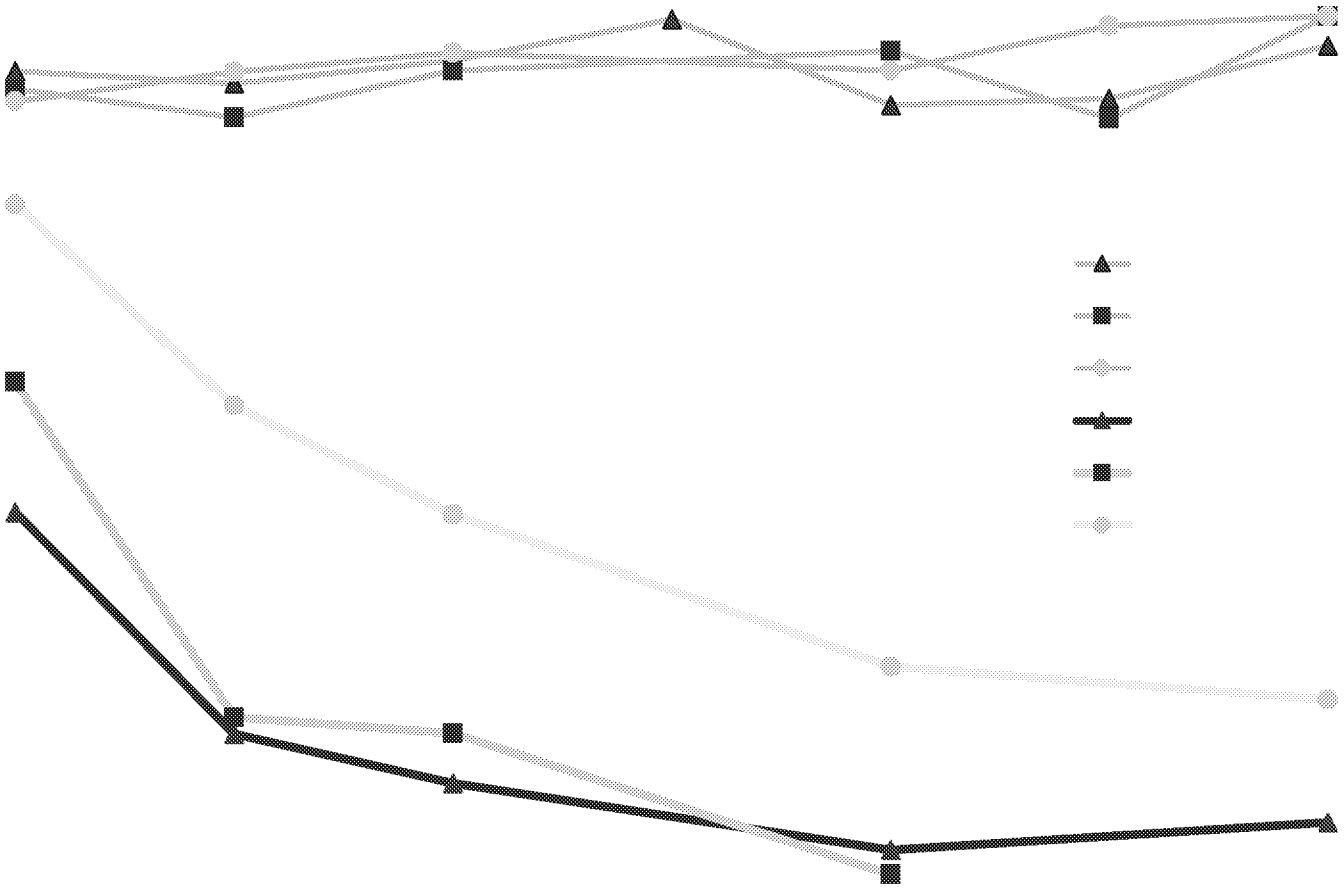
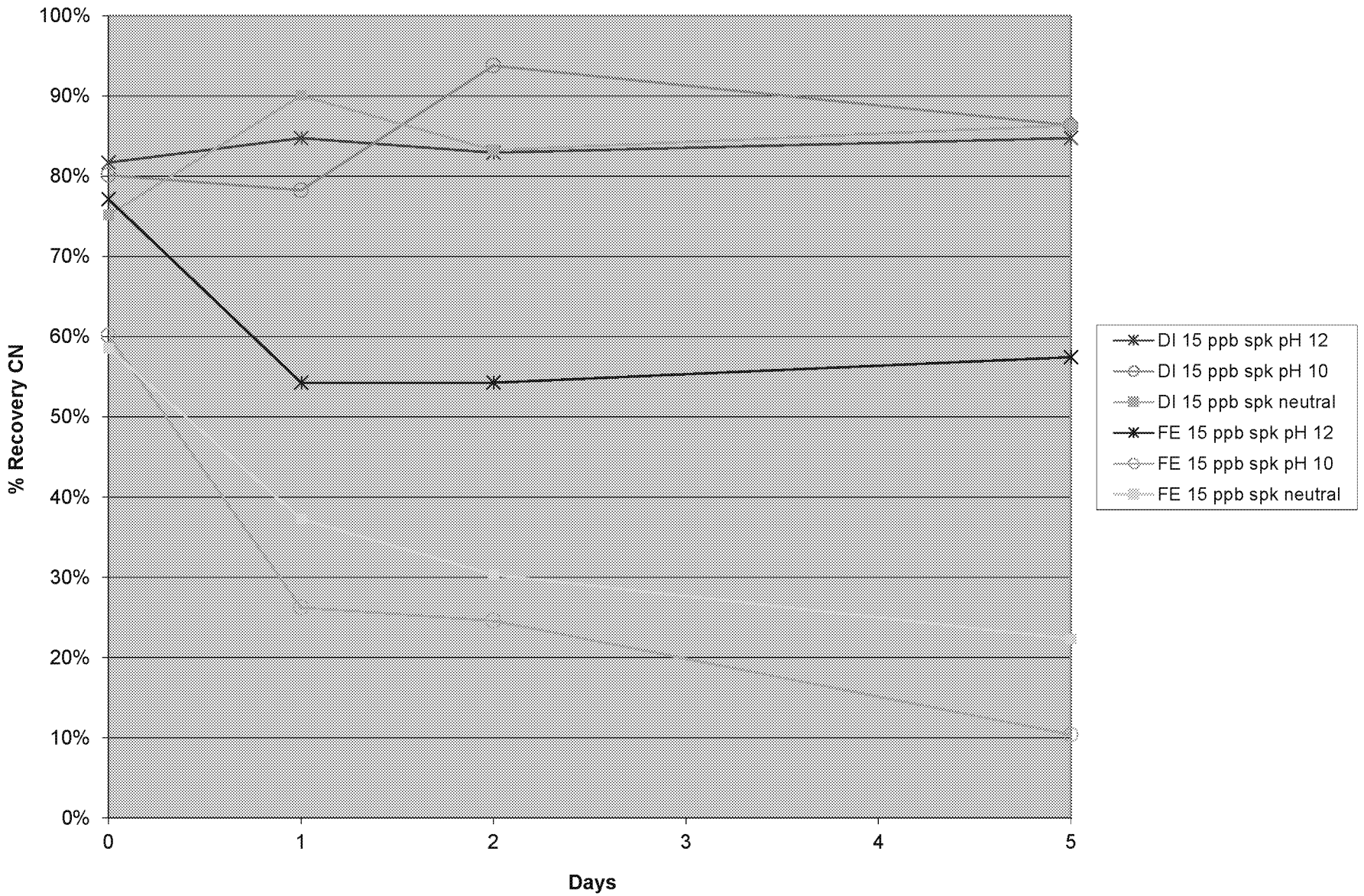
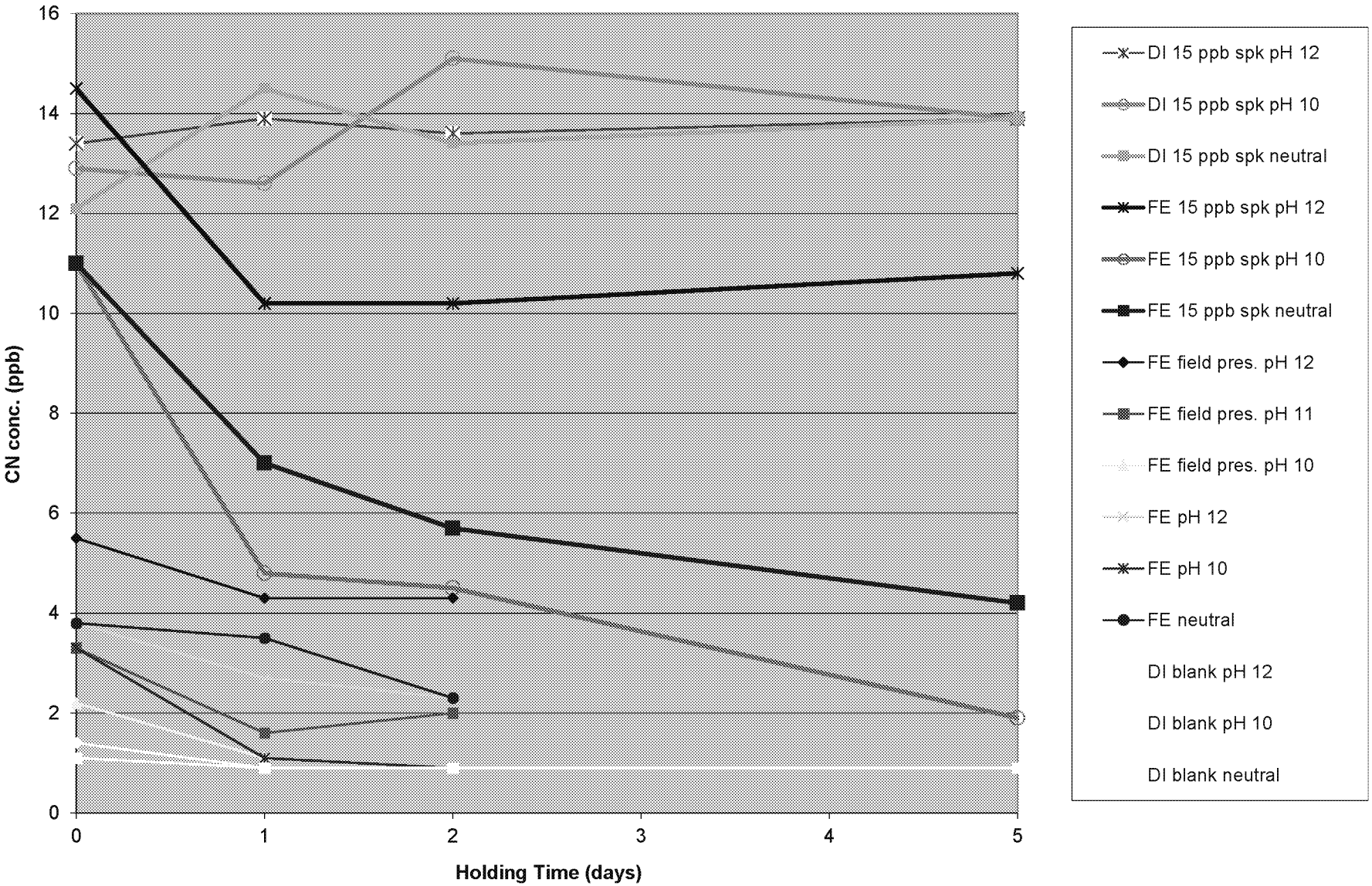
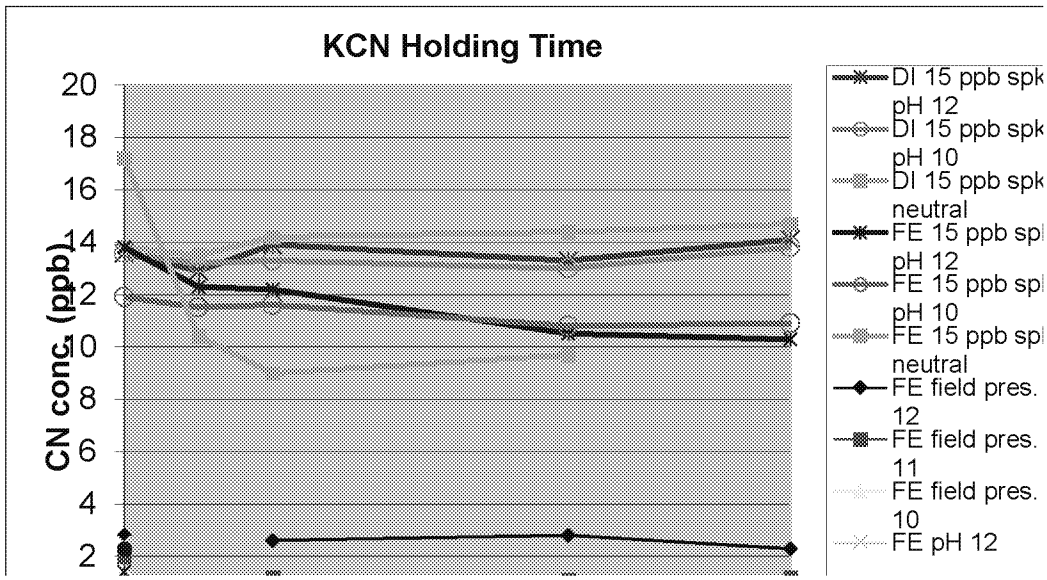



100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Recovery CN
0
1
2
3
4
5
Days
DI 15 ppb spk pH 12
DI 15 ppb spk pH 10
DI 15 ppb spk neutral
FE 15 ppb spk pH 12
FE 15 ppb spk pH 10
FE 15 ppb spk neutral


16
14
12
10
8
6
4
2
0
CN conc. (ppb)
0
1
2
3
4
5
Holding Time (days)
DI 15 ppb spk pH 12
DI 15 ppb spk pH 10
DI 15 ppb spk neutral
FE 15 ppb spk pH 12
FE 15 ppb spk pH 10
FE 15 ppb spk neutral
FE field pres. pH 12
FE field pres. pH 11
FE field pres. pH 10
FE pH 12
FE pH 10
FE neutral
DI blank pH 12
DI blank pH 10
DI blank neutral

SJ# day 0	SJ# day 1	SJ# day 2	SJ# day 5		Description	0	1	2	5
20110	20272	20353			FE field pres. **pH 12**	5.5	4.3	4.3	
20112	20274	20355		FE field pres.	FE field pres. **pH 11**	3.3	1.6	2	
20111	20273	20354		FE field pres.	FE field pres. **pH 10**	2.2	1.1	0.9	
20217	20276	20357			FE **pH 12**	3.8	2.7	2.3	
20218	20277	20358		FE	FE **pH 10**	3.3	1.1	0.9	
20113	20275	20356		FE	FE **neutral**	3.8	3.5	2.3	
20223	20282	20363	20384	FE 15 ppb spk	FE 15 ppb spk **pH 12**	14.5	10.2	10.2	10.8
20224	20283	20364	20385	FE 15 ppb spk	FE 15 ppb spk **pH 10**	11	4.8	4.5	1.9
20222	20281	20362	20383	FE 15 ppb spk	FE 15 ppb spk **neutral**	11	7	5.7	4.2
20220	20279	20360		DI blank	DI blank **pH 12**	1.4	0.9	0.9	0.9
20221	20280	20361		DI blank	DI blank **pH 10**	1.1	0.9	0.9	0.9
20219	20278	20359		DI blank	DI blank **neutral**	1.1	0.9	0.9	0.9
20226	20285	20366	20387	DI 15 ppb spk	DI 15 ppb spk **pH 12**	13.4	13.9	13.6	13.9
20227	20286	20367	20388	DI 15 ppb spk	DI 15 ppb spk **pH 10**	12.9	12.6	15.1	13.9
20225	20284	20365	20386	DI 15 ppb spk	DI 15 ppb spk **neutral**	12.1	14.5	13.4	13.9

12-Jan		14-Jan	18-Jan	21-Jan					
SJ# day 0	**SJ# day 1**	**SJ# day 2**	**SJ# day 6**	**SJ# day9**		**Description**	**0**	**1**	**2**	**6**
20458		20704	20748	21047	21191	FE field pres. **pH 12**	2.8		2.6	2.8
20460		20706	20750	21049	21193	FE field pres. **pH 11**	2		1.2	1.1
20459		20705	20749	21048	21192	FE field pres. **pH 10**	1.4		0.9	0.9
20461						FE **pH 12**	2.5			
20462						FE **pH 10**	1.4			
20457						FE **neutral**	2.3			
20467	20558	20602	20741	21040		FE 15 ppb spk **pH 12**	13.8	12.3	12.2	10.5
20468	20559	20603	20742	21041		FE 15 ppb spk **pH 10**	11.9	11.5	11.6	10.8
20466	20557	20601	20740	21039		FE 15 ppb spk **neutral**	17.2	10.4	9	9.7
20464						DI blank **pH 12**	0.9			
20465						DI blank **pH 10**	0.9			
20463	20556	20600	20739	21038		DI blank **neutral**	0.9	0.9	0.9	0.9
20470	20561	20605	20744	21043		DI 15 ppb spk **pH 12**	13.6	12.9	13.9	13.3
20471	20562	20606	20745	21044		DI 15 ppb spk **pH 10**	13.6	13.2	13.3	13
20469	20560	20604	20743	21042		DI 15 ppb spk **neutral**	13.8	13.5	14.2	14.4



5 Jan Study	0	1	2	5
FE 15 ppb spk **pH 12**	77%	54%	54%	57%
FE 15 ppb spk **pH 10**	60%	26%	25%	10%
FE 15 ppb spk **neutral**	59%	37%	30%	22%
DI 15 ppb spk **pH 12**	82%	85%	83%	85%
DI 15 ppb spk **pH 10**	80%	78%	94%	86%
DI 15 ppb spk **neutral**	75%	90%	83%	86%

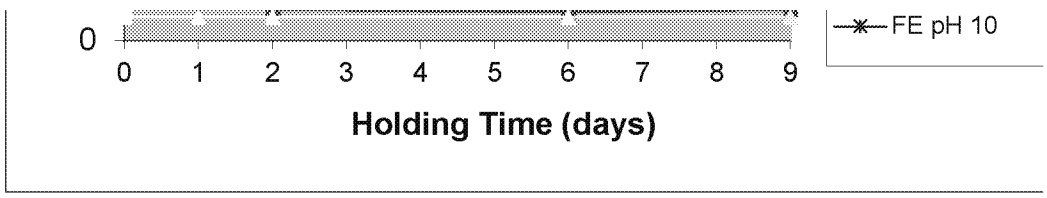
12 Jan Study	**0**	**1**	**2**	**6**	**9**
FE 15 ppb spk **pH 12**	79%	70%	70%	60%	59%
FE 15 ppb spk **pH 10**	73%	70%	71%	66%	66%
FE 15 ppb spk **neutral**	99%	60%	52%	56%	
DI 15 ppb spk **pH 12**	91%	86%	93%	89%	94%
DI 15 ppb spk **pH 10**	91%	88%	89%	87%	92%
DI 15 ppb spk **neutral**	92%	90%	95%	96%	98%

9	**13**
2.3	2.9
1.2	1.1
0.9	0.9

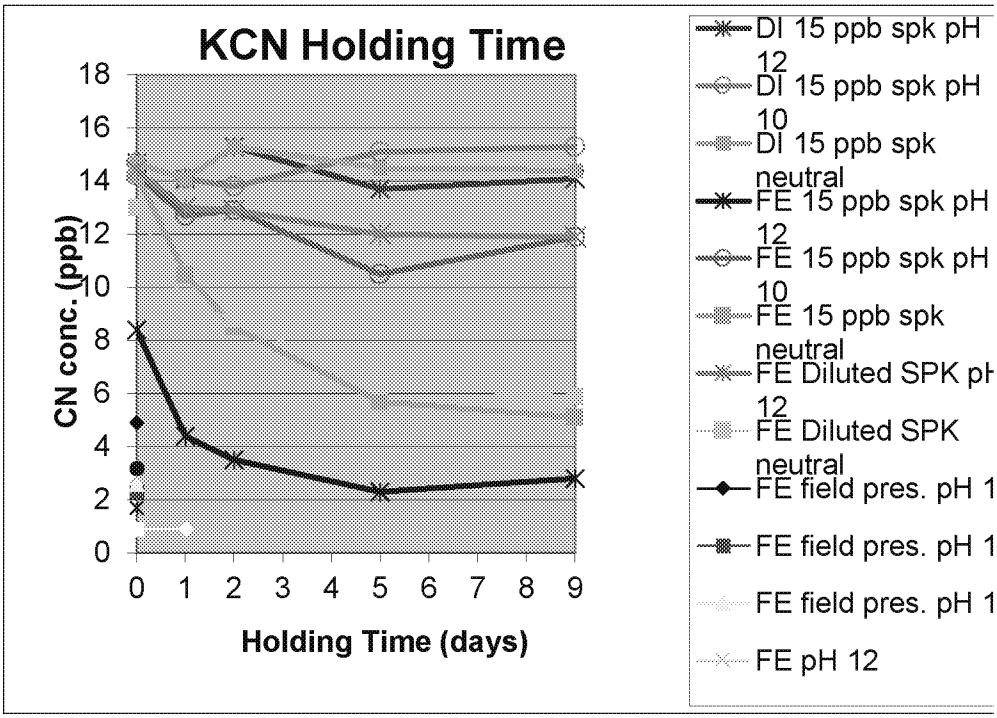
10.3
10.9

0.9
14.1
13.8
14.7

k
k
k
k
pH
pH
pH


0
0
1
2
3
4
5
6
7
8
9
Holding Time (days)
FE pH 10

19-Jan	20-Jan	21-Jan	24-Jan	28-Jan						
SJ# day 0	**SJ# day 1**	**SJ# day 2**	**SJ# day 5**	**day 9**	**Description**	**0**	**1**	**2**	**5**	**9**
					FE field pres. **pH 12**	4.9				
20852					FE field pres. **pH 11**	2.3				
20851					FE field pres. **pH 10**	2.6				
20853					FE **pH 12**	2.9				
20854					FE **pH 10**	1.7				
20849					FE **neutral**	3.2				
20862	20981	21054	21143	21405	FE 15 ppb spk **pH 12**	8.4	4.4	3.5	2.3	2.8
20861	20980	21053	21142	21404	FE 15 ppb spk **pH 10**	14.2	12.7	12.9	10.5	11.9
20860	20979	21052	21141	21403	FE 15 ppb spk **neutral**	14.2	10.5	8.5	5.7	5.1
20858	20978	21051	21140	21402	DI blank **pH 12**	0.9	0.9	0.9	0.9	0.9
20859					DI blank **pH 10**	0.9				
20857					DI blank **neutral**	0.9				
20866	20985	21058	21148	21410	DI 15 ppb spk **pH 12**	14.7	14.1	15.3	13.7	14.1
20867	20986	21059	21147	21409	DI 15 ppb spk **pH 10**	14.7	14.1	13.8	15.1	15.3
20865	20984	21057	21146	21408	DI 15 ppb spk **neutral**	14.7	14.1	15.3	14.5	14.4
20856					FE Diluted **pH 12**	2.9				
20855					FE Diluted **neutral**	2				
20864	20983	21056	21145	21407	FE Diluted SPK **pH 12**	14.4	13	12.9	12	11.9
20863	20982	21055	21144	21406	FE Diluted SPK **neutral**	13	9.4	8.8	6.3	5.9

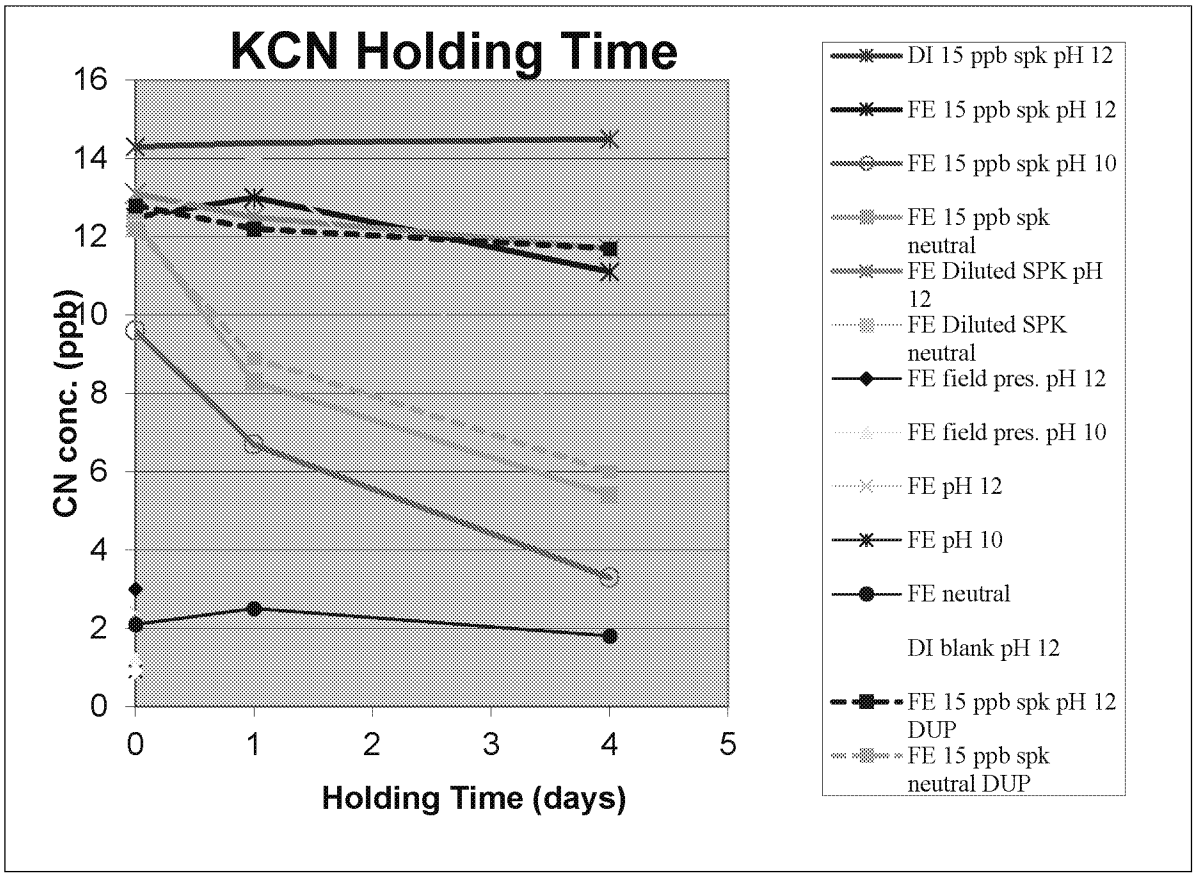


FE 15 ppb spk **pH 12**	47%	25%	20%	13%	16%
FE 15 ppb spk **pH 10**	85%	76%	77%	63%	71%
FE 15 ppb spk **neutral**	78%	58%	47%	31%	28%
DI 15 ppb spk **pH 12**	98%	94%	102%	91%	94%
DI 15 ppb spk **pH 10**	98%	94%	92%	101%	102%
DI 15 ppb spk **neutral**	98%	94%	102%	97%	96%

19-Jan

SJ#	Description	0	1	4	5	9
21448	FE field pres. **pH 12**	3				
49	FE field pres. **pH 10**	1.2				
55	FE **pH 12**	2.4				
56	FE **pH 10**	0.9				
57	FE **neutral**	2.1	2.5	1.8		
50	FE 15 ppb spk **pH 12**	12.5	13	11.1		
50	FE 15 ppb spk **pH 12 FIA**	12.54	11.17			
51	FE 15 ppb spk **pH 12** DUP	12.8	12.2	11.7		
51	FE 15 ppb spk **pH 12** DUP **FIA**	14.44	10.99			
52	FE 15 ppb spk **pH 10**	9.6	6.7	3.3		
53	FE 15 ppb spk **neutral**	12.4	8.3	5.4		
54	FE 15 ppb spk **neutral DUP**	12.2	8.9	6		
	DI blank **pH 12**	0.9				
62	DI 15 ppb spk **pH 12**	14.3	14.4	14.5		
60	FE Diluted **pH 12**	0.9				
61	FE Diluted **neutral**	0.9				
58	FE Diluted SPK **pH 12**	13.1	12.5	11.7		
59	FE Diluted SPK **neutral**	12.2	13.9	6.6		

27 Jan Study	0	1	4
FE 15 ppb spk **pH 12**	72%	75%	64%
FE 15 ppb spk **pH 10**	64%	45%	22%
FE 15 ppb spk **neutral**	56%	39%	19%
DI 15 ppb spk **pH 12**	95%	96%	97%
DI 15 ppb spk **pH 10**			
DI 15 ppb spk **neutral**			



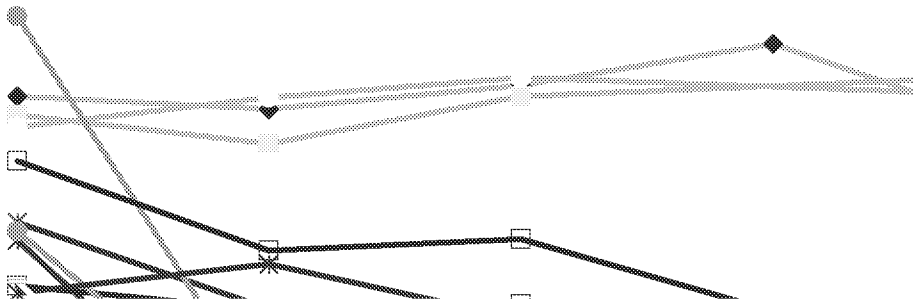
5 Jan Study	**0**	**1**	**2**	**4**	**5**
FE 15 ppb spk pH 12	0.771276596	0.542553191	0.542553191		0.574468085
FE 15 ppb spk pH 10	0.601092896	0.262295082	0.245901639		0.103825137
FE 15 ppb spk neutral	0.585106383	0.372340426	0.303191489		0.223404255
DI 15 ppb spk pH 12	0.817073171	0.847560976	0.829268293		0.847560976
DI 15 ppb spk pH 10	0.801242236	0.782608696	0.937888199		0.863354037
DI 15 ppb spk neutral	0.751552795	0.900621118	0.832298137		0.863354037

12 Jan Study	0	1	2
FE 15 ppb spk pH 12	0.788571429	0.702857143	0.697142857
FE 15 ppb spk pH 10	0.725609756	0.701219512	0.707317073
FE 15 ppb spk neutral	0.994219653	0.601156069	0.520231214
DI 15 ppb spk pH 12	0.906666667	0.86	0.926666667
DI 15 ppb spk pH 10	0.906666667	0.88	0.886666667
DI 15 ppb spk neutral	0.92	0.9	0.946666667

19-Jan	0	1	2	5
FE 15 ppb spk pH 12	0.469273743	0.245810056	0.195530726	0.12849162
FE 15 ppb spk pH 10	0.850299401	0.760479042	0.77245509	0.628742515
FE 15 ppb spk neutral	0.78021978	0.576923077	0.467032967	0.313186813
DI 15 ppb spk pH 12	0.98	0.94	1.02	0.913333333
DI 15 ppb spk pH 10	0.98	0.94	0.92	1.006666667
DI 15 ppb spk neutral	0.98	0.94	1.02	0.966666667

27 Jan Study	0	1	4
FE 15 ppb spk pH 12	0.718390805	0.747126437	0.637931034
FE 15 ppb spk pH 10	0.64	0.446666667	0.22
FE 15 ppb spk neutral	0.561403509	0.391812865	0.192982456
DI 15 ppb spk pH 12	0.953333333	0.96	0.966666667

Average	**1**	**2**	**3**	**5**	**6**
FE avg pH 12	69%	56%	48%		35%
FE avg pH 10	70%	54%	58%	22%	37%
FE avg neutral	73%	49%	43%	19%	27%
DI water pH 12	91%	90%	93%	97%	88%
DI water pH 10	90%	87%	91%		94%
DI water pH neutral	88%	91%	93%		92%

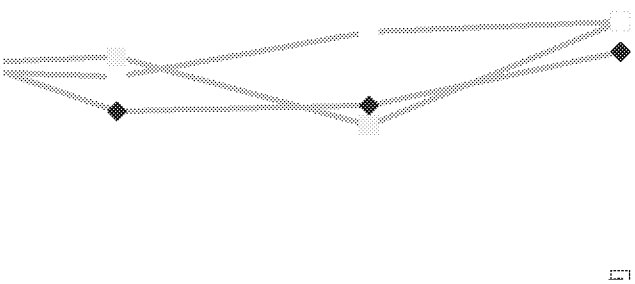


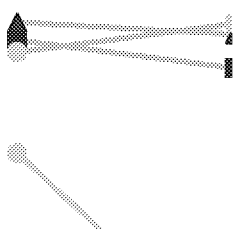
6	9

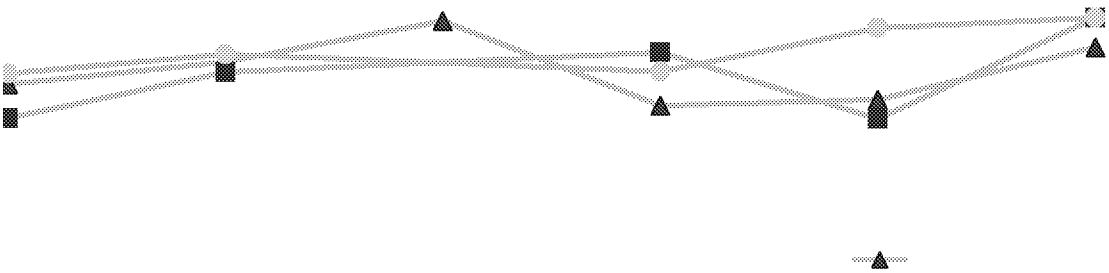
6	9
0.6	0.588571429
0.658536585	0.664634146
0.560693642	
0.886666667	0.94
0.866666667	0.92
0.96	0.98

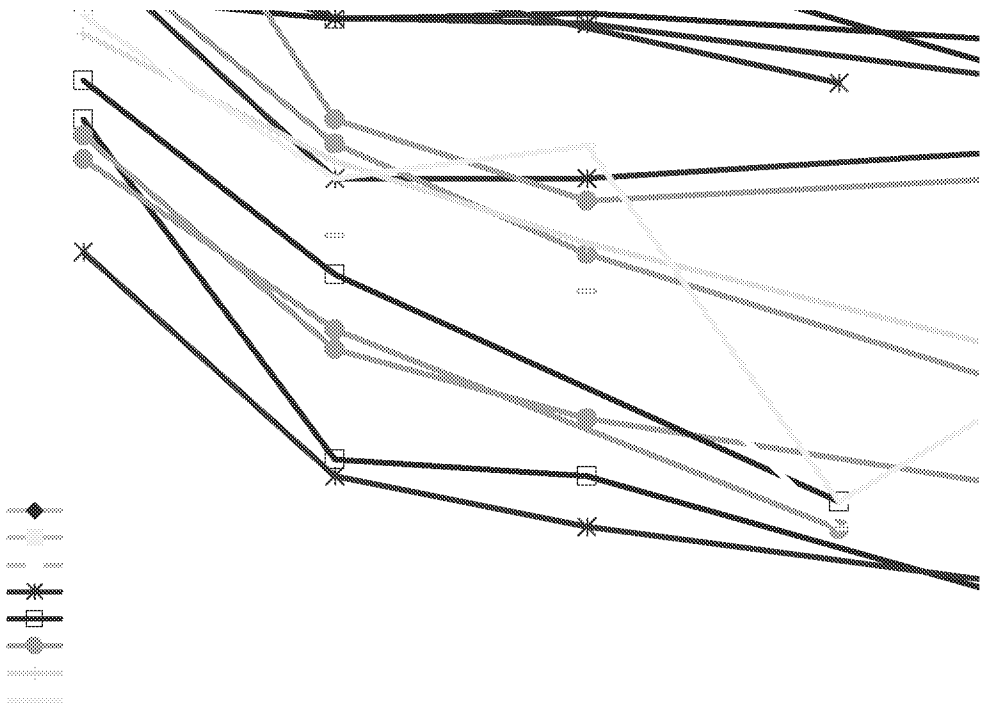
9
0.156424581
0.71257485
0.28021978
0.94
1.02
0.96

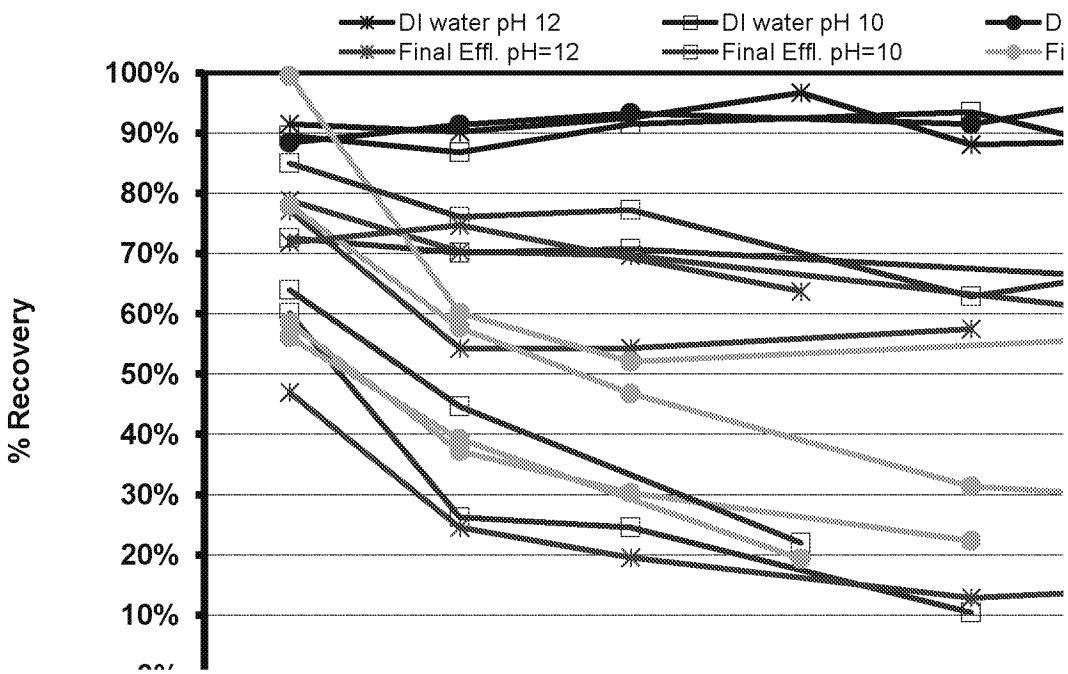
7	10
	37%
66%	69%
	28%
89%	94%
87%	97%
96%	97%

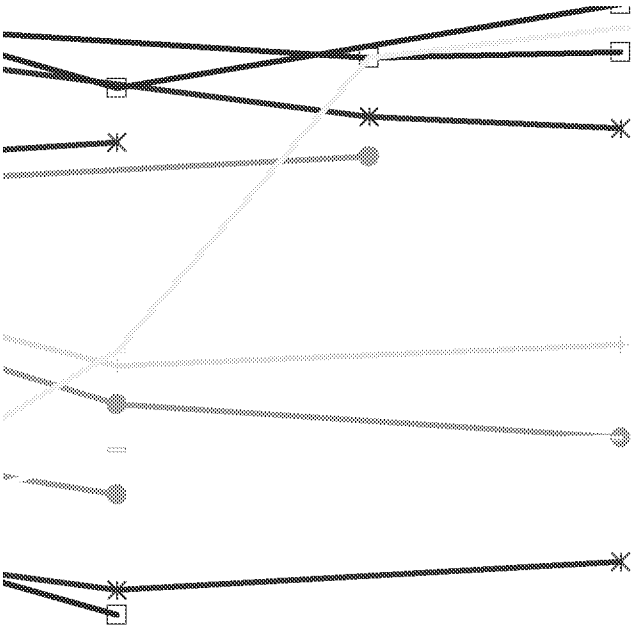


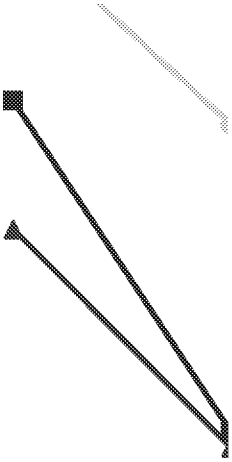




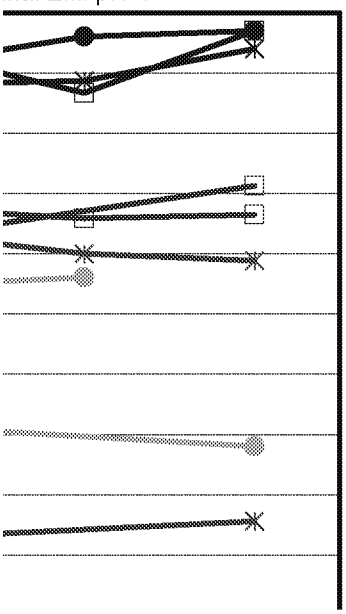


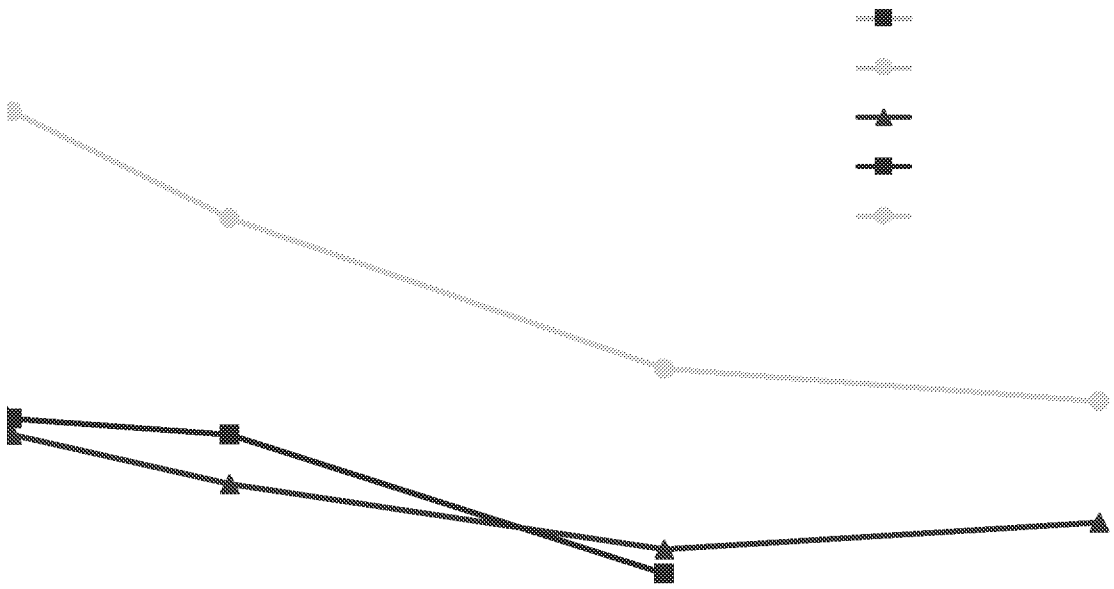

DI water pH 12
DI water pH 10
D
Final Effl. pH=12
Final Effl. pH=10
Fi
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
% Recovery

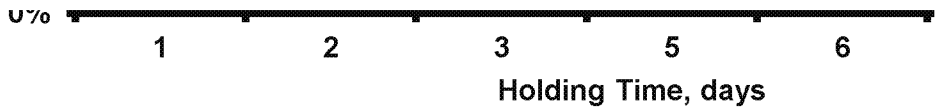




I water pH neutral
inal Effl. pH~7

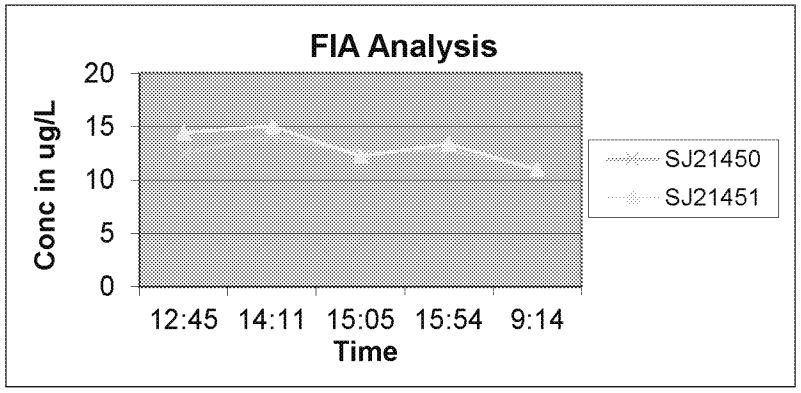





0%
1
2
3
5
6
Holding Time, days

7
10

Date		27-Jan-05	27-Jan-05	27-Jan-05	27-Jan-05	28-Jan-05
Time		12:45	14:11	15:05	15:54	9:14
Description						
FE 15 ppb spk **pH 12 FIA**	SJ21450	12.54	14.07	12.58	12.76	11.17
FE 15 ppb spk **pH 12** DUP **FIA**	SJ21451	14.44	15.05	12.25	13.38	10.99



Starting-Ending CN levels for 4 holding time studies

	5-Jan	12-Jan	19-Jan	27-Jan
pH 12	14-10	14-11	8-3	13-12
pH 10	10-4	12-11	14-12	10-3
unadjusted	10-2	15-10	14-6	13-6

	pH 12	pH 11	pH 10
1		4.7	2.9
2	11.1	4.3	2.5
6	11.5	2.9	1.2
12	10.2	2.6	1.4

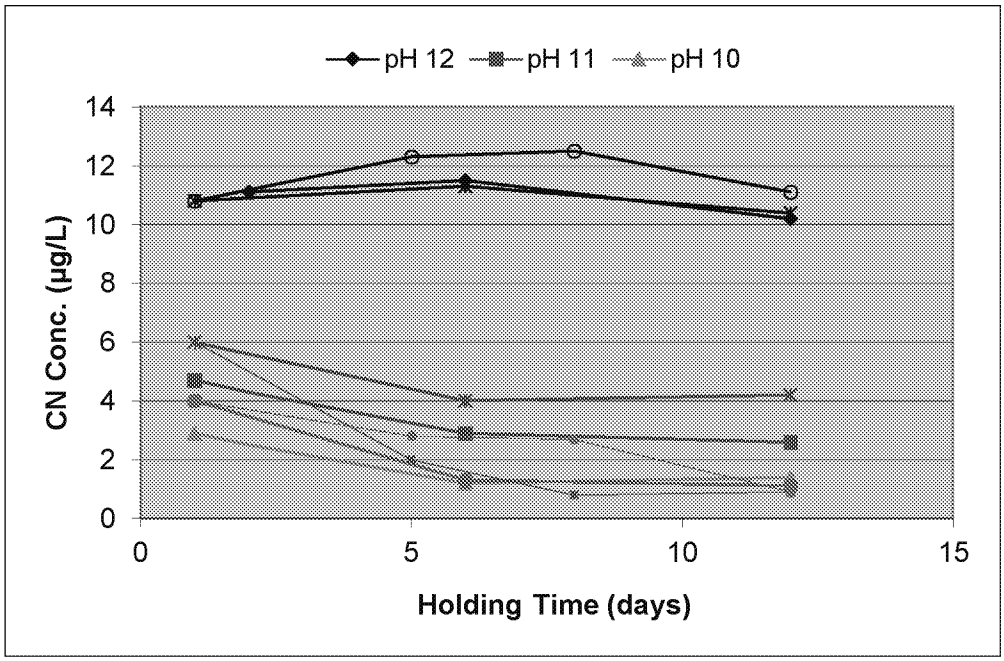
	pH 12	pH 11	pH 10
1	10.8	6	4
6	11.3	4	1.3
12	10.4	4.2	1.1

	pH 12
1	10.8
5	12.3
8	12.5
12	11.1

SJ 18714	SJ 18709	SJ 18708
SJ 19028	SJ 19027	SJ 19026
SJ 19129	SJ 19131	SJ 19130

15-Dec	Sample taken		
16-Dec	19171	19174	19173
21-Dec	19404	19407	19406
27-Dec	19463	19466	19465

22-Dec	Sample taken
23-Dec	19571
27-Dec	19617
30-Dec	19719
4-Jan	19875



pH 11	pH 10
6	4
2	2.8
0.8	2.7
0.9	0.9

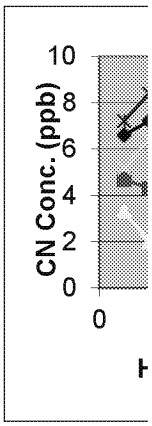
	pH 12	pH 11	pH 10	Outfall
1	6.2	3	2.4	4.9
5	5.4	1.5	0.9	3.1
1				
5				

		29-Dec	Sample taken			
19574	19573	30-Dec	19799	19802	19801	19800
19620	19619	3-Jan	19880	19883	19882	19881
19722	19721	30-Dec	20010	20013	20012	20011
19878	19877	4-Jan				

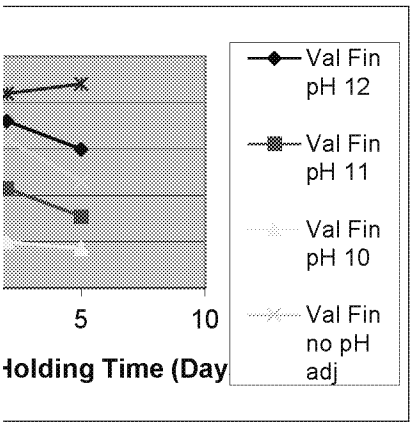
12-Jan	Sample Taken
13-Jan	20543

January 12 NPDES Valencia sample had hit (9.5 ppb). Reanalysis were continued on this.
Conclusion:

20953	21064	21135
20956	21067	21138
20955	21066	21137
20957	21063	21134
20954	21065	21136

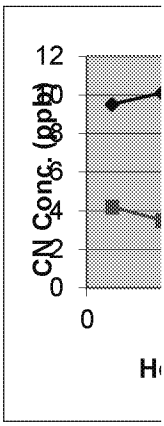
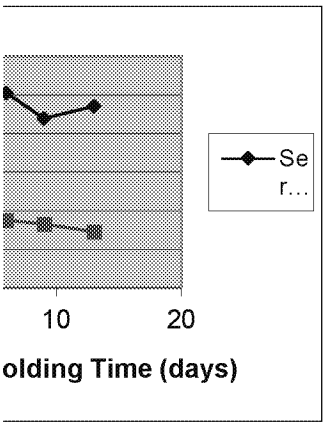


	1	2	5
Val Fin pH 12	6.6	7.2	6
Val Fin pH 11	4.7	4.3	3.1
Val Fin pH 10	3.3	2	1.7
Val Fin no pH adj	5.2	6.4	4.6
Val Outfall pH 12	7.2	8.4	8.8



January 12 NPDES Valencia sample had hit (9.5 ppb). Reanalysis were continued on this.
Conclusion:

	14-Jan	18-Jan	21-Jan
20543	20703	20747	21046
20542	20702	20746	21045



25-Jan	2	6	9	13
21191	9.5	10.1	8.8	9.4
21190	4.2	3.5	3.3	2.9