

CASE STUDY / EMERGING CONTAMINANT ASSESSMENT

PFAS TESTING AND TREATMENT SYSTEMS OVERCOME PROJECT ROADBLOCKS

Marine Corps Air Station Cherry Point sought to develop an F-35 program at its installation, but hit roadblocks when the site design required dewatering activities and emerging contaminants were present. A PFAS sampling report and treatability assessment kept the project on track.



CONTAMINANT ASSESSMENT PROVIDES PROJECT COST CERTAINTY

With treatment cost certainty, the project was able to move forward with confidence and without delay.

PROJECT STATS

CLIENT

Naval Facilities Engineering Command Mid-Atlantic

LOCATION

Cherry Point, North Carolina

COMPLETION DATE

May 2019

80%

DECREASE IN ENVIRONMENTAL CONTINGENCY

4

TREATMENT TECHNOLOGIES CONSIDERED

CHALLENGE

As the Naval Facilities Engineering Command Mid-Atlantic (NAVFAC MIDLANT) and Marine Corps Air Station (MCAS) Cherry Point prepared to bring an F-35 program to the military installation, it needed both confidence in site viability and certainty in the construction schedule and costs for its utility corridor modernization.

Located on the coast of North Carolina with very shallow groundwater, the site for the P-235 flight line utility corridor required significant dewatering.

Following completion of the 65 design and cost estimate submittal for the over 8,000 lineal feet of utility corridor, the preliminary assessments for the site's per- and polyfluoroalkyl substances (PFAS) indicated that PFAS were used in areas surrounding the project site. Construction dewatering could produce more than 10 million gallons of PFAS-containing water with concentrations in excess of the U.S. Environmental Protection Agency's health advisory of 70 parts per trillion.

The potential presence of PFAS led MCAS Cherry Point to request an emerging contaminant assessment. If treatment systems caused significant delays to the utility corridor's construction schedule or if estimated

treatment costs were outside of the project budget, it would prevent the F-35 program from being established at the installation. This emerging contaminant assessment had to be done promptly.

SOLUTION

Prior to mobilizing the field assessment, our team prepared a groundwater characterization work plan that specified procedures and protocols to be followed by field personnel and the laboratory supporting the project. This plan included sampling standard operating procedures such as specific measures to prevent sample contamination by PFAS and cross-contamination of PFAS samples.

Without any certified methods in place for PFAS assessment, it's up to consultants and the buyers to vet and partner with laboratories that can process the samples to help define the extent of the problem. Our team helped MCAS Cherry Point navigate the selection of a reputable laboratory for these services.

The site assessment began with a desktop review and moved quickly to sampling four monitoring wells along the corridor. Although the scope of work focused on testing for PFAS, the assessment looked for other suites of compounds that could impact PFAS treatment technologies.



Once the results were in, a historical data review was performed to identify data indicative of groundwater quality along portions of the corridor where there were no existing monitoring wells. This combined dataset informed the team's prediction of the worst-case water quality for dewatering fluids that would require treatment. The assessment indicated that PFAS, select chlorinated solvents and hydrocarbons, and arsenic were the present contaminants requiring treatment. Treatment objectives were established to support the discharge of dewatering fluids to the base storm sewer, which is subject to National Pollutant Discharge Elimination System permitting.

Before outlining treatment options, our team collaborated with MCAS Cherry Point to understand how it would typically sequence this project. We were then able to calculate dewatering rates that informed the volume of water that would need to be treated.

Our team then outlined multiple treatment technologies for site remediation in a feasibility study, comparing the remediation options

against potential risks to the site. We sought options that would be productive, protective and prevent exposure.

Given the scope of construction dewatering, options such as powdered activated carbon, nanofiltration and reverse osmosis were determined to be infeasible. These technologies would be either ineffective in treating all the contaminants present, result in reject concentrates that would require additional treatment or management, or could not easily be delivered in a mobile treatment system.

Granular activated carbon and ion exchange resins were then compared to assess the cost to treat dewatering fluids using mobile treatment systems relying on granular activated carbon and ion exchange for the removal of PFAS. This assessment demonstrated that ion exchange technologies would be more cost-effective, due to the longevity of the ion exchange treatment media. Based on this complete evaluation, our team identified a treatment system that would include granular activated carbon to treat the chlorinated solvents and hydrocarbons,

to be followed by ion exchange for removal of PFAS and arsenic.

RESULTS

In just three months, MCAS Cherry Point had a PFAS sampling report and treatability assessment that outlined the recommended treatment system for use in construction. We worked with contractors to obtain estimates to treat the anticipated volume of dewatering fluids throughout construction. This report reduced the environmental contingency on the project by over 80%, allowing their mission to move forward. It also informed the construction bid's project scope. The project's construction contract will include this treatment system as part of the larger utility corridor construction project.

With this assessment and future contaminant treatment plans in place, MCAS Cherry Point will be ahead of anticipated federal regulations on PFAS remediation. MCAS will address the contaminant as part of this massive construction project for a long-term program.



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