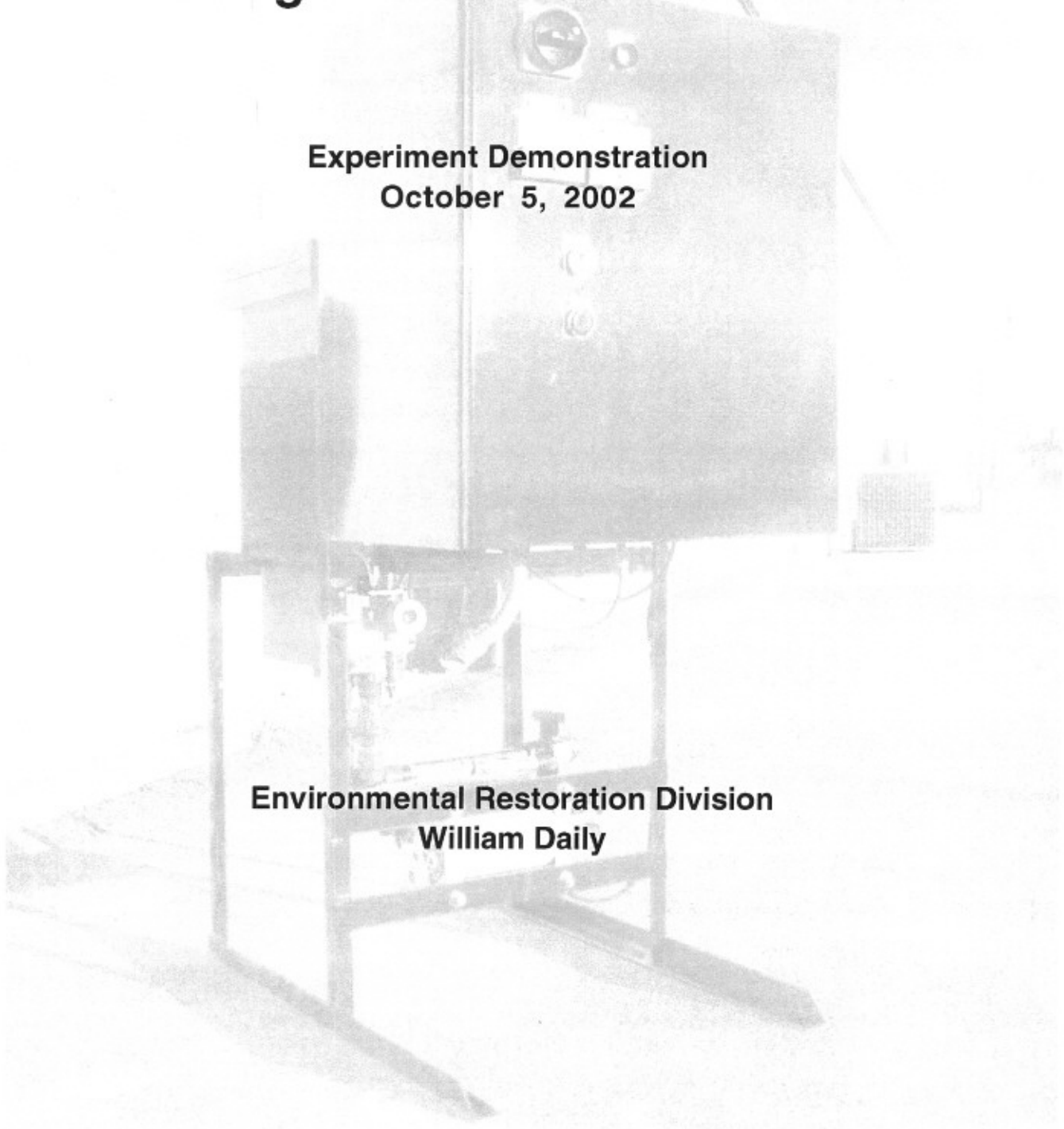


Uranium Removal From Groundwater Using Electro-Chemical Methods

Experiment Demonstration
October 5, 2002

Environmental Restoration Division
William Daily



Removal of Soluble Uranium from Ground Water

Scope of Work

Scaled Equipment Testing

Investigate the potential and validate the past performance of bench scale Electro-Coagulation as a method of removing dissolved uranium species from S-300 groundwater in a field scale study. The scope of work would include:

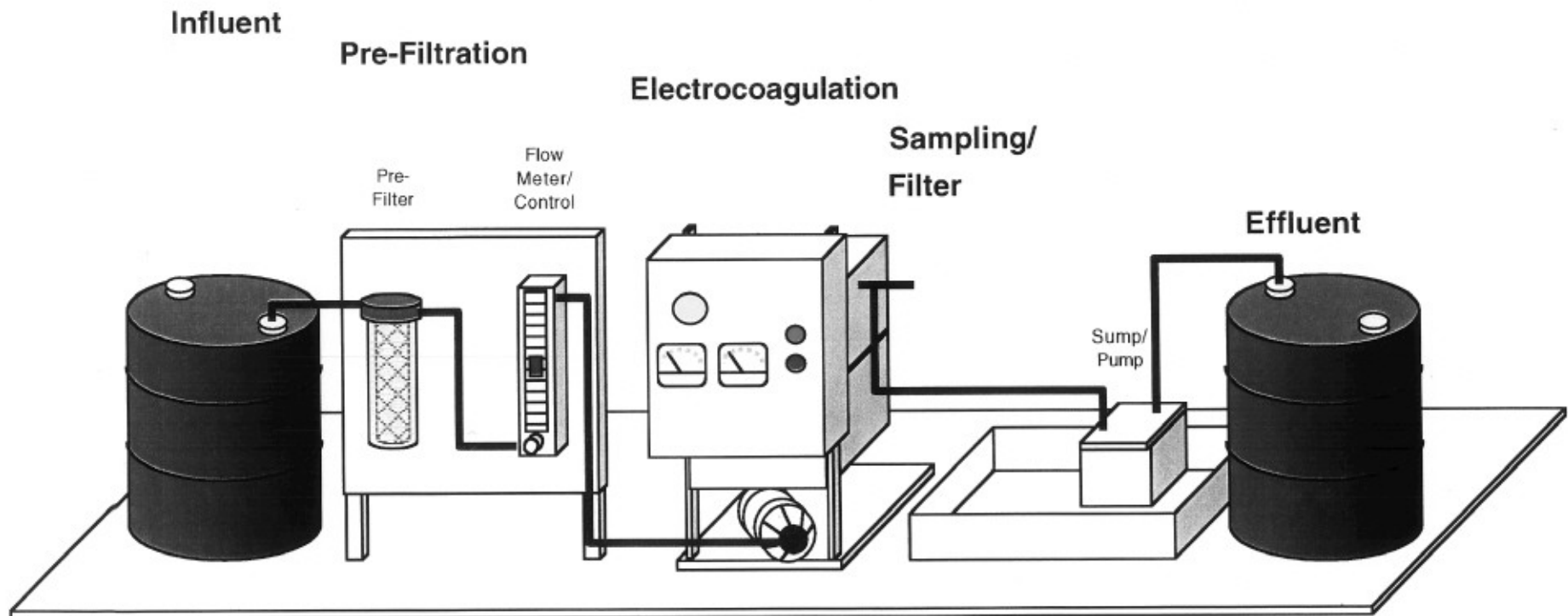
- 1 Test field scale apparatus (electrocoagulator) in conjunction with all required support equipment and using actual S-300 groundwater contaminated with dissolved uranium.
- 2 Sample the effluent from the treatment process and separate liquid from suspended solids to 25 microns. Send aqueous phase to lab for total dissolved uranium concentration analysis.
- 3 Note volume and characteristics of precipitate (flock) to determine optimal separation process.
- 4 Measure current draw and treatment effectiveness using various electrode configurations.
- 5 Vary residence time and determine its affect on remedial efficiency.
- 6 Work with HWM to determine efficient hazardous waste disposal practice.

Field Scale Optimization (Future Work)

Validate the past performance of scaled Electro-Coagulation and Captive De-ionization testing and optimize reaction mechanics and critical variables of soluble uranium separation in preparation for design and application in the field. The scope of work would include:

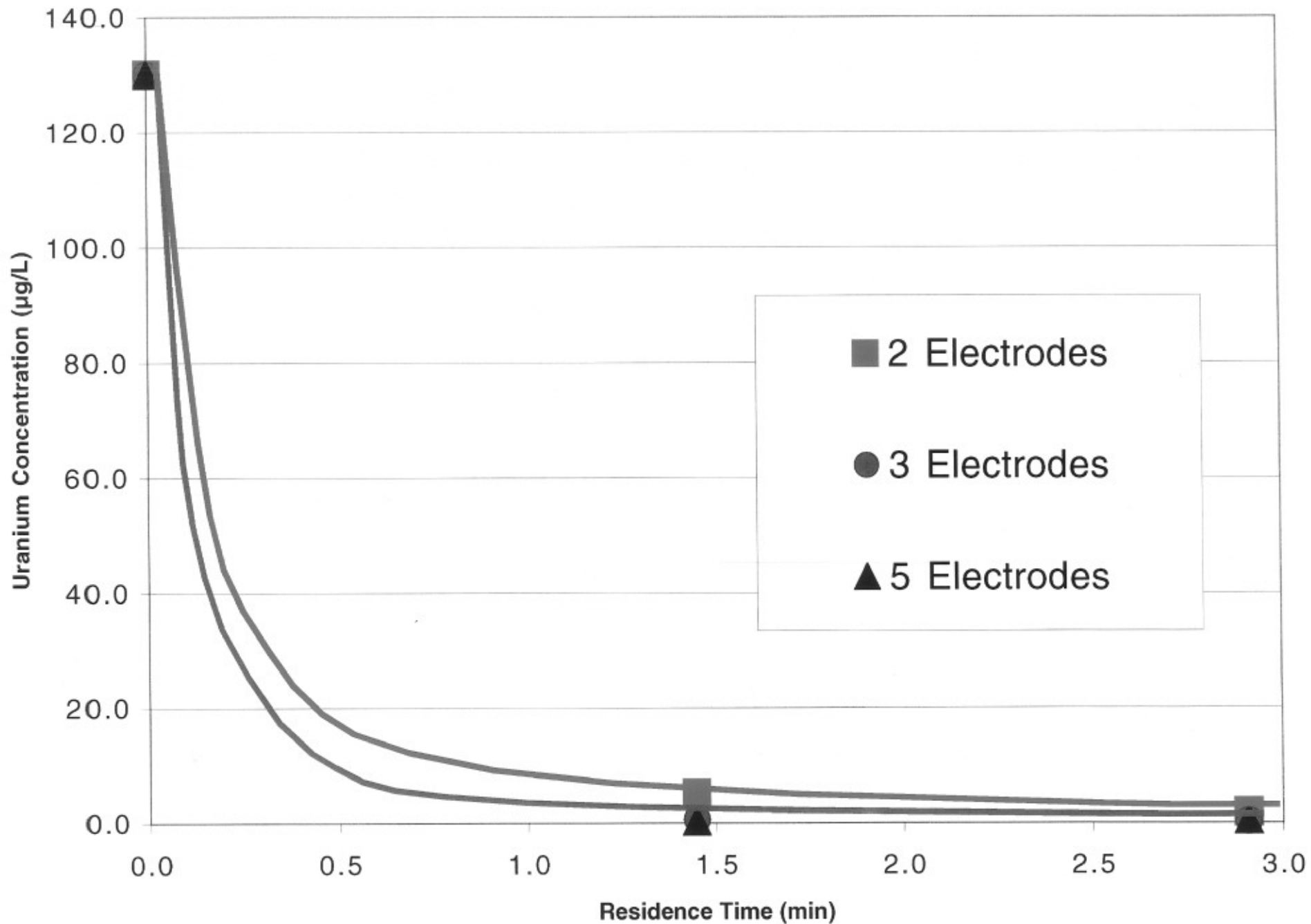
Test field scale electro-chemical apparatus (electrocoagulator and CDI) side by side.

Uranium Removal From Groundwater Using Electrocoagulation Scaled Test

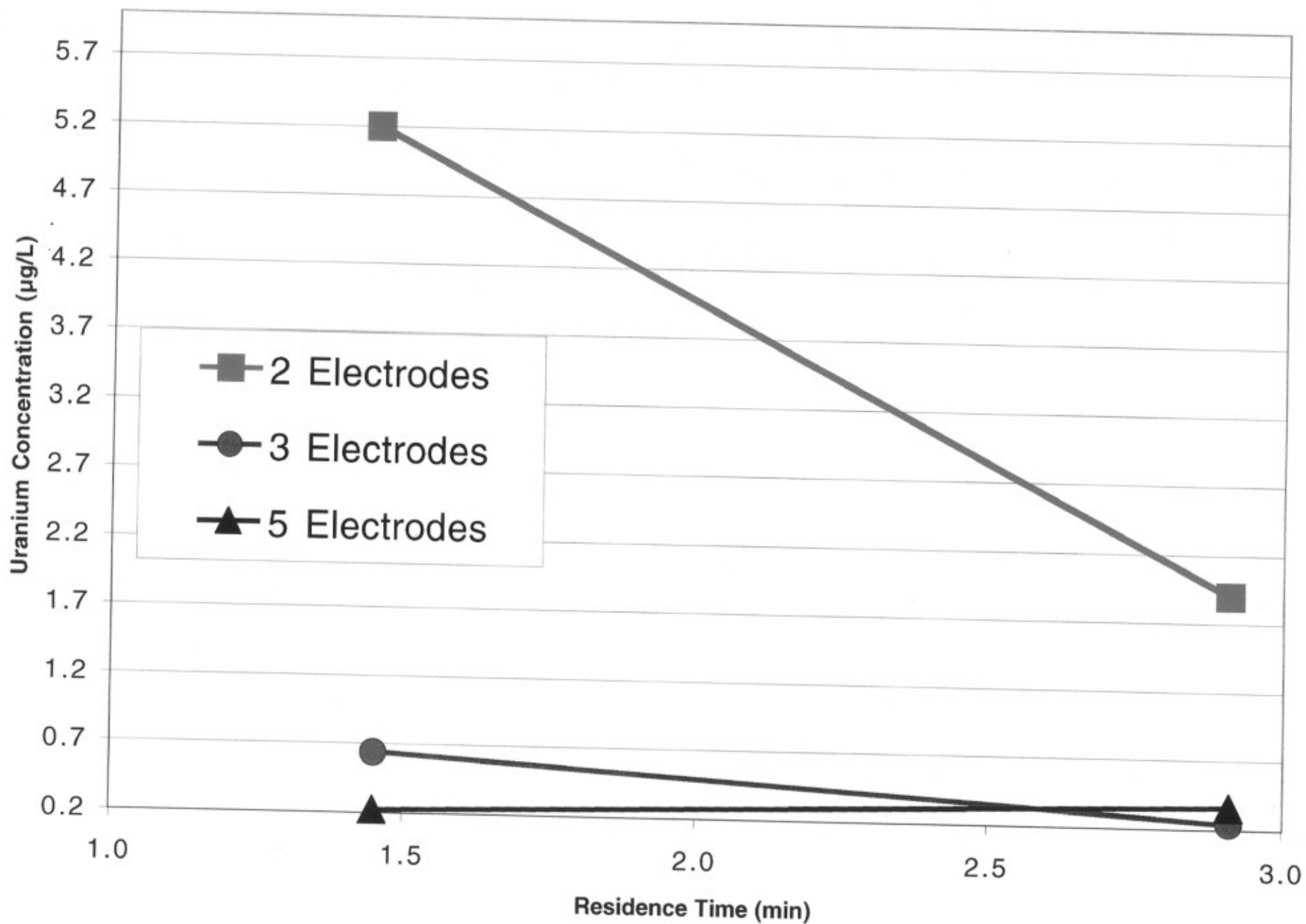


Sample Description	Residence Time (min)	Uranium Concentration (ng/ml) ($\mu\text{g/L}$)
Influent		130
Influent Duplicate		130
2 electrodes @ 1 gpm	2.91	1.9
2 electrodes @ 1 gpm duplicate	2.91	1.8
2 electrodes @ 2 gpm	1.45	5.2
3 electrodes @ 2 gpm	1.45	0.64
3 electrodes @ 1 gpm	2.91	0.24
5 electrodes @ 1 gpm	2.91	0.36
5 electrodes @ 2 gpm	1.45	0.22

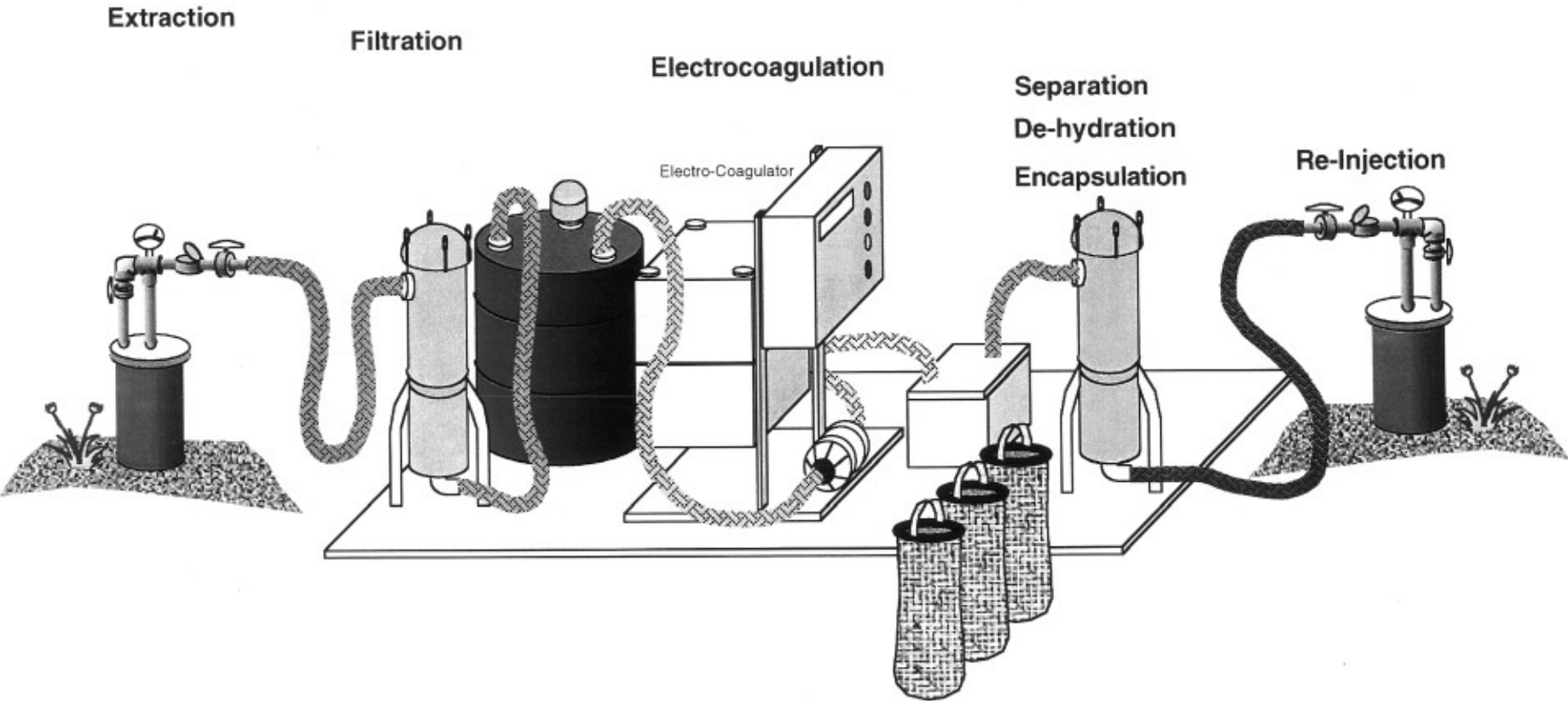
Electro-Coagulation for Uranium Removal from Groundwater

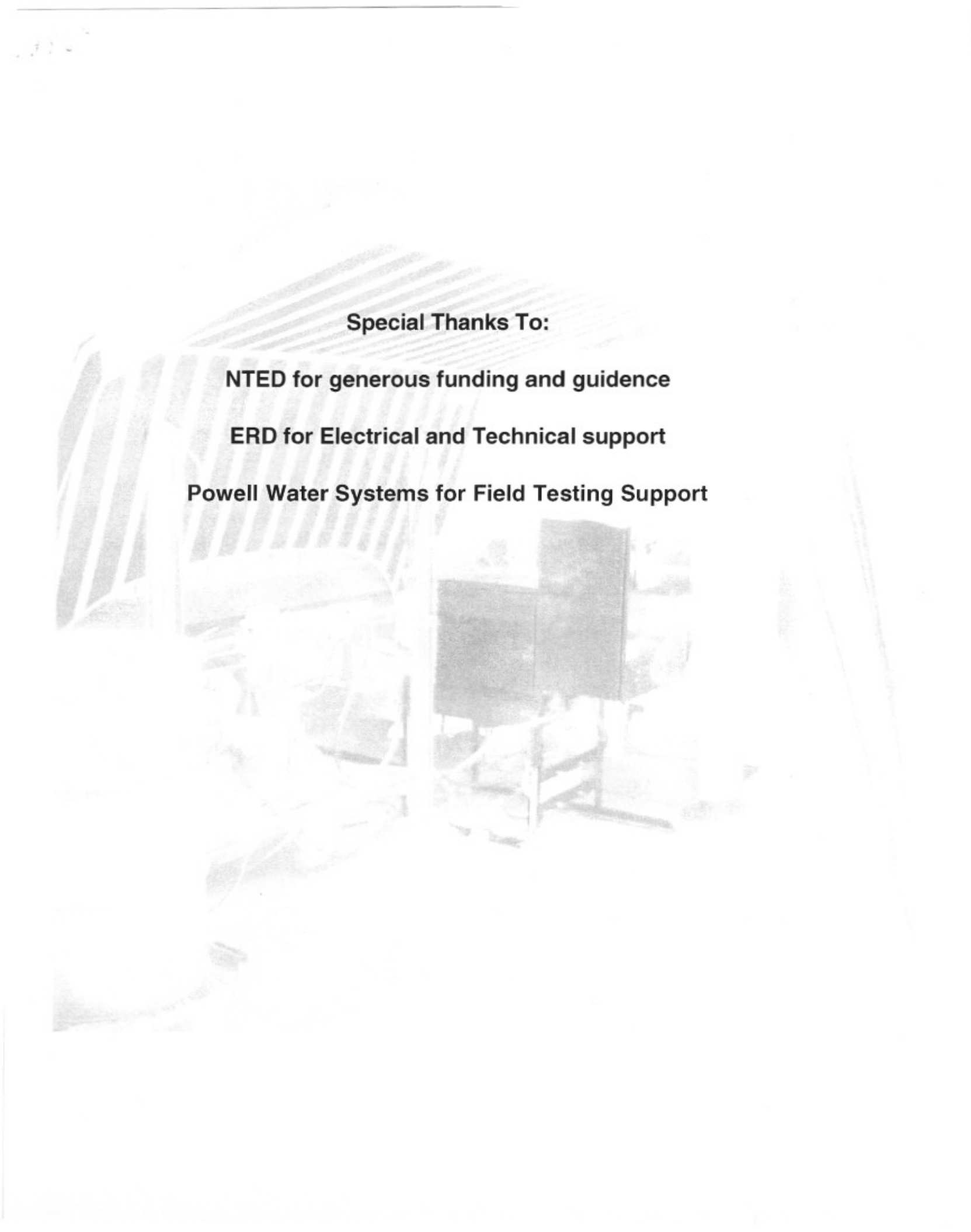


Electro-Coagulation for Uranium Removal from Groundwater



**Uranium Removal From Groundwater Using Electrocoagulation
Field Application**





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