

MicroBind Case Study – Osage County, OK

Timeline

1/29/13 – Collect initial samples to vertically/horizontally delineate impacted area

Site Map



1/29/13 Analytical Results		
Sample ID	Depth (ft. bgs)	Total Soluble Salts Results (ppm)
001	0	26,000
001A	1	2,040
002	0	5,140
002A	1	16,800
003	0	26,800
003A	1	12,600

**ft. bgs = feet below ground surface, ppm = parts per million*

Results indicated Total Soluble Salts (TSS) levels above the Oklahoma Corporation Commission (OCC's) action level of 2,640 ppm in Sample IDs 001, 002, 002A, 003, and 003A.

1/29/13 – 1/30/13 – Perform remediation services:

- Till the impacted area
- Treat the impacted area with an EnviroClean solution and a MicroBind solution

4/17/13 – Collect confirmation samples from previous sample locations

Comparison of Analytical Results from Pre and Post Remediation				
Sample ID	Depth (ft. bgs)	Pre-Remediation Total Soluble Salts Results (ppm)	Post-Remediation Total Soluble Salts Results (ppm)	Δ Total Soluble Salts Results (ppm)
001	0	26,000	3,690	-22,310
002	0	5,140	6,550	+1,410
002A	1	16,800	7,360	-9,440
003	0	26,800	1,400	-25,400
003A	1	12,600	2,490	-10,110

Analytical results indicated significant reductions in TSS in all samples collected, except for Sample ID 002, which had a slight increase in TSS. Slight vegetative growth was noted at the time of sampling.

9/19/13 – Collect confirmation samples from previous sample locations

Comparison of Analytical Results from Pre and Post Remediation					
Sample ID	Depth (ft. bgs)	Pre-Remediation Total Soluble Salts Results (ppm)	1 st Post- Remediation Total Soluble Salts Results (ppm)	2 nd Post- Remediation Total Soluble Salts Results (ppm)	Δ Total Soluble Salts Results (ppm)
001	0	26,000	3,690	1,320	-24,680
002	0	5,140	6,550	1,080	-4,060
002A	1	16,800	7,360	1,330	-15,470
003	0	26,800	1,400	531	-26,269
003A	1	12,600	2,490	776	-11,824

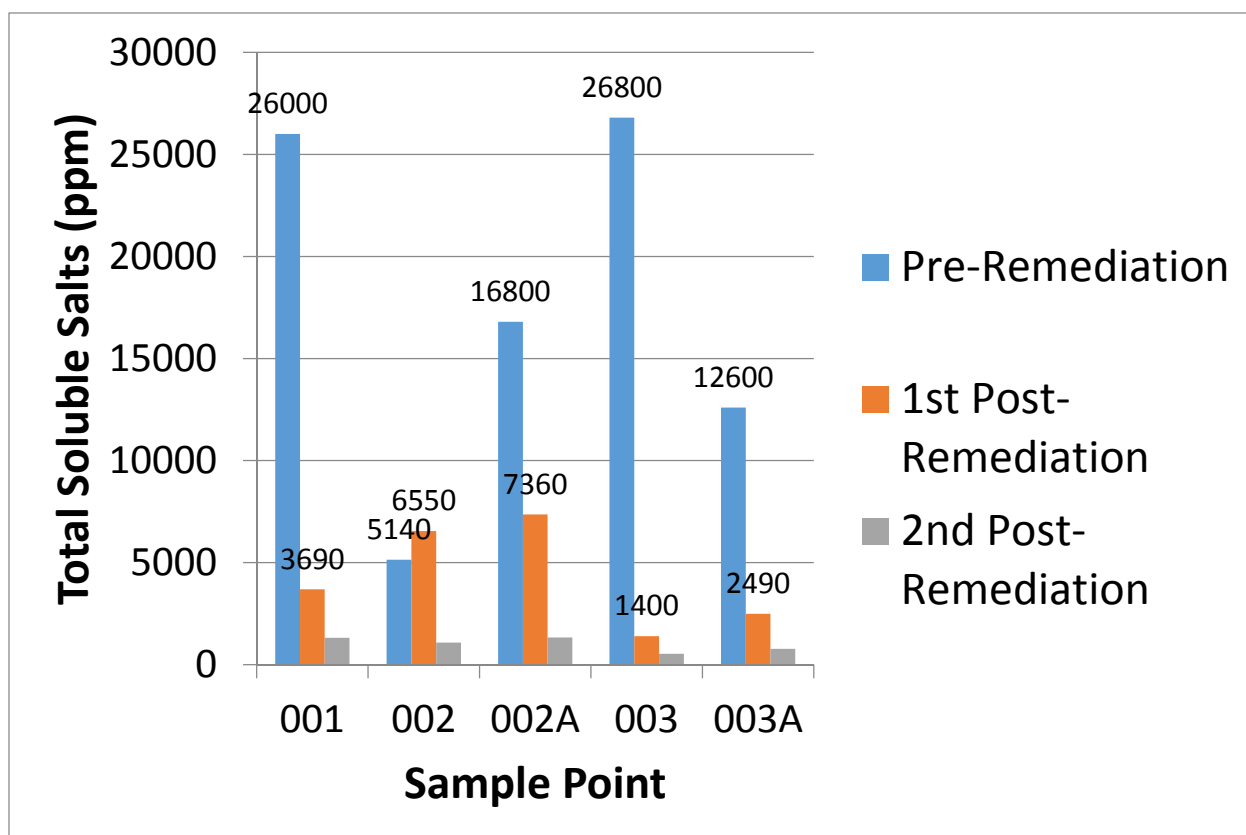


Figure 1: Comparison Graph of Pre and Post Remediation TSS Results

Analytical results indicated significant reductions in TSS in all samples collected. Final analytical results indicated TSS results below the OCC's action level in all sample locations. In addition, the site had full vegetative growth at the time of sampling.

Photographic Documentation of Remediation:



Photograph 1: Pre-Remediation Impacted Area



Photograph 2: Pre-Remediation Impacted Area



Photograph 3: Pre-Remediation Impacted Area



Photograph 4: Pre-Remediation Impacted Area



Photograph 5: Tilling the impacted area



Photograph 6: Tilling the impacted area



Photograph 7: Treating the impacted area with a MicroBind and EnviroClean solution



Photograph 8: Treating the impacted area with a MicroBind and EnviroClean solution



Photograph 9: Post-Treatment

Photographic Documentation of Site at April 2013 Confirmation Sampling:



Photograph 10: Site 3 Months Post-Remediation



Photograph 11: Site 3 Months Post-Remediation



Photograph 12: Site 3 Months Post-Remediation



Photograph 13: Site 3 Months Post-Remediation

Photographic Documentation of Site at September 2013 Confirmation Sampling:



Photograph 14: Site 8 Months Post-Remediation



Photograph 15: Site 8 Months Post-Remediation



Photograph 16: Site 8 Months Post-Remediation



Photograph 17: Site 8 Months Post-Remediation