2012-2017 CONCEPTUAL RESTORATION AND MANAGEMENT PLAN

For

SHOEMAKER ISLAND COMPLEX

Prepared for:

Platte River Recovery Implementation Program
Land Advisory Committee

Completion Date:

06/13/2012

Table of Contents

I. EXECUTIVE SUMMARY 1
II. HABITAT COMPLEX DESCRIPTION 4
A. Complex Location 4
B. Land Interests 4
C. Existing Habitat 4
1. Complex Habitat 4
2. Adjacent or Associated Non-Complex Habitat 5
D. Communication, Coordination, and Responsibilities 5
1. Program Lands 5
2. Other Conservation Lands 6
3. Private Lands 6
III. GOALS, OBJECTIVES AND IMPLEMENTATION STRATEGY 7
A. Complex-Level Goals and Objectives 7
1. General Goals and Objectives 7
2. Adaptive Management Goals and Objectives 8
3. Species Habitat Goals and Objectives 12
4. Operations and Maintenance Goals and Objectives 16
IV. MONITORING AND RESEARCH 17
A. Baseline Monitoring 17
1. Land Cover Analysis 17
2. Channel LiDAR Project 17
3. Aerial Photography 17
4. In-Channel Geomorphology and Vegetation Monitoring 17
5. Least Tern, Piping Plover and Whooping Crane Monitoring 17
6. Species of Interest Surveys 18
B. Research 18
1. LETE and PIPL riverine habitat selection experiment (Goal 2, Objective 2a) 18
2. LETE and PIPL riverine versus OCSW experiment (Goal 3, Objective 3a) 18
3. FSM experiment (Goal 4, Objective 4a) 18
V. ENVIRONMENTAL LAWS, PERMITTING AND COMPLIANCE 19
A. Section 7 Consultation 19
1. Measures to Minimize or Eliminate Take of Least Tern and Piping Plover 19
2. Measures to Minimize or Eliminate Take of Whooping Crane 19
3. Measures to Minimize or Eliminate Take of Pallid Sturgeon 19
B. Fish and Wildlife Coordination Act and Nebraska Non-game and Endangered Species Conservation Act 20
1. Raptors 20
2. Northern River Otter 20
3. Western Prairie Fringed Orchid 20
4. Platte River Caddisfly 20
5. Vegetation Communities of Conservation Importance 20
6. Regal Fritillary 20

C. Migratory Bird Treaty Act 21
D. Bald Eagle Act 21
E. United States Army Corps of Engineers Section 404 Permitting and Nebraska Department of Environmental Quality Section 401 Water Quality Certification 21
F. National Pollutant Discharge Elimination System Construction Stormwater Discharge Permit 21
G. County Floodplain Development Permit 21
H. State Historic Preservation Office Clearance 21
I. Good Neighbor Policy 22

APPENDIX A – COMPLEX FIGURES

APPENDIX B – TRACT OPERATIONS AND MAINTENANCE PLANS

APPENDIX C – COMPLEX ANNUAL WORK PLANS

I. EXECUTIVE SUMMARY

The term "Complex" as referenced in this document refers to a group of land tracts in close proximity that are managed together to provide habitat for the Platte River Recovery Implementation Program's (Program) target species. The Shoemaker Island Complex is located in the Wood River to Alda bridge segment and so far includes a 1,524 acre property purchased by the Program in December of 2010. The property includes approximately 900 acres of wet meadow and 2.5 linear miles of main channel habitat. Future land acquisitions will focus on execution of management agreements with south-bank landowners to facilitate in-channel management, research, and monitoring. Fee title acquisition to be considered where offered.

The Shoemaker Island Complex affords an excellent opportunity to restore and maintain high-quality target species riverine and wet meadow habitat. It also affords an opportunity to reduce uncertainties about physical process relationships and target species habitat selection and productivity through implementation of research, monitoring and Program land-scale adaptive management experiments. All of the Complex goals and objectives presented in this plan are intended to provide progress towards, or reduce uncertainties associated with, achieving relevant overall Program goals, objectives and management objectives, which have been reproduced below.

1. Program Goals
    a. Improve and maintain migration habitat for whooping cranes and reproductive habitat for least terns and piping plovers
    b. Reduce the likelihood of future listings of other species found in the area
2. Program Objectives
    a. Protecting, restoring where appropriate, and maintaining 10,000 acres of habitat in the central Platte River area between Lexington and Chapman, Nebraska
3. Management Objectives
    a. Improve production of least terns and piping plovers from the central Platte River.
        i. Increase number of fledged tern and plover chicks
            1. Increase nesting pairs
            2. Increase fledge ratios and reduce chick mortality from causes such as flooding, predation, weather, inadequate forage
        ii. Reduce adult mortality
    b. Improve survival of whooping cranes during migration[1]
        i. Increase availability of whooping crane migration habitat along the central Platte River
    c. Within the overall objectives 3.a & 3.b, provide benefits to non-target listed species and non-listed species of concern and reduce the likelihood of future listing
        i. Increase availability of habitats for these species (Land Plan "other species of concern") along the central Platte River

[1] The Governance Committee has asked the TAC to consider modifying this objective, and the ISAC has been supportive of modification. The GC has not yet acted on a modification, but if such action is taken this objective will be updated without need for review or re-approval of the management plan.

Table 1 provides a summary of the specific Program goals and objectives for the Shoemaker Island Complex. These items reflect the current Program priority of restoring and maintaining target species habitat in a way that is useful in reducing fundamental uncertainties in physical process relationships and target species use and productivity. Additional detail is provided for each goal and objective in Section III.A of this plan.

Table 1 – Shoemaker Island Complex Goals and Objectives

Goals and Objectives	Associated Priority Hypotheses	Estimated Cost
Goal 1 - Obtain sufficient First-Increment Program land interest in Complex		
Objective 1a – Execute management agreements in main channel	N/A	$0*
Goal 2 - Refine understanding of target bird species riverine habitat requirements		
Objective 2a – Implement tern and plover riverine habitat selection experiment	S1b,T1, P1, TP4d, TP5	$100,000
Goal 3 – Refine understanding of interaction between tern and plover riverine and adjacent non-complex off-channel sand and water (OCSW) nesting habitat.		
Objective 3a – Maintain and monitor species use and productivity on both in-channel and OCSW nesting habitat	S1b, T1, P1, TP1	$0**
Goal 4 – Evaluate the effects of the flow-sediment-mechanical (FSM) management strategy on physical processes and channel characteristics.		
Objective 4a – Implement FSM "Proof of Concept" experiment	Flow1, Flow3, Flow4, Flow5	$200,000
Goal 5 – Improve sand and water habitat for terns, plovers and whooping cranes.		
Objective 5a – Create and maintain riverine habitat that attempts to conform to Land Plan table 1 habitat criteria (will be accomplished via Goal 2 & 3 actions)	N/A	N/A
Goal 6 – Improve wet meadow/grassland habitat for whooping cranes and other species of concern.		
Objective 6a - Create and maintain wet meadow/grassland that conforms to Program habitat criteria	N/A	$80,000
Objective 6b - Improve hydrology in wet meadow areas north of Shoemaker Island Road	N/A	$30,000
Objective 6c – Manage grasslands to provide areas of short stature vegetation during WC migration	N/A	$15-25/ac cost $39,000/yr income
Objective 6d – Monitor wet meadow hydrology and vegetation species composition	N/A	TBD
Goal 7 – Provide benefits to other species of concern without compromising ability to accomplish target species goals and objectives		
Objective 7a – Monitor existing Platte River Caddisfly population***	N/A	N/A

Objective 7b – Improve habitat for sandhill cranes.	N/A	N/A
Goal 8 – Conduct all activities in adherence with the Program's Good Neighbor Policy.		
Objective 8a – Emphasize the prevention, as opposed to the correction of actions that cause adverse effects	N/A	N/A
Objective 8b – Quickly identify any problems and ensure needed corrective actions can be taken in a timely manner	N/A	N/A
Objective 8c – Provide means to cover documented damage claims resulting from the actions of the Program	N/A	N/A
Objective 8d – Demonstrate good land stewardship by managing Program lands in accordance with sound wildlife management and agricultural practices	N/A	N/A

*Compensation in form of Program management actions which also benefit landowner.
**Costs for this task are covered as part of the Program's system-wide annual tern and plover monitoring contract
***Monitoring PRCF on all Program properties performed by UNK student under IMRP budget line

A variety of monitoring activities will be conducted in the Complex area (and at nearby non-complex areas) as part of the system-wide investigations conducted under the Program's Integrated Monitoring and Research Plan (IMRP). These efforts, which are absolutely critical to facilitate learning through implementation of management actions, include:

- Land Cover Analysis
- LiDAR Collection
- Aerial Photography Acquisition
- In-Channel Geomorphology and Vegetation Monitoring
- Least Tern, Piping Plover and Whooping Crane Monitoring
- Water quality monitoring
- Species of Interest Surveys

Further details on IMRP activities are provided in Section IV of this plan.

When implementing management, research, and monitoring activities, the Program must comply with a variety of environmental laws, permit requirements and compliance activities. These requirements are presented in Section V and will be incorporated into the development/design and approval process for all activities contemplated in this plan.

II. HABITAT COMPLEX DESCRIPTION

A. Complex Location

The Shoemaker Island Complex (Complex) is located in the Wood River to Alda bridge segment in Township 9 North, Range 11 West. The entire Complex is located in Hall County. Figure A-1 (located in Appendix A) provides an overview of the conceptual complex layout including Platte River Recovery Implementation Program (Program) property interests and proximity to other lands owned and leased by Program participants.

B. Land Interests

The Program owns one tract totaling approximately 1,524 acres within the Complex extent shown on Figure A-1. The Platte River Whooping Crane Maintenance Trust (PRWCT), The Nature Conservancy (TNC), and Nebraska Game and Parks Commission (NGPC) collectively own or lease an additional 2,518 acres in the general proximity. At this time, none of those properties are to be managed as part of the Program's Shoemaker Island Complex. If necessary, the Program may approach these entities (as with other neighboring landowners) for management agreements for in-channel activities.

C. Existing Habitat

1. Complex Habitat

Table 2 provides the characteristics of Shoemaker Island Complex lands based on *Table 1. Target Habitat Complex Guidelines*, of the Program's Land Plan. The characteristics in Table 2 below are based on existing land cover/use and may change as land classification definitions are refined and as restoration work is completed.

Table 2 – Shoemaker Island Complex Habitat Characteristics for Land in Conservation Ownership

Classification	Characteristics
Program Ownership	Approximately 1,524 acres
Other Conservation Ownership	Approximately 2,518 acres. Approximately 250 acres of in-channel area could be pursued for management agreements adjacent to Program ownership.
Riverine Habitat	
Channel Length	2.5 miles
Channel Width	600 – 1400 Feet (main channel)
Channel Ownership	100% (one bank only) Approx. 240 acres
Wet Meadow Habitat	
Proximity	Contiguous to active channel
Size	Approximately 900 acres
Buffer	
Size	Approximately 130 acres
Land Use/Cover	Woodland

2. Adjacent or Associated Non-Complex Habitat

No non-complex palustrine wetland habitat is associated with this complex. Two adjacent non-complex off-channel sand and water (OCSW) habitat areas are associated with this complex for the purpose of evaluating the interaction between in-channel and off-channel tern and plover nesting habitats. The first is a newly constructed 22-acre OCSW site on Tract 2011001. This site is located 0.5 miles from the main channel approximately 1.5 miles west of the Shoemaker Island Complex. The second is Tract 2011002, a newly acquired 37-acre active sand mining operation. This property is located 1.5 miles from the main channel approximately 2 miles east of the Shoemaker Island Complex. It currently has little suitable OCSW nesting habitat but will be developed into habitat over the next several years.

D. Communication, Coordination, and Responsibilities

1. Program Lands

The Executive Director's Office (ED Office) is responsible for coordination and implementation of restoration and management actions on Program lands. Tract-specific habitat and adaptive management objectives and activities are incorporated into this Complex Restoration and Management Plan. Land steward activities are presented in the tract Operations and Maintenance Plans located in Appendix B.

2. Other Conservation Lands

The ED Office is responsible for communication and coordination with other conservation land owners. All interactions with property owners will be governed by the Program's Good Neighbor Policy. If the Program wishes to implement specific management actions on conservation lands, the ED Office will work to develop a management agreement with the conservation owner. The agreement will include the actions to be taken, timeframe, responsibilities and other pertinent information. Approximately 250 acres of in-channel property under other conservation ownership may be considered for management agreements.

3. Private Lands

The ED Office is responsible for communication and coordination with private land owners. All interactions with property owners will be governed by the Program's Good Neighbor Policy. If the Program wishes to implement specific management actions on private lands and does not desire (or is not able) to negotiate an easement, lease, or purchase, the ED Office will work to develop a management agreement with the land owner. The agreement will include the actions to be taken, timeframe, responsibilities and other pertinent information.

III. GOALS, OBJECTIVES AND IMPLEMENTATION STRATEGY

The following goals and objectives will function as the benchmark for evaluation of ongoing land-related actions at the Shoemaker Island Complex. Planning of Program actions to address goals and objectives is done primarily at the complex level; however, because of differences in ownership and the types of management agreements, implementation will take place at the tract level. This section addresses complex-level actions and the tracts on which they will be implemented. While each objective is not repeated in the individual tract Operations and Maintenance Plans, it is intended that all objectives, actions, and evaluation will take place on identified individual tracts as soon as the Program assumes control – even if the Complex plan as a whole cannot be implemented.

This section also provides the strategies and methods for achieving the complex-level goals and objectives along with work areas and preliminary timelines and estimates of cost. Complex and tract-level implementation activities will be integrated into annual Complex Work Plans that will be reviewed by the LAC, TAC and approved by the GC. Work Plans will be appended to this Complex Plan annually in Appendix C.

A. Complex-Level Goals and Objectives

1. General Goals and Objectives

- ***Goal 1 – Obtain sufficient First-Increment Program land interest in Complex to be able to carry out activities to meet the remaining complex-level goals and objectives.***
  - ***Objective 1a*** – Execute management agreements (or other acquisition options) with conservation and private landowners as necessary to allow the Program to implement necessary restoration, construction, maintenance and research/monitoring activities.
    - **Strategy** – Identify needed scope and extent of acquisition based on conceptual design of restoration and research actions. Approach landowners with conceptual designs and gauge receptiveness. Proceed to final design and agreement negotiation/execution if landowner is receptive. Section C.2. on page 8 of the Program Land Plan provides baseline requirements for the content of these agreements. If landowners are not receptive, work will be planned and attempted within the bounds of Program ownership. If available, Program may pursue fee title or easement acquisition of necessary tracts.
    - **Area –** Management agreements (or other acquisition options) will be executed on the riverine portion of the Complex not under Program control.

- **Timeline** – Riverine management agreements executed by August 2012. Other acquisition methods pursued as available.

- **Costs** – Program staff time. Agreement compensation is intended to be in the form of management/maintenance activities as opposed to direct compensation. If direct compensation is necessary, the Program will alternatively pursue lease or easement arrangements with the landowner.

- **Responsibilities** – The Program's Land Specialist will be responsible for initiating coordination with landowners and drafting and execution of management agreements. Conceptual management actions and areas to be included in the agreements are presented this Complex plan.

2. Adaptive Management Goals and Objectives

This section contains objectives related to the experimental design of implementation of the Program's Adaptive Management Plan and experiments to be conducted through that plan. The following summarizes major adaptive management experimental design components that may be conducted completely or in part within this complex:

1. *Bird Response*
   a. The objective of this experiment is to reduce uncertainty around key factors that influence habitat selection, nest success, and survival for the target species, including (but not limited to): island size, island elevation above water, and unobstructed view distances.

2. *"Paired Design" – River nesting vs. OCSW nesting*
   a. The objective of this experiment is to determine differences in nest success and productivity, as well as species selection and use, between river nesting and OCSW nesting of the target species by offering both types of available habitats in close proximity.

3. *Flow-Sediment-Mechanical (FSM) "Proof of Concept."*
   a. The objective of this experiment is to assess the ability of Program flow, sediment, and mechanical management to create and/or maintain least tern and piping plover nesting habitat and whooping crane roosting habitat, as well as maintain wide, mobile, braided river channel area.

4. *Conservation Monitoring and Directed Research*
   a. System-wide Program conservation monitoring protocols (tern and plover, whooping crane, geomorphology/in-channel vegetation, water quality) and directed research projects (tern and plover foraging habits study, vegetation scour research) may occur at this complex based on monitoring and research priorities and schedules.

- ***Goal 2 – Utilize Complex to refine Program's understanding of interior least tern (LETE) and piping plover (PIPL) riverine habitat requirements.***

  - ***Objective 2a*** – Test Program System, LETE and PIPL hypotheses related to amount and physical characteristics of riverine nesting habitat and its relationship to LETE and PIPL occurrence, use and productivity by providing bare sand substrate at a range of sizes and heights. (Priority hypotheses S1b,T1, P1, TP4d, TP5)

    - **Strategy –** Design and implement LETE and PIPL riverine habitat selection experiment. The experiment will include design, construction and maintenance of in-channel nesting islands with two ranges of sizes (small/large) and heights (low/high) in the channel as well as target tree clearing to increase distance to visual obstructions and predator roost habitat. Experimental and engineering design to be developed by Program staff and contractors under the guidance of the TAC, AMWG, and GC. Final experimental design documents will be attached to this management plan when completed. LETE and PIPL presence, use, and productivity will be monitored per the Program's annual system-wide LETE and PIPL monitoring protocol. Annual monitoring data will be used to address priority hypotheses.

      - **Methods –** Construction and maintenance of nesting islands will be accomplished using methods from *Habitat Management Methods for Least Terns, Piping Plovers, and Whooping Cranes* including use of heavy equipment for construction and annual application of pre-emergent herbicide and mechanical removal for vegetation control. Monitoring methods are presented in the Program's LETE and PIPL monitoring protocol.

    - **Area –** Construction of riverine LETE and PIPL habitat will occur on Program Tract 2010004. The extents of various activities are presented on Figure A-2.

    - **Timeline –** Design and permitting will be accomplished in the summer and fall of 2012. Construction will occur during the winter of 2012/2013. Monitoring and maintenance will occur annually until at least 2016, at which time this Complex plan will be revisited.

    - **Costs –** A detailed cost estimate for all riverine activities will be developed in the fall of 2012 as part of the experimental design. Construction costs are expected to be on the order of $100,000. Annual maintenance costs are expected to be on the order of $10,000.

- **Responsibilities –**Program staff or contractors under the supervision of Program staff (in conjunction with the appropriate advisory committees) are responsible for design, permitting and monitoring. Construction and maintenance activities will be bid.

- ***Goal 3 – Refine Program's understanding of interaction between LETE and PIPL riverine and off-channel sand and water (OCSW) nesting habitat.***

  - ***Objective 3a*** – Test Program System, LETE and PIPL hypotheses related to bird response to habitat development, habitat preference for and productivity on riverine versus OCSW nesting habitat. (Priority hypotheses S1b, T1, P1, TP1)

    - **Strategy** – Monitor LETE and PIPL use and productivity on Program riverine habitat and adjacent non-complex OCSW nesting habitat on Program Tracts 2011001 and 2011002. Occurrence, use and productivity will be monitored per the Program's LETE and PIPL monitoring protocol.

      - **Methods** – Riverine habitat creation and maintenance methods are presented under Objective 2a. Non-complex habitat creation and maintenance methods are presented in the operations and maintenance plans for those tracts. Monitoring methods are presented in the Program's LETE and PIPL monitoring protocol.

    - **Area** – See Objective 2a for location of mechanically created islands. The location of the OCSW area on 2011001 is shown on Figure A-2. The locations of 2011001 and 2011002 can be seen on Figure A-1.

    - **Timeline** – Construction of OCSW habitat on 2011001 is to be completed in spring 2012. 2011002 is an active sand pit, and habitat creation will be ongoing. See objective 2a for riverine habitat construction. Maintenance and monitoring will occur annually.

    - **Cost** – OCSW construction costs are described in management plans for those non-complex tracts. Riverine habitat construction is covered in objective 2a of this plan.

    - **Responsibilities** –Program staff or contractors under the supervision of Program staff are responsible for monitoring.

- ***Goal 4 – Evaluate the effects of the flow-sediment-mechanical (FSM) management strategy on physical processes and channel characteristics.***

  - ***Objective 4a*** – Evaluate ability of FSM management strategy to produce and/or maintain habitat that approximates Land Plan table 1 criteria for least terns, piping plovers, and whooping cranes. (Priority hypotheses Flow1, Flow3, Flow4, Flow5)

    - **Strategy –** Implement an FSM proof-of-concept (POC) experiment utilizing the implementation design developed for the Elm Creek Complex as a template. Experiment components will include 2-D hydraulic and sediment transport modeling, mechanical removal of in-channel vegetation, and monitoring of geomorphic and vegetation response to Program and natural flow events.

      - **Methods –** Vegetation will be removed using methods from *Habitat Management Methods for Least Terns, Piping Plovers, and Whooping Cranes* including use of heavy equipment for channel clearing and leveling (as dictated by experimental and engineering design). Implementation design document, monitoring protocol(s), and data analysis will be developed using the ongoing FSM POC experiment at the Elm Creek Complex as a template.

    - **Area –** Reach extending downstream from the west property boundary of Tract 2010004 to the east property boundary of the same tract.

    - **Timeline –** Modeling and development of the implementation design will be initiated in the summer of 2012. Vegetation clearing will occur during the winter of 2012. The implementation design will define milestones and/or deadlines to assess success or failure, or requirements for further vegetation control efforts within the duration of the experiment.

    - **Cost –** Modeling, development of the implementation design, and monitoring are expected to cost on the order of $200,000 annually during the duration of the project. Annual vegetation removal costs will vary depending on the ability of flow to scour vegetation. If in-channel vegetation removal becomes necessary, annual costs are expected to be on the order of $15,000. Other costs not accounted for within the management plan include costs associated with flow releases and sediment augmentation activities.

    - **Responsibilities -** Program staff or contractors under the supervision of Program staff (in conjunction with the appropriate advisory committees) are responsible for design, permitting and monitoring. Construction and maintenance activities will be bid.

3. Species Habitat Goals and Objectives

- ***Goal 5 – Improve sand and water habitat for LETE, PIPL and WC.***

  - ***Objective 5a –*** Create and maintain a complex with riverine target bird species habitat that approximates *Table 1. Target Habitat Complex Guideline*s of the Program Land Plan, to the extent possible.

    - **Strategy –** Development and maintenance of sand and water LETE, PIPL and WC habitat will be accomplished as part of design and implementation of the experiments presented under Goals 2 and 3. Methods, area, timeline, costs and responsibilities can be found in the same location.

- ***Goal 6 – Improve wet meadow/grassland habitat for WC and other species of concern.***

  - ***Objective 6a*** – Create and maintain wet meadow/grassland that conforms (to the extent appropriate) to *Table 1. Target Habitat Complex Guidelines,* of the Land Plan and/or other criteria that will be developed by the Wet Meadow Working Group, a subgroup of the Technical Advisory Committee (TAC).

    - **Strategy –** Clear woody vegetation from wet meadow areas and convert cropland area to grassland using a local-ecotype seed mix that incorporates mesic wet meadow species.

    - **Area –** All Program wet meadow/grassland and cropland areas within complex. Areas are identified on Figure A-3.

    - **Timeline –** Woody vegetation removal to take place in 2012. Native prairie grass seeding of alfalfa field to commence in fall 2012 or spring 2013.

    - **Cost –** Woody vegetation removal costs on the order of $70,000. Seeding for cropland area will cost approximately $10,000.

    - **Responsibilities –** Design and oversight by Program staff. Construction activities will be bid.

  - ***Objective 6b*** – Improve hydrology in wet meadow areas north of Shoemaker Island Road.

    - **Strategy –** Clean out road ditches, reroute water in road ditch across wet meadow area, remove small berm in wet meadow area north of road.

- **Area –** Along and north of Shoemaker Island Road on tract 2010004.

- **Timeline –** Ditch cleanup to be completed in spring 2012. Alternatives for water routing to be investigated in 2012. Construction to commence in 2013.

- **Cost –** Costs to be developed once specific activities are identified, but are expected to be on the order of $30,000.

- **Responsibilities -** Conceptual design and costs to be developed by Program staff. Construction activities will be bid. Program staff will initiate coordination with county road department for activities affecting the roadway and ditches.

- ***Objective 6c –*** Manage wet meadow area to provide a diversity of vegetative structure with wet meadow area maintained in short stature during each spring and fall whooping crane migration.

  - **Strategy –** Use a combination of livestock grazing, rest, haying, mowing, and prescribed fire to provide a diverse mixture of vegetative structure and species composition as of March 1 in all years. Timely haying and moderately grazed pastures will result in large areas of short stature vegetation for crane use.

    - ***Methods –*** Grazing in combination with haying and prescribed fire will be used to manage existing grasslands. Grazing will typically be for a 5 month grazing period (May-October) each year at a moderate stocking rate. Typical stocking rate will be one animal unit (one cow/calf pair or approximate equivalent weight in yearling cattle) per 5.5 acres. Each management unit will be evaluated annually and adjustments in stocking rate and timing will be made accordingly. Haying will be coordinated with tenant to maximize benefits to target species. Prescribed fire will be planned to suppress cool season, invasive vegetation under appropriate environmental conditions and fuel loading and conducted during mid-March to mid-April. Prescribed fire will be implemented on each management unit on a 4 year return interval.

  - **Area –** All grassland areas of tract 2010004. Management units identified on Figure A-4. Prescribed fire units and schedule identified on Figure A-5.

- **Timeline –** Grazing to occur annually. Prescribed fire to be implemented according to the schedule on Figure A-5.

- **Cost –** Prescribed fire costs are estimated at $15-25/ acre. A Request for Proposals for prescribed fire services will be released in 2012 and following years based on need. Annual grazing and haying income is estimated to be $39,000 for 5 month grazing season (May 15-October 15).

- **Responsibilities -** Program staff and consultants will provide grazing lease oversight. Contractors under the supervision of Program staff will conduct prescribed burns. Local NRD burn teams may also be utilized when available for prescribed burns.

- ***Objective 6d –*** Monitor wet meadow condition including hydrology and vegetation species composition.

  - **Strategy –** The Shoemaker Island Complex contains large wet meadow grassland areas. These grasslands should be monitored to assess effects of Program management activities; both to ensure the management activities are not adversely affecting current function, and to potentially enable restoration of other wet meadow areas on Program lands in other bridge segments.

    - ***Methods –*** Methods will be developed by the Wet Meadow Working Group and the TAC as part of experimental design, but are likely to include groundwater monitoring wells or staff gages, regular intensive vegetation surveys, and documentation of management activities including grazing timing and intensity.

  - **Area –** All grassland areas of tract 2010004.

  - **Timeline –** Monitoring plan to be developed in 2012. Monitoring to occur annually.

  - **Cost –** Costs will vary based on exact methods and equipment, and will be developed in combination with the monitoring plan.

  - **Responsibilities –** Program staff will coordinate plan development. Monitoring may be carried out by Program staff or contractors under the supervision of Program staff.

- ***Goal 7 – Provide benefits to other species of concern without compromising ability to accomplish target species goals and objectives.***

  - ***Objective 7a –*** Monitor Platte River Caddisfly (PRCF) population on property.

    - **Strategy –** At the September 2011 GC meeting, the GC instructed the ED Office that no clearing or management should occur in areas where known PRCF populations exist, and asked the ISAC to assess Program opportunities and implications with regard to the PRCF. As such, no tree clearing or other management will occur unless the ISAC and GC recommend further action. As with other PRCF populations on Program properties, this population will be monitored and documented annually.

    - **Area –** The current known population of PRCF exists in the southeast wooded slough portion of tract 2010004. A 2011 survey also indicated presence of PRCF in the northeast corner of tract 2010004.

    - **Timeline –** Surveys and reports will be completed annually.

    - **Cost –** N/A

    - **Responsibilities –** Program staff are responsible for coordination and monitoring.

  - ***Objective 7b*** – Improve habitat for sandhill cranes.

    - **Strategy –** Sandhill crane habitat needs are similar in nature to whooping crane habitat needs. Sandhill cranes are a Program "other species of concern" and will benefit through many habitat improvements made for whooping cranes (see goals 5 and 6).

4. Operations and Maintenance Goals and Objectives

- ***Goal 8 – Conduct all activities in adherence with the Program's Good Neighbor Policy.***
  - ***Objective 8a*** – Emphasize the prevention, as opposed to the correction of actions that cause adverse effects on adjacent landowners or others.
    - **Strategy –** Prevention efforts will rely on early coordination with Complex landowners to identify and address potential negative effects. Conceptual design documents will be used as a baseline for discussion of actions and identification of potential effects.
  - ***Objective 8b*** – Quickly identify any problems and ensure needed corrective actions can be taken in a timely manner.
    - **Strategy –** Timely identification of existing or potential problems will accomplished through robust monitoring of Program actions. Complex-specific monitoring protocols will be developed as part of the AM experimental designs. Monitoring protocols will include "trigger" values or conditions that will serve as indicators of potential problems.
  - ***Objective 8c*** – Provide means to cover documented damage claims resulting from the actions of the Program or contractors acting on the Program's behalf.
    - **Strategy** – The Program and all consultants and contractors planning and/or implementing actions will be required to carry appropriate levels of liability insurance. The Program may request that contractors name the Program as an additional insured on contractor insurance policies.
  - ***Objective 8d*** – Demonstrate good land stewardship by managing Program lands in accordance with sound wildlife management and agricultural practices.
    - **Strategy –** The Program will identify and include wildlife and agricultural management practices in tract-level management plans. Management practices will be selected based on their ability to provide benefits to species habitat, while being as compatible as possible with agricultural/farm management, and with other compatible uses in mind.

IV. MONITORING AND RESEARCH

A. Baseline Monitoring

A variety of monitoring activities will be conducted in the Complex area (and nearby non-complex area) as part of the system-wide investigations conducted under the Integrated Monitoring and Research Plan (IMRP). Baseline monitoring efforts include:

1. Land Cover Analysis

- **Objectives –** Document pre-Program land cover conditions. Land cover analysis will be performed again near the end of the First Increment to document changes in land cover.
- **Hypotheses Links** – S1, S1a
- **Timeline –** Pre-Program completed in 2007. Next analysis in 2018.
- **Responsibilities –** ED Office

2. Channel LiDAR Project

- **Objectives –** Document channel topography annually.
- **Hypotheses Links** – S1, S1a, Flow1, Sediment1-4
- **Timeline –** Baseline LiDAR collection completed in March of 2009. Collection to continue annually under leaf-off and low flow conditions.
- **Responsibilities –** Collection and analysis by contractor under supervision of ED Office.

3. Aerial Photography

- **Purpose –** Document annual channel features and vegetation.
- **Hypotheses Links** - TP 5, Sediment 3, WC3
- **Timeline –** Annual during First Increment per protocol.
- **Responsibilities –** Data collection performed by contractors under supervision ED Office. Analysis by ED Office.

4. In-Channel Geomorphology and Vegetation Monitoring

- **Purpose –** System-wide analysis of changes/trends in geomorphology and in-channel vegetation over time. Correlate Program actions with changes/trends. Rotating panel point 12 is located near the center of the complex.
- **Hypotheses Links** – Flow1-5, Sediment1-4
- **Timeline –** Annual during First Increment.
- **Responsibilities –** Monitoring performed by contractors under supervision ED Office.

5. Least Tern, Piping Plover and Whooping Crane Monitoring

- **Purpose -** Document WC use, document LETE and PIPL use, nesting pairs, and fledging success.
- **Hypotheses Links** – T1, P1, TP1-5, WC1 & 3
- **Timeline –** Annual during First Increment.

- **Responsibilities –** Monitoring performed by Program staff and/or contractors or cooperators under supervision Program staff.

6. Species of Interest Surveys

- **Purpose -** Document habitat for and use of Program properties by "species of concern" or other species of interest.
- **Hypotheses Links** – S2
- **Timeline –** Following acquisition and later, as appropriate, after restoration.
- **Responsibilities –** Coordination by ED Office. Surveys by contractors or agency personnel.

B. Research

Research efforts to be conducted in full or part on this complex under the IMRP include:

1. LETE and PIPL riverine habitat selection experiment (Goal 2, Objective 2a)

- **Purpose -** Refine Program's understanding of interior LETE and PIPL riverine habitat needs and test associated AMP priority hypotheses for each species.
- **Hypotheses Links** - S1b,T1, P1, TP4d, TP5
- **Timeline –** Design and construction in 2012. Monitoring annually.
- **Responsibilities –** Program staff or contractors under the supervision of Program staff (in conjunction with the appropriate advisory committees) are responsible for design, permitting and monitoring. Construction and maintenance activities will be bid.

2. LETE and PIPL riverine versus OCSW experiment (Goal 3, Objective 3a)

- **Purpose -** Determine LETE and PIPL preference for and productivity on riverine versus OCSW nesting habitat.
- **Hypotheses Links** - S1b, TP1
- **Timeline –** Initial design and construction in 2012. Monitoring annually.
- **Responsibilities –** Program staff or contractors under the supervision of Program staff (in conjunction with the appropriate advisory committees) are responsible for design, permitting and monitoring. Construction and maintenance activities will be bid.

3. FSM experiment (Goal 4, Objective 4a)

- **Purpose -** Evaluate the ability of the FSM management strategy to maintain acceptable riverine habitat for the target bird species.
- **Hypotheses Links** - Flow1, Flow3, Flow4, Flow5
- **Timeline –** Design and construction in 2012. Monitoring annually.
- **Responsibilities –** Program staff or contractors under the supervision of Program staff (in conjunction with the appropriate advisory committees) are responsible for design, permitting and monitoring. Construction and maintenance activities will be bid.

V. ENVIRONMENTAL LAWS, PERMITTING AND COMPLIANCE

A. Section 7 Consultation

1. Measures to Minimize or Eliminate Take of Least Tern and Piping Plover

Habitat improvement activities occurring in the river channel between April 15 and August 15 will only be conducted in the absence of nesting least terns and piping plovers. Program Staff will insure that a survey for these species is conducted by qualified individuals (e.g. by Program staff, contractor, conservation owner) in the area that will be disturbed within three days prior to the initiation of activities.

2. Measures to Minimize or Eliminate Take of Whooping Crane

For habitat restoration and land management activities in or within 0.25 miles of the Platte River channel occurring between March 23 and May 10, or October 1 and November 15, construction shall only take place from one hour following sunrise to two hours prior to sunset unless otherwise approved by the Service's Coordinator of the Whooping Crane Migration Tracking Program. Program staff will notify the Service when Program habitat restoration work will be conducted during the above dates from the Highway #283 and Interstate 80 intersection near Lexington, Nebraska downstream to Chapman, Nebraska.

Construction or other work crews working in or within 0.25 miles of the channel during the above dates will check channel areas for the presence of whooping cranes prior to starting work each day, and report the presence of whooping cranes to Program staff. When whooping cranes are discovered in the Platte River valley, either by the Program monitoring crew or the above required check by construction or work crews, or are known to be in the valley through other sources, including via notification from the Service's Coordinator, Program staff will confer with the Service and will notify construction crews if it is necessary to temporarily halt construction activities.

Construction work should be completed as quickly as possible. Earth moving equipment will be moved from the river channel to an upland site located behind a tree line at the end of each work day if such features are available on the property. In the instance that such features are unavailable, equipment should be moved to a position at least 0.25 miles away from the channel.

3. Measures to Minimize or Eliminate Take of Pallid Sturgeon

Land management activities will not result in incidental take of pallid sturgeon.

B. Fish and Wildlife Coordination Act and Nebraska Non-game and Endangered Species Conservation Act

The Program will work with the USFWS and NGPC to identify potential impacts to state and federal species of concern and address them as part of this document. Program actions to avoid or mitigate potential species impacts not addressed in other portions of Section IV are presented below.

1. Raptors

The Program will conduct raptor surveys for management activities that may affect active raptor nests during the period of February 1 through July 15th. If a nest is discovered, that tree will not be removed.

2. Northern River Otter

The Program will conduct natal den surveys when performing restoration or management actions during the period of February 15 to June 15 that may impact river channel or slough banks where natal dens may be present. If natal dens are discovered, the Program will coordinate with the NGPC to design appropriate buffers.

3. Western Prairie Fringed Orchid

Projects that will result in the disturbance of native prairies or wet meadows will be surveyed for the presence of Western Prairie Fringed Orchid during the flowering period of June 15 through July 7th. If this species is present, activities will be modified to prevent destruction of existing plants.

4. Platte River Caddisfly

Surveys for Platte River Caddisfly potential habitat and populations will be conducted on all Program properties at the time of acquisition, or during the soonest recommended survey period after acquisition. If a population is present on the property and restoration or management actions may negatively impact the population, the Program will coordinate with USFWS and NGPC to determine appropriate methods to avoid or mitigate impacts.

5. Vegetation Communities of Conservation Importance

Surveys for Northern Cordgrass Wet Prairie, Northern Sedge Wet Meadow, and Wet Mesic Tallgrass Prairie will be conducted on all Program properties during the soonest recommended period after acquisition. If occurrences are found, the Program will coordinate with the USFWS and NGPC to determine appropriate methods to avoid or mitigate negative impacts from Program management actions. Additionally, the Program will investigate opportunities to re-establish these communities if suitable locations are present.

6. Regal Fritillary

The Program will coordinate with the USFWS and NGPC to investigate opportunities to establish native violet species (*Viola spp.*) in native grasslands or grassland restorations to provide a host species for the regal fritillary and promote its conservation.

C. Migratory Bird Treaty Act

Land management that involves burning, cutting or mechanical removal of vegetation (with the exception of restoration activities on ground that was previously in agricultural crops) will not occur between April 15 and July 15 without first doing surveys to insure that no occupied migratory bird nest will be destroyed.

D. Bald Eagle Act

Eagle nests, if established, will not be disturbed and a 330 foot buffer (no access) or 660 foot buffer (non mechanical equipment access area) will be maintained during the bald eagle breeding season (March – July). Known eagle roost trees and trees within 330 feet of a known eagle nest will not be removed. Tree removal within the 660 foot buffer and outside the 330 foot buffer will not occur during the bald eagle breeding season.

E. United States Army Corps of Engineers Section 404 Permitting and Nebraska Department of Environmental Quality Section 401 Water Quality Certification

Prior to commencement of construction work to be accomplished in wetlands or waters of the United States, including dredging or placement of fill material, the Program will obtain a 404 permit and 401 water quality certification. Work in wetlands or waters of the State that are not jurisdictional under the Federal Clean Water Act will still need to comply with the Nebraska Department of Environmental Quality's Title 117.

F. National Pollutant Discharge Elimination System Construction Stormwater Discharge Permit

All construction work that will disturb an area exceeding 1 acre in size will be required to meet the requirements of the Environmental Protection Agency NPDES Construction General Permit. This permit includes the development of a Stormwater Pollution Prevention Plan. The Program will submit a Notice of Intent a minimum of seven days before commencement of construction activities.

G. County Floodplain Development Permit

All fill placed within the 100-year floodplain will require a floodplain development permit from the county where the work is undertaken. In order to obtain a permit, a project must have No-Rise certification meaning that it will raise the 100-Year Base Flood Elevation (BFE) by less than one foot.

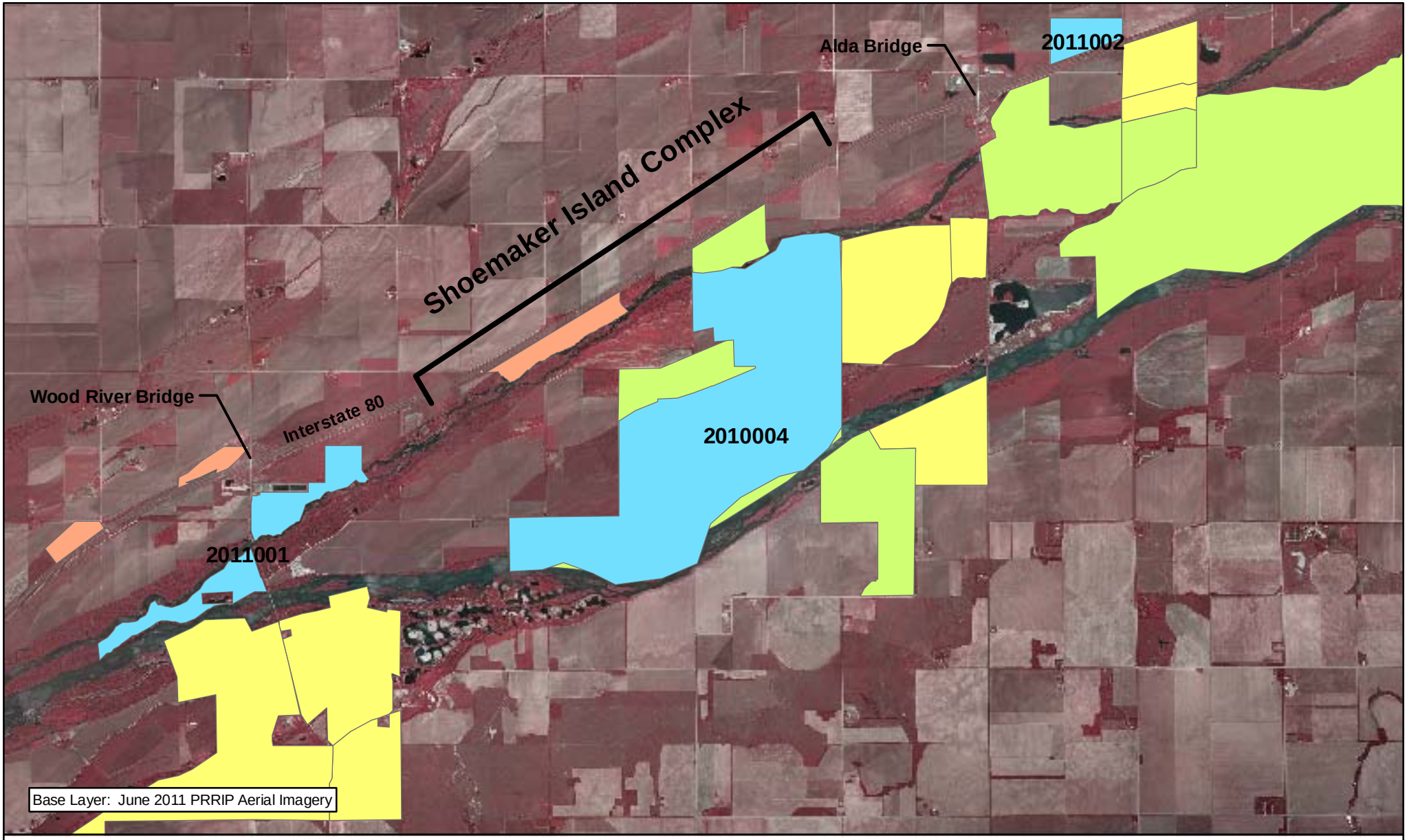
H. State Historic Preservation Office Clearance

Projects will require screening for impacts to cultural resources including historic properties. Program properties will be submitted to the State Historic Preservation Office for a cultural resources screening at the time of acquisition.

I. Good Neighbor Policy

The Program will comply with local, state, and federal laws, and to the extent permitted by such laws will be responsible for its actions to the same extent as a private individual under like circumstances.

APPENDIX A – COMPLEX FIGURES



PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

Legend

- Audubon
- CNPPID
- NGPC
- NPPD
- PRRIP
- PRWCT
- TNC
- Wyoming

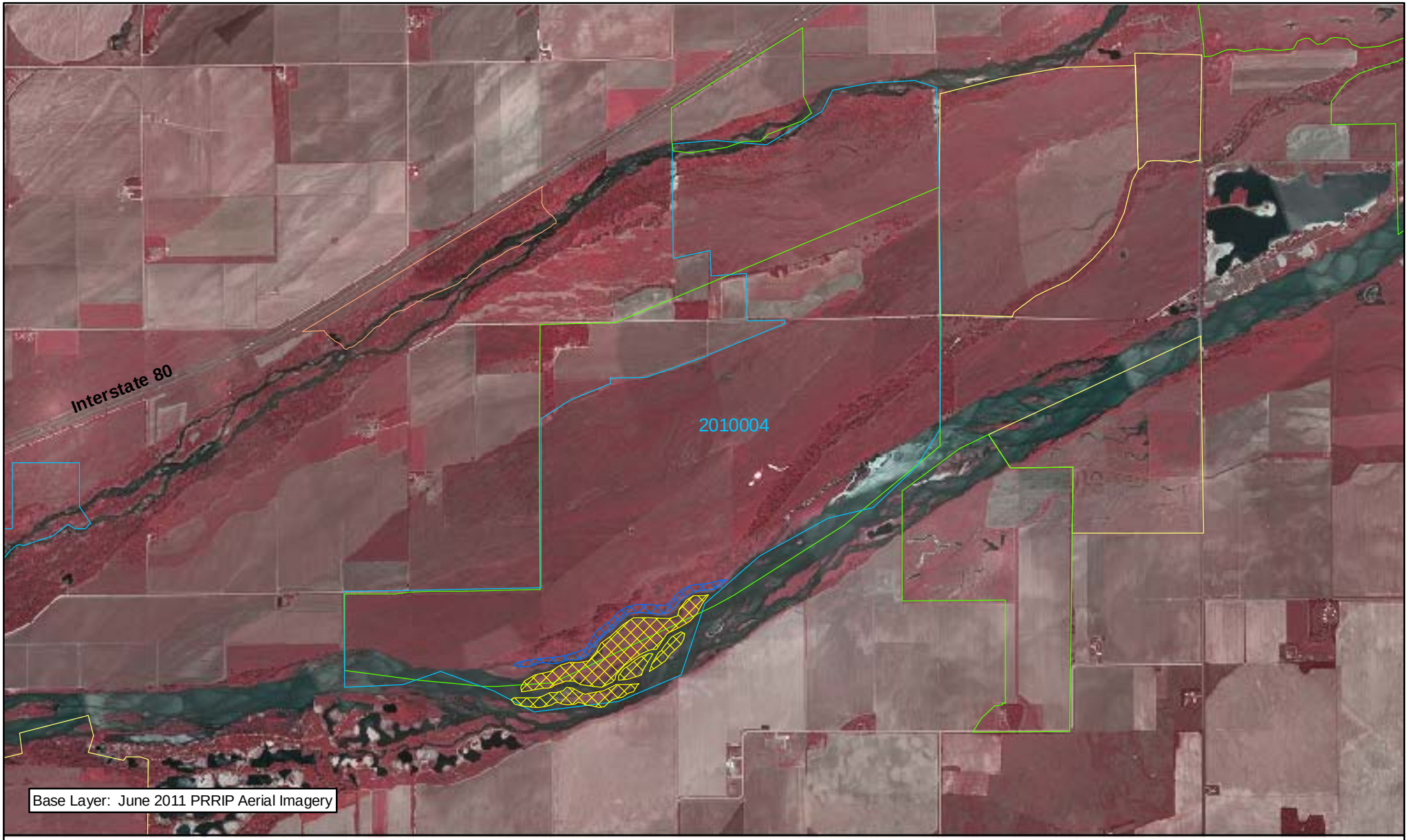
N

Miles
1

SHOEMAKER ISLAND COMPLEX
AREA MAP

Date: 01/19/12
By: JDB

Figure A-1



PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

Legend

- Island Clearing
- Tree Clearing
- PRRIP
- NGPC
- PRWCT
- TNC

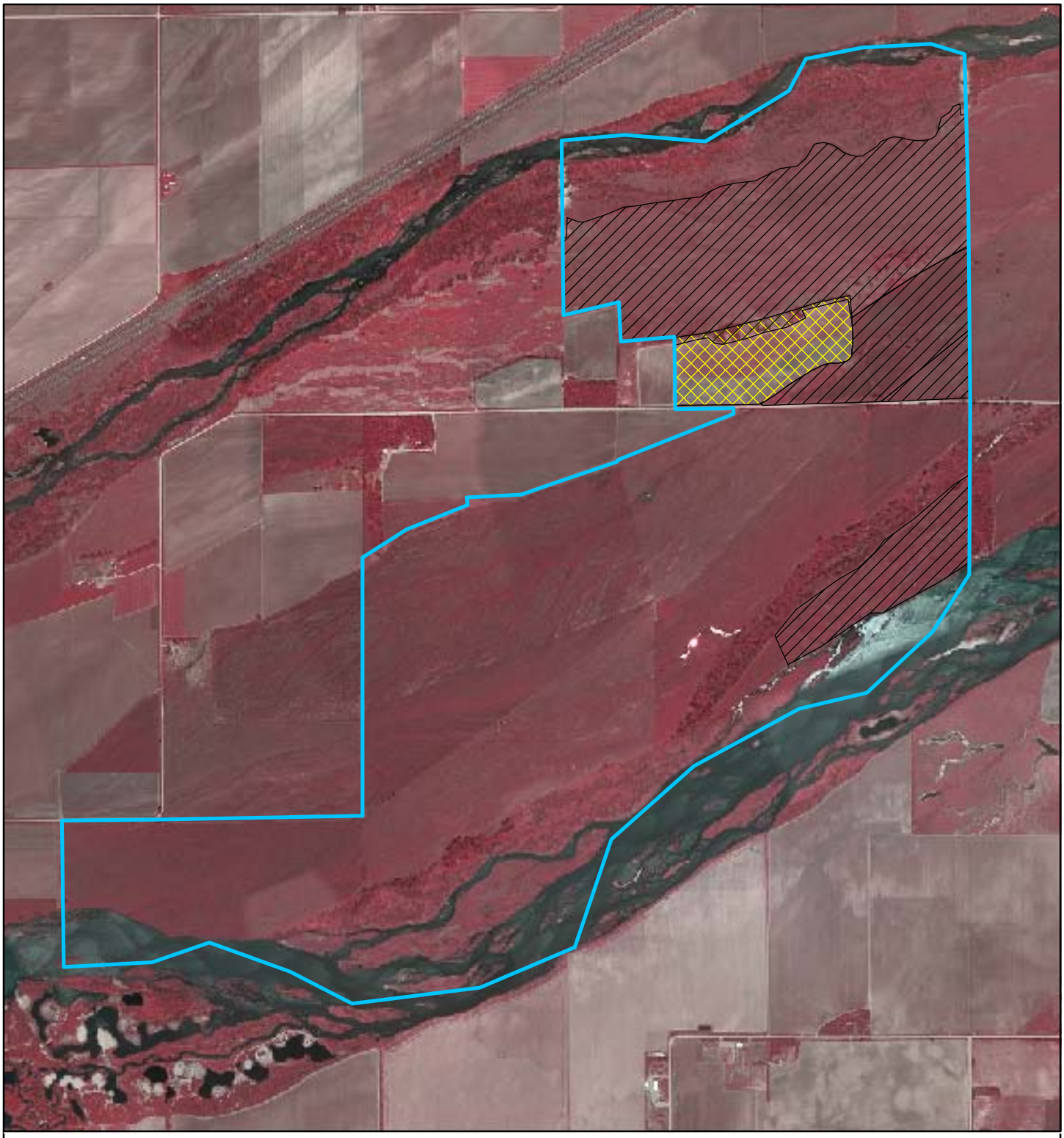
N

0.5 Miles

SHOEMAKER ISLAND COMPLEX
HABITAT ACTIVITIES

Date: 01/19/12
By: JDB

Figure A-2



Legend

- 2010004
- Pasture Cleanup/Tree Clearing
- Cropland Conversion

N

0.5 Mile

SHOEMAKER ISLAND COMPLEX
Pasture Cleanup &
Cropland Conversion

Date: 1/11/12

By: TRT

Figure A-3

PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

Legend

Mangement Units

Mile

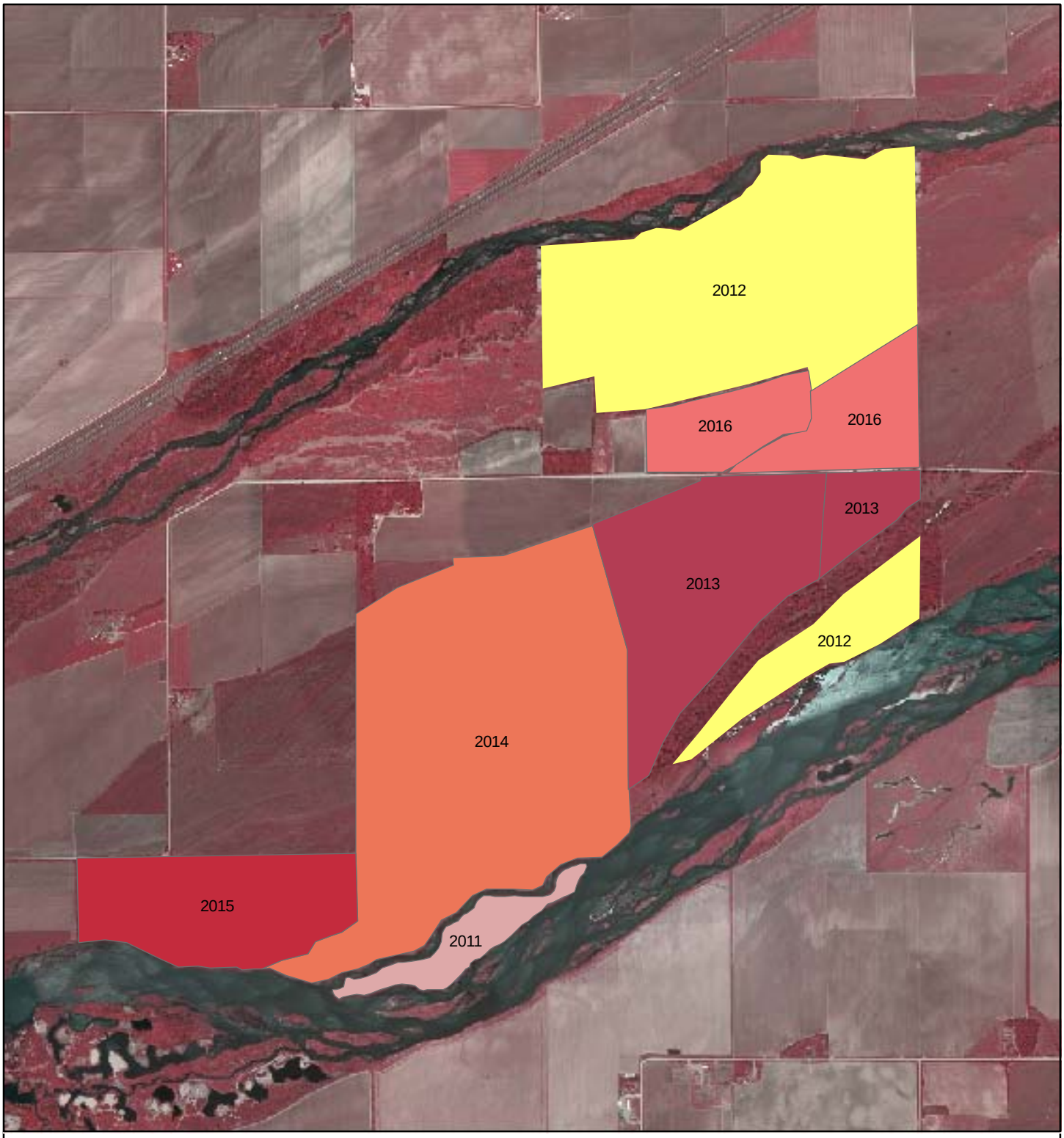
0.5

SHOEMAKER ISLAND COMPLEX
Management Units

Date: 1/11/12

By: TRT

Figure A-4



PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

Legend

- 2011
- 2012
- 2013
- 2014
- 2015
- 2016

0.5 Mile

SHOEMAKER ISLAND COMPLEX
Prescribed Fire Schedule
2011-2016

Date: 1/11/12

By: TRT

Figure A-5

APPENDIX B – TRACT OPERATIONS AND MAINTENANCE PLANS

APPENDIX C – COMPLEX ANNUAL WORK PLANS