

**City of Bingen
Leak Detection Survey
April 2010**

It is the intent of these specifications to describe Leak Detection Survey Services in sufficient detail to secure competitive bids. All materials, labor, equipment and administrative costs which are necessary in order to complete this project, shall be included in the bid and shall conform in strength, quality of workmanship and material to that which is usually provided the trade in general. Any variance from the specifications or standards of quality must be clearly pointed out in writing by the bidder.

Project Description and Technical Specifications

A. Project Description:

This project involves performing leak detection survey on approximately 21,000 lineal feet of PVC and asbestos cement (AC) water pipe, including hydrant leads (see table below). Leak detection survey is not required to be performed on each individual water service connection, only as needed for sounding and pinpointing. The system includes approximately 52 fire hydrants and 120 valves. System pressures range from 30 psi to 88 psi. The survey is to be conducted within the entire water service area as shown in the attached Figure 1-2A from the City's 2008 Water System Plan.

City of Bingen Water System Pipe Size and Length

Pipe Diameter	Approximate Length of Pipe in System (lineal feet)
0.75 inch	262
1 inch	704
1.25 inch	188
1.5 inch	1,115
2 inch	1,921
2.5 inch	187
3 inch	1185
4 inch	1,271
6 inch	8,199
8 inch	5,183
10 inch	481
Total	20,696

B. Scope of Work

The survey will be conducted according to the procedures set forth in the most current edition of the AWWA, M36 Water Audits and Leak Detection and utilizing the latest in leak detection equipment and technology. All personnel will be trained and experienced in the use of the equipment, techniques and methods described in this bid specification with a minimum experience of 10 years.

The contractor shall accomplish the survey by making physical contact with the system (valves, fire hydrants, curb stops, etc.). Prior to initiating the survey, the consultant shall determine the distance that quiet leak sounds will travel in various pipe materials, pipe sizes, and pressure zones within the system.

All leak sounds found during the sounding phase will be further investigated by pinpointing with a leak noise correlator. The correlator's findings are to be confirmed by listening over the leak position with a ground sounding microphone.

In general, survey work shall be done Monday through Friday, 7 a.m. – 3:30 p.m., 5 days per week.

Start date shall be as mutually agreed by the City and contractor, although shall be no later than June 1, 2010 and shall be completed no later than June 30, 2010.

The City of Bingen will provide personnel in the field as necessary for assistance in locating and operating valves, services, and hydrants. At no time shall the contractor operate any of the valves or portion of the City's water system.

Traffic control will be provided by the contractor.

The contractor shall not operate any valves controlling water service to the City's customers. When shutting down a water service to a customer is necessary, prior notice shall be given to the customer and shall be coordinated with the City.

C. Sounding

The water leak detection survey will begin with a physical and acoustic examination of all available access points to the underground water pipe such as hydrants, valves, meter/service connections, etc. This will be done with acoustic rods and electronic sound enhancing equipment. The purpose of this initial inspection is to isolate areas of suspected leakage for further intensive leak location testing during the pinpointing phase.

D. Pinpointing

Any leak noise that is discovered using the listening instrument, shall be confirmed as a true leak. A leak noise correlator and ground sounding microphone will be used to confirm potential leaks identified during the sounding phase. The location of the water pipe will first be determined using an electronic pipe locator. Once this is determined, the suspected leak area will be narrowed down to between two access points, such as two valves or hydrants, or a valve and a hydrant, etc. Correlator microphone sound sensors will be placed on each of the two access points. Ground sounding shall be used in situations where distances between access points limit or otherwise impede the sounds ability to be heard.

Pinpointing leak locations through interpretation of sound intensity, either by ear, decibel metering, or other like methods, is not acceptable when contact point are available for use with a correlator. In no case shall physical contacts with the system exceed 400 feet.

When normal contact points are not available and/or accessible within the above stipulated distance, an on-the ground listening device may be used. On-the-ground listening devices can only be used on hard surfaces (concrete, asphalt pavement, or other similar surfaces); when

ground cover does not meet this requirement the contractor shall utilize probe rods at intervals not to exceed 10 feet. The on-the-ground listening devices shall be used at intervals no greater than 6 feet and directly over the pipeline.

E. Report

A report shall be provided within two weeks of the completion of the project that summarizes the results of the leak detection survey. The report shall include at a minimum:

- Dates and times that survey was conducted
- Description of equipment and techniques used to conduct the survey
- Specific location of all detected leaks
- Main size at leak location
- Estimated flow rates of each detected leak (GPM)
- If identified leaks were repaired by the City
- Results of resurvey (if any) of leak repaired locations

F. Payment

Payment will be made upon completion of the report summarizing the results of the survey. Five percent retainage shall be held until all appropriate reports are made to the City of Bingen and the State of Washington, including prevailing wage reports.