

163-N ION EXCHANGE REGENERATION WASTE pH CONTROL

PROJECT 88G-GEN-011

SYSTEM DESCRIPTION

The ion exchange regeneration waste from the regeneration vessels (Primary Cation, Secondary Cation, Primary Anion, and Secondary Anion) in the 163-N demineralization plant is transferred to a 125,000 gallon neutralization/surge tank. These wastes are corrosive in nature and exhibit extreme pH depending on the regeneration completed.

The waste is then mixed in the neutralization/surge tank to achieve partial pre-neutralization. Acid and caustic reagents can be injected at the neutralization/surge tank to assist in the pre-neutralization process. The partially neutralized waste is then released to an elementary neutralization unit for final pH adjustment.

The elementary neutralization unit is a three-stage unit consisting of 1750 gallon mixing tanks with mixers and pH controllers to automatically inject acid or caustic to adjust the effluent stream between pH 6.0 and pH 9.0. The unit provides for a ten-minute retention time in each stage and utilizes vacuum injectors and filtered water as the motive force to inject the chemical reagents.

The automatic neutralization system inclusive of the neutralization/surge tank is designed for a 175 gpm flow capacity although the maximum operating flow will be 150 gpm. It provides those control features to record the effluent pH and incorporates the alarm capability to divert the waste stream back to the neutralization/surge tank should an out-of-tolerance pH condition develop.

G. T. Wells

ljs

2/9/89