



United States
Environmental Protection
Agency

National River and Stream Assessment 2008-09

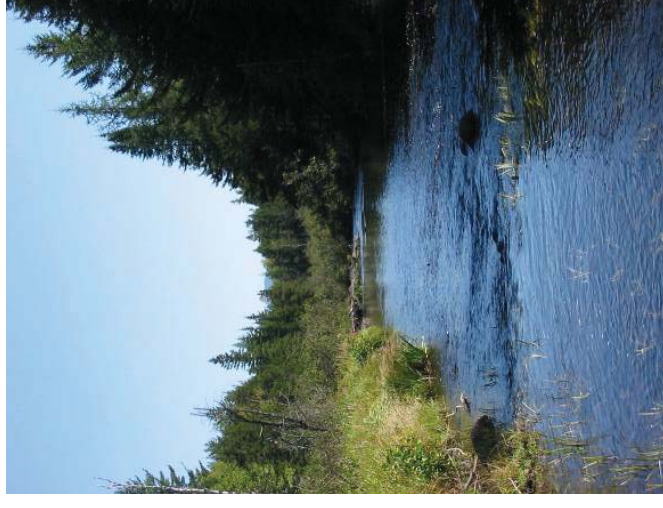
Survey Design & Extent Estimates



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What flowing waters are included in the NRSA ?

- Target population definition
 - All streams and rivers within the 48 contiguous states that have flowing water during the study index period
 - Includes run-of-the-river ponds and pools
 - Great Rivers
- Excludes
 - Tidal rivers to head-of-salt
 - Reservoirs
 - Canals, ditches





NRSA Sample Frame derived from NHD-Plus

- NHD-Plus FTYPES included
 - Stream/river perennial & Stream/river
 - Stream/river intermittent
 - in states east of 96th meridian
 - if 5th & higher and in states west of 96th meridian
 - Artificial path if not in lake/reservoir
 - Canal/ditch & Connectors
 - Aquaduct (at or near surface)
- Excluded all other stream/river intermittent and pipelines



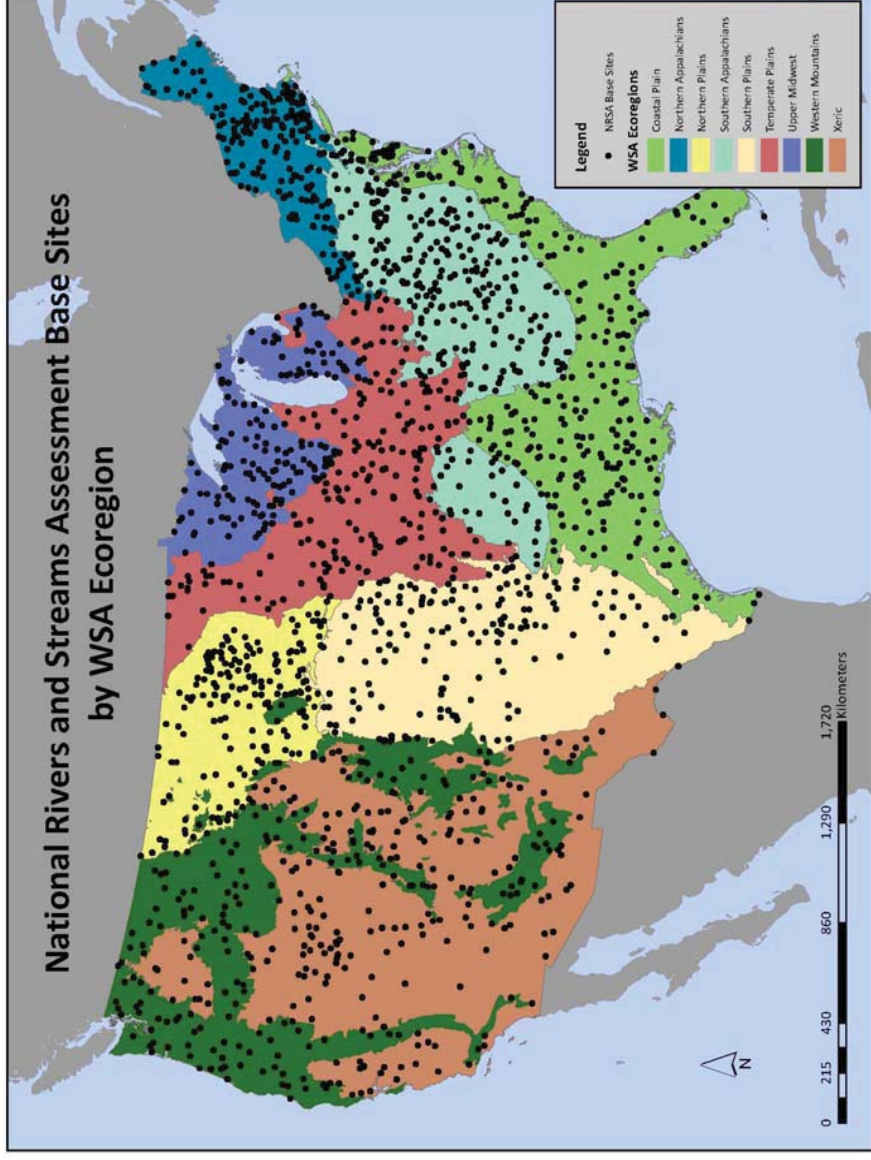
Survey design Requirements

- National design: 1800 sites
 - Rivers: Strahler order 5th and higher: 900 sites
 - Streams: Strahler order 1st to 4th: 900 sites
 - Repeat sites from WSA: 450 wadeable
 - New sites: 450 1st to 4th
- Nine Ecological Reporting Regions: 200 sites/region
 - Rivers: 100 sites/region
 - Streams: 100 sites/region
- Revisit sites in 2008-9: 192 sites, 4/state
- Unequal probability within the above groups



National Rivers and Streams Assessment

**1926 sites sampled
on rivers and
streams in the
conterminous
United States for
use in 2008-9
NRSA**





Summary of Sites Evaluated

Strahler Order	NRSA New Sites	WSA Repeat Sites	Total	Expected # New Sites	Sites Evaluated per Expected # Sites
1 st	642	99	741	113	5.7
2 nd	290	144	434	113	2.6
3 rd	240	112	352	112	2.1
4 th	248	56	304	112	2.2
1 st to 4 th	1420	411	1831	450	3.2
5 th	557	25	582	350	1.7
6 th	430	14	444	275	1.6
7 th +	401	-	401	275	1.5
5 th & Higher	1388	39	1427	900	1.5
Total	2808	450	3258	1350	2.1



Estimated Portion of Sample Frame: Target, Assumed Target, Non-Target

	Percent of Sample Frame			Km of Sample Frame (1000s)			
	Target	Target Assumed	Non-Target	Target	Target Assumed	Non-Target	Total
National	62.0	14.5	23.5	1,970	461	748	3,179
CPL	42.7	17.9	39.4	300	125	276	702
NAP	75.8	8.2	16.0	192	21	40	253
SAP	78.0	11.3	10.7	520	76	72	667
UMW	66.2	5.5	28.3	156	13	67	236
TPL	70.7	12.9	16.4	367	67	85	519
NPL	66.4	14.7	18.8	46	10	13	69
SPL	65.3	14.7	20.0	62	14	19	95
WTM	58.0	25.0	17.0	251	108	73	432
XER	37.0	13.4	49.6	76	28	102	205

Margin of error < 3.5%



Estimated Percent of Target Rivers and Streams: Sampled & Reason Not Sampled

	Percent of Target Rivers & Streams			
	Sampled	Not Sampled Landowner No Access	Not Sampled Inaccessible	Not Sampled Other Reason
National	79.0	13.2	5.8	2.0
CPL	66.8	21.0	8.6	3.6
NAP	90.1	5.3	4.5	0.1
SAP	85.1	9.7	3.0	2.2
UMW	91.4	4.8	2.8	1.0
TPL	84.3	14.9	0.5	0.2
NPL	77.9	18.1	0.0	4.0
SPL	77.1	16.7	1.7	4.5
WTM	67.8	12.2	17.9	2.1
XER	70.0	22.0	4.6	3.4

Margin of error < 4%



Estimated Percent of Non-Target Rivers and Streams: Reason Non-Target

		Percent of Non-Target Rivers & Streams							
	Non-Perennial	Canal	Wetland	Impounded	Tidal	Map Error	Other		
National	64.5	15.7	5.8	5.4	5.0	3.0	0.6		
CPL	53.7	17.5	8.4	5.3	12.8	1.8	0.5		
NAP	49.3	4.7	17.8	13.4	0.1	14.1	0.6		
SAP	84.2	0.2	2.1	13.5	-	-	-		
UMW	82.1	4.9	10.0	3.0	-	0.1	-		
TPL	86.2	10.9	2.6	-	-	0.3	-		
NPL	53.5	34.3	5.9	0.7	-	-	5.6		
SPL	74.1	22.8	-	3.1	-	-	-		
WTM	74.2	9.1	-	6.6	1.3	5.9	2.9		
XER	48.8	38.1	2.1	3.1	1.1	6.8	-		

Margin of error < 6%

