

**Air Monitoring Summary**  
**CSMRI Creekside Site Characterization**  
**June-August 2006**  
*results in uCi/ml*

	<b>June 16-23</b>	<b>June 23-30</b>	<b>June 30-July 10</b>	<b>July 10-17</b>	<b>July 17-24</b>	<b>July 24-31</b>	<b>July 31-Aug 7</b>
<b>AS North</b>	2.65E-15	3.25E-15	3.25E-15	4.21E-15	4.67E-15	5.46E-15	2.15E-15
<b>AS East</b>	1.41E-15	9.30E-16	3.79E-15	7.18E-16	4.88E-15	4.98E-15	2.78E-15
<b>AS South</b>	2.17E-15	2.75E-15	2.58E-15	3.83E-15	3.18E-15	2.72E-15	3.91E-16
<b>AS West</b>	7.97E-16	2.03E-15	1.67E-15	3.02E-15	2.03E-15	2.90E-15	2.69E-15

Effluent limit for Creekside mixture = 4.72 E-14 uCi/ml

## CSMRI Air Monitoring

Date(s) of air monitoring: June 16-23, 2006

Date air filters were counted: June 28, 2006

$$MDA (dpm) = \frac{\frac{2.71}{T_S} + 3.29 \sqrt{\frac{C_B}{T_S} + \frac{C_B}{T_B}}}{Eff}$$

Where:

$T_S$  = Count time for sample filter (minutes) =

10

$T_B$  = Count time for background (minutes) =

2

$C_B$  = Background count rate (cpm) =

0.9 alpha

Eff = Efficiency of detector =

0.2962

Calculated MDA = 9.08 dpm

Air Monitor No.	Start date	Start time	Start flowrate (lpm)	End date	End time	Total elapsed time (min)	End flowrate (lpm)	Avg Flow rate (l/min)	gross sample count rate (cpm)	net count rate (sample - bkgd) in cpm	Airborne activity concentration (uCi/ml)
AS-North	6/16/06	12:00	78	6/23/2006	15:49	10309	78	78	2.3	1.4	2.65E-15
AS-South	6/19/06	12:00	70	6/23/2006	16:14	6014	70	70	1.2	0.3	1.08E-15
AS-West	6/15/06	12:30	70	6/23/2006	16:05	11735	60	65	1.3	0.4	7.97E-16
AS-East	6/15/06	12:24	63	6/23/2006	16:10	11746	65	64	1.6	0.7	1.41E-15

Airborne activity concentration (uCi/ml) =  $\frac{\text{net count rate (cpm)} \times 4.5 \times 10^{-7} \text{ (uCi/dpm)}}{\text{sample volume (ml)} \times \text{efficiency (cpm/dpm)}}$  = 2.65E-15 uCi/ml

Effluent limit for Creekside mixture = 4.72 E-14 uCi/ml

## CSMRI Air Monitoring

Date(s) of air monitoring: June 23-30, 2006  
 Date air filters were counted: July 5, 2006

$$MDA (dpm) = \frac{\frac{2.71}{T_S} + 3.29 \sqrt{\frac{C_B}{T_S} + \frac{C_B}{T_B}}}{Eff}$$

Where:

$T_S$ =	Count time for sample filter (minutes) =	10
$T_B$ =	Count time for background (minutes) =	2
$C_B$ =	Background count rate (cpm) =	0.6 alpha
Eff =	Efficiency of detector =	0.2962

Calculated MDA = 7.58 dpm

Air Monitor No.	Start date	Start time	Start flowrate (lpm)	End date	End time	Total elapsed time (min)	End flowrate (lpm)	Avg Flow rate (l/min)	gross sample count rate (cpm)	net count rate (sample - bkgd in cpm)	Airborne activity concentration (uCi/ml)
AS North	6/23/06	15:51	82	6/30/06	15:36	10065	76	79	2.3	1.7	3.25E-15
AS East	6/23/06	16:12	70	6/30/06	15:43	10051	60	65	1	0.4	9.30E-16
AS South	6/23/06	16:16	74	6/30/06	15:48	10052	69	71.5	1.9	1.3	2.75E-15
AS West	6/23/06	16:07	70	6/30/06	15:32	10045	64	67	1.5	0.9	2.03E-15

Airborne activity concentration (uCi/ml) =  $\frac{\text{net count rate (cpm)} \times 4.5 \times 10^{-7} \text{ (uCi/dpm)}}{\text{sample volume (ml)} \times \text{efficiency (cpm/dpm)}} = 3.25E-15 \text{ uCi/ml}$

Effluent limit for Creekside mixture = 4.72 E-14 uCi/ml

## CSMRI Air Monitoring

Date(s) of air monitoring: June 30 - July 10, 2006

Date air filters were counted: July 13, 2006

$$MDA (dpm) = \frac{\frac{2.71}{T_S} + 3.29 \sqrt{\frac{C_B}{T_S} + \frac{C_B}{T_B}}}{Eff}$$

Where:

$T_S$  = Count time for sample filter (minutes) =

10

$T_B$  = Count time for background (minutes) =

2

$C_B$  = Background count rate (cpm) =

0.7 alpha

Eff = Efficiency of detector =

0.2962

Calculated MDA = 8.11 dpm

Air Monitor No.	Start date	Start time	Start flowrate (lpm)	End date	End time	Total elapsed time (min)	End flowrate (lpm)	Avg Flow rate (l/min)	gross sample count rate (cpm)	net count rate (sample - bkgd in cpm)	Airborne activity concentration (uCi/ml)
AS North	6/30/06	15:37	80	7/10/06	16:13	11916	85	82.5	2.8	2.1	3.25E-15
AS East	6/30/06	15:44	63	7/10/06	16:00	14416	65	64	3	2.3	3.79E-15
AS South	6/30/06	15:49	72	7/10/06	16:28	14439	75	73.5	2.5	1.8	2.58E-15
AS West	6/30/06	15:33	69	7/10/06	16:18	11925	68	68.5	1.6	0.9	1.67E-15

$$\text{Airborne activity concentration (uCi/ml)} = \frac{\text{net count rate (cpm)} \times 4.5 \times 10^{-7} \text{ (uCi/dpm)}}{\text{sample volume (ml)} \times \text{efficiency (cpm/dpm)}} = 3.25E-15 \text{ uCi/ml}$$

$$\text{Effluent limit for Creekside mixture} = 4.72 \text{ E-14 uCi/ml}$$

Note: air samplers AS-west and AS-north were not running on 7/5/06 in the am when we arrived on site.

Estimate they stopped 7/4/06 at 1800 due to heavy rain storm. Electrician fixed problem on 7/6/06 at 12:00 pm and AS-west and AS-north were restarted. Subtracted 42 hours from run time.

## CSMRI Air Monitoring

Date(s) of air monitoring: July 10-17, 2006

Date air filters were counted: July 21, 2006

$$MDA (dpm) = \frac{\frac{2.71}{T_S} + 3.29 \sqrt{\frac{C_B}{T_S} + \frac{C_B}{T_B}}}{Eff}$$

Where:

$T_S$  = Count time for sample filter (minutes) =

10

$T_B$  = Count time for background (minutes) =

2

$C_B$  = Background count rate (cpm) =

0.9 alpha

Eff = Efficiency of detector =

0.2962

Calculated MDA = 9.08 dpm

Air Monitor No.	Start date	Start time	Start flowrate (lpm)	End date	End time	Total elapsed time (min)	End flowrate (lpm)	Avg Flow rate (l/min)	gross sample count rate (cpm)	net count rate (sample - bkgd in cpm)	Airborne activity concentration (uCi/ml)
AS North	7/10/06	16:15	85	7/17/06	16:05	10070	80	82.5	3.2	2.3	4.21E-15
AS East	7/10/06	16:05	35	7/17/06	16:00	10075	49	42	1.1	0.2	7.18E-16
AS South	7/10/06	16:30	75	7/17/06	16:12	10062	75	75	2.8	1.9	3.83E-15
AS West	7/10/06	16:20	65	7/17/06	16:08	10068	65	65	2.2	1.3	3.02E-15

Airborne activity concentration (uCi/ml) =  $\frac{\text{net count rate (cpm)} \times 4.5 \times 10^{-7} \text{ (uCi/dpm)}}{\text{sample volume (ml)} \times \text{efficiency (cpm/dpm)}} = 4.21\text{E-15 uCi/ml}$

Effluent limit for Creekside mixture = 4.72 E-14 uCi/ml

### CSMRI Air Monitoring

Date(s) of air monitoring: July 17-24, 2006

Date air filters were counted: July 28, 2006

$$MDA (dpm) = \frac{\frac{2.71}{T_S} + 3.29 \sqrt{\frac{C_B}{T_S} + \frac{C_B}{T_B}}}{Eff}$$

Where:

T<sub>S</sub> = Count time for sample filter (minutes) =

10
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T<sub>B</sub> = Count time for background (minutes) =

2
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C<sub>B</sub> = Background count rate (cpm) =

0.9	alpha
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Eff = Efficiency of detector =

0.2962
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Calculated MDA = 9.08 dpm

Air Monitor No.	Start date	Start time	Start flowrate (lpm)	End date	End time	Total elapsed time (min)	End flowrate (lpm)	Avg Flow rate (l/min)	gross sample count rate (cpm)	net count rate (sample - bkgd in cpm)	Airborne activity concentration (uCi/ml)
AS North	7/17/06	16:05	82	7/24/2006	15:32	10047	80	81	3.4	2.5	4.67E-15
AS East	7/17/06	16:00	49	7/24/2006	15:36	10056	50	49.5	2.5	1.6	4.88E-15
AS South	7/17/06	16:12	77	7/24/2006	15:39	10047	75	76	2.5	1.6	3.18E-15
AS West	7/17/06	16:08	66	7/24/2006	15:28	10040	68	67	1.8	0.9	2.03E-15

Airborne activity concentration (uCi/ml) =  $\frac{\text{net count rate (cpm)} \times 4.5 \times 10^{-7} \text{ (uCi/dpm)}}{\text{sample volume (ml)} \times \text{efficiency (cpm/dpm)}} = 4.67\text{E-}15 \text{ uCi/ml}$

Effluent limit for Creekside mixture = 4.72 E-14 uCi/ml

### CSMRI Air Monitoring

Date(s) of air monitoring: July 24-31, 2006  
 Date air filters were counted: August 7, 2006

$$MDA (dpm) = \frac{\frac{2.71}{T_s} + 3.29 \sqrt{\frac{C_B}{T_s} + \frac{C_B}{T_B}}}{Eff}$$

Where:

T <sub>S</sub> =	Count time for sample filter (minutes) =	10	
T <sub>B</sub> =	Count time for background (minutes) =	2	
C <sub>B</sub> =	Background count rate (cpm) =	0.4	alpha
Eff =	Efficiency of detector =	0.2962	

Calculated MDA = 6.36 dpm

Air Monitor No.	Start date	Start time	Start flowrate (lpm)	End date	End time	Total elapsed time (min)	End flowrate (lpm)	Avg Flow rate (l/min)	gross sample count rate (cpm)	net count rate (sample - bkgd in cpm)	Airborne activity concentration (uCi/ml)
AS North	7/24/2006	15:32	80	7/31/2006	15:38	10086	80	80	3.3	2.9	5.46E-15
AS East	7/24/2006	15:36	55	7/31/2006	15:35	10079	54	54.5	2.2	1.8	4.98E-15
AS South	7/24/2006	15:39	80	7/31/2006	15:45	10086	75	77.5	1.8	1.4	2.72E-15
AS West	7/24/2006	15:28	70	7/31/2006	15:41	10093	65	67.5	1.7	1.3	2.90E-15

Airborne activity concentration (uCi/ml) =  $\frac{\text{net count rate (cpm)} \times 4.5 \times 10^{-7} \text{ (uCi/dpm)}}{\text{sample volume (ml)} \times \text{efficiency (cpm/dpm)}} = 5.46\text{E-15 uCi/ml}$

Effluent limit for Creekside mixture = 4.72 E-14 uCi/ml

## CSMRI Air Monitoring

Date(s) of air monitoring: July 31-Aug 7, 2006

Date air filters were counted: August 21, 2006

$$MDA (dpm) = \frac{\frac{2.71}{T_S} + 3.29 \sqrt{\frac{C_B}{T_S} + \frac{C_B}{T_B}}}{Eff}$$

Where:

$T_S$  = Count time for sample filter (minutes) =

10

$T_B$  = Count time for background (minutes) =

2

$C_B$  = Background count rate (cpm) =

0.7 alpha

Eff = Efficiency of detector =

0.2962

Calculated MDA = 8.11 dpm

Air Monitor No.	Start date	Start time	Start flowrate (lpm)	End date	End time	Total elapsed time (min)	End flowrate (lpm)	Avg Flow rate (l/min)	gross sample count rate (cpm)	net count rate (sample - bkgd in cpm)	Airborne activity concentration (uCi/ml)
AS North	7/31/06	15:38	80	8/7/06	14:53	10035	75	77.5	1.8	1.1	2.15E-15
AS East	7/31/06	15:35	54	8/7/06	15:00	10045	55	54.5	1.7	1	2.78E-15
AS South	7/31/06	15:45	75	8/7/06	15:05	10040	80	77.5	0.9	0.2	3.91E-16
AS West	7/31/06	15:41	70	8/7/06	14:56	10035	65	67.5	1.9	1.2	2.69E-15

Airborne activity concentration (uCi/ml) =  $\frac{\text{net count rate (cpm)} \times 4.5 \times 10^{-7} \text{ (uCi/dpm)}}{\text{sample volume (ml)} \times \text{efficiency (cpm/dpm)}} = 2.15E-15 \text{ uCi/ml}$

Effluent limit for Creekside mixture = 4.72 E-14 uCi/ml