen and confirmation is attempted.
- ◆ The Project Team will line locate the water main and service lines in the immediate area so the correct pipe distances can be input into the leak correlator and also so that the Water Utility will have an idea of where the water main is located prior to excavation. Non-metallic pipe locations will be "interpolated" as best that can be identified, given the line location of metallic services, Utility knowledge of the area, or other information regarding the actual location of the main.
- ◆ The Project Team will use the following Electronic Leak Correlators (either a FCS Accu Corr or Tri-Corr 2001), to determine if a leak is present and use the same equipment to pinpoint the leak.
- ◆ For PVC water mains only the Accu Corr or Tri-Corr 2001 will be used for correlations because of the ability for these correlators to be able to analyze the particular sound frequencies inherent to PVC pipe. The water main will be correlated from point to point with correlation distances not exceeding 350' between points. I.E.: Hydrants, valves, service valves, or other accessible points on the pipe.



Conducting initial listening survey



"X" marks the spot for excavation

- ◆ The leak location will be marked in the field (on the surface) using environmentally formulated Precautionary Blue paint.
- ◆ The Project Team will document all leak locations with a diagram indicating the location of the leak. Other information related to that correlation will be included as part of the field sheet such as the filters used for the correlation, line locations, distances between sensors, etc.
- ◆ The field sheets will be copied, and turned into the assigned Water Department Manager daily or an agreed time period so the leak can be dug and repaired immediately. They will be classified as to the potential severity of water loss, as well as potential danger to the general public.
- ◆ The locations of leaks requiring immediate attention (immediate threat to life, injury or traffic) will be turned in as quickly as possible to facilitate the repair process.

SCOPE OF SERVICES

- ◆ **"Ground miking" will not be used as the primary determination for leak locations.** Grounding miking will be done per Utility request, or when it has been deemed to be the most efficient means to listen to the water main running under ground. Large diameter mains (18" – 36") may need this additional evaluation. This method may be used to assist in confirmation of a leak location. However, "ground miking" is solely dependent on conditions beyond the direct observations of the leak technician such as soil conditions and composition, water table, depth of pipe bury, assumed location of the water main (such as concrete pressure pipe) and compaction of pavement material causing leak sounds to scatter and echo or simply be absorbed.
- ◆ The Project Team will report daily or per request of the Utility, to the assigned Utility Manager and go over the progress of the previous day, as well as cover what will be surveyed the current day.
- ◆ It may be necessary to conduct parts of the Leak Survey during "off hours" such as at night. This may be required in areas of high traffic volume where traffic noise may affect the ability to detect leak noise, and traffic volume may affect the ability of the Project Team to be able to safely access main line valves in the middle of the street. The Project Team will give 24-hour advanced notice of intent to survey a particular area that may require after hours surveying or nighttime surveying. This is so the Utility can plan for the area to be surveyed, give notification to the Police department, as well as other Public Works Divisions as to the activity that will take place.
- ◆ A progression map shall be maintained for each section under survey indicating leak locations on the map. This will be especially helpful in quickly determining leak locations that correspond to the field leak diagrams turned into the Utility.
- ◆ As a part of the leak program, mapping discrepancies found on the current water atlas will be noted and included as a part of the final report so the Utility can make needed corrections. This will be included as a part of the periodic reporting to the Utility, thus enabling the Utility to keep up with mapping corrections.
- ◆ Distribution assets found to be in disrepair such as issues with hydrants, valves, and service lines, will be noted and turned into the Utility.
- ◆ Leaks verified on the customer's side of a service shut-off will not be located beyond the shut-off. If a leak appears to be on the Customers' side, the Utility will be notified first, then the customer notified and permission granted prior to the water being shut off even for short periods of time where possible and as time allows, as well as the ability for the customer to respond.
- ◆ If the Utility requests leak locations beyond the service shut off on the customer's side of the service line, this will result in an additional charge to the leak survey based on an hourly rate and this service must be agreed upon between the Utility and M.E. Simpson Co., Inc. prior to the start of the survey.
- ◆ Valves and hydrants will not be operated without Utility permission. Valves and hydrants that break during this type of operation are the sole responsibility of the Utility. M.E. Simpson Co., Inc. cannot be responsible for valves and hydrants that break due to pre-existing conditions.
- ◆ The Utility is encouraged to dig up and repair the leaks located as soon as possible so that the area may be re-surveyed while the Project Team is still working on the survey in that general geographical location to ensure no other leaks are present in that area.

SCOPE OF SERVICES

OPTIONAL GPS OF LEAK LOCATIONS

Once leak locations have been confirmed, the M.E. Simpson Co., Inc. Project Team can perform the following:

- ◆ **The Project Team will collect GPS Coordinates** of all leak locations assessed using the above "Scope of Work"
- ◆ The Project Team will work with the Utility to develop a "data dictionary" which will define the information to be collected for each leak location. The Data dictionary shall have the following but not limited to:
 - Date and time the information was gathered.
 - The unique identifying number for each attribute consistent and compatible with system presently employed by the *Utility*.
 - Location for each attribute referenced by Northing and Easting coordinates generated from the GPS location in the Utility's local State Plane Coordinate system, as well as Latitude and Longitude.
 - Type of Attribute (main break on pipe, mainline valve leak, hydrant leak, service leak).
 - Offset information if the attribute needs to have the location determined by an offset coordinate due to blocked signals from the GPS satellites.
 - Any other data required to be collected as part of the attribute data set as defined by the Data Dictionary. This Data Dictionary will be assembled by the Project Team and the Utility.
- ◆ **The accuracy of each GPS location will be sub-meter.**
- ◆ **The location of "offset" GPS locations** will be accomplished by use of a Laser Rangefinder with an accuracy of 1/10th of a foot with an automatic Electronic Compass coupled to the GPS data collector. This is so that a bearing and distance from the offset location to the target GPS location can be recorded as part of the attribute data. This will allow coordinates to be generated in high tree canopy and urban canyons where normal coverage would not be possible.
- ◆ **GPS locations will need to have readings** from at least four satellites in position and a reading from a local GPS beacon, or five satellites for the position to be considered accurate as a differentially corrected GPS location.
- ◆ **"PDOP" readings need to be less than 5.** "PDOP" readings greater than 5 will not be considered as accurate locations.
- ◆ **A minimum of 30 readings** for each position shall be taken.
- ◆ **Position of the GPS satellites shall be given primary consideration.** The position of the satellites shall be recorded as part of the data. If the satellites are low on the horizon, it is expected that the project team will wait until the position is better before attempting to gather the GPS position. Data collected with the satellites low on the horizon and/or poorly distributed shall not be considered valid.
- ◆ **The information collected** will be compiled into the **Pathfinder Office** or **TerraSync™** software database with the ability to export the information into a format acceptable to the Utility such as Microsoft Access, Microsoft Excel, .DXF file, or .SHP file for use in the Utility's GIS system or CAD mapping program, and also included in the Leak Location Excel database.
- ◆ **All locations will be differentially corrected** for accuracy. A stationary beacon or mobile beacon can be set up to allow differential correction. All data will be "Post-Processed", so that a comparison can be made to a Local stationary GPS receiver. The locations of the stationary GPS stations can be obtained from the Internet. The particular stationary GPS receiver shall be listed in the final report as the station used for differential correction. This will allow for a greater accuracy of the GPS locations.

SCOPE OF SERVICES

DOCUMENTATION OF OPTIONAL GPS LEAK LOCATIONS

M.E. Simpson Co., Inc. will provide a location report for each leak located, including the following:

- ◆ The GPS location data collected will be exported into a database for Utility use
- ◆ The GPS data collected shall include but is not limited to the following information:
 - a. *Identifying number consistent and compatible with system presently employed by the Utility.*
 - b. *Location referenced by coordinates using the **Connecticut State Plane Coordinate System.***
 - c. *Location by street and cross-street names.*
 - d. *Type of structure.*
 - e. *Date and time data was collected.*



SCOPE OF SERVICES

Quality Control and Accuracy of Leak Locations

The level of accuracy of leak detection is a matter of taking in all the above considerations and applying those considerations to each individual potential leak location as it is being evaluated. Any statement made as to the level of accuracy of leak locations must be considered based on the individual conditions of each leak.



Leak surfacing at intersection



Hidden leak running into drain tile

Locating leaks on a distribution system can be very challenging. *It is not a perfect science.* Pipes and fittings can leak for a variety of reasons (age, poor installation, material failures, bad soils, etc.), and the ability to locate leaks is dependent on the stated variables listed in the "Project Approach". By employing a strict methodology in the field for conducting a leak survey, these variables can be accounted for and mitigated. The depth of experience of the Project Team is extremely important to maintaining the ability to have accurate locations of leaks. Additionally, crews work as Two-Person Teams in the field, double checking the progress of the work as the survey progresses. The systematic procedure for leak confirmation has been stated in the Scope of Field Service and is restated here.

"Suspected leak areas are always listened to a second time, preferably at a different time of day than originally listened to. The mains and services will be line located to insure correct pipe distances are used for the correlations. Correlations may need to be performed several times with several configurations to insure all the possible scenarios have been covered. Sewer manholes may need to be opened and flows observed. If there is any doubt as to the existence of a leak, the area may be checked and correlated at different times to rule out water usage or other factors. The progress of the survey will be monitored by the use of daily logs and a progression map with suspected leak noise indications marked and possible leak locations will be maintained. Field leak location forms will be turned into the Utility according to the agreed schedule. The Project Team will follow up on leak locations by monitoring the repair schedule of the Utility. That way in case a potential leak location is wrong, the Project Team can return to the site and determine why the leak location was incorrect, and correct it. This means maintaining a good level of communication between the Project Team in the field, and the Utility. As a matter of Quality Control for leaks in the field, the two Correlators (Accu-Corr and Tri-Corr) have the distinct ability to be able to detect and pinpoint more than one leak in the same relative area, thus allowing better leak coverage and insuring that one leak is not "masking" another leak in the same area. The use of progress reports and meetings will allow for open discussions of problems encountered so solutions can be examined."

SCOPE OF SERVICES

Utility Observations

The M.E. Simpson Co., Inc. Project Team will welcome having staff of the Utility observe field procedures while the Leak Survey is in progress. They will be happy to explain and demonstrate the equipment and techniques that are employed by M.E. Simpson Co., Inc. for detecting and locating leaks on the Water System. This may be useful for the staff of the Utility in understanding the parameters of Leak Detection, especially during an emergency such as a main break on a critical line where a major disruption of service could occur.

FINAL REPORTS, DOCUMENTATIONS and COMMUNICATIONS

"Effective Communication ...
Accurate Documentation...
Insuring the success for the
Leak Survey"

M.E. Simpson Co., Inc. will perform the following:

- ◆ Project Team will **meet daily** with assigned Utility personnel to go over areas of survey for prior workday and plan current day and area to survey.
- ◆ The field technicians will be readily available by cellular phone as well as Nextel Direct Connect Radio. This will facilitate communications between the Utility and the field technicians. A **24-hour toll free 800 number** is available for direct contact with M.E. Simpson Co., Inc. for emergencies.
- ◆ **Diagram all leak locations**, date of location, and classify according to severity and an estimate of loss. These will be turned in daily to appointed Utility Personnel.
- ◆ **The Project Manager will meet** with the Utility regularly for a progress report.
- ◆ **Prepare a progress report** at monthly intervals for the Utility if requested.
- ◆ **Maintain a progression map to be included with the progress reports and final report** of the project indicating leak locations with symbols indicating type and severity corresponding to the individual leak diagrams.
- ◆ Develop a **Leak Survey log** of activity which will also have confirmed leaks listed and this list will be turned in weekly (in an Excel format). The list will also be included with the final report that will include the following;
 - 1.) **Mechanical deficiencies discovered**
 - 2.) **Mapping errors on the water atlas**
 - 3.) **Type of monitored appurtenances**
 - 4.) **Location of same for leaks discovered**
 - 5.) **Total estimated loss**
- ◆ **Prepare the final report** at the completion of the project which will include all leak location reports with drawings, total of estimated water loss, total pipe distance investigated, a description of the area surveyed, and other problems found in the system during the course of the survey that need the attention of the Water Utility. The leak summary will list leak types such as main leaks, service line leaks, valve leaks, or hydrant leaks. A cost benefit analysis of the survey based on the "cost to produce" water will also be included that describes the financial impact to the Utility for water loss. Recommendations for system maintenance will be a part of this report based on field observations made during the survey. **This final report shall be made available for submission to the Utility within thirty (30) working days of the completion of the fieldwork.**



3406 Enterprise Avenue
Valparaiso, IN 46383

Phone: (800) 255-1521
Fax: (888) 531-2444

www.mesimpson.com

December 16, 2011

Mr. Aleem A. Ghany, PE, CFM, CGC
Director of Public Works
City of North Miami
776 N.E. 125th Street
North Miami, Florida 33161

Dear Mr. Ghany,

M.E. Simpson Co., Inc. is pleased to present our response for the Request for Proposal for a **"Leak Detection Survey in the Distribution System"**, for the City of North Miami, Florida, water utility.

M.E. Simpson Co., Inc. is a **Technical Services** firm dedicated to developing and providing programs and services designed to maximize peak performance for our clients' water distribution and wastewater collection systems. Many of these programs are universally recognized as a part of "Best Management Practices" (BMP's) for utilities. We provide our clients the highest quality Technical and Professional Services, with highly skilled and trained professionals using state-of-the art technologies.

These services were developed and refined to provide Utilities with programs that can be customized to meet their needs. From complete "Turn-Key" services to assisting with the development of "In-House" programs utilized by a utility, M.E. Simpson Co., Inc. provides our services to our clients knowing that the public has the implicit faith that *"the water is always safe to drink"*.

M.E. Simpson Co., Inc. submits this proposal with our approach to identify and quantify sources of real water losses in the distribution system for the Regional Water Authority. Our work will provide the Authority with several key benefits:

- ◆ A Nationally recognized firm that is a leader in water loss management and control
- ◆ Innovative, cost effective technology coupled with over 25 years of using well developed field methodologies proven to identify and quantify real water losses under some of the most challenging conditions
- ◆ A project approach that incorporates flexibility, interim reporting and continuous input opportunity.
- ◆ An experienced Field Project Team with individual team members having several years of honed leak survey and leak detection experience in a variety of severe environmental conditions and temperature extremes.
- ◆ Experience with water systems ranging in size from a few miles to over 3,400 miles with multiple pipe materials.

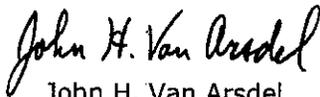
This **Proposal** is being submitted as follows:

- ◆ **Firm History**
- ◆ **Related Project Experience, References**
- ◆ **Employee Qualifications, Project Staffing**
- ◆ **Project Understanding and Approach**
QA/QC, Equipment to be used
- ◆ **Scope of Services / Proposed Schedule**
- ◆ **Proposal Fee**
- ◆ **Leak Survey Report Example**

We understand the City of North Miami has many choices it can make selecting a project team for this worthy project. The process of selecting a team for such a critical project is a daunting task. We hope our proposal will allow for an educated and informed decision to be made that will benefit the City for many years to come. M.E. Simpson Co., Inc. truly appreciates the time and consideration afforded to us regarding our Leak Detection Services.

If there are any inquiries regarding this proposal, please do not hesitate to contact us. We look forward to hearing from you soon.

Sincerely yours,



John H. Van Arsdel
Vice President

FIRM HISTORY

M.E. Simpson Co., Inc. was founded in 1979 by Marvin E. Simpson. Our firm has become the industry leader in developing and providing programs and services aiding our clients in maximizing their peak performance for their water distribution and wastewater collection systems. We offer our clients the highest quality Technical and Professional Services, using state-of-the art technologies and highly skilled and trained professionals. Our staff has developed a host of high tech programs that will insure that your Utility will be proactive in dealing with both your water distribution and waste water collection systems.

"Crumbling infrastructure, inaccurate records, conservation, sustainability, water quality, water loss, economic conditions, revenue shortfalls, being green, having enough water"; these are all statements and buzz words in today's society. Currently in the water and wastewater industry, these words are our reality, thus making them our responsibility.

Since our humble beginnings over thirty years ago, we have provided services that have improved water accountability and increased revenues for both water and wastewater Utilities. We've also maximized distribution system performance and optimized distribution system data, records, and mapping. To date we have provide Water Loss Control programs that have included over 50,000 Large Water Meters serviced and 100,000 miles of Leak Detection services. Our Asset Management services have documented over 400,000 valves located and exercised. Our Fire Hydrant Flow testing program has recorded 70,000 fire hydrants flowed and water main capacity information developed.

Though our Wastewater Services are much newer, they have given us the opportunity to optimize collection system, collection system data, records and mapping. Our Manhole Inspection services have located, documented and mapped over 15,000 manholes. We have provided Smoke Testing services to over 25 collection systems, discovering hundred's of documented infractions. This service continues to be a steady area of growth for our firm.

We know service and we can assist you with your Utility's service needs. M.E. Simpson Co., Inc. provides its clients with water and wastewater system service technologies for the 21st Century.

The company began operations in Rochester, Indiana. The corporate headquarters moved to Valparaiso, Indiana in 1988. In 1989 the Indiana Section of the American Water Works Association honored Marvin with the "Water Wheel Award" for his outstanding service to his profession. In 1995 Marvin was honored as a lifetime Member of the American Water Works Association.

Marvin's belief in service to our Industry and our Country has established M.E. Simpson Co., Inc.'s commitment to community and organizations such as the United Way, Abused Women and Children, Mental Health Association, Boys and Girls Club, Kiwanis and Jaycees (Junior Chamber of Commerce) for example, as well as local Police and Fire organizations. We encourage all of our employees to be active within their own communities serving with various organizations such as the Boys and Girls Club, Jaycees and Kiwanis.

M.E. Simpson Co., Inc. is active in Water Works Organizations at the national and state levels such as American Water Works Association, Water Environment Federation, Water Operators Association, Rural Water Association, American Backflow Prevention Association, American Public Works Association as well as local Districts, Branches, and Suburban Groups.

FIRM HISTORY

Our support of these groups goes beyond Membership to truly taking an active role by allowing employees to fill elected and appointed positions as officers and committee chairpersons. M.E. Simpson Co., Inc. has always taken an active role in education by making presentations at no charge at meetings, training seminars, and providing continuing education credits for water operators through the various water groups. We have presented programs on Water Meter Evaluation and Maintenance, Water Distribution System Leak Surveys, Water Distribution System Valve Location, Exercising and Computerized Mapping, and Best Management Practices for distribution system maintenance at state and national AWWA conventions.

Leak Detection History

M.E. Simpson Co., Inc. developed its Leak Detection program in 1986. Since that time we've improved the program that it is now a fundamental asset management and condition assessment program for our clients. We've also developed a Microsoft Access leak database with leak location drawings showing all the pertinent information needed to readily recreate leak locations from field data. Today the database is being developed into an internet based program to be accessible by clients online.

M.E. Simpson Co., Inc. is proud of the work we have performed and the maintenance programs that we have developed utilizing the latest technology and meeting the needs of "our customer" the Water Works Industry. We have played an important role in educating utilities about the need for and efficiency of annual maintenance programs; including the development of Polcon Pro-Valve® our computer software program for valve location and exercising records, Pro-Hydrant® a computer software program for fire hydrant flow testing records, and the continuing development and manufacturing of the Polcon® Flow Monitoring Equipment. We have moved beyond the competition in flow / pressure recording, computerization and record management.

Our leak detections services have been employed since 1986 in a majority of municipalities around the Chicago metro area. Currently we have crews stationed at other metro areas throughout the United States providing our services. Additionally, our crews have been deployed to locations throughout the United States, including Alaska, as well as American Samoa, Guantanamo Bay, Cuba, and Sigonella, Italy. Our crews have the unique ability to be able to respond to individual Utility requests because of the cross training they have received performing all the services M.E. Simpson Co. Inc. provides.

RELATED PROJECT EXPERIENCE, REFERENCES

South Central Connecticut Regional Water Authority (2011)

In 2011, a leak survey was performed on **1,139** miles of water main for the South Central Connecticut Regional Water Authority's distribution system. The 2011 program discovered **60** leaks. There were **10** main breaks, **10** service line leaks, **32** hydrant leaks, and **6** valve leaks (packing and bonnet bolts) and **2** "Other" leaks which will require more investigation by the Utility. The estimate of the annualized water losses in dollars was **\$519,629.318** based on the average costs of pumpage and water treatment (retail costs) for this 1,139 mile survey. The payoff for this survey was estimated at 5.5 months.

Project Completion: October 2011
Contact info: Mr. Brian Lakin
Project Engineer
Regional Water Authority
90 Sargent Drive
New Haven, Connecticut
(203) 401-2677
blakin@rwater.com

The City of Manchester, CT (2009)

In late 2009, a leak survey was performed on **261** miles of water main in the City of Manchester's distribution system. This program was based on an RFP issued by the City for the leak survey program. The 2009 program discovered **16** leaks. There was **1** main break (28,800 GPD), **2** service line leaks (**1** on the customer side of the shut off valve), **12** hydrant leaks, and **1** valve leaks (packing and bonnet bolts). The majority of these leaks did not surface because the local geology is limestone and the area is hilly. The estimate of the annualized water losses in dollars was **\$50,757.19** based on the average costs of pumpage and water treatment (wholesale costs) for this 261 mile survey. The payoff for this survey was estimated at 14 months.

Project Completion: November 2009 to December 2009
Contact info: Mr. Ed Soper, P.E.
Administrator
Water and Sewer Department
125 Spring Street
Manchester, CT 06045-0191
(860) 647-3115
esoper@ci.manchester.ct.us

RELATED PROJECT EXPERIENCE, REFERENCES

City of Baltimore, Maryland (Current - 2012)

M.E. Simpson Co., Inc. is currently teamed with KCI Technologies on a system wide Water Audit and Leak Detection Program for the City of Baltimore. This project was implemented as a result of water losses (both apparent and real) that are occurring in the City and County water systems. This project is involved with the verification of master meter accuracies to obtain the true water produced and input into the system, leak detection survey, "24-hour on call" response for leak locations, prioritizing leak status for repair work, development of standards for leak repairs for contractors, analysis of water consumption, selected meter testing, billing record review, Condition Assessment modeling and field analysis, and updating the GIS from field conditions. Important aspects of this program include "real time" reporting from the field via GIS for leak locations and the implementation of a Dashboard application of the GIS to monitor system field maintenance work in real time.

Project Completion: March 2010 to March 2012
Contact info: Mr. Timothy W. Wolfe, P.E., BCEE
Vice President, Chief, Environmental Group
KCI Technologies, Inc.
936 Ridgebrook Rd.
Sparks, Maryland 21152
(410) 316-7849

City of West Bend, Wisconsin (1997, 1999, 2001, 2003, 2005, 2007, 2009, 2011)

M.E. Simpson Co., Inc. has been conducting a Leak Survey on the **125 mile distribution system** every other year as a way for the West Bend Water Utility to reduce water losses occurring in the distribution system. The Utility owns Leak detection equipment; however, the staff of M.E. Simpson Co., Inc. performs leak detection work daily and has a greater understanding of the parameters of detection and locating leaks. The leak surveys have found numerous leaks on this system since the start of the leak detection program; however, because of the vigilance of the program, these water losses have subsided to a point of regular distribution system preventative maintenance.

Project Completion: February into March
Contact info: Mr. James Kell
Supervisor, Water
251 Municipal Drive
City of West Bend, WI 53095
(414) 335-5040
wusup@ci.west-bend.wi.us

RELATED PROJECT EXPERIENCE, REFERENCES

Town of Medley, Florida (2007, 2009, 2010, 2011)

M.E. Simpson Co., Inc. has been conducting a Leak Survey on approximately **42 miles of the distribution system** as a way for the Town to reduce water losses occurring in the distribution system. The staff of M.E. Simpson Co., Inc. performs leak detection work daily and has a greater understanding of the parameters of detection and locating leaks especially on this system due to the number of years performing work of various types on this system along with knowledge of the pipe material used in this system. The leak surveys have found numerous leaks on this system. During the Leak Detection Programs leaks found in the system were costing the Utility in excess of \$47.58 per day or \$17,365.00 annually.

Contract Length: One Year
Project Completion: February 2010
Contact info: Mr. Walter Wernke
Department Head, Water & Sewer Department
Town of Medley
10776 N.W. South River Drive
Medley, Florida 33178
wwernke@townofmedley.com

City of Joliet, IL (2008-2009, 2010)

In early 2009, a leak survey was performed on **180** miles of water main out of an estimated 375 miles of water main in the City of Joliet's distribution system and continued in 2010. This program was based on an RFP issued by the City for the leak survey program. In years past, low bid was used to solicit leak detection vendors. The 2009 program discovered 149 leaks. There were **33** main breaks, **59** service line leaks (7 on the customer side of the shut off valve), **46** hydrant leaks, and **11** valve leaks (packing and bonnet bolts). The majority of these leaks did not surface because the local geology of Joliet is limestone. The estimate of the annualized water losses in dollars was **\$918,354** based on the average costs of pumpage and water treatment (wholesale costs) for this 180 mile survey. GPS coordinates were taken for each leak location as a part of this contract. The City has since extended the contract for the remainder of the system with a renewal of the contract for the next year.

Project Completion: December 2008 to February 2009
Contact info: Mr. James Eggen, P.E.
Director of Utilities
921 East Washington Street
Joliet, Illinois 60433
(815) 724-4222
jeggen@jolietcity.org

RELATED PROJECT EXPERIENCE, REFERENCES

Town of Plainfield, Indiana (2010)

M.E. Simpson Co., Inc. has been conducting a Leak Survey on approximately **171 miles of the distribution system** as a way for the Town to reduce water losses occurring in the distribution system. The leak surveys have found numerous leaks on this system. During the 2010 Leak Detection Program, 60 leaks were found in the system were costing the Utility in excess of \$745.63 per day or \$272,155.68 annually.

Contract Length: One Year
Project Completion: June 2010
Contact info: Mr. Kurt Wirth
Utility Manager
Town of Plainfield
1090 S. Center Street
Plainfield, Indiana 46168

City of Princeton, Indiana (2010)

M.E. Simpson Co., Inc. has conducted a Leak Survey on approximately **65 miles of the distribution system** as a way for the City to reduce water losses occurring in the distribution system. The leak surveys have found numerous leaks on this system. During the 2010 Leak Detection Program, 64 leaks were found in the system were costing the Utility in excess of \$351.36 per day or \$128,246.40 annually.

Contract Length: One Year
Project Completion: July 2010
Contact info: Mr. J.B. Brines
Water Distribution Superintendent
City of Princeton
P.O. Box 15
Princeton, Indiana 47670

RELATED PROJECT EXPERIENCE, REFERENCES

Miami-Dade Water and Sewer Division (WASD), Miami, Florida (2006-2008)

M.E. Simpson Co., Inc. worked with Malcolm Pirnie Engineers to conduct a Water Loss Assessment and Reduction Plan for Miami-Dade WASD. M.E. Simpson Co. Inc. worked with Malcolm Pirnie in the assessment of water loss issues within the WASD distribution system. This consisted of the development of a 20 year Water Loss Reduction Plan that was submitted and accepted by the South Florida Water Management Agency. M.E. Simpson Co., Inc. provided a critical analysis and review of current leak detection methods and equipment employed by WASD leak crews on the **5,600 mile** distribution system. This also involved random sample field testing of areas for leaks and providing a statistical analysis of the overall effectiveness of the efforts to reduce leakage by WASD field staff over the last 10 years. Recently efforts were completed to provide an analysis of flow meter accuracies for the water supply of the distribution system. Additionally wholesale and commercial meters were sampled for proper meter applications and accuracy levels.

Project Completion:	2006 through 2008	
Contact info:	Mr. Dave Bridges Asst. Distribution Supt. Miami-Dade County Water and Sewer Division (WASD) 7301 N.W. 70 th St. Medley, FL 33166 (305) 460-4908 DBRID@miamidade.gov	Mr. Steve Davis, P.E., DEE Vice President Malcolm Pirnie, Inc. 4646 Van Buren St. Suite 400 Phoenix, AZ 85008-6945 (949) 232-4230 sdavis@pirnie.com

City of Lebanon, Ohio (2005, 2009 - 2010)

M.E. Simpson Co., Inc. performed a leakage assessment program a **77-mile water distribution system**. During the course of this survey, several leaks were located that had remained undetected for a few years. The estimated cost saving over one year in lost water production was close to \$400,000, and the payback period for the investment of the leak survey was approximately two weeks. This project ran approximately 8 days for completion.

Mr. John Habig
Water Superintendent
Lebanon, Ohio
(513) 228-3601

RELATED PROJECT EXPERIENCE, REFERENCES

Gwinnett County Department of Water Resources, Gwinnett County, Georgia (2006-2007)

M.E. Simpson Co., Inc. worked with HDR Engineers (local Atlanta, Georgia office) to conduct a Water Distribution Leak Detection Study for Gwinnett County Georgia. M.E. Simpson Co., Inc. provided the field services expertise, field supervision, leak detection equipment, vehicles and half the field personnel for a Leak Survey project. This project was developed to assist the County in controlling the water losses in its **3,400 mile distribution system**. The entire system was surveyed and all leaks found were pin-pointed. All leak locations had GPS coordinates taken and a Leak Database was created to be used with the County's GIS system. The field work was completed in 11.5 months, ahead of schedule and under budget. After the field work had been completed, selected County Field staff attended leak detection classes presented by the Project Team so the County could take over a regular leak detection program. Since completion of the leak field work, additional water loss prevention work is being pursued such as commercial/ industrial large meter testing and repair, master meter testing and wholesale meter testing and repair. This region has come under scrutiny due to the water use issues in the metro Atlanta area and the drought of 2007-2008. The following are the basic particulars:

Contract Length:	2006 - 2007	
Project Completion:	March 2006 through February 2007	
Contact info:	Mr. James Henderson Construction Manager Gwinnett County Dept. Water Recourses 684 Winder Highway Lawrence, GA 30045-5012 (678) 376-7127 (678) 376-6717 fax james.henderson@gwinnettcountry.com	Mr. Tom Jakubowski, P.E. Project Engineer HDR, Inc. 301 Perimeter Center N. Suite 400 Atlanta, GA 30346 (262) 853-8142 mobile thomas.jakubowski@hdrinc.com

Navajo Indian Reservation, Chinle, AZ for Tetra Tech (2009)

M.E. Simpson Co., Inc. conducted a Leak Survey on approximately 144 miles as a way for Tetra Tech reduce water losses occurring in the Navajo Indian Reservation in Chinley, Arizona. The most recent completed Leak Survey Program covering 144 miles resulted in the location of leaks costing the Utility in excess of \$10,249.20 annually.

Contract Length:	One Year
Project Completion:	November 2009
Contact info:	Mr. Doug Brimhall, P.E. Tetra Tech 1801 W. Deuce of Clubs, Suite 230 Show Low, Arizona 85901

RELATED PROJECT EXPERIENCE, REFERENCES

City of Waukegan, Illinois (1991 through 2009 - 2010)

M.E. Simpson Co., Inc. has been conducting a Leak Survey on one third of the **350 mile distribution system** every year as a way for the Waukegan Water Utility to reduce water losses occurring in the distribution system. The staff of M.E. Simpson Co., Inc. performs leak detection work daily and has a greater understanding of the parameters of detection and locating leaks especially on this system due to the number of years performing work of various types on this system along with knowledge of the pipe material used in this system. The leak surveys have found numerous leaks on this system since the start of the leak detection program in 1989 but the program had stopped after 1994. In 1997 the program was restarted and because of the results of the program, these water losses have subsided to a point of regular distribution system preventative maintenance.

Contract Length: Annual since 1997
Project Completion: October of each year
Contact info: Tom Hagerty
Public Works Superintendent
Public Works Department
1700 N. McAree Road 60085
Waukegan, IL 60085
(847) 360-0944

Fluid Conservation Systems, Inc. -- City of Phoenix, AZ Water Services Department Logger Program (2006 - 2007)

M.E. Simpson Co., Inc. provided a leaks survey team for the Fluid Conservation System's leak logger program for the City of Phoenix. The program consisted of placing loggers, reading loggers, addressing issues with the loggers, interpolating the data from the loggers, performing leak detection and leak pinpointing in the areas the loggers heard noise and reporting results to the client so that leaks could be repaired. We also surveyed specific areas and pinpointed leaks as we found them as a part of the project. The project was conducted from July of 2006 through January of 2007. Several areas throughout the Water Services Departments water distribution system. Approximately 500 to 800 loggers were "lifted and shifted" to predetermined areas and were allowed to listen for at least 7 consecutive days before they were moved again. 30 leaks were located during this process. The protocols, staff training and schedule developed allowed the City to assume control and operation of the program In February of 2007.

Project Completion: July 2006 to January 2007
Contact info: Mr. Tim O'Connor
Regional Program Consultant
Fluid Conservation Systems, Inc.
502 Technecenter Drive, Suite B
Milford, OH 45150
(877) 655-1699

RELATED PROJECT EXPERIENCE, REFERENCES

ADDITIONAL REFERENCES

Below are several references that use our services. Please feel free to call any of these gentlemen and ask them about our services and us.

Mr. Gale Gerber
Water Superintendent
Town of Nappanee, IN
(574) 773-4623
ggerber_46550@yahoo.com

Mr. Chuck McIntire
Superintendent
Valparaiso Water Works
(219) 462-3800
cmcintire@valpo.us

Mr. Dan Lueder
Utilities Director
City of Cottonwood, AZ
(928) 634-8033 ex 11
dlueder@ci.cottonwood.az.us

Mr. Scott Ham
Water Superintendent
Silver Creek Water Corp.
(812) 246-2889
scott@silvercreekwater.com

Mr. Steve Gerdes
Director of Water
City of Normal, IL
(309) 454-9564
sgerdes@normal.org

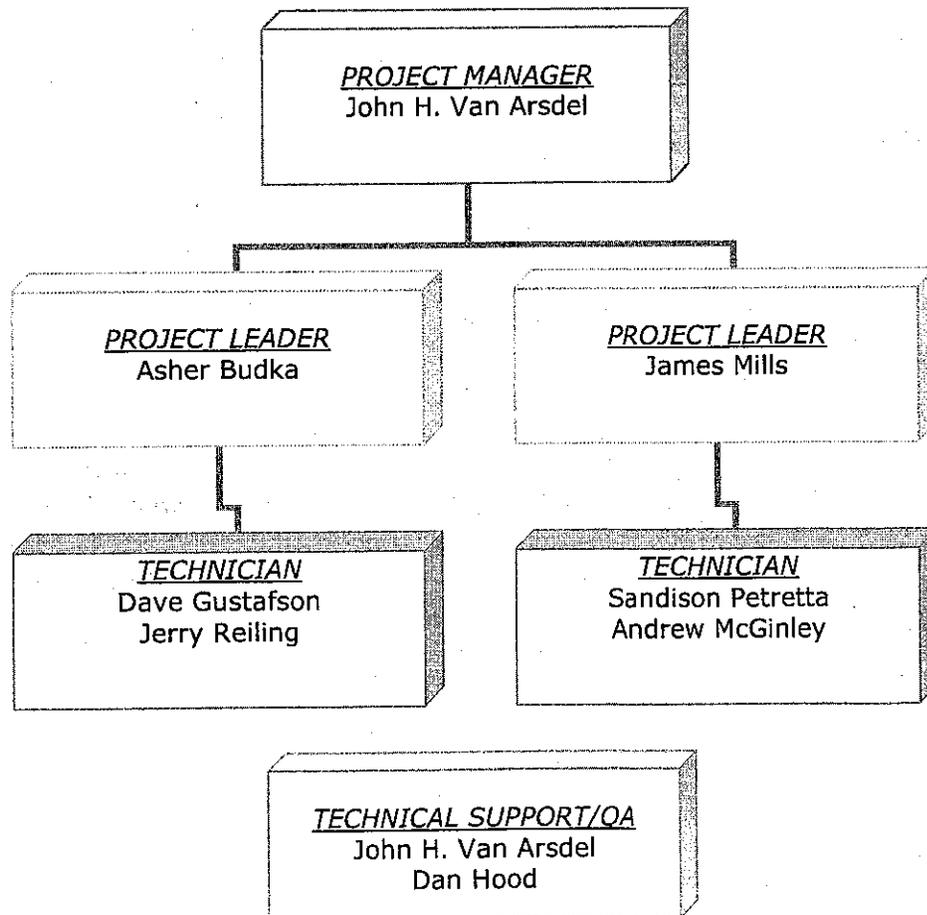
Mr. John Crooks
Director of Utilities
City of Shakopee, MN
(952) 445-1988
jcrooks@shakopeeutilites.com

EMPLOYEE QUALIFICATIONS, PROJECT STAFFING

The chart below outlines the **Project Team** to be used during the Water Distribution System Leak Survey for the City of North Miami, Florida. One of the two Project Managers listed will lead the **Project Team** in the field. **Two-Man Project Teams will be used at all times during the course of the Project for reasons of Safety and Quality Assurance.**

The **Project Manager (John H. Van Arsdel)** shall be on site at project startup, make periodic inspections of the worksite, meet with the Utility periodically to monitor the progress of the program, be responsible for the QA/QC of the field work, and be responsible for the production of field reports. He will be in communication with the Director of Utilities and the Project Leader throughout the project. He shall be responsible for the overall success of the Leak Survey Program.

The **Field Leader (Asher Budka and/or James Mills)** will lead the **Project Team** in the field and will be responsible for the day to day operations of the project. Daily contact with the Director of Utilities or appointed Utility personnel shall be maintained and progress of the day to day operations discussed. The Field Leader will be responsible for performing work done in the field, including locations of leaks, field paperwork, supervision of field crews, daily production records, and serve as liaison between the field crew and Project Manager. He will report any problem areas that need the immediate attention of the Utility during the course of the project. This shall be done to assure direct quality control in the field for the Leak Survey Program.



EMPLOYEE QUALIFICATIONS, PROJECT STAFFING

Qualifications of Staff for Leak Detection Services

PROJECT MANAGER/SUPERVISOR RECENT LEAK DETECTION PROJECT EXPERIENCE

John H. Van Arsdel, Vice President

John was the Project Manager for the following selected Leak projects.

- ◆ (2010-2011) City of Baltimore – Baltimore, MD
- ◆ (2011) South Central Connecticut Regional Water Authority - CT
- ◆ (2009) Offutt Air Force Base(AECOM) – Offutt, NB
- ◆ (2010) Vance Air Force Base (AECOM) – Vance, OK
- ◆ (2009 - 2010) Town of Medley – Medley, FL
- ◆ (2009 - 2010) Village of Hickory Hills – Hickory Hills, IL
- ◆ (2008, 2010-2011) Village of Lombard – Lombard, IL
- ◆ (2008 - 2009) Village of Mokena – Mokena, IL
- ◆ (2009) City of Manchester – Manchester, CT
- ◆ (2009) Town of Medley – Madly, FL
- ◆ (2008 - 2009) City of Joliet – Joliet, IL
- ◆ (2008) Miami-Dade Water and Sewer Division (WASD) - Miami, FL.
- ◆ (2009) Village of Richton Park – Richton Park, IL
- ◆ (2008 - 2009) Village of Hinsdale – Hinsdale, IL
- ◆ (2007, 2009) Village of South Holland – South Holland, IL
- ◆ (2006 - 2009) Village of Palos Hills – Palos Hills, IL
- ◆ (2006 - 2007) Gwinnett County Water Authority - Lawrenceville GA.
- ◆ (2009) Village of Glenwood – Glenwood, IL

PROJECT LEADER RECENT LEAK DETECTION PROJECT EXPERIENCE

Asher Budka, Project Leader

Asher was the Project Leader for the following selected Leak projects.

- ◆ (2010-2011) City of Baltimore – Baltimore, MD
- ◆ (2011) South Central Connecticut Regional Water Authority - CT
- ◆ (2009) City of Manchester – Manchester, CT
- ◆ (2007, 2009) City of South Bend Water Department – South Bend, IN
- ◆ (2008) City of Woodhaven - Woodhaven, MI

Jimmy Mills, Project Leader

Jimmy was the Project Leader for the following selected Leak projects.

- ◆ (2009 - 2011) Town of Medley – Medley, FL
- ◆ (2007, 2011) City of South Bend Water Department – South Bend, IN
- ◆ (2010) City of Country Club Hills – County Club Hills, IL
- ◆ (2009) City of Manchester – Manchester, CT
- ◆ (2009) City of Angola – Angola, IN
- ◆ (2008) Village of Westmont – Westmont, IL
- ◆ (2008) Village of Evergreen Park – Evergreen Park, IL
- ◆ (2007 - 2008) City of Auburn – Auburn, IN
- ◆ (2008) Blumfield Reese Water Authority - Michigan

TECHNICAL SUPPORT/QUALITY ASSURANCE

Dan E. Hood, President

John H. Van Arsdel, Vice President

Experience:

John H. Van Arsdel has been with M.E. Simpson Co., Inc. since May 1989. He graduated from Valparaiso University with a B.A. in Geography with an emphasis in Locational Evaluation and Research Design. He has completed water operators classes and seminars on Water Filtration and Distribution, Vulnerability Assessment Class for the Sandia Labs RAM-W method and the RAM-W "modified" for small to medium systems (*currently licensed to use the Sandia Labs RAM-W Method, and licensed to teach the RAM-W "modified" for small to medium water systems*), along with classes related to the operation and maintenance of water meters, system hydraulics specifically related to the Polcon® Flow Testing equipment, and backflow prevention.

John has over 22 years experience directing projects for water utilities concerning water loss prevention and audits, leak detection programs, meter evaluation and maintenance, flow testing using the Polcon® Flow Testing method (C-factors, pump curves, zone flow measurements), mainline valve assessments (location, exercising and mapping programs), and fire hydrant and main capacity flow testing programs. John has been responsible for the analysis, evaluation, and CAD updating of Water Distribution, Sanitary, and Storm Sewer Atlases using GPS locating. He developed the Company's Unidirectional Main Flushing Program and Utility Atlas Updating Program. He has presented classes for continuing education credits for water operators for over fifteen years to several local and state Water Works Organizations on Water Loss Reduction including Water Audits, Leak Detection, Meter Testing and Flow Testing. At 2007 ACE, he presented a paper on "Best Management Practices for Distribution System Maintenance". At 2009 ACE, he presented a paper on "Unequal sized Meters in Parallel Settings". Since 2003, he has conducted classes on Vulnerability Assessments and Emergency Response Planning for water utilities as well as conducting several VA and ERP projects.

John has maintained an active role in several water works organizations including holding offices on various Boards of Directors. As Vice President of M.E. Simpson Co., Inc., John serves as the main point of contact for client development, business sales and customer relations for the Eastern U.S.

Professional Certifications:

- ◆ 10 Hour and 30 Hour OSHA Certified for General Industry
- ◆ American Red Cross First Aid and CPR with AED Certified
- ◆ American Traffic Safety Services Association Flagging Certified

Professional Associations:

- ◆ American Water Works Association (AWWA)
Chair, 2010-2012 Water Loss Control Committee
Apparent Water Loss Sub Committee
- ◆ Illinois Section AWWA
2011, Board of Directors, Vice Chair
2009, 2010 Board of Directors, Secretary/Treasurer
2006-2009 Chair, Membership Committee
Education Committee, Water For People Committee, Water Efficiency Committee
- ◆ Indiana, Michigan, Wisconsin, North Carolina, South Carolina, Georgia, and Florida Sections AWWA
- ◆ Illinois Rural Water Association
- ◆ Wisconsin Rural Water Association
- ◆ North Suburban Water Works Association
1999-2001 Past President, Past Vice President, Past Secretary
- ◆ West Shore Water Producers Association
- ◆ Water Environment Federation

Awards:

- ◆ 2006 and 2008 National AWWA Zenno Gorder Membership Award for recruitment
- ◆ 2006 and 2008 Diamond Pin for National AWWA membership
- ◆ 2010-2011 Water Professional of the Year, Illinois Section AWWA



James Mills
Field Leader
Valparaiso, Indiana

Experience:

James (Jimmy) Mills has been with the Company since October of 2004. Jimmy has attended numerous classes and lectures related to the operation, maintenance, and installation of water meters, and completed classes in plumbing. Jimmy has experience in the following: maintenance and installation of water meters; valve location, exercising and mapping; fire hydrant and main capacity flow testing; and the use of state of the art leak detection equipment. He is also experienced in the use of all of our Polcon® Flow Testing equipment.

Professional Certifications:

- ◆ 10 Hour OSHA Certified for General Industry
- ◆ American Red Cross First Aid and CPR with AED Certified
- ◆ American Traffic Safety Services Association Flagging Certified, Traffic Technician
- ◆ Extensive traffic control training
- ◆ Extensive confined space training

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Andrew McGinley
Field Leader
Valparaiso, Indiana

Experience:

Andrew McGinley has been with the Company since May of 2008. Andrew has completed classes and attended lectures and training on water meter testing and repair; on leak detection practices / water loss reduction programs, valve assessment programs and GPS location programs. Andrew is experienced in the following: valve location, exercising and mapping, GPS locating and use of the state of the art leak detection equipment

Professional Certifications:

- ◆ 10 Hour OSHA Certified for General Industry
- ◆ Extensive confined space training
- ◆ American Traffic Safety Services Association – Flagging Certified
- ◆ American Traffic Safety Services Association – Traffic Technician
- ◆ American Red Cross First Aid and CPR with AED Certified



Asher Budka
Project Leader
Valparaiso, Indiana

Experience:

Asher Budka has been with the Company since August 2007. Asher has attended numerous classes and lectures on the operation and maintenance of water meters. He has experience in the maintenance and installation of water meters, valve location, exercising and mapping, and the use of state of the art leak detection equipment. Asher is experienced in the operation and maintenance of water meters, fire hydrant and main capacity flow testing, and the operation of our Polcon® Flow Testing equipment.

Professional Certifications:

- ◆ 10 Hour OSHA Certified for General Industry
- ◆ American Red Cross First Aid and CPR with AED Certified
- ◆ American Traffic Safety Services Association Flagging Certified
- ◆ Extensive traffic control training
- ◆ Extensive confined space training

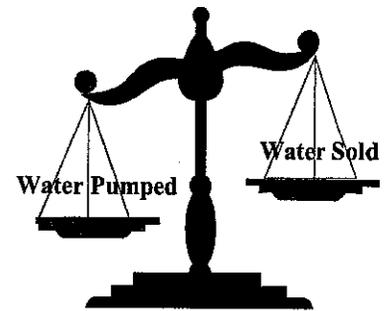
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PROJECT UNDERSTANDING AND APPROACH

This Leak Detection program is needed to be able to help the Utility control the water losses in the distribution system. Therefore, it is imperative the selection of a qualified Project Team be conducted with the utmost care with thorough research. Any team selected should have no trouble finding large leaks. When the first large leak is located, it will be impressive and the project team will look great. However, it is especially important to be able to locate all the leaks that can be possibly located, including all the small leaks that possibly can be masked by the larger leaks. That will be the real true test of the mettle and ability of the leak detection crew. In addition, gathering field data for the general condition of the distribution system is something the project team will need to be well versed in. Flowmeter maintenance and flowmeter testing is also a practical way of controlling real water losses in the system. Therefore, a practical project management plan with a proven QA/QC plan is needed to insure that this happens.

M.E. Simpson Co., Inc.'s philosophy behind water distribution system leak surveys and leak detection services as incorporated in this work plan is to provide the Utility the following benefits:

- ◆ Conserve freshwater resources
- ◆ Reduce the cost of lost water through leakage
- ◆ Conserve energy and reducing treatment costs by reducing pumpage
- ◆ Help in monitoring potential system operation and maintenance problems
- ◆ Promote proper accounting and financial reporting (GASB 34)
- ◆ Reduce the risk of water shortage and customer hardship (drought management)
- ◆ Ensure a sound and reliable water service for customers of the Utility



A number of items uniquely qualify M.E. Simpson Co., Inc. in performing this leak detection program. The Project Team's extensive practical experience in leak detection methodology coupled with other extensive Water Loss Assessment Program experience such as Water Audits, Meter Testing, and Master Meter Assessments, will allow for a thorough examination of the Distribution system to help reduce the total water loss occurring in the distribution system. From start up to completion, our firm is committed to furnishing a quality service in a timely manner.

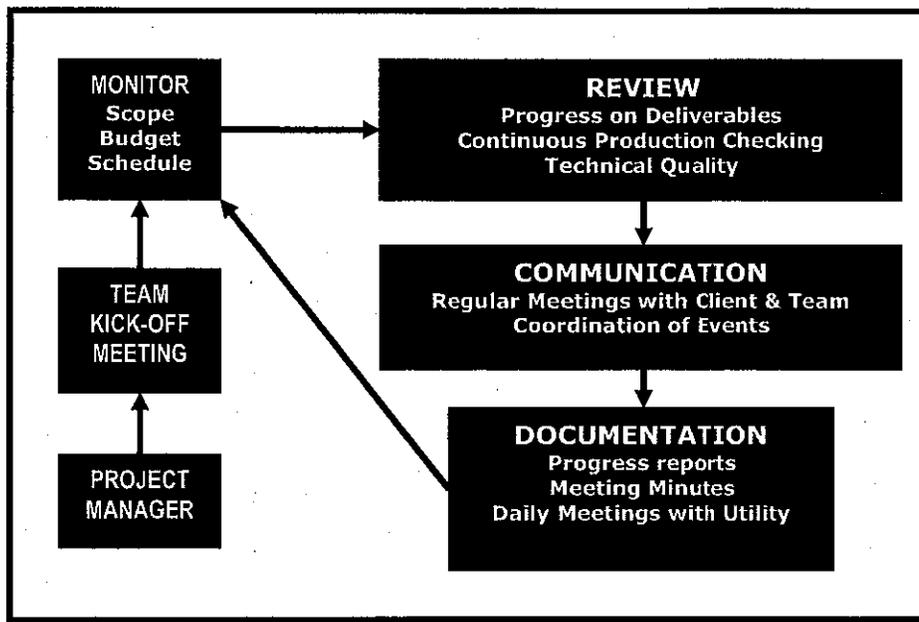
Project Management Approach

M.E. Simpson Co., Inc.'s project management approach is what leads to our proven track record to complete projects on time and within the budget established. Based on our past experience, we have developed a project approach that will insure the Utility of effective communication throughout this project.

PROJECT UNDERSTANDING AND APPROACH

Our project management system establishes - the single project manager – who has the responsibility and authority to act on behalf of M.E. Simpson Co., Inc. This project manager will stay with the project from beginning to the successful completion. The project manager's specific responsibilities include:

- ◆ Coordination of all activities in this project
- ◆ Establishing key decisions and review milestones during this project
- ◆ Preparing an initial project development plan identifying the schedule of work tasks and key personnel to perform the work in the field to meet the milestones and objectives
- ◆ Coordinate communications and meetings with the Utility as needed or required to review technical concepts and alternatives, soliciting staff input and coordinating activities with the project team
- ◆ Prepare periodic reports as needed and meet with the Utility on a regular basis summarizing project scheduling, progress and maintaining the project within the budget stipulated
- ◆ Oversee the execution and development of the project deliverables



Project management remains an important activity during the course of the project and does not stop with the project manager. Each project team deployed into the field is dedicated to providing the best leak survey coverage that can be attained using the state of the art leak detection equipment, tools, field experience and knowledge. Each field team will be made up of two experienced leak detection technicians that also have been cross trained in other disciplines of water loss control such as water meter assessments (residential, commercial, wholesale, and production meters), and water distribution system field maintenance such as distribution flow testing, valve exercising and locational assessments, and Unidirectional water main flushing. It is this combination of experience and knowledge that has helped shape our approach to water loss assessments in distribution systems because the technicians have the capacity to make on the spot decisions regarding any fine tuning of the leak detection program while in the field. They will maintain constant communication with the Utility and the project manager regarding their daily progress as well as any major issues needing immediate attention and discussion.

PROJECT UNDERSTANDING AND APPROACH

M.E. Simpson Co., Inc. believes that the selection of our team to perform this survey will provide the Utility with exceptional experience, sound decision making, and a level of service providing the following advantages:

- ◆ A professional leak detection team with a specialized expertise in water loss management
- ◆ An experienced team with the capacity to provide the highest quality work for the Utility
- ◆ A project approach that incorporates interim reporting and continuous input opportunities
- ◆ Innovative proven analysis techniques developed from the completion of several hundred similar projects that sought the same scope and results as this project

Project Quality Assurance/Quality Control

Quality is of the utmost importance to M.E. Simpson Co., Inc. – not merely because of the Utility's and other client's requirements, but because it is vital to our continued success and viability. Quality management and services bring to all of us the rewards of jobs well done, satisfied Utility staff, and successful projects.

M.E. Simpson Co., Inc.'s QA/QC program is built around several key elements of M.E. Simpson Co., Inc.'s mission and values which consist of:

- ◆ Maintaining a reputation for quality performance
- ◆ Client satisfaction
- ◆ Continuous process improvement
- ◆ Open communication with the field staff and the Utility
- ◆ Team Work

The QA/QC plan for this project is very simple. No work will leave M.E. Simpson Co., Inc. until it has been verified that all the requirements and objectives of the project as well as the requirements of the project QA/QC managers have been met. During the course of the project, the project manager and/or the QA/QC manager will meet with the Utility to ensure that the work product is technically correct, but also meets the needs and expectations of the Utility.



PROJECT UNDERSTANDING AND APPROACH

M.E. Simpson Co., Inc.'s professional services are grounded in sound principles that meet the tests of time from past successes of hundreds of water loss projects and will satisfy the quality requirements of the Scope of Service. Each member of the project team will have a thorough understanding of the project objectives. They will apply sound methodology and principles, and are expected to produce quality, accurate and complete documents. The QA/QC procedure has been developed and implemented based on tried and proven methodologies. The prevention of poor quality service is based on four sound principles:

- ◆ Quality management of the project by using experienced personnel committed to excellence.
- ◆ Conformance to requirements by being knowledgeable of all local conditions in the field and keeping abreast of new cutting edge leak detection methods.
- ◆ Prevention of rework and errors by using teamwork in the field, cross checking the procedure every step of the way, and having data entry staff knowledgeable in all aspects of leak detection projects.
- ◆ Quality is built in - not added on. The project management and field staff have shown that a quality service is produced when the project tasks are properly sequenced and carried out to the final termination of the program using the built in system of checks and balances.



The above images were taken of a main break discovered by M.E. Simpson Co., Inc. in Princeton, Indiana in June of 2010. This leak, along with 64 others, was costing the utility upwards of \$128,246.40 a year.

PROJECT UNDERSTANDING AND APPROACH

Equipment to be used

The following equipment will be used for acoustic leak detection work during the leak survey. All material listed will be on the job site at all times.

- ◆ **FCS Accu Call Leak Correlator, FCS AC Digital Leak Correlator or Vivax-Metrotech HL6000 Leak Correlator.**
- ◆ **FCS S-30 electronically enhanced listening device or L-Mic electronically enhanced listening device.**
- ◆ **RADIO DETECTION LINE LOCATORS.**
- ◆ **SCHONSTEDT or CHICAGO TAPE magnetic locator.**



The first items listed are Leak Correlators manufactured by Fluid Conservation Systems, of Milford, Ohio. These Correlators have a proven record of achievement in locating leaks on water distribution systems under some very extreme circumstances. M.E. Simpson Co., Inc. uses FCS equipment exclusively in its leak detection programs for water utilities.

The FCS S-30 or FCS L-Mic will be used during the initial surveying process. Both units use highly sensitive transducers to detect leak noise along the pipe or appurtenances attached to the pipe. There is an adapter plate that can be used with the transducer as a "ground microphone" so that this type of leak detection method is available for the crew to use if needed.

The FCS Correlators, amplifiers, and related equipment are sent in to the manufacturer annually for software upgrades as well as system checks to insure the equipment is operating at optimum levels. Records of these system checks and calibrations are kept on file and are available upon request. Furthermore, stamps have been attached by FCS to the Correlators and amplifiers indicating dates of the last calibration.

The Radio Detection Line Locator is used to locate buried metallic water pipe. Line locating the water main and services in areas of suspected leaks is necessary so that the layout of the pipe and correct distances of the pipe can be verified. When a leak correlation is being performed on a suspected leak, the proper distance will be entered into the leak correlator. If the water lines are not properly located, it is possible that incorrect pipe distances could be entered into the correlator, thus the leak location could be inaccurate causing the digging of a dry hole. Also, when the Utility crews are ready to dig up the leak area for repair, having the proper location of the pipe is necessary.

The Magnetic locator is a required tool so that buried mainline valves and curb-stops can be located for listening and /or leak correlation if needed.

PROJECT UNDERSTANDING AND APPROACH

If the Utility selects the option of having the leak locations documented with GPS, M.E. Simpson Co., Inc. would use Trimble equipment for this purpose. The state of the art Trimble GPS GeoExplorer GeoXH (sub-meter accuracy) hand held receiver is a twelve channel GPS receiver designed to provide real time GPS locations. It also has the ability with post processing of the data to be able to provide sub-foot accuracy locations. GPS locations of leaks allow for tracking the leaks over time for a utility using a GIS program. This will allow the utility to monitor areas of pipe prone to leakage over time to determine a pipe rehabilitation or replacement schedule.

Project Field Approach

When leaks occur on a water pipe, the water escaping the pipe under pressure produces friction, and thus "leak noise." The ability to detect, and then pinpoint leaks on water pipe is dependent on several variables. All these variables need to be analyzed by the Project Team during the course of the Leak Survey in order for successful leak locations to occur. These variables include:

- ◆ *Pipe Material* - different pipe materials cause sound waves to travel at different velocities
- ◆ *Pipe sizes* - different pipe sizes cause sound waves to travel at different velocities. Larger pipes will cause the sound to travel slower than on smaller pipe due to the amount of pipe material for the sound to be absorbed into
- ◆ *Water pressure on the pipe* - lower pressure will not produce as much leak noise as higher pressure
- ◆ *Flow velocity in the pipe* - water moving through the pipe can affect the transmission of leak noise on the pipe and the ability to detect leakage
- ◆ *Water table* - high levels of ground water can affect ability to hear leaks on the pipe. *Soil conditions*- types of soils can affect ability to detect leaks due to the density of the soil surrounding the pipe
- ◆ *Size of the leak in the pipe* - larger leaks can in some circumstances produce lower noise levels than smaller leaks
- ◆ *Mechanical noise* - Pump noise from a nearby pump station can affect the ability to detect leaks as well as noise from electrical transformers

"M.E. Simpson Co., Inc.'s extensive field experience in leak detection methodology will allow for a thorough examination of the Utility's distribution system"

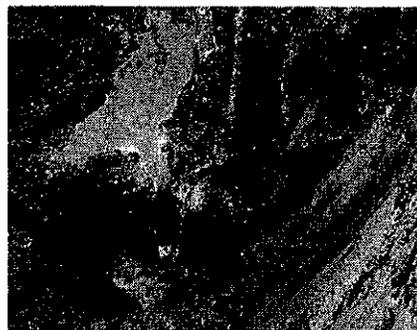
The success of this program will be dependent upon reviewing all available data regarding the operation of the distribution system. The following will need to be gathered; all as-built drawings of the water distribution system, all original atlases, all books, field cards, notes, computer copies of the distribution system, valve cards, hydrant cards and a copy of a digital map of the Utility, if available.

Additionally, other records such as amounts pumped into the system will need to be reviewed. The field verification of leaks and associated locations, along with the records being reviewed, shall yield updated location records of the Utility's leak locations as well as supplying valuable information regarding the general condition of the distribution system.

PROJECT UNDERSTANDING AND APPROACH

An organized field approach to this Leak Survey project will include the following:

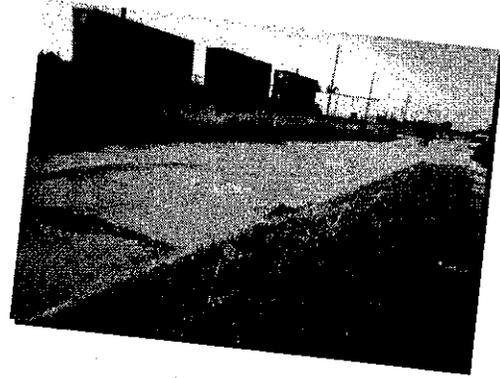
- ◆ **Introduce and maintain an interactive role** with the Utility Staff for the Leak Survey Program. Conduct short interviews with staff about particulars of the distribution system such as problem areas prone to leaks, age of pipe, pressure problems in the distribution system. This will allow for a greater understanding of how the distribution system is functioning allowing priorities to be assigned to particular segments of the work
- ◆ **Divide areas of the distribution system** into geographic areas that can be surveyed in progression and leak areas pinpointed in an orderly fashion. This would include setting a schedule and maintaining a level of Field Staffing that will insure completion of the Leak Survey within the schedule and budget allotted. This will require all maps of the distribution system to be examined during the course of the planning sessions to formulate a workable plan of action
- ◆ **Perform a Leak Survey on the distribution system** and document confirmed leak locations in a manner that will allow a prioritized list of leak repairs to be pursued according the described "Scope of Work"
- ◆ **Locate** all confirmed leaks in a manner that will allow their positions to be known and readily re-creatable by Utility personnel upon demand
- ◆ **Document** each located leak to such an extent as to provide information characteristic to each specific attribute as defined by the Utility including GPS locations of each leak.
- ◆ **Provide constant communication** with the Utility staff so located leaks can be addressed in a timely manner
- ◆ **Provide instruction and council to Utility staff** during the course of the Leak Survey so once the program is concluded, the Utility staff will have a complete understanding of all the parameters of conducting leak surveys with the established goal of reducing the total water loss in the system
- ◆ **Provide daily reporting** during the course of the project as well as a final report indicating all the pertinent details regarding the leak survey program.
- ◆ **Provide recommendations for future leak survey programs** such as a methodology and frequency for surveying the distribution system



PROJECT UNDERSTANDING AND APPROACH

Potential Problems

Problems can occur at any point during the course of the leak survey. As outlined above, all variables need to be accounted for so these issues can be mitigated. This is done with having a good QA/QC program built into the project. Despite all precautions, things can and do go wrong.



When a major leak has been located, the Utility will need to excavate as soon as is prudent while the field team is performing the remainder of the leak survey. It is rare that a leak is missed and the Utility digs a dry hole. However, when this happens, M.E. Simpson Co., Inc. will assist in any way possible to determine why the pinpoint of the leak was off. It is imperative that if a leak is missed, that the Utility contact the project field team immediately so the field team can mobilize to the open excavation to be able to assess if a mistake was made because incorrect information was used in the initial evaluation such as; incorrect pipe material, incorrect distance between points used for correlation, size of pipe, pipes not line located correctly, or some other issue. The field team will retrace all steps used for the initial leak pinpoint and re-locate the leak. This may involve placing one or both of the transducer microphones directly on the pipe in the open excavation and performing a leak correlation to obtain a pinpoint. What matters is correctly locating the leak so it can be repaired and service restored. Once the leak has been located and confirmed, then a determination of how the pinpoint was miscalculated can be determined and rectified.

Other issues that can cause potential problems can be avoided by simply following the established field procedure described under the "Scope of Service" as well as the established QA/QC procedure. These procedures have established sequences, that when followed, yields accurate leak locations. Leak pinpointing becomes inaccurate when some or all of the variables cannot be accounted for or mitigated.

SCOPE OF SERVICES

The Field Scope of Service for the Leak Survey is understood to be the following:

M.E. Simpson Co., Inc. will furnish all labor, material, transportation, tools, and equipment necessary to survey the water distribution system areas selected by the Utility. M.E. Simpson Co., Inc. shall be required to provide such skilled and trained personnel and equipment necessary to complete the work herein specified. **There will be a minimum of Two Persons per team working on the survey at all times for safety and quality assurance.**



Leak Detection has come a long way since the early 1900's.

- ◆ Work in an orderly and **safe** manner to insure protection of the local residents, Utility employees, and the Field Staff so that no **avoidable** accidents occur.
- ◆ All Field Staff will have readily observable identification badges worn while in the field.
- ◆ The leak detection equipment to be used will be that which was described in the "Equipment to be used" section.
- ◆ Initially listen to **all fire hydrants, all main line valves**, and when necessary, selected service connections in the entire distribution system with the **S30** electronic listening device or the **L-Mic**, by making physical contact with the valve, hydrant, pipe, or B-box. (Listening points that are not accessible will be given to the Utility and when corrected they will be listened to.) This will be done on the Utility's distribution system.
- ◆ Listening distances will not exceed 500' between points. I.E.: valves, hydrants, service valves or meter settings will be used with preference of listening points in order as follows; direct contact with the pipe, main line valves, hydrant valves, hydrants, then service valves or meter settings.
- ◆ Valve vaults full of water may be pumped out to facilitate listening. Sometimes full vaults can mask leak noise.
- ◆ Large diameter pipe (18"-36") may need to have additional listening performed by listening directly above the pipe at intervals of 6-10 feet.
- ◆ **All accessible points** along PVC water mains will be physically listened to including services, main line valves, and hydrants.

SCOPE OF SERVICES

- ◆ A "suspected leak" log shall be maintained indicating all areas where suspected leak noise was heard. This log will be reviewed when the Project Team is verifying the suspected leak area for confirmation of the actual existence of a leak. This log will be a part of the periodic reports turned into the Utility regardless of an actual leak located in the area or not, with an explanation of the noise source.
- ◆ When leak noise has been detected and or suspected, the Project Team will verify the suspected area a second time to confirm the noise. At least four hours will pass between the initial listening of the area before a second listen and confirmation is attempted.
- ◆ The Project Team will line locate the water main and service lines in the immediate area so the correct pipe distances can be input into the leak correlator and also so that the Water Utility will have an idea of where the water main is located prior to excavation. Non-metallic pipe locations will be "interpolated" as best that can be identified, given the line location of metallic services, Utility knowledge of the area, or other information regarding the actual location of the main.
- ◆ The Project Team will use the following Electronic Leak Correlators (either a FCS Accu Corr or Tri-Corr 2001, to determine if a leak is present and use the same equipment to pinpoint the leak.
- ◆ For PVC water mains only the Accu Corr or Tri-Corr 2001 will be used for correlations because of the ability for these correlators to be able to analyze the particular sound frequencies inherent to PVC pipe. The water main will be correlated from point to point with correlation distances not exceeding 350' between points. I.E.: Hydrants, valves, service valves, or other accessible points on the pipe.



Conducting initial listening survey



"X" marks the spot for excavation

- ◆ The leak location will be marked in the field (on the surface) using environmentally formulated Precautionary Blue paint.
- ◆ The Project Team will document all leak locations with a diagram indicating the location of the leak. Other information related to that correlation will be included as part of the field sheet such as the filters used for the correlation, line locations, distances between sensors, etc.
- ◆ The field sheets will be copied, and turned into the assigned Water Department Manager daily or an agreed time period so the leak can be dug and repaired immediately. They will be classified as to the potential severity of water loss, as well as potential danger to the general public.
- ◆ The locations of leaks requiring immediate attention (immediate threat to life, injury or traffic) will be turned in as quickly as possible to facilitate the repair process.

SCOPE OF SERVICES

- ◆ **"Ground miking" will not be used as the primary determination for leak locations.** Grounding miking will be done per Utility request, or when it has been deemed to be the most efficient means to listen to the water main running under ground. Large diameter mains (18" - 36") may need this additional evaluation. This method may be used to assist in confirmation of a leak location. However, "ground miking" is solely dependent on conditions beyond the direct observations of the leak technician such as soil conditions and composition, water table, depth of pipe bury, assumed location of the water main (such as concrete pressure pipe) and compaction of pavement material causing leak sounds to scatter and echo or simply be absorbed.
- ◆ The Project Team will report daily or per request of the Utility, to the assigned Utility Manager and go over the progress of the previous day, as well as cover what will be surveyed the current day.
- ◆ It may be necessary to conduct parts of the Leak Survey during "off hours" such as at night. This may be required in areas of high traffic volume where traffic noise may affect the ability to detect leak noise, and traffic volume may affect the ability of the Project Team to be able to safely access main line valves in the middle of the street. The Project Team will give 24-hour advanced notice of intent to survey a particular area that may require after hours surveying or nighttime surveying. This is so the Utility can plan for the area to be surveyed, give notification to the Police department, as well as other Public Works Divisions as to the activity that will take place.
- ◆ A progression map shall be maintained for each section under survey indicating leak locations on the map. This will be especially helpful in quickly determining leak locations that correspond to the field leak diagrams turned into the Utility.
- ◆ As a part of the leak program, mapping discrepancies found on the current water atlas will be noted and included as a part of the final report so the Utility can make needed corrections. This will be included as a part of the periodic reporting to the Utility, thus enabling the Utility to keep up with mapping corrections.
- ◆ Distribution assets found to be in disrepair such as issues with hydrants, valves, and service lines, will be noted and turned into the Utility.
- ◆ Leaks verified on the customer's side of a service shut-off will not be located beyond the shut-off. If a leak appears to be on the Customers' side, the Utility will be notified first, then the customer notified and permission granted prior to the water being shut off even for short periods of time where possible and as time allows, as well as the ability for the customer to respond.
- ◆ If the Utility requests leak locations beyond the service shut off on the customer's side of the service line, this will result in an additional charge to the leak survey based on an hourly rate and this service must be agreed upon between the Utility and M.E. Simpson Co., Inc. prior to the start of the survey.
- ◆ Valves and hydrants will not be operated without Utility permission. Valves and hydrants that break during this type of operation are the sole responsibility of the Utility. M.E. Simpson Co., Inc. cannot be responsible for valves and hydrants that break due to pre-existing conditions.
- ◆ The Utility is encouraged to dig up and repair the leaks located as soon as possible so that the area may be re-surveyed while the Project Team is still working on the survey in that general geographical location to ensure no other leaks are present in that area.

SCOPE OF SERVICES

OPTIONAL GPS OF LEAK LOCATIONS

Once leak locations have been confirmed, the M.E. Simpson Co., Inc. Project Team can perform the following:

- ◆ **The Project Team will collect GPS Coordinates** of all leak locations assessed using the above "Scope of Work"
- ◆ The Project Team will work with the Utility to develop a "data dictionary" which will define the information to be collected for each leak location. The Data dictionary shall have the following but not limited to:
 - Date and time the information was gathered.
 - The unique identifying number for each attribute consistent and compatible with system presently employed by the *Utility*.
 - Location for each attribute referenced by Northing and Easting coordinates generated from the GPS location in the Utility's local State Plane Coordinate system, as well as Latitude and Longitude.
 - Type of Attribute (main break on pipe, mainline valve leak, hydrant leak, service leak).
 - Offset information if the attribute needs to have the location determined by an offset coordinate due to blocked signals from the GPS satellites.
 - Any other data required to be collected as part of the attribute data set as defined by the Data Dictionary. This Data Dictionary will be assembled by the Project Team and the Utility.
- ◆ **The accuracy of each GPS location** will be sub-meter.
- ◆ **The location of "offset" GPS locations** will be accomplished by use of a Laser Rangefinder with an accuracy of 1/10th of a foot with an automatic Electronic Compass coupled to the GPS data collector. This is so that a bearing and distance from the offset location to the target GPS location can be recorded as part of the attribute data. This will allow coordinates to be generated in high tree canopy and urban canyons where normal coverage would not be possible.
- ◆ **GPS locations will need to have readings** from at least four satellites in position and a reading from a local GPS beacon, or five satellites for the position to be considered accurate as a differentially corrected GPS location.
- ◆ **"PDOP" readings need to be less than 5.** "PDOP" readings greater than 5 will not be considered as accurate locations.
- ◆ **A minimum of 30** readings for each position shall be taken.
- ◆ **Position of the GPS satellites shall be given primary consideration.** The position of the satellites shall be recorded as part of the data. If the satellites are low on the horizon, it is expected that the project team will wait until the position is better before attempting to gather the GPS position. Data collected with the satellites low on the horizon and/or poorly distributed shall not be considered valid.
- ◆ **The information collected** will be compiled into the **Pathfinder Office** or **TerraSync™** software database with the ability to export the information into a format acceptable to the Utility such as Microsoft Access, Microsoft Excel, .DXF file, or .SHP file for use in the Utility's GIS system or CAD mapping program, and also included in the Leak Location Excel database.
- ◆ **All locations will be differentially corrected** for accuracy. A stationary beacon or mobile beacon can be set up to allow differential correction. All data will be "Post-Processed", so that a comparison can be made to a Local stationary GPS receiver. The locations of the stationary GPS stations can be obtained from the Internet. The particular stationary GPS receiver shall be listed in the final report as the station used for differential correction. This will allow for a greater accuracy of the GPS locations.

SCOPE OF SERVICES

DOCUMENTATION OF OPTIONAL GPS LEAK LOCATIONS

M.E. Simpson Co., Inc. will provide a location report for each leak located, including the following:

- ◆ The GPS location data collected will be exported into a database for Utility use
- ◆ The GPS data collected shall include but is not limited to the following information:
 - a. *Identifying number consistent and compatible with system presently employed by the Utility.*
 - b. *Location referenced by coordinates using the **Connecticut State Plane Coordinate System.***
 - c. *Location by street and cross-street names.*
 - d. *Type of structure.*
 - e. *Date and time data was collected.*



SCOPE OF SERVICES

Quality Control and Accuracy of Leak Locations

The level of accuracy of leak detection is a matter of taking in all the above considerations and applying those considerations to each individual potential leak location as it is being evaluated. Any statement made as to the level of accuracy of leak locations must be considered based on the individual conditions of each leak.



Leak surfacing at intersection



Hidden leak running into drain tile

Locating leaks on a distribution system can be very challenging. *It is not a perfect science.* Pipes and fittings can leak for a variety of reasons (age, poor installation, material failures, bad soils, etc.), and the ability to locate leaks is dependent on the stated variables listed in the "Project Approach". By employing a strict methodology in the field for conducting a leak survey, these variables can be accounted for and mitigated. The depth of experience of the Project Team is extremely important to maintaining the ability to have accurate locations of leaks. Additionally, crews work as Two-Person Teams in the field, double checking the progress of the work as the survey progresses. The systematic procedure for leak confirmation has been stated in the Scope of Field Service and is restated here.

"Suspected leak areas are always listened to a second time, preferably at a different time of day than originally listened to. The mains and services will be line located to insure correct pipe distances are used for the correlations. Correlations may need to be performed several times with several configurations to insure all the possible scenarios have been covered. Sewer manholes may need to be opened and flows observed. If there is any doubt as to the existence of a leak, the area may be checked and correlated at different times to rule out water usage or other factors. The progress of the survey will be monitored by the use of daily logs and a progression map with suspected leak noise indications marked and possible leak locations will be maintained. Field leak location forms will be turned into the Utility according to the agreed schedule. The Project Team will follow up on leak locations by monitoring the repair schedule of the Utility. That way in case a potential leak location is wrong, the Project Team can return to the site and determine why the leak location was incorrect, and correct it. This means maintaining a good level of communication between the Project Team in the field, and the Utility. As a matter of Quality Control for leaks in the field, the two Correlators (Accu-Corr and Tri-Corr) have the distinct ability to be able to detect and pinpoint more than one leak in the same relative area, thus allowing better leak coverage and insuring that one leak is not "masking" another leak in the same area. The use of progress reports and meetings will allow for open discussions of problems encountered so solutions can be examined."

SCOPE OF SERVICES

Utility Observations

The M.E. Simpson Co., Inc. Project Team will welcome having staff of the Utility observe field procedures while the Leak Survey is in progress. They will be happy to explain and demonstrate the equipment and techniques that are employed by M.E. Simpson Co., Inc. for detecting and locating leaks on the Water System. This may be useful for the staff of the Utility in understanding the parameters of Leak Detection, especially during an emergency such as a main break on a critical line where a major disruption of service could occur.

FINAL REPORTS, DOCUMENTATIONS and COMMUNICATIONS

“Effective Communication ...
Accurate Documentation...
Insuring the success for the
Leak Survey”

M.E. Simpson Co., Inc. will perform the following:

- ◆ Project Team will **meet daily** with assigned Utility personnel to go over areas of survey for prior workday and plan current day and area to survey.
- ◆ The field technicians will be readily available by cellular phone as well as Nextel Direct Connect Radio. This will facilitate communications between the Utility and the field technicians. A **24-hour toll free 800 number** is available for direct contact with M.E. Simpson Co., Inc. for emergencies.
- ◆ **Diagram all leak locations**, date of location, and classify according to severity and an estimate of loss. These will be turned in daily to appointed Utility Personnel.
- ◆ **The Project Manager will meet** with the Utility regularly for a progress report.
- ◆ **Prepare a progress report** at monthly intervals for the Utility if requested.
- ◆ **Maintain a progression map to be included with the progress reports and final report** of the project indicating leak locations with symbols indicating type and severity corresponding to the individual leak diagrams.
- ◆ Develop a **Leak Survey log** of activity which will also have confirmed leaks listed and this list will be turned in weekly (in an Excel format). The list will also be included with the final report that will include the following;

- 1.) Mechanical deficiencies discovered**
- 2.) Mapping errors on the water atlas**
- 3.) Type of monitored appurtenances**
- 4.) Location of same for leaks discovered**
- 5.) Total estimated loss**

- ◆ **Prepare the final report** at the completion of the project which will include all leak location reports with drawings, total of estimated water loss, total pipe distance investigated, a description of the area surveyed, and other problems found in the system during the course of the survey that need the attention of the Water Utility. The leak summary will list leak types such as main leaks, service line leaks, valve leaks, or hydrant leaks. A cost benefit analysis of the survey based on the “cost to produce” water will also be included that describes the financial impact to the Utility for water loss. Recommendations for system maintenance will be a part of this report based on field observations made during the survey. **This final report shall be made available for submission to the Utility within thirty (30) working days of the completion of the fieldwork.**

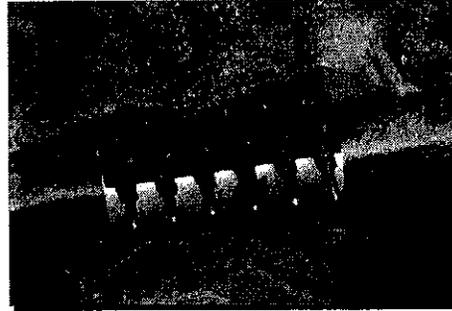
SCOPE OF SERVICES

ASSUMPTIONS AND SERVICES PROVIDED BY THE UTILITY

- ◆ The Utility will furnish all maps, atlases, and records necessary to properly conduct the survey. All corrected maps are to be returned to the Utility at the completion of the project.
- ◆ The Utility will assist as necessary to clean out service valves, meter pits and valve-boxes needed for listening.
- ◆ It is assumed all water mains are metallic or AC (transite) mains. If the Utility has PVC mains, the level of effort required will be higher.
- ◆ The Utility will provide a Primary Contact Person and/or secondary contact person for the Field Staff to report to on a periodic basis. This person shall act as the official liaison for the duration of the Leak Survey. This person shall have a working knowledge of the water system and will be helpful in attempting to locate particularly hard-to-find water valves for listening and for general information about the water system. This person will not need to assist the Project Team on a full time basis, but only on an "as needed" basis.
- ◆ The Utility will assist, if needed, to help gain entry into sites that may be difficult to get into due to security issues or other concerns.
- ◆ The Utility will assist, if needed, to locate *all nonmetallic pipe* within the service area. This would include all Concrete Cylinder pipe and Asbestos Cement Pipe.
- ◆ We will encourage the immediate digging of major leaks (main breaks) so that if there are problems with the leak location, the problems can be corrected while the Project Team is close by and can verify the site.



Leak Located...



Leak repaired.

AREA TO BE SURVEYED

The total miles of pipe to be surveyed are approximately **90- 106** miles of distribution pipeline for the Utility.

The leak survey work includes monitoring all accessible main line valves, all hydrants, and several selected services as needed to keep listening distances within the accepted bounds and Scope of the survey.

SCOPE OF SERVICES



Safety is a major part of any project. M.E. Simpson Co., Inc. always provides a safe work environment for its employees. **Our staff is trained in General Industry OSHA rules, Confined Space Entry & Self-Rescue, CPR, and Traffic Control.** While in the field on your project, M.E. Simpson Co., Inc. and its employees will follow all of the necessary safety procedures to protect themselves, your staff and the general public.

M.E. Simpson Co., Inc. uses Two-Man Teams for Safety and Quality Assurance.

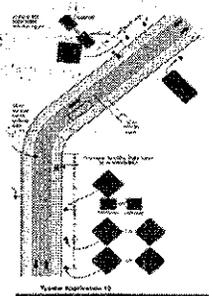
The use of a "one person" leak detection team is dangerous and impractical where water mains run under roadways. It would be a dangerous precedent to allow a "one-person" team to access main line valves located in the roadway, attempt to listen to the valve with headphones on, and at the same time try to control traffic flow at that person's location in the street.

Therefore M.E. Simpson Co., Inc. adheres to the following:

- ✦ The Project Manager and the Field Manager will be trained in accordance with OSHA Standard 1910 (General Industry) and be in possession of an **OSHA 10 Hour or 30 Hour Card.**
- ✦ Any listening points located in a "**confined space**" such as pit and vault installations that **require entry** will be treated in accordance with the safety rules regarding **Confined Space Entry, designated by the Utility, The Department of Labor and OSHA.**
 - All personnel are **trained and certified** in Confined Space Entry & Self-Rescue.
- ✦ We will follow all safety rules regarding **First Responder First Aid & CPR, designated by the Utility, The Department of Labor and OSHA.**
 - All personnel are **trained and certified** in First Responder First Aid & CPR.
- ✦ We will follow all **traffic safety rules, designated by the Utility, The Department of Labor, OSHA, and the Florida Department of Transportation (per MUTCD).**
 - All personnel are **trained and certified**, by the **AMERICAN TRAFFIC SAFETY SERVICES ASSOCIATION (ATSSA)** in Traffic Control and Safety.



ATSSA Certified
Traffic Control Personnel



Work Zone Safety Plans
will be used

Current documentations of safety training and certifications can be provided for all project personnel for the Utility. These certifications are current and up to date for all project personnel.

PROPOSAL FEE

December 16, 2011

M.E. Simpson Co., Inc. is pleased to present our "Cost Proposal" for Leak Detection Services for the **City of North Miami, Florida**. The leak survey program will be conducted on approximately **90-106** miles of water mains in the Utility's water distribution system. Mileage of mains covered will depend on mobilization fees. M.E. Simpson Co., Inc. will perform this leak survey with one or two of our two-man teams, with all necessary equipment, described within this document, furnished by M.E. Simpson Co., Inc. All procedures will be followed as described within this document. All travel, lodging and meals are included in the proposal price. The survey will also include complete pinpointing of all leaks found, with an individual report on each leak location, and a final comprehensive report.

A Water Distribution System Leak Survey Pilot Program on approximately **90** miles of water main includes pinpointing all leak locations:

Per Mile Fee at \$205.00 per mile:

90 miles at \$205.00 per mile ----- (\$18,450.00)

**Mobilization at \$6,400.00 ----- (\$6,400.00)

Lump Sum ----- (\$24,850.00)

**If M.E. Simpson Co., Inc. has other work with other utilities in the area at the same time as this program, the mobilization fee will be split by 1/2 or \$3,200.00. This would allow for additional miles (up to 106 miles) to be surveyed as defined below:

Per Mile Fee at \$205.00 per mile:

106 miles at \$205.00 per mile ----- (\$21,730.00)

**Mobilization at \$3,200.00 ----- (\$3,200.00)

Lump Sum ----- (\$24,930.00)

*Any pipe surveyed beyond the original miles of main will be assessed a fee of \$205.00 per mile.

We thank you for this opportunity to acquaint you with our Leak Detection Services and offer this proposal. If you have further inquiries or you wish to discuss our service in more detail, do not hesitate to call us.

Sincerely Yours,

John H. Van Arsdel

John H. Van Arsdel
Vice President

PROPOSED SCHEDULE

Project Schedule

Possible Notice of Award: TBD (possible, January, 2012)

Notice to Proceed: TBD. Work will start by M.E. Simpson Co., Inc. Crews within 15 business days of notice to proceed or when agreed upon with the Utility.

Kick Off Meeting and Commencement of work: TBD or within 15 business days of "Notice to Proceed" or agreement of Utility and meet with Utility staff to go over project goals and objectives. Field work will begin on day agreed upon by the Utility and M.E. Simpson Co., Inc.

Fieldwork to be completed and documented: Assume one (2 person crew), 10 - 14 business days in the field for completion of field work for the acoustic leak survey and all pinpointing per "Scope of Work". Additional leak detection work outside of the leak survey area will be based on fees as stated in the Cost Proposal and may cause a shift in the completion date.

Daily Work Hours

Normal "on site" daily work hours will be 7:00 AM to 4:30 PM. Any work that needs to be performed outside the normal work hours will be discussed with the Water Superintendent at least 24 hours in advance (such as night work).

Daily Leak Reporting: The Field staff will meet with assigned Utility staff daily or as needed and determined by the assigned Utility Manager. Leaks needing immediate attention will be documented and submitted immediately for the Utility's attention. Minor leaks (such as hydrant leaks, service line leaks, valve packing leaks) will be reported daily for scheduling of repair. Photo copies of leak locations will be turned in to assigned Utility Manager daily or as agreed upon by, prioritized by leak severity.

Microsoft Excel format Leak logs will be turned in weekly (e-mailed or printed) or as agreed upon to the Utility. Leak logs will have all suspected leak areas identified whether an actual leak is confirmed or not. If a "no leak" condition is confirmed, the noise source will be identified. These logs will be included as part of the final report.

Final Leak Reports: The final summary report will be available 30 work days after field work has been completed for the program or for each phase of the program if the system is split into phases. This report will have all the leak location drawings and suspected leak logs compiled during the course of the project. In addition the final report will have a summary of the entire program with quantified levels of project payback detailed.