

Water Treatment Consulting Services
Scope of Services
RFP #7566

Lot 1: City University of New York (CUNY)

This shall serve to outline the professional services to be rendered in order to meet the program and project objectives as they relate to the identification, documentation, and evaluation of existing water treatment, filtration, and mechanical systems at City University facilities and the effect the current water treatment program has upon the condition of the existing HVAC equipment specifically and overall operation generally. The professional services shall consist of the following general responsibilities:

1. Assist CUNY in developing a water treatment program system-wide;
2. Assist CUNY in managing water treatment programs for specific campus locations throughout the system; and
3. Provide general water treatment consulting and advisory services to CUNY.

The services to be rendered shall generally include research, inspection and testing of equipment, piping and water at various CUNY facilities in order to determine the condition of existing systems, including water and energy consumption and thermal efficiency, document findings, potential domestic water disinfection and treatment issues, and evaluate the relative impact that the existing water treatment program has on the operation and condition of the mechanical systems, which shall include but not be limited to boilers, chillers, HVAC equipment and piping systems. All wetted components of major pieces equipment and major piping systems that are part of the heating or air conditioning system are to be cataloged, and the current condition of the components analyzed. Major piping systems are to be sample surveyed.

1. Program Development

A. Required Data:

- I. Provide the list of required documents relating to systems, equipment, water and energy consumption and current water treatment program;
- II. Solicit listed documentation from campus;
- III. Review documentation for completeness and in order to obtain known conditions;
- IV. Develop preliminary inventory of systems and HVAC and water treatment equipment; and
- V. Site Visits:

- a. Interview operating and maintenance personnel and current water treatment and service-related vendors at each indicated campus; and
- b. Determine:
 - i. Problems experienced with the operation of the surveyed equipment;
 - ii. System operating conditions and system repair status; and
 - iii. Current water treatment procedures.

B. Water Quality Analysis:

- I. Provide recommendations and requirements for water testing parameters;
- II. Provide sampling and testing of treated water for all major pieces of equipment that are part of the heating or air conditioning system based on the OWNER's approved test parameters; sampling and testing may be performed by a sub consultant and laboratory.
- III. Verify water quality meets contractual specification or, when no such specifications exist, generally accepted industry guidelines for corrosion inhibitors, corrosion products, bacteria, suspended solids and contaminants; and
- IV. Analyze and report all test results and relevant field reports; and indicate severity of deviation from specifications and generally accepted guidelines, priority of importance and recommend corrective actions.
- V. Report water quality for HVAC systems that controls corrosion and build-up of scale and biological growth for maximum efficiency of installed equipment without posing a hazard to operating personnel or the environment.
- VI. Report base chemical treatment performance requirements on quality of water available at Project site, HVAC system equipment material characteristics and functional performance characteristics, operating personnel capabilities, and requirements and guidelines of authorities having jurisdiction.
- VII. Water Analysis
 - a. Submit a copy of the water analysis to illustrate water quality available at Project site.
- VIII. Field Test Reports
 - a. Indicate and interpret test results for compliance with performance requirements.

- IX. Report Maintenance Data and include in maintenance manuals
 - a.Pumps
 - b.Agitators
 - c.Filters
 - d.System controls, and accessories

- X. Provide guidance regarding Legionella prevention in cooling towers and other HVAC equipment to comply with New York City Department of Buildings and New York State Department of Health requirements.

C. Equipment Inventory:

- I. Provide complete inventory of all building HVAC systems and water treatment equipment based on existing documentation and site visit inspections, including but not limited to the information listed below:

- a. Nameplate data
- b. Year of installation
- c. Location
- d. Operating condition of all equipment;

- II. Indicate the following systems:

- a. Control instrumentation and monitoring devices
- b. Corrosion coupons; including water, energy and thermal-efficiency metering devices, if any;
- c. Verify communication of data with the central BMS system of the building.

- III. Determine if current controls and metering devices are sufficient for required baseline and operating data indication;

- IV. Identify all critical information that is not available and make recommendations to obtain missing documentation.

- V. List Product Data: Include rated capacities; water-pressure drops; installed, and operating weights; for the products listed below:

- a. Pumps
- b. Chemical solution tanks
- c. Agitators
- d. Control equipment and devices
- e. Test equipment
- f. Chemicals
- g. Filters
- h. Chemical feeders

- i. Edit list of products as necessary
- VI. Detailed power and control wiring and differentiate between manufacturer-installed and field-installed wiring.

D. Condition Assessment:

- I. Based on site inspections and field verification, indicate the current operating condition of each inventoried piece of equipment;
- II. Based on documentation and site investigations:

Recommend and provide scopes of work, as may be required and/or requested for the OWNER, for tests to be performed by third party entities on mechanical systems to comprehensively assess the existing condition of systems, components and equipment, including but not limited to:

- a. testing of equipment and piping systems, including eddy current testing of chiller evaporator and condenser tube bundles based on OWNER accepted recommendations and as requested by the OWNER; and
- b. Boiler inspections, by a boiler inspector, qualified with the City of New York, combustions and emissions testing and conditions assessments as requested by the OWNER.

E. Provide System Cleaning Parameters, Preliminary Specifications and Requirements

- I. Clean a system prior to operation.
- II. Treat the open (cooling tower) and closed (LTHW, Steam & Condensate) systems with chemical to remove foreign matter such as oil, grease, thread compounds, loose mill scale or rust and biomass.
- III. Flush the system until the pH condition is the same as the raw water and all suspended matter is gone.
- IV. Dispose of the water containing the chemicals and flush water in accordance with any local, State or Federal discharge regulations.
- V. After the cleaning has been completed, sanitize each of the systems and chemically treat the condenser water system in accordance with manufacturer's instructions.

2. Reports

A. Findings Report:

I. Provide a report of all findings and recommendations in hard copy and electronic format which includes:

- a. Water Quality Analysis;
- b. Equipment Inventory;
- c. Condition assessment;
- d. Recommendations based on findings for cleaning and flushing of systems and piping;
- e. Estimate of remaining useful life of major pieces of equipment, and systems piping;
- f. Estimate of the operating efficiency of the equipment and recommendations for performance improvement;
- g. Recommendations for a water monitoring protocol specific for each type of equipment;
- h. Audit report card for each campus indicating key water treatment parameters, pass/fail criteria and necessary corrections to water treatment program.

B. Water Treatment Program Report

I. Water Treatment Program recommendations shall address:

- a. Environmental health and safety:
 - i. Extending useful operating life of equipment through control of corrosion and deposits;
 - ii. Increasing the energy efficiency of operating equipment;
 - iii. Reducing water consumption;
 - iv. Cost of recommended monitoring and control equipment;
 - v. Cost of chemicals and storage;
 - vi. Cost of on-going testing and auditing; and
 - vii. Required training of site personnel.

C. Procurement Documentation

I. Provide recommendations for procurement including:

- a. Required chemical inventory, quantities and services; and
- b. Bid documentation suitable for University-wide chemical procurement program inclusive of chemical supplier qualifications and technical specifications.

D. Audit Program

I. Provide specific program requirements indicating:

- a. Recommended audit program test parameters, intervals and required documentation.

3. Schedule

A. Time Sequence:

- I. Provide a time sequence schedule indicating significant events with associated durations; and
- II. Indicate all activities which require coordination with Campus personnel and other consultants.

4. Project Development

A. Provide Parameters, Preliminary Specifications and Requirements for the following:

I. Where new equipment is installed, identify the items listed below:

- a. Isolation valves between the new equipment and the existing.
- b. Locations for filling and draining the new system, for cleaning and flushing of the new equipment and piping.
- c. The chemicals as required to clean and flush the new systems.

II. Identify the items listed below:

- a. Scope of Work
- b. Equipment specification, datasheets, State and Local codes, Referenced industry codes and standards, and all attachments
- c. Prepare Vendor Data Requirements (VDR) form.
- d. Prepare Skids and packaged equipment specification. The packaged skids shall be pre-piped, insulated, pre-wired and tested such that the Owner needs only to provide single-point power, single-point data and single-point utility connections to form a complete functional and integrated system.
- e. Equipment receiving and unloading at the job site (unless otherwise stated on the datasheets or purchasing documents)
- f. Equipment installation (unless otherwise stated on the datasheets or purchasing documents)
- g. Utilities supplied to Skid Boundaries

Lot 2: Statewide

This document shall serve to outline the professional services to be rendered in order to meet the project objectives as they relate to the identification, documentation, and evaluation of existing water treatment, filtration, and mechanical systems at various facilities throughout the State of New York and the effect the current water treatment program has upon the condition of the existing HVAC equipment specifically and overall operation generally. The services to be rendered shall generally include research, inspection and testing of equipment, piping and water at the listed facilities in order to determine the condition of existing systems, including water and energy consumption and thermal efficiency, document findings, potential domestic water disinfection and treatment issues and evaluate the relative impact that the existing water treatment program has on the operation and condition of the mechanical systems. All wetted components of major pieces equipment and major piping systems that are part of the heating or air conditioning system are to be cataloged, and the current condition of the components analyzed. Major piping systems are to be sample surveyed. facilities and the effect the current water treatment program has upon the condition of the existing HVAC equipment specifically and overall operation generally. The services to be rendered shall generally include research, inspection and testing of equipment, piping and water at the listed facilities in order to determine the condition of existing systems, including water and energy consumption and thermal efficiency, document findings, and evaluate the relative impact that the existing water treatment program has on the operation and condition of the mechanical systems. All wetted components of major pieces equipment and major piping systems that are part of the heating or air conditioning system are to be cataloged, and the current condition of the components analyzed. Major piping systems are to be sample surveyed. The services may also include assisting the Owner with new project design reviews to ensure water treatment requirements such as specifications, details, and water treatment program protocols are well defined and provide quality assurance inspections or testing of new contracts that includes oversight for water quality and treatment.

1. Program Development

A. Required Data:

- I. Provide the list of required documents relating to systems, equipment, water and energy consumption and current water treatment program;
- II. Solicit listed documentation from the campus, institution, or facility;
- III. Review documentation for completeness and in order to obtain known conditions; and
- IV. Develop preliminary inventory of systems and HVAC and water treatment equipment.
- V. Site Visits:

- a. Interview operating and maintenance personnel and current water treatment and service-related vendors at each indicated campus institution, or facility; and
- b. Determine:
 - i. Problems experienced with the operation of the surveyed equipment;
 - ii. System operating conditions and system repair status; and
 - iii. Current water treatment procedures.

B. Water Quality Analysis:

- I. Provide recommendations and requirements for water testing parameters;
- II. Provide sampling and testing of treated water for all major pieces of equipment that are part of the heating or air conditioning system based on the OWNER's approved test parameters; sampling and testing may be performed by a sub consultant and laboratory.
- III. Verify water quality meets contractual specification or, when no such specifications exist, generally accepted industry guidelines for corrosion inhibitors, corrosion products, bacteria, suspended solids and contaminants; and
- IV. Analyze and report all test results and relevant field reports; and indicate severity of deviation from specifications and generally accepted guidelines, priority of importance and recommend corrective actions.
- V. Report water quality for HVAC systems that controls corrosion and build-up of scale and biological growth for maximum efficiency of installed equipment without posing a hazard to operating personnel or the environment.
- VI. Report base chemical treatment performance requirements on quality of water available at Project site, HVAC system equipment material characteristics and functional performance characteristics, operating personnel capabilities, and requirements and guidelines of authorities having jurisdiction.
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- X. Provide guidance regarding Legionella prevention in cooling towers and other HVAC equipment to comply with New York State Department of Health requirements, and other regulatory requirements as may be required.

C. Equipment Inventory:

- I. Provide complete inventory of all building HVAC systems and water treatment equipment based on existing documentation and site visit inspections, including but not limited to the information listed below:

- II. Indicate the following systems:
 - a. Control instrumentation and monitoring devices
 - b. Corrosion coupons; including water, energy and thermal-efficiency metering devices, if any;

 - c. Verify communication of data with the central BMS system of the building.

- III. Determine if current controls and metering devices are sufficient for required baseline and operating data indication;

- IV. Identify all critical information that is not available and make recommendations to obtain missing documentation.

- V. List Product Data: Include rated capacities; water-pressure drops; installed, and operating weights; for the products listed below, but are not limited to:
 - a. Pumps
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- VI. Detailed power and control wiring and differentiate between manufacturer-installed and field-installed wiring.

D. Condition Assessment:

- I. Based on site inspections and field verification, indicate the current operating condition of each inventoried piece of equipment;
- II. Based on documentation and site investigations:
 - a. Recommend tests to be performed on mechanical, systems to comprehensively assess the existing condition of equipment.
 - b. Provide testing of equipment and piping systems, including eddy current testing of chiller evaporator and condenser tube bundles based on OWNER accepted recommendations and as requested by the OWNER.
 - c. For boilers, provide inspection by a qualified boiler inspector, and combustion and emissions testing as requested by the OWNER.
- III. Provide System Cleaning Parameters, Preliminary Specifications and Requirements
 - a. Clean a system prior to operation.
 - b. Treat the open (cooling tower) and closed (LTHW, Steam & Condensate) systems with chemical to remove foreign matter such as oil, grease, thread compounds, loose mill scale or rust and biomass.
 - c. Flush the system until the pH condition is the same as the raw water and all suspended matter is gone.
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