NE-25-36470 Analysis of NuCycle® Flowsheet for Waste Stream Characterization

Curio Solutions, located in Washington, D.C., is focused on the development of its used nuclear fuel (UNF) recycling process called NuCycle®. Its vision is to develop and demonstrate a technology that can potentially be deployed for recycling spent nuclear fuel in the United States and closing the legacy light-water reactor (LWR) fuel cycle.

The management and disposal of UNF remains a critical and unresolved challenge for the U.S. nuclear industry. Waste processing and disposal can account for a significant percentage of the operational costs of a nuclear recycling facility, making the development of a waste stream baseline and its periodic review throughout the NuCycle® development path critical for optimizing both performance in disposal environments and cost efficiency.

Curio will partner with Pacific Northwest National Laboratory (PNNL) to conduct an analysis of the NuCycle® flowsheet that will allow the generation of quantities and classification of anticipated waste streams and recommendations on waste forms most suitable to sequestering the generated waste streams. Results of the project would be used to determine the approach to managing waste from a pilot demonstration of NuCycle® to be performed in 2027.