

DOLORES RIVER DIALOGUE PLAN TO PROCEED

BACKGROUND The Dolores River Dialogue (“DRD or Dialogue”) is a multi-stakeholder effort aimed at improving the environment of the Dolores River downstream of McPhee Dam, while protecting or enhancing human uses of the Dolores River resource. The dialogue is considering a range of creative alternatives. The practical actions that may result from this effort fall into three categories: 1) river channel work (maintenance, restoration, habitat improvement); 2) spill flow management / enhancement; 3) base flow – pool management /operation; and/or 4) some combination of these three strategies. Specific alternatives may include, but are not limited to, re-timing downstream releases, efficiency/infrastructure improvements, interruptible supplies, new storage, new supplies, stream habitat improvements, and weather modification. To evaluate the various strategies and determine the preferred alternatives, the Dialogue needs technical expertise in several disciplines. Some of this expertise can be supplied by members of the Dialogue. Other expertise, by its nature, must be supplied by folks not involved in the Dialogue.

PURPOSE This Plan To Proceed outlines the three technical understandings required to get to the point where the Dolores River Dialogue Group can make a responsible decision about what, if any, action to take to implement its goals. First, a water availability analysis needs to be done. That analysis needs to describe the amount of water expected to flow downstream of McPhee Reservoir through spills and base flow releases. It also needs to describe the realistic opportunities to manage or enhance those flows. Second, an analysis of potential downstream environments needs to be made. The science associated with different flow patterns downstream of McPhee Reservoir needs to be described. Third, a correlation between those two efforts needs to be made that will illuminate the practical actions that could result from the efforts of the DRD Group. A matrix of doable alternatives with identified consequences (scientific, institutional, legal, political, fiscal) will be described. The Plan’s finished products are designed to be thorough, credible, and realistic in their analysis of what is possible and what hurdles different actions may potentially face.

SUMMARY OF THE PLAN PROCESS The Technical Team, with oversight and direction from the Dolores River Dialogue Group, will lead this Plan To Proceed. Two groups will be formed. The Core Hydrology Group will be responsible for the water availability analysis. The Core Science-based Group will be responsible for providing the scientific analysis of the environments downstream of McPhee Reservoir that could be impacted by potential actions under consideration by the Dialogue Group. The Technical Team is responsible for directing the work and the reports provided by the two new technical groups, and also with producing a comprehensive summary report of both the water availability, and the necessary science that describes the impacts of various actions. The Technical Team will also provide a menu of recommendations for the Dolores River Dialogue Group to consider based on these reports.

TECHNICAL TEAM MEMBERS The Technical Team is composed of John Porter, Chuck Wanner, and anybody else from either inside the Dolores River Dialogue Group or elsewhere who is willing to help do the Team's work. Membership is designed to produce a product that is politically and intellectually credible, as well as fitting within the financial constraints of the DRD's efforts. Current members include: John Porter, Chuck Wanner, Tom Iseman, Kirk Lashman, Don Schwindt, Chris Kloster, Dan Merriman and David Graf. Members of the Technical Team are listed on the Technical Team Organizational Chart in Appendix C.

TECHNICAL NEEDS

1) EVALUATE EXISTING MANAGEMENT CONSTRAINTS AND

OPPORTUNITIES The management obligations of the Dolores Project provide the fundamental sideboards for the Dolores River Dialogue. What are the legal, contractual, and operational constraints on water management? Given the available water supply, what opportunities are there to beneficially impact potential flow options for the downstream river system? These fundamental threshold questions will need to be addressed, and the 'decision space' defined, prior to consideration of river flow options or management strategies. This exercise will assess available hydrology and identify water availability to provide a basis for future informed decision-making. The detailed Scope of Work for this project is attached as Appendix A.

a) **MEMBERS CORE HYDROLOGY GROUP** The Core Hydrology Group will be led by John Porter and the Dolores Water Conservancy District, Chuck Wanner, and include other members of the DRD roundtable, including David Graf, Vern Harrull, Erik Knight and any additional hydrology, engineering or recreational boating expertise, as needed. In addition, a member of the core science group should participate. Members of the Core Hydrology Group are listed on the Technical Team Organizational Chart in Appendix C.

b) TASKS

i) **HYDROLOGY REVIEW** The Core Hydrology Group should review existing data on historic flows in the Dolores River system, including hydrology data provided by John Porter and DWCD. The Group should develop estimated water budgets for all of the possible flow scenarios – matching the various categories with the various scenarios and the various data periods. The end product should be a range of expectations (recognizing both constraints and opportunities) of available water for downstream habitat. The hydrology review will also address recreational boating.

ii) **CONTRACTUAL REVIEW** the Core Hydrology Group shall identify the existing contractual obligations for the Dolores Project and other pre- and post-project water commitments from the Dolores system; and the water needed to meet these obligations in characteristic water years, as demonstrated by the above water budgets. The Core Hydrology Group shall identify existing NEPA compliance obligations and determine whether specific actions comply.

iii) **PRELIMINARY SUMMARY REPORT** the Core Hydrology Group shall prepare a preliminary summary of the results of the water budgeting exercise. The

extensive summary report will be used by the Core Science Based Group in their work as well as by the Technical Committee and the DRD. The key piece of this report that needs to be produced as quickly as possible (even in a rough draft format), is a summary of the amount of water (and its probable duration) available for both the spill and base flow out of McPhee Reservoir during wet, normal, and dry periods. These amounts need to be described as a range of possible flows and timing / duration that reflect the constraints of the contractual review, and the opportunities under discussion by the DRD

- c) **TIME TABLE** December 31, 2004.
- d) **FUNDING** Up to \$5,000 from DWCD for John Porter to provide Hydrology Review and flow modeling with Core Hydrology Group and CWCB assistance.

2) IDENTIFY FLOW OPTIONS WITHIN EXISTING CONSTRAINTS AND OPPORTUNITIES

Several studies have proposed river system flow options for the Dolores River. (Studies of other Colorado River systems may be of value in considering Dolores flow options, as well.) The studies have identified both base flows and peak (or spill) flows needed to maintain a range of river ecosystem components, including the cold-water trout fishery, recreational boating, native warm-water fishes, riparian vegetation/tamarisk invasion, and channel forming processes (Table 1). The Dolores River Dialogue will need to evaluate these flow options in light of its objective of improving the downstream environment while protecting human uses of the Dolores River¹. The peak flows and base flows available for release from McPhee Reservoir (as well as potential channel modification flows) need to be evaluated to determine what benefits accrue to various types of downstream environments. The available science needs to be interpreted in conjunction with the hydrology constraints and opportunities described by the Core Hydrology Group.

- a) **MEMBERS CORE SCIENCE BASED GROUP** The Core Science Based Group will be comprised of approximately five members, to be decided by the DRD. The DRD will engage a project manager to convene the technical experts, compile information, and prepare a summary report. Technical experts will include a geomorphologist, a riparian ecologist, a hydrologist, and a warmwater fish ecologist. Members of the Core Science Based Group are listed on the Technical Team Organizational Chart in Appendix C.
 - i) **OBJECTIVES** Before adoption of the Plan to Proceed, the technical group needs to identify the questions that need to be asked of the Core Science Based Group. The subject areas below are based on the goals of Dolores River Dialogue, as identified in the Dialogue's initial meetings in spring-summer 2004.²
 - ii) **NATIVE FISH HABITAT:** What flows, in terms of magnitude, duration, and recurrence, would create habitat and support life-cycles of native warm-water fish in

¹ All parties recognize that any identified flow options are non-binding and will need to be evaluated for implementability under 'Evaluating management opportunities'.

² These questions focus on the role of river flows in maintaining these targets (eg native fish) or processes (eg geomorphology). There may also be opportunities to consider manual or mechanical river restoration, including for native fish habitat, channel form, and tamarisk removal.

- the Dolores River, particularly roundtail chub, bluehead sucker, and flannelmouth sucker?
- iii) **GEOMORPHOLOGY:** What flows, in terms of magnitude, duration, and recurrence, would support key geomorphic processes, including sediment transport, channel formation, and habitat creation?
 - iv) **RIPARIAN VEGETATION:** What flows create conditions for riparian regeneration and support establishment of native riparian communities over invasive species?
 - v) **SPORT FISH HABITAT:** See Table 1 – are existing studies adequate?
- b) The Core Science Based Group will evaluate existing literature and expert opinion relating to the above objectives. The Group will then seek to correlate potential flows with benefits to the downstream river system, and will identify any gaps in knowledge that should be addressed going forward. The group will prepare a summary report of their findings by March 2005.

3) PREPARE A COMPREHENSIVE SUMMARY OF OPTIONS, INCLUDING: PRELIMINARY FLOW MANAGEMENT , WATER SUPPLY

AUGMENTATION, AND CHANNEL WORK. Once the two technical sub-groups (the hydrology group and core science group) have completed their reports, the technical team will have to develop a comprehensive summary report integrating hydrologic and scientific information. Specifically, they will need to develop a matrix or simplified model as a tool to identify and evaluate potential trade-offs as well as potential compatibilities and incompatibilities, to get the best mix of benefits for the identified environmental and human uses prior to the workshop. The purpose of this exercise is to develop a product (list of options) that will allow the DRD to collectively make good decisions, based on sound data, implementability, and estimated costs. This effort should be completed by March 31, 2005 (?).

4) CONDUCT A DOLORES RIVER DIALOGUE WORKSHOP

a) PURPOSE OF WORKSHOP – TO IDENTIFY PRACTICAL ACTIONS.

Once the Comprehensive Summary Report is complete, the Dolores River Dialogue will convene a flow recommendations workshop, where the DRD participants and additional river experts will review the Comprehensive Summary Report (directed by the Technical Committee and prepared as a combined effort by the Core Hydrology Group and the Core Science Based Group) and prepare a draft report on initial flow recommendations to address river ecosystem options. This DRD technical workshop will occur in spring/ summer 2005.

b) TIME TABLE April, 21, 2005

5) DEVELOP MONITORING AND RESEARCH PROGRAM

a) The Technical Committee acknowledges that the hydrologic system and, by extension, functional river systems, are by their nature dynamic and variable. Therefore, any ‘naturalized’ flow regime designed to improve river habitat below McPhee dam will require subsequent monitoring, and may require adjustments (as feasible) to downstream flows. The final task will identify a monitoring and research program to ensure that management actions

are meeting downstream habitat objectives, while also sustaining and/or enhancing human uses of water.

b) **TIME TABLE** To be determined

NEXT STEPS FOR DOLORES RIVER DIALOGUE TECHNICAL COMMITTEE

- 1) **REVIEW PLAN TO PROCEED** As modified at the November 18, 2004 Dolores River Dialogue Meeting.
 - a) **MODIFY AS APPROPRIATE** based on contacts with potential consultants to the Core Science Team.
 - b) **REFINE PLAN TO PROCEED INCLUDING REALISTIC TIME FRAMES FOR COMPLETION OF THE PROCESS**
- 2) **SELECT THE TWO CORE GROUPS**
- 3) **ADOPT BUDGET**
 - a) **IDENTIFY SOURCES OF REVENUE** All participants of the roundtable shall be given the opportunity contribute to the effort.
 - b) **ITEMIZE MAJOR EXPENDITURES**
- 4) **Review Progress on the above at the Dolores River Dialogue Meeting on January 20**

Table 1 – Historic Flow Recommendations for the Dolores River

	Base Flows	Peak/SpawningFlows	Source
Coldwater/Trout	20cfs (dry) 50 cfs (normal) 78 cfs (wet)		Dolores Project EIS 1981
	50 cfs	125 cfs (rainbow-spring) 65 cfs (brown-fall/winter)	BLM 1990
	80 cfs (summer) 40 cfs (winter)	100,000 af	Dolores River Biology Team 1993
Warmwater/Native	80 cfs (summer) 30 cfs (winter) 200 cfs (riffle)		Anderson 2003
	50 cfs (dry) 78 cfs (wet/normal)	Simulate natural hydrograph	Bio/West 1992
Riparian/Channel		2,000 cfs/7-days/1-in-2 yrs *500 cfs ramping	BLM 1990
		1,200 cfs	Anderson 2003
Boating	Canoe – 125 cfs Float/Fishing – 300 cfs Scenic Boating – 800 cfs Minimum Whitewater – 1,100 cfs Optimum Whitewater – 2,000 cfs		BLM 1990

Peak Flows: Peak flows drive critical processes in natural river systems. Peak flows drive channel processes, including reshaping sediment deposits, building and maintaining floodplains, flushing fine sediments, scouring vegetation, and maintaining natural channel meanders. They also support key biological processes, including maintaining spawning habitat, providing access to in-channel, warmwater and backwater habitats, maintaining temperature, chemical, and nutrient characteristics, triggering spawning and other life-cycle stages, and regenerating riparian vegetation communities. It is critical to identify the appropriate magnitude, timing, duration, ramping, and recurrence of peak flows to support the river system.

Base Flows: Base flows sustain appropriate, year-round, in-channel habitat for fish, and maintain water levels to support riparian vegetation in the late summer period.

Appendix A

Scope of Work: Evaluate Existing Management Constraints and Opportunities

Purpose: The management obligations of the Dolores Project provide the fundamental sideboards for the Dolores River Dialogue. What are the legal and contractual, constraints on water management? Given the available water supply, what opportunities are there to beneficially impact potential flow options for the downstream river system? These fundamental threshold questions will need to be addressed, and the ‘decision space’ defined, prior to consideration of river flow options or management strategies.

- 1) **MEMBERS** The Core Hydrology Group will be led by John Porter and the Dolores Water Conservancy District, Chuck Wanner, and include other members of the DRD roundtable, including David Graf, Vern Harrell, Erik Knight and any additional hydrology / engineering expertise, as needed. In addition, a member of the core science group should participate. Members of the Core Hydrology Group are listed on the Technical Team Organizational Chart in Appendix C.
- 2) **TASKS**
 - a) **HYDROLOGY REVIEW** the Core Hydrology Group should review existing data on historic flows in the Dolores River system, including hydrology data provided by John Porter and DWCD. The Group should develop estimated water budgets for all of the possible flow scenarios – matching the various categories with the various scenarios and the various data periods. The end product should be a range of expectations (recognizing both constraints and opportunities) of available water for downstream habitat.
 - i) **CATEGORIES**
 - (1) Base Flow
 - (2) Spill
 - (3) Out Of Basin / Human Use (the purpose for including the out-of-basin / human use category is so that the water budgets reflect the amount of water available pursuant to the various constraints).
 - (4) Downstream Inflows
 - ii) **RIVER REACHES** to the extent possible, the Core Hydrology Group should consider different river reaches, to capture and reflect the influence of tributary inputs as the river flows towards its confluence with the Colorado.
 - (1) McPhee to Bradfield
 - (2) Bradfield to Bedrock
 - (3) Bedrock to Cisco
 - iii) **SCENARIOS** the following scenarios are defined by the Project’s Definite Plan Report. Based on those definitions, a challenge for the Core Hydrology Group will be to impose standards comparable to the DPR for post DPR data
 - (1) Wet (Spill)
 - (2) Normal (No Spill)

(3) Dry (Shortage)

iv) DATA PERIODS

(1) Pre Project data available from the Projects DPR

(2) Transitional Project all Project beneficiaries are not yet fully developed

(3) Post Project Project fully developed by 1998 (generally, the project has operated more conservatively than DPR assumptions. Also, the 2002 water shortage was two times as severe as DPR predictions.)

(4) Historic a pre-diversion or simulated unaltered hydrology would provide context for natural history and restoration opportunities (see DSS?).

v) EVALUATE OPPORTUNITIES

(1) Cloud Seeding

(2) New water storage

(3) Purchase or lease Agreements

(4) Delivery efficiency or other water management improvements

vi) CORRELATE THE AVAILABLE IN-BASIN WATER WITH CATEGORIES / SCENARIOS / DATA PERIODS/OPPORTUNITIES

the purpose for developing all the various estimated water budgets is to determine how flexible, or how much water is available given various scenarios. Some of the water budget scenarios need to be extended over more than one season in order to fully evaluate costs and benefits.

b) **CONTRACTUAL REVIEW** the Core Hydrology Group shall identify the existing contractual obligations for the Dolores Project and other pre- and post- project water commitments from the Dolores system; and the water needed to meet these obligations in characteristic water years, as demonstrated by the above water budgets. The Core Hydrology Group shall identify NEPA compliance obligations and determine whether specific actions comply with the existing EIS requirements.

c) **PRELIMINARY SUMMARY REPORT** the Core Hydrology Group shall prepare a preliminary summary of the results of the water budgeting exercise. The extensive summary report will be used by the Core Science Based Group in their work as well as by the Technical Committee and the DRD. The key piece of this report that needs to be produced as quickly as possible (even in a rough draft format), is a summary of the amount of water (and its probable duration) available for both the spill and base flow out of McPhee Reservoir during wet, normal, and dry (spill, non-spill, and shortage) periods. These amounts need to be described as a range of possible flows and timing / duration that reflect the constraints of the contractual review, and the opportunities under discussion by the DRD

3) TIME TABLE December 31, 2004.

i) The draft Executive Summary should be produced by 11/18/04

ii) The draft Summary Report should be completed by the 12/16/04 --
12/31/04

b) **FUNDING** Up to \$5,000 from DWCD for John Porter to provide Hydrology Review and flow modeling with Core Hydrology Group and CWCB assistance.

Appendix B

Scope of Work: IDENTIFY FLOW OPTIONS WITHIN EXISTING CONSTRAINTS AND OPPORTUNITIES

Purpose: Several studies have proposed river system flow options for the Dolores River. (Studies of other Colorado River systems may be of value in considering Dolores flow options, as well.) The studies have identified both base flows and peak (or spill) flows needed to maintain a range of river ecosystem components, including the cold-water trout fishery, recreational boating, native warm-water fishes, riparian vegetation/tamarisk invasion, and channel forming processes (Table 1). The Dolores River Dialogue will need to evaluate these flow options in light of its objective of improving the downstream environment while protecting human uses of the Dolores River³. The peak flows and base flows available for release from McPhee Reservoir (as well as potential channel modification flows) need to be evaluated to determine what benefits accrue to various types of downstream environments. The available science needs to be interpreted in conjunction with the hydrology constraints and opportunities described by the Core Hydrology Group.

- 1) **MEMBERS** The Core Science Based Group will be comprised of approximately five members, to be decided by the DRD including DWCD Manager Philip Saletta. The DRD will engage a project manager to convene the technical experts, compile information, and prepare a summary report. Technical experts will include a geomorphologist, a riparian ecologist, a hydrologist, and a warmwater fish ecologist. At their November 18 meeting the DRD after feedback from contacts with technical experts, and subsequent discussion recommend the following:
 - a) Jim Siscoe is tentatively available and was recommended to serve as project manager, as a private consultant, subject to follow-up discussions with the Technical Committee.
 - b) Gigi Richard is tentatively available and was recommended as a geomorphology expert, as a private consultant, subject to follow-up discussions with the technical committee.
 - c) Dave Merritt is tentatively available and was recommended to serve as riparian ecology expert, subject to follow-up discussions with the technical committee. Dave is a Forest Service Employee and would require travel and per diem expenses.
 - d) Dennis Murphy (not contacted as yet) was recommended to address hydrological issues related to the Core Science Based Group. Dennis is a Montrose BLM employee and would require travel and per diem expenses.
 - e) Rich Valdez or Rich Anderson (not contacted as yet) were recommended as warm water fish experts.
 - f) Pat Shafroth, a riparian ecologist, is unavailable to serve on the core team but may be willing to serve as a reviewer and work shop participant.
 - g) Jack Schmitt, a geomorphologist, is unavailable to serve on the core team but may be willing to serve as a reviewer and work shop participant.

³ All parties recognize that any identified flow options are non-binding and will need to be evaluated for implementability under 'Evaluating management opportunities'.

- h) The Technical Team will follow up on these recommendations and report back to the January 20, 2005 DRD meeting on the Core Science Based Group make-up, revised timelines and budget. As decisions are finalized as to the make up of the Core Science Based Group members will be listed on the Technical Team Organizational Chart in Appendix C.
- i) **REPRESENTING SPECIFIC OBJECTIVES** Before adoption of the Plan to Proceed, the technical group needs to identify the questions that need to be asked of the Core Science Based Group. The subject areas below are based on the goals of Dolores River Dialogue, as identified in the Dialogue's initial meetings in spring-summer 2004.⁴
 - i) **NATIVE FISH HABITAT:** What flows, in terms of magnitude, duration, and recurrence, would create habitat and support life-cycles of native warm-water fish in the Dolores River, particularly roundtail chub, bluehead sucker, and flannelmouth sucker?
 - ii) **GEOMORPHOLOGY:** What flows, in terms of magnitude, duration, and recurrence, would support key geomorphic processes, including sediment transport, channel formation, and habitat creation?
 - iii) **RIPARIAN VEGETATION:** What flows create conditions for riparian regeneration and support establishment of native riparian communities over invasive species?
 - iv) **SPORT FISH HABITAT:** See Table 1 – are existing studies adequate?
 - v) **RECREATIONAL BOATING:** See Table 1 – are existing studies adequate? Recreational Boating will be assigned to the Core Hydrology Group, and BLM River Ranger Rick Ryan will provide information and input on boating.

2) TASKS

- a) **CONDUCT LITERATURE REVIEW.** the Core Science Based Group should review literature, existing studies, and past Dolores River flow recommendations to establish a comprehensive baseline technical resource for the Dialogue.
 - i) **PREPARE LITERATURE / DATA SUMMARY.** the Core Science Based Group should develop a summary report of the existing literature and available data that addresses several topic areas: hydrology/geomorphology; riparian vegetation; fish, amphibians, and aquatic insects; and otters, threatened and endangered plants and animals in the Dolores basin. The report should include a hydrologic/geomorphic characterization, key findings about the linkages between flow components and ecological resources, and a prioritization of monitoring and research needs going forward.
- b) **CORRELATE FLOW LEVELS WITH BENEFITS TO DOWNSTREAM RIVER SYSTEM.** The Core Science Based Group should develop a summary of the benefits that accrue to the different downstream environments from different potential flow regimes. The Core Science Group should consider currently available flow regimes and potential 'opportunity' flow regimes, as described by the Core Hydrology Group.

⁴ These questions focus on the role of river flows in maintaining these targets (eg native fish) or processes (eg geomorphology). There may also be opportunities to consider manual or mechanical river restoration, including for native fish habitat, channel form, and tamarisk removal.

The DRD needs to prioritize its focus, based on science, on efforts to better manage spills or base flows, augment downstream water supplies, or develop channel improvements.

- c) **IDENTIFY GAPS** the Core Science Based Group needs to identify gaps in scientific knowledge specific to DRD's questions regarding downstream improvement.
- d) **PRELIMINARY SUMMARY REPORT** the Core Science Based Group shall prepare a preliminary summary of recommendations for different flow options and/or channel work based on the above exercises. The recommendations should 1) identify flow options for the objectives described above; 2) correspond to the climate scenarios: Wet (Spill), Normal (No Spill), and Dry (Shortage) as as described in the hydrology report; and 3) be consistent with the available and potential 'opportunity' flows described in the hydrology report. The recommendations should build on and reinforce the information contained in Table 1. The report should identify criteria for adaptive management to be considered by the DRD.
- e) **TIME TABLE** The Science Based group should complete this phase of its work by the March 17, 2005. If the scientific gaps hinder the development of a defensible summary, the core science group shall identify key gaps and seek appropriate guidance from the technical committee and greater DRD.
- f) **FUNDING** \$12,500-\$15,000

Appendix C:

**Organizational Chart:
Technical Committee, Core Hydrology Group and Core Science Based Group**

