

TO: AM Ad Hoc Group and MRRIC

FROM: Independent Science Advisory Panel (ISAP)

RE: ISAP Evaluation of AM Governance in Draft AM Plan v4

DATE: March 11, 2016

NOTE: This memo responds to questions from the AM Ad Hoc Group seeking thoughts from the ISAP and ISETR regarding "...what is needed (or would be beneficial for the AM Ad Hoc Group and by extension MRRIC) to assist the AM Ad Hoc Group in developing recommendations at the March 16-17 meeting." The February 25, 2016 "Questions for ISAP-ISETR Regarding V4 AM Governance v4" are repeated, with the ISAP's responses, below.

AM Ad Hoc Product to date

1. *The AM Ad Hoc Group has developed some preliminary 'elements' for the AMP [see AM Governance Pillars v8.pdf]. Do they resonate? Are they valuable? Would you change or add to them?*

The Adaptive Management Ad Hoc Group presentation at the February MRRIC meeting identified seven fundamental elements of an effective adaptive management governance plan. Those elements were presented as directives—

- Commit sufficient people and resources to implement and govern the program
- Provide timely and transparent information at all levels of decision-making
- Provide unbiased science and review using independent panel and peer review process
- Allow flexibility in budgetary and implementation process
- Provide processes for transparent decision-making and dispute resolution
- Engage in discussions of stakeholder values
- Share MRRP adaptive management information with all audiences

The elements are generally consistent with the concept document *AM Strategies—MRRIC Engagement Approach* which was issued in 2011. The elements, as presented, address essential attributes of an effective governance structure for implementation of adaptive management under the Missouri River Recovery Program. That observed, fundamental to the effectiveness of MRRIC participation in the AM process will be the sustained commitment to stakeholder¹ participation and availability of reliable funding to support that participation. Regardless of future budget constraints, a "core" group of MRRIC participants must be available to engage in the design and oversight of the AM program over the long term. Fluctuations in effort and funded participation by MRRIC could impair the effectiveness of the agency-stakeholder interaction going forward. To the extent compatible with authorizing legislation and the MRRIC

¹ *Refers to all MRRIC members (not just those defined as stakeholders) who provide input to the AM process and who provide oversight and hold each other accountable for effective management of the process and its outcomes.*

Charter, MRRIC might consider seeking supplementary sources of funding, perhaps internally, to sustain a consistent level of participation.

The provision of timely information by MRRIC into the AM process depends at least in part on the overarching governance structure specified in the AM Plan. Stakeholder concerns represented in MRRIC—flood protection, navigation, agriculture, power production, dredging, water quality, recreation, fish and wildlife, status of listed species—imply different geographic scales and kinds of information relevant to AM decision-making. Correspondingly, there is a need for information to enter the AM implementation process at times and across space that are relevant to the individual interests of MRRIC participants, as well as annual and basin-wide reporting commensurate with the interests of the whole of MRRIC. These potentially disparate needs for sharing information will require careful crafting of the mechanisms for interactions both within MRRIC, and between MRRIC and the AM Team. Presumably, the scheduled occasions for interactions among MRRIC constituents will provide the opportunities to vet various stakeholder values and concerns, and importantly, determine how those issues translate into effective information sharing with the AM Team and the governing entities of the overall AM Program.

Effective and efficient participation by MRRIC in the AM process will continue to benefit from access to independent scientific input and review. The structure and process to obtain necessary scientific advice will need to be adjusted as the MRRP evolves from a focus on effects analysis to the implementation of adaptive management. Scientific input will need to be fitted to the approach to AM governance that will be more fully articulated in the AM plan (version 5). One possibility would be for MRRIC to incorporate the necessary scientific and technical expertise to provide technical advice from within its participating membership. This could increase the efficiency of access and interaction to more immediately address technical concerns identified by MRRIC, although potentially at the risk of perceived loss of independent technical review. Another alternative might be to expand the scope of MRRIC technical support through soliciting, on an as-needed basis, additional technical input from experts (from academia, government scientists, and consultants located from inside or outside of the Missouri River basin. As described below, the parsimonious means of meeting MRRIC's science advisory needs may be to retain the ISAP, while recognizing that in the implementation phase of AM some specialty advice might be necessary from ad hoc advisors engaged to assist in resolving specific technical challenges (the ISAP could assist in identifying such issues and experts). The MRRIC might reasonably stipulate the flexibility necessary to secure scientific and technical support using whatever means appears most appropriate and beneficial to MRRIC.

v3 comments reflected in v4

- 2. Given ISAP/ISETR input on draft AMP v3 Governance Chapter, where does draft AMP v4 fall short in addressing ISAP comments?*

The partnership between science and management is nowhere more clearly established than in the process of adaptive management. Implementers and operators, backed by decision-makers and planners, use scientific information to drive the adaptive management cycle in the pursuit of project goals.

Several significant changes made in the graduation from AMPv3 to AMPv4 are likely to contribute to a successful adaptive management effort. Those positive changes include improved connections between the types of decisions required and their timing within the overall AM cycle, identification of which governance level is responsible for which decisions, distribution of roles and responsibilities among governance entities, involvement of agency inputs through technical teams and implementation of projects, refined workflow conceptualizations of the decision process, and the establishment of timelines for some workflows. The inclusion of a description of the general concepts that underlie the decision process provides effective philosophical guidance.

Recognizing that the creation of the AMP is still a work in progress, the ISAP sees an opportunity in AM Plan (version 5) to address several remaining issues. Resolution of these points will give the AMP an enhanced chance for acceptance and success. The ISAP supports the following ideas suggested in AM Plan (version 5) as avenues for future additions to the plan— (1) improve descriptions of the types of decisions required in the adaptive management cycle, (2) resolve membership in the governance teams, (3) refine the decision workflows with greater details (including agency input), and (4) include water management and NEPA considerations as primary considerations in the plan. Further, the respective roles of the AM Ad Hoc Group (or its successor) and MRRIC will need to be fleshed out in the final AMP version. The ISAP cautions that the general complexity of the evolving AMP is a potential challenge to its success. The plan offers comparatively detailed views of the oversight and management levels, but a much less detailed view of implementation-level engagements and responsibilities that practitioners will face in the real-time world on the ground and in the river.

The ISAP might restate here that there are two large-scale contributions that science can make to AM on the Missouri River—to provide a firm platform for well-informed general decisions and to enable the creation of new knowledge to understand how the river responds to the environmental change generally and the management actions that will accompany the MRRMP specifically. The criticality of science in these processes implies that the placement of science in the organizational chart and the process diagrams will greatly influence the likelihood of success for adaptive management. The AMP should outline these considerations clearly. ISAP also anticipates a somewhat more refined statement in AMP (version 5) about who will do the interpretation and analysis, as well as an exploration of how scientific knowledge will filter through the overall AMP.

The special case of the pallid sturgeon comes to light often in discussing science and decision-making for the Missouri River. The case is special because, unlike the situation for the piping plover and interior least tern, knowledge about the fish, its habitat needs, and how the physical processes of hydrology and geomorphology are linked to the biology of the fish is limited. Adaptive management has an obvious role to play in management planning for pallid sturgeon, because operational strategies, informed by best available science, can be designed to test hypotheses about the bio-physical system elements (habitat attributes) that are important to the fish. The results of such tests should provide new insights about the fish, and the tests fit naturally into the adaptive management cycle. The important point is that lack of knowledge

about the pallid sturgeon should not delay the implementation of an AMP, but rather efforts to generate that requisite knowledge should be part of an AMP.

The ISAP recognizes that the plan is still developing, and that the creators of the plan are likely to be aware of the issues raised here. We are confident that the authors will continue along the productive path they have carved out thus far, but given the monumental task they have undertaken, we recognize that all issues could not be addressed in the document drafts to date. Likewise, the ISAP recognizes that all possible issues ultimately cannot be addressed in the document, and that the teams implementing the plan will need protocols defined for addressing unforeseen issues.

Changes to Advisory Panels

3. *AMP v4 combines ISAP and ISETR into one advisory panel for several reasons (resourcing, number of interactions, etc.) [see section 2.3.5.3 on page 69 of MRAM Draft v4.pdf].*
 - a. *Can a single panel mixing expertise of the ISAP and ISETR be effective and efficient?*

A single panel may afford the opportunity for science advisors and social science advisors to more readily discuss the diverse interactions, dependencies, opportunities, and constraints that challenge resource managers in their efforts to recover imperiled species within the socio-economic context of the Missouri River Basin. The development of implementable AM alternatives relies on detailing the permissible ranges of management actions—managed flows, elevations, construction, land purchases—in relation to actions required to produce measurable, desired population responses. Evaluating the socio-economic and ecological trade-offs of proposed management actions would likely benefit from having a single panel with sufficiently broad expertise to incorporate the full breadth of scientific and human-considerations challenges.

At the same time, a single panel might confront situations where the salient required technical expertise focused solely on ecological or socio-economic issues, where more than one panel member might have no need or professional standing for competent participation, given issues with clearly defined and exclusive technical boundaries. Such potential inefficiencies might be avoided through meetings, webinars, and on-line exchanges that would selectively invite input from a subset of panel members.

- b. *If only one panel exists for the AMP, what thoughts do you have on the expertise and size as proposed?*

Given likely continued federal budget constraints, consolidating the ISAP and ISETR into a single panel might appear to be a feasible and justifiable pathway to cost reductions. However, it remains challenging to envision a single panel with smaller collective membership that retains the wide-ranging areas of expertise necessary for addressing the complex ecological and socio-economical aspects of the Missouri River AM Plan and its implementation. Furthermore, a combined ISAP and ISETR panel of eight or more individuals could pose potential problems in logistics (e.g., identifying meeting times) and possibly in terms of meaningful interactions (e.g.,

webinars, teleconferences) and timely production of MRRIC-requested products (e.g., written reviews of AM Program documents). Larger panels inevitably lose the intimacy valued in deliberations and advisory products; a large panel becomes a committee, and a science committee is unlikely to service well the advisory of MRRIC in the adaptive management effort that lies ahead.

- c. *Please provide any comments on the details around panel roles and interactions [see sections 2.3.5.3 and 2.3.5.4 on pages 69-71 of MRAM Draft v4.pdf] in this section.*

The proposed independent advisory panel described in AM Plan (version 4) adds a socio-economic scientist essentially to the current ISAP. The broad technical composition of the ISAP has proven valuable and necessary in usefully addressing the complex ecological challenges regarding the three listed species in the Missouri River Basin. It is not entirely clear that the range of key socio-economic issues (e.g., flood protection, navigation, agriculture, dredging, recreation, others) could be similarly addressed by a single individual with socio-economic expertise or how this would integrate into the overall advisory panel.

Having panel scope and participation contingent on the availability of funds is a realistic constraint. At the same time, a comprehensive and complex AM Plan, as described in the current draft AM Plan, requires some degree of guaranteed participation to provide for competent review of materials generated by the AM efforts, and timely, useful feedback from the panel. Annual meetings between MRRIC proxies, science advisors, and the AM Team will not be sufficient to serve the need to inform MRRIC of the multi-dimensional adaptive management activities or convey real-time information needs, including management project implementation and assessment of project performance.

The interactions of the Independent Advisory Panel described in AM Plan (version 4) Section 2.3.5.4 appear similar to those currently in place with the ISAP. The proposed interactions place increasing emphasis on “one-on-one” interactions between panel members and the AM Team. This approach can contribute to timely feedback, but does incur some risk of inconsistent messages from panel members who have not caucused. Wherever possible, and particularly for issues that are likely to escalate to the attention of the MRRIC, efforts should be made to secure panel consensus, even if this is accomplished informally (via teleconference) among different subsets of the panel. The “Evaluate” component of the described interactions adapts the currently more formal interaction with MRRIC to a parallel activity with the AM Team. Presumably, this component will not preclude future such evaluations requested by the MRRIC in relation to implementation of the AM Plan.

AM Decision Process

4. *Regarding the decision criteria articulated in Chapters 3 and 4 (and Appendix C) – does the use of pre-approved decision criteria match or couple well with the Governance structure and processes detailed in Chapter 2? Too much predetermined? Not enough?*

The intent of the decision criteria is to make decision making more transparent to all parties involved in the AM process, including members of the four teams that make up the proposed governance structure. The ISAP supports the use of explicit decision criteria. We see no currently proposed use of the decision criteria that is inappropriate, and from our science advisory vantage point we see no significant obvious missing criteria—while acknowledging that with the next plan draft and during implementation, the need for more criteria and adjustments to the standing criteria will become apparent. Most of the decision criteria still need documentation regarding the rationale for the (ultimate) selected value(s), and the basis in science or other salient background information source (as discussed below).

Given this documentation and initial vetting, the set of criteria might be viewed as just one more class of objects that can be adjusted through the adaptive management process as more information is gained. If a criterion successfully facilitates transparent decisions that are supported by the scientific findings or weights of evidence, then it will have served its intended purpose. If a criterion seems to be leading the decision process away from achieving the program objectives in an effective, efficient, and accountable manner, then that criterion should be adjusted or otherwise redefined to better support achievement of program objectives.

5. *Given the decisions being made by different teams/at different levels, how do we document decisions so that the causal chain of decision-making is evident and science-based (i.e., how we got from there to here)? Would a summary document be sufficient? Who should prepare any documentation? [See section 2.4.1-2.4.3 on pages 74-93 of MRAM Draft v4.pdf]*

The ISAP appreciates and supports the desire of MRRIC to be assured that adaptive management decision-making is transparent and its basis in science and other reliable knowledge can be demonstrated. Periodic summaries might seem the appropriate vehicles for documenting “causal chains” and scientific defensibility in identifying candidate management actions, selecting an action from among them, and implementing that action. However, it might seem that such a requirement would be burdensome to the complex and layered process of implementing adaptive management for the piping plover and least tern, and the constellation of level 3 and 4 actions (and investigations) that are ahead for the pallid sturgeon. Instead, documentation of the “scientific basis” for decision criteria (better, a description of how science and other essential information was used to establish the criteria) that support the necessary decisions that accompany adaptive management may best be addressed in the next draft plan.

Decision criteria are being developed and presented in a matrix that will appear in the AMP (version 5). The matrix depicts categories of actions (for which process decisions must be made) and types of decisions that must be informed by reliable knowledge, and will presumably include

decision responsibilities and authorities. That tabular catalogue of the institutional process decisions that will lead to implemented management actions, identification of performance metrics and assessment strategies, monitoring program design and implementation, and research design and model development would benefit from an additional column. That column could present a description of the information that will support the decision, including data, analyses, or model outputs drawn from the effects analysis, findings from new research that is undertaken in support of the program, real-time monitoring and other assessment activities, or inferences drawn from information from outside of the program. With addition of an information-and-source column, the decision criteria matrix then becomes a useful archival resource to guide agency policy makers and staff managers and to inform decisions made by adaptive management team during program implementation. It can be used to assure both the Fish and Wildlife Service and stakeholders that adaptive management decisions, actions, and assessments are supported by a defensible “causal chain” or sequence of decisions that have used the best available scientific information.

The issue of the reliability of the information used to support decisions in the implementation of adaptive management warrants consideration. In conservation planning engagements, information quality is usually differentiated and ranked on the basis of the reliability of its sources; for example, information from (independent) peer-reviewed publications would typically be recognized as superior to information from agency publications that have been subjected only to internal review, and information from those sources is generally recognized as more reliable than that from unpublished reports and other information that has not been subject to review. However, at the point of initiation of adaptive management on the Missouri River, some of the best available science for and syntheses of reliable data for the three listed species in the planning area will be most readily available in unpublished documents that support the effects analyses and the effects analysis itself. Considering the scope of the effects analyses, the vetting they received, and the authorships of the individual effects analysis documents, information drawn from the effects analysis can be considered to meet the criterion of best available science for use in supporting decisions made in implementing the MRRMP adaptive management plan.

Annual or semi-annual program reviews, in the form of reports, presentations, and technical meetings, may all be required to keep MRRIC stakeholders and other parties informed about science updates and regarding management decisions and the basis for changes and new initiatives. The program reviews should include evaluation of the performance of tasks undertaken and assessment and critique of planned actions (including monitoring designs yet to be implemented, proposed research, and numeric operations models being used to guide decisions). Scientific review should assess last year’s successes and failures, consider the current state of the system, and evaluate proposed management actions and assessment efforts for the coming activity period. Scientific review of the program and the key decisions made under its direction, and future decisions under consideration, may best be organized using the decision criteria; accordingly programmatic scientific review will provide a means of assessing, and if necessary adjusting or otherwise updating, the decision criteria in response to lessons learned from the ongoing adaptive management. The next version of the AM plan might acknowledge the need for independent scientific review of select technical documents that will accompany the

implementation of adaptive management, and provide process guidelines (procedural rules) for the different levels of review that will be needed as the AM process moves forward.

In efforts to document the decision processes that may occur during technical team, implementation team, management team, and/or oversight team deliberations, other adaptive management programs have developed protocols for note-taking, reporting, and publicly posting such communications on program web sites. The MRRIC should expect the Missouri River Adaptive Management Program to provide similar documentation and reporting of decision processes and outcomes at all decision levels in order to maintain transparency and credibility of the AM process.