Science and Adaptive Management Committee Meeting

January 4, 2022

Meeting Materials:

Agenda

Minutes

2021 MRGESCP Annual Evaluation Form – SAMC section [read-ahead]

MRGESCP Biennial Schedule [read-ahead, presentation]

Proposed Draft S&T Ad Hoc Group Charge – MRG HR Monitoring Template [read-ahead, draft]

SAMC Reviewer Response Form [read-ahead]

Revised Draft Long-Term Plan Project Evaluation Criteria [read-ahead, draft]

MRGESCP Long-Term Plan [read-ahead, not included]

S&T Ad Hoc Group Charge – MRG HR Monitoring Template [presentation]

Draft MRGESCP SOW Template [follow-up, draft]

Link to full Meeting Materials List

Science and Adaptive Management Committee Meeting

January 4, 2022

See the following meeting material on the page below:

Agenda

Middle Rio Grande Endangered Species Collaborative Program

Est. 2000

Science and Adaptive Management Committee (SAMC)
January 4, 2022
8:00 AM – 12:00 PM

Location: Zoom
https://west-inc.zoom.us/j/8983593120?pwd=bU54V3NGeG93bXVlSlJFcEIzcE9wZz09

Meeting Agenda

Meeting Objectives:

- *Hear an update regarding the December Executive Committee (EC) meeting*
- *Discuss SAMC completion of annual MRGESCP evaluation form*
- *Discuss SAMC procedures and tasks for 2022*
- *Review proposed charge for new Science and Technical (S&T) Ad Hoc Group*
- *Discuss revised criteria for evaluating projects in the Long-Term Plan (LTP)*
- *Discuss SAMC use of Science and Adaptive Management Information System (SAMIS) and updates to the LTP*

8:00 – 8:05	**Welcome, Introductions, and Agenda Review** ✓ **Decision**: Approval of January 2022 Agenda Read-Ahead: ☐ Draft January 4, 2022 Meeting Agenda	*Catherine Murphy, Program Support Team (PST)*
8:05 – 8:15	**August Meeting Minutes and Actions Item Review** ✓ **Decision**: Approval of November 2021 Minutes Read-Ahead: ☐ Draft November 3, 2021 Meeting Minutes	*Catherine Murphy, PST*
8:15 – 8:30	**Update from December EC Meeting**	*Debbie Lee, PST*
8:30 – 9:00	**Annual MRGESCP Evaluation** • Review the purpose of the annual evaluation • Review and discuss the SAMC evaluation form ➢ **Action Item**: SAMC members will complete the annual evaluation form and return to cmurphy@west-inc.com by January 31, 2022 Read-Ahead: ☐ 2021 MRGESCP Annual Evaluation Form - SAMC Section	*Catherine Murphy and Debbie Lee, PST*

9:00 -9:30	**SAMC Procedures and 2022 Priorities** • Review SAMC roles in Biennial Schedule • Review tasks in 2022 Work Plan • Discuss modifications to SAMC procedures to improve efficiency/productivity ✓ **Decision:** Recommend modifications to SAMC procedures ➢ **Action Item**: PST will draft a memo regarding any SAMC recommended modifications that require EC approval (if needed) Read-Aheads: ☐ MRGESCP Biennial Schedule ☐ 2022 MRGESCP Work Plan	*Facilitated discussion*
9:30 – 10:00	**Proposed S&T Ad Hoc Group: Habitat Restoration Monitoring Template** • Review proposed draft charge • Discuss relationship to Habitat Restoration Workshop ➢ **Action Item**: SAMC members will review charge and return response form to cmurphy@west-inc.com by January 18, 2022 ➢ **Action Item**: PST will incorporate SAMC edits and send revised charge for SAMC approval (if needed) Read-Aheads: ☐ Proposed Draft S&T Ad Hoc Group Charge – MRG HR Monitoring Template ☐ SAMC Reviewer Response Form	*Sarah Anderson, PST*
10:00 – 10:10	**Break**	
10:10 – 10:20	**Updates on Current S&T Ad Hoc Groups** • RGSM CEM/Genetics Ad Hoc • RGSM Integrated Population Model Ad Hoc • RGSM Hypothesis Development Ad Hoc	*Catherine Murphy, PST*
10:20 – 11:20	**Criteria for LTP Project Evaluation** • Review revised draft LTP project evaluation criteria ✓ **Decision:** Finalize LTP project evaluation criteria for 2022 Read-Ahead: ☐ Revised Draft LTP Project Evaluation Criteria	*Facilitated discussion*

11:20 – 11:45 **MRGESCP Long-Term Plan Update** *Facilitated discussion*

- Review process for updating LTP and use of Science and Adaptive Management Information System (SAMIS)

➢ **Action Item**: Following updates to project information, PST will assign preliminary scores to LTP project list for SAMC review

Read-Ahead:

☐ MRGESCP Long-Term Plan

11:45 – 12:00 **Action Items, Next Steps, and Announcements** *Michelle Tuineau, PST*

➢ **Seminar**: Katey Driscoll (U.S. Forest Service) seminar on habitat restoration and ecosystem function – 10 AM, January 12, 2022

➢ **Seminar**: Charles Yackulic (U.S. Geological Survey) seminar on RGSM Integrated Population Model – TBD, February 2022

Next Meeting: April 2022

12:00 **Adjourn**

Link to full Meeting Materials List

Science and Adaptive Management Committee Meeting
January 4, 2022

See the following meeting material on the page below:

Minutes

Middle Rio Grande Endangered Species Collaborative Program

Est. 2000

Science and Adaptive Management Committee (SAMC)
Meeting Minutes

January 4, 2022; 8:00 AM–12:00 PM
Location: Zoom Meeting

Decisions

- ✓ Approval of January 4, 2022 SAMC meeting agenda
- ✓ Approval of November 3, 2021 SAMC meeting minutes

Action Items

WHO	ACTION ITEM	BY WHEN
PST	Send a Doodle Poll to schedule the April SAMC meeting	1/7/2022
Ari Posner	Suggest to the Program Support Team (PST) a nominee for the Peer Review Administrative (Admin) Ad Hoc from U.S. Bureau of Reclamation (Reclamation)	1/4/2022
PST	Invite Mick Porter to participate on the Peer Review Admin Ad Hoc or recommend a nominee	1/14/2022
PST	Send the SAMC the template for tracking/reporting Science & Technical (S&T) Ad Hoc Group progress	1/6/2022
PST	Add November S&T Ad Hoc Group progress reports to the SAMC to the Biennial Schedule	1/14/2022
SAMC	Review the Middle Rio Grande (MRG) Habitat Restoration (HR) Monitoring Template Ad Hoc charge and provide comments using the SAMC review form to the PST	1/18/2022
PST	Incorporate SAMC edits and send revised MRG HR Monitoring Template Ad Hoc charge for SAMC approval	2/1/2022
SAMC	Review the Science and Adaptive Management Information System (SAMIS) project evaluation criteria and send feedback to the PST	1/21/2022
SAMC	Complete the Annual Program Evaluation form and return to the PST	1/31/2022
PST	Provide a summary of Science & Adaptive Management (AM) Plan/Long-Term Plan revisions for the merged version of the documents for SAMC review	1/21/2022
SAMC	Review and provide comments on the Science & AM Plan/Long-Term Plan revisions	1/31/2022
PST	Compile a list of subject matter experts to contact regarding Science & Technical (S&T) Ad Hoc Group membership or review	1/21/2022

PST	Send out SAMC agenda to larger list of Middle Rio Grande Endangered Species Collaborative Program (MRGESCP) members prior to meeting	April SAMC meeting
SAMC	Forward SAMC agenda to interested members of their respective organizations	April SAMC meeting
PST	Reach out to Reclamation to invite Phaedra Budy and/or Tim Walsworth to present a Collaborative Seminar on the Utah State University (USU) simulation model	April SAMC meeting
PST	Draft a charge for an S&T Ad Hoc Group to analyze the potential for joint utility of the RGSM Integrated Population Model and USU simulation model for SAMC review	April SAMC meeting
Ari P., Ryan Gronewold, & PST	Prepare a proposal for a workshop on the Middle Rio Grande Channel Width Maintenance Program and ESA Considerations for SAMC review and Executive Committee (EC) approval	March EC meeting
PST	Update the EC on the results of the discussion on balancing S&T Ad Hoc Group membership	March EC meeting

Next Meeting: April 12, 2022; 8 AM – 12 PM

Meeting Minutes

Welcome, Meeting Objectives, and Agenda Review

Catherine Murphy, PST Science Coordinator and SAMC Facilitator, opened the meeting and led introductions. Catherine M. reviewed the January 4, 2022 SAMC meeting agenda.

- ✓ **Decision**: Approval of the January 4, 2022 SAMC meeting agenda

November Meeting Minutes and Actions Item Review

Catherine M. and Debbie Lee, PST, reviewed the November 3, 2021 meeting minutes and action items.

- ✓ **Decision**: Approval of the November 3, 2021 SAMC meeting minutes

Update from December Executive Committee Meeting

Debbie L. gave an update on the December 7, 2021 Executive Committee (EC) meeting. Summary points are below:

- The Long-Term Plan (LTP) was approved.
- The draft peer review process will be refined by a Peer Review Admin Ad Hoc Group for SAMC review and EC approval.
- The LTP and Science & AM Plan will be combined into the Long-Term Plan for Science & AM.
- The SAMC was tasked with discussing options for ensuring balanced Science & Technical Ad Hoc Group membership

- ➢ **Action Item**: Ari Posner will suggest to the PST a nominee for the Peer Review Admin Ad Hoc from Reclamation
- ➢ **Action Item**: The PST will invite Mick Porter to participate on the Peer Review Admin Ad Hoc or recommend a nominee

Annual MRGESCP Evaluation

Catherine M. discussed the Annual Program Evaluation (see 2021 MRGESCP Annual Evaluation Form - SAMC Section). Summary points are below:

- The Annual Evaluation will assess the MRGESCP's productivity and efficiency, including the level of participation/engagement. The Annual Evaluation will be used to improve the MRGESCP through an iterative process.
- The SAMC will assess the SAMC, including the charter, membership/areas of expertise, annual work plan, and deadlines, as well as the Science & AM Plan, and Long-Term Plan.
- The SAMC is invited to discuss how their expectations matched their first year as members. Members should identify areas that are functioning well or can be improved.
- RE: Frequency of SAMC meetings.
    - o According to the Biennial Schedule, the SAMC will meet at least quarterly. Meetings will be further apart, but communication between meetings will be supported by one-on-ones with the PST. Meetings will be scheduled far ahead.
    - o The SAMC will have more time to provide reviews and recommendations.
    - o In 2021, the SAMC focused on building up tools/processes, but moving forward, should shift to addressing S&T Ad Hoc Group findings, developing S&T Ad Hoc Groups, and

working on science and AM events (e.g., Symposium, Collaboratory, seminars, and workshops).

- RE: Review schedules for SAMC.
    - In some cases, SAMC feedback has been rushed to meet PST contract deliverables or EC deadlines. The Biennial Schedule was developed to help ensure deliverables are on track with sufficient time for SAMC input. Enhancing SAMC feedback will help ensure the group's opinion is accurately represented to the EC and larger MRGESCP.
- RE: Feedback from the SAMC.
    - Virtual meetings do not promote active participation, and the SAMC has struggled with this. SAMC members conveyed the opinion that despite the limitations of virtual meetings, the PST has coordinated the SAMC well and no improvements are requested.
    - The PST asks that SAMC members increase their responses during meetings. The SAMC is not a voting body, but the PST will ask for and document the variety of opinions during meetings. The SAMC is encouraged to ask questions.
- RE: MRGESCP concern about the SAMC.
    - MRGESCP participants have asked about SAMC activities and S&T Ad Hoc Group membership, and have requested increased transparency.
        - The PST will increase messaging that SAMC meetings are open to all.
        - SAMC meeting agendas should be sent out to the larger MRGESCP ahead of meetings. Participants can choose to attend meetings based on topics to be discussed. The SAMC can also forward agendas to their respective circles.
        - Workshops are an opportunity for the MRGESCP to have direct interaction with the SAMC. The SAMC should continue to host workshops.
    - There has been concern that S&T Ad Hoc Group members are not recruited transparently and there is potential imbalance of representation. There could be an open call for nominees, as long as a group number limit is set. If there are many nominees, they can be split into deliverable and peer review groups. The SAMC will suggest the initial nominees, which may include experts outside the MRGESCP, and the EC will provide input. The MRGESCP will create a list of subject matter experts (SMEs) for possible S&T Ad Hoc Group membership. An SME list could be housed on Microsoft Teams. The PST will explore options.

- **Action Item**: The SAMC will complete the Annual Program Evaluation form and return to the PST
- **Action Item**: The PST will compile a list of SMEs to contact regarding S&T Ad Hoc Group membership or review
- **Action Item**: The PST will send out SAMC agenda to larger list of MRGESCP members prior to meeting
- **Action Item**: The SAMC will forward the SAMC agenda to interested members of their respective organizations
- **Action Item**: The PST will update the EC on the results of the discussion on balancing S&T Ad Hoc Group membership

SAMC Procedures and 2022 Priorities

Debbie L. discussed SAMC procedures and priorities in 2022 (see Biennial Schedule and 2022 Work Plan). Summary points are below:

- The PST needs to ensure the SAMC's work aligns with the Biennial Schedule and 2022 Work Plan.

- Biennial Schedule:
    - Terms of SAMC members are meant to be staggered. After the initial two-year term, SAMC members will have the option to stay for one additional year. SAMC members should communicate their plans for the optional year ahead of time, so the full committee can discuss the work plan for the upcoming year and determine the areas of expertise needed on the SAMC. The SAMC will recommend areas of expertise to the EC.
    - The SAMC will update the CEMs every spring. The task will be one of the first performed by new SAMC members, which will help orient them to species-specific issues at hand.
    - The SAMC will come up with at least one topical workshop a year, tentatively scheduled for October, which increases MRGESCP engagement and promotes relevant and timely action on science and management issues.
    - The SAMC will ensure relevant science initiatives are incorporated into the Guiding Principles.
    - There are other activities ongoing during the Biennial Schedule, but these are not time-bound.
    - RE: Progress reports from S&T Ad Hoc Groups.
        - All S&T Ad Hoc Groups should deliver an annual progress report to the SAMC at one time. The annual progress report should be reviewed by the SAMC before it goes to the EC. The progress reports help share information on the SAMC's activities to the MRGESCP.
            - The best time to deliver the annual progress reports is in November, in time to help determine which groups will continue into the next year. No more than six ad hoc groups (S&T or Admin) should be active.
        - Catherine M. receives S&T Ad Hoc Group updates regularly. She attends nearly all meetings, and when another PST member attends, they fill out a report template and send to Catherine M. The PST will continue to use that template.
    - Each activity in the Biennial Schedule informs the next, facilitating continuous adaptive learning and the completion of the AM cycle.
- 2022 Work Plan
    - The Work Plan is subject to change, as needed, with new priorities communicated to the EC throughout the year.
    - The SAMC is involved in Work Plan Tasks 2-4. Task 2 covers the S&T Ad Hoc Groups, Task 3 covers activities related to developing and documenting linkages in the SAMIS, and Task 4 covers scientific and adaptive learning.
    - Task 2:
        - The RGSM Integrated Population Modeling Ad Hoc ends in February. Charles Yackulic, U.S. Geological Survey, will give a Collaborative Seminar on the model.
        - After the RGSM CEM/Genetics Ad Hoc completes its work, the revised CEM will be peer-reviewed by an S&T Ad Hoc Group. The schedule for review is tentative.
        - The RGSM Hypotheses Development Ad Hoc is in development and individuals are committing to membership.
        - A Scenario Planning Ad Hoc is planned, which will be led by Sarah Anderson, PST.
    - Task 3:
        - With this task, work by the MRGESCP is incorporated into the SAMIS -- projects are updated and outcomes from the S&T Ad Hoc Groups are included.
    - Task 4:

        - The SAMC will help develop a survey of management needs and scoring criteria for the SAMIS.
        - At the end of the year, the SAMC will host the Collaboratory.
- RE: USU simulation model.
    - The USU simulation model is finalizing soon. Phaedra Budy and/or Tim Walsworth should be invited to speak on the model. The MRGESCP will be able to reflect on how the USU model and Charles Y.'s population model can inform adaptive management of the RGSM.
    - After considering both models, the SAMC will discuss potential AM applications and may form an S&T Ad Hoc Group to develop one or more ideas.
- RE: Wetlands and MRG Width Maintenance Program discussion.
    - The SAMC agrees the topic is important and should be explored further with a workshop. The workshop should define an S&T Ad Hoc Group charge. Ari Posner and Ryan Gronewold volunteered to work with the PST to prepare a workshop proposal.

- **Action Item**: The PST will send the SAMC the template for tracking/reporting S&T Ad Hoc Group progress
- **Action Item**: The PST will add November S&T Ad Hoc Group progress reports to the SAMC to the Biennial Schedule
- **Action Item**: The PST will reach out to Reclamation to invite Phaedra Budy and/or Tim Walsworth to present a Collaborative Seminar on the USU simulation model
- **Action Item**: The PST will draft a charge for an S&T Ad Hoc Group to analyze the potential for joint utility of the RGSM Integrated Population Model and USU simulation model for SAMC review
- **Action Item**: Ari P., Ryan G., & the PST will prepare a proposal for a workshop on the Middle Rio Grande Channel Width Maintenance Program and ESA Considerations for SAMC review and EC approval

Proposed S&T Ad Hoc Group: Habitat Restoration Monitoring Template

Sarah A. presented on the proposed HR Monitoring Template S&T Ad Hoc (see Proposed MRGESCP S&T Ad Hoc Group Charge: MRG HR Monitoring Template Ad Hoc presentation) and opened discussion. Summary points are below:

- Reclamation and the New Mexico Interstate Stream Commission (NMISC) approached the PST to request the development of a standardized monitoring program for RGSM HR. The PST developed an S&T Ad Hoc Group charge around this topic.
- Sarah A. has a background in MRG HR and will be the PST lead on the proposed HR Monitoring Template S&T Ad Hoc.
- In 2019-2021, Reclamation and NMSIC monitored eight RGSM habitat sites in the San Acacia Reach. The proposed S&T Ad Hoc Group will review site-specific monitoring plans, AM thresholds, and protocols, and characterize the goals of a standardized RGSM habitat monitoring approach for the MRG.
- The S&T Ad Hoc will address needs identified at the HR Workshop in August 2021 and explore a way for all signatories to contribute to a larger RGSM dataset.
- RE: U.S. Army Corps of Engineers (USACE) restoration projects:
    - USACE has constructed and will construct multiple ecosystem restoration projects with their own monitoring and AM plans. The MRGESCP is encouraged to coordinate with USACE regarding standardized HR approaches.

- RE: Reclamation and standardized monitoring:
    - Reclamation has questions about standardizing monitoring, as the goals of each HR project are very different. It may be better to look at best management practices for monitoring. The MRGESCP could provide guidance on aligning a project's goals with a related monitoring program.
    - The impetus of the proposed HR group is to glean lessons learned, particularly for the San Acacia Reach projects, as there are three years of monitoring and reports to analyze. The PST compiled a table of signatory HR projects, in an effort to synthesize HR approaches and outputs from the HR Workshop.
    - Suggestion to move focus of the HR group outside the San Acacia Reach to cover broader project conditions, monitoring, and goals.
- RE: Perspectives on the proposed HR group:
    - There are different perspectives on the intent of the proposed HR group. Although it would be difficult to standardize projects with different goals, the intent of the group may be to analyze project data on a larger MRG scale. If so, it is useful to provide guidance on best management practices or the type of data that would be useful for analyzing multiple sites.
    - The intent of the proposed HR group is two-fold: 1) to determine if the framework applied to the San Acacia Reach HR projects can be generalized, and 2) to determine which metrics provide the most information on the response to HR.
    - The protocol of the proposed HR group addresses the need voiced during the HR Workshop for a quicker way to design monitoring. Data collection would be designed to be rapid and require less investment, so projects without a large monitoring budget could still be covered. A minimum threshold for monitoring could be used on already established or new sites without adding too much cost/effort, and would provide a place for all HR monitoring to start.
- RE: Monitoring approaches:
    - The proposed HR group needs to consider the spectrum of approaches to monitoring, either very robust or the bare minimum, and decide what is appropriate for a project. It is important to match the level of monitoring effort with desired return on investment.
    - The standardized HR protocol needs to describe levels of efforts, added benefits when level of effort is increased, and value relative to restoration goals.
    - It is best to stay away from standardization, but frame the effort as providing guidance for developing monitoring programs. There may be data that should be collected at every site, but that should not be the focus.
- RE: RGSM habitat considerations
    - The HR group needs to separate RGSM habitat restoration considerations between larval and adult life stages. More habitat needs to be designed to increase availability during low water years. Larval habitat is vital, as it has the most constraints.

- **Action Item**: The SAMC will review the MRG HR Monitoring Template Ad Hoc charge and provide comments using the SAMC review form to the PST
- **Action Item**: The PST will incorporate SAMC edits and send revised MRG HR Monitoring Template Ad Hoc charge for SAMC approval

Updates on Current S&T Ad Hoc Groups

Catherine M. presented on the current S&T Ad Hoc Groups. Summary points are below:

- RGSM CEM/Genetics Ad Hoc – Catherine M. met with the group in December 2021. The group added new components to the CEM with definitions. The next step was to update the transition schematics from one life stage to the next with the new components. Between meetings, the group members work individually, and they will meet again in February 2022. Pairiwse relationships between variables can be added as line items to the tabular version of the CEM, and the group will characterize relationships in terms of ability to manage, amount of uncertainty, and importance to species. Wade Wilson (group lead) will present the revised CEM, which will be reviewed by a subsequent S&T Ad Hoc Group. Those who were in the group that initially developed the RGSM CEM will be invited to participate in the peer review group.
- RGSM Integrated Population Modeling Ad Hoc – The group met in December 2021 to review the manuscript on the model and expert elicitation process. Charles Yackulic (group lead) will present a seminar on the model to the MRGESCP in February.
- RGSM Hypotheses Development Ad Hoc – This group, an outcome of the Population Monitoring Work Group Summary Report, will assess and translate the recommendations in the report into hypotheses for further investigation. Potential linkages between the hypotheses and uncertainties in the RGSM CEM will also be evaluated. The group will be led by Andy Dean, U.S. Fish and Wildlife Service. Mick Porter (USACE), Matt Wunder (New Mexico Department of Game and Fish), Eric Best (Reclamation), and possibly Kim Eichhorst (Bosque Ecosystem Monitoring Program) will be joining the group. The PST will extend an invitation to to Nathan Schroeder, Pueblo of Santa Ana, to join the group.

Criteria for LTP Project Evaluation

Catherine M. opened discussion on criteria for LTP project evaluation (see Revised Draft LTP Project Evaluation Criteria). Summary points are below:

- The SAMIS was designed using primarily older projects. The PST pulled information (i.e., title, objective, methodology, outcomes, benefit to species, etc.) from project descriptions that were not standardized. Moving forward, standardized data fields will be used to control the information entered into the SAMIS.
- The SAMC reviewed the project evaluation criteria and there were concerns about the accuracy of information in the Project Bank. The signatories will be given the opportunity to update and correct information for their projects before they are evaluated.
- The term “rubric” will be removed, as it implies projects will be graded, which is not the intended use of the evaluation criteria.
- The Linkage Score can be generated automatically in the relational database. The S.M.A.R.T. Score should be straightforward if complete project information is added to the SAMIS. The Resiliency Score was changed to the Adaptive Management (AM) Score.
- Suggestion to move away from the term “score” as well, as it is linked to grading.
- The revised “scores” or sets of criteria should transparently convey project information that is useful for planning and prioritizing. Signatories will be able to filter using any field, including each “score”, to meet their individual planning needs. If the “scores” are combined, their individual meanings are lost. The criteria need additional refinement before moving forward.
- RE: In support of keeping “scores” separate.
    - Ryan G. support keeping the “scores” separate as they each have a different purpose. The Linkage Score would help USACE with the budgeting process and justifying projects. The SMART score would helpful when funding is already available and USACE needs a well-scoped project to fund.

    - Rather than providing signatories a pre-sorted list of top projects, signatories should be able to manipulate the list based on their own needs.
- The Linkage Score was changed to reflect directional (i.e., contingent, serial, on-going) relationships between projects to avoid inflated counts.
- Definitions for each "score" are included on the criteria document. The Linkage Score is the count of linkages in the SAMIS. The S.M.A.R.T. Score is determined by the SAMC based on whether a project is Specific, Measurable, Achievable, Relevant, and Time-Bound.
- RE: Is Relevant in the S.M.A.R.T. Score duplicative with the Linkage Score?
    - The Relevant part of the S.M.A.R.T. Score has a larger scope than the Linkage Score.
    - There is difficulty using the S.M.A.R.T. criteria to assess projects, as it is typically used to develop objectives.
- RE: Scope of Work (SOW) template
    - The S.M.A.R.T. Score is subjective and depends on how information is submitted to the SAMIS. The SOW template can be used to develop a template for projects entering the SAMIS. The template will help ensure SAMIS fields are filled out completely, which should theoretically result in higher S.M.A.R.T. scores. The S.M.A.R.T. Score indicates the scientific readiness of a project.
    - The SOW template could replace the S.M.A.R.T. Score as a way to measure scientific readiness. The SAMC does not see a need to replace the S.M.A.R.T. Score, but the S.M.A.R.T. criteria need to be improved.
    - The SOW template is missing a connection to the MRGESCP's Guiding Principles.
- RE: What projects are considered "in" or "out" of the MRGESCP?
    - Reclamation does river maintenance work, like collecting LiDAR data, which is not related to the Endangered Species Act. Ari P. believed these activities would not be included in the SAMIS. These efforts are more difficult to score.
    - The PST defined five categories for activities that should be included in the MRGESCP. Eventually, the PST would like to move to including only activities that produce relevant scientific findings or relate to program management.
    - Certain stand-alone data collection efforts indirectly inform endangered species management. The SAMC must determine if they should be included in the SAMIS.
- RE: Planning future projects.
    - The "scores" should help guide how future projects are scoped and planned.
- The AM Score evaluates the forward-looking elements of a project. This "score" indicates a project's ability: 1) to improve the resilience to changing conditions for a species, habitat, or management action s, 2) to result in a significant innovation (ex. RGSM SNP panel or new technological advancement), and/or 3) to directly address a management or planning need.
- RE: Outdated projects on SAMIS:
    - There are older projects on SAMIS that need "scores" but are not likely to have any follow-up step. The PST needs assistance with updating projects.
    - Duplicated projects may come through the SAMIS. Project information needs to be recorded, so these duplicates can be flagged and removed.
    - The first iteration of the Project Bank includes all projects regardless of possible repeats.
    - A "score" may not be able to prevent repeated activities. There is a lack of awareness of work that has been done. The criteria do not include whether the objectives of a project have been addressed sufficiently by previous efforts. The second part of the AM Score, whether a project results in innovation, may reflect that concept, but there was disagreement.

- RE: Unclear criteria for AM Score:
    - The criteria are not clear. It may help to tie the criteria to species management plans. There is a way to tie in species plans after an activity is complete, but not yet on the front end.
    - Biological Opinions (BOs) drive projects, and projects should be evaluated on specifically what they address in BOs. There is not a formal place to record whether a project addresses a BO or planning objective in the SAMIS yet, but the SOW template can capture that information. The question could be very general, only asking whether a project addresses a BO. The question should not be required.
    - Recovery plans should be used where possible, as they cover all activities.
- RE: SAMC reviewing and "scoring" projects
    - The PST will compile the projects for easy SAMC review. SAMC members should evaluate each project as a group to ensure quality control. There may be a workshop for this effort or the SAMC will review and evaluate projects independently.

➢ **Action Item**: The SAMC will review the SAMIS project evaluation criteria and send feedback to the PST

MRGESCP Long-Term Plan Update

Debbie L. opened discussion on combining the LTP and Science & AM Plan (see the approved LTP). Summary points below:

- The two plans have a lot of duplication, and rather than track and update both, they will be combined into one document, the "Long-Term Plan for Science and Adaptive Management."
- The PST will combine and update the LTP narrative. A list of projects from the SAMIS will be included and can be amended. There is a difference between complete and finalized projects in the LTP. Finalized projects have provided findings to the MRGESCP.
- The SAMC may be asked to help inform development of the LTP for Science & AM. The PST can merge the documents and summarize the changes for the SAMC.

➢ **Action Item**: The PST will provide a summary of Science & AM Plan/Long-Term Plan revisions for the merged version of the documents for SAMC review

➢ **Action Item**: The SAMC will review and provide comments on the Science & AM Plan/Long-Term Plan revisions

Closing Items

- Katey Driscoll, U.S. Forest Service, will present a Collaborative Seminar on January 12, 2022.
- Charles Y. will present a Collaborative Seminar on February 24, 2022.
- The Middle Rio Grande Water Advocates is hosting a multi-session conference in January 2022.
- The New Mexico Water Dialogue is hosting a seminar on climate change.
- The December 2021 Newsletter is available on the Program Portal. Contributions to the newsletter are welcome.
- The PST will schedule one-on-ones with SAMC members.
- The next SAMC meeting will be in April 2022. SAMC members prefer filling out a Doodle Poll for each meeting rather than setting a fixed schedule.

➢ **Action Item**: The PST will send a Doodle Poll to schedule the April SAMC meeting

Meeting Participants

SAMC Member	Role
Alan Hatch	Executive Committee *Ex Officio* Member
Ari Posner	Geomorphology Expert
Catherine Murphy	Program Support Team, SAMC Facilitator
Dave Moore	U.S. Bureau of Reclamation
Meaghan Conway	Ecosystem Function Expert
Mo Hobbs	Aquatic Ecology Expert
Ryan Gronewold	Hydrology Expert
Thomas Archdeacon	Aquatic Ecology Expert

Participant	Organization
Debbie Lee	Program Support Team
Michelle Tuineau	Program Support Team
Sarah Anderson	Program Support Team

Link to full Meeting Materials List

Science and Adaptive Management Committee Meeting
January 4, 2022

See the following meeting material on the page below:

2021 MRGESCP Annual Evaluation Form – SAMC section [read-ahead]

Middle Rio Grande Endangered Species Collaborative Program
2021 Program Evaluation

Science and Adaptive Management Committee (SAMC)

The Executive Committee (EC) has directed an annual Program evaluation of overall Collaborative Program relevance, efficiency, and effectiveness. To that end, the EC requests the SAMC complete the following form by **January 31, 2022** in order to evaluate:

- The SAMC charter
- SAMC membership
- Annual Work Plan tasks and deadlines
- The Science & Adaptive Management Plan
- The Long-Term Plan

Evaluation Topic	YES	NO	Detailed Explanation	Recommended Action(s)
Are all of the SAMC members actively engaged?				a. Science Coordinator discuss engagement with the appropriate members b. Appropriate members evaluate their engagement and actions to undertake c. *Describe another action, in detail*
Are all SAMC members attending meetings and responding to requests for reviews and comments within the specified deadlines?				a. Science Coordinator discuss meeting attendance and deadlines with the appropriate signatories b. Appropriate signatories evaluate their engagement and appropriate actions to undertake c. *Describe another action, in detail*
Are the SAMC's Annual Work Plan tasks on track to be completed?				a. PST and SAMC discuss potential revisions to the Annual Work Plan for EC review and approval b. *Describe another action, in detail*
Have the results of the Science Symposium been incorporated into the science and adaptive management tools?				a. SAMC charge S&T Ad Hoc Group(s) to update tools b. *Describe another action, in detail*
Did the SAMC's activities match the charter?				a. Recommend charter amendments b. *Describe another action, in detail*
Are the standing subject matter				a. Recommend changes to the SAMC charter

expert areas of expertise still relevant to the Program's needs now and into the near future?				b. *Describe another action, in detail*
Are any subject matter expert areas of expertise missing from the current membership that are relevant to the Program's needs?				a. Recommend technical areas of expertise b. Amend the charter and application c. *Describe another action, in detail*
Which SAMC members are not able to continue for another year?	n/a	n/a		a. Begin the process to find new members b. Determine the need for new technical areas of expertise c. *Describe another action, in detail*
Is the EC's *ex officio* member able to continue for another year?				a. The EC appoint a new *ex officio* member at the next EC b. *Describe another action, in detail*
Does meeting frequency, timing, and length appreciate to accomplish the SAMC plans and Ad Hoc Group charges?				a. Science Coordinator and SAMC discuss an appropriate meeting schedule b. *Describe another action, in detail*
Is the term of SAMC membership still appropriate?				a. Recommend membership term changes to the EC b. Revise the charter and application c. *Describe another action, in detail*
Is the format and content of SAMC memos to the EC appropriate and sufficient?				a. Science Coordinator, Program Manager, and EC Co-chairs discuss SAMC memo formats b. *Describe another action, in detail*
Other issues to raise regarding the SAMC?				a. *Describe action, in detail*

Link to full Meeting Materials List

Science and Adaptive Management Committee Meeting
January 4, 2022

See the following meeting material on the page below:

MRGESCP Biennial Schedule [read-ahead, presentation]

PROPOSED MRGESCP BIENNIAL SCHEDULE

DEBBIE LEE, PROGRAM MANAGER

EXECUTIVE COMMITTEE MEETING

OCTOBER 27, 2021

PURPOSE OF BIENNIAL SCHEDULE

- To be included in the Science & Adaptive Management Plan (March 2022 update)
- Ensure the closing of the adaptive management cycle through evaluation, learning, and adjustment
- Ensure the Collaborative Program is management relevant, timely, and responsive to signatory priorities

KEY POINTS

- Alternating hosting a science symposium or "Collaboratory" every year
- Science Symposium: Focuses on science
- Collaboratory: Puts science in a management context

COLLABORATORY

- Compiling scientific learning:
  - Synthesize the scientific findings of last two years
  - Put in context of Program objectives, scientific uncertainties
  - Communicate potential updates to conceptual ecological models
  - Opportunity to provide additional scientific information
  - Recommend next steps (future scientific learning and management recommendations)
- Planning for future management needs:
  - Priority questions/issues from signatories
  - Signatories' planned projects
  - Identify opportunities for Collaborative Program input
  - Identify opportunities for signatory coordination
- Directly inform:
  - Work plans, including Science & Technical Ad Hoc Groups
  - Updates to Science Objectives and Strategies
  - Updates to the Long-Term Plan

	MTGS	EVERY YEAR		YEAR A	YEAR B
JANUARY	**SAMC**	Annual Program Evaluation SAMC new member search SAMC Search Admin Ad Hoc	Draft Annual Report		Science Evaluation Develop proposed projects from Collaboratory
FEBRUARY[N]	**HR coord** **FPC**				
MARCH	**EC**	Signatory Contributions report Results of Program Evaluation • Updates to charters, S&AM Plan* • Form By-Laws Admin Ad Hoc*	Appoint new SAMC members Approve Annual Report Relate MAT/hydro forecast to Program		Approve updated Science Objectives Approve updated Long-Term Plan
APRIL[N]	**SAMC**	Updates to CEMs By-Laws Admin Ad Hoc* Ensure data on Portal is up-to-date		S&T Ad Hoc to work with contractor to update RioRestore	
MAY	**HR coord** **FPC**				
JUNE[N]	**EC**	Updates and recs from SAMC Work Plan update	Update By-Laws*		
JULY	**SAMC**				
AUGUST[N]	**HR coord** **FPC**				Funding check: RioRestore, Program Portal, PASS
SEPTEMBER	**EC**	Updates and recs from SAMC	Work Plan update		
OCTOBER[N]		Topical Workshop	Draft Annual Report		
NOVEMBER	**SAMC** **HR coord** **FPC**				
DECEMBER[N]	**EC**	Hydrology and species summary SAMC summary Next year's work plan Determine SAMC SME needs		**Collaboratory**	**Science Symposium**

* If needed; [N] Newsletter

ITEMS NOT IN BIENNIAL SCHEDULE

- MOA term length
  - Addendum to extend or draft new MOA one year prior to expiration
- Anytime, as appropriate
  - Science-based management recommendations from the EC
  - Propose activity ideas for the Project Bank
  - Public outreach and education
  - Internal or external peer review
  - Additional Administrative or Science & Technical Ad Hoc Groups
  - Emergency or special EC meetings
  - Holding seminars
  - Holding additional topical workshops
- Biennial schedule subject to change based on Program need, priorities, activities, direction, and any future changes to Program structure

Link to full Meeting Materials List

Science and Adaptive Management Committee Meeting
January 4, 2022

See the following meeting material on the page below:

Proposed Draft S&T Ad Hoc Group Charge – MRG HR Monitoring Template [read-ahead, draft]

Middle Rio Grande Endangered Species Collaborative Program (MRGESCP)
Science & Technical (S&T) Ad Hoc Group Charge
MRG Habitat Restoration Monitoring Template Ad Hoc

Proposed to Science and Adaptive Management Committee (SAMC) on January 4, 2022.

Parent Committee
Science and Adaptive Management Committee.

Ad Hoc Group Charge

- Review the site-specific monitoring plans, adaptive management thresholds, and protocols used by the U.S. Bureau of Reclamation (Reclamation) and the N.M. Interstate Stream Commission (NMISC) to monitor eight habitat sites created in the San Acacia Reach from 2019-2021.

- Review 2020 and 2021 adaptive management recommendations and actions.

- Determine if monitoring goals, metrics and methods appropriately align and could serve as the basis for a standardized Rio Grande silvery minnow (*Hybognathus amarus*; RGSM) habitat monitoring template for the Middle Rio Grande.

- Characterize the goal(s) of a standardized RGSM habitat monitoring approach for the Middle Rio Grande.

- Determine the minimum subset of monitoring components needed for this standardized approach and whether the protocols employed by Reclamation and NMISC meet, exceed, or fall short of the determined minimum.

Membership

A. Criteria for membership

- Knowledge of the ecology, dynamics and habitat features of the MRG;
- Knowledge of RGSM biology and habitat needs;
- Familiarity and experience with project design for RGSM habitat restoration, monitoring needs, and data collection methods.

B. Members (Nominees)

_____(Lead),
_____(Member),
_____(Member),
_____(Member),
_____(Member),
…

Iterative Task Development

Background

In 2018 Reclamation and NMISC partnered to develop standardized monitoring protocols to monitor eight habitat sites created in the San Acacia Reach of the Middle Rio Grande. These protocols were used for the first time in 2019 and were continued in 2020 and 2021. Annual results are provided in monitoring reports that are available on the MRGESCP Portal. After three years of monitoring, Reclamation and NMISC are requesting a review of the protocols as a starting point from which standardized habitat monitoring protocols can be developed for habitat sites throughout the Middle Rio Grande.

Habitat restoration monitoring components and standard operating procedures described in the report titled, "*Monitoring and Adaptive Management Plan for New Mexico Interstate Stream Commission Habitat Restoration Projects in the San Acacia Reach of the Middle Rio Grande"* (Caplan & McKenna 2019) provide a foundation for a review of shared restoration goals, monitoring metrics and methods throughout the MRG. Results and recommendations provided in a subsequent report, "*2020 Annual Monitoring Results and Maintenance Plan for San Acacia Reach Restoration Sites"* (GSA 2020) offer an assessment of the San Acacia Reach restoration projects, which could inform monitoring at other sites with similar restoration goals, as well as a monitoring program on a broader scale.

To that end, the tasks below are designed to compile as much guidance as possible from the habitat and monitoring efforts underway in the San Acacia Reach to build a standardized template for monitoring RGSM habitat throughout the MRG.

The SAMC requests that you review the draft tasks, deliverables and schedule below and provide feedback and questions to begin the iterative process of task development.

Tasks and Deliverables

Task 1. Review habitat restoration and monitoring protocols used by Reclamation and NMISC within the San Acacia Reach of the MRG. Identify project goals, metrics, and methods that could serve as the basis for a standardized template to guide project design, monitoring, and scientific collaboration related to restoring RGSM habitat in the MRG.

> **Objective of Task 1:** Comparing approaches among habitat construction and monitoring efforts with similar goals will help to identify common elements, as well as those metrics and methods that could be standardized among practitioners.
>
> **Deliverable:** List of habitat goals and primary features of MRG habitat projects, as well as monitoring metrics and methods, when available. Label commonly used metrics and those that could be standardized among efforts.

Task 2. Characterize the goal(s) of a standardized monitoring approach applicable for restoration of RGSM habitat throughout the MRG. Determine the minimum subset of monitoring components required for this standardized approach, as well as additional optional components that would be informative, if time and resources allow.

> **Objective of Task 2:** A minimal baseline monitoring approach that can be shared among restoration efforts with similar goals will: 1) provide discretionary monitoring guidance for new restoration projects; and 2) establish a format for combining data to address habitat questions on a larger scale.

Deliverable: Template for minimal standardized approach for monitoring restoration sites for RGSM habitat within the MRG. Template should target effectiveness or validation monitoring[1] and include, at a minimum, the restoration goal(s), S.M.A.R.T.[2] objectives, monitoring metric(s), timing and frequency of data collection, brief description of approach, format of output, targets or thresholds, and adaptive management alternatives. Including a "recommended" approach with additional optional metrics, to supplement the minimal approach, is encouraged.

[1] *Effectiveness monitoring is conducted to directly assess whether restoration project actions produce a desired physical habitat response; Validation monitoring assesses the correctness of basic assumptions about how management actions will affect biological outcomes (for more details, see Caplan and McKenna 2019).*

[2] *Specific, Measurable, Attainable, Relevant, Time-bound*

Timeline and Reporting Scheduling

Task	Subtask	Deliverable	To Be Completed By
Task 1: Review monitoring protocols and identify shared elements	NA	List of reviewed project protocols with shared and candidate elements flagged	TBD
Task 2: Characterize goals and list metrics for minimal baseline monitoring approach for RGSM habitat restoration throughout MRG	NA	Template for minimal standardized approach (and optional "recommended" approach)	TBD
		Presentation to SAMC	TBD

References:

Caplan, T. and C. McKenna. 2019. Monitoring and Adaptive Management Plan for New Mexico Interstate Stream Commission Habitat Restoration Projects in the San Acacia Reach of the Middle Rio Grande. Prepared for the New Mexico Interstate Stream Commission by GeoSystems Analysis, Inc., Albuquerque, NM.

GSA 2020. 2020 Annual Monitoring Results and Maintenance Plan for San Acacia Reach Restoration Sites. Prepared for the New Mexico Interstate Stream Commission, Albuquerque, NM. Prepared by GeoSystems Analysis, Albuquerque, NM. Work Order RG-21-02. February 2021.

Link to full Meeting Materials List

Science and Adaptive Management Committee Meeting
January 4, 2022

See the following meeting material on the page below:

SAMC Reviewer Response Form [read-ahead]

Middle Rio Grande Endangered Species Collaborative Program

Est. 2000

Science and Adaptive Management Committee (SAMC)
Document Review Form

Please use this form to respond to requests for review and approval of SAMC documents and Science & Technical Ad Hoc Group deliverables.

Reviewer Name						
Review Date						
Document Author(s) or Ad Hoc Group						
Document Title						
Document Version#						
Due Date						
Email to	cmurphy@west-inc.com					
Reviewer decision (*All documents*)	☐ Accept without revision ☐ Accept with minor revision(s) ☐ Listed below ☐ Tracked in attached document ☐ Accept after major revision(s) ☐ Listed below ☐ Tracked in attached document ☐ Revise and resubmit (please explain below)					
Reviewer ratings (*Ad Hoc group deliverables only*)		Strongly disagree	Disagree	Neutral (or NA)	Agree	Strongly agree
	Addresses ☐ Science Obj._____ ☐ Crit. Uncertainty_____ ☐ Panel Rec._____ ☐ Other_____	☐	☐	☐	☐	☐
	Satisfies charge/task	☐	☐	☐	☐	☐
	States findings clearly	☐	☐	☐	☐	☐
	Uses sound methodology	☐	☐	☐	☐	☐
	States assumptions clearly	☐	☐	☐	☐	☐
	Is concise	☐	☐	☐	☐	☐
	Is complete	☐	☐	☐	☐	☐
	Cites appropriate references	☐	☐	☐	☐	☐

Document Line Number	Revision or Comment (*add rows as needed*)

Link to full Meeting Materials List

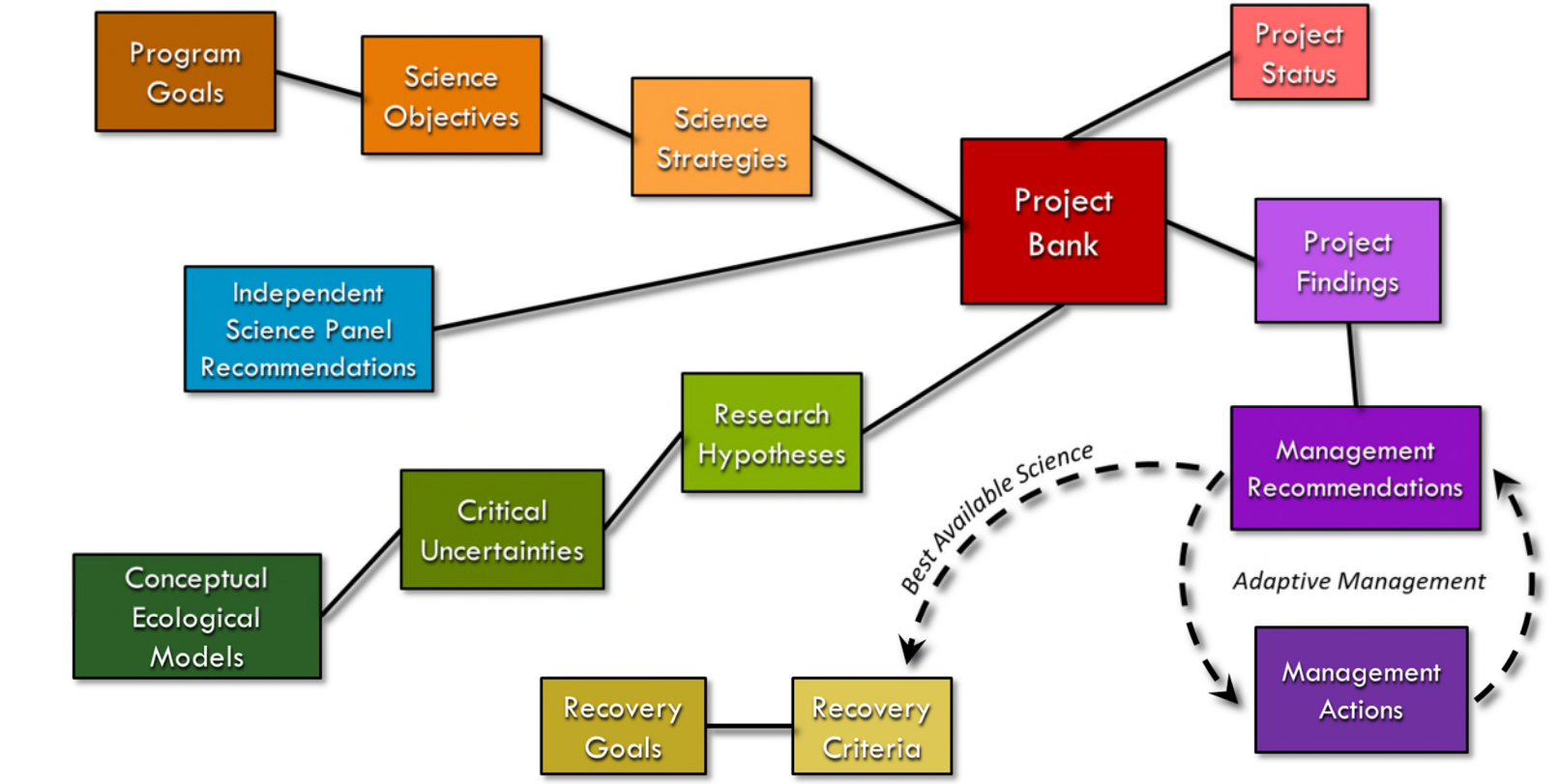
Science and Adaptive Management Committee Meeting
January 4, 2022

See the following meeting material on the page below:

Revised Draft Long-Term Plan Project Evaluation Criteria [read-ahead, draft]

EVALUATION CRITERIA	Type	Assessment				
SAMIS Linkage Count						
Addresses an MRGESCP Science Strategy	count					
Addresses an Independent Science Panel Recommendation	count					
Reduces an uncertainty identified from a Conceptual Ecological Model	count					
Data or findings will inform subsequent projects (Parent relationship)	count					
Reduces an uncertainty identified in a previous project (Child relationship)	count					
Linkage Total						
S.M.A.R.T. Score		Strongly disagree	Disagree	Neutral or NA	Agree	Strongly agree
Specific – Hypothesis or objective is clearly stated	score					
Measureable – Targets and methods are well-defined and appropriate	score					
Attainable – Project is feasible with achievable outcomes	score					
Relevant – Project is within the purview of the MRGESCP	score					
Time-bound – Timeline is defined and reasonable	score					
S.M.A.R.T. Total						
Adaptive Management Score		Strongly disagree	Disagree	Neutral or NA	Agree	Strongly agree
Project informs/increases resilience to changing conditions (e.g., climate, anthropogenic impacts, species population status)	score					
Project will result in a significant innovation (e.g., technology, methodology)	score					
Project directly informs/addresses a management or planning need in the MRG	score					
Resilience Total						

Science & Adaptive Management Information System



Project Status Definitions:

1. **Outlined**: Proposed project idea has been outlined, but lacks details needed for a scope of work.

2. **Scoped**: Scope of work has been developed, which includes research question/objective, study design, budget, timeline, etc.

3. **Submitted**: Project scope of work has been submitted to a potential funding agency.

4. **Approved**: Funding agency has agreed to fund the project, but work has not commenced.

5. **In-progress**: Project work is underway.

6. **Completed**: Project work is complete and deliverables are in-progress.

7. **Finalized**: Project deliverable(s) and final report have been released and findings shared with the Collaborative Program.

LTP includes categories 1-5.

Link to full Meeting Materials List

Science and Adaptive Management Committee Meeting
January 4, 2022

See the following meeting material on the page below:

S&T Ad Hoc Group Charge – MRG HR Monitoring Template [presentation]

Proposed MRGESCP S&T Ad Hoc Group Charge:

MRG HABITAT RESTORATION MONITORING TEMPLATE AD HOC

PRESENTED BY SARAH ANDERSON

MRGESCP PROGRAM SUPPORT TEAM

S & T Ad Hoc Group Summary

- In 2019-2021 the U.S. Bureau of Reclamation (Reclamation) and the N.M. Interstate Stream Commission (NMISC) monitored 8 Rio Grande Silvery Minnow (*hybognathus amarus*; rgsm) habitat sites created in the San Acacia Reach.

- The goal of this Ad Hoc group is to review the site-specific monitoring plans, adaptive management thresholds, and protocols and to characterize the goal(s) of a standardized RGSM habitat monitoring approach for the Middle Rio Grande (MRG).

MRG Habitat Restoration Monitoring Template Ad Hoc Group Charge

- Review the site-specific monitoring plans, adaptive management thresholds, and protocols used by the U.S. Bureau of Reclamation (Reclamation) and the N.M. Interstate stream commission (NMISC).
- Review 2020 and 2021 adaptive management recommendations and actions.
- Determine if monitoring goals, metrics and methods appropriately align and could serve as the basis for a standardized RGSM habitat monitoring template for the MRG.
- Characterize the goal(s) of a standardized RGSM habitat monitoring approach for the MRG.
- Determine the minimum subset of monitoring components needed for this standardized approach and whether the protocols employed by Reclamation and NMISC meet, exceed, or fall short of the determined minimum.

Larger Context for the Middle Rio Grande

- Signatories requested the Ad Hoc Group and used Collaborative Program processes
- Ad Hoc Group will create a standardized RGSM monitoring approach that will be used throughout the valley to inform a larger dataset
- Indicates that a collaborative data collection effort is wanted and needed in the MRG

Overall Purpose

Take the information that is already out there and apply it to a larger standardized effort that all signatories can add to for a great MRG purpose

Charge addresses needs identified in the HR Workshop:

A need to inform a larger adaptive management context

A need to measure non-species metrics

A need for a standardized definition of "success"

Now, we would like to encourage questions and discussion related to this ad hoc group.

Link to full Meeting Materials List

Science and Adaptive Management Committee Meeting
January 4, 2022

See the following meeting material on the page below:

Draft MRGESCP SOW Template [follow-up, draft]

DRAFT

Middle Rio Grande Endangered Species Collaborative Program
SOW Template for Inclusion in a Request for Proposals (RFP)

1. INTRODUCTION

Insert 1-2 sentence thesis statement here.

BACKGROUND

The background section should begin by broadly introducing the topic of interest, and narrow down to the specific question(s) to be answered/task(s) to be performed. This section should include only as much detail as needed for those responding to the RFP to understand the general need for the work and context in which it matters (2-3 paragraphs). This section does not typically include literature citations unless in reference to work that will need to be replicated.

OBJECTIVES

2. PROPOSAL INFORMATION, ORGANIZATION, AND CONTENT

This section details how proposals should be organized and what information they should contain. This section will likely differ depending on the funding agency, however if there are specific needs (such as an overview of the proposer(s)' qualifications or details of their facility for lab work), they may be specified here. Example:

All Proposals should be concise, well organized, and demonstrate the Proposer(s)' qualifications and experience applicable to the Project.

All proposals shall contain, at minimum, the following information:
A. Title Page
B. Table of Contents
C. Cover Page
D. Approach and Scope of Work
E. Schedule
F. Qualifications
G. Budget
H. Company/Organization Overview
I. References
J. Project Team Staffing

Details for information to be included in each section can then be specified.

3. TASKS AND DELIVERABLES

This section should detail the tasks to be performed, questions to be answered, deliverables, and a timeline for those deliverables. This section will contain the vast majority of the detail about the work to be done. This section should not include extensive justifications for each task (unless needed to complete the task), nor does it need to include citations, unless specific methodology is required and can be found in that publication. Example:

TASK A. Database Creation and Management

A database will be created to store all collected data, as well as inputting future data. The database control will be given over at the end of the contract for X agency and Y organization to manage.

TASK B. Data Analysis

Data analyses will be performed to answer the management questions below. In the proposal, detail how these questions will be addressed and what statistical methods will be performed. Sample data will be provided in order for contractors to gauge how they will organize, input, and analyze data. Data will be analyzed to assess year-to-year changes in *Z species* breeding efforts, reproductive success, and utilization of *A species* as a source of prey, within each study area.

i. Analyze Nesting
    1. Preferred nesting substrates for each study area and across the entire extent
    2. Species' preference by study area
    3. Nesting success by study area, species, and proximity to water
    4. etc.

ii. Analyze the effects of *Z species* on *A species*
    1. Determine the effectiveness of removing *Z species* on *A species*
        a. What is the effect of removing *Z species* on *A species* over time?
        b. etc.

The tasks can be as specific as needed, but should not be so specific as to limit the contractor from considering and proposing new/creative methods.

DELIVERABLES

Deliverables should include the desired timeline and specific deliverables for each time segment. Deliverables can be required as frequently or infrequently as needed, depending on the project. Be sure to specify how deliverables will be received (report, presentation, webinar, in person) to meet the needs of the group and help the contractor appropriately account for cost.

1. Monthly

A one page report that contains:

a. Status of project – estimate of percent progress
b. Completed objectives
c. Update on data results

2. Quarterly

The contractor should be prepared to organize meetings in webinars or webexes with stakeholders to present and discuss interim and final database and data analyses' results. Meetings will be scheduled quarterly to provide updates on milestones.

3. At the end of the contract

a. A functional database that includes:
- All input data input from *Z species* and *A species*
- GIS layers for all data
- An input option for future data to be added

b. Final Programmatic Report that contains:

- Methods, results, and discussion sections of *Z species* monitoring, removal, and management program data analyses
- PDF maps of:
    - Active and inactive nests (all species)
    - *A species* carcass (differentiate between road kill and predation)
    - Etc.