

CASE STUDY / MINNESOTA AQUATIC INVASIVE SPECIES RESEARCH CENTER RENOVATIONS

DESIGN SOLUTIONS ADDRESS MULTIPLE NEEDS FOR AQUATIC LABORATORY

A Minnesota research center had been utilizing a 100-year-old space unsuitable for ecological experiments. In need of renovations to accommodate performance of critical studies, the laboratory required innovative design solutions taking research capabilities to the next level.



PRESERVING MINNESOTA LAKES AND RIVERS

With new laboratory components in place, the team is able to provide an environment offering more types of research for their studies.

PROJECT STATS

CLIENT

University of Minnesota

LOCATION

St. Paul, Minnesota

COMPLETION DATE

2016

11K

SQUARE FOOT
LABORATORY SPACE

5K

SQUARE FOOT
WASH-DOWN FACILITY

CHALLENGE

The Minnesota Aquatic Invasive Species Research Center (MAISRC), run by the University of Minnesota, uses biological and ecological research methods to determine ways to reduce the impacts of aquatic invasive species throughout Minnesota lakes and rivers.

In order to perform more and flexible research ventures, the MAISRC Engineering and Fisheries Laboratory required renovations. This included a new water supply system, large tanks, environmental chambers and areas for pathogen studies.

SOLUTION

The University of Minnesota's design goal was to provide 220 gpm of water

to experimental aquariums. To achieve this flow rate, the design required a new groundwater well feeding the water to 20 head tanks with the ability to mix to any temperature between 50 and 95 degrees Fahrenheit and distribute to six research bays. With these parameters in place, the research team can simulate summer, winter and shoulder season water temperatures.

The water was provided in two supply headers — one heated and one ambient well temperature. Water discharged from the system was filtered prior to discharge to the sewer to prevent release of the organisms into the environment. The filtered solids required sterilization through chlorination prior to discharge to the sewer.





The design included a modular curtain system to help darken the space for photo-isolation experiences, as well as a programmable lighting system to generate night and day simulations. Also included was physical security for the 11,000-square-foot facility, whose space was designed to include six fish tank bays, a plant laboratory, a zebra mussel laboratory, a fish pathogen laboratory and a wet chemistry laboratory.

Also part of the project was a new 5,000-square-foot remote wash-down facility for boats, trailers, nets and equipment. The design of the wash-down facility allowed for the

collection of water to be transported for treatment in the effluent treatment system at the main research facility.

Additional features:

- Four environmental chambers with growth lights and temperature control.
- Laboratory hood for chemical analysis.
- Reverse osmosis deionization water system for the wet laboratory and environmental chambers.
- Two freezers and a cooler for fish food and fish storage.

RESULTS

The original laboratory, which was in a century-old rail facility, was not suitable. The renovated lab is flexible and adaptable for research needs and tank arrangements. Drain piping is no longer routed on the floor; this removes a safety hazard and reduces the need to relocate tanks and experiments.

The new laboratory meets Minnesota Department of Natural Resources standards, allowing the MAISRC team to study various organisms from Asian carp to zebra mussels and one-of-a-kind aquatic plants. The research is used to help preserve the health of Minnesota lakes and rivers.



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