MATRIX v.1.1: Waterway Assessment Methods

Table A: Assessment Methods -
What area(s) of waterway management are we assessing?

No.	Assessment Methods	Acronym	Description (Developer)	Areas (aka categories)											
				Stream Morphology	Floodplain and Floodway Designation	Storm water Runoff	Hydrology and Hydraulics	Sediment Supplies and Dynamics	Water Quality	Indicators of Watershed Health	Riparian Systems	Instream Habitat	Bird Habitat	Fish Habitat	Amphibian and Reptile Habitat
	Guy Ziv														
	InVEST Annual Water Yield model	InVEST-Water Yield	Estimates annual amount of water available for multiple users within			x									
	InVEST Sediment Retention Model	InVEST-Sediment	Estimate the amount of sediments exported and retained on the landscape	x				x			x				
	InVEST Nutrient Retention model	InVEST-Nutrient	Estimate the amount of N and P exported and retained on the landscape	x					x		x				
	InVEST Habitat Quality model	InVEST-Habitat Quality	Estimate the quality of terrestrial habitat based on intrinsic quality and spatial threats										x		x
	InVEST Habitat Risk Assessment model	InVEST-HRA	Estimate risk to habitat or species, based on aggregated stressors with different exposure and consequence levels										x		x
	Christina Sloop														
	Bird - Area Search		http://data.prbo.org/cadc2/index.php?page=songbird-area-searches	x	x					x	x		x		
	Birds - Point Counts		http://data.prbo.org/cadc2/index.php?page=songbird-point-counts	x	x					x	x		x		
	IBI - macro invertebrates		http://water.epa.gov/type/wetlands/assessment/fact5.cfm			x				x		x		x	
	Eric Stein														
	California Rapid Assessment Method	CRAM	stream and wetland condition assessment (SCCWRP, SFEI, MLML)	x	x						x	x			
	California Stream Condition Index	CSCI	benthic invertebrate assessment - replaces old IBI (SWRCB, DFG, USGS, SCCWRP)						x		x				
	Periphyton IBI	PIBI	stream algae bioassessment (SCCWRP, SWRCB)						x		x				
	Physical Habitat Assessment	PHAB	stream physical habitat assessment (EPA, DFG, SWRCB)	x								x		x	
	Hydromodification Risk Assessment	none	screens sites based on susceptibility to hydromod (SCCWRP, CSU-Ft. Collins)	x	x	x	x	x				x			

	Healthy Watersheds Initiative	HWI	GIS based assessment of condition and vulnerability at HUC 12 level (EPA)		x	x	x	x		x						
	Tom Griggs															
	Riparian Restoration Design															
	Joshua Fuller															
	Stream Visual Assessment Protocol	SVAP	Qualitative evaluation of the condition of aquatic ecosystems of wadeable streams. (USDA NRCS)	x	x					x	x	x	x	x	x	
	Intrinsic Potential Model	IP-km Model	Stream gradient, channel width, annual discharge model to assess potential production capacity of salmonid habitat				x					x		x		
	Environmental Diagnostic Treatment Model	EDT Model	Use of many parameters to evaluate production capacity of potential salmonid				x					x		x		
	CDFG Habitat Typing	HAB 8	Field observation methodology for assesses habitat features, quality and extent	x								x		x		
	Expert Habitat Mapping	EHM	High resolution assessment of salmonid habitat under a range of flow conditions				x					x		x		
	PHABSIM	PHABSIM	Habitat flow relationship model				x					x		x		
	Gretchen Hayes															
	River Rutherford Reach Restoration Project		Monitoring protocols used for the Napa River Rutherford Reach Restoration Project	x	x			x			x	x		x	x	
	Fraser Shilling															
	California Water Plan, Water Sustainability Indicator Framework	CWP-SIF	Multiple indicator based approach, uses distance to target method (Shilling et al., 2007)	x	x	x	x	x	x	x	x	x	x	x	x	
	Josh Collins															
	Proper Functioning Condition	PFC														
	Watershed Assessment of River Stability & Sediment Supply	WARSSS	http://water.epa.gov/scitech/datait/tools/warsss/index.cfm													
	WRAMP Framework and Tool Set	(CARI, CRAM, Riparian Width Estimator, Landscape Profile Tool, EcoAtlas, Status and Trends, etc.)	Statewide framework for comprehensive assessment of aquatic resources with a focus on wetlands and associated riparian areas, with intended application across federal and state water quality and willdife protection programs. Collectivley the WRAMP tools addresss each category to some degree.	x	x	x	x	x	x	x	x	x	x	x	x	

MATRIX v.1: Watershed / Waterway Assessment Methods
Table B: Use and Critique - What are the best use(s) for each assessment?

List of Uses

1 *ECOLOGICAL & SYSTEM FUNCTIONS*
- 1.1 Stream channel geomorphic functioning
- 1.2 Floodplain and floodway functions
- 1.3 Riparian functions
- 1.4 Groundwater recharge and protection

2 *REGULATORY & MANGEMENT*
- 2.1 Regulatory programs
- 2.2 Stormwater management
- 2.3 Emergency responses to floods and fire
- 2.4 Prevent and or treat water pollution
- 2.5 Protection of endangered –threatened animals and plants

3 *RESTORATION & PLANNING*
- 3.1 Instream and floodplain protection or restoration
- 3.2 Restoration design
- 3.3 Land use planning
- 3.4 Prioritizing projects and programs
- 3.5 Protection or acquisition of open space and refuges

4 *RESTORATION: HABITAT*
- 4.1 Fish habitat protection-enhancement
- 4.2 Bird habitat protection-enhancement
- 4.3 Aquatic amphibian, reptile, insect, mammalian habitat

5 *ANTHROPOGENIC & OTHER USES*
- 5.1 Research
- 5.2 Historical heritage
- 5.3 Recreational values
- 5.4 Educational-communication
- 5.5 Green house gas reduction-climate change adaptability

MATRIX v.1: Waterway Assessment Methods

Table B: Use and Critique - What are the best use(s) for each assessment?

Definitions and Instructions
1. Assessment Method: Name or acronym from Table A: Assessment Methods
2. Environmental Condition Based: method assesses physical condition(s), e.g. characteristics of the channel and/or floodplain.
3. Ecological Function & Process Based: method assesses function(s) and process(es), e.g. fish and bird surveys; estimates of sediment transport.
4. Communication Based: method assesses overall 'how we're doing'; e.g. indicators of overall health; report card.
5. Uses, by Number: Reference the "List of Uses" to indicate the number of the use(s) associated with the assessment method.
6. Method and Use Applicability: Indicate the applicability of the assessment method to each associated use: (f)=fully; p)=partially; (na)=not applicable.

No. (from Table A)	[1] Assessment Methods	[2] Environmental Condition based *Check if applicable*	[3] Ecological Function & Process based *Check if applicable*	[4] Communication based *Check if applicable*	[5] Uses, by number *Reference the list at right to indicate associated uses.*	[6] Applicability *Indicate the applicability of each use:*			[7] Applicability Explanation *e.g. Nature of the partial applicability or limitations; comments on the strengths and limitations*
						(f)	*(p)*	*(na)*	
	InVEST-WaterYield		x		3.3	x			
					3.4	x			
	InVEST-Sediment		x		1.1		x		
					1.3		x		
					2.1		x		
					3.4	x			
	InVEST-Nutrient		x		1.1		x		
					1.3		x		
					2.1		x		
					2.4		x		
					3.4	x			
	InVEST-HabitatQuality	x			2.5		x		
					3.5	x			
					4.2	x			
	InVEST-HRA			x	2.5		x		
					3.5	x			
					4.2		x		
	IBI - Macroinvertebrates	x	x	x	1.3		x		
					2.2		x		
	Riparian bird surveys	x	x	x	1.2		x		
					1.3		x		
					4.3		x		
					5.1		x		

	CRAM	x		x	5.4		x		
					1.1				
					1.3				
					2.1				
					3.4				
					3.1				
	CSCI	x	x	x	2.1				
					2.4				
					3.4				
					3.1				
	PIBI	x	x	x	2.1				
					2.4				
					3.4				
					3.1				
	PHAB	x		x	1.1				
					2.1				
					2.4				
					3.4				
					4.1				
	Hydromodification Risk Assessment				1.1				
					1.2				
					2.1				
					2.2				
					3.1				
					3.3				
	HWI	x	x	x	2.1				
					3.3				
					3.4				
					3.5				
					5.4				
	Riparian Restoration Design								
	Site Assessment for Horticultural Potential	x			3.2	x			
	Assessment of site-specific hydrology - Flooding, ground-water table		x		3.2	x			
	Public Safety - Flooding Issues - Hydraulic Modeling			x	1.2	x			
					1.3		x		
					2.3	x			
					3.2	x			

	Assessment of wildlife use			x	4.2	x			
	IP-KM	x	x		2.1		x		
					2.5		x		
							x		
					4.1		x		
					3.2		x		
	EDT	x	x		2.1				
					2.5				
					4.1				
					3.2				
	HAB 9				2.1		x		
					2.5		x		
							x		
					4.1		x		
					3.2		x		
	EHM				2.1		x		
					2.5		x		
							x		
					4.1		x		
					3.2		x		
	PHABISM				2.1		x		
					2.5		x		
							x		
					4.1		x		
					3.2		x		
	Napa River Rutherford Reach Restoration	x	x	x	1.1		x		
					1.3		x		
					3.1		x		
					3.2		x		
					4.1		x		
	CWP-SIF	x	x	x	1.1	x			
					1.2	x			
					1.4	x			
					2.1	x			
					2.2	x			
					2.4	x			
					2.5	x			
					3.3	x			
					4.1	x			
					4.3	x			
					5.1	x			
					5.4	x			
	WRAMP Framework and Tool Set	x (L1, L2 tools)	x (L2 and L3 tools)	x (Wetlands Portal, eCRAM, and EcoAtlas	1.1 (CARI, CRAM)	x			
					1.2 (CARI, CRAM, Rip Width Estimator, Landscape Profile Tool)	x			
					1.3 (CARI, Rip Width Estimator, CRAM, Landscape Profile Tool)	x			
					1.4 (EcoAtlas link to GeoTracker GAMA)		x		

					2.1 (404/401, WDR, NPDES)	x			
					2.2 (CARI, EcoAtlasI)	x			
					2.3 (CARI, EcoAtlas)	x			
					2.4 (all tools)	x			
					2.5 (CARI, CRAM, Status and Trends, EcoAtlas)	x			
					3.1 (CARI, CRAM, Landscape Profile Tool, EcoAtlas)	x			
					3.2 (CARI, CRAM, Rip Width Estimator, Landscape Profile Tool, EcoAtlas)	x			
					3.3 (CARI, Rip Width Estimator, Status and Trends, Landscape Profile Tool, EcoAtlas)	x			
					3.4 (CARI, CRAM, Status and Trends, Landscape Profile Tool, EcoAtlas)	x			
					3.5 (CARI, Status and Trends, Landscape Profile Tool, EcoAtlas)	x			
					4.1 (CARI, CRAM, Rip Width Estimator, Landscape Profie Tool, EcoAtlas	x			
					4.2 (CARI, CRAM, Rip Width Estimator, Landscape Profie Tool, EcoAtlas	x			
					4.3 (CARI, CRAM, Rip Width Estimator, Landscape Profie Tool, EcoAtlas	x			
					5.1 (eCRAM and EcoAtlas as data sources)		x		
					5.2 (Historical Ecology in EcoAtlas)	x			
					5.3 (EcoAtlas)		x		
					5.4 (EcoAtlas)	x			
					5.5 (CARI, Status and Trends, EcoAtlas)	x			
