



PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (PRRIP -or- Program)

Scope of Work – Wet Meadow Hydrology Report Peer Review

1) Document Introduction and Background

The PRRIP seeks an independent peer review of the Wet Meadow Hydrology Report developed by the Program's Executive Director's Office (EDO). For the PRRIP, understanding the role of hydrology at wet meadows in the Central Platte River Valley (CPRV) has been a long-term goal under broader objectives to manage land and water resources to benefit four threatened and endangered species (the Program's target species: whooping crane, piping plover, interior least tern [now de-listed], and pallid sturgeon). During the Program's First Increment (2007-2019), fully one third of the lands (10,000 acres) to be acquired by the Program were set to be managed as wet meadow habitat with the objective of providing additional wetland diurnal habitat for the endangered whooping crane. At that time, it was thought that flow releases to benefit wet meadows could consume a major fraction of the Environmental Account (EA) water budget. However, as water and land priorities adapted in response to learning about whooping crane use of wet meadows, water-use to support wet meadows decreased in priority. But, despite the shift in priorities, the Program continues to recognize wet meadows as vital components of the CPRV.

This Wet Meadow Hydrology Report provides a summary of data and analysis conducted as part of the Program's Wet Meadow Hydrologic Study. The study was designed to utilize hydrologic and climatological data that was collected at two Program-managed wet meadow study sites (Fox and Binfield) between 2013 and 2021. Specific objectives were to improve the understanding of wet meadow hydrology using an eight-year hydrological and climatological dataset (i.e., contribute to a growing body of literature), to quantify relationships between processes dominating wet meadow hydrology, and to develop tools and methods that inform management and restoration of wet meadow sites throughout the CPRV. Pending internal feedback and the results of this peer review regarding the significance and relevance of methods and results presented in the Wet Meadow Hydrology Report, the intent is to prepare a manuscript for publication that incorporates parts of the overall report.

The Wet Meadow Hydrology Report consists of 131 pages and is organized as follows:

- Cover Page, Preface, Table of Contents, Lists of Figures/Tables/Appendices, Executive Summary (10 pages)
- Section 1 – Introduction and Background (3 pages)
- Section 2 – Study Sites and Monitoring Networks (3 pages)
- Section 3 – Characterizing the Hydroregime (18 pages)
- Section 4 – Groundwater-Vegetation Links (11 pages)
- Section 5 – Modeling (10 pages)
- Section 6 – River-Floodplain Elevation Analysis (16 pages)
- References (4 pages)
- Appendix A – Wet Meadow Definitions (3 pages)
- Appendix B – PRRIP Wet Meadow Tracts (1 page)
- Appendix C – Groundwater Contours from Existing Groundwater Model (1 page)
- Appendix D – Groundwater Statistics (16 pages)
- Appendix E – Ground Surface-Groundwater Elevation Relationships (2 pages)
- Appendix F – Grassland Survey – L7th Supplement (1 page)
- Appendix G – Model Calibration Results (32 pages)



The main narrative is broken into 7 sections: 1) introduction and background, 2) study area and data collection, 3) quantifying the hydroregime, 4) groundwater-vegetation links, 5) model prediction of groundwater levels, and 6) river-floodplain elevation analysis. Sections 3 through 6 are structured as stand-alone scientific reports containing methods, results, and discussion. The final sections include references and appendices with supporting information.

The Introduction includes a review and discussion of background information about wet meadows in the central Platte River valley to provide context for the Report. Section 2 introduces the study area encompassing the Big Bend reach of the central Platte River valley and describes two key Program-managed wet meadow study sites. Sections 3 through 6 describe the methods and findings for four scientific analyses related to wet meadow hydrology. Section 3 includes a statistical analysis of wet meadow groundwater depths. Section 4 applies a previously developed method to predict continuous vegetation landcover types at wet meadow sites based on groundwater depth statistics. Section 5 describes a modified analytical model that can be used to predict groundwater levels at wet meadow sites based on time-varying inputs of stage, precipitation, evapotranspiration (ET), and calibrated hydraulic parameters. Section 6 presents an exploratory analysis that uses river and ground surface elevation differences to make predictions about shallow sub-surface hydrology within the Platte River floodplain.

The Wet Meadow Hydrology Report presents a series of analyses that extend the understanding of hydrology at wet meadow sites. This includes characterizing spatiotemporal variations in depth to groundwater, quantifying the broad a range of hydrologic conditions that characterize wet meadows, applying quantitative links between vegetation and hydrology, demonstrating a useful tool for defining management targets at wet meadow sites given specific vegetation objectives, documenting and testing a simple analytical modeling method that can be used to test management scenarios to understand the influence of river discharge changes on groundwater levels, and describing a differencing analysis that may provide utility for screening and characterizing hydrology when field data are limited. Methods and results described herein collectively address objectives to improve the understanding of wet meadow hydrology and provide useful tools for Program decision-makers at other wet meadow sites.

2) Description of Peer Review

The purpose of this review is to provide a formal, independent, external scientific peer review of the information presented in the Wet Meadow Hydrology Report. The peer review process, including all communication with the Peer Review Panel and development of the summary report from the individual peer reviews, will be coordinated by Dr. Chadwin Smith of the PRRIP EDO.

3) Methods and Scientific Standards

Factors to be addressed include the scientific merit of technical analyses and conclusions. The peer reviewers must ensure any scientific uncertainties are clearly identified and characterized, and the potential implications of these uncertainties for the technical conclusions drawn are clear. Peer reviewers are advised they are not to provide advice on policy. Rather, they should focus their review on identifying and characterizing scientific and technical uncertainties and the technical soundness of the Wet Meadow Hydrology Report.



4) Charge to the Panel

Each Peer Review Panel member will be tasked with reviewing the Wet Meadow Hydrology Report from their particular area of expertise following the PRRIP Scientific Peer Review Guidelines (Attachment A) and the specific directions contained in this Scope of Work. All Peer Reviewers must be prepared to sign (during the contracting phase) the PRRIP Certification Regarding Lobbying (Attachment B) and the PRRIP Conflict of Interest Form for Peer Reviewers (Attachment C). Peer reviewers will be asked to submit all comments, questions, and other communication in writing to ensure an appropriate record is built, and generally all communication with peer reviewers will be conducted via e-mail during the course of the review.

Peer reviewers must consider and respond to the questions listed below, at a minimum, in their reviews:

- 1) Does the Wet Meadow Hydrology Report adequately address the overall objectives – to improve the understanding of wet meadow hydrology using an eight-year hydrological and climatological dataset (i.e., contribute to a growing body of literature), to quantify relationships and controls for hydrology and vegetation at wet meadow sites, and to develop tools and methods that inform management and restoration for wet meadows throughout the central Platte River Valley?
- 2) Does the author draw reasonable and scientifically sound conclusions from the information presented? If not, please identify those that are not and the specifics of each situation.
- 3) Are there any seminal peer-reviewed scientific papers omitted from consideration that would contribute to alternate conclusions that are scientifically sound? Please identify any such papers including citations.
- 4) Are the statistical methods and modeling tools used valid and current, and are the associated results presented in a manner useful to Program decision-makers?
- 5) Are potential biases, errors, or uncertainties appropriately considered within the methods sections and then discussed in the results and conclusion sections?
- 6) Are recommended future work items noted in the Wet Meadow Hydrology Report reasonable and likely to increase knowledge of wet meadow hydrology? Will anticipated outcome of those additional research items help Program decision-makers in managing wet meadows in the central Platte River Valley? Would you recommend other research and analyses?

Reviewers must protect information and ensure that services consist of unbiased assessments. Until it is made public, no information from the Wet Meadow Hydrology Report may be released without express written permission from the EDO. Additionally, all peer review-related inquiries from outside sources must be forwarded to Dr. Smith of the EDO; reviewers should not communicate with those inquiring about the review.

5) Peer Review Rating & Recommendation

In addition to providing written comments, each reviewer will provide a separate comprehensive rating and recommendation utilizing the following format:

**RATING**

Please score each aspect of this set of chapters using the following rating system:

1 = Excellent; 2 = Very Good; 3 = Good; 4 = Fair; 5 = Poor

Category**Rating**

Scientific soundness

Degree to which conclusions are supported by the data

Organization and clarity

Cohesiveness of conclusions

Conciseness

Important to objectives of the Program

RECOMMENDATION**(Check One)**

Accept

Accept with revisions

Unacceptable

PLEASE NOTE: If a peer reviewer checks “Accept with Revisions” or “Unacceptable,” that reviewer **must explicitly state** what changes would be required to change the recommendation to “Accept.” This is a critical step in ensuring the Program understands potential fatal flaws or major areas of revision that must be addressed before finalizing these documents and seeking Governance Committee approval.

6) Peer Review and Peer Reviewer Identification

It is the intention of the PRRIP that each individual peer review will be shared with the other members of the Peer Review Panel; members of the PRRIP Governance Committee (GC); members of the PRRIP Executive Director’s Office (EDO); members of relevant PRRIP Advisory Committees including the Technical Advisory Committee (TAC) and the Independent Scientific Advisory Committee (ISAC); and the public via a final package including, but not limited to, the peer reviewed and revised Wet Meadow Hydrology Report and the results of all individual peer reviews posted as a public document on the PRRIP website. *Individual Peer Reviewers may choose to remain anonymous unless they agree to share their identity and interact with (electronically and/or virtually) the other members of the PRRIP Peer Review Panel and relevant PRRIP entities including the TAC, ISAC, EDO, and GC.*



7) Peer Review Schedule

The general the schedule below provides guidance for conducting a 60-day peer review of the PRRIP Wet Meadow Hydrology Report:

| Wet Meadow Hydrology Report Peer Review Process Tasks | Anticipated Completion Date |
|---|---|
| Task 1 (TAC) – Request Peer Review of Wet Meadow Hydrology Report <ul style="list-style-type: none">Review Scope of Work – add/subtract/edit specific questions for peer reviewers, overall Charge to PanelReview and approve Peer Review Panel (Smith [EDO] will work with Peer Reviewer Selection Panel to identify and recommend peer reviewers)Transmit peer review request and Peer Review Panel members to GC for review and appointment | September 2023 / October 2023 |
| Task 2 (GC) – Approve Peer Review / Appoint Peer Review Panel Members | September 2023/October 2023 |
| Task 3 (Smith, EDO): Facilitate Peer Review <ul style="list-style-type: none">Secure signed contracts with all peer reviewersProvide access to all materials needed for review to each peer reviewerVirtual meeting with Peer Review Panel to coordinate review and answer clarifying questions | October 2023 |
| Task 4 (Peer Review Panel): Conduct Peer Review of Wet Meadow Hydrology Report <ul style="list-style-type: none">Smith (EDO) answers clarifying questions, as necessaryPeer reviewers provide written reviews to Smith (EDO) | December 31, 2023 |
| Task 5 (Smith, EDO): Respond to Peer Review <ul style="list-style-type: none">Work with EDO Staff to implement suggested changes or explain why changes are either inappropriate or not feasible at this timeDevelop Peer Review Summary Report for TAC consideration, including written responses to each peer review comment and proposed changes/edits | January 2024 |
| Task 6 (TAC): Evaluate Peer Review Summary Report <ul style="list-style-type: none">TAC meeting to discuss Peer Review Summary Report and proposed document changes/editsRecommend additional changes/edits and finalize for review by Peer Review Panel | February 20-22, 2024 (2024 PRRIP Science Plan Reporting Session) |
| Task 7 (Peer Review Panel): Evaluate Peer Review Summary Report <ul style="list-style-type: none"><i>As warranted</i>, elicit Peer Review Panel reaction (via electronic responses and/or virtual meeting) to proposed changes/responses to Wet Meadow Hydrology Report indicating acceptance or rejection of changesSmith (EDO) coordinates | March 31, 2024 |
| Task 8 (TAC): Evaluate Reaction from Peer Review Panel <ul style="list-style-type: none">TAC meeting to discuss responses from Peer Review Panel and to recommend final changes to Wet Meadow Hydrology Report for GC considerationEDO makes final changes to Wet Meadow Hydrology ReportSmith (EDO) prepares final Peer Review Package for GC | April-May 2024 |
| Task 9 (Smith, EDO): Present final Peer Review Package to GC <ul style="list-style-type: none">Review, discuss, and approve revised Wet Meadow Hydrology ReportFinal report with integrated changes and Peer Review Summary Report included posted as public document on PRRIP website | June 2024 |



The extent and content of peer review comments may necessitate more time on the part of the Program in terms of fully addressing all peer review comments. The goal is to seek final GC approval of the peer reviewed and revised PRRIP Wet Meadow Hydrology Report in June 2024.

8) Available Documentation

Peer reviewers will be provided with the following information:

- This Peer Review Scope of Work, including the PRRIP Scientific Peer Review Guidelines.
- The Wet Meadow Hydrology Report.
- Access to all references cited in the Wet Meadow Hydrology Report.
- PRRIP Extension Science Plan.
- Additional information as requested by Peer Review Panel members – if a document is requested by one member, it will be transmitted to all members simultaneously



1 **ATTACHMENT A**

2 **PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (PRRIP -or- Program)**

3 **PRRIP Scientific Peer Review Guidelines**



ATTACHMENT B

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (PRRIP -or- Program)

Certification Regarding Lobbying

The undersigned certifies, on behalf of the Consultant, that to the best of his or her knowledge and belief:

1. No federal appropriated funds have been paid or will be paid, by or on behalf of the Consultant, to any person for influencing or attempting to influence an officer or employee of any federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, or the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.
2. No registrant under the Lobbying Disclosure Act of 1995 has made any lobbying contacts on behalf of the Consultant with respect to the federal grant or cooperative agreement under which the Consultant is receiving monies.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who makes an expenditure prohibited by Section 1 above or who fails to file or amend the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

FOR THE CONSULTANT:

CONSULTANT NAME

Date



ATTACHMENT C

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (PRRIP -or- Program)

PRRIP Conflict of Interest Form – Peer Reviewers

The PRRIP developed guidance for Peer Reviewers regarding the avoidance of conflicts of interest in accordance with the Scientific Peer Review Guidelines (Adaptive Management Plan, Appendix A) contained in the PRRIP Final Program Document. PRRIP Peer Reviewers must provide an unbiased opinion of the scientific quality of a product (proposal, report, data, map, etc.) by individuals who are independent from the authors and external to them, the Program as a whole, and/or the authors' institution/entity. A review must be independent of various types of conflicts of interest with the author(s) and with the product under review. The PRRIP places considerable reliance on the objectivity, integrity, and professionalism of each Peer Reviewer to provide the technical opinion of each product without bias or conflict of interest.

When evaluating the potential for any conflicts of interest, all PRRIP Peer Reviewers should consider the following factors that could lead to bias or conflict of interest:

- Financial interest in the product or the author(s);
- Familial relationship with the author(s);
- Bias, for personal reasons, for or against the author(s) or institutions of this product;
- Professional connection (current or former: student or advisor, supervisor or supervised, employer, etc.) to the author(s) or the institution of this product;
- Organizational affiliation (same agency, department, organization, business, etc.);
- Impacts of lobbying or political pressure exerted by persons looking for a particular result or more work in the area of this product; and
- Has conducted, is conducting, or intends to conduct work for or on behalf of the Program, or work that directly overlaps with Program scientific and technical priorities, or work with the author(s), which could result in a Peer Reviewer commenting on her/his own work product(s).

As a proposed Peer Reviewer, I hereby state that I do not have any conflicts of interest with the PRRIP as outlined above and (if necessary) explained on the following page. I can serve effectively as a PRRIP Peer Reviewer without any financial, familial, personal, or professional bias and can complete an independent review of the PRRIP document as directed in the associated Scope of Work.

FOR THE CONSULTANT:

CONSULTANT NAME

Date