

RECLAMATION

Managing Water in the West

Final Scoping Report- Paradox Evaporation Pond Pilot Study

April 2012



Paradox Valley, Colorado.

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1. Introduction and Background

The Bureau of Reclamation (Reclamation) is preparing an environmental assessment (EA) to describe potential effects related to the construction and operation of a proposed evaporation pond pilot study for the Paradox Valley Unit (PVU) of the Colorado River Basin Salinity Control Program. Public involvement will be an important activity in the development of the EA and pilot study. The first phase of the public involvement process is “scoping” and is designed to help determine issues and alternatives to be addressed in the pilot study plan and EA. Scoping is defined as “an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action.” This report summarizes the findings of the scoping period.

A draft and final EA will be prepared to provide decision makers appropriate information and to inform the public of the proposed action, reasonable alternatives, and the impacts of the alternatives. In addition to scoping of significant issues and alternatives, key activities will include development of alternatives that support the proposed action and need, analysis of issues in the EA, and selection of a recommended plan. If, based on this analysis, Reclamation concludes the proposed action would have no significant impact on the human environment; preparation of an Environmental Impact Statement would not be required before the action could be implemented. If appropriate, a Finding of No Significant Impacts (FONSI) will be the final product prepared under this EA. Periodic meetings and mailings will be used to keep the public updated on the process.

The Paradox Valley was formed from the collapse of a salt anticline (dome) located in southwestern Colorado. The Dolores River, as it passes through the valley, historically picked up an estimated 205,000 tons of salt annually. The Colorado River Basin Salinity Control Act (Public Law 93-320) of 1974 authorized the Reclamation to investigate and construct the PVU. The PVU currently intercepts brine groundwater and disposes of it by deep well injection. Approximately 110,000 tons of salt that would have otherwise entered the Dolores River annually is injected into a 15,932 foot deep well located south of Bedrock, Colorado. The PVU is designed to prevent this natural salt load from entering the river and degrading the water quality of the main stem of the Colorado River.

The existing deep-injection well, completed in 1988 by Reclamation, is nearing the end of its useful life and action will be needed by Reclamation to continue long term salinity control at the Paradox Unit. A new injection well alternative and an evaporation pond alternative, as well as other alternatives are being considered for future brine disposal. Reclamation intends to conduct a study to develop and evaluate alternatives for the continued operations of the PVU.

As part of this study, the Colorado River Basin Salinity Control Forum (Forum) has requested that Reclamation develop a pilot study to gather information to evaluate the use

of evaporation ponds as an alternative to deep well injection to control brine from entering the Dolores River. The Forum is comprised of representatives appointed by the governors from the respective states in the Colorado River Basin (Colorado, Wyoming, Utah, New Mexico, Arizona, Nevada, and California) and was created for interstate cooperation and to provide the states with the information necessary to reduce salinity concentrations in the Colorado River and to comply with Section 303 (a) and (b) of the Clean Water Act.

2. Paradox Evaporation Pond Pilot Study

The proposed Paradox Evaporation Pond Pilot study (pilot study) would include the construction and operation of one or more evaporation ponds (between 1 and 15 acres in size) within the Paradox Valley to evaluate the feasibility of evaporation ponds as a method for long-term salt disposal. Brine collected at the existing PVU Well Field would be piped to the evaporation pond(s). The pilot study would be operated for a period of three to five years to gather information on evaporation rates, enhanced evaporation techniques and operational costs.

The pilot study would also monitor and evaluate other environmental factors, such as potential impacts on migratory birds and other wildlife, hydrogen sulfide removal techniques, and methods for disposal of brine evaporate. The pilot study would test strategies aimed at preventing harm to migratory birds (as outlined in the federal Migratory Bird Treaty Act of 1918). The U.S. Fish and Wildlife Service indicated during a recent Forum meeting that pond netting must be incorporated into the pond designs. Net supports would be in place and netting available onsite, ready to install, if impacts occur and other mitigation techniques are not effective. Reclamation is considering using both active and passive deterrents (coloring the brine, noise cannons, flashing lights, and bioacoustics, as well as other methods with potential to deter birds from using the evaporation pond(s).

Reclamation has initially identified three potential sites for the pilot study, although additional sites may be considered (See attached map). It is anticipated that the total area of the pilot study will not exceed 40 acres in size. Reclamation proposes to enclose and stabilize (cover) the brine evaporate in place following the study, subject to local, state and federal laws and regulations. The long-term storage of the salt brine evaporate accumulated during the pilot study may also require additional permitting as a landfill. Removal and disposal of brine evaporate at an existing permitted landfill locations will also be explored.

3. Public Scoping Activities

Several methods were used to inform the public and solicit comments on preparation of an environmental assessment. These methods included press releases, preparation and mailings of information packets, meetings with interested parties, scoping announcements, and public scoping meetings.

The scoping period began on November 22, 2011, with press releases and scoping letters mailed to landowners in the Paradox Valley, and various organizations and agencies. The scoping letter described Reclamation's intent to prepare an EA, announced scoping public meeting dates, and solicited public comments. Scoping comments were requested by January 30, 2012.

Reclamation distributed an announcement of the scoping meetings along with background information to an initial EA mailing list of approximately 240 individuals, organizations, and agencies. The announcement requested written comments as well as attendance at the scoping meetings. Personal contacts were also used to notify people of the scoping meetings.

Public scoping meetings were held December 6 and 8, 2011, in Paradox and Montrose, Colorado, respectively. Representatives from federal, state, and local agencies attended the meetings, as well as members of the public. At the meetings, Reclamation presented background information and listened to public comment and questions. Forms were also provided for written comments. At the meetings, Reclamation offered to meet individually with groups or organizations to discuss the EA process.

Additional meetings were held with the Bureau of Land Management and Colorado Department of Public Health and Environment.

4. General Scoping Results

Nineteen people, representing local landowner interests, organizations, agencies and other interested parties, attended the scoping meeting in Paradox and twenty people attended the scoping meeting in Montrose. Notes from the scoping meetings are available for review at Reclamation's office in Grand Junction. In addition, written input received from agencies, organizations and individuals is also available for review. Approximately 68 agencies, organizations and individuals that participated in the public scoping are as follows:

- Montrose County
- Environmental Protection Agency
- Colorado Parks and Wildlife
- Bureau of Land Management
- Trout Unlimited
- Energy Fuels
- Living Rivers and Riverkeepers
- The Wilderness Society
- Center for Biological Diversity
- Canyonlands Watershed Council
- High Country Citizens' Alliance
- Western Colorado Congress
- Biodiversity Conservation Alliance
- Colorado Environmental Coalition
- Montrose County West End Planning Advisory Committee
- Colorado Department of Water Resource
- Colorado River Water Conservation District
- Congressman Tipton's Office
- Sheep Mountain Alliance
- Dolores River Dialog
- San Juan Citizens Alliance Colorado
- Rocky Mountain Chapter of the Sierra Club -
- Rocky Mountain Recreation
- InitiativeDvorak Raft, Kayak & Fishing Expeditions
- Grand Canyon Trust
- Colorado River Basin Salinity Control Forum

The following section of this report summarizes comments and concerns associated with specific topics. The information is a compilation of information presented and no attempt is made to analyze/support/or refute the comments.

BLM Areas of Critical Environmental Concern (ACEC)

1. What effect does an ACEC have on the project? Are they deal breakers? What effect does a proposed ACEC have?
2. If a proposed pond site was in a proposed ACEC, what would happen?
3. Can you do anything in an ACEC before the BLM finishes their Resource Management Plan (RMP)?

Coordination with other Agencies

1. There will likely be a need for Reclamation and Montrose County to coordinate the development of these sites.
2. Montrose County request updates be provided so that staff and elected officials may remain aware of the status of this locally important project.

Economics

1. Need to maintain or increase employment related to the Unit.
2. Want to see a chart comparing costs of alternatives; what is cost of the study?
3. Considering the cost of the pilot study, this is a no-brainer. Should develop new well.
4. How much will the pilot study cost?

Evaporation Ponds

1. The idea of building evaporation ponds to collect the salt in Bedrock is totally the correct solution. I worked on heavy construction projects during my career and one of the projects was the Truscott Brine Lake Dam in Truscott, Texas in 1980. The Brasos River was receiving high salt concentrations because of large springs that contained salt. The Corps of Engineers tried to seal the salt springs with concrete but it was not effective. The company I worked for simply built a dam one mile long and 70 feet high. I visited the dam in 2002 and it was working quite well. I was never in favor of the costly deep well injection system, but evaporation ponds will work.

Flooding and Storm Events

1. It looks like it would be hard to protect the evaporation ponds from

- unusual weather events such as cloud burst or rain and snow flooding. As an example, you need to look up the San Miguel River a few miles.
2. Flood impacts need to be considered when identifying and evaluating pond sites.

Landfill and Solid Waste Regulations

1. The brine is classified by the EPA as a non-hazardous waste.
2. The Colorado Department of Public Health considers the brine evaporate as a solid waste, requiring permitting for long-term storage (landfill).
3. Reclamation and BLM policies restrict construction of new landfills on federal lands.
4. The County issues the Certificate of Designation (approval) for landfills that comply with State regulations.

Land Value Impacts

1. I am very concerned about the detrimental effect that the ponds and operations thereof would have on the human environment and on the value of my property immediately adjacent to the proposed pond.
2. I own 115 acres adjacent to or very near the proposed pond. There is no question in my mind that the pond and operating activities would basically make this land worthless. In addition, I own 35 acres with an expensive house near Bedrock Store, and I believe that the proposed operations would reduce the value of this property considerably.

Noise and Disturbances

1. It is peaceful and quiet in the Paradox Valley. I would be concerned about how you would keep animals away from the evaporation ponds with sound bursts.
2. Canon noise should not be used to scare wildlife.
3. Bird deterrents such as flashing lights and especially noise cannons may have a negative impact on the area, especially our resort which could possibly become somewhat of a nuisance for our patrons and possibly cause us to lose business and revenue and ultimately affect our ability to make a living in the area which is already difficult.
4. I really don't like the idea of using noise cannons to deter migratory birds from landing on ponds. Noise cannons would definitely have an impact on the human environment, and I live fairly close to the site, I think I would be able to hear the cannons. Noise cannons might also affect chickens that are laying, or other undomesticated animals.
5. The use of noise cannons, flashing lights and possible other methods would have a severe detrimental effect on the normal living conditions of local residents.

Odor

1. With regard to the evaporation ponds we have also heard that the smell of sulfur would be terrible. Would this be true?
2. Possible odors are also of concern. Hydrogen sulfide removal would need to be done. Also, odors may also be produced by biological decomposition, enhanced by wind, also resulting in a negative impact. A large scale pond may have a similar affect.

Pilot and Alternative Studies

1. How long will the pilot study last?
2. Have you investigated lining the river?
3. You should use the results of the ongoing USGS hydro study.
4. What are we scoping—the pilot study or the overall study for the Unit?
5. If you did similar studies in the 1970's, why do need another study now?
6. Is there a way to stop the salt at the source? Can you cut the water supply that supplies the brine?
7. Time frames being presented are confusing? Chicken and egg situation.
8. Can you control recharge?
9. Who decides if the pilot study is feasible?
10. You should put the pilot study money towards building a new well.
11. Are there commercial opportunities to use brine?
12. Commercialization options should be evaluated in parallel with the pilot study as a means to off-set some of the cost and bring some new industry to the area.
13. Reclamation should pursue the evaporation pond pilot study as quickly as possible.
14. Closing the salt injection facility would have a positive effect on our future plans (Resort and RV Park) as it would greatly reduce traffic to and from the plant since the access road crosses our property and would reduce other impacts such as noise, lights, privacy, etc. We are actually looking forward for the day when the plant closes and the road will be used primarily by us.
15. We would like to see other alternatives used, such as drilling another deep injection well or possibly piping the brine to another less populated location where there would be less human impact, such as the East end of the Paradox Valley, possibly near the proposed Uranium Mill site where there will already be impacts from the mill operation.
16. Implore you to conduct a full Environmental Impact Statement (EIS) for salinity control in the Paradox Valley before allowing an evaporation pond to be built. Although deep injection system creates concerns over seismic impacts and is reaching capacity, the Bureau should thoroughly examine the alternatives available and avoid creating permanent toxic waste dump

in Paradox Valley. Please for the sake of our children and the environment in this beautiful valley, please fully assess all possible environmental impacts before allowing this plan to move forward (5 comments).

17. Please don't fix one problem by creating another problem. Please conduct a full environmental impact statement EIS before moving forward with anything in Paradox Valley.
18. It has come to my attention that the Bureau of Reclamation is considering building an 800 acre pond complex to replace the current injection system with a large scale evaporation pond complex. I urge you to conduct a full environmental impact study before proceeding with this option to make certain that this is the best option for all things considered.
19. I would like very much to see the Bureau of Reclamation conduct a full Environmental Impact Statement (EIS) for salinity control in Paradox Valley.
20. Plans for evaporation ponds in the Paradox Valley is just part of the solution. Is it a solution and what is the scope of the total salinization of the watershed. It seems to me that the total watershed must be looked at and each contributing source examined.
21. An Environmental Assessment is not adequate. Even an Environmental Impact Statement needs to include more than just this source of salinity. But, at the very least it must be done.
22. In the past I have seen various projects touted as "a simple impact assessment is enough". It is not enough for this possibly large future project, impact on wildlife, recreation and tourism dollar! Therefore I say Full Environmental Impact Study is quite justified.

Pond Liners

1. How do you encapsulate the salt pile? How long will the pile last?
2. Liners all eventually leak, what happens then? Will this cause a bigger problem?
3. Could the pond liner leak?
4. What if the salt leeches into the river?

Pond Location

1. Will private lands be considered for ponds?
2. Long Park has flat area you could pump to.
3. Will you consider using private lands?
4. Are their sites on the west side of the river?
5. Reclamation should investigate using private land purchase as way to get the best site and obtain local support.
6. There is still an old pond site shown north on the map that is a terrible mess that has never been cleaned up and we wondered many times how the site could be left like that.

7. How will the pilot study results relate to a large scale site if at a different location?

Roads

1. County Road Y11 may be impacted by construction and monitoring activities.

Salinity

1. How has the conductivity of the Dolores River changed?
2. Is the goal to reduce concentration of salt in the river or tons of salt?
3. The Paradox Valley is a major source of salt to the Colorado River and control is very important.
4. The salinity of the Colorado River is an issue that encompasses the whole Colorado River Watershed. It is essential that we understand the scope of the problem and that a cumulative cost-benefit analysis of the watershed be undertaken.

Uranium Mill

1. Use brine from uranium processing; used to be piped to Uravan for that purpose.
2. Is Reclamation working with Pinon Ridge Uranium Mill? How will the Pinon Ridge well pumping affect the salt issue?

Visual Impacts

1. Roads in area are part of scenic route, ponds might conflict with this.

Injection Well

1. Concerns with causing earthquakes
2. What is wrong with another deep well?
3. What was cost of old well? Was it fracked?
4. Will there be parallel studies going on about deep well injection?
5. How far away would you have to drill a new well?
6. How much would it cost to decide where to drill?
7. We have heard through the grapevine that consideration is being given to drilling a new well off X Road and also Monogram Mesa. The location by X Road is only 200 yards from our house. The location would be a terrible installation for us and our quiet way of life. X Road would be destroyed and it already lacks maintenance. We hope you would consider Monogram Mesa where the impact would be minimal.

Wildlife

1. Birds—during migration, can have lots of birds in the area.
2. Do you have information on the effects of similar ponds on wildlife?
3. Loss of habitat for wintering animals.
4. Loss of nesting habitat for spring nesting and birthing.
5. Would the ponds be fence to protect wildlife?

4. Input from agencies and organizations

Agencies and organizations provided comments and are summarized in the following paragraphs.

U.S Fish and Wildlife Service:

Migratory Bird Concerns:

“The Service’s concerns for impacts to migratory birds have not changed as we continue to believe that open brine evaporation has the potential to negatively impact migratory birds. The Migratory Bird Treaty Act (Act) does not have provisions to allow for take and so if birds should die in the pit, Reclamation will be held responsible for their death. The Act provides stiff penalties for actions that take migratory birds.”

“We have stated that to protect migratory birds the pond will most likely need to be netted and if they are not netted initially the supports will need to be installed to allow the net to be pulled over the ponds, should the brine cause adverse impacts to migratory birds. We note that in your summary sheet you plan to try various means including active and passive deterrents to deter birds from using the ponds. While these methods may provide protection for the ponds without meeting it will be important to have staff on hand daily to visually inspect the ponds for birds that may become trapped in the brine and remove and rehabilitate them if they show adverse effects from the brine solution.”

Pond Placement

“One site has been evaluated is adjacent to the Dolores River and could be subject to erosion during high flow events. Also, long term disposal at a site close to the river could lead to dike failure that would allow stored brine to enter the river. Site location should be closely evaluated to lessen the potential for storage failure that could ultimately allow the brine to enter the river.”

Deep Well Injection

“The project as it is currently operating, as a deep well injection site, has worked relatively well and has no known impacts to migratory birds or other wildlife in the area. We believe that this technique has proven itself to be successful and that future expansion of the deep well injection system would better provide the means to rid the Colorado River of excess salt without the need to evaluate the impacts evaporation may have on migratory birds and other wildlife in the area. We support the idea of developing

additional wells or other means to extend the life of the existing well so that the salt brine is not placed on the ground surface where it has the potential of impacting wildlife and entering the river.”

Montrose County:

Coordination

“...it appears that all potential pilot study sites are located in Montrose County. As a result, there will likely be a need for BOR and the County to coordinate the development of these sites... As BOR advances the pilot study, we respectfully request that updates be provided so that staff and the County’s elected officials may remain aware of the status of this locally important project”.

County Road Impacts

“...County Road Y11 may be impacted by construction and monitoring activities.

Colorado Department of Public Health and Environment:

The Colorado Department of Public Health and Environment provided Reclamation with draft solid waste impoundment regulations for review and consideration. These regulations are currently in the process of being revised. Disposal of the brine evaporate would fall under these regulations and require a “certificate of designation as a landfill” from the appropriate county.

Bureau of Land Management:

Pond Locations

“The BLM has concerns with both (BLM) sites due to their close proximity to the Dolores River. BLM believes a more suitable site might be found either on private land or BLM-managed lands. As appropriate, BLM will assist BOR (Reclamation) in locating a more suitable site.”

”The 80 acre parcel (Site 2 in the scoping document) ranges in elevation from approximately 4944’ to 4963’. The approximate elevation of the Dolores River is 4940’. Only 4’ of elevation difference, flood hazard is a concern at the site. Placing an evaporation pond designed to remove salts from the Dolores River in a location where it could be flooded and wash salt and other heavy metals and contaminants into the river, seems counterproductive...the site appears to be a former river oxbow. The mapped soils confirm the probability of an oxbow by indicating the site is composed of fluvaquents, a type of frequently flooded soils.”

“Elevation differences at this site (Site 3 in the scoping document) seems to be more protective from a flooding event. However, the location is only approximately 100 feet

from the mainstem of the Dolores River, and the potential for spilling of salt brine, evaporates and associated contaminants directly into the river seems possible. Bank erosion is already evident in the area and a large storm event could quickly erode through the existing dam. The soils at this site are typical on the floor of the Paradox Valley, a fine sandy loam. Any ponds in this area would need a substantial liner to prevent deep percolation of the pond contents.”

Landfill Regulations

“Regulations prohibit landfills on BLM-managed public lands. Assuming the brine evaporate is classified as a solid waste, BOR (Reclamation) would be required to remove the evaporate to a permitted/approved landfill.”

Land Withdrawal

“A long-term evaporative pond might best be managed through a Withdrawal Order, wherein BLM would transfer jurisdiction of public land to BOR (Reclamation)”.

Wildlife

“How would these (effects on wildlife) be assessed? If the pond’s location is close to the river, will all future evaporation ponds be similarly located? If not, how would these evaluate wildlife uses given different attractions in the vicinity?”

“What is the plan if crystals from the brine appear on birds? “At what level would mitigation be implemented to prevent death to migratory birds?”

“What will the migratory bird monitoring/management plan document? “Presence of birds? Adjacent to pond? Species? Condition?” Need to define unacceptable impact on migratory birds.”

Artificial Lighting

“How about a statement that artificial lighting will not be used, or if needed, (used only) for safety purposes. What is the maximum that would be appropriate that would not attract birds? Shielded lighting to protect the night skies?”

The Wilderness Society and San Juan Citizens Alliance; Sheep Mountain Alliance, Living Rivers and Colorado Riverkeepers, Rocky Mountain Chapter of the Sierra Club, Rocky Mountain Recreation Initiative, Dvorak Raft, Kayak & Fishing Expeditions, Center for Biological Diversity, Canyonlands Watershed Council, High Country Citizens’ Alliance, Western Colorado Congress, Biodiversity Conservation Alliance, Grand Canyon Trust, and Colorado Environmental Coalition:

Two letters were received representing comments from 14 groups. A summary of those comments are presented as follows.

Scope of Analysis

“We believe that for salinity treatment to truly be successful and sustainable in the long term, a comprehensive approach that considers the full Dolores River Basin, and perhaps Colorado River Basin, is warranted.”

“...the Bureau of Reclamation’s stated intent of replacing the current deep well brine injection system causes considerable concern regarding potential substantial impacts associated with many of the possible action alternatives, especially the potential development of the Evaporation Pond Pilot Study into a large-scale evaporation complex. Currently, the deep-well injection system poses concerns for its seismic impacts which will require a carefully considered approach to identify appropriate alternatives for its extension or replacement.”

Environmental Impact Statement

“The pilot pond may create significant environmental impacts requiring substantial mitigation that will affect Paradox Valley, nearby residents and wildlife. The scope of the action contemplated, particularly when considered within the true context of potential build-out of surface evaporation ponds, cannot be adequately analyzed through an Environmental Assessment (EA), but rather requires the detailed and thorough NEPA analysis of an Environmental Impact Statement. The need for more extensive analysis is underscored in the Bureau of Reclamation Scoping Notice...”

“The pilot pond will cause impacts to the Dolores River corridor, riparian zones and wetlands, habitat for sensitive species, potential BLM Areas of Critical Environmental Concern, and the proposed suitability of the middle Dolores River for Wild and Scenic River status. These potential impacts are the result of major actions by the Bureau of Reclamation that trigger the full analysis of an Environmental Impact Statement under NEPA’s threshold.”

Native and Endangered Fish

“The potential benefits and adverse impact on imperiled native fish species, including those already protected by the Endangered Species Act, poses difficult questions that need to be addressed in consultation with the U.S. Fish and Wildlife Service.”

Colorado River Basin Salinity Control

“Not only is the pilot project significant in terms of footprint and specific impacts to the Paradox Valley, but the general value of the Paradox Valley Salinity Control Project is of measurable and significant importance to federal agency actions to control salinity in the entire Colorado River Basin. A full Environmental Impact Statement is appropriate, warranted and desired in order to identify alternatives and fully analyze the impacts triggered by these major actions by federal agencies. Since the passage of the Salinity

Control Act in 1974, such a comprehensive analysis has been lacking, but the time and need for it now are pressing.”

“Salinity control projects have been implemented over the past several decades...these efforts, increases in salinity can be expected from future extractive energy development throughout the basin, higher reservoir evaporation rates and lower high-flow periods due to global climate change and drought patterns, and decreased quantity due to over-allocation and increased consumption.”

Energy and Mining Activities

“The Dolores River watershed and its sensitive ecosystems and habitats are experiencing increased pressure from mineral extraction such as potash, uranium, carbon and base metals. Due to overlapping impacts, the Bureau of Reclamation analysis needs to be coordinated with the ongoing Department of Energy preparation of the Programmatic Environmental Impact Statement of its Uranium Leasing Program in the Dolores and San Miguel River Basins...”

Collaboration

“The existing collaboration among diverse stakeholders throughout the Dolores River Basin should be considered as a weighty and important framework underlying any analysis of the Paradox Valley Evaporation Pond Pilot Study. These related actions and others – from grassroots outreach to federal agency projects to national policy directives – are interwoven with changing regional development patterns. The Colorado River Basin Salinity Control Program, too, is interwoven into the collective impact of multiple and competing uses imposed on the Dolores River.”

Landfill

”Given associated problems with the three Pond Pilot Study must be analyzed...”
“The permanent storage and creation of landfills to store toxic waste from evaporation ponds in Paradox Valley should be excluded from consideration in all alternatives. All evaporate waste created by the Paradox Valley Salinity Control Project should be removed and permanently stored in a licensed provisions for monitoring for groundwater contamination, surface run-off, and impacts to wildlife and vegetation...”

Injection Well

“The No Action alternative should investigate the feasibility of continuing the existing brine injection system or expanding it to increase disposal capacity as a best possible scenrio for avoidance of higher seismic events caused by pressure injections in light of existing and future development within Paradox Valley, including the proposed Pinyon Ridge Uranium Mill to the east...”

Renewable Energy

“The feasibility of using renewable energy sources should be incorporated into alternatives. The Bureau of Reclamation is planning to deploy a solar-powered desalinization pilot project this year at the Brackish Groundwater Research Facility in Alamogordo, N.M. In other instances, the Bureau is researching technology that combines desalinization with wind or solar power, or co-location of desalinization facilities with power generators. The use of solar stills is another possibility in Paradox Valley, which has the benefit of returning a freshwater supply to the river.”

McPhee Reservoir Operations

“An alternative that evaluates the impacts of managing natural Dolores River flows and increasing releases from McPhee Reservoir as a means of reducing salinity should be developed and considered.”

Resource Impacts

Additionally, issues and/or concerns were listed for: water quality and quantity, riparian zone and wetlands, groundwater depletion, brine character, air quality and odors, soil quality and impacts to soil crusts, birds, bats, rare plant and plant communities, wildlife habitat, fish, livestock, nuisances, scenic viewshed, cultural resources, recreation, research and natural history activities, land management and designations and public land planning processes, emergency preparedness, economic development, area development, waste, energy, and alternative technologies.

Colorado River Conservation District

“The River District strongly supports the Paradox Evaporation Pond Pilot Study. This type of salinity control project is an excellent and proven way to reduce salt loading to the Upper Colorado River Basin and to reduce significant economic damages in the Lower Colorado River Basin. In addition, such a salinity control project not only helps ensure that Upper Colorado River water users can develop their water resources it helps avoid economic damages to Lower Colorado River Basin interests and ensures that federal interests can comply with treaty obligations to the Republic of Mexico.”

Cost Effective Replacement

“In fact, it is now imperative to develop a cost effective replacement or even an augmentation, to the currently very effective deep injection well...To best understand the cost effective alternatives for brine disposal, this Pilot Project will provide crucial data and information. Such information must be developed to accurately determine a future course of action and inter-compare potential alternatives such as either a new injection well or a less energy intensive evaporation facility for critical salt control efforts. Such salinity control alternatives could be implemented separately or used conjunctively.”

Impacts to Mainstem Colorado

“...Should no viable alternative be explored or to be available to replace the eventual non-functioning injection well, approximately 110,000 tons of salt will immediately enter the Dolores River degrading the water quality of the main stem of the Colorado River and loading the Colorado River Basin and eventually adversely impacting the system all the way to Mexico.”

“In addition, the River District believes that the pilot is necessary to:

- Proactively address technical issues, questions and/or concerns that will arise in any future evaluation (e.g., NEPA compliance) of alternatives analysis and/or a full scale replacement salinity control project;
- Meet the intent and objectives of basinwide salinity control efforts and further the ability of the State of Colorado to fully develop its allocation under applicable Colorado River Compacts and the Law of the River;
- Meet the stated desires of Salinity Control Forum members and their representative agencies to address important technical and financial issues to help to complete the EA in a timely manner;
- Meet the stated desires the representatives of the seven Basin States, and their representative agencies to address important technical and financial issues to help to complete the EA in a timely manner and to recognize that the concept of the evaporation pilot has been developed cooperatively and the project will contain monitoring and safeguards to curtail impacts, if and, as they arise; and
- Help the United States and USBR meet their long term commitments, legislative mandates”

Colorado River Water Conservation Board

“This comment is submitted by the Colorado Water Conservation Board (“CWCB”) on behalf of Colorado’s three members of the Colorado River Basin Salinity Control Program’s Forum: Jennifer Gimbel, Steve Gunderson, and David Robbins. Ms. Gimbel is the Director of the CWCB and Mr. Gunderson is Director of the Colorado Water Quality Control Division of the Colorado Department of Public Health and Environment (“CDPHE”).”

“As alternatives are being considered to extend the life of the unit the Forum, representing the seven basin states, has recommended that an evaporation pond pilot study be conducted in order to better evaluate the potential for future large scale evaporation ponds as a possible alternative or part of the future plan for saline brine disposal at the Paradox Unit.”

“The Forum further believes that time is of the essence in implementing the pilot evaporation project since there is currently no backup plan to handle the continuous brine inflow to the Dolores River that would occur if the existing injection well was to experience a catastrophic

failure. In this regard, we observe that operation of the unit provides demonstrable water quality benefits to downstream water users and wildlife in and along the Dolores River in Colorado, as well as to the millions of water users in the Lower Colorado River Basin.”

“We encourage you to expeditiously complete the required Environmental Assessment of the pilot project and begin implementation as soon as possible. The pilot is necessary to answer some of the technical questions that will arise in the future NEPA evaluation of a full scale project, and thus must be well underway before a more thorough alternatives study and a full environmental evaluation of the Paradox Unit can be initiated.”

“...a key aspect of the pilot project will be to assess any adverse wildlife impacts if they occur and to test the effectiveness of several potential mitigation strategies that may be necessary to prevent any impacts if a full scale evaporation project is eventually recommended.”

Colorado Parks and Wildlife

“The location of the proposed Paradox Pilot Evaporation Pond Study and the three potential ponds lie within mapped severe winter range for Mule deer and elk. Mule deer and a small number of elk are in the area throughout the year.”

There are several existing roads in the area, and CPW recommends improving existing roads and using those to access the pond sites versus creating new roads. This will help to minimize habitat fragmentation as well as disturbances to existing wildlife.”

“With the increased human activity..., the spread and control of noxious weeds becomes a concern for wildlife...”

“The Dolores River contains three BLM-designated Sensitive Species of fish that are also of great concern to CPW...these species are declining and are sensitive to any additional water depletions or changes in water quality in the Dolores River Basin.”

“Riparian areas and floodplains are important for stream bank stabilization, maintaining the plant community, trapping sediment, recycling nutrients and flood control...Protecting riparian habitat will improve water quality and fish habitat.”

CPW also suggests fencing the ponds to exclude most wildlife. CPW recommends a minimum of an eight foot tall woven wire fence around the perimeter of each pond. The CPW supports the U.S. Fish and Wildlife pond netting requirements for avian species. CPW also supports the use of active and passive deterrents as mentioned in the Paradox Pilot Evaporation Pond Study.”

Colorado River Basin Salinity Control Forum

“The proposed Paradox Evaporation Pond Pilot Study is an integral part of the overall environmental process which will be required for the PVU brine disposal alternatives EIS. Without information gained from the Paradox Evaporation Pond Pilot Study,

Reclamation will not have the scientific information required to make appropriate decisions in the EIS process.”

“ The Forum believes that the scientifically based and environmentally responsible path to move ahead with the overall PVU brine disposal alternatives study is to quickly implement a pilot evaporation pond study effort as a piece of the overall EIS. The Forum believes that the responsible approach in the EIS to determine whether or not an evaporation pond is a viable and environmentally acceptable replacement alternative is to test it through a pilot study.”

5. Summary

A public scoping process was conducted on the Paradox Evaporation Pond Pilot Study. Information collected will assist Reclamation in the development and analysis of alternatives and the identification of significant issues. Issues were identified that need to be resolved early in the process. Ideas for alternatives were also presented. There is strong public and agency interest in the operation of the PVU because of its economic importance to the local community and as well it regional economic and environmental benefits.

Local landowners’ comments and concerns focused primarily on potential impacts to lands adjacent to the proposed site including noise, odor, wildlife, and property values. Local residents also had concerns with potential evaporation ponds sites adjacent to the Dolores River and on the west-end of the Paradox Valley (residence, farming and grazing, minimize visual impacts).

Many Paradox Valley locals also supported continued salinity control activities for the economic benefits (jobs opportunities). Locals also strongly supported investigating a second deep well injection site, subject to additional geologic and seismic studies.

Environmental groups and others requested that Reclamation prepare an Environmental Impact Statement prior to implementing the evaporation pond pilot study. These groups also questioned the scope of the proposed environmental assessment and recommended an evaluation of the entire Colorado River Basin.

Members of the Salinity Control Forum support the implementation of the evaporation pond pilot study as a viable method to gather information to be used in evaluating a range of alternatives for PVU brine disposal. Forum members also expressed a desire to explore brine disposal with lower operation and maintenance costs when compared to deep well injection.

The U.S. Fish and Wildlife Service expressed concerns with potential leaking evaporation ponds impacting the Dolores River. The Service also expressed doubts that the pilot study could successfully address impacts to waterfowl and reiterated that the Migratory Bird Treaty Act has stiff penalties for actions that take migratory birds.

Regulatory agencies indicated need for the pilot study to be designed to comply with federal, state and local laws and regulations.

Scoping Documents

Paradox Evaporation Pond Pilot Study

Background: The Paradox Valley was formed from the collapse of a salt anticline (dome) located in southwestern Colorado. The Dolores River, as it passes through the valley, historically picked up an estimated 205,000 tons of salt annually. The Colorado River Basin Salinity Control Act (Public Law 93-320) of 1974 authorized the Bureau of Reclamation (Reclamation) to investigate and construct the Paradox Valley Unit (PVU). The PVU currently intercepts brine groundwater and disposes it by deep well injection. Approximately 110,000 tons of salt that would have otherwise entered the Dolores River annually is injected into a 15,932 foot deep well located south of Bedrock, Colorado. The PVU is designed to prevent this natural salt load from entering the river and degrading the water quality of the main stem of the Colorado River. The existing deep-injection well, completed in 1988 by Reclamation, is nearing the end of its useful life and action will be needed by Reclamation to continue long term salinity control at the Paradox Unit. A new injection well alternative and an evaporation pond alternative, as well as other alternatives are being considered for future brine disposal. Reclamation intends to conduct a study/Environmental Impact Statement to develop and evaluate alternatives for the continued operations of the Paradox Unit. As part of this study, the Colorado River Basin Salinity Control Forum (Forum) has requested that Reclamation develop a pilot study to gather information to evaluate the use of evaporation ponds as an alternative to deep well injection to control salt brine from entering the Dolores River near Bedrock, Colorado. The Forum is comprised of representatives appointed by the governors from the respective states in the Colorado River Basin (Colorado, Wyoming, Utah, New Mexico, Arizona, Nevada, and California) and was created for interstate cooperation and to provide the states with the information necessary to reduce salinity concentrations in the Colorado River and to comply with Section 303 (a) and (b) of the Clean Water Act.

Paradox Evaporation Pond Pilot Study: The proposed pilot study would include the construction and operation of one or more evaporation ponds (between 1 and 15 acres in size) within the Paradox Valley to evaluate the feasibility of evaporation ponds as a method for long-term salt removal. Salt brine collected at the existing PVU Well Field would be piped to the evaporation pond(s). The pilot study would be operated for a period of three to five years to gather information on evaporation rates, advanced evaporation techniques and operational costs.

The pilot study would also monitor and evaluate other environmental factors, such as potential impacts on migratory birds and other wildlife, hydrogen sulfide removal techniques, and methods for disposal of brine evaporate. The pilot study would test strategies aimed at preventing harm to migratory birds (as outlined in the federal Migratory Bird Treaty Act of 1918). The U.S. Fish and Wildlife Service indicated during a recent Forum meeting that pond netting must be incorporated into the pond designs. Net supports would be in place and netting available onsite, ready to install, if impacts occur and other mitigation techniques are not effective. Reclamation is considering using both active and passive deterrents (coloring the brine, noise cannons, flashing lights, and bioacoustics, as well as other methods with potential to deter birds from using the evaporation pond(s)).

Environmental Assessment: Reclamation has identified three potential sites for the pilot study, although additional sites may be considered during the National

Environmental Policy Act (NEPA) process (see attached map). It is anticipated that the footprint of the pilot study will not exceed 40 acres in size. Reclamation proposes to enclose and stabilize (cover) the salt brine evaporate in place following the study, subject to local, state and federal laws and regulations. The long-term storage of the salt brine evaporate accumulated during the pilot study may also require additional permitting as a landfill. Removal and disposal of salt brine evaporate at an existing permitted landfill locations will also be explored.

Reclamation is conducting public scoping to identify issues and concerns to assist in the preparation of an environmental assessment (EA). The EA will evaluate the effects on the human environment from the construction and operation of the proposed Paradox Evaporation Pond Pilot Study. If, based on the analysis completed during development of the EA, Reclamation concludes the proposed action would have no significant impact on the human environment; preparation of an Environmental Impact Statement would not be required before the pilot study could be implemented.

Public Scoping Meeting: Public scoping meetings on the pilot evaporation proposal are scheduled on the dates and locations provided below:

Paradox, Colorado- Paradox Community Center, 21665 6.00 Road (basement of the red church in Paradox Valley) on Tuesday, **December 6, presentation at 6 PM, with an open house from 5-7 PM**

Montrose, Colorado- Holiday Inn Express, 1391 S Townsend Ave. on Thursday, **December 8, presentation at 6 PM, followed by a questions an answer session**

Public Comments: Reclamation requests written comments on the proposed pilot study are received by January 30, 2012. Comments may be provided at a public scoping meetings listed above, emailed to TStroh@usbr.gov, or mailed to:

Area Manager
Bureau of Reclamation
2764 Compass Drive, Suite 106
Grand Junction, Colorado 81506

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