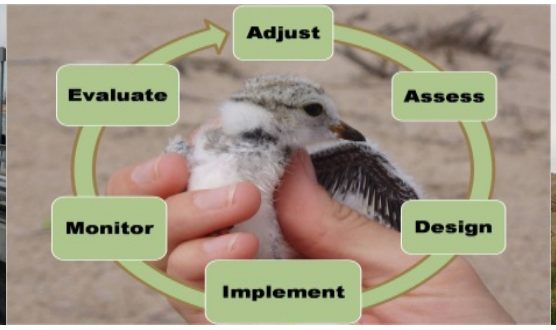
ADAPTIVE MANAGEMENT ON THE PLATTE RIVER



10/27/2013

Platte River Recovery Implementation Program
Adaptive Management Plan (AMP)
2013 "State of the Platte" Report

Prepared by Executive Director's Office staff of the
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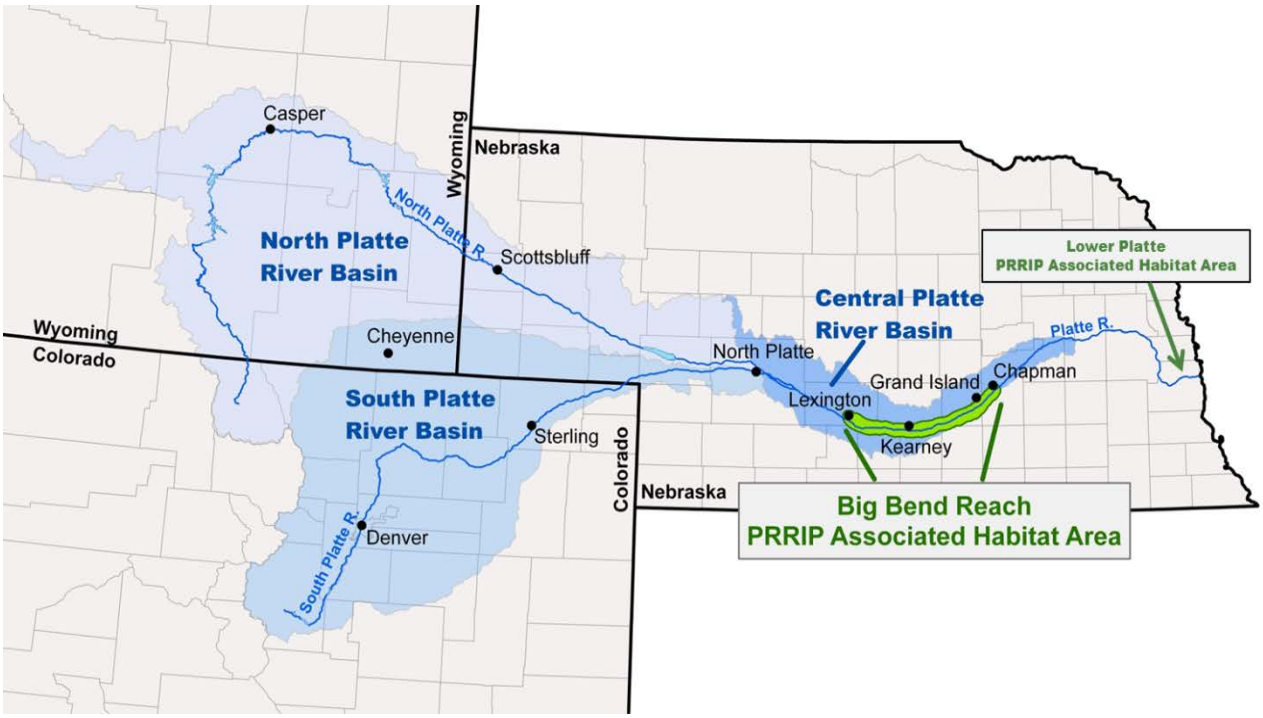
PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM
2013 "State of the Platte"

The Platte River Recovery Implementation Program's ("Program" or "PRRIP") Executive Director's Office (EDO) developed this document for the Governance Committee (GC). It is intended to serve as a synthesis of Program monitoring data, research, analysis, and associated retrospective analyses to provide important information to the GC regarding key scientific and technical uncertainties. These uncertainties form the core structure of the Program's Adaptive Management Plan (AMP) and are directly related to decisions regarding implementation of management actions, assessment of target species' response to those management actions, how best the Program can spend its resources (money, land, water, etc.), and ultimately the success or failure of the Program.

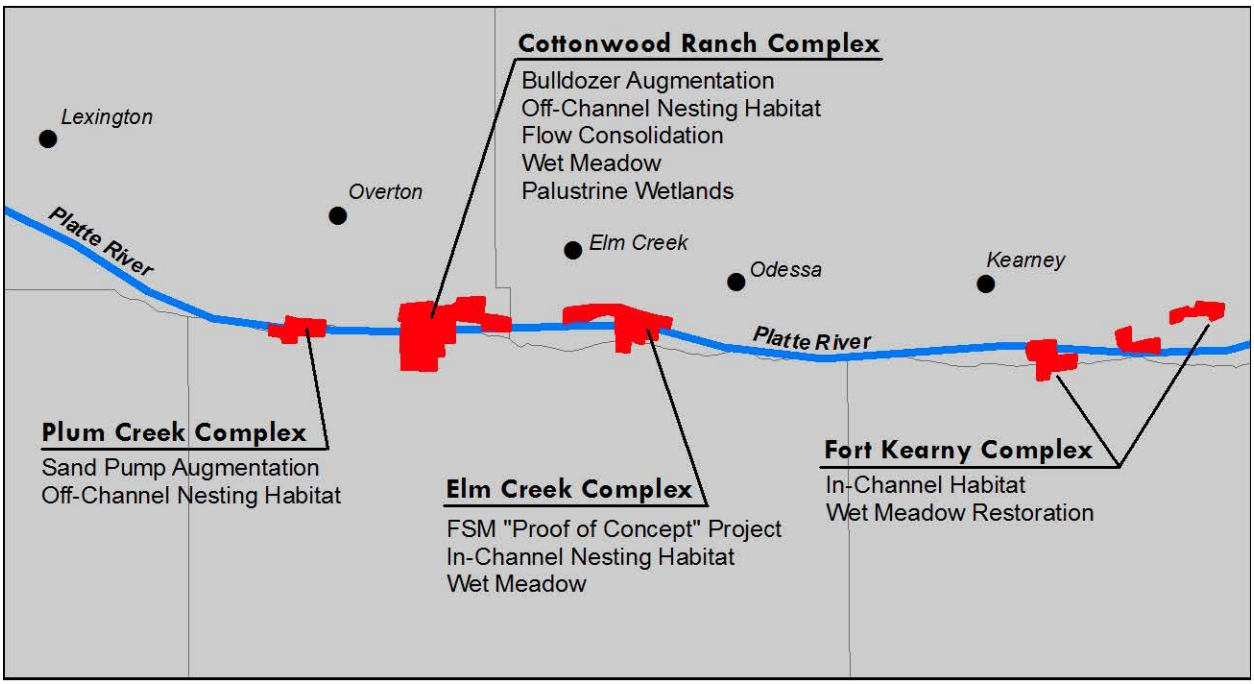
This report is an annual update to the first State of the Platte Report developed in 2012. An assessment for each of eleven "Big Questions" is provided in Table 1 below, followed by a detailed write-up for each Big Question. Commentary on each assessment from the Program's Independent Scientific Advisory Committee (ISAC) are included in Appendix A. The ISAC generally agrees with the 2013 Big Question assessments. Technical comments from the Program's Technical Advisory Committee (TAC) and related clarifications from the EDO are included in Appendix B. This report was discussed with and reviewed by the TAC and the ISAC several times during the course of 2013.

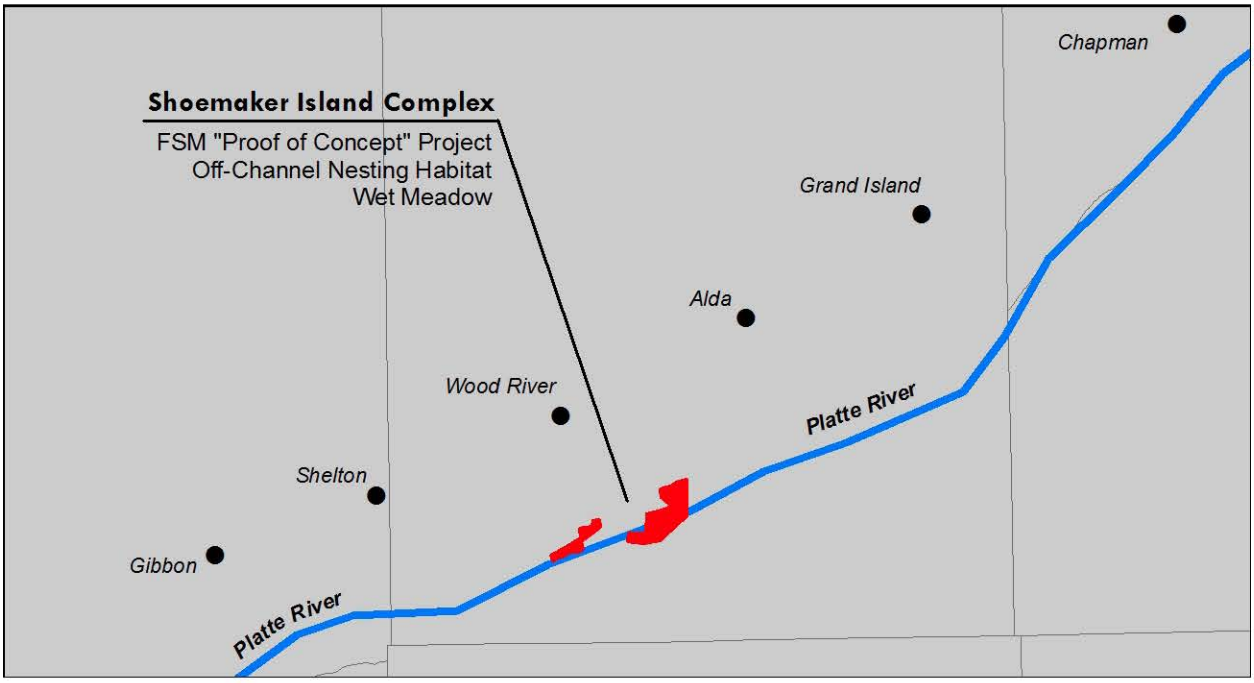
This document contains a large number of endnotes as a way to identify key documents or data sets that are important to read and understand when reviewing this report. In general, those endnotes include hyperlinks to information available in the Public Library section of the Program's web site.



Map depicting the Program area, including the Associated Habitat Reaches on the central and lower Platte River.

The two maps below detail the Program's Associated Habitat Area in the central Platte river, highlighting Program habitat complexes in the western half of the 90-mile reach (top map) and the eastern half (bottom map). Program implementation, data collection, and analysis described in the 2013 assessments of the Big Questions largely center on management actions taken at Program habitat complexes.





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"Quick Reference" Guide

To assist the GC with quickly evaluating the 2013 Big Question assessments, the icons below are used to visually summarize the basic conclusion for each question. Thumbs up or down indicate a trend in the affirmative or negative and may point to the need to re-evaluate management actions based on collected data and analysis. The unknown "character" is used when there is not enough evidence to indicate a trend in either direction and more time is needed to collect appropriate data and conduct analyses. These icons are intended to provide the GC with a quick and visual means to see where the Program stands each year in moving towards resolution of the Program's most significant scientific questions as they relate to management decision-making.

Icon	Trend or Answer Explained by Icon
	• Big Question and underlying hypotheses **answered conclusively** in the **affirmative** • Foundational documents, analysis, and other references on which this assessment is based have undergone peer review through the PRRIP peer review process and/or publication in refereed journals • Governance Committee should consider adjustments to decisions related to PRRIP management actions
	• Affirmative answer or trend, but Big Question and underlying hypotheses **NOT answered conclusively** • Assessment can be based on draft documents and analysis, but peer review may be pending • To the extent possible, consider what information is necessary to change this designation
	• Evidence thus far is **inconclusive**; no affirmative or negative answer/trend to Big Question and underlying hypotheses • Assessment can be based on draft documents and analysis, but peer review may be pending • To the extent possible, consider what information is necessary to change this designation
	• Negative answer or trend, but Big Question and underlying hypotheses **NOT answered conclusively** • Assessment can be based on draft documents and analysis, but peer review and/or publication may be pending • To the extent possible, consider what information is necessary to change this designation
	• Big Question and underlying hypotheses **answered conclusively** in the **negative** • Foundational documents, analysis, and other references on which this assessment is based have undergone peer review through the PRRIP peer review process and/or refereed journals • Governance Committee should consider adjustments to decisions related to PRRIP management actions

PRRIP Big Questions = What we don't know but want to learn	Broad Hypotheses[1]	Priority Hypotheses[2]	2012 Assessment	2013 Assessment
Implementation – Program Management Actions and Habitat				
1. Will implementation of SDHF[3] produce suitable[4] tern and plover riverine nesting habitat on an annual or near-annual basis?	*PP-1a: Flows of 5,000 to 8,000 cfs magnitude in the habitat reach for a duration of three days at Overton on an annual or near-annual basis will build sandbars to an elevation suitable for least tern and piping plover habitat.*	Flow #1		
2. Will implementation of SDHF produce and/or maintain suitable whooping crane riverine roosting habitat on an annual or near-annual basis?	*PP-1b: Flows of 5,000 to 8,000 cfs magnitude in the habitat reach for a duration of three days at Overton on an annual or near-annual basis will increase the average width of the vegetation-free channel.*	Flow #3, Flow #5		
3. Is sediment augmentation necessary for the creation and/or maintenance of suitable riverine tern, plover, and whooping crane habitat?	*PP-2: Between Lexington and Chapman, eliminating the sediment imbalance of approximately 400,000 tons annually in eroding reaches will reduce net erosion of the river bed, increase the sustainability of a braided river, contribute to channel widening, shift the river over time to a relatively stable condition, and reduce the potential for degradation in the north channel of Jeffrey Island resulting from headcuts.*	Sediment #1		
4. Are mechanical channel alterations (channel widening and flow consolidation) necessary for the creation and/or maintenance of suitable riverine tern, plover, and whooping crane habitat?	*PP-3: Designed mechanical alterations of the channel at select locations can accelerate changes towards braided channel conditions and desired river habitat.*	Mechanical #2		

[1] From the Final Program Document, Adaptive Management Plan (AMP), Broad Hypotheses, Pages 14-17.
[2] From the Final Program Document, Adaptive Management Plan (AMP), Table 2, Pages 70-78. See **Appendix B** for the specific language of each Priority Hypothesis listed as well as the associated X-Y graph.
[3] Short-Duration High Flows (SDHF) = 5,000-8,000 cfs at Overton for 3 days. This is the only flow-related management action specified in the AMP.
[4] The term "suitable" is defined by the Program either as a function of habitat suitability criteria developed by the Technical Advisory Committee or Department of Interior (DOI) target habitat criteria in Land Plan Table 1.

PRRIP Big Questions = What we don't know but want to learn	Broad Hypotheses	Priority Hypotheses	2012 Assessment	2013 Assessment
Effectiveness – Habitat and Target Species Response				
5. Do whooping cranes select suitable riverine roosting habitat in proportions equal to its availability?	*WC-1: Whooping cranes that use the central Platte River study area during migration seasons prefer habitat complexes (Land Plan Table 1) and use will increase proportionately to an increase in habitat complexes. WC-4: In the central Platte River study area, whooping cranes prefer conditions created by species target flows and annual pulse flows.*	WC1, WC3		
6. Does availability of suitable nesting habitat limit tern and plover use and reproductive success on the central Platte River?	*TP-1: In the CPR study area, terns and plovers prefer/do not prefer riverine habitats as described in Land Plan Table 1 and use will/will not increase proportionately to an increase in habitat complexes.*	T1, P1		
7. Are both suitable in-channel and off-channel nesting habitats required to maintain central Platte River tern and plover populations?	*TP-2: The maintenance of tern & plover populations in the central Platte requires/does not require that sandpits & river continue to function together to provide nesting and foraging habitat. TP-3: Ephemeral river nesting areas are/are not needed for long-term nesting success of tern & plover.*	TP1		
8. Does forage availability limit tern and plover productivity on the central Platte River?	*TP-4: Existing river flows do/do not provide a sufficient forage base throughout the central Platte River study reach for populations of terns and plovers during the nesting season.*	T2, P2		*N/A – question answered in 2012*
9. Do Program flow management actions in the central Platte River avoid adverse impacts to pallid sturgeon in the lower Platte River?	*PS-2: Water related activities above the Loup River do/do not impact pallid sturgeon habitat.*	PS2		
Larger Scale Issues – Application of Learning				
10. How do Program management actions in the central Platte River contribute to least tern, piping plover, and whooping crane recovery?	*S-3: Program management actions will/will not have a detectable effect on target species use of the associated habitats.*	S1b		
11. What uncertainties exist at the end of the First Increment, and how might the Program address those uncertainties?	N/A	N/A		

1 The Program's "Big Questions", associated Broad Hypotheses from the AMP, and associated Priority Hypotheses from the AMP.

APPENDIX B

2013 TECHNICAL COUNTERPOINTS AND CLARIFICATIONS TABLE

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM
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2013 Technical Counterpoints and Clarifications Table

The following table is intended to catalog key technical discussions within the Program that occurred during the development of the 2013 State of the Platte Report to provide the ISAC with an "apples-to-apples" treatment of key technical issues that may require their input, and to provide the GC with a running commentary of technical discussions underlying each Big Question in 2013. Under each Big Question for which there was technical discussion, the 2013 assessment statement with from the EDO is listed first, followed by key Program entity technical counterpoints in *italics*, followed by EDO clarifications/responses in {curly brackets}.

BQ#1 – Will implementation of SDHF produce suitable tern and plover riverine nesting habitat on an annual or near-annual basis?	
2013 Assessment Statement, Counterpoints, & Rebuttals	**Author**
An additional year of systematic geomorphology/vegetation monitoring[84] and early results from implementation of the FSM Proof of Concept experiment at the Elm Creek Complex[85] continue the data trends that suggest a SDHF will likely not build sandbars to a height that is suitable for tern and plover nesting with or without sediment balance. New research also indicates that maximum sandbar height is often less than the formative stage.[86]	
Given the results of independent research, the monitoring of naturally occurring flows of similar and greater magnitude and duration, and associated computer modeling of SDHF's, we would argue for a change to two thumbs down. *Based on the above conclusions, empirical data and current knowledge it seems highly unlikely suitable riverine nesting habitat was historically available on an annual or near-annual basis or that flow and sediment management alone in today's environment can achieve that condition.*	DWU[87]
Until full scale sediment augmentation is occurring and flow events of 5,000-8,000 cfs for 3-5 days are achieved, conclusive (2 thumbs) positive or negative results will be difficult to justify.	USFWS[88]
{There are other hypothesized benefits of SDHF releases including maintaining wide, unvegetated channels for whooping cranes. Program-defined suitability criteria for tern/plover nesting habitat could also be revised.} {During the period of 2008-2011, flows exceeding 5,000 cfs occurred in 2 out of three years in the reach downstream of Kearney that is in sediment balance.}	
Linking habitat annually to the annual flow that year does not always illustrate the cause and effect relationship that is occurring.	USFWS
{We are unclear as to why processes like sandbar formation and flow scour of vegetation cannot be linked to a single flow event.}	
After vegetation encroachment following multi-year low/no flows in the early-mid 2000's, it would not be scientifically valid to expect an SDHF to produce the hypothesized habitat in one year.	USFWS
{It is the understanding of the EDO that the mechanical component of FSM is intended to prepare the channel to be maintained on an annual basis by subsequent high flow events.}	