

# Project (In Process)

## Thunderbird Farms - Arizona Arsenic & Fluoride Removal



### Background

In 2008 AdEdge was selected by Atwell Hicks Engineers and Thunderbird Improvement district to provide a 500 gpm treatment system for this Arizona community serving 1,500 population to treat elevated levels of arsenic and fluoride. Non compliant levels are 13 ppb As and 3.20 mg/L F respectively. Raw water quality information is provided in the table below. Several options were considered for this site. Upon the cost analysis developed by AdEdge in conjunction with previous studies, an adsorption approach was selected for piloting. A successful pilot test program using Granular Ferric Oxide (GFO) and AD74 alumina based adsorption technology was initiated in September, 2008 which is near completion. Results indicate the processes are quite feasible in cost effectively achieving the primary and secondary treatment goals. Design will be initiated in late 2008 with construction commencing in early 2009 following ADEQ approvals.



Pilot Test 2008

Parameters		Parameters	
pH	7.90	Total Organic Carbon	mg/L TOC
Total As	0.018 mg/L As	Sulfate	180.00 mg/L as SO4
As(III)	0.018 mg/L (if known)	Nitrates	8.20 mg/L as NO3
Sulfides	no data mg/L	Chlorides	230 max mg/L Cl
Hardness	40-260 mg/L @ CaCO3	Uranium	11.80 mg/L U
Alkalinity	200 mg/L @ CaCO3	Gross Alpha	12.80 pCi/L
Silica	29.0 mg/L SiO2	TDS:	820.00 mg/L
Phosphate	no data mg/L P04	Fluoride	3.20 mg/L F
Bicarbonate	no data mg/L HCO3	Turbidity	NTU
Iron	0.20 mg/L Fe	Suspended Solids	mg/L TSS
Manganese	0.02 mg/L Mn	Temperature	degrees F

### Treatment System

AdEdge has proposed and successfully piloted an integrated system featuring GFO Granular Ferric Oxide and Activated Alumina adsorption media in series. Given the relatively high pH of 7.9, AdEdge will utilize its CO2 gas injection system to correct pH to 6.5 prior to entering the system for optimal performance. The first stage of the treatment train will remove arsenic independently while the AD74 will target the fluoride removal. Optional on-site regeneration for the AD74 process is being investigated and considered as an alternative to the discardable media option to reduce operating costs.

### For More Information Contact

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