

TRI-PARTY AGREEMENT

Change Notice Number

TPA CHANGE NOTICE FORM

Date:

TPA-CN- 679

8/13/2015

Document Number, Title, and Revision:

Date Document Last Issued:

PNNL-12220, "Sampling and Analysis Plan Update for Groundwater Monitoring 1100-EM-1 Operable Unit"

June 1999

0093887

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Description of Change:

This change notice retires use of PNNL-12220, *Sampling and Analysis Plan Update for Groundwater Monitoring 1100-EM-1 Operable Unit*, issued in June, 1999, and any associated TPA changes notices, for the National Priority List (NPL) delisted 1100-EM-1 Groundwater Operable Unit.

H.B. Hathaway

and D.R. Einarson

agree that the proposed change

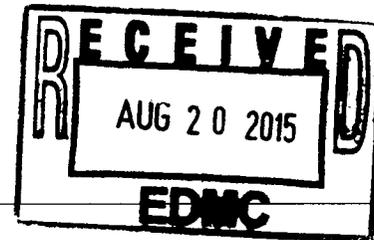


DOE



Lead Regulatory Agency

modifies an approved workplan/document and will be processed in accordance with the Tri-Party Agreement Action Plan, Section 9.0, *Documentation and Records*, and not Chapter 12.0, *Changes to the Agreement*.



Justification and Impacts of Change:

Summary

The monitored natural attenuation (MNA) remedy selected for 1100-EM-1 groundwater has been completed and the 1100 Area was delisted from the National Priorities List, but groundwater monitoring was required annually in three wells. Because contaminant concentrations in monitoring wells have continued to meet cleanup goals, groundwater monitoring may be discontinued. The original SAP did not provide an avenue to cease groundwater monitoring, nor did a subsequent change notice.

Background

In 1993 EPA, Ecology, and DOE signed a ROD for the 1100 Area, including the 1100-EM-1 groundwater Operable Unit (EPA/ROD/R10-93/063). The ROD had a groundwater component that relied on MNA for trichloroethene (TCE), with a cleanup level of 5 µg/L at the designated point of compliance. The point of compliance was defined as the George Washington Way diagonal line (Figure 1).

The ROD identified TCE as the risk-driver for groundwater. Vinyl chloride and 1,1-dichloroethene were identified as TCE breakdown products. Nitrate and chromium were not decision drivers but were initially included for monitoring. Groundwater monitoring requirements were described in DOE/RL-95-50, later replaced by PNNL-12220.

In 2006, the second CERCLA 5-year review (DOE/RL-2006-20) concluded that remedies selected for the 1100-EM-1 OU had been completed, that is, the remedial action objectives established in the ROD had been achieved and were considered protective of human health and the environment. As a result, the 1100 Area was removed from the National Priorities List and DOE, EPA, and Ecology agreed to a change (reduction) in groundwater monitoring. The new monitoring requirements were described in TPA-CN-163 and were intended to provide assurance that the remedial action goals had been achieved. TPA-CN-163 also stated that monitoring of nitrate and uranium near the DOE Horn Rapids Landfill would

continue under the environmental monitoring activities performed to meet the AEA objectives, and monitoring associated with the 300-FF-5 OU will continue to evaluate TCE concentrations northeast of 1100-EM-1 near the river.

The third CERCLA 5-year review in 2012 (DOE/RL-2011-56) did not recommend any change to 1100-EM-1 monitoring, simply noting, "Previous groundwater monitoring indicated trichloroethylene contamination; however, recent monitoring has showed that these levels are not over the cleanup standard. Additional cleanup actions have taken place to achieve the cleanup goals and standards."

Currently, monitoring of nitrate and uranium near the landfill, as well as tritium near the City of Richland's water supply wells, is described in DOE/RL-2012-59 (Surveillance Monitoring Plan). TCE is a contaminant of concern for 300-FF-5. The current monitoring requirements in DOE/RL-2012 include annual sampling for Wells 699-S28-E12, 699-S31-E10A, and 699-S31-E10C (Figure 1) for TCE, vinyl chloride, and 1, 2-dichloroethene.

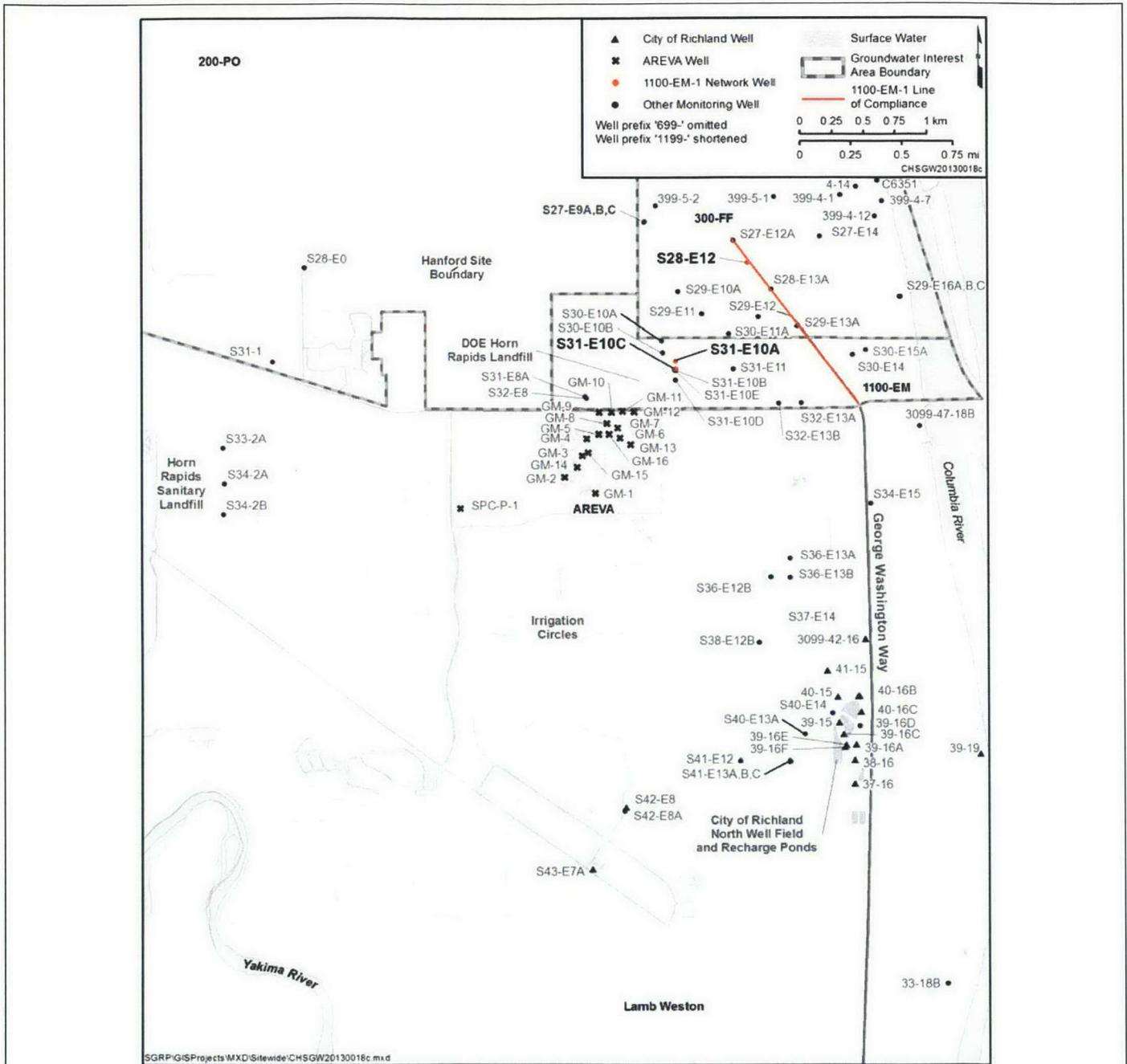


Figure 1. Location of 1100-EM-1 Line of Compliance and Monitoring Wells

Data Evaluation

TCE concentrations in compliance wells have remained below the 5 µg/L cleanup level since 2001 (Table 1). Detection limits in the early 1990s were sometimes greater than the cleanup level, but since the mid-1990s the detection limits have been less than or equal to 1 µg/L. A complete listing of TCE, 1,1-dichloroethene, and vinyl chloride data for the three wells from 1993 through 2014 can be found at the end of this documentation.

The upper panel of Figure 2 illustrates concentrations of TCE from 1993 through 2014. The lower panel shows detail for the period 2006 through 2014. Concentrations declined between 1993 and 2007, and have remained near or below 1 µg/L between 2008 and 2014.

Breakdown products vinyl chloride and 1,1-DCE have been undetected since 1995, with detection limits less than or equal to 1 µg/L. Thus there is no evidence of TCE breakdown products.

Table 1. Summary of Trichloroethene Data in 1100-EM-1 Compliance Wells

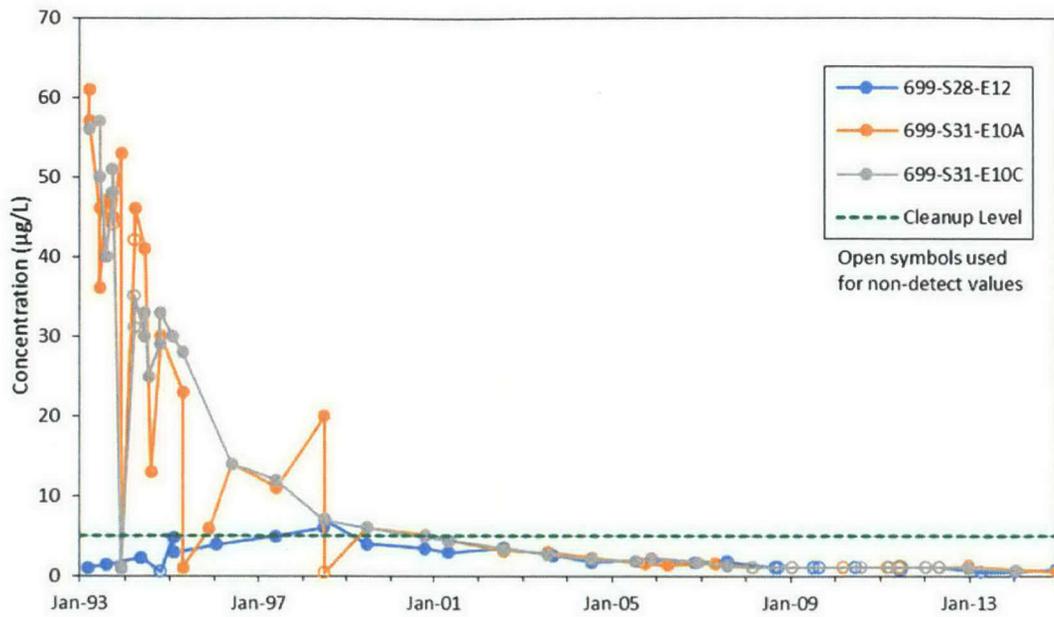
Well Name	Number of Data points (1993 through 2014)	Maximum TCE Detection (µg/L)	Date of Max. Detection	Date of Last Exceedance of 5 µg/L Cleanup Level
699-S28-E12	32	7	6/30/1998	6/30/1998
699-S31-E10A	40	61	3/16/1993	10/11/2000
699-S31-E10C	39	57	6/9/1993	6/14/1999

Conclusion

TCE concentrations have met cleanup goals in all three 1100-EM-1 compliance wells since 2001. Data from thirteen years of subsequent sampling confirm that concentrations are stable at levels well below the cleanup goal. No further groundwater monitoring is needed for 1100-EM-1.

DOE performs other groundwater monitoring in and near the southern Hanford Site. This monitoring includes nitrate and uranium from offsite sources, tritium near the City of Richland's water supply wells, and uranium and volatile organics in the 300-FF-5 groundwater OU.

Trichloroethene



Trichloroethene Detail

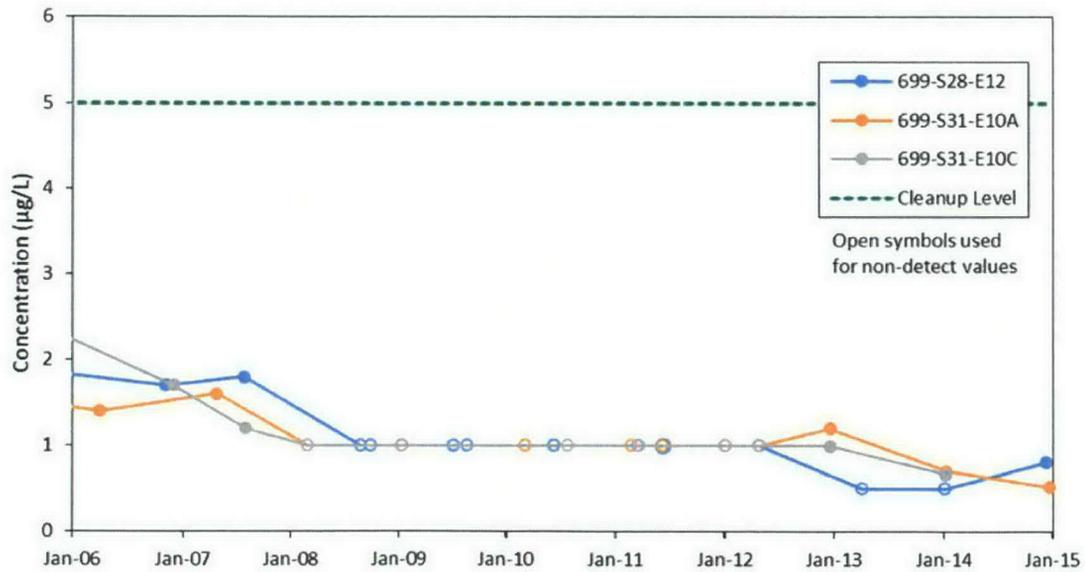


Figure 2. Trichloroethene in 1100-EM-1 Compliance Wells (non-detects are plotted at the detection limit)

References

- DOE/RL-95-50, 1995, *Additional Monitoring Well Installation and Field Sampling Plan for Continued Groundwater Monitoring at the Horn Rapids Landfill*, U.S. Department of Energy, Richland, Washington.
- DOE/RL-2006-20, 2006, *The Second CERCLA Five-Year Review Report for the Hanford Site, Rev. 1*, U.S. Department of Energy, Richland Operations Office, Richland, Washington. Available at: <http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=DA04570094>.
- DOE/RL-2011-56, Rev. 1., 2012, *Hanford Site Third CERCLA Five-Year Review Report*, U.S. Department of Energy, Richland, Washington. Available at: http://www.hanford.gov/files.cfm/DOE-RL-2011-56_Rev%201_2-28-12_.pdf
- DOE/RL-2012-59, 2013, *Surveillance Groundwater Monitoring Plan for the Hanford Site*, U.S. Department of Energy, Richland, Washington.
- EPA/ROD/R10-93/063, 1993, *Record of Decision for the USDOE Hanford 1100 Area Final Remedial Action*, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington. Available at: <http://www.epa.gov/superfund/sites/rods/fulltext/r1093063.pdf>.
- PNNL-12220, 1999, *Sampling and Analysis Plan Update for Groundwater Monitoring – 1100-EM-1 Operable Unit*, Pacific Northwest National Laboratory, Richland, Washington. Available at: <http://pdw.hanford.gov/arpir/pdf.cfm?accession=0084082>
- TPA-CN-163, 2007, *Change Notice for Modifying Approved Documents/Workplans In Accordance with the Tri-Party Agreement Action Plan, Section 9.0, Documentation and Records: PNNL-12220, "Sampling and Analysis Plan Update for Groundwater Monitoring 1100-EM-1 Operable Unit"*, dated April 24, U.S. Environmental Protection Agency and U.S. Department of Energy, Richland Operations Office, Richland, Washington. Available at: <http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=DA05317392>.

Monitoring Data for 1100-EM-1

Well Name	Sample Date	Trichloroethene (µg/L)	1,1-Dichloroethene (µg/L)	Vinyl Chloride (µg/L)
699-S28-E12	3/12/1993		10 U	10 U
	7/30/1993	1.4		
	5/10/1994	2.3		
	10/17/1994	0.5 U		
	1/26/1995	4.8		0 U
	1/26/1995	2.9		
	1/17/1996	3.9		0.25 U
	5/22/1997	5	1 U	1 U
	6/19/1998	6	0.19 U	0.68 U
	6/30/1998	7		0.68 U
	6/14/1999	4 J	0.15 U	0.1 U
	10/11/2000	3.4	0.23 U	0.17 U
	5/2/2001	2.9 J		0.17 U
	7/25/2002	3.5 J	0.39 U	0.32 U
	7/25/2002	3.5 J	0.39 U	0.32 U
	9/10/2003	2.6	0.16 U	0.25 U
	7/13/2004	1.7	0.07 U	0.08 U
	7/14/2005	1.9 B	0.04 U	0.07 U
	11/6/2006	1.7	0.21 U	0.23 U
	7/27/2007	1.8	0.045 U	0.04 U
	8/26/2008	1 U	1 U	1 U
	9/28/2008	1 U	1 U	1 U
	7/9/2009	1 U	1 U	1 U
	8/25/2009	1 U	1 U	1 U
	6/10/2010	1 U	1 U	1 U
699-S28-E12 (cont.)	3/17/2011	1 U	1 U	1 U
	6/8/2011	1 U	1 U	1 U

	6/8/2011	1	U	1	U	1	U
	4/24/2012	1	U	1	U	1	U
	4/4/2013	0.5	U	1	UT	1	U
	1/7/2014	0.5	U	1	U	1	U
	12/10/2014	0.81	J	0.3	U	0.3	U
699-S31-E10A	3/16/1993	61		10	U	10	U
	3/16/1993	57		10	U	10	U
	6/8/1993	46		10	U	10	U
	6/8/1993	36		5	U	10	U
	8/3/1993	47					
	9/22/1993	45	U	5	U	10	U
	9/22/1993	44	U	10	U	10	U
	11/30/1993	53		1		1	
	11/30/1993	1		5	U	5	U
	3/22/1994	42	U	0.6	U	1	U
	3/22/1994	46		1	U	0.5	U
	6/7/1994	41		0.6	U	0.5	U
	7/26/1994	13					
	10/12/1994	30		1	U	1	U
	4/12/1995	23		3	U	1	
	4/12/1995	1		2.6	J	3	
	11/17/1995	5.9				0.25	U
	5/22/1996	14		5	U	10	U
	5/22/1997	11		1	U	1	U
699-S31-E10A (cont.)	6/22/1998	20		0.19	U	0.68	U
	6/22/1998	0.4	U			0.68	U
	6/14/1999	6		0.15	U	0.1	U
	10/11/2000	5.1		0.23	U	0.17	U
	5/1/2001	4.4	J			0.17	U
	7/26/2002	3.1	J	0.39	U	0.32	U

	7/22/2003	2.9		0.16	U	0.25	U
	7/14/2004	2.3		0.07	U	0.08	U
	9/29/2005	1.5		0.04	U	0.07	U
	3/29/2006	1.4		0.21	U	0.23	U
	4/25/2007	1.6		0.045	U	0.04	U
	2/27/2008	1	U	1	U	1	U
	1/13/2009	1	U	1	U	1	U
	3/4/2010	1	U	1	U	1	U
	2/24/2011	1	U	1	U	1	U
	6/8/2011	1	U	1	U	1	U
	1/4/2012	1	U	1	U	1	U
	4/24/2012	1	U	1	U	1	U
	12/18/2012	1.2	J	1	U	1	U
	1/9/2014	0.71	J	1	U	1	U
	12/21/2014	0.52	J	0.08	U	0.08	U
699-S31-E10C	3/15/1993	56		10	U	10	UJ
	6/9/1993	57		5	U	10	U
	6/9/1993	50		5	U	10	U
	8/3/1993	40					
	9/21/1993	48	U	5	U	10	U
699-S31-E10C (cont.)	9/21/1993	51	U	5	U	10	U
	11/30/1993	1		1		1	
	11/30/1993	1		1		1	
	3/21/1994	31	U	1	U	1	U
	3/21/1994	35	U	1	U	1	U
	6/6/1994	30		0.6	U	0.5	U
	6/6/1994	33		0.6	U	0.5	U
	7/8/1994	25					
	10/11/1994	29		1	U	1	U
	10/11/1994	33		1	U	1	U

	1/23/1995	30				
	4/11/1995	28		2.6	J	3
	5/22/1996	14		5	U	10 U
	5/20/1997	12	B	1	U	1 U
	6/19/1998	7		0.19	U	0.68 U
	6/14/1999	6	G	0.15	U	0.1 U
	10/11/2000	4.9		0.23	U	0.17 U
	5/1/2001	4.4	J			0.17 U
	7/26/2002	3.4	J	0.39	U	0.32 U
	7/22/2003	2.7		0.16	U	0.25 U
	7/14/2004	2.1		0.07	U	0.08 U
	7/19/2005	1.9	G	0.04	U G	0.07 U G
	11/18/2005	2.3		0.04	U	0.07 U
	11/30/2006	1.7		0.21	U	0.23 U
	8/1/2007	1.2		0.045	U	0.04 U
	2/27/2008	1	U	1	U	1 U
699-S31-E10C (cont.)	1/13/2009	1	U	1	U	1 U
	7/28/2010	1	U	1	U	1 U
	3/23/2011	1	U	1	U	1 U
	1/4/2012	1	U	1	U	1 U
	4/24/2012	1	U	1	U	1 U
	12/18/2012	1	U	1	U	1 U
	12/18/2012	1	J	1	U	1 U
	1/9/2014	0.67	J	1	U	1 U

Green shading indicated trichloroethene concentrations above 5 µg/L cleanup level.

B = Analyte was detected in both the associated quality control blank and in the sample

G = Record has been reviewed and determined to be correct, or the record has been corrected with laboratory confirmation or other supporting information

J = Estimated value; constituent detected at a level less than the required detection limit or practical quantitation limit, but greater than or equal to the method detection limit

T = Spike or spike duplicate sample recovery outside control limits

U = Undetected (reported value is method detection limit)

Approvals:

H. Boyd Atkinson
DOE Project Manager

8/13/15
Date

Approved Disapproved

[Signature]
EPA Project Manager

13 Aug 15
Date

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N/A

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Ecology Project Manager

Date