AEMR Template

Project Name			
Project No.			
Project Site (name/lat/long)			
Reference or Control Site (name/lat/long)			
Restoration/Monitoring Sponsor	Agency	Email	Phone
Name 1			
Name 2			
Restoration: Physical Changes Planned	Number	Dimensions/acreages/ miles	Comments
Dike/levee removal			
Dike/levee breach			
Culverts replaced			
Culverts modified			
Tide gates replaced			
Tide gates modified			
Tide gate(s) removed/replaced with culvert(s)			
Excavation/grading			
Creation			
Invasive plant removal			
Riparian revegetation			
Other: XXXX			
Experimental Design			
Before-after-reference-impact			
Before-after-control-impact			
Accident Response			
Survey			
Other			
Monitoring/Research Period			
Pre-restoration			
Post-restoration (~1 yr)			

Post-restoration (~5 yr)			
Post-restoration (~10 yr)			
Monitoring/Research Indicators	Location	Frequency/Period	Method/ Protocol
Photo points			
Water-surface elevation (logger)			
Temperature (logger)			
Salinity (logger)			
Channel x-sec area			
Sediment accretion			
Elevation (bathymetry/topography)			
Catchment area			
Plant species comp			
Plant percent cover			
Plant biomass			
Aerial photos			
Fish presence/species/size			
Fish density			
Satellite imagery landcover			
Water velocity			
Water properties (DO, TOC, chloro, etc.)			
Nutrients (NH_3, PO_4, SiO_3)			
Fish diet			
Fish residence time			
Neuston prey			
Benthic-invertebrate prey			
Insect fallout prey			
Fish condition (FIT)			
Derived Variables			
Hypsographic curve of water sfc elev.			
Catchment area			

Tidal exchange volume			
Image analysis			
Area-time inundation			
Floodplain wetted area			
Wetted-channel edge length			
Plant similarity			
Plant biomass flux			
Material flux			
Fish growth			
Data Management	Name	Agency	Phone
Custodian			
Weblink			
Reporting	Schedule	Citation	Source/ Weblink
Draft report			
Final report			
Other reporting			
Journal article 1			
Journal article 2			
Etc.			

Site Evaluation Card

Project Name Project No. Project Site (name/lat/long)			
Reference or Control Site (name/lat/long)			
Site Evaluation Card Prepared By	Agency	Date	Phone
Name			
Restoration/Monitoring Practitioner	Agency	Email	Phone
Name 1			
Name 2			
Etc.			
ERTG Survival Benefit Assessment	Stream-type SBU	Ocean-type SBU	Comments
Phase 1			
Phase 2			
Etc.			
Construction			
Construction period			
Describe restoration realized			
Restoration Accounting: Physical Changes Realized	Number	Restored Acres/Miles	Comments
Dike/levee removal			
Dike/levee breach/mod’			
Culvert removal			
Culvert modification			
Tide gate removal			
Tide gate modification			
Tide gate(s) removal/replacement with culvert(s)			
Excavation/grading			
Creation			
Invasive plant removal			

Riparian revegetation			
Other: XXXX			
Experimental Design			
Before-after-reference-impact			
Before-after-control-impact			
Accident Response			
Survey			
Other: XXXX			
Monitoring/Research Period			
Pre-restoration			
Post-restoration (~1 yr)			
Post-restoration (~5 yr)			
Post-restoration (~10 yr)			
Monitored Indicator	Location	Frequency/Period/ Date	Method/ Protocol
Photo points			
Water-surface elevation (logger)			
Temperature (logger)			
Salinity (logger)			
Channel x-sec area			
Sediment accretion			
Elevation (bathymetry/topography)			
Catchment area			
Plant species comp			
Plant percent cover			
Plant biomass			
Aerial photos			
Fish presence/species/size			
Satellite imagery land cover			
Water velocity			
Water properties (DO, TOC, chloro, etc.)			
Nutrients (NH_3,PO_4, SiO_3)			

Fish diet			
Fish residence time			
Neuston prey			
Benthic-invertebrate prey			
Insect fallout prey			
Fish condition (FIT)			
Derived Variables			
Hyposographic curve of water sfc elev.			
Catchment area			
Tidal exchange volume			
Image analysis			
Area-time inundation			
Floodplain wetted area			
Wetted-channel edge length			
Plant similarity			
Plant biomass flux			
Material flux			
Fish density			
Fish growth			
Data Management	Name	Agency	Phone
Custodian			
Weblink			
Reporting	Schedule	Citation	Source/ Weblink
Draft report			
Final report			
Other reporting			
Journal article 1			
Journal article 2			
Etc.			
Post-Construction Assessment: Year 1	Description		Grade
Photo point/aerial photo			

Condition of physical metrics		
Condition of habitat metrics		
Condition of functional metrics		
CEERP adaptive management lessons		
Post-Construction Assessment: Year 5	Description	Grade
Photo point/aerial photo		
Condition of physical metrics		
Condition of habitat metrics		
Condition of functional metrics		
CEERP adaptive management lessons		
Final assessment (~10 year)	Description	Grade
Was the project successful in meeting its goals? Explain the answer. Final grade?		
If not, what should be changed for future projects of this type?		

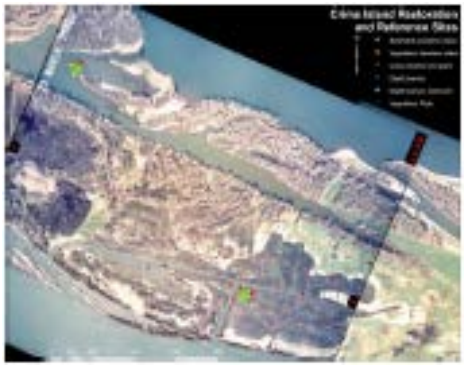
Sample Site Evaluation Card

PART 2: SITE EVALUATION CARD – Crims Island				
Project Name	Crims Island			
Project No.	XXX			
Project Site (name/lat/long)	Crims Island, XXX/XXXX			
Reference or Control Site (name/lat/long)	Gull Island, XX/XXX			
Site Evaluation Card Prepared By		Agency	Date	Phone
Erin Donley		PNNL	1/6/11	
Restoration/Monitoring Practitioner	Agency	Email		Phone
Blaine Ebberts	USACE			
Craig Haskell	USGS			
Amy Borde	PNNL			
ERTG Survival Benefit Assessment	Stream-type SBU	Ocean-type SBU		Comments
Phase 1	XXX	XXXX		2007 BA
Construction				
Construction Period	August 2004–September 2005			
Describe restoration realized	Grading lowered the topography by 2 feet. Excavating created channels and removed passage impediments.			
Restoration Accounting: Physical Changes Realized	Number	Restored Acres/Miles		Comments
Tide gates replaced/mod	1	unk		
Excavation/grading	1	94		Intertidal marsh (77 acres) and channels (17 acres)
Experimental Design	Before-after-reference-impact			
Monitoring/Research	Period			
Pre-restoration period	2003–2004: Design and pre-restoration monitoring during the months of March–July			
Post-restoration (~1 yr)	2006: Post-restoration monitoring during the months of March–July			
Post-restoration (~5 yr)	Not scheduled			

Post-restoration (~10 yr)	Not scheduled		
Monitored Indicators Realized	Photo points; water-surface elevation (logger); temperature (logger); channel x-sec area; sediment accretion; elevation (bathymetry/topography); plant species comp; plant percent cover; fish presence/species/size; fish diet; fish residence time		
Derived Variables	Hypsographic curve of water sfc elev; floodplain wetted area; area-time inundation; wetted-channel edge length; plant similarity		
Data Management	Name	Agency	Phone
Custodian	Craig Haskell	USGS	(509) 538 2299
Weblink			

Reporting	Schedule	Citation	Source/Weblink
Draft report	2007	Haskell, C.A., Kenneth Tiffan and John Olson. 2007. Crims Island Habitat Restoration in the Columbia River Estuary – Fisheries Monitoring and Evaluation, 2006. Final Report of Research Submitted to U.S. Army Corps of Engineers, Portland District.	
Final report	Spring 2011	**XXXXX**	
Other reporting	2010	Johnson GE and HL Diefenderfer (eds.). 2010. "Evaluating Cumulative Ecosystem Response to Restoration Projects in the Lower Columbia River and Estuary, 2009." PNNL-19440, prepared by Pacific Northwest National Laboratory, Richland, Washington for the U.S. Army Corps of Engineers, Portland District, Portland, Oregon.	

Post-Construction Assessment: Yr 1	Description/Citation	Grade
Photo point/aerial photo	Date XX	n/a



Condition of physical metrics	Cross-sections pre, post, ref if avail; Sediment accretion rates: 1.1 cm/yr post-restoration and 0.1 cm/yr at the reference site. (Sediment accretion rates measured in September 2006 and February 2007.) Haskell and Tiffan 2011.	TBD
Condition of habitat metrics	Vegetation: Plant communities very different at Crims Restoration and Reference sites. The restoration site is dominated by common rush. The reference site is dominated by slough sedge and forget me-not. Johnson and Diefenderfer (eds.) 2010. 38 species of plant were detected at the restoration site and 16 species were detected at the reference sites. Haskell et al. 2007.	TBD
Condition of functional metrics	Fish presence After restoration the number of subyearling Chinook increased and density was lower than that observed in the reference site. Fish residence time Median residence time of the fish in the restoration site (median = 50.2 h) in 2006 was longer compared to before restoration (median =12.7 h). Pre-restoration, median residence time at the reference site was 1 h. Whereas median reference residence time was 43.1 h. Haskell et al. 2007.	TBD
CEERP adaptive management lessons	XXXXXXX	

Post-Construction Assessment: Yr 5	Description	Grade
Photo point/aerial photo	(no plans for 5-yr assessment)	
Condition of physical metrics		TBD
Condition of habitat metrics		TBD
Condition of functional metrics		TBD
CEERP adaptive management lessons		

Final assessment (~10 year)	Description	Grade
Was the project successful in meeting its goals? Explain the answer. Final grade?	TBD	TBD
If not, what should be changed for future projects of this type?		