Sender Name and associated Submittal Number(s) for the unique individual submissions:

*Navigation is accessible through PDF page numbers

Sender Name	Submittal Number(s)	Beginning Page No.*
A		
Abbott, Mary	3645	4
Acosta, Mike	3775	6
Adams, Lance	7526	7
Adams, Linda	7286	8
Adarkar, Bharat	3374	9
Ahlstrand, Heidi	3307	10
Akins, Keith	8885	11
Allain-Broeman, Claire	7375	12
Allen, Cynthia	7765	13
Allen, Georgia	3549	14
Allison, Doug	7698	15
Allred, Laura	649	16
Ames, Mary	3203	17
Anderson, Barbara	7442	18
Anderson, Christine	5169	19
Anderson, Mason	380	21
Angell, JL	4057	22
Anthony, Marilyn	432	24
Armstrong, Jeremiah	2103	25
Ashbrook, Doris	3758	26
Atwood, Luc	7318	27
Austin, Skyler	293	28
B		
Babbitt, Susan	3419	29
Baggs, Robert	8914	30
Baker, Emily	8642	44
Baker, Susan	3535	45
Balken, Eric	229	46
Barbour, Grant	2104	47
Baretinicich, Luke	11294; 12085; 15498; 17799	48
Baron, David	7347	49
Barresi, Dave	7583	50
Bateman, Lenora	8359	51
Baudhuin, John	415	52
Bean, Bari	8611	53
Becker, Susan	4446	310
Belke, John	7737	311
Belles, Mark	5	312
Bened, DS	3506	313
Benemelis, Perri	251; 8381	314
Bennington, Mary	3751	316
Benny, Karisha	7216	318
Berge, Rachel	9459; 11145; 11936; 16755	319
Bernstein, Abbie	3259	320
Besic, Dijana	292	321
bethjane1220	3768	322
Beverly, J.	1216	323
Beverly, Jessica E.	3381	324
Blachard, Karen	324	325
Blair, Giles	1141	326
Bloom, Sage	9433; 11080; 11871; 16285	327
Bockian, Rosa	992	328
Bolla, Gregory	230	329
Bond, James	8716	330
Bordélon, Tika	3672	331
Borgeson, Dean	3198	332
Bortoluzzo, Virginia	3566	333
Boyka, Barbara	2943	334
Brach, Dave	3339	335
Brame, Scott	3356	336
Bran, Kevin	553	337
Branch, Michael	4041	338
Brennan, J.	4521	340
Brenner, Summer	2379	342
Breslin, Pj	8218	343
Brown, Shelby	8172	344

Sender Name	Submittal Number(s)	Beginning Page No.*
Bruce, Felicia	3562	345
Bruno, Leila	3149	346
Brunson, Jane	2119	347
Bryce	3710	348
Buchanan, Lisa	7248	349
Bullock, Laurel	7610	352
Bunting, Karlyn	8837	353
Burk, Ryan	7331	354
Byrne, Margo	3360	355
C		
C., Lorraine	1288	356
Caliendo, Kaden	4058	357
Campbell, Terry	369	358
Campolettano, Marilyn	3869	359
Canright, Rebecca	5507	360
Cantor, Steven L.	6300	361
Carlsen, Elisa	3523	362
Carrington, Elizabeth	3550	364
Carroll, Lynn	5066	365
Carter, Henri	3512	366
Casey, Skylar	1396	368
Cash-Rolland, Jackie	2516	369
Castle, Anne	225	370
Cecconi, Jim	216	371
Champion, Sally	8082	372
Chapman, Michael	302	373
Chapple, Josh	1818	374
Childress, Rusty	11; 4215	375
Chisesi, Craig	7828	377
Christensen, Spencer	7259	378
Christman, Erica	7376	379
Clark, Donald	8034	380
Clarke, Louis	3776	385
Clever, Amanda	3828	386
Clinton, Michael	299	387
Cloud, Curtis	440	389
Coffee, John	9; 10; 24; 173	394
Coley, Phyllis	1550	398
Collins, Carol	3157	399
Collins, Patricia	730	401
Congdon, Sarah	7739	402
Cook, Nena	2797	403
Cooke, Ted	691	404
Cool, Carole	6301	406
Cooper, Austin	9689; 12574; 13819; 15918	407
Corbato, Steven	6612	408
Corcoran, JC	5589	410
Coughlin, Sean	3123	411
Cracchiolo, Regina	3219	412
Cress, Milo	1943	413
Cullison, Paula	7478	414
Culp, Jude	3329	415
Currell, Major John R.	233	416
Curtis, Krista	5163	417
Cylich, Danielle	4013	419
D		
Daly, Antonia	459	420
Daly, Ina	1	421
Daniel, Laurie	3468	422
Dantice, John	25	423
Daughtery, Jennifer	286	424
Davis, Ashley	10713; 12418; 13603; 17582	425
Davis, Petrina	8565	426
Day, W. Mark	7443; 7719	427
Deardorff, Glen	3919	438
Della Penta, Cathy	7	439
DeSena, Anthony	2401	440
Desrosiers, Tanner	8703	441
Dick, Laurel	6637	442
Dickerson, Gail	2132	443

Sender Name	Submittal Number(s)	Beginning Page No.*
Dieckmann, J.	3610	444
Dill, L.	3980	445
Doucet, Camille	3791	446
Dowell, V.	3787	447
drlisagold	3992	448
Duckworth, Gannon	7658	449
E		
Earnest, Robyn	8705	450
Easterday, Bruce	8351	451
Eli	6337	453
Elizabeth, Robert	1915	454
Emery, Hannah	1220	455
Eng, Bruce	2582	456
Ertelt, Jonathan	1754	457
Esser, Michael	1307	458
Evans, Jane	7054	459
Evans, Miles	372	460
F		
Farsang, Mária	6554	461
Feichtl, James	3465	462
Fields, Michael	398	463
Fink-Winter, Ruth	5013	464
Firestack, Shane	7420	465
Fischnaller, Neil	1922	466
Fitzgerald, Jamie	7263	467
Flahart, Patricia	7385	468
Flessa, Karl	7926	469
Flores, Alec	7345	470
Forsberg, Gail	7600	471
Freeman, Dan	20; 7628	472
Friar, Susan	3755	474
Froelich, Charles	4997	475
Fylling-Ellison, Marni	1331	476

Letter #: 3645

Date Received: 2/27/2026

Sender Names: 3608: Mary Abbott

Emails: 3608: info@greatbasinwater.org

Organizations:

Subject: Mary Abbott Comments on Colorado River

Great Basin Water Network DOI - . The document fails to consider the following:The DEIS ignores the complete geographic scope, and the impacts of that narrowed scope from curtailments, inaction, and limited action in directly affected communities in the Lower Colorado River Basin.Air quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Water quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Water availability impacts on communities in the Lower Colorado River Basin are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Impacts on Lower Region MSCP (27 species including listed Endangered Species) are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Socioeconomic impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts on Lower Colorado River communities that will result from the alternatives in the DEIS.Impacts on recreation facilities, refugia, park service units, federal infrastructure, and directly connected waterways of the Colorado River System are too narrowly reviewed in the Technical Appendices.Three Alternatives Do Not Likely Comply With The Law Of The River. Programmatic Review Is Necessary And So Is Congressional ActionIn Appendix C, the DEIS implies that modeling justifying three of the proposals "may not be implementable" because potential non-compliance with "laws, contracts, agreements, and other authorities that are part of the Colorado River legal and contractual framework referred to as Law of the River." That is a reference to the Enhanced Coordination, Maximum Operational Flexibility, and Supply Driven Alternative. Without any deal in place among the states or congressional action, a Record of Decision supporting those alternatives poses legal challenges that may be insurmountable.Therefore, according to the DEIS, the No Action Alternative and Basic Coordination Alternative are among the only options that could avoid a legal challenge after a Record of Decision.Those options pose some of the worst outcomes for Lakes Powell and Mead. We believe that no course of action as put forth in the DEIS is a sufficient means of stabilizing the system under the current Law of the River framework. This is troubling considering Reclamation is predicting some of the most dire reservoir elevations ever in the coming two years.Reclamation should undertake a programmatic review as the states continue negotiating. This year's low flows will inevitably get people back to the negotiating table in a meaningful way. Congress will act when the reservoirs are in crisis. We have seen congressional, bi-partisan action multiple times in the past seven years. When Congress is ready, enlist the National Academy of Sciences to undertake a programmatic review in partnership with the Department of Interior, Reclamation and other cooperating agencies. This document is not the beginning of the end. We believe it is merely the end of the beginning.The DEIS Fails To Consider Impacts On Irretrievable Resources By Sanctioning The Repurposing Of Water ResourcesThe DEIS offers multiple alternatives that impose varying levels of cuts in the Lower Basin and no meaningful cuts in the Upper Basin. Some alternatives mention the possibility of Upper Basin "conservation" but those offerings do not describe who, what, where and when. There is nothing steadfast for cuts in the Upper Basin.The DEIS also showcases a modified version of the 2016 Upper Basin Depletion Schedule that still assumes considerable new uses of water in the Upper Basin in the coming decades. Because of the limited resources available, there's no doubting that cuts imposed on the Lower Basin will be repurposed by the Upper Basin. That repurposing defeats the intent of this analysis. Once that water is re-appropriated by Upper Basin regulators, waters with established beneficial uses will not return to where those uses were first proven in the Lower Basin. This is highly suspect.Furthermore, we question how Reclamation can execute its recognized authority to force a curtailment in one basin but not even questioning how development of new appropriations in another part of the basin will impact the whole system and those who had to undertake curtailment. Upper Basin reservoirs are subject to the "apportionments" among

the two basins, seven states and Mexico (See Colorado River Storage Project Act, Pub. L. No. 84-485, SS 4, 70 Stat. 107 (1956)). Reclamation has a great deal of say in how certain rights are managed in the system. But how can regulators sequester the differences between the starting and end points of a highly connected system where some users have established decades worth of use? This gray area is at the heart of the ongoing conflict among the seven states, and we request more information on this in the FEIS.We fear that it is an unacceptable practice to allow the Upper Basin to repurpose water from Lower Basin in the name of state-led permitting efforts in Colorado, New Mexico, Utah and Wyoming. Further declines in the system will challenge Reclamation's mission to protect infrastructure, ecosystems, and communities. It means less water making its way through the southernly reaches of the system in the majority of years if current trends continue. Every state needs a curtailment plan on the Colorado River. This DEIS fails to compel the Upper Basin States to meaningfully consider how they will act to protect federal assets and resources.Finally, this could also bring about conflict over tribal water rights in the Upper and Lower Basins -- especially where settlements have been established. There must be consideration of reducing, at a 1-for-1 rate, junior non-tribal use for those senior tribal rights that have not yet been put to use. How Reclamation would undertake this matter in the Upper and Lower Basin must included in any FEIS. Also, there must be consideration of how Reclamation would prevent new Upper Basin appropriations put forth by non-native water users from using, in a de facto sense, settled and adjudicated rights of Lower Basin tribes.DEIS Ignores Glen Canyon Dam's Antique PlumbingThe analysis in the DEIS fails to consider bypass, decommissioning, and other meaningful resolutions available at Glen Canyon Dam, which poses considerable concerns for water delivery and endangered species protections. We understand and respect the legal arguments for not including the One-Dam Alternative. But it is a mistake to not undertake comprehensive analysis on this matter. Keeping Lake Powell's elevations above 3550', 3525, and 3490' are not realistic scenarios for the long-term. Failure to include greater analysis on Glen Canyon Dam's river outlet works will ultimately cost us all -- imposing direct impacts on Lake Mead, Hoover Dam, other federal infrastructure, metropolitan areas, agricultural hubs, tribal resources, sensitive species, National Park Service units, U.S. Fish and Wildlife units, and other conservation areas in the Lower Basin.The DEIS' Purpose-And-Need Is Too Narrow And Segments Requisite ReviewsReclamation, admittedly so in its Purpose and Need statement, recognizes the grave uncertainties we face if conditions do not improve on the river system. Reclamation also recognizes the direct connections the DEIS makes with upstream infrastructure associated with the Colorado River Storage Project units and in Lower Basin units at Parker Dam, Davis Dam, Imperial Dam, and Palo Verde. The DEIS would benefit from greater analyses in the technical appendices dealing with directly related impacts at the dams during low-flow periods. The same can be said for analyzing impacts at all Colorado River Storage Project facilities in low-flow periods too. They will be essential for propping up Lakes Powell and Mead. What will operations look like if CRSP and Lower Basin Infrastructure are only operating collectively at 10-20 percent of normal? What can we expect? To say that management at Mead and Powell are not directly connected to that management is implausible.If you have any additional questions please contact me.Mary
Abbott(c) Great Basin Water Network. Powered by weForms.

Letter #: 3775

Date Received: 2/27/2026

Sender Names: 3737: Mike Acosta

Emails: 3737: ma48442@gmail.com

Organizations:

Subject: Your Drinking Water Is at Risk

DOI - . The Colorado River provides drinking water for 40 million people, supports Tribal nations, sustains farms and cities, and is the lifeblood of fragile desert ecosystems.But the Basin is facing:Record-low reservoir levelsIncreasing salinity and pollution risksCollapsing aquatic habitatsRising temperatures and reduced snowpackGrowing threats to safe, reliable water suppliesThis EIS must reflect the reality of climate-driven water scarcity and prioritize clean water protections, ecosystem health, and equitable solutions, not simply divide up a shrinking supply!

Letter #: 7526

Date Received: 3/2/2026

Sender Names: 7477: Lance Adams

Emails: 7477: lanceadams197@gmail.com

Organizations:

Subject: Comments on the Post-2026 Colorado River Guidelines

DOI - . Maintenance of Glen Canyon Dam water levels above 3550 feet is critical for native fish, endangered and endemic species, cultural and archeological sites, and millions of people in the Southwest. I urge you to consider the importance of these decisions, both for the ecology of one of the last pristine wilderness areas in the United States, as well as for the health and well being of millions of people in Arizona, Nevada, and California, as you design future management plans for the Glen Canyon Dam. Thank you, Lance Adams

Letter #: 7286

Date Received: 3/2/2026

Sender Names: 7246: Linda Adams

Emails: 7246: lalucitn@yahoo.com

Organizations:

Subject: Colorado River Water Plan

DOI - . I am a resident of Mesa, Arizona, born and raised in California in 1943. I am Very concerned about the possibility of the Colorado river allotment might be cut for the state of Arizona. Please consider this, thousands of people have moved into our state from the state of California in order to escape the governments increased taxes and run-away government spending, alone with many other reason's, I'm sure. Arizonans cannot do without the allocated river water we now use, much less a reduced amount. Please consider this as you vote on allocating that water. Remember and keep in mind, that California sits on the Pacific Ocean, and like Israel has done with de-salination so can California do for their citizens needs regarding water. The peoples tax money has been wasted on unrealistic projects like the train to nowhere, that wasted money could have already been realized for a de-salination project so there would then be no need for the state of California in need of the Colorado river at all and there would then be no need for this discussion. It seems to me that we keep allowing bad behavior from Governors, then rewarding it as well! Arizona should keep and add to the allocation of the Colorado River water! Thank you for reading and considering this letter. Sincerely, Linda S Adams 535 S Alma School Rd. Lot#13 Mesa, AZ 85210 480-259-7053

Letter #: 3374

Date Received: 2/27/2026

Sender Names: 3343: Bharat Adarkar

Emails: 3343: bharat2126@yahoo.com

Organizations:

Subject: D -1, 704 Ganga Orchard, Pingale Wasti, Mundhwa, Pune MH 411036 INDIA Mobile: (91) 99209-64346 bharat2126@yahoo.com

DOI - . I urge the Bureau of Reclamation to significantly strengthen the Post-2026 Colorado River Basin Draft EIS that proactively addresses the crisis that we face and ensure the public has an opportunity to comment on its revised proposal before issuing its final decision.The Colorado River is already overallocated and shrinking. The Bureau must prioritize long-term sustainability, meaningful Tribal consultation, and enforceable reductions in demand, not simply identify new ways to divide a declining supply. The Colorado River cannot afford a delay.Bharat S. Adarkar

Letter #: 3307

Date Received: 2/27/2026

Sender Names: 3277: HEIDI AHLSTRAND

Emails: 3277: ironrancher@yahoo.com

Organizations:

Subject: river

DOI - . protect the colorado river not lock it in

Letter #: 8885

Date Received: 3/3/2026

Sender Names: 8791: Keith Akins

Emails: 8791: Keith.Akins.1414291146@grsdelivery.com

Organizations:

Subject: Comments on the Post-2026 Colorado River Guidelines

DOI - . Dear U.S. Bureau of Reclamation, I'm writing today to ask Reclamation action to address the deteriorating conditions on the Colorado River. The existing rules have not been effective but we need to continue those rules until we have full understanding to develop new. We need to account for the fact that parameters from over 100 years ago no longer are reality. Also, we need to include those who previously were not equitably provided in previous agreements. Please study this matter and follow the Grand Canyon Protection Act of 1992, which mandates that releases from Glen Canyon Dam protect and improve the cultural and ecological values of Glen Canyon National Recreation Area and Grand Canyon National Park. This includes protecting the canyon's native fish, beaches, and cultural and archaeological sites. Also continue to protect the river from the spread of non-native fish and release water in a manner to maintain habitat and topography that depend on proper temperature and volume. Sincerely, Keith Akins

Letter #: 7375

Date Received: 3/2/2026

Sender Names: 7334: Claire Allain-Broeman

Emails: 7334: callainbroeman@gmail.com

Organizations:

Subject:

DOI - . I've lived in Arizona my entire life. As a 67 year old, I've seen what our climate has done to our precious reservoirs. We should NOT be carrying the brunt to cut additional water from CAP. It's time for the other states (Utah and Colorado)to share these cuts. I oppose any additional cuts for Arizona. Thank you!

Letter #: 7765

Date Received: 3/2/2026

Sender Names: 7713: Cynthia Allen

Emails: 7713: Cynthia.Allen@messages.fwwatch.org

Organizations:

Subject: Protect Drinking Water – Save the Colorado River Basin

DOI - . Dear Bureau of Reclamation, The Bureau is going to decide the fate of the Colorado River crisis. It is unfortunate that no discussions have happened about how the water from the River is used and who uses it. I believe this issue is very important. Right now the huge agribusiness and tech corporations are using the majority of the water with no restrictions. Usually no one thinks about the 40 million people who need this water to survive. The agribusiness is growing alfalfa which is used by cattle on factory farms. Both of these businesses are huge and demand water. We have to also consider the demand of the mega dairies -- these operations are responsible for pollution and threaten the quality of drinking water for everyone in the Basin states. They also require and freely use the water. Because the agribusinesses operate in a climate not particularly suited to growing their product, they use much more water than they should. Huge data centers are being constructed across the country with communities banding against these in their areas. These data centers claim huge amounts of land while consuming vast amounts of water and electricity. So far, there have been no comments on the impact of these Data Centers when they enter the Basin States. We should use a no-nonsense, practical approach to saving the Colorado River as a resource for ALL of the citizens of the area and expect some kind of a plan to make the commercial entities consuming large amounts of water accountable to the Bureau to indicate they are conserving this water. I urge the Bureau of Reclamation to prioritize sustainability and the needs of the 40 million people relying on the Colorado River for drinking water over corporate profit. Sincerely, Cynthia Allen 1853 Jameson Cir Lawrenceville, GA

Letter #: 3549

Date Received: 2/26/2026

Sender Names: 3516: georgia allen

Emails: 3516: georgiaandjohnnie@gmail.com

Organizations:

Subject:

DOI - . We need to protect our rivers from being drained dry. Drought is a horrible condition for all living things. Remember the DUST BOWL years of the 1930's. Large migrations from area effected to agriculture areas where jobs were easier to get and living in the type of conditions we see today in third world countries. This is where our country is headed beginning in the west. Protecting the Colorado River to keep natural areas vibrant will leave us with a reserve for the future.

Letter #: 7698

Date Received: 3/2/2026

Sender Names: 7644: Doug Allison

Emails: 7644: ab5103@comcast.net

Organizations:

Subject: Draft EIS comments for Lake Powell

DOI - . Don't just run the reservoirs dry and use every last drop. Force rationing by the users and utilize the reservoirs for the purpose they were built, which is to supply water in leaner of years. Everyone needs to cut back, but there still needs to be a reserve. Just a new baseline of what average rainfall and runoff might be as a result of, shall I say it? "Climate change" Doug Allison Vandalia, Michigan 847-421-7765

Letter #: 649

Date Received: 2/24/2026

Sender Names: 639: Laura Allred

Emails: 639: ljallred@att.net

Organizations:

Subject: Please support a smarter future for the Colorado River, and all who depend on it!

DOI - . Dear Bureau of Land Mangement I am writing to encourage the Bureau of Reclamation to combine elements from the proposed alternatives in the draft Environmental Impact Statement (DEIS) in order to ensure that a sustainable future for the Colorado River is possible by creating new, long-term guidelines that will: - Provide clarity and predictability. By just continuing to manage each new crisis, this actually keeps everything and everyone in the basin at risk. New guidelines must promote conservation and also respond to existing conditions on the ground. - Incorporate flexible, adaptive state-of-the-art tools for conserving, storing, and managing water. New guidelines must allow for more flexibility in how water is stored and moved to help protect and stabilize the entire river system. - Embed environmental stewardship. The Colorado River is much more than a plumbing system; it is a national symbol. New guidelines must take into account the future of the river itself and the bounty of plant and animal life it sustains. - Provides for meaningful and voluntary Tribal participation grounded in sovereignty and self-determination. Thirty federally recognized Tribes who live in the Colorado River Basin deserve to be included in decision-making. - Preserve pathways for advancing in-basin mitigation and continued binational cooperation with Mexico to ensure that the Colorado River will always be able to make its way to the ocean. Sincerely, Laura Allred 3103 Sedgefield Gate Rd Greensboro, NC 274076104 ljallred@att.net

Letter #: 3203

Date Received: 2/27/2026

Sender Names: 3173: Mary Ames

Emails: 3173: amesink@earthlink.net

Organizations:

Subject: Please support a smarter future for the Colorado River, and all who depend on it!

DOI - . Dear Bureau of Land Mangement I am writing to encourage the Bureau of Reclamation to combine elements from the proposed alternatives in the draft Environmental Impact Statement (DEIS) to ensure a sustainable future for the Colorado River with new, long-term guidelines that will: - Provide clarity and predictability. Continued crisis management puts everything and everyone in the basin at risk. New guidelines must promote conservation and respond to conditions on the ground. - Incorporate flexible, adaptive tools for conserving, storing, and managing water. New guidelines must allow for more flexibility in how water is stored and moved to protect and stabilize the system. - Embed environmental stewardship. The Colorado River is more than a plumbing system to deliver water to downstream users. New guidelines must account for the health of the river itself and the bounty of life that it sustains. - Provide for meaningful and voluntary Tribal participation grounded in sovereignty and self-determination. The 30 federally recognized Tribes in the Basin must be included in decision-making. - Preserve and encourage continued bi-national cooperation with Mexico Thank you for your serious attention to these points. Sincerely, Mary Ames 30657 Sky Terrace Dr Temecula, CA 925923257 amesink@earthlink.net

Letter #: 7442

Date Received: 3/2/2026

Sender Names: 7399: Barbara Anderson

Emails: 7399: barbanderson0629@gmail.com

Organizations:

Subject: Arizona water

DOI - . Please continue to fight for our water rates. We have already been discounted 15%. I do not want to use our reservoirs and I want our water to continue to be at the current right. Thank you for your continued fight for our rights. Sincerely, Barbara K. Anderson

Letter #: 5169

Date Received: 2/28/2026

Sender Names: 5134: Christine Anderson

Emails: 5134: info@greatbasinwater.org

Organizations:

Subject: Christine Anderson Comments on Colorado River

Great Basin Water Network DOI - . The DEIS Avoids A Hard Look At Cumulative ImpactsThe document fails to consider the following:The DEIS ignores the complete geographic scope, and the impacts of that narrowed scope from curtailments, inaction, and limited action in directly affected communities in the Lower Colorado River Basin.Air quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Water quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Water availability impacts on communities in the Lower Colorado River Basin are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Impacts on Lower Region MSCP (27 species including listed Endangered Species) are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Socioeconomic impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts on Lower Colorado River communities that will result from the alternatives in the DEIS.Impacts on recreation facilities, refugia, park service units, federal infrastructure, and directly connected waterways of the Colorado River System are too narrowly reviewed in the Technical Appendices.Three Alternatives Do Not Likely Comply With The Law Of The River. Programmatic Review Is Necessary And So Is Congressional ActionIn Appendix C, the DEIS implies that modeling justifying three of the proposals "may not be implementable" because potential non-compliance with "laws, contracts, agreements, and other authorities that are part of the Colorado River legal and contractual framework referred to as Law of the River." That is a reference to the Enhanced Coordination, Maximum Operational Flexibility, and Supply Driven Alternative. Without any deal in place among the states or congressional action, a Record of Decision supporting those alternatives poses legal challenges that may be insurmountable.Therefore, according to the DEIS, the No Action Alternative and Basic Coordination Alternative are among the only options that could avoid a legal challenge after a Record of Decision.Those options pose some of the worst outcomes for Lakes Powell and Mead. We believe that no course of action as put forth in the DEIS is a sufficient means of stabilizing the system under the current Law of the River framework. This is troubling considering Reclamation is predicting some of the most dire reservoir elevations ever in the coming two years.Reclamation should undertake a programmatic review as the states continue negotiating. This year's low flows will inevitably get people back to the negotiating table in a meaningful way. Congress will act when the reservoirs are in crisis. We have seen congressional, bi-partisan action multiple times in the past seven years. When Congress is ready, enlist the National Academy of Sciences to undertake a programmatic review in partnership with the Department of Interior, Reclamation and other cooperating agencies. This document is not the beginning of the end. We believe it is merely the end of the beginning.The DEIS Fails To Consider Impacts On Irretrievable Resources By Sanctioning The Repurposing Of Water ResourcesThe DEIS offers multiple alternatives that impose varying levels of cuts in the Lower Basin and no meaningful cuts in the Upper Basin. Some alternatives mention the possibility of Upper Basin "conservation" but those offerings do not describe who, what, where and when. There is nothing steadfast for cuts in the Upper Basin.The DEIS also showcases a modified version of the 2016 Upper Basin Depletion Schedule that still assumes considerable new uses of water in the Upper Basin in the coming decades. Because of the limited resources available, there's no doubting that cuts imposed on the Lower Basin will be repurposed by the Upper Basin. That repurposing defeats the intent of this analysis. Once that water is re-appropriated by Upper Basin regulators, waters with established beneficial uses will not return to where those uses were first proven in the Lower Basin. This is highly suspect.Furthermore, we question how Reclamation can execute its recognized authority to force a curtailment in one basin but not even questioning how development of new appropriations in another part of the basin will impact the whole system and those who had to undertake curtailment. Upper Basin reservoirs

are subject to the "apportionments" among the two basins, seven states and Mexico (See Colorado River Storage Project Act, Pub. L. No. 84-485, SS 4, 70 Stat. 107 (1956)). Reclamation has a great deal of say in how certain rights are managed in the system. But how can regulators sequester the differences between the starting and end points of a highly connected system where some users have established decades worth of use? This gray area is at the heart of the ongoing conflict among the seven states, and we request more information on this in the FEIS.We fear that it is an unacceptable practice to allow the Upper Basin to repurpose water from Lower Basin in the name of state-led permitting efforts in Colorado, New Mexico, Utah and Wyoming. Further declines in the system will challenge Reclamation's mission to protect infrastructure, ecosystems, and communities. It means less water making its way through the southernly reaches of the system in the majority of years if current trends continue. Every state needs a curtailment plan on the Colorado River. This DEIS fails to compel the Upper Basin States to meaningfully consider how they will act to protect federal assets and resources.Finally, this could also bring about conflict over tribal water rights in the Upper and Lower Basins -- especially where settlements have been established. There must be consideration of reducing, at a 1-for-1 rate, junior non-tribal use for those senior tribal rights that have not yet been put to use. How Reclamation would undertake this matter in the Upper and Lower Basin must included in any FEIS. Also, there must be consideration of how Reclamation would prevent new Upper Basin appropriations put forth by non-native water users from using, in a de facto sense, settled and adjudicated rights of Lower Basin tribes.DEIS Ignores Glen Canyon Dam's Antique PlumbingThe analysis in the DEIS fails to consider bypass, decommissioning, and other meaningful resolutions available at Glen Canyon Dam, which poses considerable concerns for water delivery and endangered species protections. We understand and respect the legal arguments for not including the One-Dam Alternative. But it is a mistake to not undertake comprehensive analysis on this matter. Keeping Lake Powell's elevations above 3550', 3525, and 3490' are not realistic scenarios for the long-term. Failure to include greater analysis on Glen Canyon Dam's river outlet works will ultimately cost us all -- imposing direct impacts on Lake Mead, Hoover Dam, other federal infrastructure, metropolitan areas, agricultural hubs, tribal resources, sensitive species, National Park Service units, U.S. Fish and Wildlife units, and other conservation areas in the Lower Basin.The DEIS' Purpose-And-Need Is Too Narrow And Segments Requisite ReviewsReclamation, admittedly so in its Purpose and Need statement, recognizes the grave uncertainties we face if conditions do not improve on the river system. Reclamation also recognizes the direct connections the DEIS makes with upstream infrastructure associated with the Colorado River Storage Project units and in Lower Basin units at Parker Dam, Davis Dam, Imperial Dam, and Palo Verde. The DEIS would benefit from greater analyses in the technical appendices dealing with directly related impacts at the dams during low-flow periods. The same can be said for analyzing impacts at all Colorado River Storage Project facilities in low-flow periods too. They will be essential for propping up Lakes Powell and Mead. What will operations look like if CRSP and Lower Basin Infrastructure are only operating collectively at 10-20 percent of normal? What can we expect? To say that management at Mead and Powell are not directly connected to that management is implausible.If you have any additional questions please contact me.Christine Anderson(c) Great Basin Water Network.
Powered by weForms.

Letter #: 380

Date Received: 2/12/2026

Sender Names: 378: Mason Anderson

Emails: 378: mason.anderson.b9ae2@advocate-mail.com

Organizations:

Subject: I Support the Colorado River Abundance Act

Message from DOI - . Bureau of Reclamation, I'm writing to ask you to
support the Colorado River Abundance Act. It's one of the few serious, long-term approaches to the water challenges facing the West. Water supplies are getting tighter, and conservation alone can only take us so far.I'm especially concerned about major infrastructure like Lake Powell and Lake Mead. They are not just important to local economies, they also provide power and recreation for millions of people.This bill would focus on desalination and other large-scale infrastructure that could produce millions of acre-feet of new water. It would help the U.S. lead in water innovation, support agriculture, and offer practical ways to address declining reservoir levels while still meeting delivery commitments for the Colorado River Basin states and Mexico.I believe you should support the Colorado River Abundance Act and help advance durable, forward-looking water solutions that benefit both current and future generations before it is too late.Sincerely,

Mason Anderson 589 E 210 N Unit 304Vineyard, UT 84059(801) 855-6966

masondavanderson@gmail.com

Letter #: 4057

Date Received: 2/27/2026

Sender Names: 4012: JL Angell

Emails: 4012: info@greatbasinwater.org

Organizations:

Subject: JL Angell Comments on Colorado River

Great Basin Water Network DOI - . The DEIS Avoids A Hard Look At Cumulative Impacts--this ensures it is woefully inadequate and requires substantial revisions before approaching a level of usefulness or legally compliant.The DEIS ignores the complete geographic scope, and the impacts of that narrowed scope from curtailments, inaction, and limited action in directly affected communities in the Lower Colorado River Basin.Air quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Water quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Water availability impacts on communities in the Lower Colorado River Basin are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Impacts on Lower Region MSCP (27 species including listed Endangered Species) are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Socioeconomic impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts on Lower Colorado River communities that will result from the alternatives in the DEIS.Impacts on recreation facilities, refugia, park service units, federal infrastructure, and directly connected waterways of the Colorado River System are too narrowly reviewed in the Technical Appendices.Three Alternatives Do Not Likely Comply With The Law Of The River. Programmatic Review Is Necessary And So Is Congressional Action due to this significant problem making strong objections to the proposal the most legal response all who value legal compliance must take with me.In Appendix C, the DEIS implies that modeling justifying three of the proposals "may not be implementable" because potential non-compliance with "laws, contracts, agreements, and other authorities that are part of the Colorado River legal and contractual framework referred to as Law of the River." That is a reference to the Enhanced Coordination, Maximum Operational Flexibility, and Supply Driven Alternative. Without any deal in place among the states or congressional action, a Record of Decision supporting those alternatives poses legal challenges that may be insurmountable.Therefore, according to the DEIS, the No Action Alternative and Basic Coordination Alternative are among the only options that could avoid a legal challenge after a Record of Decision.Those options pose some of the worst outcomes for Lakes Powell and Mead. We believe that no course of action as put forth in the DEIS is a sufficient means of stabilizing the system under the current Law of the River framework. This is troubling considering Reclamation is predicting some of the most dire reservoir elevations ever in the coming two years.Reclamation should undertake a programmatic review as the states continue negotiating. This year's low flows will inevitably get people back to the negotiating table in a meaningful way. Congress will act when the reservoirs are in crisis. We have seen congressional, bi-partisan action multiple times in the past seven years. When Congress is ready, enlist the National Academy of Sciences to undertake a programmatic review in partnership with the Department of Interior, Reclamation and other cooperating agencies. This document is not the beginning of the end. We believe it is merely the end of the beginning.The DEIS Fails To Consider Impacts On Irretrievable Resources By Sanctioning The Repurposing Of Water ResourcesThe DEIS offers multiple alternatives that impose varying levels of cuts in the Lower Basin and no meaningful cuts in the Upper Basin. Some alternatives mention the possibility of Upper Basin "conservation" but those offerings do not describe who, what, where and when. There is nothing steadfast for cuts in the Upper Basin.The DEIS also showcases a modified version of the 2016 Upper Basin Depletion Schedule that still assumes considerable new uses of water in the Upper Basin in the coming decades. Because of the limited resources available, there's no doubting that cuts imposed on the Lower Basin will be repurposed by the Upper Basin. That repurposing defeats the intent of this analysis. Once that water is re-appropriated by Upper Basin regulators, waters with established beneficial uses will not return to where those uses were first proven in the Lower Basin. This is highly suspect and makes all of this document's development equally suspect and

warranting concern by such disregard for reality and laws.Furthermore, we question how Reclamation can execute its recognized authority to force a curtailment in one basin but not even questioning how development of new appropriations in another part of the basin will impact the whole system and those who had to undertake curtailment. Upper Basin reservoirs are subject to the "apportionments" among the two basins, seven states and Mexico (See Colorado River Storage Project Act, Pub. L. No. 84-485, SS 4, 70 Stat. 107 (1956)). Reclamation has a great deal of say in how certain rights are managed in the system. But how can regulators sequester the differences between the starting and end points of a highly connected system where some users have established decades worth of use? This gray area is at the heart of the ongoing conflict among the seven states, and we must request more information on this in the FEIS with lots of specificity missing from this document.We fear that it is an unacceptable practice to allow the Upper Basin to repurpose water from Lower Basin in the name of state-led permitting efforts in Colorado, New Mexico, Utah and Wyoming. Further declines in the system will challenge Reclamation's mission to protect infrastructure, ecosystems, and communities. It means less water making its way through the southernly reaches of the system in the majority of years if current trends continue. Every state needs a curtailment plan on the Colorado River. This DEIS fails to compel the Upper Basin States to meaningfully consider how they will act to protect federal assets and resources and this is inherently unfair and an does not meet even minimal needs for the country and stakeholders and must be rectified before anything else happens with this document.Finally, this could also bring about conflict over tribal water rights in the Upper and Lower Basins -- especially where settlements have been established. There must be consideration of reducing, at a 1-for-1 rate, junior non-tribal use for those senior tribal rights that have not yet been put to use. How Reclamation would undertake this matter in the Upper and Lower Basin must included in any FEIS with more specificity than you included in any of this document (part of inadequacy making it more fictional than useful). Also, there must be consideration of how Reclamation would prevent new Upper Basin appropriations put forth by non-native water users from using, in a de facto sense, settled and adjudicated rights of Lower Basin tribes.DEIS Ignores Glen Canyon Dam's Antique PlumbingThe analysis in the DEIS fails to consider bypass, decommissioning, and other meaningful resolutions available at Glen Canyon Dam, which poses considerable concerns for water delivery and endangered species protections. We understand and respect the legal arguments for not including the One-Dam Alternative. But it is a mistake to not undertake comprehensive analysis on this matter. Keeping Lake Powell's elevations above 3550', 3525, and 3490' are not realistic scenarios for the long-term. Failure to include greater analysis on Glen Canyon Dam's river outlet works will ultimately cost us all -- imposing direct impacts on Lake Mead, Hoover Dam, other federal infrastructure, metropolitan areas, agricultural hubs, tribal resources, sensitive species, National Park Service units, U.S. Fish and Wildlife units, and other conservation areas in the Lower Basin. Please rectify this unacceptable omission.The DEIS' Purpose-And-Need Is Too Narrow And Segments Requisite ReviewsReclamation, admittedly so in its Purpose and Need statement, recognizes the grave uncertainties we face if conditions do not improve on the river system. Reclamation also recognizes the direct connections the DEIS makes with upstream infrastructure associated with the Colorado River Storage Project units and in Lower Basin units at Parker Dam, Davis Dam, Imperial Dam, and Palo Verde. The DEIS would benefit from greater analyses in the technical appendices dealing with directly related impacts at the dams during low-flow periods. The same can be said for analyzing impacts at all Colorado River Storage Project facilities in low-flow periods too. They will be essential for propping up Lakes Powell and Mead. What will operations look like if CRSP and Lower Basin Infrastructure are only operating collectively at 10-20 percent of normal? What can we expect? To say that management at Mead and Powell are not directly connected to that management is implausible. Please meet the needs of what is real so becomes useful to stakeholders instead of pretending to while more than half the work undone.If you have any additional questions please contact me.JL Angell(c) Great Basin Water Network. Powered by weForms.

Letter #: 432

Date Received: 2/20/2026

Sender Names: 426: Marilyn Anthony

Emails: 426: marilynyael3@gmail.com

Organizations:

Subject: Colorado River

DOI - .Further to the government plan for the Colorado River, perhaps the government could take steps to ban high water needs agriculture in the states in question such as cotton and nuts. Additionally, could the government not save some of the COlorado's water by covering the entire canal. Yes, it is expensive but it is the water which cannot be replaced whereas the money can be budgeted for.Sadly no matter what steps are taken, some states are going to suffer.Good luckMarilyn AnthonySaddlebrooke, AZ

Letter #: 2103

Date Received: 2/26/2026

Sender Names: 2086: Jeremiah Armstrong

Emails: 2086: jeremiahthearmstrong@gmail.com

Organizations:

Subject: Post-2026 Draft EIS Public Comment

DOI - . To whom it may concern,I'm writing to comment on the Draft Environmental Impact Statement (EIS) for Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead.The fill Mead first option that is being pushed by opponents of the lake must be avoided.The backwards-looking options that would destroy the lake must be abandoned. Options that destroy the dam's power generation and lake conditions must be avoided. These are narrow-issue focused and fail to accept reality of water and power needs in the arid west.Thank you for your consideration.Sincerely,Jeremiah Armstrong

Letter #: 3758

Date Received: 2/27/2026

Sender Names: 3721: Doris Ashbrook

Emails: 3721: dashbrook49@gmail.com

Organizations:

Subject: Colorado River

DOI - . We urge the Bureau of Reclamation to strengthen the Draft EIS by:Centering climate science and realistic supply projectionsProtecting water quality and reducing pollution impacts as flows declinePreventing further ecological collapse in the Colorado River Delta and Basin tributariesRespecting Tribal water rights and ensuring meaningful Tribal consultationPrioritizing demand reduction and conservation over unsustainable allocations

Letter #: 7318

Date Received: 3/2/2026

Sender Names: 7278: Luc Atwood

Emails: 7278: partzsf@gmail.com

Organizations:

Subject: Arizona needs more water

DOI - . AZ needs more water, Southern AZ produces all of the Winter vegetables & nuts. Sent from my iPhone

Letter #: 293

Date Received: 2/17/2026

Sender Names: 291: Skyler Austin

Emails: 291: bloodmoonzun@gmail.com

Organizations:

Subject: Priority of the Colorado River

DOI - . To Whom It May Concern,I am writing to respectfully urge that the highest priority for the management of the Colorado River be the conservation and restoration of the native flora and fauna that depend upon its riparian habitats.In the Lower Colorado River region--specifically around Bullhead City, Laughlin, and Needles--riparian ecosystems have undergone substantial ecological degradation. Invasive plant species, particularly saltcedar (Tamarix spp.), have aggressively colonized large portions of the native mesquite woodland riparian habitat. These invasions alter soil salinity, increase evapotranspiration rates, modify fire regimes, and outcompete native vegetation for water and nutrients. As a result, formerly dominant native plant communities have been displaced, in some areas to the point of near local extirpation.Historically, this stretch of the river supported extensive stands of Fremont cottonwood (Populus fremontii) and honey mesquite (Prosopis spp.), which provided critical structural habitat, stabilized streambanks, moderated water temperatures through shading, and contributed organic matter essential to aquatic food webs. Today, only a small fraction of these native trees remain. Their decline has cascading ecological consequences.The loss of native riparian vegetation directly impacts terrestrial wildlife by reducing nesting sites, forage availability, and thermal refuge. However, the effects do not stop at the water's edge. Riparian and aquatic systems are functionally interconnected. Reduced native vegetation leads to:Increased bank erosion and sedimentation, degrading in-stream habitat for fish and macroinvertebrates.Elevated water temperatures due to reduced canopy cover, which can stress or displace temperature-sensitive aquatic species.Decreased input of leaf litter and woody debris, diminishing nutrient cycling and habitat complexity within the river channel.Altered hydrological processes that affect floodplain recharge and wetland persistence.In essence, degradation of terrestrial riparian flora and fauna inevitably places additional stress on aquatic ecosystems. The health of the Colorado River cannot be separated from the health of its surrounding plant communities.While protected areas exist adjacent to these urban centers, conservation within city boundaries and along developed stretches of the river remains insufficient. Native plants and wildlife in urbanized riparian corridors are often overlooked in favor of development, landscaping with non-native species, and bank modification. Strengthening conservation, restoration, and invasive species management efforts directly along the river--especially in and around municipalities--would reduce ecological pressure on adjacent wilderness areas already strained by industrial activity, water diversion, and climate stressors.Prioritizing native riparian restoration along the Colorado River would provide measurable ecological benefits, including improved water quality, enhanced biodiversity, increased ecosystem resilience, and long-term cost savings associated with erosion control and habitat rehabilitation.I respectfully request that federal management agencies increase emphasis on invasive species removal, native plant reestablishment, and integrated riparian-aquatic conservation planning along the Colorado River corridor, particularly in urban interface zones.Thank you for your time and consideration of this urgent matter.Sincerely,Skyler J. Austin (Independent Journalist/Novice Botnist) Profile-

https://www.facebook.com/share/1Ah3iM9L1r/P.s. I'd be interested in providing evidence through video/photo if need be or interview to show the extent of the degradation of Colorado River conservation.

Letter #: 3419

Date Received: 2/26/2026

Sender Names: 3388: Susan Babbitt

Emails: 3388: philad49@att.net

Organizations:

Subject: Action Needed for the Colorado River

DOI - . Greetings:The Colorado River's future depends on bold action, not incremental adjustments. We need a management framework that protects clean water, communities, and ecosystems for generations to come. The Bureau should take meaningful action now to address climate-driven water scarcity and the urgent need to protect water quality, ecosystems, and Basin communities.I urge the Bureau of Reclamation to significantly strengthen the Post-2026 Colorado River Basin Draft EIS that addresses the crisis that we face and ensure the public has an opportunity to comment on its revised proposal before issuing its final decision.The Colorado River is already overallocated and shrinking. The Bureau must prioritize long-term sustainability, meaningful Tribal consultation, and enforceable reductions in demand, not simply identify new ways to divide a declining supply. Thank you for your attention.Sincerely, Susan Babbitt

STATE'S RIGHTS AND RESPONSIBILITIES
URBAN FORM PLANNING FOR THE COLORADO RIVER BASIN
ALLOCATION FOR 2026 – 2046

My name is Robert Baggs, 4430 Palm Mesa Drive, Las Vegas, NV 89120 at 79baggs@gmail.com; 702-236-0264 (c). I am speaking as a private citizen about the above topic that I have followed since the early 90s when I was assigned to the "7/10 plan process" at the City of Las Vegas Planning Department and following it as part of my Service Rule management duties in the Finance Department of the Las Vegas Valley Water District and the Southern Nevada Water Authority.

My presentation and the document included herein as an example of an urban from, resource-based management methodology for addressing all of the Basin states and tribes and attached for reference are my own and reflect no collaboration between me and the LVVWD/SNWA.

Incorporated for reference and for the record is my paper on Urban Form that has, to some degree, been incorporated into the DNA of the SNWA agencies via the LVVWD's constant and consistent community outreach since the 1990s. Educated and involved community support has been outstanding. No elected official lost their position over this time due to the changes made in rates, water allocation, or citizen outreach.

The Urban Form process for Basin-wide application provides logical, quantifiable and qualitative answers to allocating land use, water, sewer, and stormwater use and re-use. This planning process will allow the states/tribes to collaborate on goals and objectives that can change the design, placement, and siting of structures and trees (also structures?) that respond to our largely similar, unifying characteristics of climate, topography, geography, solar and wind effects in the Colorado River Basin. Why is this important to the rights and responsibilities of our states and tribes?

Because the planning process is not a zero-sum game. Urban Form is goal-focused based on local, state and tribal cooperation and collaboration. Here is my proposal for consideration and possible adoption.

1 propose the provisional adoption of the twenty-year plan. Within that, I propose an Urban Form-based process in the first two years of the expected twenty-year plan horizon for the Basin. That first two years will provide states/tribes with tools for collaboration and outreach on an inter and intra Basin process.

By now, in the settlement of the American West and the local, state, intra-state, and federal environmental processes, most of our states/tribes have well-developed structures for public meetings, hearings, coordination and interlocal agreements. What is the federal role?

The federal managers can supplement this local work with the EIS data and information already familiar with the stakeholder process. Their role is support to ensure that Urban Form addresses the four components that have been expressed in the press as the basis for Basin progress.
They are:
No action,
Enhanced coordination,
Maximum operational flexibility,
Emphasize adaptive management tools.

Urban Form, as expressed through the **Elements,** (local conditions will reveal others, as mentioned below) addresses all the above, because the Elements demand all to succeed as the states/tribes develop their local, state and Basin-wide interlocal plans. These Elements are not final. Our Las Vegas environment is harsh. Other jurisdictions have their unique conditions. These conditions may lead to adjustments to exploit this opportunity locally first.

Based on what I read in our Las Vegas press, I am surprised at the Upper Basin resistance to the Basin-wide approach required by the federal government. Shortage is a problem for all 60 million of us, not just a few rural outliers who state that they are letting flows to the Lower Basin. Their largesse is unnecessary.

As presented in the Las Vegas press, this seems to be an example of the Tragedy of the Commons. That is, a view of unfettered access to a finite valuable source, such as water, that leads people to overuse it and may end up destroying its value altogether. If this description fits how aquifer storage is calculated on paper and used so that a "surplus" of water exists because the owner has not yet reached the supposed aquifer capacity, then we really don't know what water resources exist. If this paper quantity exists, it should be proven to the Upper Basin citizens, so that Urban Form-type planning can proceed accurately for the benefit of all throughout the Colorado River Basin.

Here is why the Upper Basin is part of the solution.

Frederick Jackson Turner, in his paper presented at the 1893 Chicago Columbian Exposition started with the following statement

> In a recent bulletin of the Superintendent of the Census for 1890 appear these significant words:
> Up to and including 1880 the country had a frontier of settlement,
> but at present the unsettled area has been so broken into
> by isolated bodies of settlement that there can hardly
> be said to be a frontier line. In the discussion of its extent,
> its westward movement, etc., it cannot, therefore, any longer
> have a place in the census reports.
> This brief official statement marks the closing of a great historic movement.

Turner continues:

Along the way, we developed new versions of old eastern
institutions that were adapted to the harsh realities of
evolving from a primitive environmental conditions
to an evolving pioneer/settler/capitalist urban society.
The American ethos of "more space (elbow room) drove the
pioneer class to move west again, until our cycle of
pioneer/settle/urbanize and ossification of institutions
that eventually unsettled the pioneer/settler class ran into the Pacific Ocean.

However, Turner did not believe that our energy would be stopped by an ocean.

Turner:

> The works of travelers along each frontier from colonial days onward
> describe certain common traits, and there and these traits have,
> while softening down, still persisted as survivals in the place of their origin
> even when a higher social organization succeeded.
> The result is that to the frontier the American intellect owes it
> striking characteristics.
> That inventive frame of mind, quick to find expedients,
> that masterful grasp of material things, lacking in the artistic,
> but powerful to great ends; from restless, nervous energy,
> that dominant individualism, working for good and for evil,
> and with that buoyancy and exuberance which comes with freedom.
> These are the traits of the frontier, or traits called out elsewhere
> because of the existence of the frontier.
> **Finally**
> He would be a rash prophet who should assert that the expansive
> character of American life has now entirely ceased.

> Movement has been its dominant fact, and, unless
> this training has no effect upon a people, the American
> energy will continually demand a wider field for its exercise.

Based on this historical analysis, can the Upper Basin respond to the challenge of an inventive frame of mind, expediency, individualism and the buoyancy of freedom? A few facts support participation as a full-fledged Basin citizen now that we have "exhausted" the American West.

Logically, if we can't go west, then we double back east for space. Economics, space and opportunity have created population shifts in the Upper Basin. What did the 2020 Census show about population growth in Utah, Wyoming, New Mexico and Colorado?

Utah contributors	CA, WA, ID Pop. 3.27 MM	18.4% increase since 2010
Wyoming contributors	CO, UT, ID Pop .6MM	
New Mexico	Intra county Pop. 2.17MM	**TX**
Colorado contributors	CA, **TX**, IL 5.7MM	14.8% increase since 2010
	11.74MM	

There is some spectacular growth in two states.

New Mexico's population increase is internal, based on population movements to Eddy and Lea Counties affected by Permian Basin operations in Texas. Despite growing 6.9% (39+MM), California contributed to Colorado and Utah. Texas grew to 29+MM yet moves west to the Upper Basin in Colorado and New Mexico. Finally, why are people moving to Wyoming from Utah and Colorado?

The pioneer/settler ethos is strong, with long-term repercussions for the future of the Upper Basin and its participation in the Colorado River Basin process.

The double-digit growth may not continue unabated, despite the low statistical starting point. But, for these new pioneer/settlement/urban capitalist economies, the twenty-year plan horizon has significant effects of the Upper Basin.

For planning purposes, 15 – 18% growth is statistically unsustainable, let's assume a 5% annual growth rate in the Upper Basin (the United States grew by 6.9%) for the twenty-year plan horizon. The 5% rate doubles the current 2020 Census population to 23.5MM producers and consumers by 2046. They will scatter themselves as did the 19th century pioneers/settlers where there is opportunity in large and small settled and open areas.

Let's go back to the Elements. What is not mentioned is the water resource issue of crypto exchanges that morph into Artificial Intelligence factories that demand large quantities of water and power for daily operations.

As stated in the press, the Upper Basin calculates its available water for homes, businesses, in such a way that "allows it to send" 7.5MM acre feet per year to the Lower Basin. However, the necessary supporting water and sewer systems for these new users will compete with established ranches, farms and their secondary processing facilities, future oil exploration, etc.(fracking). Any "paper aquifers" (from Las Vegas Sun, 1/10/2026) will either quickly sand up at proving time or will remove needed existing water for the new pioneer/settlers. The evolution into urban capitalism will stall.

Urban Form's Elements offers a chance to objectively evaluate growth opportunities in a balanced, public manner. This does not mean winners and losers. It means that thought must be given by all states/tribes of the Upper Basin, as to what their cultural, economic and historical outcomes will be by 2046. This type of risk assessment process has been going on for nearly three decades in the Las Vegas Valley and Arizona and California using the decreed water "given" by the Upper Basin.

My Urban Form-based recommendation is a mechanism for unity among the states as they exercise their rights and responsibilities to their citizens using the resources allocated to them since 1922. As populations shift and economies mature, the Upper Basin is a partner in this shared outcome. This presentation does not speculate on motives; it proposes solutions for discussion and action by the states and the federal government.

URBAN FORM AND RESOURCE CONSERVATION
Attached to and made a part of "State's Rights and Responsibilities..."
February 26, 2026

This paper is presented to the Southern Nevada Water Authority (SNWA) with the idea of developing valley wide public policy for resource planning through cooperation and collaboration among local, regional, and national agencies and entities. This occurs while recognizing emerging incremental development based on existing conservation objectives by private and public entities.

The proposed addition of the Southern Nevada Regional Planning Coalition (SNRPC) role is expanded to include market and non-profit input for effective land use and infrastructure design and development as part of its legal and political mandate for sustainable planning and development.

The SNWA, on behalf of the Las Vegas Valley jurisdictions, is accountable to the federal water managers for local resource conservation. Its thirty plus years in this arena has made it a regional (Lower Basin – Nevada, California, Arizona) leader in this effort.
Over time, revised and standard development processes that involve the entire Valley will best address evolving federal demands to reduce and reallocate water resource consumption. These practice Elements herein will be useful throughout the seven-state Colorado River Basin (above three, plus the Upper Basin states of New Mexico, Utah, Colorado and Wyoming).
Plannig of this sort requires equity to succeed and balance resource demands.

The "**Elements**" examples meet all the requirements of NRS 278.150 (as amended). This statute drives urban planning throughout Nevada. The Elements are proposed as structural examples of a Valley-wide brainstorm based public participation model that will lead to two things at the Basin scale. Adopted plans lead to implementation through zoning, budgeting, capital improvements and timing of urban development. The plans lend stability and credibility to the urban culture. The Elements exemplified herein provide two vital, transferrable functions for resource planning.

One, coherent policies for urban form and resource conservation to meet, anticipate, and possibly guide the federal water managers as they address shortage issues during the twenty-year planning horizon by creating quantification and qualification to succeed in a politically contentious regional environment.
This provisional twenty-year planning agreement will be adjusted within the first two years as the states and tribes develop their mutually beneficial outcomes for their state/nation and the Basin.

Two, using SNWA/SNRPC policy development work over the last thirty years as an example, offer advice and assistance to the other states and their entities and the tribes so that they will realize the downstream effects of resource conservation planning undertaken by two different River Basin regions in response to the federal and natural environments. The Elements are presented in more detail and summarize the challenge locally and over the seven states, ten tribes Basin.

The Elements can
recognize that mandated resource conservation based on demanding reduced water usage creates diminishing psychological and economic returns. Any proposed percentage reduction demands by federal water managers will be better addressed by creatively addressing land use, urban form design, and infrastructure policies that address the development and retrofitting of real estate throughout the Basin.
support feasible valley wide growth to extend resource conservation through quantifiable outcomes.
use collaborative infrastructure and land use planning to manage future Basin-wide resource sharing.
create Basin-wide standards to address, and anticipate federal demands as a basis for future federal/regional strategy and negotiation.
use the implemented policies from one through four to sustain outreach and cooperation for more water resources to sustain the Basin system.

This Element-based planning is better done beginning on October1, 2026, during the initial five year planning event period of the twenty-year plan. Setting a two-year goal of element-based planning completion is better than forcing state/tribes to work under undue pressure based on a zero sum demand environment.

Artificial intelligence will emerge as a planning methodology on its because of its ability to collate, organize and synthesize data based on inputs by the citizens and stakeholders, in areas such as urban forests, examind through the lens of wind, solar, topographic and structural needs and conditions.

URBAN FORM AND RESOURCE CONSERVATION

Elements for Formal Sustainable Development as it affects the Colorado River Basin, using a sustainable model expressed through suggested or actual policies in tbe Las Vegas Valley. Incorporated by reference and made a part of tbe public comments by the author at the draft USBE Environmental Impact Statement comment period.

This paper is presented as part of a review of the draft 2026 USBR Draft Environmental Impact Staement with the idea of developing Basin-wide public policy for resource planning through cooperation and collaboration among local, regional, and national agencies while recognizing emerging incremental development based on conservation objectives by private and public entities. This presentation references established administrative planning methods found in the Las Vegas Valley. These include the Southern Nevada Regional Planning Coalition (SNRPC) and the Southern Nevada Water Authority (SNWA), The SNWA, on behalf of the Las Vegas Valley jurisdictions, is accountable to the federal water managers for local resource conservation. Its thirty plus years in this arena has made it a regional (Lower Basin – Nevada, California, Arizona) leader in this effort. However, new standard development processes that involve the entire valley will best address evolving federal demands to reduce and reallocate water resource consumption.

These practices will be useful throughout the seven-state Colorado River Basin (above three, plus the Upper Basin states of New Mexico, Utah, Colorado and Wyoming.

There are several inputs herein that address the existing planning and conservation environments already sustained by our legally established valley wide system of planning and development cooperation and collaboration. These inputs have evolved through the public and private entities that include The Las Vegas Valley Water District
Clark County Water Reclamation District
City of Las Vegas
Clark County Flood Control District
Clark County Regional Transportation Commission
Nevada Department of Transportation
Nevada Energy
Southwest Gas.

Studying and improving their various missions using this enclosed citizen participation structure for public policy input will improve SNRPC implementation of sustainable planning for land use and related infrastructure improvements locally and eventually throughout the Basin. Consideration and adoption of strategies and objectives created by public participation will generate sound land use and infrastructure policy to address five outcomes through the recognized valley wide planning coalition.
Continued federal demand to "increase conservation" provides no unified direction toward an outcome that extends resources as far as possible while seeking relief from other sources, such as desalination, or adjusting agricultural production to reallocate water use. Decreed across the board cuts were addressed based on our aforementioned abilities to anticipate future water needs and meet them though rate changes and reducing consumptive turf uses, among other things.

If "across the Board" Basin-wide reductions in consumption are the guiding demands of the federal water managers, then the federal focus is the law of diminishing returns. Initially, the law becomes a factor on a regional scale. This would lead to wide-scale poverty and suffering, which would eventually limit population growth.

Although this diminishing returns principle may apply to stagnant or underdeveloped economies, it's not the case for American West economies that work to continuously advance their production technologies. What many early economists didn't factor in was the impact of scientific and technical advances. In contrast to stagnant economies, i.e., "progressive economies" with advancing technologies have been able to perpetually increase their productive outputs and raise the standard of living despite their rising populations. The "Urban Form" approach recognizes advances in land development methodologies and practices driven by a goal of resource conservation. For example, artificial intelligence is critical in establishing physical, measurable standards for policy development and implementation in areas such as tree selection, siting, compatility with topography, wind, solar and structures.

Background: An Integrated City
What is an integrated city?

After some informal research, I am using this synopsis, taken from the book titled Approaching the Integrative City. This content came from that book and drives the elements below.

A. The elements of urban form

Our valley, based on the above 'Integrative' elements, consists of

1. *urban and architecture design* and the emerging design of sustainable urban spaces and places.
2. developing and implementing an *interdisciplinary approach* in shaping change,
3. *cultural heritage and innovative design value, in place making,* bringing together a well-designed environment that respects well-being, social interaction, and quality of life.

These integrative elements stimulate outreach by the SNWA/SNRPC to collaboratively respond to the challenges presented to address the evolving water use demands throughout the valley. This approach is important, because the SNWA already manages resources in measurable and quantifiable ways available for review and improvement to all conservation participants.

Nothing proposed herein is unusual; the existing Element ideas below follow the logic of sustainable growth and reflect trends and ideas in the public realm.

Because of decades of land and infrastructure planning and coordination, the SNWA and the SNRPC build on the political *status quo* of land development regulations and infrastructure policies to meet and anticipate the evolving federal conservation challenge creatively and credibly through national and internationally transferrable long and short-term strategies, goals, and objectives.

B. **A description of Urban Form** From several architectural sources, I compiled this description:

Urban form is made up of patterns of building placement, height and development intensity all based on the elements that define the valley physically, such as geography, topography, wind patterns, sun, and climate. Examples of site use and building placement include flood channels, transportation corridors, urban forests, parks and open space, public facilities, housing, and commercial and activity centers. These unifying features and characteristics exist throughout the seven Colorado River Basin states, varying by intensity due to local historical, cultural and economic factors.

These features already define our physical environment and are created and sustained by economics, politics, technology, and cultural heritage. These characteristics allow our valley to institutionalize land use and infrastructure public policy culture that only needs transformation for successful resource leadership. Such transformation can be planned and occur incrementally as knowledge and conditions evolve. Resource planning is constant. The SNWA (Southern Nevada Water Authority) and SNRPC (Southern Nevada Regional Planning Coalition) can continue to lead and guide the region into a longer-term program of sustainable development throughout the Colorado River Basin.

Here are some proposals for sustainable implementation throughout the Las Vegas Valley and the states and tribes comprising the Colorado River Basin. Once the process begins with the collaboration of the SNWA and the SNRPC, these elements and others will improve over time for inter-Basin cooperation and collaboration.
Because the reader may have skepticism about the implementation of some of the inputs, these points are presented as if in a brainstorming session (i.e., no bad ideas, look for relationships and consolidation among ideas, develop measurable outcomes from ideas, develop implementation strategies). The Basin chooses its destiny, separately and together in an equitable manner, based on local (city, county, state and regional goals that reflect priorities and needs. Development, re-use, capital planning and construction are incremental by nature. Forcing these factors to respond to a rigid administrative fiat serves no useful cultural, historical, or economic purpose. Using this format is to allow ideas to stimulate the reader to evaluate their value over time.

Element: Reducing heat islands...
by modifying the remaining flood channel designs to use weirs, boulders, and existing channel topography to retain flood water, instead of large, heat-generating concrete structures. Use existing large detention basins with wells for aquifer recharge, with any treatment at point of use.
Given our tradition of street flooding, we integrate on-site development retention basins on appropriately sized non-residential and high-density residential developments. Consider retrofitting sites to these basins where appropriate over the long term.

Element: Develop an integrated urban forest plan...
that addresses existing and future open space, residential and commercial development using shade and wind breaks as a conservation tool. These forest components are already published through the SNRPC and are used by commercial nurseries.
]Artificial intelligence models will help locate and site the appropriate tree and shrub plantings to take advantage of topography, wind, solar and other natural forces.
Given the existing SNWA watering "guidelimes", most residential, commercial, and some public areas will evolve into desert succulent-based water-efficient desert landscaping that may not be fully used by existing development proposals.

Create an urban forest, not an urban farm (see Susan Simard, "Nature" "Net Transfer of Carbon Between Ectomycorrhizal Tree Species in the Field") promises the following.
"Essentially, plants within communities can be interconnected and exchange resources through a common hyphal network. That is, plants can communicate with one another chemically...". excerpt from "The New Yorker", May 29, 2023, pp. 24 – 27. (3). Also, "InterSections Urban Canopies Frow as Key Infrastructure" Related information not cited from "Planning" Magazine Fall, 2023, Volume 89, Number 3.
The SNRPC created an urban forest planting document that can be implemented as part of development approvals. The issue is to integrate plantings of water-efficient shade trees among development approvals.
Trees can be considered as structures (shade and wind breaks). Future local master plans should include the SNRPC guidelines for budget policy and zoning ordinance adoption.
Where possible, place all buildings to take design advantage of prevailing winds and solar orientation. Such placement will reduce water and power consumption, through using these structures for shade, as well as wind orientation. I recall some competition years ago that the

Springs Preserve entered for an eco-efficient (my term) home. What local, regional and Basin-wide lessons emerged from this competition?

Element: Increase residential density, create performance-based zoning
to eliminate outdoor watering as much as possible while creating shade using buildings based on placement and topography. Increased density may address affordable housing needs. This input is an issue that can evolve in our real estate market (economics as a function of time and space).

For example, assume that the standard 6 d.u./acre single family detached residential structure uses 5,000 gallons of potable water annually for irrigation, but a 10 d.u/acre development with carefully selected and placed trees, shade structures (screens and buildings) uses 2,000 gallons annually per unit (even counting common areas).
Based on actual consumption metrics, create consumption-based performance standards as part of rezoning across the valley. This performance approach allows creative design and placement of these developments.
As a federal strategy to deal with mandates, when these lower-consumption units are built, or, as described later, retrofitted, the SNWA (and other Basin participants) will amass credit for future resource conservation demands.
If someone can afford a single-family detached house with a ¾" or 1" meter, outdoor water use standards and better planting recommendations will influence water use and aesthetics of that site. If someone wants to plant shrubs, trees, or solar shade structures in a commercial or dense residential development, these plantings must sustain the adopted valley wide urban forest planting model that respects consumption, aesthetics, and unified design, where appropriate. This policy suggestion meets and anticipates future federal demands and encourages regional and Basin-wide conservation standards.

Element: Douhle plumb developments to use their locally collected gray water for irrigation...
in limited spatial contexts (e.g., higher density residential, and non-residential common areas) to reduce outdoor water consumption. This gray water irrigation exists on some public sites.
The strategic reason for these gray water and density revisions is so that their water use savings can be used as credit for emerging federal resource conservation demands. This credit buys time to implement future Basin-wide strategy and tactics and collaboration for conservation demands.
If appropriate, examine whether treated gray water can be used for aquifer recharge. to continue to offset existing groundwater mining conditions, creating another water resource.

Element: valley wide water and power conservation standards for federal evaluation...
To address federal mandates, our response will be that we are reducing outdoor watering, increasing recharge (gray water plants, coordinating flood outfall, forest planning areas).
As we build to these standards, this policy implementation should influence emerging federal goals of reduced potable water consumption. These standards should reduce groundwater mining.
These public facilities and private developments will take years to accomplish, yet they are easily measurable, quantifiable, and validated through improved water rules, ordinances and fee structures. As such, they allow others to see how we implement our strategies and standards in our valley.

For example, presently, a development that replaces larger consumption water meters with smaller ones, receives financial credit against the newer meter cost. If that financial concept can be extended to documented resource reduction based on such a revised meter plan, that, in effect, is water conservation.
Indoor consumption of water can be implemented by changing existing or requiring new appliances to achieve more water-efficiency. Reduced water use leads to reduced power consumption. As this applies to existing services, meters can be replaced for credit to the owner, reinforcing measurable conservation successes. Related to the combined water/power resource basis of this paper, development policies will have to incorporate solar power and battery-based developments.
These savings can be evaluated by the federal water managers to guide and measure progress within the Colorado River watershed; extending this across the seven states can lead to great savings over time.

Implementation: - The Southern Nevada Regional Planning Coalition (SNRPC)...
a well-known, proven regional agency that serves the local entities through collaborative planning and policy recommendation. Whether done by legislatively updating the SNRPC, or using its existing enabling structure, change requires new stakeholders. Their participation in outcomes will lend balance and credibility to the communication and collaboration process with the federal water managers.

Its structure must incorporate new participants in marketing, private infrastructure consultants and firms, public and private finance (e.g., mortgagors, bond agencies, banks) and non-profit agencies as it develops measurable strategies, tactics, ordinances, and formal policy development and implementation for the valley, the Lower Basin and the Basin through this collaborative planning process.
As a final note, reflecting valley history, some of the above density, forest, and drainage standards may form the basis for re-instituting a District water allocation policy briefly implemented in the early 1990s. During that period, each entity served by the Water District was given an annual allocation of water to apply against development proposals that allowed for consumption estimates and available supply for future development. This policy was implemented too early in the conservation process and despite its use, was abandoned within the year it was introduced.

Outcome: There is a great deal here, including some brainstorming that it will take to get this process started. I believe that some of the initial elements will survive the scrutiny of the proposed formal setting to address federal and environmental demands on our growth.

While SNWA is accountable to the federal water managers and responsible for inter-Basin negotiations, it is critical that ultimately all the state jurisdictions and tribes share accountability and responsibility by implementing urban form tools for sustainable improvements to meet, or anticipate the regional conservation demands of the federal managers. The valley has the tradition, the physical and administrative infrastructure, planning, and coordination ability, and accepted cultural and historic approaches to solving land and water use issues.

The SNWA, its local and regional valley entities can improve and update our interagency traditions and tools to assist and guide the region, watershed, and our international neighbor. Through

working with these agencies, the SNWA, through the SNRPC, can continue its two-decade leadership tradition operating as a transparent, data-driven broker and negotiator in addressing the best extension of water conservation and community sustainability.

We are encountering a variation of the theory of "diminishing returns", however, we change the model as stated earlier by using technology and updated physical modeling and construction techniques supported by dynamic legal processes.
The federal government now demands more reduced water use (input) in the context of the existing land use and infrastructure policy environment without changing any other variable. Typically, the model means less return on investment as other variables remain static. We will not remain static.
The diminishing returns theory and psychology is overturned by the creation of a variety of time and space-centered land use, infrastructure and administrative outputs that anticipate and change with the emerging policy environment. The reduced use input is challenged by altering theory and psychology so that to recognize and validate how the accountable parties will be recognized for their responses. The Elements above do not reflect diminishing our future real estate choices here or throughout the Basin.
The Elements speak to the traditional real estate values of time (present and future value of money and space. Based on the above ideas, our approach should be the hypothesis that "diminishing returns do not mean diminishing expectations".

Finally, the stakeholders include the seven states and the tribes. Conservation will buy time while the ten sovereign nations participate with the states. However, the tribes have a greater resource base to work with, because they can not only negotiate within the Basin, but outside the Basin with other tribes that may broker, or provide, water resources through consensus-based agreements. While they start within the seven states, their roles and opportunities expand due to their nation status within the Basin.

Robert Baggs
79baggs@gmail.com
February 26,2026
702-236-0264 (c)

Letter #: 8642

Date Received: 3/3/2026

Sender Names: 8563: Emily Baker

Emails: 8563: emy.bak3@gmail.com

Organizations:

Subject: Comment: Colorado River Post 2026 Operations Draft

DOI - . Dear Sirs/Madams: Thank you for the chance to comment. Whatever plans you have for managing the needs of the Colorado River and the people who depend on it, I hope they differ from the ways the U.S. government had employed before. I read extensive literature on the western United States' original water claims, including Marc Reisner's Cadillac Desert. Marq de Villiers in particular refers to this in Water: The Fate of Our Most Precious Resource. The basic gist of those classic laws is "first claimed, first served," and "use it or lose it." The irony is that this did not give precedence to wildlife, or for Native American tribes, when it was first applied. Certainly, there were some stories about the conflicts of water use, including in Wyoming and Texas [de Villiers, 1999, 62-4] Beyond that, many of the problems with the water supply in North America's southwest stemmed from that view of using it, which ultimately gave high precedence to agribusinesses (there was particular aggression over it regarding California in 1944) and other water-intensive places, such as Los Angeles and Palm Springs [ibid., 25] and Las Vegas [ibid., 15-16]. There is definitely a lot of risk of aggressively pumping groundwater from the aquifers to try and meet everyone's needs, which further exacerbates the problem with not enough water to recharge it. Also, irrigation has left a lot of salt deposits; all told, it is understandable that the Colorado River should run lower, and have increasingly less usable water. All told, we need a different way of defining use and waste of water. The Native Americans view all the resource issues as interconnected as the water systems [DEIS Technical Appendix 13, pp. 13-13 and 13-14], and I am glad you acknowledge consulting them on this; that outlook ought to figure extensively into that, and into ensuring that all needs are accounted for, including those of nature. For certain the wildlife don't see themselves as "owning" the water, but they do need it. As stated, there were debates about ways to meet the water needs in the southwest, including demands to ship water there from the Great Lakes area. I will acknowledge that many states in the Great Lakes area had not done the best job caring for our water [think of the Love Canal and the Cuyahoga river, in de Villiers, 1999, 93]. In many ways, we still aren't: we still have a corroded pipeline running through Wisconsin's Bad River Watershed and the Straits of Mackinac, we're considering installing data centers down south and reopening coal and nuclear power plants, and we're only starting to properly regulate concentrated area feeding operation pollution and work on our septic codes. Water bottling operations also have loopholes around the diversion rules. I won't blame my words ringing hollow for you, but I do hope you accept a suggestion that you employ practices that cycle water back into the area and recharge the groundwater, and also have the needs of living things in mind, and hopefully, it will ensure that all water ecosystems across the United States will have what they need. One example I could suggest incorporating is Botanical Water Technologies. These include the Sustainable Water Impact Maps, Philo Exchange and the botanical water itself. The last entails purifying the aqueous residue extracted from processing fruits and vegetables for juice concentrates and sugars, which would have been otherwise discarded; the group particularly caters to vulnerable areas. I highly recommend collaborating with this group: you can learn more at https://wegrowwater.com/. In summary, I believe that the Colorado River basin as a whole needs a new way of seeing water use and storage that returns water to the aquifer and water cycle. I recommend reaching and partnering with organizations, tribes and businesses that are willing and able to employ cyclical practices. Hopefully, this will help ensure that all waterways, and all people and other living things that depend on them, will have what they need to live and thrive. Thank you for your time and consideration.

Sincerely, Emily
Baker Michigan

Letter #: 3535

Date Received: 2/26/2026

Sender Names: 3502: Susan Baker

Emails: 3502: westseattle1952@gmail.com

Organizations:

Subject: Colorado River

DOI - . The Colorado River provides drinking water for 40 million people, supports Tribal nations, sustains farms and cities, and is the lifeblood of fragile desert ecosystems.This EIS must reflect the reality of climate-driven water scarcity and prioritize clean water protections, ecosystem health, and equitable solutions, not simply divide up a shrinking supply.The Draft EIS the Bureau has proposed is inadequate to address the crisis that we face, and the agency has failed to reveal what its preferred alternative will be. This denies the public the only real opportunity we will have to comment on the inadequacies of the Bureau's proposal before a final decision is made. We must demand that our communities have a full opportunity to express our concerns before the government takes final action.Please consider the reality and severity of the situation. It can't be emphasized enough.Thank you!!!Susan Baker

Letter #: 229

Date Received: 1/29/2026

Sender Names: 230: Eric Balken

Emails: Not Provided

Organizations:

Subject: CR DEIS Public Meeting Comments

I'm curious, in the geographic scope of the EIS, why it was cut off at Gypsum Canyon, on the northern end, which is elevation 3610, instead of going up to elevation 3700?

Letter #: 2104

Date Received: 2/26/2026

Sender Names: 2087: Grant Barbour

Emails: 2087: grant@everyactioncustom.com

Organizations:

Subject: Public Comment on Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead DEIS

DOI - . Dear Carly Jerla Bureau of Reclamation, I have rafted down the Grand Canyon multiple times, and it is a life alteriting spiritual journey every time. Keeping instreams flows for recreational use should be the highest priority. Sincerely, mr Grant Barbour 24 Valley Cir Mill Valley, CA 94941-2126 grant@grantbarbour.com

Letter #: 11294

Date Received: 12/4/2024

Sender Names: 10811: Luke Baretinicich

Emails: 10811: lukebaretinicich@yahoo.com

Organizations:

Subject: Page 2467

I Support Recreation on the Colorado River Basin I am writing as a supporter and user of Lake Powell, Lake Mead and water in the west. I am a concerned citizen and supporter of responsible water and energy infrastructure management. I am writing regarding the proposed alternatives for the Post-2026 Colorado River Operation Guidelines. It is important to recognize the role that the dams within the Colorado River Basin play in ensuring energy reliability, irrigation, water storage, navigation, and regional economic stability. I appreciate the Bureau of Reclamation recognizing BlueRibbon Coalition's Path to 3588' Plan as an alternative considered and recreation as a whole in alternatives analyzed. Glen Canyon and Hoover Dam and the Colorado River Basin, face growing pressure from radical environmental activists and anti-dam interests who seek its decommissioning. These calls threaten the dam's essential functions on the Colorado River system, therefore we appreciate BOR recognizing that moving to a one dam system would not yield a resilient system and would be bad for the environment and the economy. As a recreation user, I support any alternative that recognizes and supports recreational opportunities within the Colorado River Basin. The Supply-Driven, Max Operational Flexibility and Enhanced Coordination Alternatives all identify release levels based off of low water levels, shortages or low inflows which will better protect the dams critical infrastructure. I support any alternative or blend of alternatives in which releases are based off of real water inflows and not maximum deliveries that could hurt the water storage system and ultimately recreation. I support keeping the most water in the reservoirs for recreation as possible. The nation cannot afford to treat these critical infrastructure assets as bargaining chips in speculative environmental campaigns. Lake Powell and Lake Mead are too important to lose, and its operation must be protected. I have been going to Lake Powell since I was six weeks old. It's not just a destination to me -- it's part of who I am. It's where my family gathers year after year to create new memories and hold on to the old ones. For us, Lake Powell is sacred. We've even talked about having our ashes spread there one day -- that's how deeply it's woven into our lives. The thought of losing it would be devastating. It wouldn't just mean the loss of a lake; it would mean the loss of a place that anchors generations of our family. The city of Page depends on it. Families like mine depend on it. The West depends on it. Post-2026 Colorado River 2467 of 5176 Please save Lake Powell -- for the communities, for the families, and for the generations still to come. -Luke Baretinicich Post-2026 Colorado River

Letter #: 7347

Date Received: 3/2/2026

Sender Names: 7307: DAVID BARON

Emails: 7307: dbaron1@cox.net

Organizations:

Subject: Colorado River

DOI - . All states should do their part. It doesn't seem like the upper states are giving up much of anything. Arizona and other states should severly limit alfalfa and certainly none should be exported out of the local areas. The TSMC facility in Phoenix is a matter of national security. If China attacks Taiwan we will lose almost all high tech semiconductors for missles, satellites and everyday items such as phones and other electronics. The Phoenix facility would be the only remaining facility in the world that can supply the needed electronics to keep our country safe. That's why it is imparative that Arizona continues to receive an adequate suplply of water. Besides the water to run the TSMC plant, there are numerous suppliers (60 at last count) that need water in order to keep TSMC running. It is estimated that 100,000 jobs will be created between TSMC and the supporting infrastructure. All those people (more if you include their families) need water for their jobs and everyday living. So, Arizona needs to do their part but the federal government needs to insure that TSMC and our nation is secure. In addition to TSMC, Intel and other high tech industries need water to maintain their businesses. Here's a projection of TSMC induced jobs Direct high-tech jobs~24,000 Construction jobs~70,000-80,000 Indirect/supplier jobs~100,000-120,000 Total economic jobs~200,000+ We can't have Arizona and TSMC fail.

Letter #: 7583

Date Received: 3/2/2026

Sender Names: 7533: Dave Barresi

Emails: 7533: davstebar@yahoo.com

Organizations:

Subject: No cuts

DOI - . Please address the urgent issue of preventing Saudi Arabia from accessing our water supply due to their outstanding payment. Your prompt attention to this matter is appreciated. Thank you. Yahoo Mail: Search, Organize, Conquer

Letter #: 8359

Date Received: 3/2/2026

Sender Names: 8276: Lenora Bateman

Emails: 8276: Lenora@bennettoil.com

Organizations:

Subject: Operational Guidelines and strategies for Lake Powell

DOI - . After using Lake Powell for houseboating since 1986, I respectfully request a better plan and alternative than to install a bypass and drain the lake. Their must be something better than that!? Lenora Bateman President - CEO Tel: 928-445-1181 Ext 103 Mobile: 928-308-3643 Web: www.bennettoil.com CONFIDENTIAL COMMUNICATION E-mail from this firm normally contain confidential andPrivileged material, and are for the sole use of the intended recipient. Use or distribution by an unintended recipient is prohibited, and may be a violation of law. If you believe that you received this e-mail in error, please do not read this e-mail or any attached items. Please delete the e-mail and all attachments, including any copies thereof, and inform the sender that you have deleted the e-mail, all attachments and any copies thereof. Thank you.

Letter #: 415

Date Received: 2/18/2026

Sender Names: 409: John Baudhuin

Emails: 409: jb@spinning.com

Organizations:

Subject: Colorado River

DOI - . Dear CRB, Here in Nevada, we have recently dealt with the costly mandate of removing decorative turf from our communities. California receives much more rain/show pack, a large portion of which is allowed to flow into the ocean as a result of years of poor water management. If California built and improved the capture of water in the state, it would go a long way towards sustainable use of the Colorado River. Kind regards, John R. BaudhuinFounder/CEOMad Dogg Athletics, Inc.2111 Narcissus Ct., Venice, CA 90291Phone: 310.740.8888Mobile: 725.502.8490Fax: 310.823.7408

E-mail: jb@spinning.com www SPIN?, SPINNER?, SPINNING?, SPIN FITNESS?, SPINTV?, SPINPOWER?, THE SPINNING LOGO?, PEAK PILATES?, CROSSCORE?, UGI? AND RESIST-A-BALL? ARE REGISTERED TRADEMARKS THAT ARE OWNED BY MAD DOGG ATHLETICS, INC. A trademark is a word, name, symbol or device that identifies a particular company's products or services.SPIN, SPINNER and SPINNING are federally registered trademarks identifying Mad Dogg Athletics?, and its indoor cycling goods and services. While we're pleased that so many people think of us when they think of indoor cycling, we must protect our brand and would like to make it clear that you should please only use SPIN, SPINNER and SPINNING when you're actually referring to our brand of indoor cycling goods and services.--This e-mail (including any attachments) may contain information that is private, confidential, or protected by the attorney-client or other privilege, and is intended only for the personal and confidential use of the designated recipient(s) named above. No confidentiality or privilege is waived or lost by any error in transmission. If you are not the intended recipient of this message, or otherwise received this e-mail in error, you are hereby notified that any review, dissemination, distribution or copying of this message is strictly prohibited, and please delete this message from your system without copying it and notify the sender by reply e-mail, so that our records can be corrected.

COUNTY EXECUTIVE OFFICE

Bari Bean
Assistant County Executive Officer
BariBean@co.imperial.ca.us
www.co.imperial.ca.us

County Administration Center
940 Main Street, Suite 208
El Centro, CA 92243
Tel: 442-265-1001
Fax: 442-265-1010

March 2, 2026

VIA ELECTRONIC MAIL

Attn: BCOO-1000
U.S. Bureau of Reclamation
Post Office Box 61470
Boulder City, Nevada 89006

Re: Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead – Draft Environmental Impact Statement Comment Letter

Dear U.S. Bureau of Reclamation:

Imperial County (the "County") submits the following comments on the U.S. Bureau of Reclamation Draft Environmental Impact Statement ("Draft EIS" or "DEIS") for the Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead (the "Proposed Guidelines"). Pursuant to the National Environmental Policy Act ("NEPA"), the Draft EIS was issued for public review on January 16, 2026. The County appreciates the opportunity to comment on the Draft EIS and looks forward to working with the Bureau of Reclamation in order to find an equitable solution that adequately addresses water shortages and the associated environmental impacts. This letter should be read in conjunction with **Attachment A**, which also includes comments associated with the County's Workforce & Economic Development Analysis.

This letter has been prepared with the assistance of County staff and consultants, including the Imperial County Air Pollution Control District, Agricultural Commissioner, and County Departments of Planning, Public Health, and Workforce & Economic Development, including critical County staff: Bari Bean[1], Assistant County Executive

[1] [Bari Bean serves as the County's Assistant County Executive Officer as well as the California Lithium Ombudsman (funded by Senate Bill 125), and Regional Innovation Officer (funded by the U.S. Department of Commerce Economic Development Administration Tech Hub Program). Bari has experience working in the geothermal industry, and holds an Executive MBA in Energy from the University of Oklahoma]

Officer, Belen Leon-Lopez[2], Air Pollution Control Officer, Priscilla Lopez[3], Director of Workforce & Economic Development, and Jeff Lamoure[4], Deputy Director of Public Health.

I. INTRODUCTION

The U.S. Bureau of Reclamation ("Reclamation") Draft EIS declares that it "has been prepared to inform the Secretary's timely adoption of a new set of guidelines that would be sufficiently robust and provide improved predictability to all water users and managers in the Basin" (Draft EIS, p. E-6). The Draft EIS includes several proposed alternatives that would reduce California's Colorado River apportionments up to 33 percent (Draft EIS, p. ES-33) and increase shortages 3x to 5x in critically dry conditions (Draft EIS, p. ES-32). Under the "Enhanced Coordination" alternative, Imperial County would face a shortage of 925,930 acre-feet ("af") of water, with diversions from the Imperial Dam reduced by over one-third, to just 1.8 million af (Draft EIS, p. 3-23). These reductions would have significant environmental impacts by impeding geothermal energy, critical mineral resource extraction, and agricultural uses in Imperial County.

These impacts directly conflict with the current administration's efforts to promote these uses. The January 2025 Executive Order titled "Declaring a National Energy Emergency" promotes the "development, production, transportation, refining, and generation capacity" of domestic energy, defined to include geothermal resources.[5] The March 2025 Executive Order titled "Immediate Measures to Increase American Mineral Production" promotes the accelerated mining and production of "critical minerals," including lithium.[6]

---

[2] [Belen Leon-Lopez serves as the Air Pollution Control Officer, with over 10 years' experience of direct oversight of air quality regulatory compliance in Imperial County. Belen holds a Master's of Environmental Science]

[3] [Priscilla Lopez Priscilla A. Lopez serves as Director of the Imperial County Workforce & Economic Development Office (ICWED), the administrative and fiscal entity that implements Workforce Innovation and Opportunity Act (WIOA) programs and regional economic development initiatives on behalf of the Imperial County Workforce Development Board. She also serves as Treasurer/Secretary of the California Workforce Association and holds a Master of Public Administration from San Diego State University, with extensive experience in public sector workforce strategy, compliance, and cross sector partnership development.]

[4] [Jeff Lamoure serves as Deputy Director of Public Health and holds a degree in Environmental Occupational Health and Safety from California State University, Northridge. Jeff is a Registered Environmental Health Specialist.]

[5] Exec. Order No. 14,233, 90 Fed. Reg. 18,345 (Mar. 20, 2025): https://www.whitehouse.gov/presidential-actions/2025/03/immediate-measures-to-increase-american-mineral-production/.

[6] Exec. Order No. 14,241, 90 Fed. Reg. 13,673 (March 20, 2025): https://www.federalregister.gov/documents/2025/03/25/2025-05212/immediate-measures-to-increase-american-mineral-production

Proposed reductions would also result in socioeconomic and land use impacts in Imperial County. Reduced water supply would require large-scale fallowing and crop-switching in a primarily agricultural county and the resultant shuttering of industries that support and draw support from agriculture.[7] The County projects that planned reductions in water supply could affect 52,697 acres, or 10% of the County's agricultural footprint, result in ~ $250 million in annual economic losses, and result in 450-700 job losses (**Attachment A:** Workforce & Economic Development Analysis). The DEIS fails to adequately consider these loses and the impacts associated therewith.

The Draft EIS does not address any of the foreseeable impacts from reductions in Imperial County diversions. In doing so, the Draft EIS also fails to consider mitigation measures for these impacts. Furthermore, the Draft EIS does not evaluate alternatives that would reduce apportionments to the Upper Basin States upstream of Lake Powell, and provides no supportable rationale for this shortcoming. The County requests that the Bureau of Reclamation issue a revised draft or supplemental EIS that (1) includes an alternative that more equitably reduces water claims between upper and lower basin states, (2) analyzes foreseeable impacts to Imperial County and Salton Sea, and (3) includes mitigation measures that address the magnitude impacts in the DEIS.

II. THE DRAFT EIS FAILS TO CONSIDER A REASONABLE RANGE OF ALTERNATIVES

NEPA requires an EIS to include "a reasonable range of alternatives to the proposed agency action" (42 U.S.C. §4332(C)(iii.)). Moreover, NEPA expressly requires Federal agencies to, "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources" (42 U.S.C. § 4332(E)).

Reasonable alternatives are those that are technically and economically feasible, meet the proposal's purpose and need, and, where applicable, meet the goals of the applicant (A Citizen's Guide to NEPA, The Council on Environmental Quality (2021), p. 13). Agencies are obligated to evaluate a reasonable range of feasible alternatives in enough detail so that a reader can compare and contrast the environmental effects of the various alternatives (A Citizen's Guide to NEPA, The Council on Environmental Quality (2021), p. 13).

A. The Draft EIS Fails To Adequately Analyze And Consider A Realistic No Action Alternative

Agencies must describe and analyze a "No Action" alternative, i.e., what would happen if the agency did not act upon the proposal for agency action (Draft EIS, p. 2-6). A No

[7] In July 2025, California's last sugar plant closed in Imperial County, causing the region to lose a ~$250 million industry and over 700 jobs. Kori Suzuki, *California's Last Beet Sugar Plant Is Closing: Can Imperial County Keep the Industry Alive?*, KPBS (Aug. 14, 2025), https://www.kpbs.org/news/environment/2025/08/14/californias-last-beet-sugar-plant-is-closing-can-imperial-county-keep-the-industry-alive.

Action alternative establishes a baseline against which the proposed action and alternatives may be measured (*Center for Biological Diversity v. U.S. Dep't of Interior*, 623 F.3d 633 (9th Cir. 2010)). The No Action alternative describes reasonably foreseeable environmental trends or planned actions in the area that would be affected by the proposed action. Importantly, the No Action alternative is not a "do nothing" baseline, rather it must include a discussion of reasonably foreseeable development resulting from its adoption (*Citizens for Clean Air & Clean Water in Brazoria Cnty. v. U.S. Dep't of Transp.*, 98 F.4th 178 (5th Cir. 2024); *Young v. General Servs. Admin.*, 99 F. Supp. 2d 59 (D.D.C. 2000)).

The DEIS artificially inflates the environmental impacts of the No Action alternative by rooting it to a speculative pre-2007 baseline and by failing to include foreseeable river management in a No Action alternative. The DEIS states that No Action does "not represent a continuation of current operations but is generally based on the operating guidance that was in place before the adoption of the 2007 Interim Guidelines." (ES-10, Table ES-1). The DEIS provides no explanation as to why post-2007 operating conditions under the 2007 Interim Guidelines, are not analyzed as the No Action alternative. Instead, the EIS opines on the effectiveness of the 2007 Interim Guidelines:

> "The 2007 Interim Guidelines have not sufficiently reduced risk: Based on operational experience since 2007, the current guidelines are not robust enough to manage the system in a way that is sufficiently protective of the resources dependent on the Colorado River. Despite near continuous drought-response actions in recent years, low-reservoir conditions have persisted, and new infrastructure risks at Glen Canyon Dam have arisen. More robust and adaptive guidelines are needed for the efficient and sustainable management of the major mainstream Colorado River reservoirs and system resources" (Draft EIS at ES-4).

In essence, the DEIS states that Reclamation disagrees with status quo policies (i.e. "are not robust enough to manage the system"), but that is not an excuse for failing to analyze and disclose the real consequences of the No Action alternative. The No Action alternative leaves out substantial emergency condition response mechanisms that are currently available to Reclamation, thereby failing to include reasonably foreseeable actions under No Action and inflating environmental impacts from No Action. As a result of this improper No Action definition, the impacts of the Proposed Action have been improperly reduced.

The Draft EIS states that "while the authority to use [Colorado River Storage Project] Upper Initial Units to respond to exigent and emergency conditions was recognized at that time, no specific framework for such activities had been developed, so no defined activities are included in this alternative" (Draft EIS, p. 2-38). It goes on to state that the "Existing Intentionally Created Surplus ("ICS") would be delivered in accordance with existing agreements, but there would be no new storage and delivery mechanisms" under the No Action alternative. Under current conditions, Reclamation utilizes the Upper Initial Units to deliver water to Lake Mead and Lake Powell under exigent and emergency

conditions. Removing these mechanisms paints an unrealistically harsh picture of water supply conditions under No Action. It is no surprise then that the Draft EIS concludes that water supply shortages would be most severe under No Action.

It is further unclear from the Draft EIS whether the 2019 Drought Contingency Plans ("DCPs") were included in the No Action alternative. It appears they were not, even though provisions in the 2019 DCPs extend beyond 2026.

As pointed out by the Colorado River Authority of Utah in Scoping Comments, reverting back to pre-2007 Interim Guidelines is not a realistic No Action alternative (Colorado River Authority of Utah, p. 3). The Colorado River Basin State Representatives of Arizona, California, and Nevada (the "Lower Basin State Reps") agreed and went further, recommending that "certain provisions of the 2007 Guidelines and [2019 Drought Contingency Act] related to ICS extend beyond 2026 and should be included in the No Action Alternative."

Yet instead of including reasonably foreseeable operations, agreements between states, and emergency actions, the Draft EIS presents a worst-case scenario. Reclamation should have instead consulted with the Basin States on what would constitute a No Action alternative, as suggested by the Colorado River Authority of Utah, as well as the Lower Basin State Reps (Colorado River Basin State Representatives of Arizona, California, and Nevada, Scoping Letter, p. 5).

> There are outstanding questions as to what will constitute the No Action Alternative. In order for the Basin States to develop a consensus alternative, it is essential that Reclamation consult with Basin States on what will constitute the No Action Alternative as soon as possible. Colorado River Authority of Utah, Scoping Letter, p. 4.

If Reclamation had consulted with the Basin states on a No Action alternative, it could have estimated reasonably foreseeable operating agreements based on anticipated agreements between the states.

B. The Draft EIS Fails To Disclose Rationale For Not Including an Alternative With Reduced Water Supply For Upper Basin States

The Draft EIS does not include an alternative that requires cutbacks or conservation measures by the Upper Basin States. While Reclamation concedes that upstream activities are critical to water levels at Lake Powell, and while it maintains the authority to operate the Colorado River Storage Project ("CRSP") Upper Initial Units, it paradoxically excludes activities upstream of Lake Powell from the scope of the Draft EIS. It states:

> The Draft EIS does not expand the geographic scope of analysis upstream of Lake Powell. With respect to Upper Basin conservation, the nexus to the proposed federal action is the storage and delivery of that conserved water in Lake Powell. The effects of this storage in and delivery from Lake

> Powell are within the scope of the EIS, while specific activities that may be undertaken in the Upper Basin to generate the conserved water are not within the scope of this EIS. Any such activities are unknown at this time and will not necessarily require federal decision making. Any federal decisions associated with these conservation activities will be assessed outside of this EIS. (Draft EIS, p. ES-6-7).

Beyond this surface-level explanation, the Draft EIS does not justify all five proposed alternatives reducing water deliveries to Lower Basin States, with some placing additional obligations on the Lower Basin States. Even within the Maximum Operational Flexibility Alternative, the alternative presented in the Draft EIS to represent proposals by conservation organizations and the alternative intended to incentivize proactive water conservation (Draft EIS, p. 2-23), no obligations are put on Upper Basin activities and no reductions or shortages are assigned to Upper Basin States.

For the Enhanced Coordination Alternative, the Draft EIS states that "No Upper Basin conservation would be included since it would require agreements outside of Reclamation's control" (Draft EIS, p. 2-16) while the Maximum Operational Flexibility Alternative models conservation in Upper Basin states without including specific measures (Draft EIS, p. 2-23). The Draft EIS does not explain why the agreements are outside of Reclamation's control nor does it explain why proposed alternatives cannot include obligations on the CRSP initial units.

In failing to include an alternative with more equitable reductions in water deliveries, the Draft EIS falls short of NEPA's requirements, as an agency must "[r]igorously explore and objectively evaluate all reasonable alternatives" (*Navajo Nation v. U.S. Forest Serv.*, 408 F. Supp. 2d 866 (D. Ariz. 2006)). Reclamation's own NEPA handbook states that an EIS should not "justify a predetermined action" and must be used in an "impartial manner" (Reclamation NEPA Handbook, p. 2-2).

Reclamation is of course aware of protracted negotiations between upper and lower basin states (Draft EIS, p. 1-8). These negotiations indicate that any agreement replacing 2007 Interim Guidelines will require cutbacks and conservation measures from *both* upper and lower basin states.[8] Including only alternatives that place obligations and reductions on the lower basin states is without justification and in violation of NEPA.

III. THE DRAFT EIS' DECISION TO LEAVE IMPERIAL COUNTY OUT OF ITS GEOGRAPHIC SCOPE OF ANALYSIS IS NOT REASONABLE

The Draft EIS inexplicably fails to disclose foreseeable impacts to Imperial County and the Salton Sea in its analysis of the Proposed Guidelines (Draft EIS, pp. 3-22 – 3-24).

[8] Scott Dance, *Governors Dive Into an Impasse Over Colorado River Water Use*, N.Y. Times (Jan. 30, 2026), https://www.nytimes.com/2026/01/30/climate/governors-dive-into-an-impasse-over-colorado-river-water-use.html.

NEPA requires agencies to discuss environmental effects if they are "reasonably foreseeable." 42 U.S.C. § 4332(2)(C)(i). An effect is "reasonably foreseeable" if it is "sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision." *Sierra Club v. Marsh*, 976 F.2d 763, 767 (1st Cir. 1992). *See also City of Dallas, Tex. v. Hall*, 562 F.3d 712, 719 (5th Cir. 2009). Agencies must engage in some degree of predictive behavior: "reasonable forecasting is implicit in NEPA, and we must reject any attempt by agencies to shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as 'crystal ball inquiry.'" *Dubois v. U.S. Dep't of Agric.*, 102 F.3d 1273, 1286 (1st Cir. 1996) (an effect must be capable of description with sufficient specificity to make its consideration useful to a reasonable decision-maker). While NEPA does not mandate Reclamation to choose a particular course of action, it does require that "impacts and potential mitigation be disclosed before decision making" (Reclamation NEPA Handbook at 2-3).

The DEIS acknowledges impacts associated with reduced water deliveries: the "proposed federal action would also potentially affect interests of water users in the Lower Division States in service areas that extend beyond the Colorado River floodplain" (Draft EIS, p. ES-6). It notes that under the Enhanced Coordination alternative, the Imperial and Coachella Valleys would receive 1/3 less water from the Imperial Dam, a reduction of 935,930 af in diversions (Draft EIS, p. 3-23). It goes on to tie these reduced diversions to reduced inflows to the Salton Sea. The Enhanced Coordination alternative would reduce Salton Sea inflows from 1,100,000 af to 783,000 af (Draft EIS, p. 3-23).

Given NEPA's requirement to analyze foreseeable impacts and given that the Draft EIS acknowledges that the Proposed Guidelines would severely reduce water usage in Imperial County, the Draft EIS' decision to leave out analysis of impacts associated therewith is without justification. The two rationales included in the Draft EIS for leaving out impacts to Imperial County have no basis in law.

First, the Draft EIS claims that the resultant inflows would still be within the range used by the Salton Sea Management Program's Long-Range Plan (Draft EIS, p. 3-24). That projected inflows are included in a multi-decade plan as part of a worst-case outcome does not erase Reclamation's obligations to study foreseeable impacts.[9] The Proposed Guidelines, by Reclamation's own admission, are accelerating water depletion in the Imperial County.

Second, the EIS further claims that it cannot study such impacts because Reclamation does not have enforcement authority over the end use and management of delivered or conserved water (Draft EIS, p. 3-24). That ignores the fundamental issue, the Proposed Guidelines would reduce water delivery in a way that would directly reduce inflows.

[9] *See* Cal. Nat. Res. Agency, *Salton Sea Management Program: Long-Range Plan Executive Summary* (2024), https://saltonsea.ca.gov/wp-content/uploads/2025/06/Salton-Sea-Long-Range-Plan-2024-Exec-Sum_508_WCAG.pdf.

Those variables do not remove the impacts of Reclamation's proposed action on the environment. No legal authority in NEPA or case law supports the Draft EIS' claims.

IV. THE EIS FAILS TO ADEQUATELY STUDY ENVIRONMENTAL IMPACTS IN IMPERIAL COUNTY

NEPA requires the Draft EIS to disclose "to the fullest extent possible" foreseeable impacts associated with reduced water in Imperial County (*Ground Zero Center for Non-Violent Action v. United States Department of Navy*, 860 F.3d 1244, 1257 (9th Cir. 2017) ("NEPA requires disclosure 'to the fullest extent possible.' 42 U.S.C. § 4332."); *Columbia Basin Land Protection v. Schlesinger*, 643 F.2d 585, 594 (9th Cir. 1981.) ("One of the purposes of an EIS is to ensure full disclosure of the environmental consequences of a project.")). NEPA analyses should forecast foreseeable impacts where necessary (*Center for Biological Diversity v. Bernhardt*, 982 F.3d 723, 735 (9th Cir. 2020) ("Drafting an EIS 'necessarily involves some degree of forecasting"); *see also City of Davis v. Coleman*, 521 F.2d 661, 676 (9th Cir. 1975) (An agency "must use its best efforts to find out all that it reasonably can" when predicting the environmental effects of the proposed action)).

The Draft EIS has fallen short of NEPA's impact analysis requirements by failing to study foreseeable energy, air quality and other impacts from reduced water deliveries to the Imperial County.

A. Energy Impacts

1. The DEIS fails to analyze major impacts to geothermal production and viability from reduced water supplies

The Draft EIS analyzes impacts on hydroelectric production from reduced water levels at the Glen Canyon, Hoover, Davis, and Parker Dams, but fails to analyze the impacts of reduced water deliveries on geothermal resources in Imperial County.

Reduced water supplies threaten the County's existing 11 geothermal plants, which rely on treated water for steam-generated energy.[10] A 2024 study summarized the water uses to operate the ~500 MW of geothermal resources currently operating in Imperial County:

> In addition to the geothermal brine used to produce energy, freshwater is needed to operate geothermal energy production facilities. Cooling towers use 70% of the freshwater as makeup water to offset water lost through evaporation in the hot SS-KGRA region [14, 21]. Freshwater is also used to dilute the brine for onsite processing and before reinjection to prevent certain constituents from precipitating and plugging the injection well. In the SS-KGRA, freshwater is purchased from the Imperial Irrigation District

[10] Lithium Valley PEIR, Appendix L-1: Water Supply Assessment, Draft Lithium Valley Water Demand Memo, p. 4, *available at* https://imperialcounty.org/wp-content/uploads/2025/12/December-2025-Lithium-Valley-Specific-Plan-1.pdf.

> ("IID") and treated on-site, if needed, to achieve the water quality required for each process. In 2012, the IID reported water use estimates for all geothermal facilities in Imperial County, based on self-reported data [5]. Using this historic data, we estimate geothermal facilities in the SS-KGRA purchase an average of 19,700 m^3 (16 acre-feet) each year for every MW of net generation capacity. The capacity factors of these facilities range between 74%–100% [2]. The water demand of individual facilities ranges widely from 493–39,500 m^3 (0.4–32 acre-feet) per MW annually. The variability is a result of the amount of steam condensate that is reused at each facility as well as the water consuming processes on site.[11]

While geothermal systems in other parts of the world can operate with minimal water input, in the Imperial County Salton Sea Known Geothermal Resource Area ("SSKGRA"), the exceptionally high mineral content of the geothermal brine makes water an essential component of both geothermal energy production and critical mineral recovery.[12]

Water is also integral to the re-injection process, which keeps the geothermal resource sustainable by maintaining subservice pressure. After geothermal heat and any recoverable critical minerals are extracted at the surface, the remaining hot geothermal brine, together with the process water introduced during operations, is re-injected back into the underground reservoir. This reinjection approach has been successfully practiced in the region for more than four decades, reliant upon regional water supply. Reinjection is essential to maintaining subsurface reservoir pressure, preventing long-term resource depletion, and sustaining a closed-loop system that enables continuous energy and mineral production.[13]

Where critical minerals are recovered from the brine, such as lithium, additional process water may be required to support those extraction technologies and maintain system stability. This extraction is of critical importance to the current administration, which has issued Executive Orders to accelerate critical mineral production and given out large grants and loans for lithium projects, as noted further below.

Water is a foundational requirement for geothermal energy production in the SSKGRA. Reduced water deliveries to the Imperial County not only threaten current geothermal operations but also threaten the significant growth in geothermal energy that is planned for

---

[11] Busse et al., Impact of geothermal expansion and lithium extraction in the Salton Sea known geothermal resource area (SS-KGRA) on local water resources, Environmental Research Letters (September 2024), *available at* https://iopscience.iop.org/article/10.1088/1748-9326/ad6a73/pdf.
[12] Cal. Nat. Res. Agency, *Salton Sea Long-Range Plan Appendix C: Water Use and Availability for Lithium Extraction* (2024), https://saltonsea.ca.gov/wp-content/uploads/2024/03/LRP-Appendix-C-Water-Use-and-Availability-for-Lithium-Extraction.pdf.
[13] Eylem Kaya et al., *Reinjection in Geothermal Fields: A Review of Worldwide Experience*, 15 RENEW. SUSTAIN. ENERGY REV. 47, 47 (2011).

the region and supported by federal, state, and regional governments.[14] Imperial County's Known Geothermal Resource Area has the potential to generate 4,000 MW annually from geothermal resources alone. Geothermal energy is not only an abundant domestic source of energy, but also improves electric grid stability, grid reliability, and grid resiliency, as geothermal facilities "provide[] a sustainable and stable source of electricity and are characterized as a baseload renewable resource" that can "help to restart the grid."[15] However, ramping up from 500 MW to 4,000 MW of production in Imperial County will require water. Reduced deliveries to the Imperial Dam and from it to Imperial County would impede development of geothermal and lithium/mineral extraction, given competing water uses in the region.

Impeding the County's geothermal potential would not only impact the grid and energy independence, it would also result in severe air quality and greenhouse gas impacts which have not been analyzed in the DEIS. Without expanded geothermal power, a renewable source of baseload power,[16] higher polluting natural gas power plants or other fossil fuel sources of baseload power will fill the gap by staying online or expanding.[17] The DEIS must study these impacts.

2. The DEIS fails to analyze major impacts to lithium extraction and battery production from reduced water diversions at the Imperial Dam

Lithium production in Lithium Valley not only uses water but is also related to geothermal production. Reduced geothermal production also substantially reduces the amount of lithium that can be extracted from SSKGRA brine. As the Lithium Valley Programmatic Environmental Impact Report describes, "[i]n Lithium Valley, brine can be extracted from the geothermal reservoir and serve as two beneficial resources: (1) a heat and pressure source for geothermal electricity production, and (2) a source of lithium. Lithium is dissolved in the brine, which is estimated to contain 4.1 to 18 million metric tons of lithium carbonate equivalent."[18] The lithium extraction potential from Imperial County is tremendous and tied closely to geothermal production, which is dependent on water

---

[14] Imperial Cnty. Plan. & Dev. Servs., *Lithium Valley Specific Plan: December 2025 Draft* (2025), https://imperialcounty.org/wp-content/uploads/2025/12/December-2025-Lithium-Valley-Specific-Plan-1.pdf
[15] Silvia Paz et al., *Blue Ribbon Comm'n on Lithium Extraction in Cal., Report of the Blue Ribbon Commission on Lithium Extraction in California* , Cal. Energy Comm'n (2022), https://efiling.energy.ca.gov/getdocument.aspx?tn=247861.
[16] Mukhtar A. Kassem & Andrea Moscariello, *Geothermal energy: A sustainable and cost-effective alternative for clean energy production and climate change mitigation*, 10 Sustainable Futures 1, 1 (2025), https://www.sciencedirect.com/science/article/pii/S2666188825008081.
[17] Imperial Cnty. Plan. & Dev. Servs., *Draft Program Environmental Impact Report: Lithium Valley Specific Plan Project* 2-2 (2025), https://lithiumvalley.imperialcounty.org/wp-content/uploads/2026/01/DRAFT-Lithium-Valley-Specific-Plan-Program-Environmental-Impact-Report_Combined.pdf [hereinafter "Lithium Valley PEIR"] ("While Lithium Valley currently contains ~400 megawatts (MW) of electricity production, the geothermal capacity of the region is estimated to be over 2,500 MW. (2023 National Labs.) Such energy sources qualify as low carbon energy under the State's renewable portfolio requirements, which mandate 90% of electricity be sourced from renewables by 2035 and 100% by 2045. (Pub. Util. Code § 454.53.)").
[18] Lithium Valley PEIR, p. 1-84.

supply. 3,000 MW of geothermal production in Imperial County would result in 600,000 tons of lithium produced a year[19] according to the California Energy Commission.[20]

The proposed alternatives in the DEIS would be a water supply shock to the region, not only impacting agricultural uses but also reducing the ability of the County to scale up geothermal and lithium production, with attendant climate and health impacts. The DEIS must be revised to account for these impacts.

A Berkeley Labs study recently demonstrated how energy production in Lithium Valley, despite not putting a strain on the region's water resources, could be jeopardized by the Colorado River (or in this case the Proposed Guidelines).[21]

B. Air Quality Impacts

1. The DEIS fails to account for particulate matter impacts from reducing water levels in the Salton Sea

The DEIS concedes that the Proposed Guidelines could reduce inflows to the Salton Sea by about one-third. Resulting drying of the Salton Sea will result in impact to air quality and public health which have not been disclosed in the DEIS. Over the past few decades, the dried lakebed due to the receding Salton Sea has released dust (PM_{10}) into the air, dust that contains pesticides and other toxic substances. A recent study estimated that soon 40 percent of the Salton Sea will be exposed to wind erosion, increasing PM_{10} emission 11% locally.[22] This exposure results in elevated rates of asthma and other respiratory conditions, especially in children.[23] The Proposed Guidelines promise to accelerate the drying out of the Salton Sea, yet the DEIS does not study resulting air quality impacts, nor does it consider mitigation measures. Reclamation should include any number of mitigation measures in a dust control plan, including funding for soil stabilizers, vegetation tailored to dust control, water conservation measures to mitigate respiratory impacts.[24]

2. The DEIS fails to account for particulate matter impacts from reduced water usage for dust control

---

[19] Lithium Valley PEIR, p. 1-84.
[20] Cal. Energy Comm'n, *Lithium Valley Vision*, https://www.energy.ca.gov/programs-and-topics/programs/lithium-valley-vision (last visited Feb. 28, 2026).
[21] Patrick Dobson et al., *Characterizing the Geothermal Lithium Resource at the Salton Sea* (2023), https://escholarship.org/content/qt4x8868mf/qt4x8868mf.pdf.
[22] Fangqi Guo et al., *Particulate Matter Levels and Children's Lung Function in a Rural Cohort Near a Drying Saline Lake*, 10 Environ. Epidemiol. e455, 1 (2026), https://pmc.ncbi.nlm.nih.gov/articles/PMC12788894/.
[23] *Id.*
[24] *See* U.S. Env't Prot. Agency, *Fugitive Dust Control Measures and Best Practices* (2022), https://www.epa.gov/system/files/documents/2022-02/fugitive-dust-control-best-practices.pdf. *See also* Lithium Valley PEIR, pp. 4.3-1 – 4.3-80.

Another major air quality impact completely ignored by the DEIS is impacts on water use within Imperial County that are *approved and recommended by the federal government* to control dust in construction, paving, and other activities. While the County's Air Quality Management Plan enables both water and chemical treatments to control dust,[25] the preferred method is water treatment, with the vast majority of treatment today (~95%) being with water. Reduced diversions from the Imperial Dam will shift the balance away from water treatment towards more expensive chemical stabilizers. Not only are the chemical stabilizers used for dust control much more expensive,[26] their health impacts are unanalyzed and undisclosed in the DEIS[(**Attachment B:** Imperial Reg VII BACM Assessment)].[27]

The DEIS contains no analysis of health impacts from increases in fugitive dust due to reduced water allocations in the Proposed Guidelines. There is similarly no analysis of the degree to which the action may adversely affect communities with environmental justice concerns. These foreseeable impacts are absent from the DEIS.

C. Biological Resources Impacts

1. The Draft EIS fails to adequately analyze the impacts of the Proposed Guidelines on species that rely on the Salton Sea

An EIS should include "any reasonably foreseeable adverse environmental effects which cannot be avoided should the proposal be implemented;" (42 U.S.C. § 4332(C)(ii.)

Furthermore, the EIS to be prepared must contain high-quality information and accurate scientific analysis. *Lands Council v. Powell*, 395 F.3d 1019, 1031 (9th Cir. 2005.) If relevant data is not available or not complete the EIS must disclose that fact. (*Id.*). Despite being alerted by scoping comments about the potential effects that major reductions in water could have on species habitat on the Salton Sea, Reclamation chose to ignore the effects of biological resources on migratory birds, native vegetation, and other species that rely on the Salton Sea. The U.S. Environmental Protection Agency recommended analyzing such impacts in its scoping letter:

> In addition, discuss the impacts of the alternatives on sensitive or ecologically diverse areas that depend on Colorado River water, including consistency with the Lower Colorado River Multi-Species Habitat Conservation Plan and the effects upon the Salton Sea. Address the prolonged drought that has prompted major reductions in water deliveries

[25] Imperial Cnty. Air Pollution Control Dist., *2018 Redesignation Request and Maintenance Plan for Particulate Matter Less Than 10 Microns in Diameter* (2018), https://apcd.imperialcounty.org/wp-content/uploads/2020/01/FinalPM10.pdf.
[26] U.S. Env't Prot. Agency, *Best Management Practices for Dust Control* (2021), https://www.epa.gov/system/files/documents/2021-11/bmp-dust-control.pdf.
[27] U.S. Env't Prot. Agency, *Our Current Understanding of the Human Health and Environmental Risks of PFAS*, https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas (last visited Feb. 28, 2026)..

> to the Imperial and Coachella Irrigation Districts and the transfer or sale of their water supplies away from agriculture toward cities in coastal southern California (Los Angeles and San Diego). Describe the ecological and temporal ramifications of any proposed reductions in water on migratory birds, fish, and wildlife populations, and how reductions may affect state and federal efforts to create or restore wetlands and wildlife habitat in the area. Address how restoration projects, as well as proposed lithium development in the Salton Sea region, may require augmentation of water supplies from the Pacific Ocean, the Sea of Cortez, or from reuse in Tijuana, Mexico and what direct, indirect, and cumulative effects may be attributed to imported water into the system. (EPA Scoping Letter, p. 10)

The State's Salton Sea Management Program notes the importance of water levels at the Salton Sea to migratory bird species:

> As the Salton Sea shrinks for a variety of reasons, air quality in Riverside, Imperial, and surrounding counties suffers, because particulates small enough to be dangerous to human health are picked up by the wind from the exposed lakebed. Huge populations of resident and migratory birds are at risk, too, especially the fish-eating birds that depend upon the tilapia that will no longer be able to survive in the Salton Sea if it grows increasingly salty. Sustainable habitat and air quality management at the Salton Sea is critical for the protection of regional public and ecological health, as well as the management of a stable Colorado River supply for California.[28]

The DEIS alone fails to analyze foreseeable biological resources impacts.

D. Socioeconomic Impacts

Under NEPA, human beings are part of the environment (42 U.S.C. §§ 4321–4347), so when an EIS is prepared and economic or social and natural or physical environmental effects are interrelated, the EIS should discuss all of these effects (A Citizen's Guide to NEPA, The Council on Environmental Quality (2021), p. 15).

1. The EIR does not adequately analyze socioeconomic impacts from diminished agricultural production

The DEIS acknowledges that Imperial County is highly dependent on agriculture and studies the impact of fallowing on the County: "Farm employment made up a larger percentage of the total employment in Imperial County than the rest of the counties in the analysis area" (Draft EIS, p. 16-12). However, it fails to account for the degree to which

[28] Cal. Nat. Res. Agency, *Salton Sea Management Program Phase I: 10-Year Plan* 26 (2018), https://resources.ca.gov/CNRALegacyFiles/wp-content/uploads/2018/10/SSMP-Phase-1-10-Year-Plan.pdf..

the rest of county employment depends on agriculture, and the extent to which county tax revenues depend on agriculture.

Imperial County's labor market is structurally concentrated in agriculture and agriculture-adjacent sectors. According to the May 2024 U.S. Bureau of Labor Statistics Occupational Employment and Wage Statistics, Farming, Fishing, and Forestry occupations account for approximately 6.4 percent of total employment in the El Centro Metropolitan Statistical Area, compared to approximately 0.3 percent nationally. Transportation and Material Moving occupations account for approximately 8.2 percent of local employment. A 2024 economic study found that 19,812 jobs in Imperial County were attributable to the agricultural industry, and one in six workers in Imperial County were employed in jobs directly attributable to the industry.[29]

Employment affected by impacts to agriculture include direct farm labor, agricultural support services, transportation, warehousing, food processing, and equipment maintenance. Because irrigated agriculture is the foundational industry supporting these employment clusters, reductions in Colorado River deliveries that result in acreage fallowing or crop switching would reasonably be expected to produce measurable employment contraction within these occupational groups, but these impacts are not studied nor disclosed in the DEIS.

The DEIS further fails to account for the socioeconomic impacts from reduced water flows hindering Lithium Valley geothermal and lithium production. As a result, it greatly underestimates economic losses and job losses.

Even while leaving out large categories of impacts, the DEIS estimates an annual reduction of $1.0 billion in *total California* economic output under the Enhanced Coordination Alternative (Draft EIS, p. 3-178). The County's Workforce & Economic Development analysis (**Attachment A**) estimates that under modeled acreage reduction scenarios associated with the Enhanced Coordination alternative, reductions in irrigated acreage could correspond to economic output reductions of approximately $248.9 million annually within Imperial County alone. The same scenarios project up to 700 losses in direct agricultural employment and in supply chain and local service sectors.[30] These estimates are conservative as they do not account for impacts on energy production or from urban decay, which are reasonable foreseeable impacts of lower water supplies to the County.

The Draft EIS also fails to disclose health and environmental impacts from urban decay that are foreseeable should the County's water supply be reduced to levels in the Proposed

[29] Imperial Cnty. Agric. Comm'r, *Economic Contributions of Imperial County Agriculture* (2024), p. 5: https://agcom.imperialcounty.org/wp-content/uploads/2024/07/ImperialCO_Ag_Report_2024_V25REV-SingPgs-1.pdf

[30] Estimates are scenario-based and reflect proportional reductions tied to modeled acreage and output assumptions; they are not presented as guaranteed outcomes, but as reasonable economic sensitivity scenarios based on the County's documented agricultural dependency.

Guidelines, levels that threaten both the County's current economic driver, agriculture, and potential future economic driver, energy. The Draft EIS notably includes no plans to fund fallowing of land: the federal government has previously funded programs like the Deficit Irrigation Program in Imperial County to mitigate economic impacts from low Colorado River flows.[31]

Because the proposed reductions will result in significant economic disruption to the region, Reclamation should strongly consider the No Action alternative in a revised draft or supplemental EIS that includes mitigation measures that protect counties like Imperial County that are highly dependent on water resources for economic sustainability. If Reclamation adopts an alternative that materially reduces deliveries to Imperial County, the Final EIS should include a workforce mitigation framework proportionate to modeled economic impacts. Such mitigation may include:

1. Federally funded agricultural workforce transition and upskilling programs;
2. Targeted infrastructure modernization employment initiatives;
3. Dust mitigation and environmental remediation workforce funding;
4. Support for geothermal and lithium workforce expansion to offset agricultural contraction;
5. Direct economic stabilization funding for highly water-dependent counties.

The absence of a workforce mitigation analysis or framework in the Draft EIS leaves a significant gap in the evaluation of reasonably foreseeable human environmental consequences, as required under NEPA.

E. Population and Land Use

1. The EIS fails to analyze the environmental impacts of crop switching

The DEIS finds that multiple alternatives would result in large scale fallowing of land and crop switching in the lower basin states. Describing land use impacts in the Enhanced Coordination alternative: the DEIS declares "[p]ro rata distribution mitigates concentrated impacts for junior users but introduces broader reductions, increasing risk of widespread crop switching and fallowing in both Arizona and California" (Draft EIS, p. ES-59). Despite these findings, the DEIS contains no analysis of the environmental impacts of such crop switching, on water, air quality, or biological resources. Large-scale fallowing

[31] Imperial Irrigation Dist., *Deficit Irrigation Program*, https://www.iid.com/water/water-conservation/deficit-irrigation-program (last visited Feb. 28, 2026).

of land will create foreseeable environmental impacts that must be analyzed within the EIS.

V. THE DRAFT EIS DOES NOT DISCLOSE CONFLICTS WITH FEDERAL AND STATE PLANS

NEPA requires federal agencies to disclose in an EIS any inconsistencies between a proposed action and approved state or local plans and laws (42 U.S.C. § 4332(2)(C)). Agencies must discuss the extent to which the agency would reconcile its proposed action with the plan (*Calvert Cliffs' Coordinated Committee v. Atomic Energy Commission*, 449 F.2d 1109 (D.C. Cir. 1971), *cert. denied*, 404 U.S. 942 (1972)). Reclamation's Draft EIS failed to even disclose, let alone analyze, possible conflicts between the proposed action and the objectives of Federal and State plans, policies and controls for the area concerned.

A. The DEIS Fails To Disclose Consistency With Federal Air Quality Management Plans

As discussed above, the Imperial County Air Quality Management Plan, a state implementation plan under the federal Clean Water Act, requires dust control measures in order to contain PM_{10} levels in Imperial County. These measures are directed specifically to address the fugitive dust issue within the region caused by receding water levels and exacerbated by certain developments such as construction and paving. Under this management plan, treatment with water is not only recommended but required for development activities.[32] The EIS does not address the inconsistency between the Proposed Guidelines reducing water apportionments while the Clean Air Act requires controlling dust with water. NEPA explicitly requires such analyses to avoid situations where federal obligations conflict, and this is one such circumstance. *Calvert Cliffs' Coordinated Committee v. Atomic Energy Commission,* 449 F.2d 1109 (D.C. Cir. 1971), cert. denied, 404 U.S. 942 (1972).

B. The DEIS Fails To Disclose How Energy Impacts Impede Federal Energy Reliability Plans

As detailed above, reduced water deliveries to Imperial County will greatly impede lithium development. Lithium battery storage systems assist electric service providers by integrating with renewable energy resources to provide evening and off-peak electric generation (Assembly Bill 2514 [2010], § 1). Batteries are in demand, as they provide considerable grid benefits. California alone has estimated a battery storage demand of 37 gigawatts by 2045 (CARB 2022).

Developing local sources of lithium is necessary to minimize national security threats: "Our national and economic security are now acutely threatened by our reliance upon

[32] Imperial Cnty. Air Pollution Control Dist., *2018 Redesignation Request and Maintenance Plan for Particulate Matter Less Than 10 Microns in Diameter* (2018), https://apcd.imperialcounty.org/wp-content/uploads/2020/01/FinalPM10.pdf.

hostile foreign powers' mineral production. It is imperative for our national security that the United States take immediate action to facilitate domestic mineral production." (The White House, March 2025). Federal regulations characterize lithium as an "Applicable Critical Material." That label emphasizes reducing reliance on foreign controlled sources of lithium (88 FR 51792) (promulgated pursuant to 30 U.S.C. 1606(a)(3); Pub. Law 117-169; 26 USC § 45X(a)(6)(P)).

Evidence of the federal government's interest in developing Lithium Valley is the numerous federal grants and loans disbursed within the County to explore and extract lithium. In January 2025, the Department of Energy's Loan Programs Office announced a 1.36 billion loan to "finance the construction, equipping, and operation of a facility in Imperial County, California, to produce lithium hydroxide from geothermal brine."[33] Yet the EIS fails to analyze inconsistencies with the Lithium Valley Specific Plan.[34]

VI. THE DRAFT EIS DOES NOT INCLUDE A REASONABLY COMPLETE DISCUSSION OF MITIGATION MEASURES TO IMPACTS IN IMPERIAL COUNTY

NEPA requires the discussion of mitigation measures in impact statements by requiring the discussion of "any adverse environmental effects which cannot be avoided." Section 102(2)(C). CEQ regulations implement this requirement by requiring the discussion of mitigation measures in impact statements. 40 C.F.R. §§ 1502.14(f), 1502.16(h). *See also* 40 C.F.R. § 1505.2(2)(c) (requiring inclusion of mitigation measure discussion in record of decision). CEQ regulations define mitigation as "rectifying" environmental impacts by repairing, restoring or rehabilitating the affected environment, reducing or eliminating the impact over time through preservation or maintenance, and compensating for the impact by providing substitute resources. The Supreme Court held that the requirement that an agency discuss mitigation measures is implicit in "NEPA's demand" and CEQ regulations. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332 (1989). The omission of a "reasonably complete discussion" of mitigation measures would undermine NEPA's action-forcing functions. Without such a discussion, neither the agency nor other interested groups or individuals could properly evaluate the severity of the adverse effects of the action.

An EIS that does not discuss mitigation measures is not compliant with NEPA.

> [O]mission of a reasonably complete discussion of possible mitigation measures would undermine the "action forcing" function of NEPA. Without such a discussion, neither the agency nor other interested groups

[33] Off. of Energy Dominance Fin., *LPO Announces Conditional Commitment for Project ATLiS for Lithium Hydroxide Production in California*, U.S. Dep't of Energy (Jan. 15, 2025), https://www.energy.gov/edf/articles/lpo-announces-conditional-commitment-project-atlis-lithium-hydroxide-production.
[34] Imperial Cnty. Plan. & Dev. Servs., *Lithium Valley Specific Plan: December 2025 Draft* (2025), https://imperialcounty.org/wp-content/uploads/2025/12/December-2025-Lithium-Valley-Specific-Plan-1.pdf

and individuals can properly evaluate the severity of the adverse effects (*Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352, 371 (1989)).

As discussed in prior sections, the DEIS includes no consideration of mitigation measures to defray the considerable energy, air quality, biological resources, and socioeconomic costs from drastically lower river diversions into Imperial County and resulting impacts to the Salton Sea. This absence of discussion is in violation of NEPA.

VII. THE DEIS FAILS TO DISCLOSE THE IMPACTS OF CLIMATE CHANGE ON COLORADO RIVER WATER LEVELS AND THE IMPACTS OF THE PROPOSED GUIDELINES ON GREENHOUSE GASES

The Draft EIS includes no discussion of the project's impacts associated with greenhouse gasses and climate change, which has already impacted Colorado River flows, which have been reduced by nearly 20 percent since 2000.[35] This omission simply ignores the substantial evidence demonstrating that Colorado River flows are lower because of climate change.[36] The omission is a fundamental flaw in the entire EIS and fundamentally skews the analysis and accuracy of the alternatives analysis in the DEIS. Without accounting for a major factor influencing flows. This precludes the Bureau of Reclamation from meeting its statutory obligations to consider a reasonable range of alternatives and weigh their impacts, as required by NEPA (42 U.S.C. §4332(C)(iii.)).

The Draft EIS also includes no discussion of the Proposed Guidelines impacts on greenhouse gases ("GHG") and by proxy climate change. As detailed in Section IV.A, the Proposed Guidelines would impede carbon-free geothermal production in Imperial County by reducing water supply for geothermal production. The Proposed Guidelines would also reduce the potential to produce lithium in Imperial County, as that potential is tied to geothermal production. Lithium plays an integral role in decarbonization. It enables battery storage systems that can pair with solar and wind resources to produce renewable power throughout the day. Furthermore, Imperial County has the potential to produce enough lithium for 375 million electric vehicle batteries.[37] Such production would facilitate major decarbonization of mobile sources.

The DEIS should have analyzed the GHG impacts of reduced water supplies to Imperial County and its energy production plans. Courts have held that where GHG emissions were foreseeable and significant, they must be analyzed within the NEPA process (*Sierra Club v. Federal Energy Regul. Comm'n*, 867 F.3d 1357 (D.C. Cir. 2017); *see also Food &*

[35] Nature Conservancy, *A River in Crisis* (Aug. 28, 2022), https://www.nature.org/en-us/about-us/where-we-work/priority-landscapes/colorado-river/colorado-river-in-crisis.
[36] Benjamin A. Cook et al., *Twenty-First-Century Drought Projections in the Colorado River Basin*, 32 J. Climate 8171, 8171 (2019), https://journals.ametsoc.org/view/journals/clim/32/23/jcli-d-19-0207.1.xml.
[37] Cal. Energy Comm'n, *Lithium Valley Vision*, https://www.energy.ca.gov/programs-and-topics/programs/lithium-valley-vision (last visited Feb. 28, 2026).

Water Watch v. Federal Energy Regul. Comm'n, 28 F.4th 277 (D.C. Cir. 2022) (FERC violated NEPA by failing to consider the reasonably foreseeable downstream effects of increased greenhouse gas emissions from approval of a natural gas pipeline and compressor station); *Sovereign Iñupiat for a Living Arctic v. Bureau of Land Mgmt.*, 555 F. Supp. 3d 739 (D. Alaska 2021) (NEPA violation when BLM failed to consider downstream greenhouse gas emissions from foreign consumption of oil and gas); *Utah Physicians for a Healthy Env't v. U.S. Bureau of Land Mgmt.*, 528 F. Supp. 3d 1222 (D. Utah 2021) (BLM violated NEPA by failing to quantify the socioeconomic costs of direct and indirect GHG emissions in a coal lease expansion)).

The DEIS does not address how the existing and future effects of climate change—such as increased temperatures, sea-level rise, or increased storm frequency—will interact with the project over its lifetime. The agency must analyze whether the project itself is resilient to these changes or if it will exacerbate the vulnerability of surrounding communities to climate risks.

VIII. CONCLUSION

Reclamation has failed to proceed in the manner required by NEPA. Reclamation's Draft EIS is legally insufficient. Before proceeding to issue a Final EIS, Reclamation must first prepare a revised draft or supplemental EIS for public review and comment that (1) includes an alternative with a more equitable distribution of reductions between upper and lower basin states, (2) analyzes the impacts of reduced flows on Imperial County and the Salton Sea, and (3) considers mitigation measures to address these impacts.

Very truly yours,



Bari Bean
Assistant County Executive Officer
BariBean@co.imperial.ca.us
(760) 604-1956

Attachment A

Imperial County Workforce & Economic Development
Division of Workforce & Business Services

Priscilla Lopez
ICWED Director

2799 S. 4th Street
El Centro, CA 92243
Tel: (760) 337-5000
Fax: (760) 370-5005

February 23, 2026

U.S. Bureau of Reclamation
Colorado River Basin – Post-2026 Operations
Draft Environmental Impact Statement

Subject: Comments on Draft EIS – Post-2026 Colorado River Operational Guidelines

Dear Sir or Madam,

The County of Imperial respectfully submits the following comments on the Draft Environmental Impact Statement (Draft EIS) for Post-2026 Colorado River Operational Guidelines. Imperial County recognizes the hydrologic challenges facing the Colorado River Basin and supports durable, science-based operational policies that protect long-term system sustainability and public safety. At the same time, the County requests that the Final EIS explicitly analyze and mitigate disproportionate economic and workforce impacts to heavily water-dependent, agriculture-centered communities in the Lower Basin. Imperial County's documented economic exposure to Colorado River operational decisions is significant and measurable:

Imperial County's 2024 Agricultural Crop & Livestock Report documents $2,488,876,000 in total gross agricultural value and 526,967 harvested acres (multi-cropping included). Within that same report, major commodity categories include Livestock ($705,759,000), Field Crops ($519,727,000), and Vegetable & Melon Crops ($1,026,169,000). The Bureau of Labor Statistics (Quarterly Census of Employment and Wages) reports 65,495 covered employees in Imperial County (December 2024) and an average weekly wage of $1,083 (Q4 2024). BLS Occupational Employment and Wage Statistics for the El Centro metropolitan area (Imperial County) shows Farming, Fishing, and Forestry occupations represent 6.4% of local employment with a mean hourly wage of $19.96 (vs. 0.3% nationally), with Transportation and Material Moving also a major local occupational group with a mean hourly wage of $22.38 (8.2%).

The documented occupational concentration demonstrates that Imperial County's labor market is structurally more dependent on agricultural production and commodity movement than the national average. As a result, increased shortage frequency, delivery variability, or conservation pressure under post-2026 operational guidelines would reasonably increase employment volatility for: (1) planted and harvested acreage; (2) agricultural production value; (3) seasonal and year-round employment in farming and related sectors; and (4) countywide economic

activity supported by agriculture-adjacent services (transportation, equipment repair, supplies, and other local business activity).

The connection between Colorado River operational decisions and Imperial County's workforce is structural and data-based: agricultural production (NAICS 11) depends on reliable irrigation; transportation and warehousing (NAICS 48-49) depend on agricultural throughput; and the County's occupational structure shows elevated concentrations in farming and commodity movement roles. These relationships are documented in federal labor datasets and are not speculative. Accordingly, the County requests that the Final EIS include the following actions and commitments:

1. County-level socioeconomic analysis for Lower Basin agricultural regions, including employment, labor income, business output, and small business sensitivity reported transparently by county, not solely as basin-wide averages.
2. Operational predictability safeguards that preserve priority-based reliability for senior water rights holders and reduce uncertainty that drives planting, financing, and investment decisions.
3. An embedded, proportional mitigation framework tied to modeled socioeconomic impacts, including workforce stabilization and economic mitigation funding that scales with the magnitude of impacts shown in the Final EIS.
4. Formal coordination pathways between the Bureau of Reclamation and federal/state partners (e.g., U.S. DOL, EDA, USDA, DOI programs) to deliver rapid response, upskilling, infrastructure, and community resilience investments in impacted counties.

Imperial County is prepared to collaborate on solutions that advance river system sustainability while sustaining the communities and industries that depend on reliable water deliveries. Sustainable river management must also sustain the communities that feed the nation and support regional economic stability.

Respectfully,

Priscilla Avendaño Lopez
Director
Imperial County Workforce & Economic Development

REFERENCE A

Agricultural & Workforce Impact Analysis (Planning Scenarios)

Gross Agricultural Production (2024): $2,488,876,000
Harvested Acres (2024): 526,967
Covered Employment (Dec 2024): 65,495
Average Weekly Wage (Q4 2024): $1,083
Farming, Fishing, & Forestry occupational share (El Centro MSA): 6.4%

Scenario	Acreage / Intensity Reduction	Acres Affected	Illustrative Gross Production Impact
Moderate	2%	10,539	$49.8M
High	5%	26,348	$124.4M
Severe	10%	52,697	$248.9M

Workforce Sensitivity (Illustrative Range):
Moderate: 90–140 jobs impacted
High: 225–350 jobs impacted
Severe: 450–700 jobs impacted

REFERENCE B

County Fiscal & Revenue Sensitivity Analysis

While agricultural production itself is not taxed as gross output, reduced agricultural throughput affects local revenues through taxable transactions (fuel, supplies, parts, equipment purchases, and service contracting) and through reduced consumer spending tied to seasonal labor income.

*Planning assumptions used for sensitivity estimates constructed to show order-of-magnitude exposure, not exact revenue loss (conservative):

- 30% of gross production impact flows through taxable local transactions (inputs and services).
- 1% local sales tax sensitivity (illustrative planning figure; actual allocations vary by jurisdiction and taxable base).
- Secondary consumer spending effect estimated conservatively at 20% of lost labor income.

Scenario	Gross Production Impact	Estimated Taxable Flow (30%)	Illustrative Local Sales Tax Sensitivity (1%)
Moderate	$49.8M	$14.9M	$149,000
High	$124.4M	$37.3M	$373,000
Severe	$248.9M	$74.7M	$747,000

Scenario	Estimated Jobs Impacted (Midpoint)	Estimated Annual Wage Impact	Illustrative 20% Local Spending Reduction
Moderate	115	$6.5M	$1.3M
High	288	$16.2M	$3.2M
Severe	575	$32.4M	$6.5M

REFERENCE C

Workforce & Economic Mitigation Framework

Recommended mitigation strategies to be incorporated into Final EIS implementation planning:

- Establish a Basin-Wide Workforce Mitigation Fund to support rapid response, dislocated worker services, and short-cycle upskilling aligned to local demand.
- Implement paid conservation programs (not uncompensated reductions) with local hire provisions and training alignment for monitoring/verification and retrofit work.
- Invest in irrigation modernization, measurement/telemetry, and efficiency projects that create local construction and technician jobs.
- Expand training pipelines in CDL, equipment operation, industrial maintenance (mechanical/electrical), and jobsite safety to support both agriculture-adjacent needs and emerging industries.
- Coordinate cross-sector hiring through County, IID, employer partnerships to align project timelines, training seats, and hiring commitments.

Imperial County supports responsible river management. However, operational alternatives must include county-level modeling, explicit mitigation funding, and workforce stabilization mechanisms to ensure long-term community and economic sustainability in disproportionately impacted Lower Basin counties.

Attachment B

ENVIRON

Air Sciences

DRAFT FINAL
TECHNICAL MEMORANDUM
REGULATION VIII BACM ANALYSIS

Prepared for

Imperial County Air Pollution Control District
150 South 9th Street
El Centro, CA. 92243-2801

Prepared by

ENVIRON International Corporation
707 Wilshire Blvd., Suite 4950
Los Angeles, CA 90017

October 2005

TABLE OF CONTENTS

Page

1. INTRODUCTION 1
Background 1
Best Available Control Measure (BACM) Development and Assessment 2
Purpose 3
Report Organization 4

2. DETERMINATION OF PM_{10} DE MINIMUS LEVELS 5
Background 5
Ambient PM_{10} and Related Emission Inventories 5
Calculation of DM Levels 7
Analysis of Major PM_{10} Stationary Sources 8

3. SIGNIFICANT AND DE MINIMIS SOURCE CATEGORIES 9
Emission Inventory 9
Inventory Discussion 10
Conclusions 15

4. COMPARATIVE ANALYSIS 17
Introduction 17
Comparative Analysis for Significant Sources 18
Sources on BLM Lands 18
Comparative Analysis for Sources With Emissions Less Than the DM Level 38

5. IMPACT ANALYSIS 39
Control Effectiveness and Cost Information 39
PR 801: Construction 40
PR 802: Bulk Materials 40
PR 803: Carry-out and Track-out 41
PR 804: Open Areas 41
PR 805: Paved and Unpaved Roads 42
PR 806: Conservation Management Practices 42
Cost-Effectiveness 43

6. CONCLUSIONS 58

TABLE OF CONTENTS
(Continued)

Page

APPENDICES

Appendix A: Technical Memorandum: Latest Revisions of the Windblown Dust Study

Appendix B: Entrained and Windblown Emissions From Unpaved Roads

Appendix C: Detailed Comparative Analysis for Significant Sources

Appendix D: Detailed Comparative Analysis for Sources Below the De Minimis Level

Appendix E: Draft Regulation VIII Rules and Rule Amendments (dated October 2005)

Appendix F: BLM Environmental Assessment and Finding of No Significant Impact

TABLES

Table 2-1. Annual Average PM_{10} levels in µg/m3 6

Table 2-2. 24-Hour Average PM_{10} levels in µg/m3 6

Table 2-3. Annual Average PM_{10} Emission Inventories for Imperial County in tons/day (Only non-zero categories are reported) 7

Table 2-4. Summer Average PM_{10} Emission Inventories for Imperial County in tons/day (Only non-zero categories are reported) 7

Table 3-1. 2004 Annual Average PM_{10} Emission Inventories for Imperial County in tons/day 9

Table 3-2. Windblown Emissions from Lands by Month and Annual Average (tons/day)....12

Table 3-3. Windblown Emissions from Unpaved Roads 13

Table 3-4. Entrained Unpaved Road Emissions....14

Table 3-5. Imperial County Cattle-Related PM_{10} Emissions 15

Table 3-6. Significant Source Categories of PM_{10} (2004 emissions in tons/day)....16

Table 3-7. De Minimis Source Categories That Emit Greater than 1 ton/day of PM_{10} (These are NOT significant source categories)....16

Table 3-8. De Minimus Source Categories That Emit Less than 1 ton/day of PM_{10} 16

Table 4-1. Dust Control Source Categories for Sources above the DM Level 18

Table 4-2. Dust Control Source Categories For Sources Above the DM Level 21

Table 4-3. Dust Control Source Categories For Sources Below the DM Limit....38

Table 5-1. Proposed Regulation VIII Emission Reduction Summary 39

TABLE OF CONTENTS
(Continued)

Page

Table 5-2. Cost-effectiveness of measures in Proposed Rule 801 – Construction and Demolition 45
Table 5-3. Cost-effectiveness of measures in Proposed Rule 802 – Bulk Materials 46
Table 5-4. Cost-effectiveness of measures in Proposed Rule 803 – Track-out and Carry-out ...47
Table 5-5. Cost-effectiveness of measures in Proposed Rule 804 – Open Areas 48
Table 5-6. Cost-effectiveness of measures in Proposed Rule 805 – Paved and Unpaved Roads.....49
Table 5-7. Cost-effectiveness of measures in Proposed Rule 806 – Conservation Management Practices 51
Table 5-8 Senate Bill 656 Measures Not in the Proposed Regulation VIII Amended Rules.....52

FIGURES

Figure 1-1: Imperial County 1
Figure 3-1: Land Use and Land Classification Categories in Imperial County 11

ABBREVIATIONS AND ACRONYMS

ADVT	Average daily vehicle trips
BLM	U.S. Department of Interior Bureau of Land Management
BMP	Best Management Practice (agriculture)
BP	Border Patrol
CAA	Federal Clean Air Act
CARB	California Air Resources Board
CMP	Conservation Management Practice (agriculture)
IC	Imperial County
ICAPCD	Imperial County Air Pollution Control District
IID	Imperial Irrigation District
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
PM	particulate matter
PM_{10}	particulate mater less than 10 μm in aerodynamic diameter
SCAQMD	South Coast Air Quality Management District
SIP	State Implementation Plan
SJV	San Joaquin Valley
SJVAPCD	San Joaquin Valley Unified Air Pollution Control District
TSP	total suspended particulates (less than 30 ∝m in aerodynamic diameter)
USEPA	United States Environmental Protection Agency
VDT	Vehicle daily trips
$\mu g/m^3$	microgram per cubic meter
μm	micron or micrometer

1. INTRODUCTION

Background

Imperial County is located in the southeastern portion of California and borders Mexicali, Mexico. The climate is hot and dry, ranging from lows in the mid 30's in January to highs of 110°F+ in July and August (mean annual temperatures: low-55.0°F; of high-89.6°F), with little moisture (average annual rainfall: 2.92 inches; 25 percent average relative humidity). Imperial County extends over 4,597 square miles, bordering Mexico to the south, Riverside County to the north, San Diego County to the west, and the State of Arizona to the east. The terrain varies from 235 feet below sea level at the Salton Sea to 4,548 feet above sea level at Blue Angel Peak. The population of all of Imperial County is about 149,300 people. The principal industries are farming and retail trade. Most of the population, farming, and retail trade exists in a band of land on average less than 1/4th the width of the county that stretches from the south shore of the Salton Sea to the Mexican border, where road network is densest, as shown in Figure 1.

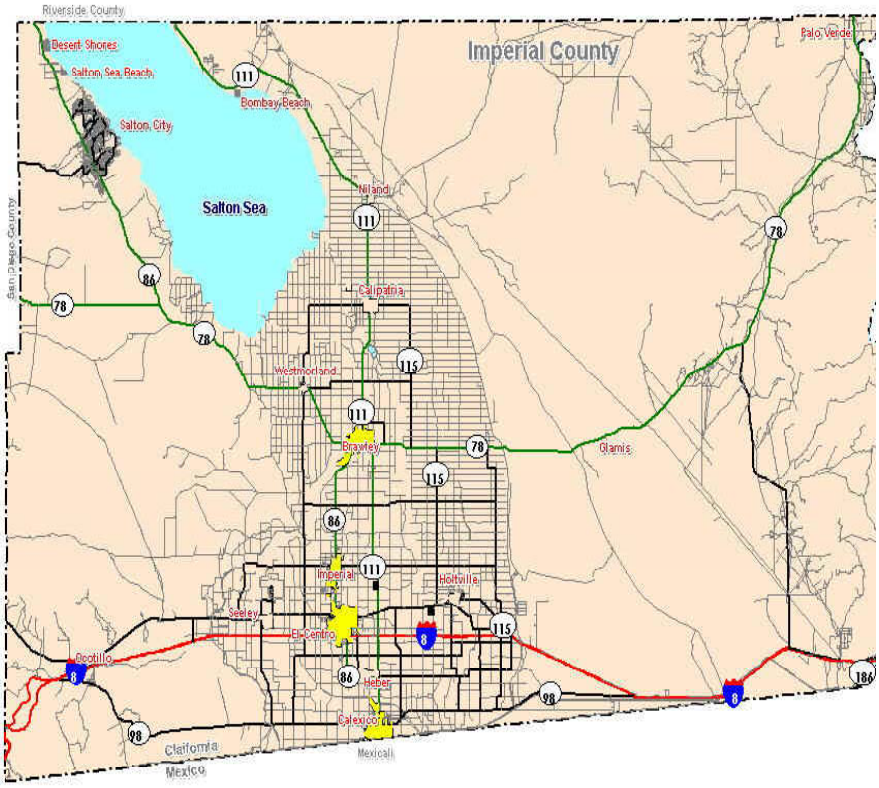


Figure 1-1: Imperial County

Much of the rest of Imperial County is desert or barren areas that are sparsely populated or unpopulated. In Imperial County, elevated PM_{10} levels can result from disturbance of soils by wind and human activity, and from transport from Mexico. Likely PM_{10} sources include the large desert areas (during high winds), unpaved roads, waste burning, agriculture, vacant lots, Immigration and Naturalization Service (Border Patrol) activities along the border, and Mexican sources.

Best Available Control Measure (BACM) Development and Assessment

USEPA issued a finding on August 3, 2004 that Imperial Valley failed to attain the PM_{10} NAAQS by the statutory deadline of December 31, 1994, and therefore reclassified the area from a moderate to a serious PM_{10} nonattainment area. Also on August 3, 2004, USEPA proposed to find that the Imperial Valley failed to attain by the serious area attainment date of December 31, 2001. The proposed rule generally described the necessary plan requirements and would require Imperial County submit its clean air plan, including BACM, within one year of the final action. As of the date of this report, USEPA has not taken final action. In addition, ICAPCD on August 9, 2005 approved a natural event action plan (NEAP) to support the exclusion of natural events from attainment determinations, as allowed by USEPA's Natural Event Policy (NEP). Although the final action by USEPA has not occurred, ICAPCD has proposed Regulation VIII BACM rules. EPA guidance recommends the following procedure for demonstrating the BACM has been implemented on all significant sources:

- Inventory sources of PM_{10} and PM_{10} precursors
- Determine a de minimis level for each pollutant
- Identify significant source categories
- Identify candidate control measures/technologies
- Evaluate alternative control technologies for:
  - Technical feasibility analysis
  - Economic feasibility analysis
  - Environmental impacts
  - Select and implement measures

Traditionally, BACM development and assessment would be based on the State Implementation Plan (SIP) and its technical analyses. Key technical issues concerning emission inventory and natural events have not been resolved at this time. Unlike other serious non-attainment areas, ICAPCD is preparing its fugitive dust BACM in advance of the development and approval of a SIP. ICAPCD has prepared proposed Regulation VIII BACM (based on other recent serious area BACM rules) to meet the requirements of the NEP and to expedite BACM emission reductions. In

March 2004, ICAPCD began a review and assessment of BACM in other areas, which it has used as the basis on its proposed Regulation VIII BACM amendments. In October 2004 it gave a BACM presentation to local stakeholders that initiated the BACM rule development. ICAPCD prepared and released proposed Regulation VIII BACM rules in December 2004. These rules are being developed through a public process that includes a local Technical Advisory Committee (TAC). Membership in the TAC group includes representatives from Coalition of Labor and Business (COLAB), Farm Bureau, farmers, private industry, Bureau of Land Management (BLM), Border Patrol, Imperial Irrigation District, County Public Works Department and APCD. The initial meeting was December 16, 2004, with subsequent meetings held on January 4, 2005, January 11th, January 24th, and March 22nd. For the first time, on March 23, 2005, the TAC held a meeting with EPA to review EPA's comments and receive information that would be useful in amending Regulation VIII rules. ARB participated by teleconference. The ICAPCD also conducted six public workshops to collect comments on Regulation VIII rules in Brawley, El Centro and Holtville. Workshop were held on May 31st, June 1st (two workshops) and June 2nd (two workshops), and August 4th. ICAPCD then re-submitted the Draft Regulation VIII Rules to EPA and ARB, for a second time, for informal comments. The EPA and ARB commented on these rules. On August 10, 2005, the district held a meeting with ARB and EPA at ARB's headquarters, in Sacramento, to discuss their comments. An agreement was reached with EPA if their comments were addressed, that Regulation VIII rules would be declared BACM. Informal comments on these rules were also submitted by US Marine Corps and the California Department of Transportation (Caltrans). The current schedule is for the ICAPCD Board to hold an adoption hearing in November 2005.

Purpose

This report presents the BACM determination based on proposed Regulation VIII amendments. It includes all elements of a BACM determination, including inventory assessment, calculation of the de minimis emission level, identification of significant sources (e.g. those sources which emit more than the de minimis level of emissions), a comparative analysis of proposed Regulation VIII amendments for significant sources with regulations adopted by serious PM_{10} non-attainment areas, and a presentation of the cost-effectiveness of individual dust control measures. The proposed Regulation VIII BACM amendments are based on BACM recently adopted by other serious non-attainment areas. As shown in this report, they apply to all significant fugitive dust sources in Imperial County and certain non-significant sources. This technical memorandum is based on USEPA's guidance on BACM development and assessment, including: 1) an inventory sources of PM_{10} and PM_{10} precursors, 2) determination a de minimis level for each pollutant, 3) identification of significant source categories, 4) a comparative analysis of proposed Regulation VIII amendments and BACM in other serious non-attainment areas, and 5) emission reductions and costs associated with proposed Regulation VIII rules, as well as the cost-effectiveness of Regulation VIII measures

based on previous BACM analyses. These elements of a BACM assessment traditionally done in a SIP are being developed outside of the traditional SIP process to meet the requirements and schedule of the NEP and accelerate BACM implementation.

Report Organization

This report is organized as follows:

- Section 2 presents a determination of PM_{10} De Minimis Levels for Imperial County based on the current emission inventory and ambient measurements.
- Section 3 assesses the current PM_{10} emission inventory and identifies the potentially significant sources of PM_{10}. This also includes an analysis of major stationary sources.
- Section 4 presents the comparative analysis of the proposed Regulation VIII amendments with BACM in other serious PM_{10} non-attainment areas.
- Section 5 presents the cost-effectiveness of proposed Regulation VIII amendments based on the cost-effectiveness analyses of previous BACM determinations.
- Section 6 presents the conclusions and recommendations of this report.
- Appendix A is an ENVIRON Technical Memorandum that presents the latest revisions of the Windblown Dust Study, which is used to calculate windblown from all sources except unpaved roads.
- Appendix B presents the updated entrained and windblown unpaved road emission estimates.
- Appendix C presents a detailed comparative analysis on a source-by-source basis for all proposed Regulation VIII rules for those sources with emissions above the de minimis emissions level.
- Appendix D presents a detailed comparative analysis on a source-by-source basis for all proposed Regulation VIII rules for those sources with emissions below the de minimis emissions level. A comparative analysis is not required for these sources and is presented for informational purposes only.
- Appendix E contains the version of the proposed Regulation VIII rules dated October 2005. This analysis is based upon this version of the proposed rules.
- Appendix F is the Environmental Assessment and Finding of No Significant Impact prepared by BLM in April 2002 for Road and Trail Maintenance related to Border Patrol activities in Imperial County.

2. DETERMINATION OF PM_{10} DE MINIMUS LEVELS

Background

USEPA has established de minimis (DM) criteria for source categories contributing to PM_{10}. Specifically, USEPA has established a source category contribution level of 1 $\mu g/m^3$ based on the annual average PM_{10} national ambient air quality standard (NAAQS) and 5 $\mu g/m^3$ based on the 24-hour PM_{10} NAAQS[1]. If a source category contributes more than these levels to measured ambient PM_{10} concentrations in a serious nonattainment area, then BACM and/or Best Available Control Technology (BACT) are required to be implemented for that source. (BACM applies to certain area sources and BACT applies to stationary, mostly point, sources). The purpose of this report is to determine the DM conditions, on an emission per $\mu g/m^3$ basis, for sources of primary PM_{10} in Imperial County. (Ambient PM_{10} in most of Imperial County (e.g., those areas which do not border Mexicali) is overwhelmingly primary PM_{10}, with little or no contribution from secondary aerosols). Once the DM levels are determined, then any source category which exceeds those limits would be subject to BACM/BACT. For individual stationary sources that meet the state and/or federal definition of PM_{10} major source, the last section of this chapter identifies those sources, whether BACT has been imposed (based on the date of the latest major modification permit), and, if BACT has not been applied, an assessment of the impact of the source's emissions on ambient concentrations, relative to the significance thresholds. The BACM/BACT requirement does not apply to mobile sources of emissions.

Ambient PM_{10} and Related Emission Inventories

The DM level is calculated using the ambient PM_{10} data and the related emission inventory. There are six PM_{10} stations in Imperial County; from north to south, Niland, Westmorland, Brawley, El Centro, Calexico-Grant, and Calexico-Ethel. The last two stations are located in Calexico, next to the greater Mexicali, Mexico area. As shown in previous 179B(d) submittals, measures in excess of the annual average PM_{10} standard at the Calexico stations would not have occurred but for Mexican PM_{10} sources[2]. Since BACM and BACT can only be applied to U.S. sources, the Calexico stations will be excluded from the DM level determination. It is expected and assumed that ambient PM_{10} at these non-border ambient air monitoring stations is overwhelmingly primary PM_{10}. (This is a conservative assumption when calculating the DM level, e.g., it produces the

[1] State Implementation Plans for Serious PM_{10} Non-Attainment Areas, and Attainment Date Waivers for PM_{10} Non-Attainment Areas Generally; Addendum to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, Federal Register, Vol. 59, No. 157, August 16, 1994.

[2] "Imperial County PM_{10} Attainment Demonstration," prepared by ENVIRON for the Imperial County Air Pollution District, July 2001.

smallest DM level.) The annual average PM_{10} levels for 2002 through 2004 for the non-Calexico stations are presented in Table 2-1, including the location of the maximum.

Table 2-1. Annual Average PM_{10} levels in µg/m3

	2002	2003	2004
Annual Average PM_{10}	57.1 (Westmorland)	73.5 (Westmorland) 60.3 without the flagged wildfire event	56.3 (Westmorland)

The peak 24-hour average values are not as straightforward. Table 2-2 reports the peak 24-hour average PM_{10} values for 2002 through 2004. The peak 24-hour average PM_{10} in 2003 was due to a wildfire event that has been flagged by USEPA as natural event. The more representative 2nd peak 24-hour average PM_{10} values have been provided as more representative of local emissions. It should be noted that ICAPCD has requested that the August 18, 2002 and August 19, 2003 PM_{10} readings be flagged as natural events; however, for the purposes of this analysis, these readings will be used in the calculation of the DM level. (Using lower 24-hour average readings would increase the DM level, so this is a conservative approach.)

Table 2-2. 24-Hour Average PM_{10} levels in µg/m3

	2002	2003	2004
Peak 24-Hour Average PM_{10}	297 (Westmorland 8/18)	840[1] (Westmorland 10/30) 2nd high: 162 (8/19)	354 (Brawley 2/18) 2nd high: 201 (Westmorland 8/13)

[1] Wildfire event on October 30, 2003

Except for the miscellaneous emissions category, emission data are from CARB 2004 emission inventory. The 2004 emissions inventory is used since this is the latest published inventory and there is little variation in the inventory over the 2002 through 2004 timeframe. The miscellaneous category includes fugitive dust sources such as windblown dust emissions, entrained unpaved and paved road emissions, construction emissions, and emissions from crop and cattle farming operations. A more detailed description of the emission inventory can be found in Chapter 3. Table 2-3 summarizes the Imperial County PM_{10} emissions, based on the CARB's published inventory and revisions to the miscellaneous source emissions described in Chapter 3:

Table 2-3. Annual Average PM_{10} Emission Inventories for Imperial County in tons/day (Only non-zero categories are reported)

Category	Year 2004
Fuel Combustion	0.41
Industrial	2.77
Miscellaneous[1]	279.98
On-Road Mobile	0.38
Other Mobile	0.69
Total	**284.23**

[1] Miscellaneous source emissions are based on 2004 CARB estimates or revisions to the CARB estimates. See Chapter 3 for details.

Since peak 24-hour emissions are not reported, our analysis relies on CARB's reported peak seasonal (e.g. summer) inventories. For miscellaneous source emission estimate, annual average emission estimates are used for all sources except that the 24-hour hour average windblown emissions during the highest emitting month are used for non-unpaved road area sources (e.g. agricultural fields, shrub land, barren desert areas and dunes). These emissions will underestimate the peak day emissions, since they do not reflect the highest wind days.

Table 2-4. Summer Average PM_{10} Emission Inventories for Imperial County in tons/day (Only non-zero categories are reported)

Category	Year 2004
Fuel Combustion	0.49
Industrial	2.76
Miscellaneous	543.33
On-Road Mobile	0.38
Other Mobile	0.74
Total	**547.7**

[1] Miscellaneous source emissions are based on 2004 CARB estimates or revisions to the CARB estimates. Windblown emissions from all areas except unpaved roads are based on highest emission month. See Chapter 3 for details.

Calculation of DM Levels

The DM level is calculated by determining the emissions that are proportional to either 1 $\mu g/m^3$ (annual average) or 5 $\mu g/m^3$ (24-hour average), based on the ambient data. The annual average DM level is derived from dividing the 2004 PM_{10} emissions of 284.23 tons/day by the average (2002

through 2004) ambient measurements of 57.9 $\mu g/m^3$; the annual average DM is thus 4.9 tons/day per $\mu g/m^3$. (The wildfire event was excluded from the 2003 annual average, since it is unrepresentative of the annual average emissions. On a year-by-year basis, changing only the annual average PM_{10} maximum concentrations, the DM level calculation would be 5.0 for 2002, 4.7 for 2003, and 5.0 for 2004.)

For the 24-hour average, the summer average emissions (547.2 tons/day) are divided by the average ambient 24-hour PM_{10} levels (271 $\mu g/m^3$) and then multiplied by 5 (the DM is set by emissions proportional to 5 $\mu g/m^3$). This is very conservative since the summer and/or monthly average inventory will be smaller than the peak 24-hour inventory. The calculations exclude the wildfire events (10/30/03) as unrepresentative of local emissions and unrelated to the emissions inventory. The DM level for the peak 24-hour average is thus 10.1 tons/day per 5 $\mu g/m^3$. (On a year-by-year basis, changing only the 24-hour average PM_{10} maximum concentrations, the DM level calculation would be 9.2, 16.9, and 7.7 for 2002, 2003, and 2004, respectively.)

Consistent with a conservative determination of the DM level, the DM level for PM_{10} in Imperial County is 4.9 tons/day. A further discussion of the DM level and emission source categories is presented in the next chapter.

Analysis of Major PM_{10} Stationary Sources

The previous analysis dealt with traditional fugitive PM_{10} sources and the assessment of their potential significance as it relates to BACM. The de minimis value was determined by comparing proportional ambient PM_{10} concentrations to average PM_{10} emissions. This analysis may not capture localized effects of major PM_{10} stationary sources. Stationary sources are required to implement Best Available Control Technology (BACT) to control PM_{10} emissions (Rule 207, New and Modified Stationary Source Review) and they are also required to comply with 20% opacity (Rule 403, Opacity of Emissions). In addition, stationary sources will be required to mitigate fugitive dust emissions from access roads, construction activities, handling and transferring of bulk materials and track-out and carry out according to the requirements on Regulation VIII. According to our 2004 stationary source emission inventory, there is only one PM_{10} major stationary source that operates in Imperial County. This source manufactures gypsum wallboard and related products and it is located approximately 20 miles west from the nearest PM_{10} monitoring site. In addition, it underwent an expansion within the last ten years, during which BACT was implemented on its major sources. Its impact on ICAPCD PM_{10} monitors is not significant. Regardless, this source is required to comply with all the above mentioned requirements and regulations; thus it meets the requirement for BACM and BACT, whether it is a significant source or not.

3. Significant and De Minimis Source Categories

Emission Inventory

As stated in the introduction, there is no existing SIP inventory for Imperial County. This analysis uses the CARB 2004 PM_{10} emission inventory, published on CARB's web site,[3] revised cattle emissions, revised windblown dust model results, and updated entrained and windblown unpaved road dust estimates. Table 3-1 is a summary of the 2004 PM_{10} inventory for Imperial County. Except where noted, the emission estimates are based on the published CARB data. The next section discusses the revisions to the published CARB data and provides additional information on emission sub-categories. This report follows the same procedures as those in the San Joaquin Valley BACM/T and RACM/T Demonstration[4]. The identification of significant and de minimis source categories can be found in the Conclusions section of this chapter.

Table 3-1. 2004 Annual Average PM_{10} Emission Inventories for Imperial County in tons/day

Source Category	PM_{10}	Comment
Fuel Combustion	0.41	
Waste Disposal	0.00	
Cleaning/Surface Coatings	0.00	
Petroleum Prod/Mktg	0.00	
Industrial Processes	2.77	Includes Food / Agriculture (0.16), Mineral Processes (2.61)
Solvent Evaporation	0.00	
Res Fuel Combustion	0.09	
Farming – Tilling	7.11	
Farming – Harvest	0.01	
Farming – Cattle	2.62	Revised based on latest cattle population, emission factors and implementation of Rule 420
Construction	1.91	
Paved Road Dust	4.09	
Unpaved Road Dust	61.00	Entrained. Revised based on latest road mileage, activity, and emission factor estimates.
Windblown –Unpaved Roads and Open Areas	188.30	Unpaved Roads: Revised based on latest road mileage and emission factor estimates (30.95) Open Areas: Windblown Dust Study results, including Grassland (98.75), Dunes (19.85), Other Barren Lands (38.74), and Urban (0.01)

[3] www.arb.ca.gov/app/emsinv/emssumcat_query.php?F_DIV=-4&F_DD=Y&F_YR=2004&F_SEASON=A&SP=2005&F_AREA=CO&F_CO=13

[4] Appendix G, BACM/T and RACM/T Demonstration for Sources of PM_{10} and PM_{10} Precursors in the San Joaquin Valley Air Basin. SJVAPCD 2003 PM_{10} SIP. SJVAPCD. April 2003.

Table 3-1. 2004 Annual Average PM_{10} Emission Inventories for Imperial County in tons/day

Source Category	PM_{10}	Comment
Windblown – Non-Pasture Ag Lands	10.81	Windblown Dust Study results
Windblown – Pasture	1.79	CARB estimate
Fires	0.00	
Waste Burning	2.19	
Cooking	0.06	
On-Road Mobile	0.38	
Other Mobile	0.69	
TOTAL	**284.23**	

Inventory Discussion

The inventory presented in the draft Regulation VIII BACM Analysis Report was based on 2003 CARB emission inventory estimates. Based on the latest emissions modeling for many windblown dust sources and comments from CARB and EPA, the emission inventory for certain categories highlighted in the draft Report have been reviewed and revised. The following sections discuss those categories that have been revised.

Windblown Dust (Except From Unpaved Roads)

In May 2004, ENVIRON prepared a report entitled "Development of a Windblown Fugitive Dust Model and Inventory for Imperial County," for ICAPCD (Windblown Dust Study). The results of that report indicated that windblown PM_{10} from agricultural lands in Imperial County were 10.8 tons/day, compared with the CARB estimate of 91.60 tons/day. This initial version of the Windblown Dust Study also estimated windblown annual average emissions from open barren lands to the east and west of the populated areas of Imperial County to be 792 tons/day; the model assumed that such lands were unvegetated and unstable. ICAPCD submitted this report to CARB and USEPA for their review and approval of the new emission inventory estimates. Based on those comments, ENVIRON has revised the windblown emissions model such that only the dune areas to the east are considered unvegetated and unstable, and that the remainder of the barren lands are stable and 9% vegetated (see Figure 3-1). Table 3-2 summarizes the results of the revised windblown dust estimates.

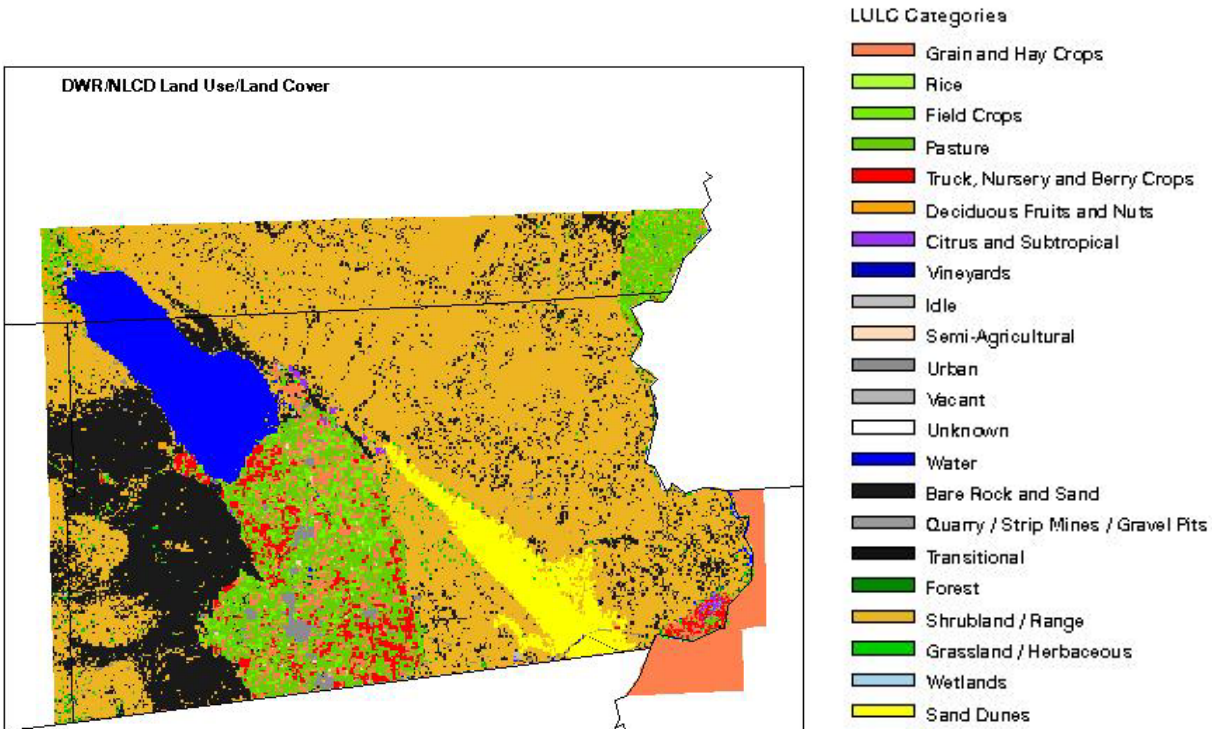


Figure 3-1: Land Use and Land Classification Categories in Imperial County

Table 3-2. Windblown Emissions from Lands by Month and Annual Average (tons/day)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Agriculture	8.59	11.32	19.93	28.48	12.95	16.26	7.37	4.33	9.76	0.38	6.60	4.42	**10.81**
Urban	0.07	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Desert - Other	20.55	38.09	52.04	97.31	57.09	71.84	15.77	43.16	29.29	6.36	22.05	13.37	**38.74**
Forest	0.07	0.06	0.07	0.15	0.06	0.11	0.02	0.07	0.03	0.00	0.04	0.02	**0.06**
Shub/Grassland	96.15	102.12	120.63	243.24	97.52	189.86	40.64	139.97	63.84	7.32	64.00	25.40	**98.75**
Desert - Dunes	21.77	31.88	36.23	62.37	24.77	4.59	16.73	11.98	8.22	0.00	9.32	11.64	**19.85**
TOTAL (TPD)	**147.20**	**183.45**	**228.91**	**431.57**	**192.40**	**282.67**	**80.53**	**199.52**	**111.14**	**14.06**	**102.00**	**54.84**	**168.22**

As noted, the original Windblown Dust Study estimate of emissions from barren lands was 792 tons/day. With the revised assumptions, windblown dust from barren lands is 58.6 tons/day, of which 19.9 tons/day is emitted from the dune area. Emissions from all other categories are the same as in the May 2004 Windblown Dust Study Report. CARB and USEPA have recently approved the use of the Windblown Dust Study for estimating windblown dust emissions for all areas except unpaved roads. (Windblown unpaved road dust is estimated using the CARB methodology described further below.)

Windblown Dust from Unpaved Roads

The CARB inventory web site references the August 1997 Windblown Dust – Unpaved Roads methodology. The 1993 windblown emissions from unpaved roads in that report are 5.90 tons/day. Based on discussion with CARB staff, it appears that the additional 73.5 tons/day was based on a previous estimate of windblown emissions from canal roads that assumed fewer canal road miles than current estimates and a much higher emission factor than currently recommended by CARB. ENVIRON has re-calculated the windblown emissions from all unpaved roads in Imperial County using the latest mileage information from Imperial County, the cities of Imperial County and the Imperial Irrigation District (IID) and the latest CARB emission factor. The results of that analysis are summarized in Table 3-3.

Table 3-3. Windblown Emissions from Unpaved Roads

Road Type	Current	CARB 2003	Comment
city/county	7.82	5.9	Consistent
canal	16.76	73.50	Updated emission factor
farm	6.01	--	Not in ARB inventory
BLM/USFS	0.37	--	Not in ARB inventory
Total (tons/day)	**30.95**	**79.40**	

The greatest difference between the current estimates and the previous CARB estimate is canal road windblown emissions. Previous estimates used a much higher emission factor for windblown dust related to the canals. Details of the calculation of windblown emissions from unpaved roads can be found in Appendix B.

Entrained Unpaved Road Dust

ICAPCD has collected updated information on the unpaved roads in its cities and in the county and along the canals. Previous CARB estimates were based on an emission factor of 2.27 lbs PM_{10} / VMT. The latest CARB-approved emission factor, used in the San Joaquin Valley PM_{10} BACM analysis, is 2.0 lbs PM_{10} / VMT. ICAPCD received information from the IC Public Works Department concerning miles of county roads with 50 or greater ADT. For this current estimated, ADT was set at the CARB default of 10 for all roads except high ADT county roads (assumed 70

ADT) and canal roads (assumed 5 ADT used in 1993 SIP). Table 3-4 summarizes the results of the entrained unpaved road emission estimates.

Table 3-4. Entrained Unpaved Road Emissions

	Current	CARB 2003	Notes
City/County	26.64	16.84	Assumes 70 ADT on high ADT county roads (if 10 ADT for all roads, ems = 13.62), consistent with the previous CARB estimate)
Canal	31.56	12.78	1993 SIP: 3,128 mi canals; 1,682 mi canal roads / Current: 3156 mi canal; 6,312 mi roads. Assumes 5 trips/day (1993 SIP)
Farm	1.41	1.41	Using new CARB method
BLM/USFS	1.39	2.28	Using CARB methodology and 1993 road mileage
Total (tons/day)	**61.00**	**33.31**	

The current estimate is about twice the previous CARB estimate. The difference is due to higher ADT estimates for certain county roads, and larger actual miles of canal roads. Information from the public works departments of Imperial County and its cities indicate that there are 7.5 miles of city roads and 1,354 miles of county roads, of which 217 miles have 50 or greater ADT. Entrained emissions from these city and county roads assumed the CARB default of 10 ADT for all roads, except the high ADT roads, where an ADT of 70 was assumed. As noted in the previous section, the 1993 SIP assumed 1,682 miles of canal roads, whereas the latest information from IID indicates that there are 6,312 miles of canal roads. The current estimate assumes 5 ADT for these roads, as assumed in the 1993 SIP. There is a discrepancy in the entrained emissions for farm roads that is probably due to an incorrect activity level in the previous estimate; the current estimate uses the latest CARB methodology and parameters.

Cattle Feedlot Dust

The previous emission inventory for this category was in error; cattle feedlot dust was reported in both categories Cattle Feedlot Dust (ID# 620-616-540-000) and Livestock Husbandry – Agricultural Waste – Feedlot Cattle (ID# 620-618-0262-0103). Also, CARB recently revised the emission factor for dust from cattle operations. After discussions with CARB staff, a revised PM_{10} inventory for cattle in Imperial County has been calculated (Table 3-5).

Table 3-5. Imperial County Cattle-Related PM_{10} Emissions

Livestock Category	2004 Animal Totals	Emission factor (lbs PM_{10}/1000 head/day)	Uncontrolled PM_{10} emissions (tons/day)	Baseline PM_{10} emissions (tons/day)
Feedlot Cattle	360,486	28.9	5.21	2.60
Heifers	21,452	see milk cows		
Milk cows	3,615	6.72	0.01	0.01
Pink Veal	4,514	NA		
TOTAL	**390,067**		**5.22**	**2.62**

The CARB emission factors are applied to feedlot and milk cows only, based on the current CARB methodologies. The CARB milk cow factor assumes the presence of young stock, such as heifers and calves. There is currently no approved CARB emission factor for heifers and calves separate from milk cows. It is assumed that veal calf emissions are minimal, since they are not in open corrals. The baseline emissions reflect the effect of ICAPCD Rule 420, which requires that feedlot manure moisture be maintained between 20 and 40% and other measures. (The analysis assumes that rule penetration is 100%, since Rule 420 applies to all feed yards with more than 10 animals, and that there is 100% compliance. Emissions are 3.26 tons/day if 80% rule compliance is assumed.)

Paved Road Dust

The CARB paved road dust estimate is based on previously assumed VMT levels of 4,569,000 VMT/day. The estimate in the latest version of the EMFAC model is 4,340,000 VMT/day, approximately 5% less. An updated inventory would result in a smaller emission estimate for paved road dust. Given the relatively small contribution from paved road dust and the fact that emissions from this source are below the DM level, the inventory estimate has not formally been updated.

Conclusions

Based on the DM level of 4.9 tons/day, there are four PM_{10} sources above the de minimis level and therefore are significant source categories in Imperial County (Table 3-6).

Table 3-6. Significant Source Categories of PM_{10} (2004 emissions in tons/day)

Source Category	Emissions (tons/day PM_{10})
Windblown – open non-crop-farm areas	159.14
Unpaved Roads (Entrained and Windblown)	91.95
Windblown – Non-pasture agricultural lands	10.81
Tilling dust	7.11

All other source categories are below the DM level. For information purposes only, Table 3-7 presents those sources below the DM level that emit more than 1 ton/day of PM_{10}. It should be noted that ICAPCD Rule 420 and proposed Regulation VIII amendments apply to these sources. However, based on this analysis, BACM is not specifically required for these sources.

Table 3-7. De Minimis Source Categories That Emit Greater than 1 ton/day of PM_{10} (These are NOT significant source categories)

Source Category	2004 Emissions (tons/day PM_{10})
Paved Road dust	4.09
Industrial (including Mineral) Processes	2.77
Cattle feedlot dust (with Rule 420)	2.62
Waste Burning	2.19
Construction	1.91
Agricultural Burning	1.59

Sources categories that are both below the DM level and contribute less than 1 ton/day of PM_{10} are listed in Table 3-8.

Table 3-8. De Minimus Source Categories That Emit Less than 1 ton/day of PM_{10}

Source Category	2004 Emissions (tons/day PM_{10})
Harvest Operations	0.01
Cooking	0.06
Fuel Combustion (All sources)	0.41
Waste Disposal (All sources)	0.00
Cleaning/Surface Coatings (All sources)	0.00
Petroleum Production / Mrkg (All sources)	0.00
On-Road Mobile* (All sources)	0.38
Other Mobile* (All sources)	0.69

* Not subject to a BACM/BACT analysis.

4. COMPARATIVE ANALYSIS

Introduction

This chapter presents the comparative analysis for proposed Regulation VIII rules compared to the fugitive dust rules in other PM_{10} serious non-attainment areas. The most recent comparative analysis was done by San Joaquin Valley as part of their 2003 PM_{10} SIP; this analysis is based directly on Appendix G of that SIP[5]. The serious non-attainment areas include San Joaquin Valley, Maricopa County (Phoenix area), Clark County (Las Vegas area), South Coast (Los Angeles Basin), and Coachella Valley (Palm Springs area). As noted in the San Joaquin Valley analysis, the comparison shows that control programs in the serious non-attainment areas are different based on local conditions and needs. For each of the fugitive dust control categories, comparisons are made between proposed Regulation VIII rules and similar rules or statutes applicable to the other serious non-attainment areas. For significant sources of PM_{10} (e.g. those with emissions above the DM level), the comparison will form the basis for evaluating the stringency of the proposed Regulation VIII measures compared to similar measures in other areas. Any thresholds and/or requirements for significant sources that are not as stringent as the most stringent in other areas will be justified based on local conditions, needs, and resources. Regulation VIII applies both to sources that are significant and require a stringency evaluation and to sources that are not significant and do not require a stringency evaluation.

This section summarizes the comparative analysis for sources above the DM level. For each significant category, the thresholds and requirements are evaluated for stringency compared to similar rules in the other serious non-attainment areas. In cases where the proposed Regulation VIII rule thresholds and/or requirements are not as stringent as the most stringent thresholds and/or requirements from other areas, a justification is presented. Appendix C presents a detailed comparative analysis for sources with emissions greater than the DM level, including a stringency analysis and justification of any measures not deemed as stringent as the most stringent in other serious non-attainment areas. Appendix D presents a comparative analysis for sources with emissions below the DM level, although this is not a requirement of a BACM analysis. The thresholds and requirements for these sources are not evaluated for stringency, as this is not required. Similarly, the thresholds and requirements for sources in this section do not need to be justified based on a stringency evaluation. For each of the key source categories, controls

[5] 2003 San Joaquin Valley PM_{10} SIP, Appendix G, "Best Available Control Measures / Technology and Reasonably Available Control Measures / Technology Demonstration for Sources of PM_{10} and PM_{10} Precursors in the San Joaquin Valley Air Basin," April 2004 (Final revised version).

implemented in the other serious PM_{10} non-attainment areas are given, along with the citations to the appropriate rule, statute, or referenced guidance. At the end of each segment, a discussion is provided which highlights the area or areas that have implemented the most stringent controls. As noted in the SJVAPCD BACM/T Determination, there is no statutory requirement that each control measure limit and/or requirement be as stringent as the most stringent limit and/or regulation adopted in any serious non-attainment area.

Comparative Analysis for Significant Sources

The following section presents a summary of the comparative analysis for sources above the DM level: unpaved roads and areas, disturbed areas, and agricultural sources. Appendix A presents a detailed comparative analysis of these sources, beginning with general requirements of the proposed Regulation VIII amendments related to visible dust emissions and stabilized surfaces for these sources (e.g., PAR 800, PR 804, PR 805, and PR 806). Next, the comparative analysis for each specific significant source is presented. Table 4-1 presents the rule source and control categories that are considered in the comparative analysis of the significant PM_{10} sources. Table 4-2 summarizes the comparative analysis in Appendix C, including a discussion of the comparative stringency of the thresholds and requirements for each significant source category and a justification if the proposed Regulation VIII thresholds and/or requirements are not as stringent as the most stringent thresholds and/or requirements from other serious non-attainment areas.

Table 4-1. Dust Control Source Categories for Sources above the DM Level

RULE SOURCE CATEGORY	CONTROL CATEGORY
General	Visible Dust Emissions
General	Definition of Stabilized Surface
Unpaved Road Dust	Applicability
Unpaved Road Dust	Control Requirements
Unpaved Lots/Staging Areas	Applicability
Unpaved Lots/Staging Areas	Requirements
Disturbed Open Areas	Applicability
Disturbed Open Areas	Control Measures
Disturbed Open Areas	Windblown
Agricultural Sources[1]	Conservation Management Practices (CMPs)

[1] Only tilling and windblown emissions from agricultural sources are above the DM level, but the full source category will be compared to BACM in other areas.

Sources on BLM Lands

In the preceding analysis, unpaved roads and disturbed open areas are considered significant sources of PM_{10} in Imperial County. There are unpaved roads in the lands administered by BLM and the USFS; entrained and windblown dust from these roads is 1.8 tons/day, less than 2% of the 92 tons/day for all unpaved roads. Almost all of the unpaved roads on BLM and USFS lands have

traffic levels under the Rule 805 threshold of 50 ADT. Of the over 2,666,600 acres comprising Imperial County over 77% is scrubland, barren land, or sand dunes. Most of this land is administered by BLM and the USFS. Except for areas used by the military or lands set aside for OHV use, most of the land is disturbed only by wind, water, and native animals. The lack of "destination" national or state parks, low County population density, general remoteness, and high summer temperatures minimizes man-made disturbances on most of this land. The exception to this is special off-roading events held in the dune areas. These special events occur 5 to 10 times per year, for a few days each. The BLM Dust Control Plan in PAR 800 requires control measures for these special events, even if annual or average day usage does not meet the thresholds in Rules 804 and 805.

The only Imperial County significant sources on BLM lands are unpaved roads and disturbed open areas. In addition, PAR 800 only exempts the recreational use of public lands (e.g., OHVs, all-terrain vehicles, trucks, cars, motorcycles, motorbikes or motorbuggies), not other dust-producing activities such as construction, etc. The BLM Dust Control Provisions make clear that any stationary source activity must meet all applicable SIP provisions, including project- or activity-specific BACM. Thus, the focus of the Dust Control Plan provisions are on unpaved road and disturbed open area sources related to the recreational use of public lands.

BLM sources are considered separate from the general dust source categories; this is in recognition of the special federal purposes of these agencies (e.g., habitat preservation and compliance with other area-specific environmental laws) and the inconsistency of requiring certain traditional dust control methods on these sources (e.g., vegetating disturbed dune areas approved for off-highway vehicle recreational use.). Many restrictions apply to actions on federal lands that have special purposes, such as habitats, national monuments and preserves. Common dust control measures, such as chemical stabilization and paving would not be allowed if it endangered native wildlife or impacted habitats. BLM is required to determine if a proposed dust control project conforms with the approved land use plan terms and conditions, as required by CFR 1610.5. Examples of such laws and plans include the federal Endangered Species Act, the California Desert Protection Act, the California Desert Conservation Area Plan and related tiered plans(e.g. the Yuha Basin ACEC Management Plan, Yuha Desert Habitat Management Plan, Yuha Desert Management Plan, Imperial San Dunes Recreation Area Management Plan (RAMP), Algodones Dunes Habitate Management Plan, Flat-tailed Horned Lizard Rangewide Strategy and Recovery Plan for Bighorn Sheep in the Peninsular Ranges, CA).

BLM also must meet the requirements of NEPA for its projects. BLM is the appropriate lead agency for both NEPA and conformity determinations for dust control projects on BLM lands; mandating Rule 804 and 805 requirements without consideration of NEPA and conformity issues could unnecessarily involve ICAPCD in these issues and potentially delay implementation of

proposed dust control programs. Mandating PR 804 and 805 could also put BLM in the position of either violating an ICAPCD rule or potentially requiring a finding of overriding concerns for a given Environmental Assessment. Furthermore, any action on the use of the BLM lands has been highly litigious. Were ICAPCD to unilaterally impose requirements on BLM, it is possible that litigation and a temporary suspension of those rules while the litigation is resolved will occur. Thus, proposed Regulation VIII establishes a separate control program for the BLM lands, rather than imposing general Regulation VIII requirements on them on a dust source by dust source basis. ICAPCD believes that this is the most appropriate and expeditious way to reduce emissions from federal sources.

ICAPCD and BLM have worked together on previous dust control programs, including the inclusion of PM_{10} control measures in the RAMP. BLM has also included PM_{10} prevention and mitigation measures based on its Environmental Assessment of its road and trail maintenance activities related to Border Patrol activities. Appendix F is the Environmental Assessment for this project. It is an example of the detailed environmental analysis required for projects on BLM lands and the use of the NEPA process to identify and implement PM_{10} prevention and mitigation measures.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
General: Visible Dust Emissions	• Limit visible emissions to not more than 20% opacity (PAR800) o All non-exempt sources (Ref: PAR 800) o Construction / demolition (de minimis source) (Ref : PR 802, Section E.1) o Bulk materials (de minimis source) (Ref : PR 802, Section E.1) o Open areas (significant source) (Ref : PR 804, Section E.1) o Unpaved roads and traffic areas (significant source) (Ref : PR 805, Section E.1) Test methods, including for unpaved road traffic in App. A and B (PAR800, G)	• Limit visible emissions to not more than 20% opacity (Ref: R8021, Sect. 5.0; R8031, Sect 5.0; R8041, Sect. 5.7.2; R8051, Sect. 5.0; R8061, Sect. 5.2; R8071, Sect. 5.1; and 8081, Sect. 5.0) • Opacity test methods, including for unpaved road traffic. (Ref: R8011, Appendix A, Sections 1 and 2)	• No visible emissions across property line. (Ref: R403(d)(1))	• Limit visible emissions to not more than 20% opacity (Ref R310, Sect. 301) • Opacity for dust generating activities based on minimum 12 observations, spaced 15 seconds apart (Ref: R310, Section 501.1(a)) • Opacity for unpaved parking lots and unpaved haul/access roads based on six vehicles, two readings per vehicle (Ref: R310, Section 501.1 (a) and (b))	• Limit visible emissions to not more than 20% opacity (Ref: AQR Section 91.2.1.4; AQR Section 92.2.1.3; AQR Section 93.2.1.5; AQR Section 94.5.3) • Opacity based on six vehicles, two readings per vehicle for unpaved surfaces And minimum 12 observations, spaced 15 seconds apart, for other sources. (Ref AQR Section 91.4.1.1 and AQR Section 94 AQR Section 94.5.3) • Limit construction visible emissions to not more than 100 yards (Ref: AQR Section 94.5.2(a))	Imperial County is proposing the same opacity limits and test methods used in other areas, except South Coast, which appears less stringent than other areas. Clark County requires both opacity limits and a 100-yard visible emission distance limit for construction activities. Construction emissions in Imperial County are below the DM level, and thus justification as "most stringent" is not required. Imperial County is proposing the same opacity limits and test methods used by San Joaquin Valley that have been accepted by EPA as "most stringent" in its May 26, 2004 approval of the San Joaquin Valley PM_{10} SIP[6].

[6] Federal Register Vol. 69, No. 102; p.30035; May 26, 2004.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
General: Definition of Stabilized Surface	• A surface is considered to be stabilized if it meets at least one of the following conditions specified in below or as determined by test methods outline in Appendix B. 1. Visible crust; or 2. Threshold frictional velocity of 100 cm/sec or greater; or 3. Flat vegetative cover of at least 50% that is attached or rooted vegetation; or unattached vegetative debris lying on the surface with a predominant horizontal orientation (not subject to wind movement); or 4. Standing vegetative cover over 30%	• Any disturbed surface that is resistant to wind blown fugitive dust and meets at least one of the following conditions: 1. A visible crust 2. A threshold friction velocity of 100 cm/sec or greater 3. A vegetative cover of at least 50% that is attached or rooted 4. Unattached horizontal vegetative cover of at least 50% and wind-movement resistant 5. Vertical, rooted vegetation with at least 30% cover, or 10% cover where the soil threshold	• Stabilized surface means any previously disturbed surface area or open storage pile which, through the application of dust suppressants, shows visual or other evidence of surface crusting and is resistant to wind driven • Fugitive dust and is demonstrated to be stabilized; (Ref: R403, (C)(28))	• Must meet at least one of the following standards: 1. Maintain a visible crust 2. Maintain a threshold friction velocity of 100 cm/sec or greater 3. Maintain standing (rooted, vertical) vegetative cover of at least 30%, or 10% cover where the soil threshold friction velocity is at least 43 cm/sec 4. Maintain flat (rooted or horizontal debris not subject to wind movement) of at least 50% 5. Maintain a cover of at least 10% with	• Stabilization standards: 1. Establish visible crust 2. Establish cover of at least 20% with non-erodible materials 3. Establish soil threshold friction velocity of at least 100 cm/sec 4. Comply with specially-approved alternative method	Imperial County is proposing the same stabilized surface definition and requirements as used in the San Joaquin Valley, which is comparable to the requirements used in all other areas, except South Coast. The exception is that Clark County has established a more stringent requirement if non-erodible materials are used to establish a stabilized surface, namely, that a more restrictive 20% minimum covering (compared to 10% in San Joaquin Valley, Maricopa County and proposed IC Regulation VIII) is required. However, inclusion of a 20% minimum non-erodible material coverage as a control option in Clark County does not mean its inclusion is necessary for Regulation VIII to be demonstrated as BACM for this category. Clark County's limit was based on local observations at areas where the soil was significantly pulverized as the result of significant amounts of traffic.[7] Imperial County does not have similar areas experiencing such high levels of growth and commuters

[7] September 26, 2005 telephone conversation with Rodney Langston, Clark County Department of Air Quality Management.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
	that is attached or rooted 5. A standing vegetative cover of at least 10% that is attached or rooted with a predominate vertical orientation where the TFV is at least 43 centimeters per second when corrected for non-erodible elements 6. A surface greater than or equal to 10% of non-erodible elements such as rocks, stones, or hard-packed clumps of soil (Ref: 800 C.28) Test methods: Test methods in Appendix A and B shall be used to determine compliance with the Regulation VIII rules (Ref PAR800, Section G)	friction velocity is at least 43 cm/sec 6. A surface that is at least 10% covered with non-erodible materials (Ref: R8011, Section 3.58)		non-erodible materials 6. Comply with specially-approved alternative method (Ref: R310, Section 302.3)		"trailblazing" unpaved roads across open areas. Thus, this limit was based on specific Clark County conditions and should not be applied to Imperial County. Taken together, the applicable limits and requirements in the definition of a stabilized surface provide equivalent stringency and can be considered as stringent as the most stringent limits and requirements. The exact same provisions in San Joaquin Valley were approved as BACM by EPA[8] in 2004.

[8] Federal Register Vol. 69, No. 102, p.30035, May 26, 2004.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
Unpaved Roads: Applicability	• Unpaved Haul/ Access Roads: All roads (Ref: PR805, Section E.1) • Unpaved Roads: 50 or more average daily vehicle trips (Ref: PR805, Section E.2) • Canal Roads: 20 or more ADT (Ref: PR805, Section E.4) (The implementation schedule for city and county roads is discussed in the next section, Unpaved Roads: Control Requirements.)	• 26 annual average vehicle daily trips or more (Ref: R8061, Section 5.2.1) (The implementation schedule for city and county roads is discussed in the next section, Unpaved Roads: Control Requirements.)	• For meeting standards of rule: o more than 50' wide at all points, or o are not within 25' of property line, or o more than 20 vehicle trips per day (Ref: R403(g)(2)(B)(iii)) • For treating unpaved roads: All roads greater than the average ADT of all unpaved roads within its jurisdiction, up to a set number of miles by 2006 (Ref: R1186(d)(4))	• 150 vehicles or more per day (Ref: R310.01, Section 304)	• For new unpaved roads, there is no VDT limit (Ref AQR Section 91.2.1) • For existing unpaved roads (prior to June 22, 2000), the control measures apply to roads with 150 or more vehicles per day.	Imperial County's limit is based on 50 or greater ADVT. The Imperial County 50 ADVT or more limit is more stringent than either Maricopa County of Clark County. Both Maricopa and Clark County have a significant number of unpaved roads with greater than 150 ADT; hence their rules target those roads. The provisions of the South Coast rule, tied to average levels of VDT, is generally less restrictive than in other jurisdictions. The proposed ADT limit for unpaved city and county roads in IC Regulation VIII is less stringent than SJV's limit of 26 ADVT. However, the percentage of unpaved city / county roads with greater than 26 ADT in San Joaquin Valley is 12% (90 out of 750 miles)[9] compared to 16% of Imperial County roads with greater than 50 ADT (217 out of 1361.5 miles). Thus, proposed Regulation VIII is the most stringent. (A comparison of implementation schedule requirements is presented in the next row, Unpaved Road Requirements.

[9] EPA's Technical Support Document for the San Joaquin Valley, California 2003 PM_{10} Plan and 2003 PM_{10} Plan Amendments., p. 31, January 27, 2004.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
						Only Imperial County sets a separate, lower threshold for canal roads, and 20 ADT is below any other unpaved road threshold. Proposed Regulation VIII is the most stringent.
Unpaved Roads: Control Requirements	• For roads with 50 ADVT or more and canal roads with 20 or greater ADVT, limit VDE to 20% opacity and comply with the requirements of a stabilized unpaved road surface by application and/or maintenance of at least one of the following control requirements (Ref: PR805, Section E.2, E.4): a) Pave (Section F.1.a) b) Apply chemical stabilization (, Section F.1.b) c) Apply and maintain gravel, asphalt, or other material of low	• For unpaved roads with greater than 26 annual average vehicle trips per day, limit VDE to 20% opacity and implement at least one of the following control measures: a) apply water b) apply uniform layer of washed gravel c) apply chemical/organic dust suppressant d) use vegetative materials e) pave f) use any other approved method to limit VDE to 20% opacity and meets the condition of a	• Annually treat unpaved public roads beginning in 1998 and continuing for each of 8 years thereafter by implementing one of the following (Ref: R1186(d)(4)): a) Pave at least one mile with typical roadway material (Ref: ibid, (d)(4)(A)) b) Apply chemical stabilizers to at least two miles to maintain stabilized surface (Ref: ibid, (B))	• For 150 vehicles or more per day, implement at least one of the following BACM (Ref: R310.01, Section 304): a) Pave b) Apply dust suppressants c) Uniformly apply and maintain surface gravel (Ref: ibid, Section 304.1) • For existing roads, BACM, as above, must be implemented by: a) June 10, 2000 for more than 250 vehicle trips b) June 10, 2004 for more than 150 vehicle trips	• Implement one control measure on 1/3 of unpaved roads with 150+ VDT by June 1, 2001 (Ref: AQR Section 91.2.1.1(a)) • Implement one control measure on 2/3 of unpaved roads with 150+ VDT by June 1, 2002 (Ref: ibid, (b)) • Implement one control measure on all unpaved roads with 150+ VDT by June 1, 2003 (Ref: ibid, (c)) • For any unpaved road with newly found levels of 150+ VDT, implement one control measure	Proposed Regulation VIII and rules in all areas except South Coast require compliance with the 20% opacity standard; Proposed Regulation VIII is as stringent as the most stringent for this requirement. In addition, all areas except South Coast specify the implementation of at least one control requirement to comply with the requirements of a stabilized surface. Clark and Maricopa County do not allow watering as a control option, but only require implementation on roads with greater than 150 ADT. As noted by EPA[10], the inclusion of a control option or requirement does not mean it is necessary for a proposed regulation to meet BACM, as long as other applicable limits combine provide adequate stringency. In this case, the applicability and control requirements combine provide adequate stringency.

[10] Federal Register Vol. 69, No. 102, p.30019, May 26, 2004.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
	silt content of a depth of 3 or more inches (Section F.1.c) d) Apply water one ore more times daily (Section F.1.d) e) Permanent road closure (Section F.1.e) f) Restrict unauthorized vehicle access (Ref: PR805, Section F.1.f) g) Any other method that limits VDE to 20% opacity and meets conditions of a stabilized unpaved road (Section F.1.g) • Within an urban area, construction of a new unpaved road is prohibited, unless it meets the definition of a Temporary Unpaved Road. • Cities and the	stabilized unpaved road (Ref: R8061, Section 5.2.1) • As option to above, obtain Fugitive PM_{10} Management Plan (Ref: ibid, Section 5.2.1) with specific requirements. • Within an urban area, construction of a new unpaved road is prohibited, unless it meets the definition of a temporary unpaved Road. • Cities and the County shall treat an average of 20% of applicable roads per year form 2006 through 2010, to a cap of 5 miles per year per jurisdiction. A statement of financial hardship can be submitted if a jurisdiction cannot afford to meet the requirements of this	c) Speed control (15 mph) on at least three miles of road surface:	(Ref: ibid, 304.2) • BACM must meet the following standards: a) Limit VDE to 20% opacity b) Do not equal or exceed 0.33 oz/ft2, or c) Do not exceed 6% silt content (Ref: ibid, 304.3)	within 365 days (Ref: ibid, (d)) • For unpaved roads with less than 150 VDT, maintain stabilized surface standards within 365 days of determination of non-stabilized surface (Note: not a SIP measure) • No new unpaved roads are to be constructed after June 22, 2000 (Ref: AQR Section 91.2.1.2) • Applicable control measures are as follows: a) Pave b) Apply dust palliatives to meet stab. standards • Stabilization standards: a) Limit VDE to 20% opacity b) Do not equal or exceed 0.33 oz/ft2, or c) Do not exceed 6% silt content	The control options for existing unpaved roads in Proposed Regulation VIII and in San Joaquin Valley's regulations are the same, and thus equally stringent (although as seen above, proposed Regulation VIII applies to a greater percentage and absolute mileage of unpaved roads). Although the compliance schedule for city and county roads appears more stringent for San Joaquin (20% per year), that only equates to 18 miles per year, compared to almost 22 miles per year for Imperial County (10% of 217 miles). In addition, San Joaquin caps at 5 the number of miles that require treatment per year per urban areas. San Joaquin also allows cities and/or counties to submit a statement of financial hardship if they cannot meet the rule requirements. The San Joaquin Valley regulations have been approved as BACM by EPA[11]. Proposed Regulation VIII is as stringent as the most stringent requirements in any serious non-attainment area.

[11] Federal Register Vol. 69, No. 102, p.30035, May 26, 2004.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
	County shall comply with Section E.2 by treating an average of 10% of applicable roads per year form 2006 through 2015.(Ref: PR805, Section E.7)	section. (Ref R8061, Section 5.2.3).			(Ref: ibid, 91.2.1.4)	Proposed Regulation VIII prohibits the construction of new unpaved roads in urban areas. This is as stringent as the San Joaquin Valley and Clark County regulations. (Clark County regulations are only in effect in the non-attainment area, which is predominantly urban, and not in the surrounding rural and federal lands. Hence, the prohibition on new unpaved roads is essentially a prohibition on new unpaved roads in urban areas.)
Unpaved Lots: Applicability	• Unpaved traffic areas larger than one (1) acre and with 75 or more average vehicle trips per day shall comply with one or more of the requirements of Section F.3 so as to limit VDE to 20% opacity (Ref: PR805, Section E.4)	• Areas with AADT of 50 or more (Ref: R8071, Section 4.1) • Agricultural sources exempt from Rule 8081 are also exempt from R8071.	(Note: South Coast does not have rule language specifying this category. It is presumed that Rule 403 provisions for either unpaved roads, or disturbed surface areas would apply.)	• Over 100 vehicles entering or parking (Ref: R310.01, Section 303)	• No minimum vehicle limit specified for parking lots. (Ref: AQR, Section 92.2.1) • No minimum vehicle limit specified for staging areas (Ref: AQR Section 94 Handbook, CST 17)	Clark County has no minimum vehicle limit for parking lots or staging areas. Maricopa has a 100 vehicle threshold. San Joaquin exempts traffic areas with less than 50 annual average daily trips and agricultural traffic area sources exempt from R8071 (e.g., traffic area less than 1.0 acre and more than one mile from an urban area, or with less than 50 AADT or less than 150 VDT if intermittently used). EPA has adjudged the San Joaquin rule as BACM[12] based on the adequacy of their cost-effectiveness analyses of potential lower thresholds. Proposed Regulation VIII has a

[12] EPA's Technical Support Document for the San Joaquin Valley, California 2003 PM_{10} Plan and 2003 PM_{10} Plan Amendments, p. 34-5, January 27, 2004

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
						higher threshold for ADVT than San Joaquin and a 1 acre size threshold. ICAPCD is conducting additional survey work and will prepare a cost-effectiveness analysis to justify the proposed thresholds. If the analysis indicates that more stringent thresholds are cost-effective, amendments to PR805 will be prepared. Please see Appendix C for more discussion about Imperial County unpaved traffic areas. (Although agricultural unpaved traffic areas are exempt from PR 805, any size traffic area for an agricultural operation with more than 40 acres total must implement controls, per PR 806.)
Unpaved Lots: Requirements	For unpaved traffic areas larger than one (1) acre and with 75 or more average vehicle trips per day shall comply with one or more of the requirements of Section F.3 (listed below) so as to limit VDE to 20% opacity: • Pave or (Ref: PR805, Section	• For days with 50 or more vehicle trips, limit VDE to 20% opacity and implement at least one of the following control measures: o apply water o apply uniform layer of washed gravel o apply	(No specific rule language for this category. See measures for "Unpaved Roads" for presumed applicable BACM.)	• If utilized less than 35 days per year, use one of following: a) Apply dust suppressants to maintain stabilized surface b) Apply and maintain gravel to maintain	• For unpaved parking lots, use one of following: a) Pave b) Apply dust palliatives to maintain stabilized surface c) Apply dust palliatives to travel lanes, and apply	Maricopa County requires the stabilization or paving of all traffic areas, regardless of usage. Watering is not an option. Clark County requires the paving or stabilization of unpaved traffic areas, unless the area is only used infrequently. In that case, stabilization only has to occur during use times. Watering is not an option.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
	F.3.a) • Apply chemical stabilizers (Ref: PR805, Section F.3.b) • Apply and maintain gravel, recrushed/recycled asphalt or other material of low silt content to a depth greater than 3 inches (Ref: PR805, Section F.3.c) • Wetting. Apply water one or more times daily (Ref: PR805, Section F.3.d)	chemical/organic dust suppressant o use vegetative materials o pave o use any other method to limit VDE to 20% opacity (Ref: R8071, Section 5.1.1) • For days with 100 or more vehicle trips, as above and comply with requirements for stabilized surface (Ref: ibid, Section 5.1.2) • On each day that 25 or more VDT with 3 or more axles will occur on an unpaved vehicle/equipment traffic area, special requirements (Ref: R8071, Section 5.1.3). • On each day when a special event will result in 1,000 or more vehicles, special requirements.		stabilized surface (Ref: R310.01, Section 303, and 303.1) • If utilized at least 35 days per year: a) Add option, to above, to pave (Ref: ibid; also R310, Table 1, 1B,2B,3B)	gravel to a depth of two inches in the parking areas to maintain stabilized surface (Ref: AQR Section 92.2.1 and 92.2.1.2) • If parking lot is used intermittently, less than 35 days per year, and the lot was in existence prior to June 22, then application may be limited to period of use (Ref; ibid, 92.2.1 and 92.2.1.1) • For staging areas: o Limit size of staging areas (Ref AQR, Section 94 Handbook, CST 17-1) o Apply water (Ref: ibid, CST 17-2) o Apply dust palliative (Ref: ibid, CST 17-3) o Limit vehicle speeds to 15	Proposed Regulation VIII and San Joaquin Valley rules allow the use of daily watering as a control option; thus, Regulation VIII includes an option that is less stringent, based on the relative control effectiveness of watering compared to stabilization, gravelling and paving. However, proposed Regulation VIII still requires compliance with the opacity limit However, in SJV for sites on days with more than 100 trips, the surface must comply with stabilized surface requirements, and for areas on days with more than 25 VDT from vehicles with 3 or more axles or if over 1000 vehicles are anticipated, there are special control requirements (generally re-application of stabilizers or water) for those days. Imperial County commits to assessing the need and cost-effectiveness of these specific single day provisions and preparing amendments to PR 805, if necessary.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
		(Ref: R8071, Section 5.1.4). • As option to above, obtain Fugitive PM_{10} Management Plan (Ref: ibid, Section 5.2.1, 5.2.2, and 5.2.3)			mph (Ref: ibid, CST 17-4) o Limit ingress and egress points (Ref: ibid, CST 17-5)	
Unpaved Roads: Canal Roads	• For Canal Roads with 20 or more ADT (Ref: PR805, Section E.3) a) Stock Triploid Grass carp in canals to reduce maintenance trips or (Ref: PR805, Section F.2.a) b) Install remote control delivery gates or (Ref: PR805, Section F.2.a) c) Implement Silt removal program to delay grading of spoil piles or (Ref: PR805, Section F.2.a) d) Permanent road closure or (Ref: PR805, Section	(No requirements specified.)	(No requirements specified.)	(No requirements specified.)	(No requirements specified.)	Canal roads are unpaved roads used by the Imperial Irrigation District to maintain the irrigation canal network. San Joaquin has identified private canal roads in its inventory but does not anticipate that these private canal roads have traffic levels that meet the 26 ADT threshold for unpaved road controls and does not specify additional canal road requirements such as the ones in proposed Regulation VIII. Thus, these requirements are the most stringent for this source. (NOTE: These requirements are in addition to the general unpaved road requirements for unpaved roads that canal roads are also subject to. See Unpaved Roads: Applicability and Unpaved Roads: Control Requirements above.)

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
	F.2.a) e) Convert open canals to pipeline or (Ref: PR805, Section F.2.a) f) Line canals to eliminate maintenance for silt/weed control or (Ref: PR805, Section F.2.a) g) Initiate canal bank surface maintenance (Ref: PR805, Section F.2.a)					

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
Disturbed Open Areas: Applicability	• 0.5 acres or larger in urban areas, or 3.0 acres or more in rural areas; and contains at least 1,000 square feet of disturbed surface area (Ref: PR804, Section B)	• This rule applies to any open area having 0.5 acres or more within urban areas, or 3.0 acres or more within rural areas; and contains at least 1000 square feet of disturbed surface area (R8051, Section 2.0).	• No limit	Rule 310, Section 102 exempts disturbed open areas which are not located at sources requiring "any permit under these rules." However, most open areas will not have need for permits. Section 303 requires a dust control plan (presumed to be what is referred to in Section 102 as a "permit"), for all sources that involve earthmoving operations of 0.10 acres or greater. Since soil disturbances can occur for reasons other than earthmoving, for example, off-road vehicle traverses, it appears that many disturbed open areas, vacant lots, etc, may be exempt under these rules.	• 5,000 square feet or larger (non-ag) (Ref: AQR Section 90.1.2 and 90.2.1)	The most stringent applicability is South Coast Rule 403, which has no minimal level (although the related control requirements are less stringent than other serious non-attainment areas) Clark County AQR Section 90 which has a 5,000 square foot (approx. 1/9 acre) minimum level for all types of open areas and vacant lots. Imperial County and SJV applicability thresholds are the same. EPA adjudged[13] the SJV thresholds as meeting the stringency test and qualifying for BACM since over 98% of the total parcel acreage is in parcels of 3 acres or greater. For Imperial County, more than 99.5% of the total parcel acreage is in parcels of 3 acres or greater.[14] Hence, proposed Regulation VIII applicability threshold is more stringent than SJV's applicability threshold, which has already been determined to be BACM.

[13] EPA's Technical Support Document for the San Joaquin Valley, California 2003 PM_{10} Plan and 2003 PM_{10} Plan Amendments., p. 37-38, January 27, 2004.
[14] Imperial County Assessors Office parcel data, 2001.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
Disturbed Open Areas: Control Measures	Use one or more of the following measures to comply with the stabilized surface requirements so as to limit open areas to VDE of 20% opacity (Ref: PR804, Section E.1) • Apply and maintain water or dust suppressant to all unvegetated areas (Ref: PR804, Section F.1.a) • Establish vegetation on all previously disturbed areas (Ref: PR804, Section F.1.b) • Pave, apply gravel, chemical stabilizers/suppressants (Ref: PR804, Section F.1.c) • Prevent unauthorized vehicle access by posting "No Trespassing" signs or installing physical barriers to prevent access (Ref: PR804,	Use one or more of the following measures to comply with the stabilized surface requirements so as to limit open areas to VDE of 20% opacity (Ref: Rule 8051, Section 5.0) • Apply water/dust suppressants to unvegetated areas sufficient to limit VDE to 20% opacity (Ref: R8051, Table 8051-1, A1) • Establish vegetation to limit VDE to 20% opacity (Ref: ibid, A2) • Pave, apply gravel, apply stabilizers to limit VDE to 20% opacity (Ref: ibid, A3) • Upon evidence of trespass, post "no trespass" signs or install barriers to prevent access to area (Ref: ibid, B)	• Apply chemical stabilizers (Ref: R403 Handbook, BACM (Q)) • Water with sufficient frequency to establish a surface crust (Ref: ibid, (R)) • Establish (drought-resistant) vegetation as quickly as possible (Ref: ibid, (T))	• Restore vegetative ground cover and soil characteristics similar to native Conditions (Ref: R310, Table 1, 1E) • Pave, apply gravel, apply stabilizer to meet stabilized standards (Ref: ibid, 2E) • Establish vegetation to meet stabilized standards (Ref: ibid, 3E) • Stabilized standards, one of the following (Ref: R310, Section 302.3):	• Upon evidence of soil disturbance by motor vehicles, prevent trespass, parking, and access by installing barriers, curbs, fences, gates, posts, signs, shrubs, and trees. (Ref: AQR Section 90.2.1.1(a)) • Apply gravel or chemical stabilizers to meet one of stabilization standards (Ref: ibid, (b)) • Stabilization standards – see General: Definition of a Stabilized Surface above (Ref: AQR Section 90.2.1.2)	Proposed Regulation VIII and SJV requirements are identical. Maricopa County and Clark County have established soil stabilization standards for determining the effectiveness of the control measures. (With respect to the stabilization standards, see General: Definition of a Stabilized Surface above.) EPA has approved the SJV regulations as BACM[15], and the proposed Regulation VIII requirements are as stringent as the most stringent requirements in other serious non-attainment areas.

[15] Federal Register Vol. 69, No. 102, p.30035, May 26, 2004.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
	Section E.2)					
Disturbed Open Areas: Windblown	There are no specific exemptions for wind events in the proposed Regulation VIII amendments, thus no requirements for windblown dust are specified. However, opacity and stabilized surface requirements remain, independent of wind speed.	(No specific requirements)	As contingency measures for a high-wind exemption from certain rule requirements: •If inactive, apply water or chemical stabilizers to maintain a stabilized surface for six months (Ref: R403, Table 3, 0B) •Apply chemical stabilizers prior to wind event (Ref: ibid, 1B) •Apply water 3 to 4 times per day (Ref: ibid, 2B) •Establish vegetative ground cover within 21 days after active operations have	•Apply gravel or dust suppressants (Ref: R310, Table 2, 1B) •Apply water 3 times per day; if evidence of wind driven fugitive dust, increase watering to 4 times per day (Ref: ibid, 2B)	(No specific wind requirements, however, the general requirements for disturbed surface areas include provisions which are intended to reduce windblown dust: • Prevent access to limit soil disturbance (Ref: AQR Section 94 Handbook, CST 11) • Stabilize soil, using dust palliative or vegetation to maintain stabilized surface (Ref: ibid, CST 11-4 and 11-5) • Pave or apply	There are no specific exemptions for wind events in the proposed Regulation VIII amendments. This is the most stringent requirement, since there are not exemptions from Regulation VIII provisions because of high winds. It should be noted that for construction activities (which are not a significant source), there is an exemption from the 20% opacity requirement (PR801, Section D.2). To qualify for the exemption, the operator must either cease operations, water or apply dust suppressants once per hour, or maintain a 12% soil moisture content by watering.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
			ceased (Ref: ibid, 3B)		surface rock to maintain stabilized surface (Ref: ibid, CST 11-6))	
Agricultural Sources: CMPs	For owner/operators of commercial farms on sites greater than or equal to 40 acres, implement at least one of the following in each category: • Land preparation and cultivation (Ref: PR806, Section E.1): a. alternative till b. bed/row size spacing c. chemical/fertigation d. combined operations e. conservation irrigation f. conservation tillage g. cover crops h. equipment changes i. fallowing land j. pest control k. mulching l. night farming m. non	SJVAPCD Rule 4550 requires the submittal of a conservation management plan for sites with more than 100 acres with 1 conservation management practice (CMP) for each category: • Land preparation and cultivation: same as Imperial County with addition of floor management (nut crops), time of planting and transplanting (some vegetable crops) options. • Harvest: same as Imperial County with addition of continuous tray/D.O.V. (dry fruit crops), fallowing land; and floor management (nut crops) options.	For agricultural operations within the South Coast Air Basin, with combined disturbed surface area of 10 acres or more, the standards of Rule 403 apply after July 1, 1999 unless Best Management Practices as delineated in the Rule 403 Agricultural Handbook are implemented. (Ref: R403(h)(1)) Best Management Practices as described in the Agricultural Handbook are as follows: a) Active conservation practices b) Inactive conservation practices c) Farm yard areas d) Trackout	In May 2000, the Agricultural BMP Committee adopted the agricultural PM_{10} general permit, which became effective by rule on May 12, 2000 (Arizona Administrative Code [AAC], R18-2- 610 and 611). The Committee identified 34 BMPs that focus on feasible, effective, and common sense practices while minimizing negative economic impacts on local agriculture. (These BMPs were based on the BMP's in the South Coast Agricultural Handbook). The general permit requires that a commercial farmer implement at least one BMP to control PM_{10} for each of the	(No requirements for this source)	ICAPCD CMPs apply to farm sites with 40 or more acres, which represent 90% of farm land in Imperial County. By comparison, San Joaquin Valley requires CMPs at site greater than 100 acres, which represents about 91% of farm land in San Joaquin Valley. Thus, the farm site limit is equally stringent compared to the most stringent threshold. The proposed ICAPCD CMP requirements are similar to the requirements in San Joaquin Valley, Maricopa County and South Coast, and are directly based on the San Joaquin Valley requirements that were approved by EPA[16] as meeting the BACM requirements. The Proposed Imperial County requirements are specifically based on the San Joaquin requirements and are of similar stringency; thus, they are as stringent as the most stringent requirements for this source.

[16] Federal Register Vol. 69, No. 102, p.30035, May 26, 2004.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
	tillage/chemical tillage n. organic practices o. precision farming p. transgenic crops • Harvesting (Ref: PR806, Section E.2): a. bailing/large bails b. combined operations c. equipment changes d. green chop e. hand harvesting f. fallowing land g. nigh harvesting h. no burning i. pre-harvesting soil preparation j. shed packing k. shuttle system / large carrier • Unpaved farm roads and traffic areas (Ref: PR806, Section E.3,4): a. chips/mulches, organic materials, polymers, road oil and sand b. gravel	• Unpaved farm roads and traffic areas: same as Imperial County with the addition of mechanical pruning (tree and vine crops) option.	conservation practices e) Unpaved road conservation practices f) Storage pile conservation practices • (Ref: Guide to Agricultural PM_{10} Dust Control Practices, dated June 1999)	following three categories: tillage and harvest, non-cropland, and cropland. The general permit requires a commercial farmer to comply by December 31, 2001.		

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
	c. paving d. restricted access e. speed limit f. track-out control g. water h. wind barrier					

Comparative Analysis for Sources With Emissions Less Than the DM Level

Sources with emissions below the DM level do not need to be included in the BACM determination. Table 4-3 presents the rule source categories for these sources with emissions below the DM level. For information purposes only, Appendix D presents a comparative analysis for these sources.

Table 4-3. Dust Control Source Categories For Sources Below the DM Limit

RULE SOURCE CATEGORY	CONTROL CATEGORY
Construction	Visible Dust Emissions
Construction	Demolition
Construction	Pre-Earthmoving
Construction	Earthmoving
Construction	Demolition
Construction	Inactive Disturbed Land
Construction	Windblown
Construction	Dust Plan Applicability
Construction	Dust Plan Requirements
Bulk Materials	Handling/Storage
Bulk Materials	Transport
Bulk Materials	Outdoor Chute/Conveyor
Bulk Materials	Windblown
Carryout/Trackout	Removal
Carryout/Trackout	Prevention
Carryout/Trackout	Clean-Up Methods
Paved Road Dust	New/Modified Roads
Paved Road Dust	Erosion Clean-Up
Paved Road Dust	Street Sweeping
Cattle feedlots	Requirements
Weed Abatement	Requirements

5. IMPACT ANALYSIS

This section presents information about the emission reductions, cost and cost-effectiveness of the proposed to Regulation VIII amendments. This report relies on previous analysis of BACM effectiveness, costs, and cost-effectiveness prepared for the 1993 SIP for PM_{10} in the Imperial Valley[17] rule. It also relies on information is taken from the October 18, 2004 CARB staff report entitled "Proposed List of Measures to Reduce Particulate Matter – PM_{10} and $PM_{2.5}$," and the April 28, 2003 SJVAPCD Appendix G to their 2003 PM_{10} Plan, entitled "Best Available Control Measures / Technology and Reasonably Available Control Measures / Technology Demonstration for Sources of PM_{10} and PM_{10} Precursors in the San Joaquin Valley." (The CARB staff report summarizes PM_{10} control measures adopted in California and their reported cost-effectiveness.) Emission reduction and cost estimates are provided for all proposed Regulation VIII rules. As noted in Chapter 1, this BACM analysis has not been prepared as part of the SIP development process.

Control Effectiveness and Cost Information

As noted above, the control effectiveness of measures within proposed Regulation VIII are based on previously published estimates, including those used in the 1993 Imperial Valley PM_{10} SIP, the 2003 San Joaquin Valley PM_{10} SIP and, where necessary, other serious PM_{10} non-attainment area SIPs and related technical documents. Table 5-1 summarizes, for each proposed Regulation VIII rule, estimated emissions from sources covered by the proposed rule, the percentage of those emissions that are subject to control requirements, the composite control factor for those controls, and the estimated emission reductions at full implementation. Cost information is based on information from the 1993 Imperial Valley PM_{10} SIP, the 2003 San Joaquin Valley PM_{10} SIP[18] and the latest information from Imperial County public works department. The following subsections present the input information and assumptions used in Table 5-1

Table 5-1. Proposed Regulation VIII Emission Reduction Summary

Proposed Rule	Emissions (tons/day)	Applicability (percent)	Composite Control Factor	Emission Reductions
801 (Construction)	1.91	100	0.12	0.23
802(Bulk Materials)	2.61	10	0.5	0.13
803 (Track-out)	4.09	18.4	0.6	0.45

[17] ICAPCD, "State Implementation Plan for PM_{10} in the Imperial Valley," Final, adopted September 28, 1993.
[18] Appendix G, BACM/T and RACM/T Demonstration for Sources of PM_{10} and PM_{10} Precursors in the San Joaquin Valley Air Basin. SJVAPCD 2003 PM_{10} SIP. SJVAPCD. April 2003.

Table 5-1. Proposed Regulation VIII Emission Reduction Summary

Proposed Rule	Emissions (tons/day)	Applicability (percent)	Composite Control Factor	Emission Reductions
804 (Open Areas)	163.36	1	0.7	1.14
805 (Non-Farm Unpaved Roads)	84.53	20	0.6	10.09
805 (Paved Roads)	4.09	1	0.8	0.03
806 (CMPs)	25.35	see below	see below	4.16
TOTAL	**281.85**			**16.23**

There is no current information on which control options will be used by sources to comply with the proposed rules, so information on control options in each proposed rule is presented in the following subsections. The exception is the treatment of unpaved roads by Imperial County to comply with PR 805; specific cost information is provided for the treatment of applicable roads.

PR 801: Construction

PR 801 applies to any construction or other earth moving activities. Only construction at existing single family homes is exempt, so the rule applies to all new construction emissions. PR 801 upgrades the RACM controls in previous Rule 800 to BACM controls consistent with requirements in other serious non-attainment areas. Emission estimates for construction already include the effect of basic RACM controls, such as watering. BACM upgrades will require additional watering and/or stabilizing during and after construction activities. As noted in the South Coast 1997 AQMP, such BACM upgrades provide an additional control efficiency of approximately 12%, mostly from additional water and/or stabilizing during and after construction or other earthmoving activities. Overall reductions from PR 801 are estimated at 0.23 tons/day.

Estimated costs for certain construction-related controls include: additional use of water trucks ($3,152 per 40 acre project)[19]; water sprinkler ($30 per acre); and dust control plans and related costs ($112/acre)[20]; . Actual costs for compliance is subject to the control options used by the site and the level of dust control currently practiced.

PR 802: Bulk Materials

PR 802 applies to the handling, storage, and transport of bulk materials. There is not an explicit inventory category for bulk materials, although it can be assumed that the majority of handling, storage, and transport of these materials occur at mineral processing facilities and, to some extent, at

[19] Final BACM Technological and Economic Feasibility Analysis, SJVAPCD 2003 PM_{10} SIP, April 2003.
[20] SCAQMD, Rule 403 Final Staff Report, September 1992.

construction sites. It is assumed that 10% of the emissions from mineral processing facilities are related to bulk materials. Wetting of bulk material piles and transfer points has an estimated control efficiency of 50%. (San Joaquin estimated a 56 to 81% control efficiency.) Emission reductions from transfer controls have not been estimated, but most mineral processing plants are operating under ICAPCD permits that require control at major transfer points. Overall reductions from PR 801 are estimated at 0.23 tons/day.

Estimated costs for PR 802-related controls include: Truck covers ($900 per truck)[21]; and 3-sided enclosure ($830 per enclosure)[22].

PR 803: Carry-out and Track-out

PR 803 applies to material carried or tracked out onto paved roadways. There is not an explicit inventory category for track-out, although it can be assumed that a given percentage of the silt loading on paved road surfaces is from track-out. EPA guidance[23] indicates that 46% of paved road deposition is attributable to mud and dirt carry-out. In addition, many permanent facilities (e.g. mineral processing facilities) currently implement PR805 track-out controls. It is assumed that 40% of the track-out emissions originate from construction and other temporary sites that have not previously been using PR805 controls. Thus, the 18% of paved road dust will be affected by new PR 803 controls. Overall reductions from PR 803 are estimated at 0.45 tons/day.

Estimated costs for PR 803-related controls include: paving access points ($6,000 to $8,500 per access point)[24]; chemical stabilization ($984)[25]; gravelling ($680 to $1,360 per year per access point)[26]; and track-out control device ($3,500 to $4,800 plus maintenance costs)[27].

PR 804: Open Areas

PR 804 applies to non-agricultural rural open areas more than 3 acres (rural) or 0.5 acres (urban). Review of Imperial County parcel data indicates that over 99.5% of parcels are greater than 3 acres in size. However, 77.5% of Imperial County is desert and/or scrubland, much of which is under the control of BLM or other federal agencies. (BLM areas are exempt from Rule 804, but are subject to dust control plan requirements in PAR 800. Agricultural areas, which cover 21% of Imperial County, are subject to PR 806.) For purposes of estimating emission reductions, it is assumed that the non-BLM desert and scrubland areas are not disturbed by man due to their remoteness. It is assumed that most disturbed land will occur relatively near the urban areas, which represent 1.5% of Imperial County. Assuming that up to 2/3rds of that area could be disturbed, the applicability is estimated to be 1% or less. The composite control factor is estimated to be 70% (based on control efficiencies cited in San Joaquin Valley's 2003 PM_{10} SIP). Overall reductions from PR 804 are estimated at 1.07 tons/day. (It should be noted that the BLM dust control plan could result in additional reductions from this source, depending on the extent of BLM areas that are disturbed by

[21] ICAPCD, "State Implementation Plan for PM_{10} in the Imperial Valley," Final, adopted September 28, 1993.
[22] Final BACM Technological and Economic Feasibility Analysis, SJVAPCD 2003 PM_{10} SIP, April 2003.
[23] EPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, Document Number EPA-450/2-92-004, Office of Air Quality Planning and Standards, 1992.
[24] ICAPCD, "State Implementation Plan for PM_{10} in the Imperial Valley," Final, adopted September 28, 1993. and SCAQMD, Rule 403 Final Staff Report, Appendix G, February 1997.
[25] SCAQMD, Rule 403 Final Staff Report, Appendix G, February 1997.
[26] Final BACM Technological and Economic Feasibility Analysis, SJVAPCD 2003 PM_{10} SIP, April 2003.
[27].Final BACM Technological and Economic Feasibility Analysis, SJVAPCD 2003 PM_{10} SIP, April 2003, and SCAQMD, Rule 403 Final Staff Report, Appendix G, February 1997

illegal OHV use. There will also be reductions resulting from implementation of the BLM dust control plan of episodic emissions from legal OHV events.)

Estimated costs for PR 804-related controls include: dust suppressants ($3,340 per acre); and signage ($200 per sign).[28]

PR 805: Paved and Unpaved Roads

PR 805 applies to unpaved paved roads. Of the 7,813 miles of unpaved roads in Imperial County, 1362 miles are city and county roads, 6312 miles are canal roads, and 139 miles are federal roads (BLM and USFS). 25.5% of entrained emissions and 5% of windblown emissions are estimated to come from city and county roads over 50 ADT, which total 217 miles. Canal roads in total are estimated to contribute 67% of the windblown emissions and 53% of the entrained emissions. It is assumed that 0.5% of canal roads (31.5 miles) have 20 ADT or greater, and would thus be subject to PR 805. For the purposes of this analysis, no reductions are credited to federal roads, although there will be reductions based on the BLM dust control plan (PAR 800). Total applicability for non-farm roads is thus 5% for windblown and 26% for entrained dust, resulting in an overall applicability percentage of 20%. (See also "Determination of PR 805 Applicability" spreadsheet in Appendix B.) The composite control factor (entrained and windblown) is estimated to be 60%[29], assuming that both the County and IID will choose gravelling to meet the requirements of PR 805. (Emission reductions will increase if paving is chosen as the control option, but budget analysis indicates that paving an appreciable number of miles is not fiscally feasible.) Overall reductions from PR 805 are estimated at 10.09 tons/day.

Imperial County Public Works Department has provided the following cost information for the paving or gravelling of high ADT roads[30]. They estimate that it would cost $2,980 to apply dust suppressant to 1 mile of unpaved road, $8,950 to gravel, grade, compact and water 1 mile of unpaved road, and $131,200 to pave 1 mile of unpaved road. It is the County's current intention to comply with PR 805 by gravelling 10% of the applicable roads per year (~22 miles per year). The annual cost of complying with PR 805 is thus approximately $194,000 per year. (Paving those same roads would cost approximately $2,850,000.) The Imperial County Public Works Department has also provided additional budget information.[31] The Department has budgeted $316,000 for gravelling projects in FY2005-06.; this is based on a 1997 FEMA project that entailed four road improvement (e.g. graveling) contracts for 550 miles of unpaved roads at a cost of $9.5 million. The current budget for paved road maintenance is $2 million per year. In addition, the Department has purchased six traffic counters at a cost of $1,240, to conduct additional traffic counts on unpaved roads in the county.

PR 806: Conservation Management Practices

PR 806 requires CMPs at all farms over 40 acres, which includes over 90% of farm acreage in Imperial County. Thus, the applicability is 90%. San Joaquin Valley estimated emission reductions from Rule 4550, which is functionally equivalent to PR 806, by CMP and crop category. In addition to assuming an 80% rule compliance factor, information used to calculate the emission reductions included an estimate of which CMP options would be used for each crop type and CMP

[28] Both from Final BACM Technological and Economic Feasibility Analysis, SJVAPCD 2003 PM_{10} SIP, April 2003.
[29] Based on control efficiency cited in San Joaquin Valley's Final Draft Staff Report for Regulation VIII (May 2004).
[30] Imperial County Public Works cost estimate of compliance, August 1, 2005.
[31] Imperial County Public Works Department letter to ICAPCD, dated August 22, 2005.

category. That information is not available for Imperial County at this time. For purposes of estimating emission reductions for this report, it is assumed that a composite control factor derived from dividing Rule 4550 emission reductions by emissions for each source category can be applied to Imperial County. (The Rule 4550 staff analysis assumed that the rule applied 91% of San Joaquin Valley farms, compared to 90% of Imperial County farms subject to PR 805. That difference was accounted for in determining PR 806 emission reductions.) Overall reductions from PR 806 are estimated at 4.16 tons/day.

Costs for CMPs related to unpaved roads and traffic areas would be similar to control costs presented for PR 803 (track-out controls) and PR 805 (unpaved road / traffic area controls). Costs for CMPs for land preparation / cultivation and harvesting are highly dependent on crop type and the specific CMP option chosen. SJVAPCD[32] cites cost information was received from the University of California Cooperative Extension, UC Davis and ARB (various documents), Draft Regulation VIII Staff Report dated September 2001, the 2003 PM10 Plan, inputs from UC Davis Cooperative Extension, inputs from stakeholders, and NRCS/RCD, and internet research. SJVAPCD determined[33] that for San Joaquin Valley farmers that "(t)he cost effectiveness analysis demonstrates a savings when reducing the number of passes for the Land Preparation CMP Category. It also shows some potential savings in the Harvest CMP Category. For the other CMP categories, the analysis generally shows a net cost."

Cost-Effectiveness

The cost-effectiveness of the measures in each Regulation VIII rule is presented in Tables 5-2 though 5-7. These estimates of cost-effectiveness for the individual control measures in Regulation VIII are based on the 2004 CARB staff report[34] for SB 656 and the 2003 San Joaquin Valley PM_{10} SIP[35]. Actual cost-effectiveness estimates for controls in Imperial County are expected to be the same or less cost-effective than those listed in the tables. Based on the rural nature of Imperial County, it would be expected that the emission reductions associated with these measures will be the same or smaller than those assumed in San Joaquin Valley and other areas. For example, activity levels associated with emissions (e.g., VMT for paved roads, ADVT for unpaved roads) will be lower in Imperial County than other areas, resulting in less emissions (and emission reductions) for these sources. Control costs in Imperial County may also be higher in some cases. More current information is available for Rule 805 implementation on county roads. Based on information from Imperial County's Public Works Department,[36] assuming that 10% of the 217miles of applicable high ADT roads are treated per year for ten years, and a 4% interest rate, the cost-effectiveness of PR 805 for county roads is approximately $795/ton. (The cost-effectiveness of paving would be approximately $7,100/ton, but the absolute cost ($2,850,000) is greater than the entire paved and unpaved road maintenance budget for Imperial County). These estimates are comparable to estimates in the SB 656 staff report ($344/ton to $12,300/ton for stabilizing,

[32] Final BACM Technological and Economic Feasibility Analysis, SJVAPCD 2003 PM_{10} SIP, April 2003 and Appendix B, Rule 4550 Final Staff Report, SJVAPCD, April 15, 2004.
[33] Appendix B, Rule 4550 Final Staff Report, SJVAPCD, April 15, 2004.
[34] CARB Staff Report, Proposed List of Measures to Reduce Particulate Matter – PM10and PM2.5 (Implementation of Senate Bill 656, Sher 2003), October 18, 2004.
[35] SJVAPCD 2003 PM_{10} SIP, Appendix G, BACM/T and RACM/T Demonstration for Sources of PM_{10} and PM_{10} Precursors in the San Joaquin Valley Air Basin, SJVAPCD, April 2003.
[36] Imperial County Public Works cost estimate of compliance, August 1, 2005.

gravelling and paving)[37] and in other non-attainment area BACM analyses ($2,100/ton to $5,900/ton for paving in the San Joaquin Valley)[38].

Certain dust control measures, as identified in Senate Bill 656, are not included in proposed Regulation VIII amendments based on technical reasons such as the source is not present (e.g., winter non-skid sand) or the control cannot be applied effectively in Imperial County (e.g. PM_{10}-certified sweepers). These measures are identified in Table 5-8. No potential BACM measures have been excluded based on cost-effectiveness, although a cost-effectiveness analysis of PR 805 provisions for unpaved parking lots and other traffic areas is being conducted.

[37] CARB Staff Report, Proposed List of Measures to Reduce Particulate Matter – PM10and PM2.5 (Implementation of Senate Bill 656, Sher 2003), October 18, 2004.
[38] Final BACM Technological and Economic Feasibility Analysis, SJVAPCD 2003 PM_{10} SIP, April 2003.

Table 5-2. Cost-effectiveness of measures in Proposed Rule 801 – Construction and Demolition

NOTE: Construction and demolition source categories are below the DM level.

	PR 801	SB 656 Measure No.	SB 656 ($/ton)	SJVUAPCD ($/ton)
E.1.a-b	Limit VDE to 20% opacity for sites of > 1 acre	24-26.a	Watering $301/ton	See below
F1.a.	Pre-Activity: Pre-water site and phase work to reduce amount of distributed surface area	24-26.b, 39, and 40	RACM to BACM upgrade: $197/ton [NOTE: based on SCAQMD minor upgrades. Not appropriate comparison]	Apply water and/or dust suppressants at end of day: $7,222,000/ton Prohibit Demolition activities when wind>25 mph: $847,000/ton Dust Monitoring: $231,000-$339,000/ton 12% soil moisture for earthmoving: $21,600-$56,000/ton 15 mph speed limit $850/ton posting of speed limit $2,940-$74,600/ton Dust Control Plans:$17,2000-$31,500/ton Require notification for earthmoving operations $2,480-$14,800/ton
F1.b	During Active Operation: apply water or chemical stabilizer; or construct and maintain a wind barrier			
F.1.b.3	Apply water or chemical stabilizer to unpaved haul/access roads and unpaved vehicle/equipment traffic areas			
F.1.c	Periods of Inactivity: restrict vehicular access; and apply water or chemical stabilizer. If area > 0.5 acres of disturbed surface area remains unused for ³ 7 days, area must comply with conditions for stabilized surface area			

Table 5-3. Cost-effectiveness of measures in Proposed Rule 802 – Bulk Materials

NOTE: Bulk materials source categories are below the DM level.

	PR 802	SB 656 Measure No.	SB 656 ($/ton)	SJVUAPCD ($/ton)
E	Limit VDE to 20% opacity for bulk material handling, material transport, and haul trucks	28.a	$1,151/ton (handling) to $28,293/ton (storage)	None Reported
F.1.a	Spray with water prior	28.b and 41a.	RACM to BACM upgrade: $197/ton	Require Construction of 3-sided enclosures with 50% porosity: $659,000/ton
F.1.b	Apply and maintain chemical stabilizer			
F.1.c	Protect from wind erosion by sheltering or enclosing the operation and transfer line	28.a	See 28.a. above	
F.1.d	Cover bulk materials stored outdoors with tarps, plastic, or other material	28.a	See 28.a. above	
F.2.a	Completely cover or enclose all Haul Truck loads of Bulk Material	28.a	See 28.a. above	
F.2.b, c, d	Material transport: cover, freeboard, housekeeping	28.b	See 28.b. above	

Table 5-4. Cost-effectiveness of measures in Proposed Rule 803 – Track-out and Carry-out

NOTE: Track-out and carry-out source categories are below the DM level.

	PR 803	SB 656 Measure No.	SB 656 ($/ton)	SJVUAPCD ($/ton)
F.1.a	Rapidly clean up any bulk material tracked out or carried out onto a paved road surface by the end of the day	29-30	Manual Sweeping: $3,54/ton Control devices installed at access points to public roads: $13,700 to $322,000/ton Length of paved interior roads: $7,930 to $186,000/ton	Impose Rule 8041 Requirements: $44,100-$387,000/ton Require track-out control devices to be 25 ft long and road width: $13,700-$322,000/ton Require paved interior roads to be 100 ft long and full road width: $7,930-$186,000/ton Gravel pads: $27,000-$322,000/ton
	All sites with access to a paved road and with > 150 ADT, or > 20 ADT by vehicles with > 3 axles shall:	29.b	<$100/ton	
F.1.b	Install one or more Track-Out Prevention Devices or wash down system at access points; or			
F.1.c	Apply and maintain paving, chemical stabilization, or gravel for a distance of 50 or more consecutive feet at access points			

Table 5-5. Cost-effectiveness of measures in Proposed Rule 804 – Open Areas

NOTE: Open areas source categories are above the DM level.

	PR 804	SB 656 Measure No.	SB 656 ($/ton)	SJVUAPCD ($/ton)
E.1	Limit open areas to VDE of 20% opacity	31.a	Watering: $7020/ton	None Reported
E.2	Prevent unauthorized vehicle access by posting "No Trespassing" signs or installing physical barriers such as fences, gates, posts, and/or appropriate barriers to prevent access	31.a	Watering: $7,020/ton	
F.1.a	Apply and maintain water or dust suppressant to all undefeated areas	27, 31, and 42	27b. RACM to BACM upgrade: $197/ton 31a. Watering: $7,020/ton 31b. RACM to BACM upgrade: $197/ton 42. $697/ton	Impose Rule 8051 requirements on urban parcels of 0.5 acres or more that have a least 1,000 square feet of disturbed surface: $67,800/ton Impose Rule 8051 requirements immediately after cessation of disturbance: $6,450-$33,600/ton
F.1.b	Establish vegetation on all previously disturbed areas			
F.1.c	Pave, apply and maintain gravel or apply and maintain chemical stabilizers/suppressants			

Table 5-6. Cost-effectiveness of measures in Proposed Rule 805 – Paved and Unpaved Roads

NOTE: The unpaved roads source category is above the DM level.

	PR 805 – Unpaved Roads	SB 656 Measure No.	SB 656 ($/ton)	SJVUAPCD ($/ton)
F.1.a	Pave or	35-36	35. Apply water, gravel, chemical or dust suppressant, or pave: $344 to $12,293/ton 36a. -Apply water, dust suppressant, gravel, pave: $56 to $1,481/ton -Paving: $2,160 to $5,920/ton 36b. $958/ton	Limit speed to 25 mph: $1,080/ton Require roads in urban areas to be paved: $2,160-$5,920/ton Impose Rule 8071: $3,510/ton
F.1.b	Apply chemical stabilizers or			
F.1.c	Apply and maintain gravel, recrushed/recycled asphalt or other material of low silt content to a depth of > 3 inches or			
F.1.d	Apply water one or more time daily or			
F.1.F	Permanent road closure or			
F.1.f	Any other method to meet VDE of 20% opacity and meets conditions of a stabilized unpaved road			
F.2.a through g	Canal Roads measures	None	Not Estimated	None Reported
Unpaved Traffic Areas				
F.3.a	Pave or	35-36	See 35-36 above	See 35-36 above
F.3.b	Apply chemical stabilizers or			
F.3.c	Apply and maintain gravel, recrushed/recycled asphalt or other material of low silt content to a depth of ³ 3 inches or			
F.3.d	Apply water one or more time daily			

Table 5-6. Cost-effectiveness of Measures in Proposed Rule 805 – Paved and Unpaved Roads (continued)

NOTE: The paved road source category is below the DM level.

	PR 805 – New and Modified Paved Roads	SB 656 Measure No.	SB 656 ($/ton)	SJVUAPCD ($/ton)
F.4.1	New or modified paved roads with projected ADT > 500 vehicles shall construct paved shoulders of 4 ft (500-3000 vehicle trips) or 8 ft (> 3000 vehicle trips)	32	32a. 4 ft. Paved shoulder on 50% of highest ADT existing paved roads: $7,290-$11,300/ton 32b. Curb and Gutter road shoulder: $5577/ton	4ft paved shoulders on all new/modified paved roads: $13,800-$508,000/ton 4ft paved shoulder on 50% highest ADT existing paved roads: $7,290-$11,300/ton Require wind-or water-borne deposition to be cleaned up within 24 hrs: $2,850/ton
F.4.2	In lieu of F.4.1, a curbing adjacent to and contiguous with the travel lane or paved shoulder or road may be constructed	32		
F.4.3	In lieu of F.4.1, intersections, auxiliary entry lanes and auxiliary exit lanes may be constructed adjacent to and contiguous with the roadway	32		
F.4.4	Medians shall be constructed with paved shoulders having a minimum width of 4 ft. adjacent to traffic lanes for projects ADT > 500, unless speed limit < 45 mph with curbing or landscaped medians	32		
F.6	In lieu of paving or vegetation requirement, may apply oils or other chemical stabilizers	32		

Table 5-7. Cost-effectiveness of measures in Proposed Rule 806 – Conservation Management Practices

NOTE: Some agricultural operations source categories (eg. tilling and windblown) are above the DM level.

	PR 806	SB 656 Measure No.	SB 656 ($/ton)	SJVUAPCD ($/ton)
D.1	Shall implement at least one of the following practices if own/operate a commercial farm of > 40 acres: land preparation and cultivation; harvest activities; unpaved roads; or unpaved equipment operation yards.	43.b	Highwind tilling prohibition and stabilization of fallow fields: $134/ton	Overall: $8 to $2,500/ton
D.4	Prepare and submit a CMP application for each agricultural operation site			
E.1	Land Preparation and Cultivation	43.c	$8/ton	
E.2	Harvesting	43.b	None provided	
E.3	Unpaved Farm Roads	43.a and d	$958/ton	
E.4	Equipment Traffic Areas	43.d	$958/ton	

Table 5-8 Senate Bill 656 Measures Not in the Proposed Regulation VIII Amended Rules

SB656		Cost-Effectiveness	Comment
33	Requires use of certified PM_{10} efficient street	$1,119/ton (1996$) A Rule 1186-certified sweeper is $37,000 more expensive than a conventional sweeper.	As noted in the SJVUAPCD "BACM/BACT and RACM/RACT Demonstration for Sources of PM_{10} and PM_{10} Precursors in the San Joaquin Valley Air Basin," (dated April 28, 2003), "use of these units will result in safety problems on freeways and rural roads in flat terrain." The overwhelming majority of roads in Imperial County are freeways and rural roads in flat terrain. For maximum efficiency, sweepers must travel less than 5 mph.
34	Requires vacuum-street sweeping on roads to remove sand and cinders that are placed on the road during winter storms as an anti-skid material. .	$350/ton (1996$) (assumes 2,400 lb/day winter-day emission reductions)	This Great Basin Unified APCD measure does not apply to Imperial County, where anti-skid material is not used.
37a. and 37b.	**Weed Abatement Activities** Pre-activity Requirements: 1) Pre-watering to limit VDE opacity to 20%; or 2) phasing work to reduce amount of disturbed surface area. Apply water during active operations to limit VDE to 20% opacity. Apply water or chemical stabilizers to meet conditions of stabilized surface.	Not estimated	Emissions from this source are not quantified and considered de minimis.
38	Defines windblown dusts	NA	No specific requirements.
41b.	Additional bulk material control requirements for Coachella Valley source	$352 - $462 /ton (1992 $)	Controls specific to Coachella Valley blowsand zone, which does not exist in Imperial County.

6. CONCLUSIONS

This report presents the BACM determination based on proposed Regulation VIII amendments. It includes all elements of a BACM determination, including inventory assessment, calculation of the de minimis emission level, identification of significant sources (e.g. those sources which emit more than the DM level), a comparative analysis of proposed Regulation VIII amendments for significant sources with regulations adopted by serious PM_{10} non-attainment areas, and a presentation of cost-effectiveness of the dust control measures. The proposed Regulation VIII BACM amendments are based on BACM recently adopted by other serious non-attainment areas. This technical memorandum presented the existing inventory of primary PM_{10} sources and determined the de minimis level of primary PM_{10} for Imperial County, based on that inventory and recent ambient PM_{10} levels. Based on the calculated DM level of 4.9 tons/day of PM_{10}, significant sources of primary PM_{10} in Imperial County were identified. Those sources are unpaved road and surface dust, disturbed open areas, and certain agricultural sources. A comparative analysis of the proposed Regulation VIII amendments and other BACM rules in serious PM_{10} non-attainment areas was presented. This comparative analysis was done for both significant sources and sources below the DM level. For significant sources, a discussion of the stringency of threshold limits and requirements compared to the most stringent in other serious non-attainment areas was presented, including justification of less stringent thresholds and/or requirements, if necessary. Emission reductions and costs associated with each proposed rule were presented. Except for unpaved parking lots and staging areas, proposed Regulation VIII thresholds and requirements were demonstrated to be as stringent as the most stringent adopted in other serious PM_{10} non-attainment areas. Further cost-effectiveness analysis will be conducted for unpaved parking lots and staging areas. Imperial County will propose amendments to PR 805 reflecting more stringent threshold and requirements if they are shown to be cost –effective. Emission reduction, cost information, and cost-effectiveness estimates for the proposed Regulation VIII rules and/or control measures in the proposed Regulation VIII rules were presented. Cost-effectiveness estimates for control measures not included in Regulation VIII were also presented. No potential BACM measures were excluded based on cost-effectiveness. Except for unpaved traffic areas (for which the cost-effectiveness justification of thresholds and requirements has not been completed), Proposed Regulation VIII amendments for sources above the DM level have been determined to be BACM for Imperial County, based on comparative analysis with fugitive dust rules in serious non-attainment areas. Measures excluded from proposed Regulation VIII have been excluded for technical or implementation reasons, not cost-effectiveness.

A P P E N D I X A

Technical Memorandum: Latest Revisions of the Windblown Dust Study

Appendix A

Technical Memorandum: Latest Revisions of the Windblown Dust Study

Appendix A presents the September 20, 2005 Technical Memorandum from ENVIRON detailing the final revised results of ENVIRON's Imperial Valley Fugitive Dust Emissions Inventory. First, a brief background of the original study is presented, followed by a discussion of the issues and concerns associated with the results presented in the original Final Report (ENVIRON, 2004). Finally, the revised analyses and windblown dust emission results are presented.

ENVIRON

MEMORANDUM

To: Brad Poiriez, Imperial County Air Pollution Control District

From: Gerard Mansell

Date: 20 September 2005

Subject: Final Revision for the Imperial Valley Fugitive Dust Emission Inventory

---

This memorandum presents the final revised results of ENVIRON's Imperial Valley Fugitive Dust Emissions Inventory. First, a brief background of the study is presented, followed by a discussion of the issues and concerns associated with the results presented in the Final Report (ENVIRON, 2004). Finally, the revised analyses and results are presented.

Introduction

Imperial County, located in the southeastern corner of California, has been designated as moderate nonattainment of the National Ambient Air Quality Standard (NAAQS) for particulate matter with a diameter less than ten microns (PM_{10}). The Federal PM_{10} standard includes both annual and 24-hour averages with thresholds of 50 and 150 $\mu g/m^3$, respectively.

In the PM_{10} emissions inventory prepared for Imperial County by the California Air Resources Board (ARB) for the year 2001, area sources represent more than 98% of the Imperial PM_{10} emissions: 235 tons/day (tpd) out of a total of 239 tpd (ARB, 2000). Within the area source category, the largest two sources are windblown fugitive dust and dust from unpaved roads, which are listed as 174 tpd and 40 tpd, respectively (i.e., 73% and 17% of the total PM_{10}). Thus, according to the ARB 2001 inventory, windblown fugitive dust emissions comprise more than two-thirds of the total Imperial County PM_{10} emissions. A majority of the ARB wind-blown dust estimate is from agricultural lands. The current inventory does not include windblown dust emissions from the barren and scrubland source areas (e.g., deserts, scrublands, sand dunes).

The Imperial Valley, which runs approximately northwest to southeast through the center of the county, is one of the most productive agricultural areas in the nation. Given the size of the agricultural industry in Imperial County, and the fraction of the inventory that is currently believed to result from agricultural operations, a thorough understanding of windblown agricultural dust generation will be essential to properly quantifying emissions from this source category.

Unlike emissions generated primarily by stationary sources or tailpipe exhaust from mobile sources, the emissions from area sources are difficult to accurately predict and to verify. In the case of windblown dust, emissions cannot be directly monitored, but rather must be derived

---

Golden Gate Plaza ! 101 Rowland Way ! Novato, California 94945-5010 USA
Tel: (415) 899-0700 ! Fax: (415) 899-0707 ! www.environcorp.com

using a combination of activity parameters (e.g., acres farmed per year, disturbed lots, etc.) and emission factors per unit of activity (e.g., tons per acre farmed, etc.).

For the reasons discussed above, the predicted emissions obtained using the modified USDA windblown dust equation, as currently used by the ARB, likely do not accurately reflect actual windblown dust emissions from disturbed lands in Imperial County. An approach to modifying the wind erosion equation was initially investigated; however, no information concerning the application of the equation for hot, arid regions could be obtained from the USDA. Therefore, ENVIRON implemented an alternative calculation methodology, based on recent efforts of the Western Regional Air Partnership (WRAP), to estimate wind blown fugitive dust in the Imperial Valley (ENVIRON, 2003; Mansell, 2003)

2002 Fugitive Dust Emission Inventory

A Fugitive Windblown Dust inventory of windblown dust emissions from agricultural lands in Imperial Valley was developed for 2002 and compared with the previous 2000 inventory prepared by ARB. The 2000 ARB inventory attributed nearly 173 tons per day (tpd) to dust emissions from wind erosion on agricultural lands but did not include any wind erosion emissions from barren and other non-agricultural lands. The new 2002 inventory estimated emissions for wind erosion from both agricultural lands and other lands in Imperial County. The new 2002 inventory estimated emissions from agricultural lands that were approximately one-seventeenth of that estimated by ARB for 2000, or, just over 10 tpd. Thus, whereas dust emissions from agricultural lands accounted for 75% of the inventory in the 2000 ARB inventory, wind erosion from agricultural lands accounted for just under 15% of the new 2002 inventory without accounting for emissions from barren and other lands.

Fugitive dust emissions for barren and other non-agricultural lands were also estimated with 792 tpd PM_{10} emissions attributed to barren lands. When included in the inventory, PM_{10} emissions from barren lands account for just over 92% of the total inventory, and windblown dust emissions from agricultural lands account for just over 1% of the total inventory.

The development of the 2002 Fugitive Windblown Dust inventory, including a summary and discussions of the resulting emission estimates, is documented in ENVIRON, 2004. Table 1 presents a summary of the 2002 PM10 fugitive dust emissions from wind erosion for Imperial County.

Table 1. 2002 PM_{10} fugitive dust emission estimates for Imperial County (tons)

Month	Total	Urban	Scrublands	Forest	Barren	Unspecified Crops	Agricultural Crops
Jan	10948.5	2.3	2980.7	1.9	7697.5	48.8	217.3
Feb	23763.4	0.0	2859.2	1.6	20586.1	41.9	274.6
Mar	53982.4	0.0	3739.4	2.3	49623	64.5	553.2
Apr	80077.8	1.0	7297.1	4.4	71921.1	107.6	746.6
May	42986.9	0.2	3023.3	1.9	39560.3	45	356.2
Jun	38076.2	0.0	5696	3.2	31889.4	52.6	435
Jul	11408	0.0	1259.8	0.7	9919.4	21.8	206.3
Aug	16710.2	0.0	4339	2.3	12234.3	26	108.6
Sep	16060.1	0.0	1915.3	0.8	13851.5	22.8	269.7

ENVIRON
Golden Gate Plaza . 101 Rowland Way . Novato, California 94945-5010 USA
Tel: (415) 899-0700 . Fax: (415) 899-0707 ! www.environcorp.com

Month	Total	Urban	Scrublands	Forest	Barren	Unspecified Crops	Agricultural Crops
Oct	2145.3	0.0	226.8	0.0	1906.8	0.9	10.8
Nov	18541.1	0.0	1919.9	1.0	16422.4	28.3	169.5
Dec	14277.5	0.0	787.5	0.5	13352.5	16.5	120.5
Annual	328977.4	3.5	36044	20.6	288964.3	476.7	3468.3
Winter	48989.4	2.3	6627.4	4	41636.1	107.2	612.4
Spring	177047.1	1.2	14059.8	8.6	161104.4	217.1	1656
Summer	66194.4	0	11294.8	6.2	54043.1	100.4	749.9
Fall	36746.5	0	4062	1.8	32180.7	52	450

In early 2005, ENVIRON received comments on the 2002 Fugitive Windblown Dust Final Report from the ARB and the EPA (ARB, 2004; EPA, 2004). Foremost among the various issues raised was the treatment of barren lands throughout the Imperial Valley. As described below, a number of assumptions are incorporated into the estimation methodology. The need for these assumptions is primarily the result of the lack of detail available in the land use and soils databases used to characterize vacant lands. To address these concerns, modifications to the various assumptions associated with barren lands were incorporated into the land use database and the windblown dust emission model was re-run. A summary description of the estimation methodology, the various assumptions used and the revised treatment of barren lands within the domain are presented below.

Summary of Emission Inventory Estimation Methodology

The emission estimation methodology involves several steps including the categorization of land types and soil characteristics, determined by the land type and stability, application of the dust flux relations for each soil texture group and adjustments to account for vegetation canopy cover. Finally, the emission factors for agricultural lands are adjusted based on non-climatic effects. Emission factors will vary spatially based on land and soil characteristics, and temporally based on hourly wind speeds and, in the case of agricultural lands, seasonal and/or monthly crop calendars. A complete discussion of the development of the land use and soils databases, as well as a discussion of the various assumptions regarding soil stability and reservoir characteristics was presented in ENVIRON, 2004.

Land use/land cover and soil texture used for the development of the 2002 Base inventory are displayed in Figures 1 and 2, respectively. Soil stability is assumed to depend on land use types as given in Table 2. Dust flux rates as a function of soil texture, soil stability and wind speed were presented in Figures 2-6 and 2-7 of ENVIRON, 2004. The assumed soil stability also determines the duration of windblown dust emissions; unstable soils can emit for up to 10 hrs during any single wind event; stable soils emit only for one hour. To account for vegetative canopy cover, the emission rates are reduced according to the assumed percent canopy cover. Table 3 presents these assumed percent vegetative canopy cover for each land use type. The reduction factors are given in Table 4.

Table 2. Stability of vacant land by LULC classification.

LULC Category	Stability
Urban	Stable/Unstable (see below)

ENVIRON
Golden Gate Plaza . 101 Rowland Way . Novato, California 94945-5010 USA
Tel: (415) 899-0700 . Fax: (415) 899-0707 ! www.environcorp.com

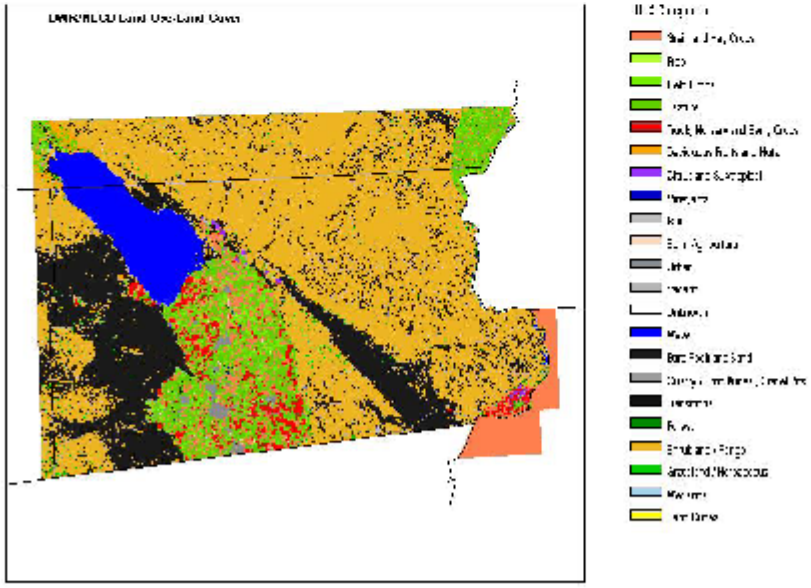
Agricultural	--
Shrubland	Stable
Grassland	Stable
Forest	Stable
Barren	Unstable
Desert	Unstable

Table 3. Default vegetation cover percentages for each land use type.

LULC Category	Vegetation Cover %
Urban	55(stable)/0(unstable)
Agricultural	--
Shrubland	11
Grassland	23
Mixed Shrub/Grassland	17
Forest	55
Barren	0
Desert	0

Table 4. Emission rates and attenuation factors by % vegetation cover.

Vegetation Cover %	ER by Formulation	Average Vertical Flux	ER by Raw Data	Reduction Factor based on Avg. Vert. Flux
0	2989.17	2185.98	2064.95	1
11	1739.34	1530.76	1460.54	0.700263
23	459.86	427.11	541.21	0.195386
55	230.02	153.23	288.4	0.070097



ENVIRON
Golden Gate Plaza . 101 Rowland Way . Novato, California 94945-5010 USA
Tel: (415) 899-0700 . Fax: (415) 899-0707 ! www.environcorp.com

Figure 1. Landuse coverage for Imperial Valley emission inventory domain based on combined DWR and NLCD.

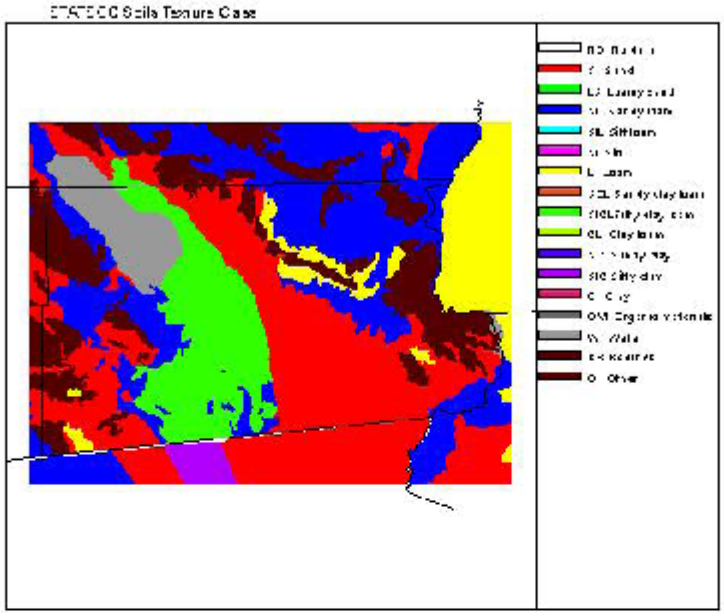


Figure 2. STATSGO soil texture class for the emissions inventory domain.

In summary, for each grid cell, the land use and soil type are determined for each land parcel based on the soils and LULC databases. Stability and reservoir characteristics are then determined using the assumption described above. Hourly wind speeds are evaluated from the CALMET data being used for the project. The appropriate emission factors as a function of wind speed, soil group and stability are determined and applied for each hour during the wind event. The emission factors are then adjusted based on the assumed vegetation density using the reduction factors given in Table 4. Based on the type of reservoir, i.e., limited or unlimited, dust emissions are generated for the duration of the wind event according to the assumptions described in ENVIRON, 2004. Non-climatic agricultural adjustments are then applied to the agricultural land types, by county, crop type and month/season using the crop specific calendars and agricultural information assembled for the project.

It should be noted that the estimation methodology used here, involves numerous assumption regarding the surface characteristics, including vegetative canopy cover, soil stability and dust reservoirs. Many of these assumptions are required due to the lack of detail in the databases used to characterize vacant lands, particularly non-agricultural lands. In addition, it has been shown that the dust estimation methodology is particularly sensitive to these assumptions (ENVIRON, 2004).

ENVIRON
Golden Gate Plaza ¸ 101 Rowland Way ¸ Novato, California 94945-5010 USA
Tel: (415) 899-0700 ¸ Fax: (415) 899-0707 ! www.environcorp.com

Revised Treatment of Barren Lands

As noted above, barren lands were considered to be void of vegetation with unstable soils. Based on the land use database used for the project, barren lands comprise approximately 26% of the area within Imperial County (see Table 5, below). The land use database does not distinguish between barren desert lands, which likely include some amount of vegetative cover, and sand dunes, which are likely void of any vegetation. Within Imperial County, a significant area of sand dunes are present east of the agricultural regions. Because the land use databases do not differentiate between these land types, the 2002 windblown dust emission estimates published by ENVIRON in 2004 are potentially overestimated from these land types.

In order to address this shortcoming of the dust emission estimates, the assumptions regarding the vegetative canopy cover and the disturbance level, or stability, of barren lands were revised. Within the land use database, the area of sand dunes east of the agricultural regions of the county were identified and treated separately from other barren lands. The sand dunes in the revised model runs were considered to be unstable and void of any vegetation, as was assumed in the original model application. However, all other barren lands, primarily to the west of the agricultural areas were considered to be stable with a 9% vegetative canopy cover, as requested by ARB and EPA. These modifications affect the resulting emission estimates in two ways; the assumption of stable soils results in less wind erosion, lower dust flux rates, and a shorter possible wind event duration; and, an assumed 9% vegetative cover reduces the emissions rates further through the application of attenuation factors, as given in Table 4. For a 9% vegetative canopy cover, an attenuation factor of 0.7547 was assumed. The revised land use, with the distinction between sand dunes and other barren lands, is displayed in Figure 3. Table 5 presents a summary of the land use types in Imperial County for both the original model application and the revised treatment of barren lands. The sand dunes are seen to comprise approximately 5% of the total area in the county. The remaining barren lands make up approximately 20% of the total county area.

ENVIRON
Golden Gate Plaza . 101 Rowland Way . Novato, California 94945-5010 USA
Tel: (415) 899-0700 . Fax: (415) 899-0707 ! www.environcorp.com
\\corsrv\client\projects\Imperial\SIP\BACM\BACM analysis document\Draft Final Sept 2005\Imperial_Valley_Dust_Final_Revisions_091905.doc

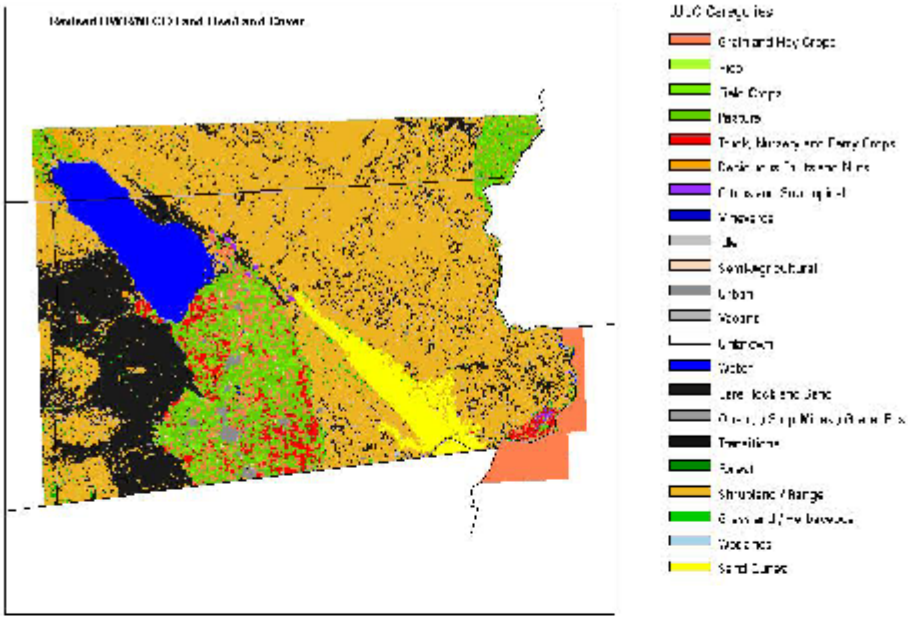


Figure 3. Revised landuse coverage for Imperial Valley emission inventory domain based on combined DWR and NLCD.

Table 5. Imperial County acreage by LULC

Land Use	Revised	Original	% of Total Area (Revised)	% of Total Area (Original)
Unknown	2436	2436	0.1%	0.1%
Water	194212	194212	6.8%	6.8%
Urban	39178	39178	1.4%	1.4%
DWR Crops	546947	546947	19.1%	19.1%
Shrub/Grasslands	1324889	1324889	46.3%	46.3%
Forest	6162	6162	0.2%	0.2%
Barren	585792	736514	20.5%	25.7%
Sand Dunes	150722	0	5.3%	0.0%
Unspecified Crops	12954	12954	0.5%	0.5%
Total	2863292	2863292	100.0%	100.0%

Revised Results

The Windblown Dust model was run with the revised land use and stability assumptions described above. All other inputs to the model were held constant. Table 6 presents the resulting PM_{10} dust emissions by month and land use type. Seasonal and annual PM_{10} emissions are also presented.

Total annual PM_{10} dust emissions in the revised inventory decreased from approximately

ENVIRON
Golden Gate Plaza ¸ 101 Rowland Way ¸ Novato, California 94945-5010 USA
Tel: (415) 899-0700 ¸ Fax: (415) 899-0707 ! www.environcorp.com

329,000 tons per year to approximately 61,400 tons per year. Barren land emissions decreased from approximately 289,000 tons/year to 21,300 tons/year (of which approximately 7,200 tons/year was from sand dune areas). A comparison of the total PM_{10} windblown dust emissions by month is displayed in Figure 4.

Table 6. Revised 2002 PM_{10} fugitive dust emission estimates for Imperial County (tons)

Month	Total	Urban	Shrublands	Forest	Barren	Sand Dunes	Unspecified Crops	Agricultural Crops
Jan	4563.3	2.3	2980.7	2.0	637.2	674.7	48.9	217.4
Feb	5136.7	0.0	2859.3	1.6	1066.4	892.6	42.1	274.8
Mar	7096.1	0.0	3739.4	2.3	1613.2	1123.3	64.3	553.5
Apr	12947.1	1.0	7297.1	4.5	2919.2	1871.0	107.6	746.6
May	5964.4	0.2	3023.2	1.9	1769.9	767.8	45.1	356.3
Jun	8480.1	0.0	5695.9	3.3	2155.2	137.8	52.8	435.1
Jul	2496.6	0.0	1259.8	0.7	488.9	518.6	21.9	206.6
Aug	6185.2	0.0	4339.0	2.3	1338.1	371.4	26.0	108.4
Sep	3334.2	0.0	1915.3	0.9	878.6	246.7	22.9	269.8
Oct	436.0	0.0	226.8	0.1	197.3	0.0	0.9	10.9
Nov	3060.1	0.0	1919.9	1.1	661.6	279.6	28.6	169.4
Dec	1700.1	0.0	787.5	0.5	414.4	360.8	16.5	120.4
Annual	61399.9	3.7	36044.0	21.1	14140.0	7244.3	477.6	3469.3
Winter	11400.1	2.3	6627.5	4.1	2117.9	1928.1	107.6	612.6
Spring	26007.6	1.3	14059.7	8.6	6302.3	3762.1	217.1	1656.5
Summer	17161.9	0.0	11294.8	6.3	3982.3	1027.8	100.6	750.1
Fall	6830.3	0.1	4062.0	2.0	1737.5	526.3	52.3	450.1

ENVIRON
Golden Gate Plaza . 101 Rowland Way . Novato, California 94945-5010 USA
Tel: (415) 899-0700 . Fax: (415) 899-0707 ! www.environcorp.com

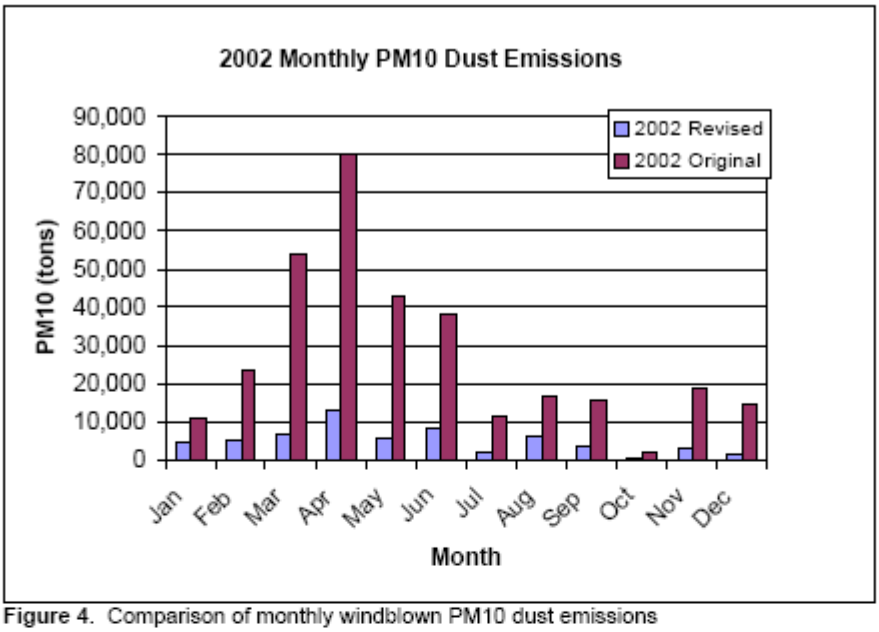


Figure 4. Comparison of monthly windblown PM10 dust emissions

The monthly variation of windblown dust emissions by land use type for the revised inventory is presented in Figure 5. The corresponding from the previous ENVIRON inventory is presented in Figure 6. While the previous inventory was dominated by the barren land dust emission, the revised inventory is now dominated by the shrub, range, and grassland dust emissions. Dust emissions from the sand dunes comprise about one-third of the total barren plus dune emissions, even though the total acreage of barren lands is nearly four times the total acreage of sand dunes within the county. The ratio of sand dune emissions to total barren area emissions varies by month. This is clearly the result of assuming a 9% vegetative canopy cover and stable soils for the barren lands. The sand dunes were considered unstable and void of vegetation, as discussed above.

ENVIRON
Golden Gate Plaza ¸ 101 Rowland Way ¸ Novato, California 94945-5010 USA
Tel: (415) 899-0700 ¸ Fax: (415) 899-0707 ! www.environcorp.com
\\corsrv\client\projects\Imperial\SIP\BACM\BACM analysis document\Draft Final Sept 2005\Imperial_Valley_Dust_Final_Revisions_091905.doc

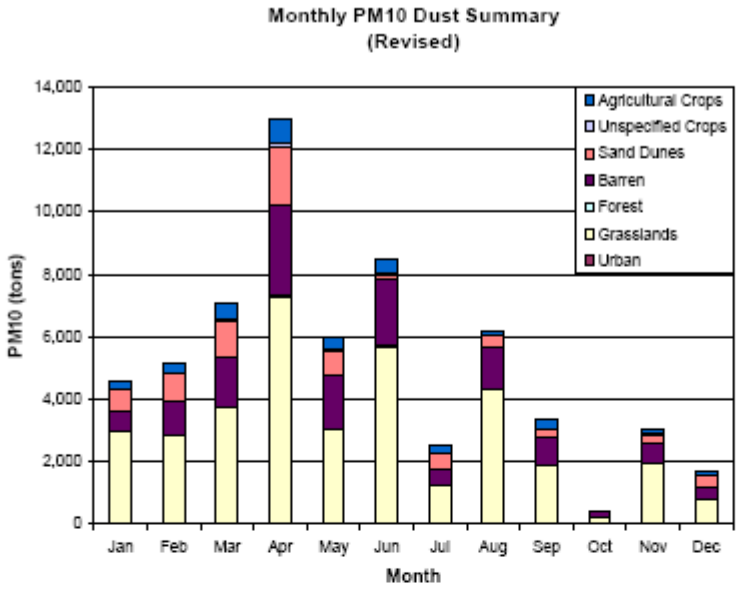


Figure 5. Revised 2002 monthly PM10 emissions by land use type.

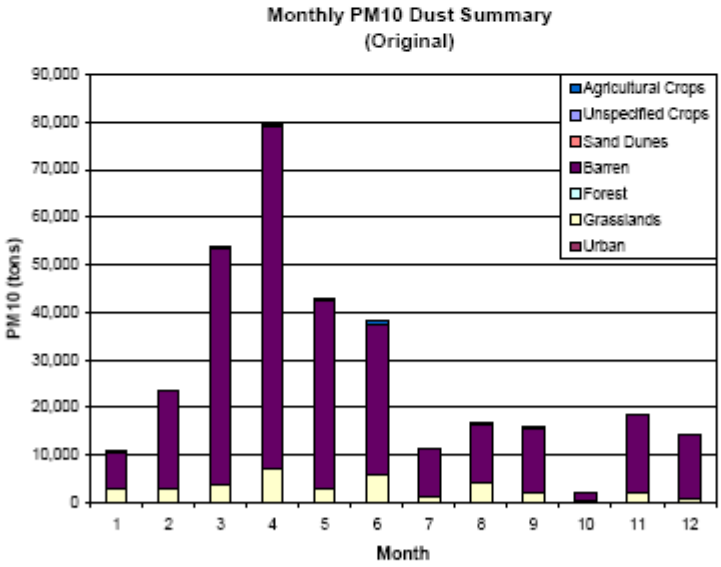


Figure 6. Original 2002 monthly PM10 emissions by land use type.

ENVIRON
Golden Gate Plaza . 101 Rowland Way . Novato, California 94945-5010 USA
Tel: (415) 899-0700 . Fax: (415) 899-0707 ! www.environcorp.com

The revised PM10 dust emissions for Imperial County are present4red in Table 6 on a per acre basis for each of the major landuse types within the county. It should be noted, however, that the emission per acre can vary independently by month, since emission factors are a different function of wind speed for different soil types and stability classifications.

Table 7. PM10 dust emissions per acre for major landuse categories (ton/yr-acre)

Landuse Category	Acres	PM10 (tons)	PM10 (tons/acre/yr)
Urban	39,178	4	0.0001
Grass/Shrublands	1,324,889	36,044	0.0272
Forest	6,162	21	0.0034
Barren	585,792	14,140	0.0241
Sand Dunes	150,722	7,244	0.0481
Agricultural	559,901	3,947	0.0070

Figure 7 displays the spatial distribution of 2002 annual PM_{10} windblown dust emissions for the revised inventory and the previous inventory. The effect of treating the barren lands with 9% vegetation cover and stable soils is seen in the greatly reduced emissions to the west of the agricultural regions and between the agricultural regions and the sand dunes. The spatial distribution of the revised windblown dust emissions by month is displayed in Figure 8.

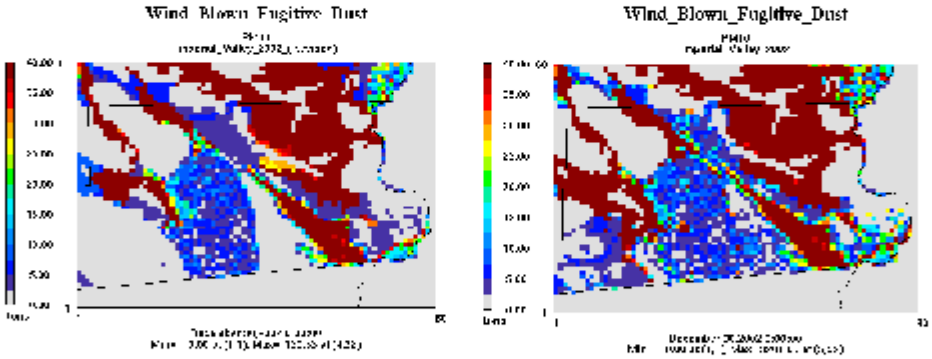


Figure 7. 2002 Annual PM10 fugitive dust emissions (tons); Left- Revised; Right - Original

ENVIRON
Golden Gate Plaza ¸ 101 Rowland Way ¸ Novato, California 94945-5010 USA
Tel: (415) 899-0700 ¸ Fax: (415) 899-0707 ! www.environcorp.com

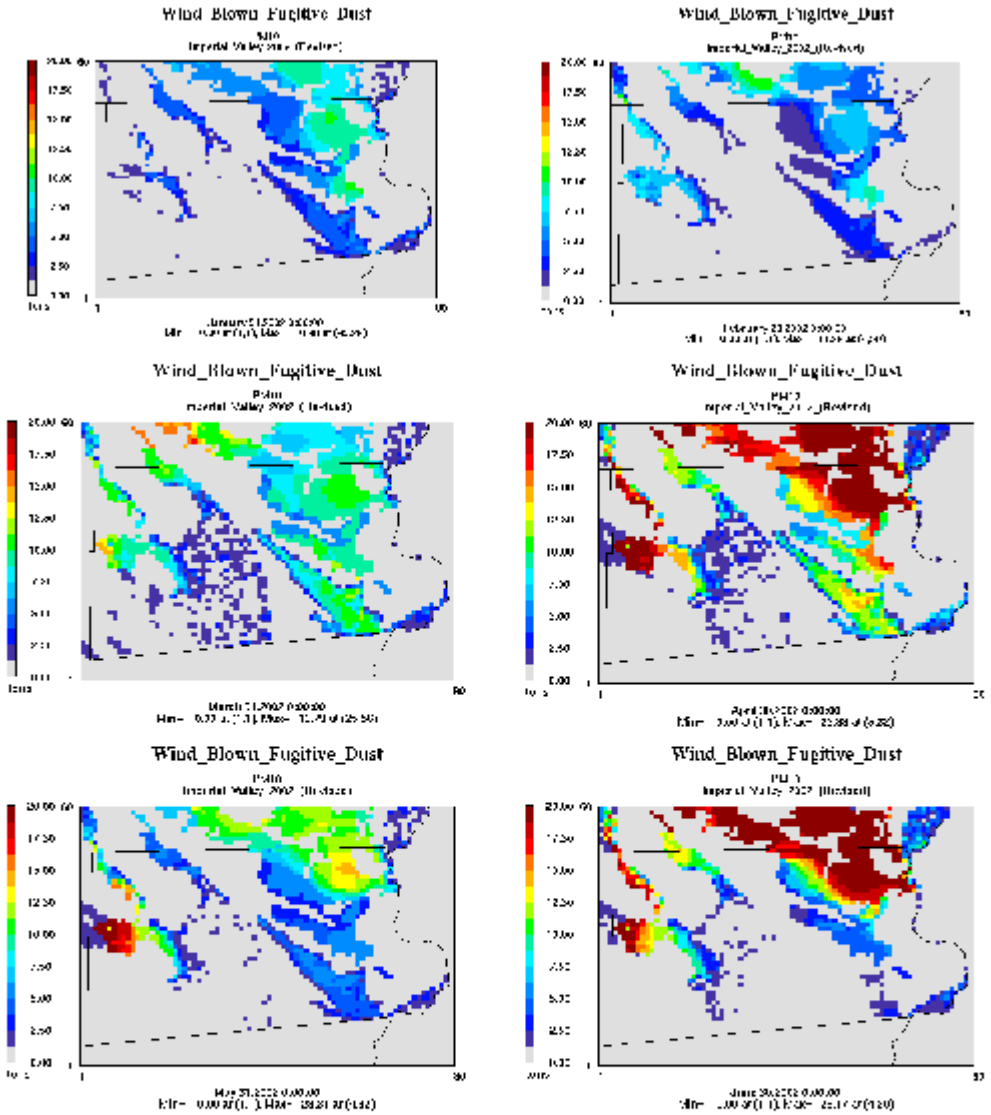


Figure 8. Spatial distribution of monthly PM10 dust emissions

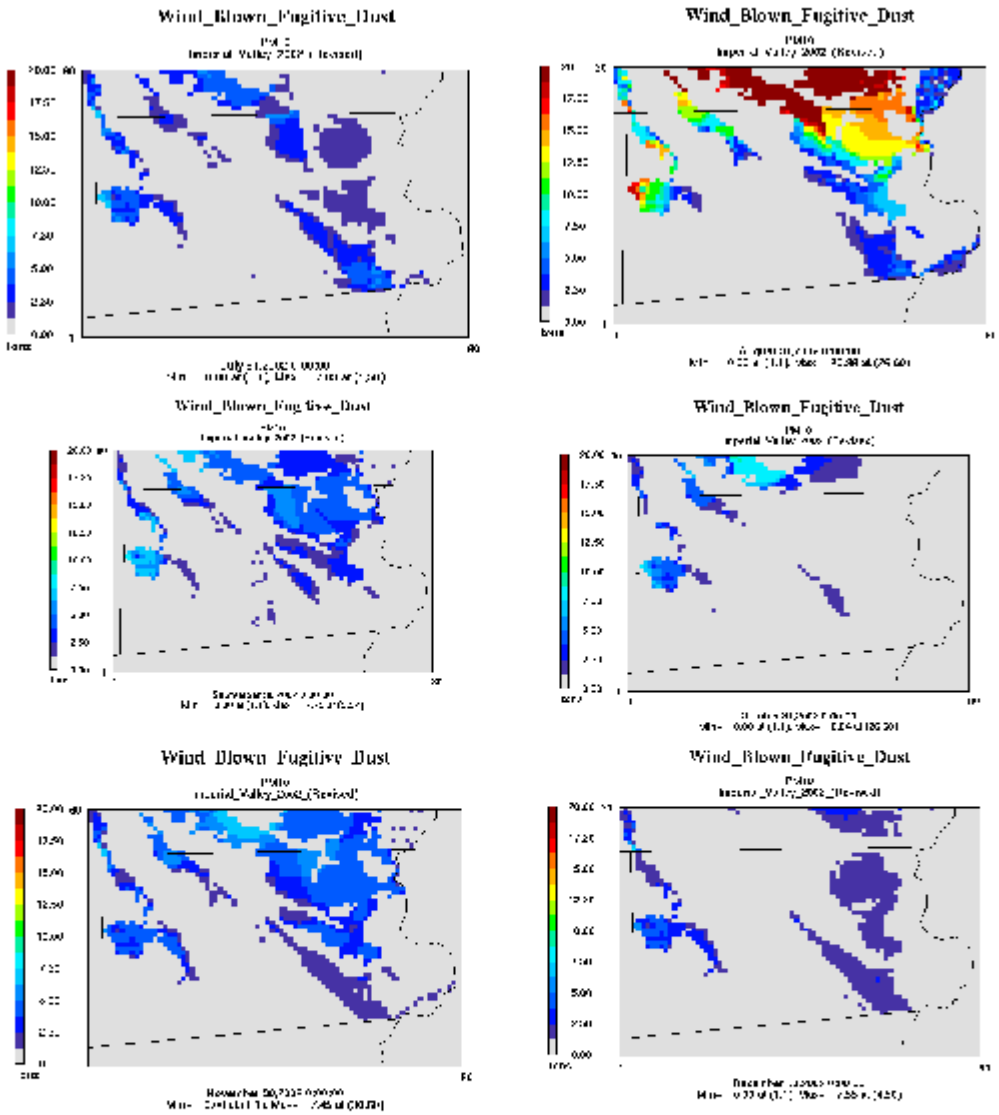


Figure 8 (concluded). Spatial distribution of monthly PM10 dust emissions

Summary

ENVIRON completed a windblown fugitive dust PM_{10} emission inventory for Imperial County in spring of 2004 for calendar year 2002. The inventory considered all land use types, including barren lands, grasslands and shrublands in addition to agricultural lands. The development of the inventory was documented in ENVIRON, 2004. In early 2005, ENVIRON received comments on the 2002 dust inventory from the California ARB and the U.S. EPA. The primary issue raised by both ARB and EPA was the treatment of barren lands throughout the Imperial Valley. As documented in ENVIRON, 2004, a number of assumptions are incorporated into the estimation methodology concerning the treatment of soil stability and vegetative canopy cover. The characterization of land types across the region was based on GIS data for Imperial County available from the California Department of Water. These data provide relatively high-resolution detailed information regarding agricultural lands. For non-agricultural lands, the model relies on regional land use data sets based on the 1992 National Land Cover Database (NLCD). The NCLD data, however does not adequately distinguish desert and barren lands with respect to varying degree of vegetation present. In addition, dune areas, of which there are significant amounts in Imperial County, were not represented.

To address these concerns, and the concerns raised by both the ARB and EPA, modifications to the various assumptions associated with barren lands were incorporated into the land use database. In addition, the sand dunes east of the agricultural regions of the county were identified and treated separately within the model. The revised data and assumptions incorporated into the model were discussed above. The windblown dust emission model was then applied with the modified data and assumptions. The resulting PM_{10} dust emissions for Imperial County were presented and discussed in this Technical Memorandum and are summarized below.

The 2000 ARB inventory attributed nearly 173 tons per day (tpd) to dust emissions from wind erosion on agricultural lands and did not including any wind erosion emissions from barren or other non-agricultural lands. Based on this final revision to the Windblown Dust Study, agricultural windblown emissions were estimated with 10.5 tpd PM_{10} emissions. Fugitive dust emissions for barren, scrub, grass, and range lands, including the sand dunes, were estimated with 157 tpd PM_{10} emissions. Estimates from the previous Windblown Dust Study (ENVIRON, 2004) were 792 tpd PM_{10} emissions from these lands. The reduced estimate is due to revised inputs for stability and vegetation cover on non-dune barren lands. Emissions from sand dunes were estimated with 19.9 tpd PM_{10} emissions, or 13% of emissions from non-agricultural lands. The revised 2002 annual PM_{10} dust estimates by land use type were presented in Table 6 above.

References

ARB, 2000. California Estimated Annual Average Emissions. Available on CEIDARS: www.arb.ca.gov/app/emsinv/emssumcal.php.

ARB, 2005. *Technical Comments on the Final Report for the Imperial County Windblown Fugitive Dust Study*. Prepared for Mr. Stephen Birdsall, Imperial County Air Pollution Control District. Prepared by the California Air Resources Board. March 11

ENVIRON, 2003. Determining Fugitive Dust Emissions from Wind Erosion – Draft Final Report. Prepared for Western Governors' Association by ENVIRON International Corporation, Novato, California; ERG, Inc., Sacramento, California; Desert Research Institute, Reno, Nevada, MACTEC Engineering & Consulting, Gainsville, Florida and University of California Riverside, Riverside, California. by ENVIRON International Corporation, Novato, California; ERG, Inc., Sacramento, California; and Desert Research Institute, Reno, Nevada. October 17.

ENVIRON, 2004. Final Report – Development of a Wind Blown Fugitive Dust Model and Inventory for Imperial County, California. Prepared for Imperial County Air Pollution Control District by ENVIRON International Corporation, Novato, California and ERG, Inc., Sacramento, California. May 12.

EPA, 2005. *EPA Comments on Windblown Dust Study for Imperial County*. Prepared for Brad Poiriez, Imperial County Air Pollution Control District. Prepared by U.S. Environmental Protection Agency. February 16.

Estimated Annual Average Emissions. Available on CEIDARS: www.arb.ca.gov/app/emsinv/emssumcal.php.

Mansell, G., 2003. Summary of WRAP Fugitive Dust Methodology Assumptions Model Sensitivity, Technical Memorandum prepared for Michael Uhl, Department of Air Quality Management, Clark County, NV. November 14.

ENVIRON
Golden Gate Plaza . 101 Rowland Way . Novato, California 94945-5010 USA
Tel: (415) 899-0700 . Fax: (415) 899-0707 ! www.environcorp.com

A P P E N D I X B

Entrained and Windblown Emission From Unpaved Roads

Appendix B

Entrained And Windblown Emissions From Unpaved Roads

Appendix B presents the assumptions and calculations to determine the entrained and windblown dust emissions from unpaved roads in Imperial County, including city and County roads, canal roads that line the irrigation canals and drainage ditches, farm roads and roads on federal lands, such as BLM and USFS roads.

Summary of PM10 emissions - tons/day

Entrained

	Current	CARB 2003	Notes
city/county	26.64	16.84	higher ADT on high ADT county roads (if 10 ADT per CARB, ems = 13.62, ems consistent)
canal	31.56	12.78	1993 SIP: 3,128 mi canals; 1,682 mi canal roads / Current: 3156 mi canal; 6,312 mi roads
farm	1.41	1.41	Using latest but unpublished ARB method
BLM/USFS	1.39	2.28	Using 1993 road mileage; ARB may have grown road miles
Total	**61.00**	**33.31**	

Windblown

	Current	CARB 2003	Notes
city/county	7.82	5.9	Consistent
canal	16.76	73.50	Using ARB emission factor significantly reduces estimated emissions compared to 1993 SIP
farm	6.01	--	Not in ARB inventory
BLM/USFS	0.37	--	Not in ARB inventory
Total	30.95	79.40	

NOTES:
All entrained unpaved road dust estimates using new ARB emission factor of 2 lbs PM10/VMT (previous 2.27 or higher)
Canal road entrained dust assumes 5 ADT for all roads on an average day (as in 1993 SIP)..

Unpaved Road Emissions - From Vehicle Travel

Annual Emissions =VMT*EF= road miles* passes/day*day/year* lbPM10/VMT

Variables

EF	2	lbPM10/VMT
	365	day/year

REF (Emission Factor): CARB methodology, Section 7.10: Unpaved Road Dust (Non-Farm Roads); August 1997, p. 1

Unpaved Road Characteristics

	Length of roads with varying vehicle miles traveled (miles)	passes/day	Emissions (tons/day)
total county	1,354	--	--
< 50 vehicles/day	1,137	10	11.37
>50 vehicles/day	217	70	15.19
city roads	7.5	10	0.075
city and county total	1,361.5	--	--

REF: Imperial County Public Works and Imperial County Cities
Imperial County Public Works water and blade about 16 mi/day of unpaved roads

Estimated Emissions

	tons/day	tons/year
2004 PM10 emissions assuming 10 passes/day for all roads	13.62	4,969.48
2004 PM10 emissions adjusted for vehicle travel	26.64	9,721.78

REF: CARB methodology
***current emissions estimate (2002) for vehicle travel on CARB website is 6,147 tons/year or 16.84 tons/day**

Unpaved Road Emissions - From Windblown Dust

Annual Emissions (tons PM10/yr) = a*I*C*K*L*V*(PM10 ratio)*(acres of road)

Variables

a	Estimated quantity of the total eroded material actually suspended to air	0.038	dimensionless
I	Soil Erodibility	86	tons/acre/year
C	Climatic Factor	1.274	dimensionless
K	Surface Roughness Factor	1.0	
L	Unsheltered Field Width Factor	0.32	
V	Vegetative Cover Factor	1	
PM10 ratio	Ratio of PM10 to TSP	0.5	
		365	day/year
	Estimated emission factor	0.666	tons PM10/acre/yr

REF: CARB methodology, Section 7.13: Windblown Dust - Unpaved Roads; August 1997, p. 2 (definitions) & Table 2 (values)

Unpaved Road Characteristics

	Length of roads with varying vehicle miles traveled (miles)	Width of roads (ft)	Acreage of roads	Emissions (tons/day)
total county	1,354	26	4,267.2	--
< 50 vehicles/day	1,137	26	3,583.3	6.54
>50 vehicles/day	217	26	683.9	1.25
city roads	7.5	20	18.2	0.03
city and county total	1,361.5	--	4,285.3	--

REF (Road lengths): Imperial County Public Works and Imperial County Cities
REF (Road widths): State Implementation Plan for Imperial County, 1993, Table C-2: Unpaved Roads Data
Imperial County Public Works water and blade about 16 mi/day of unpaved roads

Estimated Emissions

	tons/day	tons/year
2004 PM10 emissions	7.82	2,854.67

REF: CARB methodology

***current emissions estimate (2002) for windblown dust on CARB website is 2,153.5 tons/year or 5.9 tons/day**

Unpaved Canal Road Emissions - From Vehicle Travel

Annual Emissions =VMT*EF= road miles* passes/day*day/year* lbPM10/VMT

Variables

EF	2	lbPM10/VMT
	365	day/year

REF (Emission Factor): CARB methodology, Section 7.10: Unpaved Road Dust (Non-Farm Roads); August 1997, p. 1

Mileage from Imperial Irrigation District Website

Lateral canals	1,438	mi
Main canals	230	mi
All-American Canal	82	mi
Drainage ditches	1,406	mi
Total	**3,156**	mi
Total assuming roads on both sides of the canals	6,312	mi

REF: Imperial Irrigation District
Assume that each canal road has the same passes per day

Estimated Emissions

passes/day	2004 county & city PM10 emissions	
	tons/day	tons/year
0.133	0.84	307
1	6.31	2,304
2	12.62	4,608
5	**31.56**	**11,519**
10	63.12	23,039

REF: CARB methodology
***current emissions estimate (2002) on CARB website is 4,664.7 tons/year or 12.78 tons/day**

Unpaved Canal Road Emissions - From Windblown Dust

Annual Emissions (tons PM10/yr) = a*I*C*K*L*V*(PM10 ratio)*(acres of road)

Variables

a	Estimated quantity of the total eroded material actually suspended to air	0.038	dimensionless
I	Soil Erodibility	86	tons/acre/year
C	Climatic Factor	1.274	dimensionless
K	Surface Roughness Factor	1.0	
L	Unsheltered Field Width Factor	0.32	
V	Vegetative Cover Factor	1	
PM10 ratio	Ratio of PM10 to TSP	0.5	
		365	day/year
	Estimated emission factor	0.666	tons PM10/acre/yr

REF: CARB methodology, Section 7.13: Windblown Dust - Unpaved Roads; August 1997, p. 2 (definitions) & Table 2 (values)

Mileage from Imperial Irrigation District Website

	Length (mi)	Width (ft)	Acreage
Lateral canals	1,438	12	2,092
Main canals	230	12	335
All-American Canal	82	12	119
Drainage ditches	1,406	12	2,045
Total	3,156	12	4,591
Total assuming roads on both sides of the canals	6,312	12	9,181

REF (Canal lengths): Imperial Irrigation District
REF (Road widths): State Implementation Plan for Imperial County, 1993, Table C-2: Unpaved Roads Data

Estimated emissions

	tons/day	tons/yr
Total assuming roads on both sides of the canals	16.76	6,116

Unpaved Farm Roads - From Vehicle Travel

Annual Emissions= VMT/acre*acre*(lbPM10/VMT/year)

Variables

EF	2	lbPM10/VMT/year
	4.375	VMT/acre
	365	days/year

REF: CARB methodology, Section 7.11: Unpaved Road Dust - Farm Roads; August 1997, p. 1 (EF) & Table 1 (VMT/acre)

NOTE: On 9/30/05, CARB indicated that this methodology has been replaced by a newer unpublished methodology. See note at bottom of page.

Farm Acreage for Imperial County

2003 Imperial County Agricultural Crop and Livestock Report	Field Crops	376,292	acres
	Veggie and Melon	94,602	
	Fruit and Nut	6,975	
	Seed and Nursery	64,252	
	Total	542,121	

REF: http://imperialcounty.net/ag/Crop%20&%20Livestock%20Reports/Crop%20&%20Livestock%20Report%202003.pdf

Estimated Emissions

	tons/day	tons/year
2003 estimate for unpaved farm road emissions	6.50	2,372

***2003 Emissions inventory on CARB website = 514.65 ton/year or 1.41 tons/day**

As agreed by CARB (Patrick Gaffney), the emissions from unpaved farm roads will be reported as 1.41 tons/day, until the new methodology for this source can be applied to the latest per crop acreage. 1.41 tons/day

Unpaved Farm Roads - From Windblown Dust

Annual Emissions (tons PM10/yr) = a*I*C*K*L*V*PM10*(acres of road)

Variables

a	Estimated quantity of the total eroded material	0.038	dimensionless
I	Soil Erodibility	86	tons/acre/year
C	Climatic Factor	1.274	dimensionless
K	Surface Roughness Factor	1.0	
L	Unsheltered Field Width Factor	0.32	
V	Vegetative Cover Factor	1	
PM10 ratio	Ratio of PM10 to TSP	0.5	
		365	day/year
	Estimated emission factor	0.666	tons PM10/acre/yr

REF: CARB methodology, Section 7.13: Windblown Dust - Unpaved Roads; August 1997, p. 2 (definitions) & Table 2 (values)

Estimated Area of Farm Roads

Total Area of Unpaved Roads	Total miles of farm roads	2,263	mi
	Width of Farm roads	12	ft
	Area of Unpaved Roads	3,292	acre

REF: State Implementation Plan for Imperial County, 1993, Table C-2: Unpaved Roads Data

Estimated Emissions

	tons/day	tons/yr
2004 PM10 emissions	6.01	2,192.72

Unpaved Roads in BLM and US Parks and Forests - From Vehicle Travel

Annual Emissions =VMT*EF= road miles* passes/day*day/year* lbPM10/VMT

Variables

EF	2	lbPM10/VMT
	365	day/year

REF (Emission Factor): CARB methodology, Section 7.10: Unpaved Roads (Non-Farm Roads); August 1997, p. 1

Miles of Road

BLM	114	mi
US Parks and Forests	26	mi
Total	139	mi

REF: CARB methodology, Section 7.10: Unpaved Roads (Non-Farm Roads); August 1997, Table 1

Estimated Emissions for BLM

passes/day	2004 PM10 emissions	
	tons/day	tons/year
10	1.14	414.28

REF: CARB methodology

***current estimation by CARB (2003) for BLM roads is 657 ton/year or 1.8 tons/day**

Estimated Emissions for US Parks and Forests

passes/day	2004 PM10 emissions	
	tons/day	tons/year
10	0.26	94.54

REF: CARB methodology

***current estimation by CARB (2003) for US Parks and Forest roads is 175.2 ton/year or 0.48 tons/day**

Estimated Emissions for BLM, US Parks and Forests

passes/day	2004 PM10 emissions	
	tons/day	tons/year
10	1.39	508.81

REF: CARB methodology

Unpaved Roads in BLM and US Parks and Forests - From Windblown Dust

Annual Emissions (tons PM10/yr) = a*I*C*K*L*V*PM10*(acres of road)

Variables

a	Estimated quantity of the total eroded material actually suspended to air	0.038	dimensionless
I	Soil Erodibility	86	tons/acre/year
C	Climatic Factor	1.274	dimensionless
K	Surface Roughness Factor	1.0	
L	Unsheltered Field Width Factor	0.32	
V	Vegetative Cover Factor	1	
PM10 ratio	Ratio of PM10 to TSP	0.5	
		365	day/year
	Estimated emission factor	0.666	tons PM10/acre/yr

REF: CARB methodology, Section 7.13: Windblown Dust - Unpaved Roads: August 1997, p. 2 (definitions) & Table 2 (values)

Acres of Road

	Miles of roads	Width (ft)	Acreage
BLM	114	12	165.09
US Parks and Forests	26	12	37.67
Total	139	12	202.76

REF (Road miles): CARB methodology, Section 7.10: Unpaved Roads (Non-Farm Roads); August 1997, Table 1
REF (Road widths): State Implementation Plan for Imperial County, 1993, Table C-2: Unpaved Roads Data

Estimated Emissions

	tons/day	tons/yr
BLM	0.30	109.98
US Parks and Forests	0.07	25.10
Total	0.37	135.07

Determination of PR 805 applicability

road type	miles	windblown emissions	% windblown emissions	entrained emissions	% entrained emissions
county < 50 vehicles/day	1,137	6.54	26.2	11.37	19.1
county >50 vehicles/day	217	1.25	5.0	15.19	25.5
city roads	7.5	0.03	0.1	0.075	0.1
canal roads	6,312	16.76	67.2	31.56	53.0
federal	139	0.37	1.5	1.39	2.3
TOTAL	**7,813**	**24.95**	**100.00**	**59.59**	**100.00**

Percent Applicable

Applicable Roads are county >50 & canal >20 ADT

Percent of canal roads with >20 ADT

canal >20 ADT	0.5%

A = (county >50 + 0.005*canal)/Total

% Applicable Road Emissions

	A
Windblown	5.3%
Entrained	26%

A P P E N D I X C

Detailed Comparative Analysis for Significant Sources

Appendix C

Detailed Comparative Analysis for Significant Sources

Appendix C presents a detailed comparative analysis for sources above the DM level: unpaved roads and areas, disturbed areas, and agricultural sources. It begins with general requirements of the proposed Regulation VIII amendments related to visible dust emissions and stabilized surfaces for these sources (e.g., PAR 800, PR 804, PR 805, and PR 806). Next, the comparative analysis for each specific significant source is presented. The analysis includes a discussion of the stringency of the applicability thresholds and requirements for each source, a comparison of that stringency to the most stringent thresholds and/or requirements adopted in other serious PM_{10} non-attainment areas, and if the threshold and/or requirement is not as stringent as the most stringent, a justification is presented based on Imperial County conditions.

FUGITIVE DUST CATEGORY: GENERAL

SUBCATEGORY: VISIBLE DUST EMISSIONS

Proposed Imperial Requirements:

- Limit visible emissions to not more than 20% opacity
  - All non-exempt sources (Ref: PAR 800)
  - Construction / demolition (de minimis source) (Ref : PR 801, Section E.1)
  - Bulk materials (de minimis source) (Ref : PR 802, Section E.1)
  - Open areas (significant source) (Ref : PR 804, Section E.1)
  - Unpaved roads and traffic areas (significant source) (Ref : PR 805, Section E.1)
- Test methods in Appendix A and B shall be used to determine compliance with the Reg VIII rules (Ref: PAR800, Section G)

SJV Requirements:

- Limit visible emissions to not more than 20% opacity (Ref: R8021,Sect. 5.0; R8031, Sect 5.0; R8041, Sect. 5.7.2; R8051, Sect. 5.0; R8061, Sect. 5.2; R8071, Sect. 5.1; and 8081, Sect. 5.0)
- Opacity based on six vehicles, two readings per vehicle for unpaved surfaces and minimum 12 observations, spaced 15 seconds apart, for other sources. (Ref: R8011, Appendix A, Sections 1 and 2)

South Coast Requirements:

- No visible emissions across property line. (Ref: R403(d)(1))

Maricopa County Requirements:

- Limit visible emissions to not more than 20% opacity (Ref R310, Sect. 301)
- Opacity for dust generating activities based on minimum 12 observations, spaced 15 seconds apart (Ref: R310, Section 501.1(a))
- Opacity for unpaved parking lots and unpaved haul/access roads based on six vehicles, two readings per vehicle (Ref: R310, Section 501.1 (a) and (b))

Clark County Requirements

- Limit visible emissions to not more than 20% opacity (Ref: AQR Section 91.2.1.4; AQR Section 92.2.1.3; AQR Section 93.2.1.5; AQR Section 94.5.3)
- Opacity based on six vehicles, two readings per vehicle for unpaved surfaces And minimum 12 observations, spaced 15 seconds apart, for other sources. (Ref AQR Section 91.4.1.1 and AQR Section 94 AQR Section 94.5.3)
- Opacity based on six vehicles, two readings per vehicle for unpaved surfaces And minimum 12 observations, spaced 15 seconds apart, for other sources. (Ref AQR Section 91.4.1.1 and AQR Section 94.9.1)
- Limit construction visible emissions to not more than 100 yards (Ref: AQR Section 94.5.2(a))
- Proposed: Limit VDE to 100 feet; and not cross property line

Discussion:

Imperial County is proposing the same opacity limits and test methods used in other areas, except South Coast, which appears less stringent than other areas. There are likely to be situations where opacity may be more stringent (especially in large construction sites where heavy dust plumes may no longer be visible by the time they reach the property line) and other circumstances where opacity may be less stringent (especially on smaller dust-producing sites, and with intermittent plumes.) For time-averaged situations (i.e., non-road/vehicle related dust emissions), to assure that most stringent conditions are in place, a combination of the two approaches is warranted. Clark County requires both opacity limits and a 100-yard visible emission distance limit for construction activities. Construction emissions in Imperial County are below the DM level, and thus justification as "most stringent" is not required.

Imperial County is proposing the same opacity limits and test methods used by San Joaquin Valley that have been accepted by EPA as "most stringent" in its May 26, 2004 approval of the San Joaquin Valley PM_{10} SIP[1].

[1] Federal Register Vol. 69, No. 102; p.30035; May 26, 2004.

FUGITIVE DUST CATEGORY: GENERAL

SUBCATEGORY: DEFINITION OF STABILIZED SURFACE

Proposed Imperial County Requirements:

- Any disturbed surface are or open bulk storage pile that is resistant to wind blown fugitive dust emissions. A surface is considered to be stabilized if it meets at least one of the following conditions specified in below or as determined by test methods outlined in Appendix B.
  1. Visible crust; or
  2. Threshold frictional velocity of 100 cm/sec or greater; or
  3. Flat vegetative cover of at least 50% that is attached or rooted vegetation; or unattached vegetative debris lying on the surface with a predominant horizontal orientation (not subject to wind movement); or
  4. Standing vegetative cover over 30% that is attached or rooted
  5. A standing vegetative cover of at least 10% that is attached or rooted with a predominate vertical orientation where the TFV is at least 43 centimeters per second when corrected for non-erodible elements
  6. A surface greater than or equal to 10% of non-erodible elements such as rocks, stones, or hard-packed clumps of soil
     (Ref: 800 C.28)

Test methods:

- Materials used for chemical/organic stabilization of soils, including petroleum resins, asphaltic emulsions, acrylics, and adhesives shall not violate State Water Quality Control Board standards for use as a soil stabilizer. Any material prohibited for use as dust suppressant by EPA, the ARB, or other applicable law, rule, or regulation is also prohibited under Regulation VIII. (Ref: PR801, Section F)
- Use of hygroscopic materials may be prohibited by the ICAPCD in areas lacking sufficient atmospheric moisture of soil for such materials to effectively reduce fugitive dust emissions. The atmospheric moisture of soil is considered to be sufficient if it meets the application specifications of the hygroscopic product manufacturer. Use of such materials may be approved in conjunction with sufficient wetting of the controlled area. (Ref: PR801, Section F)
- Any use of dust suppressants or gravel pads, and paving materials such as asphalt or concrete for paving, shall comply with other applicable District Rules. (Ref: PR801, Section F)
- Test methods in Appendix A and B shall be used to determine compliance with the Regulation VIII rules (Ref PAR800, Section G)

SJV Requirements:

- Any disturbed surface that is resistant to wind blown fugitive dust and meets at least one of the following conditions:
  1. A visible crust

2. A threshold friction velocity of 100 cm/sec or greater
3. A vegetative cover of at least 50% that is attached or rooted
4. Unattached horizontal vegetative cover of at least 50% and wind-movement resistant
5. Vertical, rooted vegetation with at least 30% cover, or 10% cover where the soil threshold friction velocity is at least 43 cm/sec
6. A surface that is at least 10% covered with non-erodible materials (Ref: R8011, Section 3.58)

South Coast Requirements:

- Stabilized surface means any previously disturbed surface area or open storage pile which, through the application of dust suppressants, shows visual or other evidence of surface crusting and is resistant to wind driven
- Fugitive dust and is demonstrated to be stabilized; (Ref: R403, (C)(28))

Maricopa County Requirements:

- Must meet at least one of the following standards:
  1. Maintain a visible crust
  2. Maintain a threshold friction velocity of 100 cm/sec or greater
  3. Maintain standing (rooted, vertical) vegetative cover of at least 30%, or 10% cover where the soil threshold friction velocity is at least 43 cm/sec
  4. Maintain flat (rooted or horizontal debris not subject to wind movement) of at least 50%
  5. Maintain a cover of at least 10% with non-erodible materials
  6. Comply with specially-approved alternative method
     (Ref: R310, Section 302.3)

Clark County Requirements:

- Stabilization standards:
  1. Establish visible crust
  2. Establish cover of at least 20% with non-erodible materials
  3. Establish soil threshold friction velocity of at least 100 cm/sec
  4. Comply with specially-approved alternative method

Discussion:

Imperial County is proposing the same stabilized surface definition and requirements as used in the San Joaquin Valley, which are comparable to the requirements used in all other areas, except South Coast.

The exception is that Clark County has established a more stringent requirement if non-erodible materials are used to establish a stabilized surface, namely, that a more restrictive 20% minimum covering (compared to 10% in San Joaquin Valley, Maricopa County and proposed IC Regulation VIII) is required. However, inclusion of a 20% minimum non-erodible material coverage as a control option in Clark County does not mean its inclusion is necessary for Regulation VIII to be demonstrated as BACM for this

category. Clark County's limit was based on local observations at areas where the soil was significantly pulverized as the result of significant amounts of traffic.[2] Imperial County does not have similar areas experiencing such high levels of growth and commuters "trailblazing" unpaved roads across open areas. Thus, this limit was based on specific Clark County conditions and should not be applied to Imperial County.

Taken together, the applicable limits and requirements in the definition of a stabilized surface provide equivalent stringency and can be considered as stringent as the most stringent limits and requirements. The exact same provisions in San Joaquin Valley were approved as BACM by EPA[3] in 2004

[2] September 26, 2005 telephone conversation with Rodney Langston, Clark County Department of Air Quality Management
[3] Federal Register Vol. 69, No. 102; p.30035; May 26, 2004.

FUGITIVE DUST CATEGORY: UNPAVED ROAD DUST

SUBCATEGORY: LIMITS FOR APPLICABILITY

Proposed Imperial County Requirements:

- Unpaved Haul/ Access Roads: All roads (Ref: PR805, Section E.1)
- Unpaved Roads: 50 or more average daily vehicle trips (Ref: PR805, Section E.2)
- New Unpaved Roads: All new unpaved roads except for those that meet the definition of a Temporary Unpaved Road (Ref: PR805, Section E.3)
- Canal Roads: 20 or more ADT (Ref: PR805, Section E.4)

SJV Requirements:

- 26 annual average vehicle daily trips or more (Ref: R8061, Section 5.2.1)

South Coast Requirements:

- For meeting standards of rule:
  - more than 50' wide at all points, or
  - are not within 25' of property line, or
  - more than 20 vehicle trips per day (Ref: R403(g)(2)(B)(iii))
- For treating unpaved roads:
  - All roads greater than the average ADT of all unpaved roads within its jurisdiction, up to a set number of miles by 2006 (Ref: R1186(d)(4))

Maricopa County Requirements:

- 150 vehicles or more per day (Ref: R310.01, Section 304)

Clark County Requirements:

- For new unpaved roads, there is no VDT limit (Ref AQR Section 91.2.1)
- For existing unpaved roads (prior to June 22, 2000), the control measures apply to roads with 150 or more vehicles per day.

Discussion:

Imperial County's proposed limit is 50 or greater ADVT. The Imperial County 50 ADVT or more limit is more stringent than either Maricopa County of Clark County. Both Maricopa and Clark County have a significant number of unpaved roads with greater than 150 ADT; hence their rules target those roads. The provisions of the South Coast rule, tied to average levels of VDT, is generally less restrictive than in other jurisdictions.

The proposed ADT limit for unpaved city and county roads in IC Regulation VIII is less stringent than SJV's limit of 26 ADVT. However, the percentage of unpaved city / county roads with greater than 26 ADT in San Joaquin Valley is 12% (90 out of 750 miles) compared to 16% of Imperial County roads with

greater than 50 ADT (217 out of 1361.5 miles).[4] Thus, proposed Regulation VIII is the most stringent. Proposed Regulation VIII will require the treatment of over 217 miles of unpaved city and county roads, compared with 90 miles of city and county roads that must be treated in San Joaquin Valley under their regulation 8061. (For comparison, the population in Imperial County is about 150,000 people, compared to over 3,200,000 in the San Joaquin Valley.) A discussion of the implementation schedule for PR 805 for county and city unpaved roads, compared to the implementation schedule of other serious non-attainment areas, is presented in the next section, Unpaved Road Dust / Control Requirements.

Only Imperial County has proposed a separate, lower threshold for canal roads, and 20 ADT is below any other unpaved road threshold. Proposed Regulation VIII is the most stringent.

[4] EPA's Technical Support Document for the San Joaquin Valley, California 2003 PM-10 Plan and 2003 PM-10 Plan Amendments., p. 31. January 27, 2004.

FUGITIVE DUST CATEGORY: UNPAVED ROAD DUST

SUBCATEGORY: CONTROL REQUIREMENTS

Proposed Imperial County Requirements:

- For road segments with 50 or more average daily vehicle trips (ADVT), limit VDE to 20% opacity and comply with the requirements of a stabilized unpaved road surface by application and/or maintenance of at least one of the following control requirements (Ref: PR805, Section E.2). AND For canal roads with 20 or more average daily vehicle trips (ADVT), limit VDE to 20% opacity and comply with the requirements of a stabilized unpaved road surface by application and/or maintenance of at least one of the following control requirements (Ref: PR805, Section E.4)
  a) Pave (Ref: PR805, Section F.1.a)
  b) Apply chemical stabilization as directed by product manufacturer to control dust on unpaved roads (Ref: PR805, Section F.1.b)
  c) Apply and maintain gravel, asphalt, or other material of low silt content of a depth of 3 or more inches (Ref: PR805, Section F.1.c)
  d) Apply water one ore more times daily (Ref: 805, section F.1.d)
  e) Permanent road closure (Ref: PR805, Section F.1.e)
  f) Restrict unauthorized vehicle access (Ref: PR805, Section F.1.f)
  g) Any other method that limits VDE to 20% opacity and meets conditions of a stabilized unpaved road (Ref: PR805, Section F.1.g)
- For city and county roads, implementation of E.2 shall be done on the schedule, and according to the requirements of Section E.7, which requires the treatment of 10% (on average) of applicable unpaved city and county roads per year for the year 2006 though 2015.
- Within an urban area, construction of any new unpaved road is prohibited unless it meets the definition of a "temporary unpaved road" and is stabilized in accordance with Rule 800 requirements. Temporary unpaved roads are for supporting temporary or periodic activity and cannot be used more than 6 months in any consecutive 3-year period. (Ref: PR805, Section E.3)

SJV Requirements:

- For unpaved roads with greater than 26 annual average vehicle trips per day, limit VDE to 20% opacity and implement at least one of the following control measures:
  a) apply water
  b) apply uniform layer of washed gravel
  c) apply chemical/organic dust suppressant
  d) use vegetative materials
  e) pave
  f) use any other approved method to limit VDE to 20% opacity and meets the condition of a stabilized unpaved road (Ref: R8061, Section 5.2.1)
- As option to above, obtain Fugitive PM_{10} Management Plan (Ref: ibid, Section 5.2.1)
  a) Must achieve at least 50% control efficiency (Ref: R8011, Section 7.0)
  b) Must specify location, length, and area of unpaved traffic areas (Ref: ibid, 7.5.2)

c) Description of traffic conditions (vehicle trips per unit time; types of vehicles) (Ref: ibid, 7.5.3)
d) Description of control measures used and application details (Ref: ibid, 7.5.4)
e) Description of expected resulting road surface condition (Ref: ibid, 7.5.5)

- Within an urban area, the construction of any unpaved road is prohibited unless the road meets the definition of a temporary unpaved road (Ref: ibid, Section 5.2.2)
- Cities and counties shall treat an average of 20% of applicable roads per year form 2006 through 2010, to a cap of 5 miles per year per jurisdiction. A statement of financial hardship can be submitted if a jurisdiction cannot afford to meet the requirements of this section.. (Ref R8061, Section 5.2.3).

South Coast Requirements:

- Annually treat unpaved public roads beginning in 1998 and continuing for each of 8 years thereafter by implementing one of the following (Ref: R1186(d)(4)):
  a) Pave at least one mile with typical roadway material (Ref: ibid, (d)(4)(A))
  b) Apply chemical stabilizers to at least two miles to maintain stabilized surface (Ref: ibid, (B))
  c) Take at least one of the following on at least three miles of road surface:
     i. Install signage at ¼ mile intervals limiting speed to 15 mph
     ii. Install speed control devices every 500 feet
     iii. Maintain roadway in a manner which limits speed to 15 mph (Ref:, ibid, (C))
- Apply at least one BACM to unpaved roads at active operations (Ref: R403(d)(2))
  a) Pave (Ref: R403 Handbook, BACM (F))
  b) Use chemical stabilizers (Ref: ibid, (G))
  c) Apply water (Ref: ibid, (H))
  d) Reduce speed limits to 15 mph (Ref: ibid (I))
  e) Reduce vehicular trips, target at least 60% (Ref: ibid, (J))
  f) Apply gravel to depth of 4 inches (Ref: ibid, (K))

Maricopa County Requirements:

- For 150 vehicles or more per day, implement at least one of the following BACM (Ref: R310.01, Section 304):
  a) Pave
  b) Apply dust suppressants
  c) Uniformly apply and maintain surface gravel (Ref: ibid, Section 304.1)
- For existing roads, BACM, as above, must be implemented by:
  a) June 10, 2000 for more than 250 vehicle trips
  b) June 10, 2004 for more than 150 vehicle trips (Ref: ibid, 304.2)
- BACM must meet the following standards:
  a) Limit VDE to 20% opacity

b) Do not equal or exceed 0.33 oz/ft2, or
c) Do not exceed 6% silt content
(Ref: ibid, 304.3)

Clark County Requirements:

- Implement one control measure on 1/3 of unpaved roads with 150+ VDT by June 1, 2001 (Ref: AQR Section 91.2.1.1(a))
- Implement one control measure on 2/3 of unpaved roads with 150+ VDT by June 1, 2002 (Ref: ibid, (b))
- Implement one control measure on all unpaved roads with 150+ VDT by June 1, 2003 (Ref: ibid, (c))
- For any unpaved road with newly found levels of 150+ VDT, implement one control measure within 365 days (Ref: ibid, (d))
- For unpaved roads with less than 150 VDT, maintain stabilized surface standards within 365 days of determination of non-stabilized surface (Note: this is not a SIP measure, Ref: ibid, (e))
- No new unpaved roads are to be constructed in public thoroughfares after June 22, 2000 (Ref: AQR Section 91.2.1.2)
- Applicable control measures are as follows:
  a) Pave
  b) Apply dust palliatives to meet stabilization standards
  (Ref: ibid, 91.2.1.3)
- Stabilization standards:
  a) Limit VDE to 20% opacity
  b) Do not equal or exceed 0.33 oz/ft^2, or
  c) Do not exceed 6% silt content
  (Ref: ibid, 91.2.1.4)

Discussion:

Proposed Regulation VIII and requirements in all serious non-attainment areas except South Coast require compliance with the 20% opacity standard for unpaved roads; Proposed Regulation VIII is as stringent as the most stringent for this requirement. In addition, all areas except South Coast specify the implementation of at least one control requirement to comply with the requirements of a stabilized surface. Clark and Maricopa County do not allow watering as a control option, but only require implementation on roads with greater than 150 ADT. As noted by EPA[5], the inclusion of a control option or requirement does not mean it is necessary for a proposed regulation to meet BACM, as long as other applicable limits combine provide adequate stringency. In this case, the applicability and control requirements combine provide adequate stringency.

[5] Federal Register Vol. 69, No. 102; p.30019; May 26, 2004.

Proposed Regulation VIII prohibits the construction of new unpaved roads in urban areas. This is as stringent as the San Joaquin Valley and Clark County regulations. (Clark County regulations are only in effect in the non-attainment area, which is predominantly urban, and not in the surrounding rural and federal lands. Hence, the prohibition on new unpaved roads is essentially a prohibition on new unpaved roads in urban areas.)

The control options in Proposed Regulation VIII and in San Joaquin Valley's regulations are the same, and thus equally stringent (although as seen in the discussion of Unpaved Roads: Limits of Applicability, proposed Regulation VIII applies to a greater percentage and absolute mileage of unpaved roads). Although the compliance schedule for city and county roads appears more stringent for San Joaquin (20% per year), that only equates to 18 miles per year, compared to almost 22 miles per year for Imperial County (10% of 217 miles). In addition, San Joaquin caps at 5 the number of miles that require treatment per year per urban areas. San Joaquin also allow cities and/or counties to submit a statement of financial hardship if they cannot met the rule requirements. The San Joaquin Valley regulations have been approved as BACM by EPA[6]. For all of these reasons, proposed Regulation VIII limits and requirements are as stringent as the most stringent in other serious non-attainment areas.

[6] Federal Register Vol. 69, No. 102; p.30035; May 26, 2004.

FUGITIVE DUST CATEGORY: UNPAVED PARKING LOTS/STAGING AREAS

SUBCATEGORY: APPLICABILITY

Proposed Imperial County Requirements:

- Unpaved traffic areas larger than one (1) acre and with 75 or more average vehicle trips per day shall comply with one or more of the requirements of Section F.3 so as to limit VDE to 20% opacity (Ref: PR805, Section E.4)

SJV Requirements:

- Areas with AVDT of 50 or more (areas with less than 50 AVDT are exempt) (Ref: R8071, Section 4.1)
- Agricultural sources exempt from Rule 8081 are also exempt from R8071.

South Coast Requirements:

(Note: South Coast does not have rule language specifying this category. It is presumed that Rule 403 provisions for either unpaved roads, or disturbed surface areas would apply.)

Maricopa County Requirements:

- Over 100 vehicles entering or parking (Ref: R310.01, Section 303)

Clark County Requirements:

- No minimum vehicle limit specified for parking lots. (Ref: AQR, Section 92.2.1)
- No minimum vehicle limit specified for staging areas (Ref: AQR Section 94 Handbook, CST 17)

Discussion:

Clark County has no minimum vehicle limit for parking lots or staging areas. Maricopa has a 100 vehicle threshold. San Joaquin exempts traffic areas with less than 50 annual average daily trips and agricultural traffic area sources exempt from R8071 (e.g., traffic area less than 1.0 acre and more than one mile from an urban area, or with less than 50 AADT or less than 150 VDT if intermittently used). EPA has adjudged the San Joaquin rule as BACM[7] based on the adequacy of their cost-effectiveness analyses of potential lower thresholds.

Proposed Regulation VIII has a higher threshold for ADVT than San Joaquin and a 1 acre size threshold. According to the 1993 Imperial Valley PM_{10} SIP, there are only 200 acres of non-farm traffic areas (compared to 13,700 acres of non-farm unpaved roads) and speed in these areas are significantly less than on the roads themselves.. There is no information at this time on the levels of usage (e.g. ADVT), size, or current controls for these unpaved traffic areas. Some

[7] EPA's Technical Support Document for the San Joaquin Valley, California 2003 PM-10 Plan and 2003 PM-10 Plan Amendments., p. 34-5. January 27, 2004

are subject to conditional use permits (CUPs) from local jurisdictions. Imperial County believes that, similar to San Joaquin, a detailed cost-effectiveness analysis will indicate that the coverage provide by proposed Regulation VIII meets BACM. ICAPCD is conducting additional survey work and will prepare a cost-effectiveness analysis to justify the proposed thresholds. If the analysis indicates that more stringent thresholds are cost-effective, amendments to PR805 will be prepared.

(Although agricultural unpaved traffic areas are exempt from PR 805, any size traffic area for an agricultural operation with more than 40 acres total must implement controls, per PR 806.)

FUGITIVE DUST CATEGORY: UNPAVED PARKING LOTS/STAGING AREAS

SUBCATEGORY: REQUIREMENTS

Proposed Imperial County Requirements (unpaved traffic areas):

For unpaved traffic areas larger than one (1) acre and with 75 or more average vehicle trips per day shall comply with one or more of the requirements of Section F.3 (listed below) so as to limit VDE to 20% opacity:

- Pave or (Ref: PR805, Section F.3.a)
- Apply chemical stabilizers (Ref: PR805, Section F.3.b)
- Apply and maintain gravel, recrushed/recycled asphalt or other material of low silt content to a depth greater than 3 inches (Ref: PR805, Section F.3.c)
- Wetting. Apply water one or more times daily (Ref: PR805, Section F.3.d)

SJV Requirements:

- For days with 50 or more vehicle trips, limit VDE to 20% opacity and implement at least one of the following control measures:
  - apply water
  - apply uniform layer of washed gravel
  - apply chemical/organic dust suppressant
  - use vegetative materials
  - pave
  - use any other method to limit VDE to 20% opacity (Ref: R8071, Section 5.1.1)
- For days with 100 or more vehicle trips:
  - limit VDE to 20% opacity
  - comply with requirements for stabilized surface
  - implement at least one of the following control measures:
    - apply water
    - apply chemical/organic dust suppressant
    - apply roadmix
    - pave
    - use any other method that results in stabilized surface (Ref: ibid, Section 5.1.2)
- On each day that 25 or more VDT with 3 or more axles will occur on an unpaved vehicle/equipment traffic area, the owner/operator shall limit VDE to 20% opacity and comply with the requirements of a stabilized unpaved road by the application and/or re-application/maintenance of at least one of the control measures specified sections 5.1.1.1 through 5.1.1.6 (Ref: R8071, Section 5.1.3).
- On each day when a special event will result in 1,000 or more vehicles that will travel/park on an unpaved area, the owner/operator of the unpaved area to be traveled/parked upon must notify the District at least 48 hours in advance when such a special event will occur. During the duration of the special event vehicle travel/parking, the owner/operator shall limit VDE to 20% opacity and comply with the requirements of a stabilized unpaved road by the application and/or reapplication/

maintenance of water or chemical/organic dust stabilizers/suppressants in accordance with the manufacturer's specifications (Ref: R8071, Section 5.1.4).

- As option to above, obtain Fugitive PM_{10} Management Plan (Ref: ibid, Section 5.2.1, 5.2.2, and 5.2.3)
  - Must achieve at least 50% control efficiency (Ref: R8011, Section 7.0)
  - Must specify location, length, and area of unpaved traffic areas (Ref, ibid, 7.5.2)
  - Description of traffic conditions (vehicle trips per unit time; types of vehicles) (Ref: ibid, 7.5.3)
  - Description of control measures used and application details (Ref: ibid, 7.5.4)
  - Description of expected resulting road surface condition (Ref: ibid, 7.5.5)

South Coast Requirements:

(No specific rule language for this category. See measures for "Unpaved Roads" for presumed applicable BACM.)

Maricopa County Requirements:

- If utilized less than 35 days per year, use one of following:
  a) Apply dust suppressants to maintain stabilized surface
  b) Apply and maintain gravel to maintain stabilized surface (Ref: R310.01, Section 303, and 303.1)
- If utilized at least 35 days per year:
  a) Add option, to above, to pave (Ref: ibid; also R310, Table 1, 1B,2B,3B)

Clark County Requirements:

- For unpaved parking lots, use one of following:
  a) Pave
  b) Apply dust palliatives to maintain stabilized surface
  c) Apply dust palliatives to travel lanes, and apply gravel to a depth of two inches in the parking areas to maintain stabilized surface (Ref: AQR Section 92.2.1 and 92.2.1.2)
- If parking lot is used intermittently, less than 35 days per year, and the lot was in existence prior to June 22, then application may be limited to period of use (Ref; ibid, 92.2.1 and 92.2.1.1)
- For staging areas:
  - Limit size of staging areas (Ref AQR, Section 94 Handbook, CST 17-1)
  - Apply water (Ref: ibid, CST 17-2)
  - Apply dust palliative (Ref: ibid, CST 17-3)
  - Limit vehicle speeds to 15 mph (Ref: ibid, CST 17-4)
  - Limit ingress and egress points (Ref: ibid, CST 17-5)

Discussion:

Maricopa County requires the stabilization or paving of all traffic areas, regardless of usage. Watering is not an option. Clark County requires the paving or stabilization of unpaved traffic areas, unless the area is only used infrequently. In that case, stabilization only has to occur during use times. Watering is not an option.

Proposed Regulation VIII and San Joaquin Valley rules allow the use of daily watering as a control option; thus, Regulation VIII includes an option that is less stringent, based on the relative control effectiveness of watering compared to stabilization, gravelling and paving. However, proposed Regulation VIII still requires compliance with the opacity limit

However, in SJV for sites on days with more than 100 trips, the surface must comply with stabilized surface requirements, and for areas on days with more than 25 VDT from vehicles with 3 or more axles or if over 1000 vehicles are anticipated, there are special control requirements (generally re-application of stabilizers or water) for those days. Imperial County commits to assessing the need and cost-effectiveness of these specific single day provisions and preparing amendments to PR 805, if necessary.

FUGITIVE DUST CATEGORY: UNPAVED ROADS

SUBCATEGORY: CANAL ROADS

Proposed Imperial County Requirements:

- For Canal Roads with 20 or more ADT (Ref: PR805, Section E.3)
  a) Stock Triploid Grass carp in canals to reduce maintenance vehicle trips along Canal Banks to mechanically remove aquatic weeds or (Ref: PR805, Section F.2.a)
  b) Install remote control delivery gates to eliminate manual gate operation by maintenance personnel or (Ref: PR805, Section F.2.b)
  c) Implement Silt removal program to delay grading of spoil piles deposited after cleaning operations or (Ref: PR805, Section F.2c)
  d) Permanent road closure or (Ref: PR805, Section F.2d)
  e) Convert open canals to pipeline or (Ref: PR805, Section F.2.e)
  f) Line canals to eliminate maintenance for silt/week control or (Ref: PR805, Section F.2.f)
  g) Initiate canal bank surface maintenance (Ref: PR805, Section F.2.g)

SJV Requirements:
(No requirements specified.)

South Coast Requirements:
(No requirements specified.)

Maricopa County Requirements:
(No requirements specified.)

Clark County Requirements:
(No requirements specified.)

Discussion:
Canal roads are unpaved roads used by the Imperial Irrigation District to maintain the irrigation canal network. San Joaquin has identified private canal roads in its inventory but does not anticipate that these private canal roads have traffic levels that meet the 26 ADT threshold for unpaved road controls and does not specify additional canal road requirements such as the ones in proposed Regulation VIII. Thus, these requirements are the most stringent for this source. (NOTE: These requirements are in addition to the general unpaved road requirements for unpaved roads that canal roads are also subject to. See also Unpaved Roads: Applicability and Unpaved Roads: Control Requirements.)

FUGITIVE DUST CATEGORY: DISTURBED OPEN AREAS

SUBCATEGORY: APPLICABILITY

Proposed Imperial County Requirements:

- 0.5 acres or larger in urban areas, or 3.0 acres or more in rural areas; and contains at least 1,000 square feet of disturbed surface area (Ref: PR804, Section B)

SJV Requirements:

- This rule applies to any open area having 0.5 acres or more within urban areas, or 3.0 acres or more within rural areas; and contains at least 1000 square feet of disturbed surface area (R8051, Section 2.0).

South Coast Requirements:

- No limit

Maricopa County Requirements:

Unclear: Rule 310, Section 102 exempts disturbed open areas which are not located at sources requiring "any permit under these rules." However, most open areas will not have need for permits. Section 303 requires a dust control plan (presumed to be what is referred to in Section 102 as a "permit"), for all sources that involve earthmoving operations of 0.10 acres or greater. Since soil disturbances can occur for reasons other than earthmoving, for example, off-road vehicle traverses, it appears that many disturbed open areas, vacant lots, etc, may be exempt under these rules.

Clark County Requirements:

- 5,000 square feet or larger (non-agricultural) (Ref: AQR Section 90.1.2 and 90.2.1)

Discussion:

The most stringent applicability is South Coast Rule 403, which has no minimal level (although the related control requirements are less stringent than other serious non-attainment areas) Clark County AQR Section 90 which has a 5,000 square foot (approx. 1/9 acre) minimum level for all types of open areas and vacant lots. Imperial County and SJV applicability thresholds are the same. EPA adjudged[8] the SJV thresholds as meeting the stringency test and qualifying for BACM since over 98%of the total parcel acreage is in parcels of 3 acres or greater. For Imperial County, more than 99.5% of the total parcel acreage is in parcels of 3 acres or greater[9]. Hence, proposed Regulation VIII applicability threshold is more stringent than SJV's applicability threshold, which has already been determined to be BACM.

[8] EPA's Technical Support Document for the San Joaquin Valley, California 2003 PM-10 Plan and 2003 PM-10 Plan Amendments., p. 37-38. January 27, 2004.
[9] Imperial County Assessors Office parcel data, 2001.

FUGITIVE DUST CATEGORY: DISTURBED OPEN AREAS

SUBCATEGORY: CONTROL MEASURES

Proposed Imperial County Requirements:

- Limit open areas to VDE of 20% opacity (Ref: PR804, Section E.1)
- Prevent unauthorized vehicle access by posting "No Trespassing" signs or installing physical barriers such as fences, gates, posts, and/or appropriate barriers to prevent access (Ref: PR804, Section E.2)
- Apply and maintain water or dust suppressant to all unvegetated areas (Ref: PR804, Section F.1.a)
- Establish vegetation on all previously disturbed areas (Ref: PR804, Section F.1.b)
- Pave, apply gravel, chemical stabilizers/suppressants (Ref: PR804, Section F.1.c)

SJV Requirements:

- Apply water/dust suppressants to unvegetated areas sufficient to limit VDE to 20% opacity (Ref: R8051, Table 8051-1, A1)
- Establish vegetation to limit VDE to 20% opacity (Ref: ibid, A2)
- Pave, apply gravel, apply stabilizers to limit VDE to 20% opacity (Ref: ibid, A3)
- Upon evidence of trespass, post "no trespass" signs or install barriers to prevent access to area (Ref: ibid, B)

South Coast Requirements:

- Apply chemical stabilizers (Ref: R403 Handbook, BACM (Q))
- Water with sufficient frequency to establish a surface crust (Ref: ibid, (R))
- Establish (drought-resistant) vegetation as quickly as possible (Ref: ibid, (T))

Maricopa County Requirements:

- Restore vegetative ground cover and soil characteristics similar to native Conditions (Ref: R310, Table 1, 1E)
- Pave, apply gravel, apply stabilizer to meet stabilized standards (Ref: ibid, 2E)
- Establish vegetation to meet stabilized standards (Ref: ibid, 3E)
- Stabilized standards, one of the following (Ref: R310, Section 302.3):
    - Maintain visible crust
    - Maintain threshold friction velocity of 100 cm/sec or greater
    - Maintain flat vegetation, not subject to wind movement, of at least 50%
    - Maintain standing (rooted, vertical) vegetation of at least 30%
    - Maintain standing (rooted, vertical) vegetation of at least 10% where the soil threshold friction velocity is 43 cm/sec or greater
    - Maintain cover of non-erodible elements of at least 10%

Clark County Requirements:

- Upon evidence of soil disturbance by motor vehicles, prevent trespass, parking, and access by installing barriers, curbs, fences, gates, posts, signs, shrubs, and trees. (Ref: AQR Section 90.2.1.1(a))
- Apply gravel or chemical stabilizers to meet one of stabilization standards (Ref: ibid, (b))
- Stabilization standards (Ref: AQR Section 90.2.1.2)
  - Establish visible crust
  - Establish cover of non-erodible elements of at least 20%
  - Establish threshold friction velocity of 100 cm/sec or higher

Discussion:

Proposed Regulation VIII and SJV requirements are identical. Maricopa County and Clark County have established soil stabilization standards for determining the effectiveness of the control measures. (With respect to the stabilization standards, see General: Definition of a Stabilized Surface above.) EPA has approved the SJV regulations as BACM[10], and the proposed Regulation VIII requirements are as stringent as the most stringent requirements in other serious non-attainment areas

[10] Federal Register Vol. 69, No. 102; p.30035; May 26, 2004.

FUGITIVE DUST CATEGORY: WINDBLOWN DUST

SUBCATEGORY: DEFINITIONS

Proposed Imperial County Requirements:
Not defined

SJV Requirements:
Reference to wind blown dust is only included within the definition of "stabilized surface: any disturbed surface area or open bulk storage pile that is resistant to wind blown fugitive dust." (Ref: R8011, Section 3.56). There is no specific definition of "wind blown fugitive dust."

South Coast Requirements:

- Includes a definition for "wind-driven fugitive dust" as being "any visible emissions from any disturbed surface area which is generated by wind action alone." (Ref: R403(c)(29)
- High wind conditions are specified as wind gusts in excess of 25 mph (Ref: R403(h)(2)(A)) and wind gust defined as maximum instantaneous wind speed (Ref: R403(c)(30))

Maricopa County Requirements:

- Includes a definition of wind blown dust as being "visible emissions from any disturbed surface area which are generated by wind action alone (Ref: R310, Section 233)
- Includes a definition of wind event: "when the 60-minute average wind speed is greater than 25 mph" (Ref: ibid, 234)

Clark County Requirements:
No definitions specified

Discussion:
This section is provided for information purposes, since the "definition" of wind blown dust is not a control measure.

FUGITIVE DUST CATEGORY: DISTURBED AREAS

SUBCATEGORY: WINDBLOWN DUST

Proposed Imperial County Requirements:

No specific requirements, except for construction and earthmoving activities during wind events. See description in Appendix B concerning Construction/Windblown Dust.

SJV Requirements:

No specific requirements, except for construction and earthmoving activities during wind events. See description in Appendix B concerning Construction/Windblown Dust.

South Coast Requirements:

For large operations, implementing one of the following contingency measures exempts the owner/operator from certain rule provisions:

- If operations remain inactive for not more than four consecutive days, apply water and chemical stabilizers in sufficient concentration to maintain a stabilized surface for six months (Ref: R403, Table 3, 0B)
- Apply chemical stabilizers prior to wind event (Ref: ibid, 1B)
- Apply water 3 times per day; if evidence of wind driven fugitive dust, increase watering to 4 times per day (Ref: ibid, 2B)
- Establish vegetative ground cover within 21 days after active operations have ceased (Ref: ibid, 3B)

Maricopa County Requirements:

- Apply gravel or dust suppressants (Ref: R310, Table 2, 1B)
- Apply water 3 times per day; if evidence of wind driven fugitive dust, increase watering to 4 times per day (Ref: ibid, 2B)

Clark County Requirements:

(No specific wind requirements, however, the general requirements for disturbed surface areas include provisions which are intended to reduce windblown dust:

- Prevent access to limit soil disturbance (Ref: AQR Section 94 Handbook, CST 11)
- Stabilize soil, using dust palliative or vegetation to maintain stabilized surface (Ref: ibid, CST 11-4 and 11-5)
- Pave or apply surface rock to maintain stabilized surface (Ref: ibid, CST 11-6))

Discussion:

There are no specific exemptions for wind events in the proposed Regulation VIII amendments. PR803 opacity and stabilization requirements apply regardless of wind speed. This is the most stringent requirement, since there are not exemptions from Regulation VIII provisions because of high winds

It should be noted that for construction activities (which are not a significant source), there is an exemption from the 20% opacity requirement (PR801, Section D.2). To qualify for the exemption, the operator must either cease operations, water or apply dust suppressants once per hour, or maintain a 12% soil moisture content by watering.

FUGITIVE DUST CATEGORY: AGRICULTURAL OPERATIONS – CROP FARMS

SUBCATEGORY: CONSERVATION (OR BEST) MANAGEMENT PRACTICES

Proposed Imperial County Requirements:

For owner/operators of agricultural operation sites greater than or equal to 40 acres, implement at least one of the following in each category:

- Land preparation and cultivation (Ref: PR806, Section E.1):
  a) alternative till
  b) bed/row size spacing
  c) chemical/fertigation
  d) combined operations
  e) conservation irrigation
  f) conservation tillage
  g) cover crops
  h) equipment changes/technological improvements
  i) fallowing land
  j) integrated pest control
  k) mulching
  l) night farming
  m) non tillage/chemical tillage
  n) organic practices
  o) precision farming
  p) transgenic crops
- Harvesting (Ref: PR806, Section E.2):
  a) bailing/large bails
  b) combined operations
  c) equipment changes/technological improvements
  d) green chop
  e) hand harvesting
  f) fallowing land
  g) nigh harvesting
  i) no burning
  j) pre-harvesting soil preparation
  k) shed packing
  l) shuttle system/large carrier
- Unpaved farm roads and traffic areas (Ref: PR806, Section E.3 and E.4):
  a) chips/mulches, organic materials, polymers, road oil and sand
  b) gravel
  c) paving
  d) restricted access
  e) speed limit

f) track-out control
g) water
h) wind barrier

SJV Requirements:

SJVAPCD Rule 4550 requires the submittal of a conservation management plan for sites with more than 100 acres with 1 conservation management practice (CMP) for each category:

- Land preparation and cultivation: same as Imperial County with addition of floor management (nut crops), time of planting and transplanting (some vegetable crops) options.
- Harvest: same as Imperial County with addition of continuous tray/D.O.V. (dry fruit crops) fallowing land; and floor management (nut crops) options.
- Unpaved farm roads and traffic areas: same as Imperial County with the addition of mechanical pruning (tree and vine crops) option.

South Coast Requirements:

For agricultural operations within the South Coast Air Basin, with combined disturbed surface area of 10 acres or more, the standards of Rule 403 apply after July 1, 1999 unless Best Management Practices as delineated in the Rule 403 Agricultural Handbook are implemented. (Ref: R403(h)(1))

Best Management Practices as described in the Agricultural Handbook are as follows:

a) Active conservation practices
   1) Ensure adequate soil moisture so that VDE do not exceed 100 feet
   2) Irrigate or bed fields as soon as feasible
   3) Utilize conservation tillage practices
   4) Apply mulch or other materials to help bind soil

b) Inactive conservation practices
   1) Comply with local dust ordinances relating to agricultural operations
   2) Establish cover crops that maintain a minimum 60% ground cover
   3) Maintain crop residues at a minimum 60% ground cover as determined by line-intersection method
   4) Conduct surface roughening by bedding, rough disking, or tillage that leaves stable clods
   5) Alternate strips of row crops with wind-resistant crops
   6) Establish tree or shrub windbreaks at right angles to prevailing winds
   7) Establish ridge plantings by normal tillage and planting equipment at a right angle to the prevailing winds
   8) Plant or maintain perennial or annual plants as a vegetative wind barrier by planting throughout a field at a right angle to the prevailing wind

c) Farm yard areas
   1) Establish or maintain sufficient vegetation to prevent wind driven dust

2) Use water or dust suppressants to bind soils
3) Apply surface improvements (gravel, paving, etc)
4) Reduce disturbed areas by at least 50%

d) Trackout conservation practices

1) Pave or apply dust suppressants on unpaved road connections with public paved roads, preferably to a distance of 100 feed from the paved road
2) Use trackout prevention devices
3) Avoid turning tractors and other farm machinery on public pave roads if soil will be dropped on the road. If material is dropped, clean the road at the conclusion of the activity

e) Unpaved road conservation practices

1) Reduce vehicle speeds to a maximum of 15 mph
2) Restrict public access to private roads by using signage or obstructions
3) Apply water, dust suppressants, mulch or other materials to unpaved roads prior to heavy use periods
4) Improve heavily used roads by paving, applying gravel or recycled road base material

f) Storage pile conservation practices

1) Enclose with a three-sided barrier equal to height of pile
2) Water sufficiently to prevent wind driven fugitive dust
3) Apply chemical stabilizers
4) Cover with tarps, plastic, or other materials

(Ref: Guide to Agricultural PM_{10} Dust Control Practices, dated June 1999)

Maricopa County Requirements:

In May 2000, the Agricultural BMP Committee adopted the agricultural PM_{10} general permit, which became effective by rule on May 12, 2000 (Arizona Administrative Code [AAC], R18-2- 610 and 611). The Committee identified 34 BMPs that focus on feasible, effective, and common sense practices while minimizing negative economic impacts on local agriculture. (These BMPs were based on the BMPs in the South Coast Agricultural Handbook). The general permit requires that a commercial farmer implement at least one BMP to control PM_{10} for each of the following three categories: tillage and harvest, non-cropland, and cropland. The general permit requires a commercial farmer to comply by December 31, 2001.

Clark County Requirements:

(No requirements for this source)

Discussion:

The South Coast Rule 403 subjects agricultural operations to a long list of best management practice choices, which encompass many of the requirements for non-agricultural sources. Although

implementation and documentation of BMP is considered "voluntary," failure to do so subjects the owners/operators to the basic standards of the rule, which include VDE beyond the property line, implementation of at least one BACM for each fugitive dust source, upwind-downwind limit of 50 $\mu g/m^3$ of PM_{10}, and trackout control requirements. The Arizona requirements were based on the South Coast BMPs. The San Joaquin requirements were developed after the BACM analysis performed for the SJVAPCD 2003 PM_{10} SIP and after extensive rule development.

ICAPCD CMPs apply to farm sites with 40 or more acres, which represent 90% of farm land in Imperial County. By comparison, San Joaquin Valley requires CMPs at site greater than 100 acres, which represents about 91% of farm land in San Joaquin Valley. Thus, the farm site limit is equally stringent compared to the most stringent threshold.

The proposed ICAPCD CMP requirements are similar to the requirements in San Joaquin Valley, Maricopa County and South Coast, and are directly based on the San Joaquin Valley requirements that were approved by EPA[11] as meeting the BACM requirements. The Proposed Imperial County requirements are specifically based on the San Joaquin requirements and are of similar stringency; thus, they are as stringent as the most stringent requirements for this source.

[11] Federal Register Vol. 69, No. 102; p.30035; May 26, 2004

A P P E N D I X D

Detailed Comparative Analysis for Sources Below the DM Level

Appendix D

Detailed Comparative Analysis for Sources Below the DM Level

Appendix D presents a detailed comparative analysis for sources below the DM level: construction / demolition activities, bulk material, track-out, paved roads, cattle feedlots, BLM and BP sources, and weed abatement. These sources do not require a comparative analysis and this material is presented for information purposes only.

FUGITIVE DUST CATEGORY: CONSTRUCTION

SUBCATEGORY: PRE-EARTHMOVING OPERATIONS

Proposed Imperial Requirements:

Construction and Earthmoving sites shall comply with the following requirements:

- Pre-water site sufficient to limit VDE to 20% opacity (Ref: PR801, Section F.1.a.1)
- Phase work to reduce the amount of disturbed surface area at any one time (Ref: PR801, Section F.1.a.2)

SJV Requirements:

- Pre-water in sufficient amount to limit VDE to 20% opacity (Ref: R8021, Table 8021-2, A1)
- Phase work to reduce disturbed surface area (Ref: R8021, Table 8021-2, A2)

South Coast Requirements:

- Apply water to increase soil moisture content to depth of proposed cut (Ref R403 Handbook, BACM Control Measure A)
- Grade each phase separately to coincide with construction phase (Ref: ibid,
- BACM A-2(1))
- If full grading, apply chemical stabilizers to graded areas where construction will not begin for more than 60 days after grading (Ref: ibid, BACM A-2(2))

Maricopa County Requirements:

- Pre-water to depths of cuts (Ref R310, Table 1, 1D)
- Phase work to reduce the amount of disturbed surface areas (Ref: ibid, Table 1, 2D)

Clark County Requirements:

- Presoak soils to depths of cuts (AQR Section 94 Handbook, CST 07)
- Presoak with water and surfactant mixture in soils with high emission potential (Ref: ibid, CST 07-7)
- Include phasing details as part of Dust Control Permit and Dust Control Mitigation Plan (Ref, ibid, GEN 01)

Discussion:

Imperial County and SJV are of similar stringency. Clark and Maricopa counties require pre-watering to the depth of the cut.

For phased earthmoving or construction, the requirements appear to be equally stringent. Emission reductions can be reduced by limiting the area of disturbed soils to the minimum necessary for the construction project. The success of such limitation is dependent upon the degree of specificity, i.e., it would be difficult to determine if the phasing is actually minimizing the disturbed surface conditions unless such information is provided in advance. The Clark County requirements for providing such

details are considered more stringent than the Imperial County and SJV requirements because such phasing details are not part of the Imperial County or SJV Dust Control Plan submittals.

The Clark County provision of using a mixture of water and chemical stabilizers for resoaking soils with high emissions potential is questionable regarding reducing emissions. Chemical stabilizers tend to help form surface soil crusts, which minimize dust emissions from activities on the surface. If grading is done to levels below the surface, there is unknown value as to the ability of such chemicals to have an effect on subsurface soils. Thus it cannot be determined if such measures have greater dust-reducing capabilities.

FUGITIVE DUST CATEGORY: CONSTRUCTION

SUBCATEGORY: EARTHMOVING OPERATIONS

Proposed Imperial Requirements:

- Construction and Earthmoving sites shall comply with the following requirements: Apply water or chemical stabilization as directed by product manufacturer to limit VDE to 20% opacity; or (Ref: PR801, Section F.1.b.1)
- Construct and maintain wind barriers to limit VDE to 20% opacity (Ref: PR801, Section F.1.b.2)
- Apply water or chemical stabilization to unpaved/haul access roads and unpaved vehicle equipment areas sufficient to limit VDE to 20% opacity (Ref: PR801, Section F.1.b.1)

SJV Requirements:

- Apply water or chemical stabilizers/dust suppressants, in conjunction with optional wind barriers, to limit VDE to 20% opacity (Ref: R8021, Table 8021-2, B1 and B2)

South Coast Requirements:

- General VDE conditions apply (See FD Category, Visible Dust Emissions)
- Maintain soil moisture content (by applicable ASTM Method D-2216) minimum of 12% (Ref: R403, Table 2, 1(a))
- Conduct watering to limit VDE from exceeding 100 feet (Ref, ibid, (1a-1) and (1c))

Maricopa County Requirements:

- Apply water or dust suppressants to limit VDE to 20% opacity (Ref: R310, Table 1, 3D)
- Apply water to maintain soil moisture at a minimum 12% (by applicable ASTM Method D-2216-98) (Ref: R310, Table 1, 4D)
- Construct 3-5 foot high wind barriers, with 50% or less porosity, adjacent to roadways or urban areas, and meet either VDE or soil moisture limits. (Ref: ibid, 5D)
- For one acre or larger, if water is used, operate water truck or similar water application system on disturbed surfaces (Ref: ibid, 1M)

Clark County Requirements:

(Note: Clark County does not have a specific section for earthmoving. Two activities which are specified include cut-and-fill operations and backfilling operations. Control measures are summarized from those activities.)

- General VDE conditions apply (See FD Category, Visible Dust Emissions)
- Apply water to maintain soil moisture (Ref: AQR Section 94 Handbook, CST 01)
- Apply water or dust suppressant immediately following activity (Ref, ibid, CST 01- 6, CST 07-5 and CST 07-6)
- When loading soils, minimize height from loader bucket, and empty bucket slowly (Ref: ibid, CST 01-7 and CST 01-8)

Discussion:

The South Coast and Maricopa 12% soil moisture content requirement option is deemed more stringent than the VDE limit alone because this is a distinct action to minimize emissions. The Proposed Imperial County requirements are as stringent as the SJV requirements.

FUGITIVE DUST CATEGORY: CONSTRUCTION

SUBCATEGORY: INACTIVE DISTURBED LAND

Proposed Imperial County Requirements:

- Restrict vehicle access (Ref: PR801, Section F.1.c.1)
- Apply water or chemical stabilization sufficient to comply with conditions of a stabilized surface. If an area ≥ 0.5 acres of disturbed surface area remains unused for ≥ 7 days, the area must comply with the conditions for a stabilized surface (Ref: PR801, Section F.1.c.2)

SJV Requirements:

- Restrict vehicle access (Ref: R8021, Table 8021-2, C1)
- Apply water/dust suppressants to meet stabilized surface definition; if area is greater than 0.5 acres and inactive more than 7 days, then must comply with definition of stabilized surface (Ref, ibid, C2)

South Coast Requirements:

- Apply chemical stabilizers within 5 days of completion of grading (Ref: R403, Table 2, (2c))
- Apply water to at least 80% of inactive disturbed area on a daily basis when there is evidence of windblown dust (Ref: ibid, (3a))
- Establish vegetative ground cover within 21 days after active operations cease.
- Must be of sufficient density within 90 days to expose less than 30% of the disturbed area (Ref: ibid, (3c))

Maricopa County Requirements:

- For weekends, holidays, and after-hours:
  - Apply water/dust suppressants to maintain stabilized surface (Ref, R310, Table 1, 6D)
  - Establish vegetative ground cover to maintain stabilized surface (Ref: ibid, 7D and 11D)
  - Restrict vehicle access (Ref: ibid, 8D)
- For longer-term stabilization (must be done within 8 months)
  - Restore vegetation similar to natural conditions to maintain stabilized surface (Ref: ibid, 9D)
  - Pave, apply gravel or dust suppressant (presumably to road surfaces) to maintain stabilized surface (Ref: ibid, 10D)

Clark County Requirements:

- Prevent access to limit soil disturbance (Ref: AQR Section 94 Handbook, CST 11)
- Stabilize soil, using dust palliative or vegetation to maintain stabilized surface (Ref: ibid, CST 11-4 and 11-5)
- Pave or apply surface rock to maintain stabilized surface (Ref: ibid, CST 11-6)

Discussion:

Although other approaches may have more specificity in control measures, the effect of maintaining a stabilized surface in the Imperial County and SJV rules is deemed equivalent to other rules. However, Maricopa County does not specify a de minimis acreage, and hence the requirement for longer-term stabilization is deemed more stringent than the Imperial County or SJV rules which establishes a de minimis level of 0.5 acres.

FUGITIVE DUST CATEGORY: CONSTRUCTION ACTIVITIES

SUBCATEGORY: DEMOLITION

Proposed Imperial Requirements:

- All persons who own or operate a Construction/Earthmoving Site shall comply with requirements of Section F.1 so as to limit VDE to 20% opacity (Ref: PR801, Section E.1.a)

SJV Requirements:

- Apply water to limit VDE to not more than 20% opacity (Ref: R8021,5.1.1, 5.1.2)
- Apply dust suppressants to limit VDE to not more than 20% opacity (Ref, ibid, 5.1.3)
- Handling, storage, and transport of bulk materials on-site or off-site resulting from the demolition or razing of buildings shall comply with the requirements specified in Rule 8031 (Bulk Materials) (Ref, ibid, 5.1.4)
- Movement/handling must meet requirements for bulk materials (Ref: ibid, 5.1.5)
- Trackout prevention must comply with Rule 8041 (Ref: ibid, 5.1.6)

South Coast Requirements:

- Demolition must meet same requirements as other applicable dust-producing operations
  1) No visible emissions beyond property line (Ref: R403(d)(1))
  2) Must apply one or more BACM (Ref: R403(d)(2)
  3) Upwind-downwind PM_{10} levels must not exceed 50μg/m^3 (Ref: R403(d)(4))
  4) Must meet trackout requirements (Ref: R403(d)(5))

Maricopa County Requirements:

- Demolition must meet same requirements as other applicable dust generating operations
  1) Visible dust emissions must not exceed 20% opacity (Ref: R310, Sect. 301)
  2) Must implement one primary and one contingency control measure (Ref: R310, Sect. 304.3(a))

Clark County Requirements

- For implosion:
  1) Limit blasting to time periods when wind direction is away from closest residential areas, occupied buildings, and major roadways.
  2) Limit blasting times to between 8:00 am and 4:30 pm
  3) Stabilize soils prior to blasting
  4) Stabilize soils and debris after blasting
  5) Do not blast when wind speeds occur or are forecast to occur
  6) Restrict vehicles to paved or stabilized surfaces
     (Ref: AQR Section 94 Handbook, CST 08)
- For mechanical/manual demolition:
  1) Stabilize erodible surfaces

2) Stabilize surfaces where support equipment will operate
3) Stabilize loose soil and demolition debris (Ref: AQR Section 94 Handbook, CST 09)
4) Stabilize surfaces where support equipment will operate
5) Stabilize loose soil and demolition debris (Ref: AQR Section 94 Handbook, CST 09)

Discussion:

These requirements vary from general restrictions, such as, South Coast and Maricopa County, to specific requirements, as in Imperial County, San Joaquin Valley, and Clark County. While the specifics of opacity limits are likely to be equivalent to the general restrictions of South Coast and Maricopa County, the specific measures in the Clark County regulations appear to be more stringent in preventing unintended violations of the opacity limit. For example, it may never be known until after a demolition blast has actually occurred that there is an opacity violation. By specifying actions, such as stabilizing surface before and after blasting, and not allowing blasting when wind speeds exceed 25 miles per hour, there is at least a more proactive effort to minimize dust generation. Limiting the hours and wind direction conditions for approved blasting does not result in lower emissions, but rather is responsive to potential public impacts. As such, from an emissions standpoint, these are not deemed to be more stringent control measures.

FUGITIVE DUST CATEGORY: CONSTRUCTION/EARTH MOVING

SUBCATEGORY: WINDBLOWN DUST

Proposed Imperial County Requirements:

For exemption from the 20% opacity limit requirements during wind events, an operation must implement one of the following:

- Cease dust generating activities for the duration of the wind event. If operations cease for the remainder of the day, stabilization measures must be implemented.(Ref: PR801, D.2.a)
- Apply water/dust suppressant once per hour (Ref: ibid, D.2.b)
- Apply water to maintain minimum 12% soil moisture content (Ref: ibid, Table D.2.c)
- Construct fences 3-5 feet high with 50% or less porosity, and must be done in conjunction with another measure, as above (Ref: ibid, D.2.d)

SJV Requirements:

- Cease all outdoor construction activities if fugitive dust exceeds 20% opacity (Ref: Rule 8021, Section 5.4.1)
- Continue to operate water trucks when outdoor construction halted unless unsafe to do so (Ref: ibid, Section 5.4.2)

South Coast Requirements:

For exemption from the visible dust over the property line and unwind / downwind monitoring requirements, during wind events an operation must:

- For earthmoving:
  - Cease all active operations (Ref R403, Table 1, 1A)
  - Apply water to soil not more than 15 minutes prior to moving such soil (Ref: ibid, 2A)
- For unpaved roads at construction sites:
  - Apply chemical stabilizers prior to wind event (Ref: R403, Table1, 1C)
  - Apply water twice per hour during active operations (Ref: ibid, 2C)
  - Stop all vehicular traffic (Ref: ibid, 3C)

Maricopa County Requirements:

As an affirmative defense for opacity exceedence enforcement action, during wind events an operation must do one of the following:

- Cease dust generating activities for the duration of the wind event. If operations cease for the remainder of the day, stabilization measures must be implemented. (Ref: R310, Table 20.a.1)
- Apply water/dust suppressant once per hour (Ref: ibid, Table 20.a.2)
- Apply water to maintain minimum 12% soil moisture content (Ref: ibid, Table 20.a.3)

- Construct fences 3-5 feet high with 50% or less porosity, and must be done in conjunction with another measure, as above (Ref: ibid, Table 20.a.4)

Clark County Requirements:

- Cease all construction activities if fugitive dust exceeds 20% opacity and visible plume caused by winds cannot be controlled (Ref: AQR Section 94 Handbook, Gen 03)
- Continue to operate water trucks unless hazardous to do so (Ref: ibid, Gen 03, 2)

Discussion:

The proposed Imperial County requirements are based on the South Coast and Maricopa County regulations. The South Coast rule creates an exemption for property line and upwind/downwind exceedences if wind event controls are implemented. The Maricopa County rule states that opacity violations in high winds are still violations, but that the imposition of wind event controls is an affirmative defense for the operator. In the proposed Imperial County regulations, there is an exemption from the 20% opacity requirement (PR801, Section D.2). To qualify for the exemption, the operator must either cease operations, water or apply dust suppressants once per hour, or maintain a 12% soil moisture content by watering. Imperial County requirements are as stringent as the rules in these two areas. (It should be noted that all other PR801 requirements, including stabilization, are in force during wind events also.) Clark County and SJV allow fewer control options, and thus could be considered more stringent. South Coast is the only agency to have specific requirements for unpaved roads at construction sites.

FUGITIVE DUST CATEGORY: CONSTRUCTION

SUBCATEGORY: DUST CONTROL PLAN: APPLICABILITY

Proposed Imperial County Requirements:
All persons who own or operate a construction site greater than 10 acres in a residential development or greater than 5 acres for a non-commercial development shall submit a Dust Control Plan to the APCO. (Ref: R801, Section E.2.c).

NOTE: All construction/demolition sites and earthmoving activities, except at existing single family homes, is required to comply with the BACM requirements of PR 801.
SJV Requirements:

- Size: 10 acres or larger for residential areas and 5 acres or larger for non-residential (Ref: R8021, Section 6.3.1)
- Earth movement: 2,500 cubic yards or more on at least 3 days (Ref: R8021, Section 6.3.1)

South Coast Requirements:
Prior to April 2004, South Coast Rule 403 required dust control plans for sites greater than 100 acres or more than 10,000 cubic yards of daily earth movement. In the April 2004 amendments, South Coast removed all plan limits and requirements, instead requiring that all sites greater than 50 acres or with daily earth movement of 5,000 cubic yards or more meet additional requirements for large operations. These sites do not need to submit a plan, but they must submit a large operation notification. (Ref: R403, (e))

Maricopa County Requirements:

- Size: 0.10 acres or larger (Ref: R310, Section 303)
- Certain permitted activities which have any dust generating activities (Ref: ibid, Section 303.3)

Clark County Requirements:

- Dust Control Permit
  - Size: 0.25 acres or smaller
  - Demolition projects 1000 square feet or greater
  - Trenching operations 100 feet in length or greater
- Dust Mitigation Plan
  - Size: 0.25 to 10 acres
- Site-Specific Dust Control Mitigation Plan
  - Size: 10 acres or larger
    (Ref: AQR Section 94 Handbook, DCP 01)

Discussion:

Dust control plans, *per se,* do not reduce emissions. However, to the extent that dust control management efforts on the part of the operator, and oversight and compliance efforts on the part of the agency are substantially enhanced, it can be presumed that a greater degree of dust control implementation and adherence to standards ultimately result in lower fugitive dust emissions. On that basis, dust control plans (permits) can be evaluated as a BACM.

As far as size is concerned, Maricopa County, and Clark County have much more stringent requirements than does SJV and the South Coast and the proposed Imperial County requirements. (It should also be noted that Clark County allows less detailed dust control permits/plans for sites less than 10 acres.) South Coast no longer requires dust control plans for large operations (>50 acres), but does require that such sites submit a large operation notification and meet specific rule standards. The effect of overall emissions reductions needs to include the elements of the plan in addition to size.

FUGITIVE DUST CATEGORY: CONSTRUCTION
SUBCATEGORY: DUST CONTROL PLAN: REQUIREMENTS

Proposed Imperial County Requirements:

- Retain a copy of the Dust Control Plan at the project site. (Ref: R801, Section F.2.a)
- Comply with the requirements of the approved Dust Control Plan. (Ref: R801, Section F.2.b)
- The Dust Control Plan shall include (Ref: R801, Section F.2.c):
  1. Name, address, phone numbers
  2. Plot Plan
  3. Total area of land surface disturbed, estimated daily throughput volume of earthmoving in cubic yards, and total area in acres of the entire project site
  4. The start and end dates of the project.
  5. Actual and potential sources of fugitive dust emissions on the site and the location of bulk material handling and storage areas, paved and unpaved roads, entrances and exits where Track Out/Carry Out may occur, and traffic areas
  6. Specifications of dust suppressants to be applied.
  7. Specific surface treatments and/or control measures utilized to control Track Out/Carry Out
  8. The Dust Control Plan should describe all fugitive dust control measures to be implemented before, during, and after any dust generating activity.

SJV Requirements:

- Information on owner/operator (Ref: R8021, Section 6.3.6.1)
- A location plot plan (Ref: ibid, Section 6.3.6.2)
- Project size (Ref: ibid, Section 6.3.6.3)
- Start and end dates of soil disturbing activities (Ref: ibid, Section 6.3.6.4)
- Identification of all sources of fugitive dust (Ref: ibid, Section 6.3.6.5)
- Information on dust suppressants to be used (Ref: ibid, Section 6.3.6.6)
- Details of measures to control trackout (Ref: ibid, Section 6.3.6.7)
- Description of all fugitive dust control measures to be implemented before, during, after any dust generating activity (Ref: ibid, Section 6.3.8)

South Coast Requirements:

Prior to April 2004, South Coast Rule 403 required dust control plans for sites greater than 100 acres or more than 10,000 cubic yards of daily earth movement. In the April 2004 amendments, South Coast removed all plan limits and requirements, instead requiring that all sites greater than 50 acres or with daily earth movement of 5,000 cubic yards or more meet additional requirements for large operations. These sites do not need to submit a plan, but they must submit a large operation notification. (Ref: R403, (e)) and comply with Table 2 and 3 dust control measures.

Large operation requirement includes:

- Large Operation Notification (not a Plan), with annual renewal submittal containing:
  - Information on owner/operator (Ref: R403 (f)(3)(A))
  - A description of site including a map (Ref: ibid, (f)(3)(B))
- Project signage with contact information
- Trained dust control supervisor is required and must be identified

Maricopa County Requirements:

- Information on person conducting dust generating operations (Ref: R310, Section 304.1)
- Project drawing (Ref: ibid, Section 304.2)
- Identification of one primary and one contingency control measure from Table 1 for each source of fugitive dust (Ref: ibid, Section 304.3a)
- Number of vehicles traveling on unpaved haul/access roads (Ref: ibid, Section 304.3c)
- Information on dust suppressants and frequency of application (Ref: ibid, Section 304.4)
- Details of measures to control trackout (Ref: ibid, Section 304.5)

Clark County Requirements:

- Complete application for permit
- Provide project vicinity and assessors parcel maps
- Include best management practices as detailed in Section 94 Handbook
- If greater than 50 acres, trained dust control monitor is required
- Key construction project class required to take dust control class
- Signage required
- Dust control plans must be provided to all contractors and subcontractors (Ref: AQR Section 94 Handbook, DCP 01)

Discussion:

The proposed Imperial County requirements are based on the SJV requirements and are of similar stringency. Clark County has the most detailed requirements in the sense that their Best Management Practices Handbook provides the most detailed set of dust control options for specified sources of dust generating activities. That is not to say that more options can result in fewer emissions, but the more options available, the more guidance is provided to dust generating activities in the selection of appropriate combinations of control measures. Clark County is also the most progressive in being proactive to control dust emissions by requiring training of key construction personnel and also requiring a trained dust monitor for operations, which are larger than 50 acres.

In April 2004, South Coast removed its large operation plan requirements, now requiring a simple notification and adherence to Table 1 and Table 2 dust control measures. For large operations, South Coast now requires an on-site trained monitor also.

FUGITIVE DUST CATEGORY: BULK MATERIALS

SUBCATEGORY: HANDLING/STORAGE

Proposed Imperial County Requirements:

Handling/Transfer

- Spray with water prior to handling and/or at transfer points; or (Ref: PR802, Section F.1.a)
- Apply and maintain chemical stabilizer; or (Ref: PR802, Section F.1.b)
- Protect from wind erosion by sheltering or enclosing the operation and transfer line (Ref: R02, Section F.1.c)

Storage

- Cover bulk materials stored outdoors with tarps, plastic, or other suitable material and anchor in a manner that prevents the cover from being removed; or (Ref: PRR802, Section F.2.a)
- Construct and maintain wind barriers with less than 50% porosity; or (Ref: PRR802, Section F.2.b)
- Utilize a 3-sided structure with a height at least equal to the height of the storage pile and with less than 50% porosity. (Ref: PRR802, Section F.2.c)

SJV Requirements:

- Water or stabilize to limit VDE to 20% opacity (Ref 8031, 5.3, A1)
- Store in accordance with definition for stabilized surface (Ref, ibid, B1)
- Cover outdoor materials with tarps, plastic, etc (Ref, ibid, B2)
- Use wind barriers to limit VDE to 20% plus water/stabilize (Ref, ibid, A2 and B3)
- Utilize a 3-sided structure with a height at least equal to the height of the storage pileand with less than 50% porosity (Ref, ibid, B4)

South Coast Requirements:

- Use chemical stabilizers (Ref R403, Table 2, 5a)
- Water 80% surface area on windy days (Ref, ibid, 5b)
- Use temporary coverings (Ref, ibid, 5c)
- Use 3-sided enclosures, less than 50% porosity to height of pile (Ref, ibid, 5d)
- Fully enclose (Ref R403 Handbook, pg 6-4, (L))
- Alter load-in, load-out procedures (Ref, ibid, (O))

Maricopa County Requirements:

- Water to limit VDE to 20% opacity (Ref R310, Table 1, 1F)
- Cover with tarps, plastic, etc. (Ref, ibid, 2F)
- Apply water to maintain minimum 12% soil moisture or
  - 70% optimum soil moisture content (Ref, ibid, 3F)
- Meet requirements for stabilized surface (Ref, ibid, 4F)
- Construct wind barriers (with less than 50% porosity), storage silos, or
  - 3-sided enclosures to height of pile and length, distance restrictions (Ref, ibid, 4F)

Clark County Requirements:

- Must stabilize stockpiles
- Must not be over 8 feet high if within 100 yards of occupied building
- Must have water access to top of pile if higher than 8 feet
- Avoid steep slopes
- Apply water during stocking, loading, unloading (high emission potential soils) (Ref Section 94 Handbook, CST-18)

Discussion:

The proposed Imperial County requirements are of similar stringency as the SJV requirements. Other items do not necessarily result in reduced emissions, such as Clark County's requirement for limiting pile height near an occupied building. The Maricopa County 12% minimum soil moisture content may be useful if opacity measurements are difficult to determine due to intermittent nature of dust plumes.

FUGITIVE DUST CATEGORY: BULK MATERIALS

SUBCATEGORY: TRANSPORT

Proposed Imperial County Requirements:

- Completely cover or enclose all Haul Truck loads of Bulk Material (Ref: PR802, Section F.3.a)
- Haul trucks transporting aggregates shall not be required to cover loads if loads remains six inches from upper area of container (Ref: PR802, Section F.3.b)
- Cargo compartments are to be constructed and maintained so that no spillage and loss of bulk material can occur (Ref: PR802, Section F.3.c)
- Cargo compartment should be cleaned and/or washed at delivery site after removal of bulk material (Ref: PR802, Section F.3.d)

SJV Requirements:

- Limit vehicle speed such that VDE does not exceed 20% (Ref: R8031, Table 8031-1, C1)
- Maintain at least 6 inches freeboard when crossing paved public access road (Ref: ibid, C2 and D3)
- Apply water to top of load to limit VDE to 20% opacity (Ref: ibid, C3)
- Cover haul trucks with tarps or other suitable cover (Ref: ibid, C4)
- Clean interior of truck before leaving site (Ref: R8031, Table 8031-1, D1)
- Prevent spillage from holes and openings in floor, side, or tailgate (Ref: ibid, D2)

South Coast Requirements:

- Cover haul vehicles (R403 Handbook, BACM, (D))
- Use bottom-dumping vehicles when feasible (Ref: ibid, (E))
- Maintain minimum 6 inches freeboard in high wind conditions (Ref: R403, Table 1, (2E))

Maricopa County Requirements:

- Maintain at least 3" freeboard (Ref: R310, Table 1, 1G and 7G)
- Prevent spillage from holes and openings in floor, side, or tailgate (Ref: ibid, 2G and 8G)
- Prevent trackout (Ref: ibid, 3G)
- Limit on-site vehicle speed to 15 mph (Ref: ibid, 4G)
- Apply water to top of load to limit VDE to 20% opacity (Ref: ibid, 5G)
- Cover haul trucks with tarps or other suitable closure (Ref: ibid, 6G)
- Clean interior of truck before leaving site (Ref: ibid, 9G)

Clark County Requirements:

- Use tarps or other suitable enclosures on haul trucks (Ref: AQR Section 94 Handbook, CST 13-1)
- Maintain 3-6 inches of freeboard (Ref: ibid, CST 13-2)
- Check belly-dump truck seals and remove trapped rocks to prevent spillage (Ref: ibid, CST 13-3)
- Clean wheels and undercarriage before leaving site (Ref: ibid, CST 13-4)

- Limit on-site vehicle speeds to 15 mph (Ref: ibid, CST 13-5)
- Keep optimum soil moisture when handling material (Ref: ibid, CST 13-6)
- When loading material:
- Stabilize to meet VDE requirements (Ref: ibid, CST 22
- Empty loader bucket slowly (Ref: ibid, CST 22-1)
- Minimize drop height (Ref: ibid, CST 22-2)

Discussion:

Proposed Imperial County requirements are very similar to Maricopa County and SJV, with the exceptions that the six-inch freeboard requirement is more stringent than the three-inch requirement of Maricopa County and Imperial County does not require a vehicle speed limit or require water to be applied to the top of the load. Imperial County is considered at least equally stringent as other BACM for this category with the exception that Clark County has specified BACM for loading material into the transport trucks.

FUGITIVE DUST CATEGORY: BULK MATERIALS

SUBCATEGORY: OUTDOOR CHUTE/CONVEYOR

Proposed Imperial County Requirements:

- Spray with water prior to handling and/or at transfer points; or (Ref: PR802, Section F.1.a)
- Apply and maintain chemical stabilizer; or (Ref: PR802, Section F.1.b)
- Protect from wind erosion by sheltering or enclosing the operation and transfer line (Ref: R02, Section F.1.c)

SJV Requirements:

- Fully enclose chute or conveyor (Ref: R8031, Table 8031, E1)
- Operate water spray to wet materials to limit VDE to 20% opacity (Ref: ibid, E2)
- Wash conveyed materials to remove PM_{10} to limit VDE to 20% opacity (Ref: ibid, E3)

South Coast Requirements:
(No equivalent requirements under Rule 403)

Rule 1157, PM_{10} Emission Reductions from Aggregate and Related Operations, requires that the operator of a facility/operation using a conveyor shall apply dust suppressants or other dust control methods at the conveyor including all transfer points where materials are released as necessary to meet the performance standards in subparagraph (d)(1)(A), which are opacity and plume requirements.

Maricopa County Requirements:
(No equivalent requirement under Rule 310)

Clark County Requirements:
(No equivalent requirement under AQR Section 94)

Discussion:
SJV and South Coast (aggregate operations only) are the only agency to specify requirements for conveyor/chute movement of bulk materials. Imperial County is proposing similar requirements.

FUGITIVE DUST CATEGORY: BULK MATERIALS/STORAGE PILES

SUBCATEGORY: WINDBLOWN DUST

Proposed Imperial County Requirements:
There are no specific exemptions for wind events in the proposed Regulation VIII amendments, thus no requirements are specified.

SJV Requirements:
(No specific requirements)

South Coast Requirements:

- Apply water twice per hour (Ref: R403, Table 1, 1D)
- Install temporary coverings (Ref: ibid, 2D)

Maricopa County Requirements:

- Apply water twice per hour (Ref: R310, Table 2, 3B)
- Cover with tarps, plastic, or other material to prevent wind from removing coverings (Ref: ibid, 4B)

Clark County Requirements:
(No specific requirements for windblown emissions.)

Discussion:
There are no specific exemptions for wind events in the proposed Regulation VIII amendments. This is the most stringent requirement. The measures for both South Coast and Maricopa County are basically identical. Thus, the most stringent measures for high-wind exemptions call for watering twice per hour or using appropriate coverings.

FUGITIVE DUST CATEGORY: CARRYOUT AND TRACKOUT

SUBCATEGORY: WHEN TO REMOVE TRACKOUT, CLEAN-UP METHODS

Proposed Imperial County Requirements:

All sites that are subject to Regulation VIII where carry-out or track-out has occurred on public roads or the paved shoulders of a paved public road.

- Rapidly clean up, by the end of each workday, any Bulk Material tracked out or carried out onto a Paved Road surface. (Ref: PR803, Section F.1.a)

SJV Requirements:

- Remove trackout at end of workday (non-urban areas and if trackout is less than 50 feet (Ref: R8041, Section 5.1)
- For all urban areas, construction projects greater than 10 acres in rural areas, remove immediately if trackout exceeds 50 feet. (Ref: R8041, 5.4 & 5.5)
- Methods:
  - Manual sweeping (Ref: R8041, Section 5.7.1)
  - Rotary brush/broom with sufficient wetting to limit VDE to 20% opacity (Ref: ibid, 5.7.2)
  - Operating PM_{10}-efficient street sweeper with 80% efficiency per SCAQMD R1186 (Ref: ibid, 5.7.3)
  - Flushing with water in areas without curbs and gutters and without violating NPDES requirements.

South Coast Requirements:

- Remove any trackout greater than 25 feet immediately and at the end of the work day (Ref R403(d)(4))
- For sites greater than 5 acres or 100 cubic yards import / export, a trackout device or other trackout prevention measure is required.

Maricopa County Requirements:

- Remove trackout at end of workday
- Remove ASAP if trackout exceeds 50 feet (Ref R308.3(b)(1) and (2))
- Methods
  - Operate street sweeper or wet broom with sufficient water at speeds recommended by manufacturer (Ref: R310, Table 1, 1H)
  - Manual sweeping (Ref: ibid, 2H)

Clark County Requirements:

- Clean trackout from streets daily
- Remove ASAP if trackout exceeds 50 feet (Ref Section 94 Handbook, CST 19)

Discussion:

South Coast's Rule 403 requires trackout cleanup immediately for any trackout greater than 25 feet; it is the most stringent requirement. SJV, Clark County and Maricopa are of similar stringency. SJV and Maricopa County specify measures to clean up trackout after it has occurred.

FUGITIVE DUST CATEGORY: CARRYOUT AND TRACKOUT

SUBCATEGORY: PREVENTION

Proposed Imperial County Requirements:

All sites with access to a paved road and with ≥ 150 vehicle trips per day, or ≥20 vehicle trips per day by vehicles with ≥ 3 axles shall:

- In addition to F.1.a, all sites shall install one or more Track-Out Prevention Devices or other APCO approved track out control devices or wash down system at access points where unpaved traffic surfaces adjoin paved roads; or (Ref: PR803, Section F.1.b)
- In addition to F.1.a, all sites shall apply and maintain paving, chemical stabilization, or at least 3 inch depth of gravel for a distances of 50 or more consecutive feet at access points where unpaved roads adjoin paved roads (Ref: PR803, Section F.1.c)

SJV Requirements:

For sites with more than 150 AVT or 20 or more AVT by vehicles with three or more axles:

- Install trackout control device at all access points to public roads (Ref: R8041, Section 5.8.1)
- Use approved procedure with equivalent or greater level of control (Ref: ibid, Section 5.8.2)

South Coast Requirements:

For sites greater than 5 acres or daily import/export greater than 100 cubic yards:

- Pave, gravel, or chemically stabilize road surface from point of intersection with public paved road to distance of at least 100 feet by 20 feet wide (Ref R403, Table 3, (1))
- Install trackout control device from point of intersection with public paved road to distance of at least 25 feet by 20 feet wide (Ref: ibid, (2))

Maricopa County Requirements:

- Install grizzly or wheel wash system at all access points (Ref: R310, Table 1, 1J)
- At all access points, install gravel pad at least 50’ long, 30’ wide, and 6” deep (Ref: ibid, 2J)
- Pave from point of intersection with public paved road to distance of at least 100 feet by 20 feet wide. (Ref: ibid, 3J)

Clark County Requirements:

- Pave construction roadways as early as possible (Ref: AQR Section 94 Handbook, (CST 19-1)
- Install gravel pads at least 3” deep by 30 feet wide by 50 feet long (or the length of (longest haul truck if greater than 50 feet). Use 1” to 3” rough diameter gravel
  - or crushed rock and maintain effectiveness (Ref: ibid, CST 19-2)
    Install wheel shakers if gravel pads are not effective (Ref: ibid, CST 19-3)
  - Install wheel washer if gravel pads and wheel shakers not effective (Ref: ibid, CST 19-4)
- All exiting traffic must be routed over selected track out controls (Ref, ibid, CST 19)

Discussion:

Proposed Imperial County requirements are similar to those of SJV, although less stringent than South Coast, Clark County and Maricopa County requirements.

FUGITIVE DUST CATEGORY: PAVED ROAD DUST

SUBCATEGORY: NEW/MODIFIED ROADS

Proposed Imperial County Requirements:

Applies to both public and private roads (Ref: PR805, Section F.4)

- New paved roads or modifications to existing paved roads with projected average daily vehicle trips > 500 vehicles shall construct paved shoulder of 4 ft (500-3000 vehicle trips) or 8 ft (> 3000 vehicle trips) (Ref: PR805, Section F.4.a)
- In lieu of F.4.1, a curbing adjacent to and contiguous with the travel lane or paved shoulder or road may be constructed (Ref: PR805, Section F.4.b)
- In lieu of F.4.1, intersections, auxiliary entry lanes and auxiliary exit lanes may be constructed adjacent to and contiguous with the roadway Ref: PR805, Section F.4.c)
- New paved road construction or modifications to an existing paved road that are required to comply with CEQA and NEPA determinations regarding environmental, cultural, archeological, historical, or other considerations adddressed in such documents, are exempt from the paved shoulder width requirements specified in Section F.4.a. (Ref: PR805, Section F.4.d)
- For Paved Roads with projected annual average daily vehicle trips of 500 or more are constructed, or modified with medians, the medians shall be constructed with paved shoulders having a minimum width of four feet adjacent to the traffic lanes unless: (Ref: PR805, Section F.4.e)
    - The medians of roads having speed limits set at or below 45 mph are constructed with curbing; or (Ref: PR805, Section F.4.e.1)
    - The medians are landscaped and maintained with grass or other vegetative ground cover to comply with the definition of Stabilized Surface. (Ref: PR805, Section F.4.e.2)

SJV Requirements:

Applies to both public and private paved roads (Ref: R8061, Section 5.1.1)

- Paved shoulders required for all roads with average daily vehicle trips (ADVT) of 500 or more.
- If ADVT is 500-3000, then average width is 4 feet. If ADVT is greater than 3000, then average width is 8 feet. (Ref: R8061, Section 5.1.1.1)
- Curbing adjacent to and contiguous with paved lane or shoulder can be used in lieu of shoulder width requirements (Ref: ibid, Section 5.1.1.2)
- Intersections, auxiliary entry and exit lanes may be constructed adjacent to and contiguous with paved roadway in lieu of shoulder requirements (Ref: ibid, Section 5.1.1.3)
- If ADVT is 500 or greater, and medians are part of the roadway, then medians are to be constructed with minimum 4-foot shoulder widths adjacent to traffic lanes (Ref: ibid, Section 5.1.1.5)
- Where speed limits are below 45 mph, medians are to be constructed with curbing (Ref: ibid, Section 5.1.1.5.1)
- Medians are to be landscaped to meet stabilized surface requirements (Ref: ibid, Section 5.1.1.5.2)

- As an option to shoulder paving or vegetation requirements, oils or chemical dust suppressants can be used, according to the specified widths, and must be maintained to limit VDE to 20% opacity (Ref: ibid, Section 5.1.2)

South Coast Requirements:

Applies to both public and private paved roads (Ref R1186(e)(1)):

- For ADVT of 500 or more, curbing or paved shoulders required:
  - For ADVT 500-3000, shoulder width of at least 4 feet
  - For ADVT greater than 3000, shoulder width of at least 8 feet
  - (Ref: ibid, (e)(1)(A))
- For medians with ADVT of 500 or more, pave median area with typical roadway materials, unless speed limits less than 45 mph; or medians are landscaped with ground cover and there is curbing; or medians are treated with chemical stabilizers to maintain stabilized surface (Ref: ibid, (e)(1)(B))

*Contingency notification pertains to certain findings by EPA regarding lack of attainment or rate of progress.

Maricopa County Requirements:

(Note: Maricopa County regulations do not specify requirements for new/modified paved roads; however this element is contained in State Legislation and specific commitments by local jurisdictions.)

- Applicability not specified, but appears to apply to public paved roads:
- A.R.S. 9-500.04(3) and 49-474.01(4), also known as SB1427 (1998) requires cities, towns and counties in a specified area to develop and implement plans to stabilize targeted unpaved roads, alleys, and unpaved shoulders on targeted arterials beginning January 1, 2000. The plans must address performance goals and reporting requirements.
- In addition, Maricopa County and 17 local jurisdictions have committed to additional measures to stabilize unpaved roads, including paving, graveling, curbs and gutters, and vegetation.

Clark County Requirements:

- Applies to both public and private paved roads (Ref: AQR Section 93.2.1):
- Paved travel section must have 4 feet of paved or stabilized shoulder on each side (Ref: AQR Section 93.2.1.1)
- If shoulder is not paved, it must be stabilized with dust palliative or gravel to prevent trackout onto paved road section (Ref: ibid)
- Adjacent, contiguous curbing can be used in lieu of shoulder requirements (Ref: ibid, 93.2.1.2)
- If medians are used, one of the following apply:
  - curbing
  - solid paving across medial
  - use of dust palliative to meet stabilization standards

- use of rock or landscaping on median to prevent trackout (Ref: ibid, 93.2.1.4)

- If roads are constructed not in conformance with these requirements, reconstruction must be completed within one calendar year. (Ref: ibid, 93.2.1.6)

Discussion:

The Maricopa County requirements appear to apply more toward the reduction of unpaved road surfaces than to specifications for construction of new/modified roads to minimize trackout from shoulders and medians. The Imperial County provisions are similar to the South Coast and SJV. Hence, Imperial County, SJV, and South Coast requirements appear to be more stringent than Maricopa County. As for Clark County, shoulder stabilization is set at four feet, whereas Imperial County and SJV have an 8-foot requirement for roads with ADVT greater than 3000. Thus, the Imperial County and SJV requirements are most stringent for paved roads with this level of ADVT. On the other hand, Clark County has no minimum level of ADVT for stabilizing shoulders, thus it is more stringent than the SJV requirements for ADVT levels less than 500. For ADVT of 500 to 3000, the stringency is equivalent.

FUGITIVE DUST CATEGORY: PAVED ROAD DUST

SUBCATEGORY: EROSION CLEAN-UP

Proposed Imperial County Requirements:
(No specific requirements for this category)

SJV Requirements:
(No specific requirements for this category)

South Coast Requirements:

- Remove material from public paved roads within 72 hours of being notified of such accumulation (Ref: R1186(d)(1))

Maricopa County Requirements:

- Remove deposits from any (public and private) roadway within 24 hours of identification of such condition, by using appropriate control measures to limit VDE to 20% opacity (Ref: R310.01 Section 306.1a and 306.2)
- Material disposal must not result in causing new source of fugitive dust (Ref: ibid, 306.1b)

Clark County Requirements:
(No specific requirements for this category)

Discussion:
The most stringent requirement (from a time standpoint) was established by Maricopa County with a requirement for treatment of such material on the paved road surface within 24 hours of identification.

FUGITIVE DUST CATEGORY: PAVED ROAD DUST

SUBCATEGORY: STREET SWEEPING

Proposed Imperial County Requirements:
(No specific requirements for this category)

SJV Requirements:
(No specific requirements for this category)

South Coast Requirements:

- Certified PM_{10}-efficient street sweepers must be used by governmental agencies or their street sweeping contractors where the contract date, purchase date, or lease date is after January 1, 2000. (Ref: R1186(d)(2))
- Certified sweepers are to be used for all routine street sweeping except those with curbs, paved road shoulders greater than 4 feet width, not within 1000 feet of an unpaved road, and provided documentation of such is provided. (Ref: R1186(d)(2) and (i)(3))
- Certified sweepers are to be maintained according to manufacturers specifications (Ref: ibid, (d)(3))

Maricopa County Requirements:
(No specific rule requirements for routine street sweeping, however the Revised Serious Area PM_{10} SIP [Feb, 2000] contains certain commitments to test the feasibility of using PM_{10}-efficient street sweepers, along with commitments from several local jurisdictions to utilize such sweepers according to a proposed implementation schedule.)

Clark County Requirements:

- Any operator who utilizes street sweeping equipment or contracts for street sweeping services must, after January 1, 2001, acquire or contact to acquire PM_{10}-efficient street sweeping equipment (Ref: AQR Section 93.2.2)

Washoe County
(Note: Regulation adopted on Feb 27, 2002)

- Any governmental agency which conducts street sweeping or contract for street sweeping services, must purchase or lease PM_{10}-efficient certified street sweepers on or after February 1, 2002. (Ref: R040.032, Section A2 and C1)
- Certified street sweepers must be operated and maintained according to manufacturer's specifications (Ref: ibid, C2)
  Routine street sweeping must be conducted a minimum of once per month (Ref: ibid, C4)

Discussion:

PM_{10}-efficient street sweepers, as determined by South Coast Rule 1186 test method, can capture the finer particles. Since South Coast, Washoe County, and Clark County have rule provisions to employ PM_{10}-efficient street sweepers for routine street sweeping, these are considered to be most stringent.

As noted in the SJVUAPCD "BACM/BACT and RACM/RACT Demonstration for Sources of PM_{10} and PM_{10} Precursors in the San Joaquin Valley Air Basin," (dated April 28, 2003), "use of these units will result in safety problems on freeways and rural roads in flat terrain." The overwhelming majority of roads in Imperial County are freeways or rural roads in flat terrain.

FUGITIVE DUST CATEGORY: FEEDLOTS AND RELATED OPERATIONS

SUBCATEGORY: CONTROL MEASURES

Proposed Imperial County Requirements:

ICAPCD Rule 420 requires any person using or operating a Livestock Feed Yard to acquire and maintain a "Livestock Feed Yard Certificate." Application, fee and renewal requirements for such a certificate are substantially the same as those set out in Regulation II for permits, except as provided. An application for a Livestock Feed Yard certificate shall include a written plan designed to effectively control Dust. Such Dust control plan shall contain the following:

- Procedures for assuring Manure at all times is maintained at a moisture factor
- between 20% and 40%, in the top three inches (3") in occupied pens.
- An outline of Manure management practices, including standards and time tables for manure removal, designed to effectively control Dust and to prevent adverse public health conditions.

SJV Requirements:

For feedlot operations with more than 190 cows, SJVAPCD Rule 4550 requires the submittal of a conservation management plan with 1 conservation management practice (CMP) for each category:

- Pens / Manure Handling:
  - Sprinkle
  - Frequent scraping and/or removal of manure
  - Fibrous layer in working areas
  - Pull-type manure harvesting equipment
  - Shade for animals
- Overall Management / Feeding:
  - Bulk materials control
  - Feeding near dusk
  - Wet feed during mixing
  - Place wet material in feedwagon first
  - Downwind shelterbelts / boundary trees
- Unpaved roads and traffic areas:
  - Dust suppressants
  - Gravel
  - Access restriction
  - Speed reduction
  - Pavement
  - Trackout control
  - Appropriate equipment and vehicles

South Coast Requirements:

For livestock operations of 10 acres or larger:

- Cease hay-grinding activities between 2 and 5 pm if visible emissions extend more than 50 feet from the source (Ref: R1186(d)(5))
- Treat all unpaved access connections and unpaved feed lane access areas with pavement, gravel to a depth of four inches, or asphaltic road base (Ref: R1186(d)(6))
- Rule 1127 requires choosing a best management practice for dust:
  - Scrape or harrow before 9 am only unless the moisture content of the manure is greater than 20% throughout the corral, as determined by an moisture meter in accordance with paragraph(h)(1); OR
  - Clear corrals such that an even surface of compacted manure remains on top of the soil and do not scrape down to soil level; OR
  - Water corral before manure removal to reduce dust through increased surface moisture. This measure is not required for lactating cows.

Maricopa County Requirements:

For commercial feedlots and commercial livestock areas:

- Apply dust suppressants to limit VDE to 20% opacity (Ref R310.01, Section 305.1a), or
- Apply and maintain surface gravel to limit VDE to 20% opacity (Ref: ibid, 305.1b), or
- Install shrubs and/or trees within 50 to 100 feet of animal pens to limit VDE to 20% opacity (Ref: ibid, 305.1c)

Clark County Requirements:

(No specific requirements for feedlots.)

Discussion:

For livestock and feedlots, Imperial County's requirements for the feedlots themselves can be considered most stringent since they require a specific moisture level be maintained in the feedlots. SJV, South Coast and Maricopa County have taken steps to reduce emissions, mainly from disturbed surfaces. South Coast has a de minimis size of 10 acres, whereas Maricopa County does not specify a minimum size. Hence the application of measures to control dust from unpaved roads and access areas is more stringent in Maricopa County. South Coast has provisions for hay grinding activity, which is not contained in Maricopa County.

FUGITIVE DUST CATEGORY: BUREAU OF LAND MANAGEMENT (BLM) AND BORDER PATROL (BP) AREAS AND ACTIVITIES

SUBCATEGORY: REQUIREMENTS

Proposed Imperial County Requirements:

The BLM shall prepare a Dust Control Plan that includes the following: (Ref: PAR800, Section F.5):

- Stipulate that all new authorizations for stationary emission sources obtain all necessary permits and satisfy all applicable SIP provisions, including project- or activity- specific BACM;
- A summary of: the total miles of BLM roads that are paved, paved with unpaved shoulders, and unpaved roads with 50 or more vehicle trips per day, including length and level of usage of each such road; the priority for control of road segments based on annual and episodic (e.g. event) usage; the plans for control of PM_{10} emissions from these roads; the location and extent (e.g. acreage) of open areas disturbed by legal and illegal recreational use; the priority for control of these open areas based on annual and episodic (e.g. event) usage; and the plans for control of PM_{10} emissions from these areas.
  - BLM must demonstrate in its Dust Control Plan that unpaved roads, parking, and open areas are controlled pursuant to the applicability and requirements of Rules 804 and 805 except where measures are demonstrated by BLM to be prohibited by federal or state laws, regulations, or approved plans concerning wilderness preservation and species management and recovery.
  - Where compliance with any control measure in Rules 804 and 805 is prohibited pursuant to F.5.b.1, the Dust Control Plan must discuss and commit to implement other possible control measures, such as vehicle speed limits.
  - The Dust Control Plan must describe all PM-10 control measures that will be implemented, such as restricted use areas, stabilization of unpaved traffic areas and current RAMP measures, to reduce PM10 emissions during off-road events and/or competitions on public land and include all those measures that are feasible and not prohibited by the laws, regulations and plans described in F.5.b.1
- Use BLM-standard road design and drainage specifications when maintaining existing roads or authorizing road maintenance and new road construction; and
- Include public educational information on PM_{10} emissions with BLM open area literature and on information signs in heavily used areas.

The BP shall prepare a Dust Control Plan that includes the following fugitive dust control measures (Ref: PAR800, Section F.5):

- Stipulate that all new authorizations for stationary emission sources obtain all necessary permits and satisfy all applicable SIP provisions, including project-or activity- specific BACM;
- Implement alternatives to tire-dragging for monitoring of immigration across the U.S.-Mexico border; and

- Control dust emissions from certain roads and routes as identified through general BP planning.

SJV Requirements:
(No specific requirements for this category)

South Coast Requirements:
(No specific requirements for this category)

Maricopa County Requirements:
(No specific requirements for this category)

Clark County Requirements:
(No specific requirements for this category)
Discussion:
Unpaved roads and disturbed open areas are considered significant sources of PM_{10} in Imperial County. There are unpaved roads in the lands administered by BLM and the USFS; entrained and windblown dust from these roads is 1.8 tons/day, less than 2% of the 92 tons/day for all unpaved roads. Almost all of the unpaved roads on BLM and USFS lands have traffic levels under the Rule 805 threshold of 50 ADT. Of the over 2,666,600 acres in Imperial County over 77% is scrubland, barren land, or sand dunes. Most of this land is administered by BLM and the USFS. Except for areas used by the military or lands set aside for OHV use, most of the land is disturbed only by wind, water, and native animals. The lack of "destination" national or state parks, low County population density, general remoteness, and high summer temperatures minimizes man-made disturbances on most of this land. The exception to this is special off-roading events held in the dune areas. These special events occur 5 to 10 times per year, for a few days each. The BLM Dust Control Plan in PAR 800 requires control measures for these special events, even if annual or average day usage does not meet the thresholds in Rules 804 and 805.

The only Imperial County significant sources on BLM lands are unpaved roads and disturbed open areas. In addition, PAR 800 only exempts the recreational use of public lands (e.g., OHVs, all-terrain vehicles, trucks, cars, motorcycles, motorbikes or motorbuggies), not other dust-producing activities such as construction, etc. The BLM Dust Control Provisions make clear that any stationary source activity must meet all applicable SIP provisions, including project- or activity-specific BACM. Thus, the focus of the Dust Control Plan provisions are on unpaved road and disturbed open area sources related to the recreational use of public lands.

BLM sources are considered separate from the general dust source categories; this is in recognition of the special federal purposes of these agencies (e.g., habitat preservation and compliance with other area-specific environmental laws) and the inconsistency of requiring certain traditional dust control methods on these sources (e.g., vegetating disturbed dune areas approved for off-highway vehicle recreational use.). Many restrictions apply to actions on federal lands that have special purposes, such as habitats, national monuments and preserves. Common dust control measures, such as chemical stabilization and

paving would not be allowed if it endangered native wildlife or affected habitats. BLM is required to determine if a proposed dust control project conforms with the approved land use plan terms and conditions, as required by CFR 1610.5. Examples of such laws and plans include the federal Endangered Species Act, the California Desert Protection Act, the California Desert Conservation Area Plan and related tiered plans(e.g. the Yuha Basin ACEC Management Plan, Yuha Desert Habitat Management Plan, Yuha Desert Management Plan, Imperial San Dunes Recreation Area Management Plan (RAMP), Algodones Dunes Habitate Management Plan, Flat-tailed Horned Lizard Rangewide Strategy and Recovery Plan for Bighorn Sheep in the Peninsular Ranges, CA).

BLM also must meet the requirements of NEPA for its projects. BLM is the appropriate lead agency for both NEPA and conformity determinations for dust control projects on BLM lands; mandating Rule 804 and 805 requirements without consideration of NEPA and conformity issues could unnecessarily involve ICAPCD in these issues and potentially delay implementation of proposed dust control programs. Mandating PR 804 and 805 could also put BLM in the position of either violating an ICAPCD rule or potentially requiring a finding of overriding concerns for a given Environmental Assessment. Furthermore, any action on the use of the BLM lands has been highly litigious. Were ICAPCD to unilaterally impose requirements on BLM, it is possible that litigation and a temporary suspension of those rules while the litigation is resolved will occur. Thus, proposed Regulation VIII establishes a separate control program for the BLM lands, rather than imposing general Regulation VIII requirements on them on a dust source by dust source basis. ICAPCD believes that this is the most appropriate way to reduce emissions from federal sources.

ICAPCD and BLM have worked together on previous dust control programs, including the inclusion of PM_{10} control measures in the RAMP. BLM has also included PM_{10} prevention and mitigation measures based on its Environmental Assessment of its road and trail maintenance activities related to Border Patrol activities. Appendix F is the Environmental Assessment for this project. It is an example of the detailed environmental analysis required for projects on BLM lands and the use of the NEPA process to identify and implement PM_{10} prevention and mitigation measures.

FUGITIVE DUST CATEGORY: WEED ABATEMENT ACTIVITIES

SUBCATEGORY: REQUIREMENTS

Proposed Imperial County Requirements:

(No specific requirements for this category)

SJV Requirements:

There are no specific requirements for weed abatement, other than in the definition for "earthmoving activities." However, in the "applicability" section of Rule 8021, weed abatement actions are not specifically identified. It can be presumed that the following actions apply:

- Pre-activity
  - Pre-water to limit VDE to 20% opacity (Ref 8021, Table 8021-2)
  - Phase work to reduce amount of disturbed surface area (Ref: ibid)
- During Active Operations
  - Apply water to limit VDE to 20% opacity (Ref: ibid)
- Stabilization During Periods of Inactivity
  - Restrict vehicle access to area
  - Apply water or chemical stabilizers to meet conditions of a stabilized surface (Ref: ibid)

South Coast Requirements:

- Such activities subject to standards of Rule 403, unless:
  a) Mowing or cutting is used, instead of discing, and maintains stubble at least three inches above the soil (Ref R403(h)(1)(H)(i))
  b) If discing is used, there is a determination of a potential fire hazard (Ref: ibid, (ii))
- After discing, requirement for taking action on disturbed surface areas apply (Ref: ibid)

Maricopa County Requirements:

- For weed abatement by discing or blading:
  - Pre-water and take post-discing actions (Ref: R310, Section 308.8 & Table 1, 1K)
  - Apply water during activity and take post-discing actions (Ref: ibid, 2K)
  - Post-discing/blading actions to meet requirement for stabilized surface:
    a) pave
    b) apply gravel
    c) apply water
    d) apply dust suppressant (Ref: ibid, 3K)
    e) establish vegetative ground cover (Ref: ibid, 4K)

Clark County Requirements:

- If discing or blading is used on lots greater than 5000 square feet, then all of the following apply:
  a) apply water before discing/blading
  b) apply water during activity
  c) implement one of the following for stabilized surface:
     i) pave
     ii) apply water
     iii) apply dust palliative
     (Ref: AQR Section 90.2.2 and 90.2.2.1)

Discussion:

The SJV requirements are somewhat vague in the sense that the only mention of weed abatement is in the definition of "earthmoving activities" without any further specificity for actions specific to weed abatement. In other approaches, Clark County and Maricopa County are very similar, except that Maricopa County does not have a de minimis area, and so it is considered to be more stringent in this case. South Coast goes one extra step in preventing soil disturbance by encouraging cutting or mowing in preference to discing.

A P P E N D I X E

Draft Regulation VIII Rules and Rule Amendments (dated October 2005)

RULE 800. GENERAL ~~FUGITIVE DUST~~ REQUIREMENTS FOR CONTROL OF FINE PARTICULATE MATTER (PM-10)
(Adopted 10/10/94; revised 11/25/96; revised ----------)

A. General Description

The purpose of this regulation is to reduce the amount of fine Particulate Matter (PM-10) entrained in the ambient air as a result of emissions generated from anthropogenic (man-made) Fugitive Dust (PM-10) sources generated from within Imperial County by requiring actions to prevent, reduce, or mitigate PM-10 emissions. ~~This Regulation contains EPA required Reasonably Available Control Measures (RACM) to be included in the Imperial County Air Pollution Control District (APCD) Non-Attainment Area Plan for attaining the National Ambient Air Quality Standards for PM-10.~~ The Rules contained within this Regulation have been developed pursuant to United States Environmental Protection Agency guidance for Serious PM10 Non Attainment Areas.

B. Applicability

The requirements of this rule ~~Regulation~~ shall apply to any Active Operation, and/or man-made or man-caused condition or practice capable of generating Fugitive Dust (PM-10) as specified in this Regulation except those determined exempt as defined in Part E of this Rule ~~Regulation~~. The definitions, exemptions, requirements, administrative requirements recordkeeping requirements, and test methods set forth in this rule are applicable to all the rules under Regulation VIII (Fugitive Dust Requirements) of the Rules and Regulations of the Imperial County Air Pollution Control District.

C. Definitions

For the purpose of this Regulation, the following terms are defined:

C.1 ACTIVE OPERATION: Activities capable of generating Fugitive Dust (PM-10) ~~conducted for industrial, commercial, state, federal, city, county or special district purposes and their contractors,~~ including but not limited to, Earthmoving Activities, Construction activities, Unpaved Roads, Track-Out/Carry-Out, Bulk Material storage and transport, Unpaved Haul/Access Roads.

C.2 AGGREGATE MATERIALS: Consists of sand, Gravel, quarried stone and/or rock fragments that are typically used in Construction. Aggregates may be natural, artificial or recycled.

C.3 ANEMOMETRS: Are devices used to measure wind speed and direction in accordance with manufacturer's performance standards, maintenance and calibration criteria.

C.4 ANNUAL AVERAGE DAILY VEHICLE TRIPS: annual average 24-hour total of all vehicles counted on a road.

C.~~2~~5 APCD: The Imperial County Air Pollution Control District.

C.~~3~~6 APCO: The Imperial County Air Pollution Control Officer.

C.7 AVERAGE VEHICLE TRIPS PER DAY: Means the average number of vehicles that cross a given point surface during a specific 24-hour period as determined by the most recent Institute of Transportation Engineers trip generation manual, tube counts, or observations.

C.8 BLM: The Bureau of Land Management.

C.9 BP: The United States Border Patrol.

C.~~4~~10 BULK MATERIAL: Earth, rock, Silt, sediment, sand, Gravel, soil, fill, Aggregate, dirt, mud, debris, and other organic and/or inorganic material consisting of or containing Particulate Matter with five percent or greater Silt content. For the purpose of this Regulation, the Silt content level is assumed to be 5 percent or greater, unless the Person responsible for the Active Operation conducts the applicable laboratory tests and demonstrate that the Silt content is less than 5 percent. Active Operations seeking to determine if the Silt content is less than five percent are required to conduct the laboratory analysis in accordance with ASTM method C-136-a (Standard Test Method for Sieve analysis of Fine and Coarse Aggregates), or other equivalent test methods approved by EPA, ARB, and the APCD. ~~Attachment A is ASTM method C-136, attachment B is ASTM method D-75 for sampling aggregate material.~~

C.~~5~~11 CANAL BANK: A rise of land on either side of an irrigation canal.

C.~~6~~12 CHEMICAL STABILIZATION/SUPPRESSION: A means of Fugitive Dust (PM-10) control implemented to mitigate PM-10 emissions by applying petroleum resins, asphaltic emulsions, acrylics, adhesives, or any other materials approved for use by the California Air Resources Board (CARB), U.S. Environmental Protection Agency (U.S. EPA) and/or the APCO.

C.13 CONSTRUCTION: Any on-site mechanical activities preparatory to or related to the building, alteration, rehabilitation, or demolition of an improvement on real property, including, but not limited to, land clearing, excavation related to construction, land leveling, grading, cut and fill grading, and the erection or demolition of any structure. As used in Regulation VIII, a construction site may

encompass several contiguous parcels, or may encompass only a portion of one parcel, depending on the relationship of the property boundaries to the actual construction activities.

C.~~7~~14 DESIGNATED REPRESENTATIVE: The agent for a Person. The Designated Representative shall be responsible for and have the full authority to implement ~~R~~BACM on behalf of the Person.

C.15 EARTHMOVING ACTIVITIES: The use of any equipment for an activity that may generate Fugitive Dust emissions, including, but not limited to, cutting and filling, grading, leveling, excavation, trenching, loading or unloading of Bulk Materials, demolishing, drilling, adding to or removing bulk of materials from open storage piles, weed abatement through disking, and back filling.

C.~~8~~16 FUGITIVE DUST: The Particulate Matter entrained in the ambient air which is caused from man-made and natural activities such as, but not limited to, movement of soil, vehicles, equipment, blasting, and wind. This excludes Particulate Matter emitted directly in the exhaust of motor vehicles or other fuel combustion devices, from portable brazing, soldering, or welding equipment, pile drivers, and stack emissions from stationary sources.

C.~~9~~17 GRAVEL: Gravel travelways shall have a three (3) inch minimum depth Stabilized Surface. The travelway shall have a relative compaction of not less than ~~90%~~ 95% as determined by Test Method No. California 216 of State of California, Business and Transportation Agency Department of Transportation, and conforming to the following grading:

Sieve Designation	¾" Maximum Percent Passing
~~1 ½"~~ 1"	100
~~3/4"~~ ¾"	~~85-95~~ 90-100
#4	~~55-75~~ 35-60
#30	~~25-45~~ 10-30
#200	~~15-25*~~ 2-9

~~*(with <5% Silt)~~

Reference: ~~County of Imperial Department of Public Works Standard S-1101.~~ California Department of Transportation Standard Specification Section 26/class II Aggregate Base

C.~~10~~18 HAUL/ACCESS ROAD: Any on-site road used for commercial, industrial, institutional, and/or governmental traffic~~, excluding Haul/Access Roads used for agricultural operations~~.

C.~~11~~19 HAUL TRUCK: Any fully or partially open-bodied licensed motor vehicle used for transporting Bulk Material for industrial or commercial purposes.

C.~~12~~20 IMPLEMENT OF HUSBANDRY: An unlicensed vehicle which is used exclusively in the conduct of Agricultural Operations. An Implement of Husbandry does not include a vehicle if its existing design is primarily for the transportation of persons or property on a highway, unless specifically designated as such by some other provision of the Vehicle Code of California.

C.21 NON-RESIDENTIAL AREA: Any unpaved vehicle and equipment traffic area operated at any commercial, manufacturing or government sites.

C.22 MODIFIED PAVED ROAD: Any Paved Road that is widened or improved so as to increase traffic capacity. This term does not include road maintenance, repair, chip seal, pavement or roadbed rehabilitation that does not affect roadway geometrics, or surface overlay work.

C.23 OFF-FIELD AGRICULTURAL SOURCE: Any Agricultural Source or activity at an Agricultural Source that falls into one or more of the following categories:

C.23.a Outdoor handling, storage and transport of Bulk Material;

C.23.b Paved Road;

C.23.c Unpaved Road; or

C.23.d Unpaved Traffic Area.

C.~~13~~24 OFF-ROAD VEHICLE: Any nonstationary device, powered by an internal combustion engine or motor, used primarily off the highways to propel, move, or draw persons or property including any device propelled, moved, or drawn exclusively by human power, and used in, but not limited to, any of the following applications: marine vessels, construction/farm equipment, utility and lawn and garden equipment, off-road motorcycles, and off-highway vehicles.

C.25 ON-FIELD AGRICULTURAL SOURCE: Any Agricultural Source or activity at an Agricultural Source that is not an Off-Field Agricultural Source, including (but not limited to) the following:

C.25.a Activities conducted solely for the purpose of preparing land for the growing of crops or the raising of fowl or animals, such as brush or timber clearing, grubbing, scraping, ground excavation, land leveling, grading, turning under stalks, disking, or tilling;

C.25.b Drying or pre-cleaning of agricultural crop material on the field where it was harvested;

C.25.c Handling or storage of agricultural crop material that is baled, cubed, pelletized, or long-stemmed, on the field where it was harvested, and the handling of fowl or animal feed materials at sites where animals or fowl are raised;

C.25.d Disturbances of cultivated land as a result of fallowing, planting, fertilizing or harvesting.

C.26 OPEN AREA: Any of the following described in Subsection C.26.a through C.26.c of this rule. For the purpose of this rule, vacant portions of residential or commercial lots and contiguous parcels that are immediately adjacent to and owned and/or operated by the same individual or entity are considered one open area. An open area does not include any Unpaved Traffic Area as defined in this rule.

C.26.a An un-subdivided or undeveloped land adjoining a developed (or partially developed) residential, industrial, institutional, governmental, or commercial area.

C.26.b A subdivided residential, industrial, institutional, governmental, or commercial lot, which contains no approved or permitted building or structures of a temporary or permanent nature.

C.26.c A partially developed residential, industrial, institutional, governmental, or commercial lot and contiguous lots under common ownership.

C.~~14~~27 PARTICULATE MATTER: Any material, except uncombined water, which exists in a finely divided form as a liquid or solid at 60 degrees F and one atmosphere pressure.

C.~~15~~28 PAVED ROADS: An improved street, highway, alley, public way, that is covered by concrete, asphaltic concrete, or asphalt.

C.~~16~~29 PERSON: Any individual, public or private corporation, partnership, association, firm, trust, estate, municipality, or any other legal entity whatsoever which is recognized by law as the subject of rights and duties, who is responsible for an Active Operation.

~~C.17 PHYSICAL STABILIZATION: A means of dust control implemented to mitigate PM-10 emissions by applying vegetation, Gravel, recrushed/recycled asphalt or any other materials or methods specified for use by U.S. EPA, CARB and/or the APCO~~.

C.~~18~~30 PM-10: Particulate Matter with an aerodynamic diameter smaller than or equal to a nominal 10 microns as measured by the applicable State and Federal reference test methods.

~~C.19. REASONABLY AVAILABLE CONTROL MEASURE (RACM): A technique, practice, or procedure as identified in Section I of this Regulation that is used to prevent or minimize the generation, emission, entrainment, suspension and/or airborne transport of Fugitive Dust (PM-10).~~

C.31 RECREATIONAL USE: the recreational use of public lands covered by the most recent BLM dust control plan.

C.~~20~~32 SILT: Any Aggregate Material with a particle size less than 75 micrometers in diameter as measured by a No. 200 sieve as defined in ASTM D-2487 ~~(attachment C, subsection 3.1.4~~ and as tested by ASTM-C-136 or other equivalent test methods approved by EPA, ARB, and the APCD. ~~(attachment A)~~.

C.33 STABILIZED SURFACE: Any disturbed surface area or open bulk storage pile that is resistant to wind blown Fugitive Dust emissions. A surface is considered to be stabilized if it meets at least one of the following conditions specified in this Section and as determined by the test methods specified in Appendix B of this rule:

C.33.a A visible crust; or

C.33.b A threshold friction velocity (TFV) for disturbed surface areas corrected for non-erodible elements of 100 centimeters per second or greater; or

C.33.c A flat vegetative cover of at least 50 percent that is attached or rooted vegetation; or unattached vegetative debris lying on the surface with a predominant horizontal orientation that is not subject to movement by wind; or

C.33.d A standing vegetative cover of at least 30 percent that is attached or rooted vegetation with a predominant vertical orientation; or

C.33.e A standing vegetative cover that is attached or rooted vegetative with a predominant vertical orientation that is at least 10 percent and where the TFV is at least 43 centimeters per second when corrected for non-erodible elements; or

C.33.f A surface that is greater than or equal to 10 percent of non-erodible elements such as rocks, stones, or hard-packed clumps of soil.

C.34 Stabilized Unpaved Road: Any Unpaved Road or unpaved vehicle/equipment traffic area surface which meets the definition of Stabilized Surface as determined by the test method in Appendix B, Section C of this rule, and where VDE is limited to 20% opacity.

C.35 TACTICAL TRAINING: Training conducted by the U.S. Department of Defense, the U.S. military services, or its allies for combat, combat support, combat service support, tactical or relief operations. Examples include but are not limited to munitions training.

C.36 TEMPORARY UNPAVED ROAD: Any Unpaved Road surface which is created to support a temporary or periodic activity and the use of such road surface is limited to vehicle access for a period of not more than six months during any consecutive three-year period.

C.37 THRESHOLD FRICTION VELOCITY (TFV): The corrected velocity necessary to initiate soil erosion as determined by the test method specified in Appendix B, Section D, of this rule. The lower TFV, the greater the propensity for fine particles to be lifted at relatively low wind speeds.

C.~~21~~38 TRACK-OUT/CARRY-OUT: Any and all Bulk Materials that adhere to and agglomerate on the exterior surfaces of motor vehicles and/or equipment (including tires) ~~and excluding Implements of Husbandry and~~ that may then fall onto the pavement.

C.~~22~~39 TRACK-OUT PREVENTION DEVICE: ~~A vibrating or tire spreading device to dislodge mud, dirt and/or debris from the tires and undercarriage of motor vehicles~~ A Gravel pad, grizzly, wheel wash system, or a paved area, located at the point of intersection of an unpaved area and a Paved Road that prevents or controls Track-Out.

C.~~23~~40 UNPAVED ROADS: Streets, alley ways, or roadways ~~that are improved and maintained and~~ that are not covered by one of the following: concrete, asphaltic concrete, asphalt, or other similar materials specified by the U.S.EPA, CARB and/or the APCO.

C.41 UNPAVED TRAFFIC AREA: Any nonresidential area that is:

C.41.a Not covered by asphalt, recycled asphalt, asphaltic concrete, concrete, or concrete pavement, and

C.41.b Used for fueling and servicing; shipping, receiving and transfer; or parking or storing equipment, haul trucks, vehicles, and any conveyances.

C.42 VDE: Visible dust emissions. Dust emissions that are visible to an observer.

C.~~24~~43 VMT: Vehicle miles traveled.

C.44 WIND GUST: Is the maximum instantaneous wind speed as measured by an anemometer.

D. Compliance Schedule

D.1 Existing sources subject to this Regulation shall comply with its requirements no later than 90 days after its adoption date.

D.2 New sources subject to this Regulation shall comply with its requirements prior to initiation of activity.

D.3 The BLM and BP shall each comply with the following compliance schedule:

D.3.a Submit a draft dust control plan addressing all applicable portions of this Regulation including section F.5 within three (3) months of the adoption date of this rule, to which the APCO shall respond within 60 days;

D.3.b Submit a final dust control plan addressing all APCO comments within two (2) months after receiving APCO's comments, which the APCO shall transmit to CARB and U.S. EPA for 45-day review and comment;

D.3.c Implement all final dust control plan elements within six (6) months of submittal; and

D.3.d Submit an updated dust control plan every two calendar years by the procedures described in D.3.a to D.3.c. The updated plans shall be transmitted to the District no later than 90 days after the end of the calendar year and, in addition to information required of the initial plan, shall include a summary of actions taken to prevent or mitigate PM10 emissions during the previous two years.

E. Exemptions

The following activities are exempt from provisions of this Regulation:

E.1 Actions required by the Federal or State Endangered Species Act or any order issued by a court or governmental agency.

E.2 Off-Field Agricultural Sources necessary to minimize or respond to adverse effects on agricultural crops caused during freezing temperatures as declared by the National Weather Service.
~~Any operation already under Air Pollution Control District permit with requirements for PM-10 control, provided the control of fugitive PM-10 emissions is at least as stringent as required by this Regulation.~~

~~E.3 Agricultural operations including the growing, harvesting, tilling, cultivating and post harvesting of crops, or the raising of animals, fowl, or bees excepting the vehicle transportation, and vehicle hauling or other movement of the crops, animals, fowl or bees resulting from such operations and ingress to and egress from Paved Roads.~~

E.~~4~~3 Non-routine or emergency maintenance of flood control channels and water spreading basins.

~~E.5 Paved and unpaved driveways serving single family residential dwellings.~~

E.~~6~~4 Any emergency operation ~~and/or law enforcement~~ activities performed to ensure public health and safety. Emergency activities lasting more than 30 days shall be subject to this Regulation, except where compliance would limit the effectiveness of the emergency activity performed to ensure public health and safety.

~~E.7 Outdoor storage or handling of organic or inorganic fertilizer, grains, seed and feed) which would be damaged by wetting.~~

E.~~8~~5 Blasting operations permitted by the California Division of Industrial Safety. Other activities performed in conjunction with blasting are not exempt from complying with the provisions of this rule.

E.~~9~~6 The Recreational Use of public lands covered by the most recent BLM dust control plan that complies with Rule 800, including but not limited to Off-Road Vehicles, all-terrain vehicles, trucks, cars, motorcycles, motorbikes or motorbuggies.

E.7 Military training activities conducted by the Department of Defense including but not limited to: (1) military Tactical Training, (2) maintenance, repair, and removal of targets and munitions associated with military Tactical Training, (3) open areas on active military ranges, including but not limited to designated impact areas, landing zones, and bivouac areas. Other activities performed in conjunction with military Tactical Training are not exempt from complying with the provisions of this rule.

F. General Requirements

F.1 Materials used for Chemical Stabilization of soils, including petroleum resins, asphaltic emulsions, acrylics, and adhesives shall not violate State Water Quality Control Board standards for use as a soil stabilizer. Materials accepted by the California Air Resources Board (ARB) and the United States Environmental Protection Agency (EPA), and which meet State water quality standards, shall be considered acceptable to the ICAPCD.

F.2 Any material prohibited for use as dust Suppressant by EPA, the ARB, or other applicable law, rule, or regulation is also prohibited under Regulation VIII.

F.3 Use of hygroscopic materials may be prohibited by the APCD in areas lacking sufficient atmospheric moisture of soil for such materials to effectively reduce Fugitive Dust emissions. The atmospheric moisture of soil is considered to be sufficient if it meets the application specifications of the hygroscopic product manufacturer. Use of such materials may be approved in conjunction with sufficient wetting of the controlled area.

F.4 Any use of dust Suppressants or gravel pads, and paving materials such as asphalt or concrete for paving, shall comply with other applicable District Rules.

F.5 Bureau of Land Management (BLM) Requirements

The BLM shall prepare a dust control plan to minimize PM10 emissions for sources under the control of BLM. The dust control plan shall include at a minimum the following:

F.5.a A stipulation that all new authorizations for point and area stationary emission sources obtain all necessary permits and satisfy all applicable SIP provisions, including project- or activity- specific BACM;

F.5.b A summary of: the total miles of BLM roads that are paved, paved with unpaved shoulders, and unpaved roads with 50 or more average vehicle trips per day, including length and level of usage of each such road; the priority for control of road segments based on annual and episodic (e.g. event) usage; the plans for control of PM-10 emissions from these roads; the location and extent (e.g. acreage) of open areas disturbed by legal and

illegal Recreational Use; the priority for control of these open areas based on annual and episodic (e.g. event) usage; the plans for control of PM-10 emissions from these areas;

F.5.c BLM must demonstrate in its dust control plan that Unpaved Roads, parking, and Open Areas are controlled pursuant to the applicability and requirements of Rules 804 and 805 except where measures are demonstrated by BLM to be prohibited by federal or state laws, regulations, or approved plans concerning wilderness preservation and species management and recovery.

F.5.d Where compliance with any control measure in Rules 804 and 805 is prohibited pursuant to F.5.c, the dust control plan must discuss and commit to implement other possible control measures, such as vehicle speed limits.

F.5.e The dust control plan must describe all PM-10 control measures that will be implemented, such as restricted use areas, stabilization of Unpaved Traffic Areas and current RAMP measures, to reduce PM10 emissions during off-road events and/or competitions on public land and include all those measures that are feasible and not prohibited by the laws, regulations and plans described in F.5.c;

F.5.f Use BLM-standard road design and drainage specifications when maintaining existing roads or authorizing road maintenance and new road construction; and

F.5.g Include public educational information on reducing PM-10 emissions with BLM open area literature (e.g. identification of restricted areas and/or applicable speed limits) and on related information signs in heavily used areas.

F.6. Border Patrol (BP) Requirements

The BP shall prepare a dust control plan designed to minimize PM10 emissions from sources under the control of the BP. The dust control plan shall include those dust control measures found in Rules 804 and 805 that are not inconsistent with the BP's authority and/or mission. The dust control plan shall include the following fugitive dust control measures:

F.6.a A stipulation that all new authorizations for point and area stationary emission sources obtain all necessary permits and satisfy all applicable SIP provisions, including project-or activity- specific BACM;

F.6.b Implement alternatives to tire-dragging that result in fewer PM10 emissions, when such alternatives are consistent with the monitoring of immigration across the U.S.-Mexico border; and

F.6.c Control dust emissions from certain Unpaved Roads and routes owned or operated by the BP as identified through general BP planning consistent with Rule 805 unless those dust control measures are demonstrated to be inconsistent with BP authority and/or mission.

~~F. Requirements~~

~~F.1 Any Person who engages in any Active Operations identified in Section F of this rule shall provide for the implementation and maintenance of applicable RACMs, unless the implementation of such RACM endangers or could endanger the health or safety of the public.~~

~~F.2 Track Out/Carry Out: Any Person who causes the deposition of Bulk Material by tracking out or carrying out onto a Paved Road surface shall apply one or more applicable RACM to prevent or mitigate such deposition.~~

~~F.3 Unpaved Haul/Access Roads: No Person shall cause, suffer or allow the operation, use, or maintenance of any Unpaved Haul/Access Road of more than ½ mile in length at any work site without applying one or more appropriate so as to affect at least 15% of the total road surface(s) or apply one or more RACM so as to achieve a level of control that is equivalent to 100% control of emissions from 15% of the total unpaved surface(s).~~

~~F.4 Unpaved Roads: All Persons who cause, suffer or allow the operation, use or maintenance of any Unpaved Road, greater than 3/4 mile in length, and with 20.0 or more average VMT per mile per day shall apply one or more appropriate RACM as to affect at least 15% of the total road surface(s) or apply one or more RACM so as to achieve a level of control that is equivalent to 100% control of emissions from 15% of the total unpaved surface(s).~~

~~F.5 Bulk Material Handling: No Person shall cause, suffer, allow or engage in any Bulk Material handling operation including, but not limited to, storage, stacking, loading, unloading, conveying and reclaiming of Bulk Material, for industrial or commercial purposes without applying one or more appropriate RACM.~~

~~F.6 Material Transport: No Person shall cause, suffer, allow or otherwise engage in the transportation of Bulk Materials for industrial or commercial purposes, without applying one or more appropriate RACM.~~

~~F.7 Haul Trucks: No Person shall cause, suffer, allow or otherwise engage in the use or operation of any Haul Truck, for industrial or commercial purposes, of transporting or storing Bulk Material without applying one or more appropriate RACM.~~

G. Administrative Requirements

G.1 Test Methods

G.1.a Determination of VDE Opacity

Opacity observations to determine compliance with VDE standards shall be conducted in accordance with the test procedures for "Visual Determination of Opacity" as described in Appendix A of this rule. Opacity observations for sources other than unpaved traffic areas (e.g., roads, parking areas) shall be conducted per Section B of Appendix A and shall require 12 readings at 15-second intervals.

G.1.b Determination of Stabilized Surface

Observations to determine compliance with the conditions specified for a stabilized surface, in any inactive disturbed surface area, whether at a work site that is under construction, at a work site that is temporarily or permanently inactive, or on an open area and vacant lot, shall be conducted in accordance with the test methods described in Appendix B of this rule. If a disturbed surface area passes any of the specified tests, then the surface shall be considered stabilized.

G.1.c Determination of Soil Moisture Content

Soil moisture content shall be determined by using ASTM Method D2216-98 (Standard Test Method for Laboratory Determination of Water [Moisture] Content of Soil and Rock by Mass), or other equivalent test methods approved by the EPA, ARB, and the APCO.

G.1.d Determination of Silt Content for Bulk Materials

Silt content of a Bulk Material shall be determined by ASTM Method C136a (Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates), or other equivalent test methods approved by EPA, ARB, and the APCD.

G.1.e Determination of Silt Content for Unpaved Roads and Unpaved Vehicle/Equipment Traffic Areas

Silt Content for Unpaved Roads and Unpaved Traffic Areas shall be determined by using Section C of Appendix B of this Rule or other equivalent test methods approved by EPA, ARB, and the APCO.

G.1.f Determination of Threshold Friction Velocity (TFV)

TFV shall be determined by using Section D of Appendix B of this Rule or other equivalent test methods approved by EPA, ARB, and the APCO.

~~G. Record of Control Implementation~~

~~Any Person engaged in any Active Operation subject to this Regulation VIII shall maintain records of RACM sufficient to establish location, type and date of treatment. Records shall be maintained and be readily accessible for two years after the date of each entry and shall be provided to the APCD upon request and shall be open for inspection during unscheduled audits during normal business hours.~~

~~Persons who opt for the equivalency control in sections F.3 and/or F.4 must keep records to include equivalency formulas or factors with at least one sample calculation.~~

H. Record of Control Implementation

Any Person subject to the requirements of this rule shall compile and retain records that provide evidence of control measure application and compliance with this rule (i.e., receipts and/or purchase records). Such Person shall describe, in the records, the type of treatment or control measure, extent of coverage, and date applied. For control measures which require multiple daily applications, recording the frequency of application will fulfill the recordkeeping requirements of this rule (i.e., water being applied three times a day and the date) Records shall be maintained and be readily accessible for two years after the date of each entry and shall be provided to the APCD upon request.

~~H~~I. Violations

Failure to comply with any of the provisions of this Regulation shall constitute a violation of this Regulation. Failure to comply with the provisions of an APCO approved dust control plan shall also constitute a violation of this Regulation. Regardless of whether an APCO approved dust control plan is being implemented or not, or whether a Person responsible for an Active Operation(s) is complying with an approved dust control plan, the Person is still subject to the requirements of Regulation VIII at all times.

~~I. Reasonably Available Control Measures for Fugitive Dust (PM-10)~~

~~I.1 UNPAVED HAUL AND ACCESS ROADS:~~

~~I.1.a Pave.~~

~~I.1.b Apply Physical/Chemical Stabilization as directed by product manufacturer to control dust on Unpaved Roads.~~

~~I.1.c Apply Gravel, recrushed/recycled asphalt or other material of low Silt (<5%) content to a depth of three or more inches.~~

~~I.1.d Wetting. Apply water one or more times daily.~~

~~I.1.e Permanent road closure.~~

~~I.1.f Reduce vehicle speeds by 50%.~~

~~I.1.g Reduce vehicle trips by 50%.~~

~~I.2 UNPAVED ROADS:~~

~~I.2.a Pave.~~

~~I.2.b Apply Physical/Chemical Stabilization, as directed by product manufacturer to control dust on Unpaved Roads.~~

~~I.2.c Apply Gravel, recrushed/recycled asphalt or other material of low Silt (<5%) content to a depth of three or more inches.~~

~~I.2.d Reduce vehicle speeds by 50% .~~

~~I.2.e Reduce number of vehicle trips by 50%.~~

~~I.2.f Wetting. Apply water one or more times daily.~~
~~I.2.g Stocking of Triploid Grass Carp in canals to reduce maintenance vehicle trips along Canal Banks to mechanically remove aquatic weeds.~~

~~I.2.h Installation of remote control delivery gates to eliminate manual gate operation by maintenance personnel in vehicles along Canal Banks.~~

~~I.2.i Implement policies and training to emphasize:~~

~~I.2.i.1 regulated use of field-side Canal Banks for agricultural equipment parking/storage and agricultural commodity storage;~~

~~I.2.i.2 reduced speed along Canal Banks;~~

~~I.2.i.3 minimal use of Canal Banks for access to canal gate structures;~~

~~I.2.i.4 when feasible, restrict vehicle travel along Canal Bank to one side (opposite of field-side Canal Bank).~~

~~I.2.j Implement Silt removal program to emphasize delaying grading of spoil piles deposited on Canal Bank after cleaning operations until the next cleaning operation to eliminate vehicle access to Canal Bank.~~

~~I.2.k Permanent road closure~~.

~~I.2.l Conversion of open canals to pipeline.~~

~~I.2.m Lining canals to eliminate maintenance for Silt/weed control.~~

~~I.2.n Canal Bank surface maintenance.~~

~~I.3 TRACK OUT/CARRY OUT:~~

~~I.3.a Rapidly clean up, within 48 hours of deposition, any Bulk Material tracked out or carried out onto a Paved Road surface.~~

~~I.3.b Install one or more Track-Out Prevention Devices or other APCO approved track-out control device or wash-down system at access points where unpaved traffic surfaces adjoin Paved Roads.~~

~~I.3.c Pave, Chemically Stabilize, or Gravel (using Gravel or other low Silt (<5%) content material), 50 or more consecutive feet at access points where Unpaved Roads adjoin Paved Roads.~~

~~I.4 BULK MATERIAL HANDLING/TRANSFER:~~

~~I.4.a Spray with water 15 minutes prior to handling and/or at points of transfer.~~

~~I.4.b Chemical/Physical Stabilization.~~

~~I.4.c Protect from wind erosion by sheltering or enclosing the operation and transfer line.~~

~~I.5. MATERIAL TRANSPORT/HAULING:~~

~~I.5.a Completely cover or enclose all Haul Truck loads of Bulk Material.~~

~~I.5.b Haul Trucks transporting loads of Aggregate Materials shall not be required to cover their loads if the load, where it contacts the side, front, and back of the cargo container area remains six inches from the upper area of the container area, and if the load does not extend, at its peak, above any part of the upper edge of the cargo container area (As defined in Section 23114 of the California Vehicle Code for both public and private roads).~~

~~I.5.c The cargo compartment(s) of all Haul Trucks are to be constructed and maintained so that no spillage and loss of Bulk Material can occur from holes or other openings in the cargo compartment's floor, side, and/or tailgate. Seals on any openings used to empty the load including, but not limited to, bottom-dump release gates and tailgates to be properly maintained to prevent the loss of Bulk Material from those areas.~~

~~I.5.d The cargo compartment of all Haul Trucks are to be cleaned and/or washed at delivery site after removal of Bulk Material.~~

~~J. Calexico/Mexicali Cross-Border Source Apportionment Study~~

~~A PM-10 monitoring program was completed in 1993 along the border between Imperial Valley California and the Mexicali Valley, Baja California, Mexico to determine the major contributors to PM-10 and to determine how much was contributed by transport across the international boundary. This study was funded by the U.S. Environmental Protection Agency and conducted by the University of Nevada, Desert Research Institute Energy and Environmental Engineering Center. This study is expected to be published in final form by the end of the first quarter of 1995. The Imperial County Air Pollution Control District (ICAPCD) will conduct a workshop on the study within thirty days of the formal publication date for the purpose of receiving public input on the results and recommendations contained therein. The comments received at that workshop and this Regulation will be reviewed by APCD staff and recommendations forwarded to the ICAPCD Board of Directors.~~

~~K. RACM implementation~~

~~Reasonably Available Control Measure (RACM) implemented since the date of adoption of the State Implementation Plan (SIP) for PM-10 in the Imperial Valley (September 28, 1993) can be included as a portion of any amount of PM-10 control required in this Regulation.~~

APPENDIX A
Visual Determination of Opacity

SECTION A Test Method For Unpaved Roads and Unpaved Traffic Areas
SECTION B Test Method For Time-Averaged Regulations

SECTION A TEST METHOD FOR UNPAVED ROADS AND UNPAVED TRAFFIC AREAS

A. Opacity Test Method. The purpose of this test method is to estimate the percent opacity of Fugitive Dust plumes caused by vehicle movement on Unpaved Roads and Unpaved Traffic Areas. This method can only be conducted by an individual who has current certification as a qualified observer.

A.1 Step 1: Stand at least 16.5 feet from the fugitive dust source in order to provide a clear view of the emissions with the sun oriented in the 140° sector to the back. Following the above requirements, make opacity observations so that the line of vision is approximately perpendicular to the dust plume and wind direction. If multiple plumes are involved, do not include more than one plume in the line of sight at one time.

A.2 Step 2: Record the Fugitive Dust source location, source type, method of control used, if any, observer's name, certification data and affiliation, and a sketch of the observer's position relative to the Fugitive Dust source. Also, record the time, estimated distance to the Fugitive Dust source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), observer's position to the Fugitive Dust source, and color of the plume and type of background on the visible emission observation form both when opacity readings are initiated and completed.

A.3 Step 3: Make opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of vision. Make opacity observations approximately 1 meter above the surface from which the plume is generated. Note that the observation is to be made at only one visual point upon generation of a plume, as opposed to visually tracking the entire length of a dust plume as it is created along a surface. Make two observations per vehicle, beginning with the first reading at zero seconds and the second reading at five seconds. The zero-second observation should begin immediately after a plume has been created above the surface involved. Do not look continuously at the plume but, instead, observe the plume briefly at zero seconds and then again at five seconds.

A.4 Step 4: Record the opacity observations to the nearest 5% on an observational record sheet. Each momentary observation recorded represents the average opacity of emissions for a 5-second period. While it is not required by the test method, EPA recommends that the observer estimate the size of the vehicles which generate dust plumes for which readings are taken (e.g. mid-size passenger car or heavy-duty truck.) and take the approximate speeds the vehicles are traveling when the readings are being taken.

A.5 Step 5: Repeat Step 3 (Section A.3. of this appendix) and Step 4 (Section A.4. of this appendix) until you have recorded a total of 12 consecutive opacity readings. This will occur once six vehicles have driven on the source in your line of observation for which you are able to take proper readings. The 12 consecutive readings must be taken within the same period of observation but must not exceed 1 hour. Observations immediately preceding and following interrupted observations can be considered consecutive.

A.6 Step 6: Average the 12 opacity readings together. If the average opacity reading equals 20% or lower, the source is in compliance with the opacity standard described in the applicable rule.

SECTION B TEST METHOD FOR VISUAL DETERMINATION OF OPACITY OF EMISSIONS FROM SOURCES FOR TIME-AVERAGED REGULATIONS

B. Applicability. This method is applicable for the determination of the opacity of emissions from sources of visible emissions for time-averaged regulations. A time-averaged regulation is any regulation that requires averaging visible emission data to determine the opacity of visible emissions over a specific time period.

B.1 Principle. The opacity of emissions from sources of visible emissions is determined visually by a qualified observer who has received certification.

B.2 Procedures. A qualified observer who has been certified shall use the following procedures for visually determining the opacity of emissions.

B.2.a Position. Stand at a position at least 5 meters from the Fugitive Dust source n order to provide a clear view of the emissions with the sun oriented in the 140° sector to the back. Consistent as much as possible with maintaining the above requirements, make opacity observations from a position such that the line of sight is approximately perpendicular to the plume and wind direction. The observer may follow the Fugitive Dust plume generated by mobile earthmoving equipment, as long as the sun remains oriented in the 140° sector to the back. As much as possible, if multiple plumes are involved, do not include more than one plume in the line of sight at one time.

B.2.b Field Records. Record the name of the site, Fugitive Dust source type (i.e., pile, material handling (i.e., transfer, loading, sorting)), method of control used, if any, observer's name, certification data and affiliation, and a sketch of the observer's position relative to the Fugitive Dust source. Also, record the time, estimated distance to the Fugitive Dust source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds,) observer's position relative to the fugitive dust source, and color of the plume and type of the background on the visible emission observation form when opacity readings are initiated and completed.

B.2.c Observations. Make opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of sight. For storage piles, make opacity observations approximately 1 meter above the surface from which the plume is generated. For extraction operations and the loading of haul trucks in open-pit mines, make opacity observations approximately one meter above the rim of the pit. The initial observation should begin immediately after a plume has been created above the surface involved. Do not look continuously at the plume, but instead observe the plume momentarily at 15-second intervals. For Fugitive Dust from Earthmoving equipment, make opacity observations approximately 1 meter above the mechanical equipment generating the plume.

B.2.d Recording Observations. Record the opacity observations to the nearest 5% every 15 seconds on an observational record sheet. Each momentary observation recorded represents the average opacity of emissions for a 15-second period. If a multiple plume exists at the time of an observation, do not record an opacity reading. Mark an "x" for that reading. If the equipment generating the plume travels outside of the field of observation, resulting in the inability to maintain the orientation of the sun within the 140° sector or if the equipment ceases operating, mark an "x" for the 15 – second interval reading. Readings identified as "x" shall be considered interrupted readings.

B.2.e Data Reduction For Time-Averaged Regulations. For each set of 12 or 24 consecutive readings, calculate the appropriate average opacity. Sets must consist of consecutive observations, however, readings immediately preceding and following interrupted readings shall be deemed consecutive and in no case shall two sets overlap, resulting in multiple violations.

APPENDIX B
Determination of Stabilization

SECTION A Test Methods for Determining Stabilization
SECTION B Visible Crust Determination
SECTION C Determination of Silt Content for Unpaved Roads and Unpaved Vehicle/Equipment Traffic Areas
SECTION D Determination of Threshold Friction Velocity
SECTION E Determination of Flat Vegetative Cover
SECTION F Determination of Standing Vegetative Cover
SECTION G Rock Test Method

SECTION A TEST METHODS FOR DETERMINING STABLIZATION

The test methods described in Section B through Section G of this appendix shall be used to determine whether an area has a Stabilized Surface. Should a disturbed area contain more than one type of disturbance, soil, vegetation, or other characteristics, which are visibly distinguishable, test each representative surface separately for stability, in an area that represents a random portion of the overall disturbed conditions of the site, according to the appropriate test methods in Section B through Section G of this appendix, and include or eliminate it from the total size assessment of disturbed surface area(s) depending upon test method results.

SECTION B VISIBLE CRUST DETERMINATION

B.1 Where a visible crust exists, drop a steel ball with a diameter of 15.9 millimeters (0.625 inches) and a mass ranging from 16-17 grams from a distance of 30 centimeters (one foot) directly above (at a 90° angle perpendicular to) the soil surface. If blowsand is present, clear the blowsand from the surfaces on which the visible crust test method is conducted. Blowsand is defined as thin deposits of loose uncombined grains covering less than 50% of a site which have not originated from the representative site surface being tested. If material covers a visible crust, which is not blowsand, apply the test method in Section D of this appendix to the loose material to determine whether the surface is stabilized.

B.2 A sufficient crust is defined under the following conditions: once a ball has been dropped according to section B.1 of this appendix, the ball does not sink into the surface, so that it is partially or fully surrounded by loose grains and, upon removing the ball, the surface upon which it fell has not been pulverized, so that loose grains are visible.

B.3 Drop the ball three times within a survey area that measures 1 foot by 1 foot and that represents a random portion of the overall disturbed conditions of the site. The survey area shall be considered to have passed the Visible Crust Determination Test if the results of at least two out of the three times that the ball was dropped, met the criteria in section B.2 of this appendix. Select at least two other survey areas that represent a random portion of the overall disturbed conditions of the site, and repeat this procedure. If the results meet the criteria of section B.2 of this appendix for all of the survey areas tested, then the site shall be considered to have passed the Visible Crust Determination Test and shall be considered sufficiently crusted.

B.4 At any given site, the existence of a sufficient crust covering one portion of the site may not represent the existence or protectiveness of a crust on another portion of the site. Repeat the visible crust test as often as necessary on each random portion of the overall conditions of the site for an accurate assessment.

SECTION C DETERMINATION OF SILT CONTENT FOR UNPAVED ROADS AND UNPAVED VEHICLE/EQUIPMENT TRAFFIC AREAS

The purpose of this test method is to estimate the silt content of the trafficked parts of Unpaved Roads and Unpaved vehicle/equipment Traffic Areas. The higher the Silt content, the more fine dust particles that are released when vehicles travel on Unpaved Roads and Unpaved vehicle/equipment Traffic Areas.

C.1 Equipment:

- C.1.a. A set of sieves with the following openings: 4 millimeters (mm), 2mm, 1mm, 0.5mm and 0.25 mm, a lid, and collector pan.
- C.1.b A small whisk broom or paintbrush with stiff bristles and dustpan 1 ft. in width (the broom/brush should preferably have one, thin row of bristles no longer than 1.5 inches in length.)
- C.1.c A spatula without holes.
- C.1.d A small scale with half-ounce increments (e.g., postal/package scale.)
- C.1.e A shallow, lightweight container (e.g., plastic storage container.)
- C.1.f A sturdy cardboard box or other rigid object with a level surface.
- C.1.g A basic calculator.
- C.1.h Cloth gloves (optional for handling metal sieves on hot, sunny days.)
- C.1.i Sealable plastic bags (if sending samples to a laboratory.)
- C.1.j A pencil/pen and paper.

C.2 Step 1: Look for a routinely traveled surface, as evidenced by tire tracks. Only collect samples from surfaces that are not damp due to precipitation or dew. This statement is not meant to be a standard in itself for dampness where watering is being used as a control measure. It is only intended to ensure that surface testing is done in a representative manner. Use caution when taking samples to ensure personal safety with respect to passing vehicles. Gently press the edge of a dustpan (1 foot in width) into the surface four times to mark an area that is 1 square foot. Collect a sample of loose surface

material into the dustpan, minimizing escape of dust particles. Use a spatula to lift heavier elements such as gravel. Only collect dirt/Gravel to an approximate depth of 3/8 inch or 1 cm in the 1 square foot area. If you reach a hard, underlying subsurface that is <3/8 inch in depth, do not continue collecting the sample by digging into the hard surface. In other words, you are only collecting a surface sample of loose material down to 1 cm. In order to confirm that samples are collected to a 1cm depth, a wooden dowel or other similar narrow object at least one-foot in length can be laid horizontally across the survey area while a metric ruler is held perpendicular to the dowel. (Optional: At this point, you can choose to place the sample collected into a plastic bag or container and take it to an independent laboratory for silt content analysis. A reference to the procedure the laboratory is required to follow is at the end of this section.)

C.3 Step 2: Place a scale on a level surface. Place a lightweight container on the scale. Zero the scale with the weight of the empty container on it. Transfer the entire sample collected in the dustpan to the container, minimizing escape of dust particles. Weigh the sample and record its weight.

C.4 Step 3: Stack a set of sieves in order according to the size openings specified above, beginning with the largest size opening (4mm) at the top. Place a collector pan underneath the bottom (0.25mm) sieve.

C.5 Step 4: Carefully pour the sample into the sieve stack, minimizing escape of dust particles by slowly brushing material into the stack with a whiskbroom or brush. On windy days, use the trunk or door of a vehicle as a wind barrier. Cover the stack with a lid. Lift up the sieve stack and shake it vigorously up and down and sideways for at least 1 minute.

C.6 Step 5: Remove the lid from the stack and disassemble each sieve separately, beginning with the top sieve. As you remove each sieve, examine it to make sure that all of the material has been sifted to the finest sieve through which it can pass (e.g., material in each sieve (besides the top sieve that captures a range of larger elements) should look the same size.) If this is not the case, re-stack the sieves and collector pan, cover the stack with the lid, and shake it again for at least 1 minute. You only need to reassemble the sieve(s) that contain material, which require further sifting.

C.7 Step 6: After disassembling the sieves and collector pan, slowly sweep the material from the collector pan into the empty container originally used to collect and weigh the entire sample. Take care not to minimize escape of dust particles. You do not need to do anything with material captured in the sieves – only the collector pan. Weigh the container with the materials from the collector pan and record its weight.

C.8 Step 7: If the source is an unpaved road, multiply the resulting weight by 0.38. If the source is an Unpaved vehicle/equipment Traffic Area, multiply the resulting weight by 0.55. The resulting number is the estimated silt loading. Then, divide the total weight of the sample you recorded earlier in Step 2 (Section C.4) and multiply by 100 to estimate the percent Silt content.

C.9 Step 8: Select another two routinely traveled portions of the Unpaved Road or Unpaved vehicle/equipment Traffic Area and repeat this test method. Once you have calculated the silt loading and percent silt content of the 3 samples collected, average your results together.

C.10 Step 9: Examine Results. If the average silt loading is less than 0.33 oz/ft^2, the surface is STABLE. If the average silt loading is greater than or equal to 0.33 oz/ft^2, then proceed to examine the average percent Silt content. If the source is an Unpaved Road and the average percent Silt content is 6% or less, the surface is STABLE. If the source is an unpaved parking lot and the average percent Silt content is 8% or less, the surface is STABLE. If your field test results are within 2% of the standard (for example, 4%-8% Silt content on an Unpaved Road) it is recommended that you collect 3 additional samples from the source according to Step 1 (section C.2) and take them to an independent laboratory for Silt content analysis.

C.11 Independent Laboratory Analysis: You may choose to collect samples from the source, according to Step 1 (section C.2) and send them to an independent laboratory for Silt content analysis rather than conduct the sieve field procedure. If so, the test method the laboratory is required to use is: "Procedures For Laboratory Analysis for Surface/Bulk Dust Loading Samples," (Fifth Edition, Volume 1, Appendix C.2.3 "Silt Analysis," 1995,) AP-42, Office of Air Quality Planning & Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina.

SECTION D DETERMINATION OF THRESHOLD FRICTION VELOCITY (TFV)

For disturbed surface areas that are not crusted or vegetated, determine threshold friction velocity (TFV) according to the following sieving field procedure (based on a 1952 laboratory procedure published by W.S. Chepil).

D.1 Obtain and stack a set of sieves with the following openings: 4 millimeters (mm), 2 mm, 1 mm, 0.5 mm, and 0.25 mm or obtain and stack a set of standard/commonly available sieves. Place the sieves in order according to size openings, beginning with the largest size opening at the top. Place a collector pan underneath the bottom (0.25 mm) sieve. Collect a sample of loose surface material from an area at least 30 cm by 30 cm in size to a depth of approximately 1 cm using a brush and dustpan or other similar device. Only collect soil samples from dry surfaces (i.e. when the surface is not damp to the touch). Remove any rocks larger than 1 cm in diameter from the sample. Pour the sample into the top sieve (4 mm opening) and cover the sieve/collector pan unit with a lid. Minimize escape of particles into the air when transferring surface soil into the sieve/collector pan unit. Move the covered sieve/collector pan unit by hand using a broad, circular arm motion in the horizontal plane. Complete twenty circular arm movements, ten clockwise and ten counterclockwise, at a speed just necessary to achieve some relative horizontal motion between the sieves and the particles. Remove the lid from the sieve/collector pan unit and disassemble each sieve separately beginning with the largest sieve. As each sieve is removed, examine it for loose particles. If loose particles have not been sifted to the finest sieve through which they can pass, reassemble and cover the sieve/collector pan

unit and gently rotate it an additional ten times. After disassembling the sieve/collector pan unit, slightly tilt and gently tap each sieve and the collector pan so that material aligns along one side. In doing so, minimize escape of particles into the air. Line up the sieves and collector pan in a row and visibly inspect the relative quantities of catch in order to determine which sieve (or whether the collector pan) contains the greatest volume of material. If a visual determination of relative volumes of catch among sieves is difficult, use a graduated cylinder to measure the volume. Estimate TFV for the sieve catch with the greatest volume using Table 1 of this appendix, which provides a correlation between sieve opening size and TFV.

Table 1. Determination of Threshold Friction Velocity (TFV)

Tyler Sieve No.	ASTM 11 Sieve No.	Opening (mm)	TFV (cm/s)
5	5	4	135
9	10	2	100
16	18	1	76
32	35	0.5	58
60	60	0.25	43
Collector Pan	---	---	30

D.2 Collect at least three soil samples which represent random portions of the overall conditions of the site, repeat the above TFV test method for each sample and average the resulting TFVs together to determine the TFV uncorrected for non erodible elements. Non-erodible elements are distinct elements, in the random portion of the overall conditions of the site, that are larger than 1 cm in diameter, remain firmly in place during a wind episode, and inhibit soil loss by consuming Section of the shear stress of the wind. Non-erodible elements include stones and bulk surface material but do not include flat or standing vegetation. For surfaces with non-erodible elements, determine corrections to the TFV by identifying the fraction of the survey area, as viewed from directly overhead, that is occupied by non-erodible elements using the following procedure. Select a survey area of 1 meter by 1 meter that represents a random portion of the overall conditions of the site. Where many non-erodible elements lie within the survey area, separate the non-erodible elements into groups according to size. For each group, calculate the overhead area for the non-erodible elements according to the following equations:

Average Dimensions = (Average Length) x (Average Width)	Eq. 1
Overhead Area = (Average Dimensions) x (Number of Elements)	Eq. 2

Total Overhead Area = Overhead Area Of Group 1 + Overhead Area of Group 2 (etc)	Eq. 3
Total Frontal Area = Total Overhead Area/2	Eq. 4
Percent Cover of Non-Erodible Elements = (Total Frontal Area/Survey Area) x 100	Eq. 5

Note: Ensure consistent units of measurements (e.g., square meters or square inches when calculating percent cover).

Repeat this procedure on an additional two distinct survey areas that represent a random portion of the overall conditions of the site and average the results. Use Table 2 of this appendix to identify the correction factor for the percent cover of non-erodible elements. Multiply the TFV by the corresponding correction factor to calculate the TFV corrected for non-erodible elements.

Table 2. Correction Factors for Threshold Friction Velocity

Percent Cover of Non-Erodible Elements	Correction Factor
Greater than or equal to 10%	5
Greater than or equal to 5% and less than 10%	3
Less than 5% and greater than or equal to 1%	2
Less than 1%	None

SECTION E DETERMINATION OF FLAT VEGETATIVE COVER

Flat vegetation includes attached (rooted) vegetation or unattached vegetative debris lying on the surface with a predominant horizontal orientation that is not subject to movement by wind. Flat vegetation, which is dead but firmly attached, shall be considered equally protective as live vegetation. Stones or other aggregate larger than 1 centimeter in diameter shall be considered protective cover in the course of conduction the line transect test method. Where flat vegetation exists conduct the following line transect test method.

E.1 Line Transect Test Method. Stretch a 100 foot measuring tape across a survey area that represents a random portion of the overall conditions of the site. Firmly anchor both ends of the measuring tape into the surface using a tool such as a screwdriver, with the tape stretched taut and close to the soil surface. If vegetation exists in regular rows, place the

tape diagonally (at approximately a 45° angle) away from a parallel or perpendicular position to the vegetated rows. Pinpoint an area the size of a 3/32 inch diameter brazing rod or wooden dowel centered above each 1 foot interval mark along one edge of the tape. Count the number of times that flat vegetation lies directly underneath the pinpointed area at 1 foot intervals. Consistently observe the underlying surface from a 90° angle directly above each pinpoint on one side of the tape. Do not count the underlying surface as vegetated if any portion of the pinpoint extends beyond the edge of the vegetation underneath in any direction. If clumps of vegetation or vegetative debris lie underneath the pinpointed area, count the surface as vegetated, unless bare soil is visible directly below the pinpointed area. When 100 observations have been made, add together the number of times a surface was counted as vegetated. This total represents the percent of flat vegetations cover (e.g., if 35 positive counts were made, then vegetation cover is 35%.) If the survey area that represents a random portion of the overall conditions of the site is too small for 100 observations, make as many observations as possible. Then multiply the count of vegetated surface areas by the appropriate conversion factor to obtain percent cover. For example, if vegetation was counted 20 times within a total of 50 observations, divide 20 by 50 and multiply by 100 to obtain a flat vegetation cover of 40%.

E.2 Conduct the line transect test method, as described in section E.1 of this appendix, an additional two times on areas that represent a random portion of the overall conditions of the site and average results.

SECTION F DETERMINATION OF STANDING VEGETATIVE COVER.

Standing vegetation includes vegetation that is attached (rooted) with a predominant vertical orientation. Standing vegetation, which is dead but firmly rooted, shall be considered equally protective as live vegetation. Conduct the following standing vegetation test method to determine if 30% cover or more exists. If the resulting percent cover is less than 30% but equal to or greater than 10%, then conduct the test in Section D; "Determination Of Threshold Friction Velocity (TFV,) of this appendix in order to determine if the site is stabilized, such that the standing vegetation cover is equal to or greater than 10%, where threshold friction velocity, corrected for non-erodible elements, is equal to or greater than 43cm/second.

F.1 For standing vegetation that consists of large, separate vegetative structures (e.g., shrubs and sagebrush,) select a survey area that represents a random portion of the overall conditions of the site that is the shape of a square with sides equal to at least 10 times the average height of the vegetative structures. For smaller standing vegetation, select a survey area of three feet by three feet.

F.2 Count the number of standing vegetative structures within the survey area. Count vegetation, which grows in clumps as a single unit. Where different types of vegetation exist and/or vegetation of different height and width exists, separate the vegetative structures with similar dimensions into groups. Count the number of vegetative structures in each group within the survey area. Select an individual structure within

each group that represents the average height and width of the vegetation in the group. If the structure is dense (e.g., when looking at it vertically from base to top there is little or zero open air space within its perimeter,) calculate and record its frontal silhouette area, according to Equation 6 of this appendix. Also, use Equation 6 of this appendix to estimate the average height and width of the vegetation if the survey area is larger than nine square feet. Otherwise, use the procedure in section F.3 of this appendix to calculate the frontal silhouette area. Then calculate the percent cover of standing vegetation according to Equations 7, 8, and 9 of this appendix.

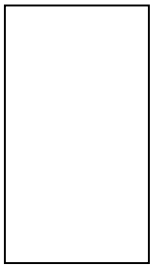
Frontal Silhouette Area = (Average Height) x (Average Width)	Eq. 6
Frontal Silhouette Area Of Group= (Frontal Silhouette Area Of Individual Vegetative Structure) x (Number Of Vegetation Structures Per Group)	Eq. 7
Total Frontal Silhouette Area = Frontal Silhouette Area Of Group 1 + Frontal Silhouette Area Of Group 2 (etc.)	Eq. 8
Percent Cover Of Standing Vegetation = (Total Frontal Silhouette Area/Survey Area) x 100	Eq. 9
Percent Open Space = [(Number Of Circled Gridlines Within The Outlined Area Counted That Are Not Covered By Vegetation/Total Number Of Gridline Intersections Within The Outlined Area) x 100]	Eq.10
Percent Vegetative Density = 100 – Percent Open Space	Eq. 11
Vegetative Density = Percent Vegetative Density/100	Eq. 12
Frontal Silhouette Area = [Max. Height x Max. Width] x [Vegetative Density/.04]o.5	Eq. 13

Note: Ensure consistent units of measurement (e.g., square meters or square inches when calculating percent cover.)

F.3. Vegetative Density Factor. Cut a single, representative piece of vegetation (or consolidated vegetative structure) to within 1cm of surface soil. Using a white paper grid or transparent grid over white paper, lay the vegetation flat on top of the grid (but do not apply pressure to flatten the structure.) Grid boxes of 1 inch or ½ inch squares are sufficient for most vegetation when conducting this procedure. Using a marker or pencil, outline the shape of the vegetation along its outer perimeter, according to Figure B, C, or D of this appendix, as appropriate. (Note: Figure C differs from Figure D primarily in

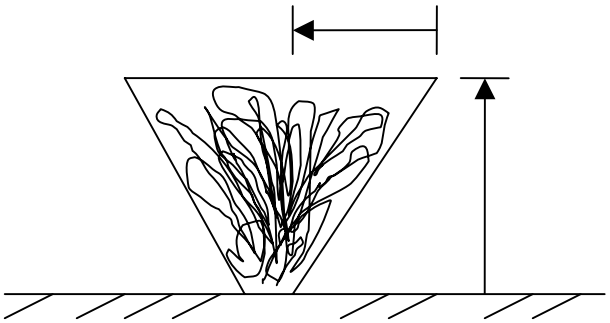
that the width of vegetation in Figure C is narrow at its base and gradually broadens to its tallest height. In Figure D, the width of the vegetation generally becomes narrower from its midpoint to its tallest height.) Remove the vegetation, count and record the total number of gridline intersections within the outlined area, but do not count gridline intersections that connect with the outlined shape. There must be at least 10 gridline intersections within the outlined area and preferably more than 20, otherwise, use smaller grid boxes. Draw small circles (no greater than a 3/32 inch diameter) at each gridline intersection counted within the outlined area. Replace the vegetation on the grid within its outlined shape. From a distance of approximately 2 feet directly above the grid, observe each circled gridline intersection. Count and record the number of circled gridline intersections that are not covered by any piece of the vegetation. To calculate percent vegetative density, use Equations 10 and 11 of this appendix. If percent vegetative density is equal to or greater than 30, use an equation (one of the equations-Equations 16, 17, or 18 of this appendix) that matches the outline used to trace the vegetation (Figure B, C, or D) to calculate its frontal silhouette area. If percent vegetative density is less than 30, use Equations 12 and 13 of this appendix to calculate the frontal silhouette area.

Figure B. Cylinder



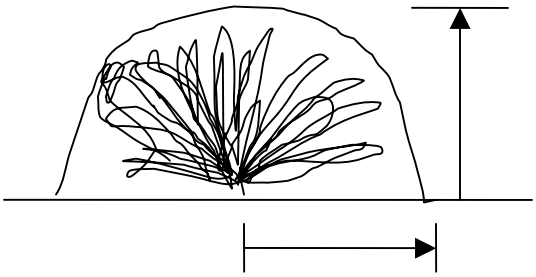
Frontal Silhouette Area = Maximum Height x Maximum Width Eq.16

Figure C. Inverted Cone



Frontal Silhouette Area = Maximum Height x ½ Maximum Width Eq. 17

Figure D. Upper Sphere



Frontal Silhouette Area = (3.14 x Maximum Height x ½ Maximum Width)/2 Eq.18

SECTION G ROCK TEST METHOD

The Rock Test Method, which is similar to Section D, Test Methods For Stabilization-Determination Of Threshold Friction Velocity (TFV) of this appendix, examines the wind-resistance effects of rocks and other non-erodible elements on disturbed surfaces. Non-erodible elements are objects larger than 1 centimeter (cm) in diameter that remain firmly in place even on windy days. Typically, non-erodible elements include rocks, stones, glass fragments, and hardpacked clumps of soil lying on or embedded in the surface. Vegetation does not count as a non-erodible element in this method. The purpose of this test method is to estimate the percent cover of non-erodible elements on a given surface to see whether such elements take up enough space to offer protection against windblown dust. For simplification, the following test method refers to all non-erodible elements as 'rocks."

G.1 Select a 1 meter by 1 meter survey area that represents the general rock distribution on the surface. A 1 meter by 1 meter area is slightly greater than a 3 foot by 3 foot area. Mark-off the survey area by tracing a straight, visible line in the dirt along the edge of a measuring tape or by placing short ropes, yard sticks, or other straight objects in a square around the survey area.

G.2 Without moving any of the rocks or other elements, examine the survey area. Since rocks >3/8 inch (1cm) in diameter are of interest, measure the diameter of some of the smaller rocks to get a sense of which rocks need to be considered.

G.3 Mentally group the rocks >3/8 inch (1cm) diameter lying in the survey area into small, medium, and large size categories. Or, if the rocks are all approximately the same size, simply select a rock of average size and typical shape. Without removing any of the rocks from the ground, count the number of rocks in the survey area in each group and write down the resulting number.

G.4 Without removing rocks, select one or two average-size rocks in each group and measure the length and width. Use either metric units or standard units. Using a calculator, multiply the length times the width of the rocks to get the average dimensions of the rocks in each group. Write down the results for each rock group.

G.5 For each rock group, multiply the average dimensions (length times width) by the number of rocks counted in the group. Add the results from each rock group to get the total rock area within the survey area.

G.6 Divide the total rock area, calculated in section G.5 of this appendix, by two (to get frontal area.) Divide the resulting number by the size of the survey area (make sure the units of measurement match,) and multiply by 100 for percent rock cover. For example, the total rock area is 1,400 square centimeters divide 1,400 by 2 to get 700. Divide 700 by 10,000 (the survey area is 1 meter by 1 meter, which is 100 centimeters by 100 centimeters or 10,000 centimeters) and multiply by 100. The result is 7% rock cover. If rock measurements are made in inches, convert the survey area from meters to inches (1 inch = 2.54 centimeters.)

G.7 Select and mark-off two additional survey areas and repeat the procedures described in section G.1 through section G.6 of this appendix. Make sure the additional survey areas also represent the general rock distribution on the site. Average the percent cover results from all three survey areas to estimate the average percent of rock cover.

G.8 If the average rock cover is greater than or equal to 10%, the surface is stable. If the average rock cover is less than 10%, follow the procedures in section G.9 of this appendix.

G.9 If the average rock cover is less than 10%, the surface may or may not be stable. Follow the procedures in Section D.3 Determination Of Threshold Friction Velocity (TFV) of this rule and use the results from the rock test method as a correction (i.e., multiplication) factor. If the rock cover is at least 1%, such rock cover helps to limit windblown dust. However, depending on the soil's ability to release fine dust particles into the air, the percent rock cover may or may not be sufficient enough to stabilize the surface. It is also possible that the soil itself has a high enough TFV to be stable without even accounting for rock cover.

G.10 After completing the procedures described in Section G.9 of this appendix, use Table 2 of this appendix to identify the appropriate correction factor to the TFV, depending on the percent rock cover.

RULE 801. CONSTRUCTION AND EARTHMOVING ACTIVITIES
(Adopted ----------)

A. Purpose

The purpose of this rule is to reduce the amount of fine Particulate Matter (PM-10) entrained in the ambient air as a result of emissions generated from Construction and other Earthmoving Activities by requiring actions to prevent, reduce, or mitigate PM-10 emissions.

B. Applicability

This rule applies to any Construction and other Earthmoving Activities, including, but not limited to, land clearing, excavation related to construction, land leveling, grading, cut and fill grading, erection or demolition of any structure, cutting and filling, trenching, loading or unloading of bulk materials, demolishing, drilling, adding to or removing bulk of materials from open storage piles, weed abatement through disking, back filling, travel on-site and travel on access roads to and from the site.

C. Definitions

The definitions of terms found in Rule 800 (General Requirements for Control of Fine Particulate Matter (PM-10) shall apply to this rule.

D. Exemptions

In addition to the exemptions listed in Rule 800, Section E, the following exemptions are established for this rule:

D.1 Construction or demolition at existing single family residential dwellings.

D.2 The 20% opacity limit of Sections E.1.a and E.2.b shall not apply when Wind Gusts exceed 25 miles per hour, provided that at least one of the following control measures is implemented for each applicable Fugitive Dust source type:

D.2.a Cease dust generating activities for a period of one hour after Wind Gusts last exceed the threshold. If operations cease for the remainder of the day, stabilization measures must be implemented.

D.2.b Apply water or dust Suppressants once per hour.

D.2.c Apply water to maintain 12% soil moisture content.

D.2.d Construct fences 3-5 feet high with 50% or less porosity, and must be done in conjunction with another measure, as above.

E. Requirements

E.1 Construction sites and Earthmoving Activities:

E.1.a All Persons who own or operate a Construction site shall comply with the requirements of Section F.1 so as to limit VDE to 20% opacity and comply with the conditions for a Stabilized Surface when applicable.

E.1.b. All Persons who perform any Earthmoving Activities shall comply with the requirements of Section F.1 so as to limit VDE to 20% opacity.

E.1.c All Persons who own or operate a Construction site of 10 acres or more in size for residential developments or 5 acres or more for non-residential developments shall develop a dust control plan. The dust control plan shall be made available to the APCD upon request. The dust control plan shall comply with the requirements of Section F.

E.1.d The owner or operator required to develop a dust control plan shall provide written notification to the APCD within 10 days prior to the commencement of any Construction activities via fax or mail. The requirement to develop a dust control plan shall apply to all such activities conducted for residential and non-residential (e.g., commercial, industrial, or institutional) purposes or conducted by any governmental entity. Regardless of whether a dust control plan is in place or not the owner or operator is still subject to comply with all requirements of the applicable rules under Regulation VIII at all times.

F. Best Available Control Measures for Fugitive Dust (PM-10)

F.1 Construction and Earthmoving Activities shall comply with the following requirements:

F.1.a Pre-Activity:

F.1.a.1 Pre-water site sufficient to limit VDE to 20% opacity, and

F.1.a.2 Phase work to minimize the amount of disturbed surface area at any one time.

F.1.b During Active Operations:

F.1.b.1 Apply water or Chemical Stabilization as directed by product manufacturer to limit VDE to 20% opacity, or

F.1.b.2 Construct and maintain wind barriers sufficient to limit VDE to 20% opacity. If utilizing wind barriers, control measure F.1.b.1 above shall be implemented.

F.1.b.3 Apply water or Chemical Stabilization as directed by product manufacturer to unpaved haul/access roads and Unpaved Traffic Areas sufficient to limit VDE to 20% opacity and meet the conditions of a Stabilized Unpaved Road.

F.1.c Temporary Stabilization During Periods of Inactivity:

F.1.c.1 Restrict vehicular access to the area by fencing or signage; and

F.1.c.2 Apply water or Chemical Stabilization, as directed by product manufacturer, sufficient to comply with the conditions of a Stabilized Surface. If an area having 0.5 acres or more of disturbed surface area remains unused for seven or more days, the area must comply with the conditions for a Stabilized Surface area.

F.1.d Track Out/Carry Out of Bulk Materials at the site shall be mitigated in compliance with Rule 803.

F.1.e Unpaved Roads at the site shall comply with Rule 805.

F.1.f Bulk Material handling operations at the site shall comply with Rule 802.

F1.g Material transport of Bulk Material to, from, or around the site shall comply with Rule 802.

F.1.h Haul trucks transporting Bulk Material to, from, or around the site shall comply with Rule 802.

F.2 Dust Control Plan:

F.2.a Retain a copy of the dust control plan at the project site.

F.2.b Comply with the requirements of the approved dust control plan.

F.2.c A dust control plan shall contain all of the following information:

1. Name, address, and phone number of the Person responsible for the preparation, submittal, and implementation of the dust control plan and

responsible for the project site.

2. A plot plan which shows the type and location of each project.

3. The total area of land surface to be disturbed, estimated daily throughput volume of earthmoving in cubic yards, and total area in acres of the entire project site.

4. The expected start and completion dates of dust generating and soil disturbance activities to be performed on the site.

5. The actual and potential sources of Fugitive Dust emissions on the site and the location of Bulk Material handling and storage areas, Paved and Unpaved Roads, entrances and exits where Track Out/Carry Out may occur, and Unpaved Traffic Areas.

6. Dust Suppressants to be applied, including: product specifications; manufacturer's usage instructions (method, frequency, and intensity of application); type, number, and capacity of application equipment; and information on environmental impacts and approvals or certifications related to appropriate and safe use for ground application.

7. Specific surface treatment(s) and/or control measures utilized to control Track Out/Carry Out, and sedimentation where unpaved and/or access points join paved public access roads.

8. The dust control plan should describe all Fugitive Dust control measures to be implemented before, during, and after any dust generating activity.

G. Record of Control Implementation

Any Person subject to the requirements of this rule shall compile and retain records that provide evidence of control measure application (i.e., receipts and/or purchase records). Such Person shall describe, in the records, the type of treatment or control measure, extent of coverage, and date applied. For control measures which require multiple daily applications, recording the frequency of application will fulfill the recordkeeping requirements of this rule (i.e., water being applied three times a day and the date) Records shall be maintained and be readily accessible for two years after the date of each entry and shall be provided to the APCD upon request.

H. Violations

Failure to comply with any provisions of this rule shall constitute a violation of Regulation VIII.

RULE 802. BULK MATERIALS
(Adopted ----------)

A. Purpose

The purpose of this regulation is to reduce the amount of fine Particulate Matter (PM-10) entrained in the ambient air as a result of emissions generated from outdoor handling, storage, and transport of Bulk Material by requiring actions to prevent, reduce, or mitigate PM-10 emissions.

B. Applicability

This rule applies to the outdoor handling, storage, and transport of Bulk Material, including, but not limited to, earth, rock, silt, sediment, sand, gravel, soil, fill, Aggregate Materials, dirt, mud, debris, and other organic and/or inorganic material consisting of or containing Particulate Matter with five percent or greater silt content.

C. Definitions

The definitions of terms found in Rule 800 (General Requirements for Control of Fine Particulate Matter (PM-10) shall apply to this rule.

D. Exemptions

In addition to the exemptions listed in Rule 800, Section E, the following exemptions are established for this rule:

D.1 Outdoor storage, transport, or handling of Bulk Materials (including, but not limited to, organic or inorganic fertilizer, grains, seed, soil amendments, and feed) which would be damaged by wetting with water or by the application of Chemical Stabilization/Suppression, provided owners/operators demonstrate to the satisfaction of the APCO that none of the control measures required by this rule can be implemented to limit VDE to 20% opacity or provide a Stabilized Surface, as defined in Rule 800.

D.2 Outdoor storage or handling of any Bulk Material at a single site where no material is actively being added or removed at the end of the workday or overnight and where the total material stored is less than 100 cubic yards.

D.3 Transport of a Bulk Material in an outdoor area for a distance of twelve feet or less with the use of a chute or conveyor device.

D.4 Transport/hauling of Bulk Materials when conducted within the boundaries of a premises, are exempt from the requirements specified in Sections F.3.a and F.3.d.

E. Requirements

E.1 Bulk Material handling: no Person shall cause, suffer, allow or engage in any Bulk Material handling operation including, but not limited to stacking, loading, unloading, conveying and reclaiming of Bulk Material, for industrial or commercial purposes without complying with one or more of the requirements of Section F.1 so as to limit VDE to 20% opacity.

E.2 Bulk Material storage: no Person shall cause, suffer, allow or engage in any Bulk Material storage, for industrial or commercial purposes without complying with one or more of the requirements of Section F.2 so as to limit VDE to 20% opacity.

E.3 Material transport: no Person shall cause, suffer, allow or otherwise engage in the transportation of Bulk Materials for industrial or commercial purposes, without complying with all of the requirements of Section F.3 so as to limit VDE to 20% opacity.

E.4 Haul Trucks: no Person shall cause, suffer, allow or otherwise engage in the use or operation of any Haul Truck, for industrial or commercial purposes, of transporting or storing Bulk Material without complying with all of the requirements of Section F.3 so as to limit VDE to 20% opacity.

F. Best Available Control Measures for Fugitive Dust (PM-10)

F.1 BULK MATERIAL HANDLING/TRANSFER:

F.1.a Spray with water prior to handling and/or at points of transfer; or.

F.1.b Apply and maintain Chemical Stabilization, or

F.1.c Protect from wind erosion by sheltering or enclosing the operation and transfer line.

F.2 BULK MATERIAL STORAGE

F.2.a When storing Bulk Materials, comply with the conditions for a Stabilized Surface; or

F.2.b Cover Bulk Materials stored outdoors with tarps, plastic, or other suitable material and anchor in such a manner that prevents the cover from being removed by wind action, or

F.2.c Construct and maintain barriers with less than 50% porosity. If utilizing fences or wind barriers, apply water or chemical/organic

stabilizers/suppressants, or

F.2.d Utilize a 3-side structure with a height at least equal to the height of the storage pile and with less than 50% porosity.

F.3. MATERIAL TRANSPORT/HAULING:

F.3.a Completely cover or enclose all Haul Truck loads of Bulk Material.

F.3.b Haul Trucks transporting loads of Aggregate Materials shall not be required to cover their loads if the load, where it contacts the side, front, and back of the cargo container area remains six inches from the upper area of the container area, and if the load does not extend, at its peak, above any part of the upper edge of the cargo container area (As defined in Section 23114 of the California Vehicle Code for both public and private roads).

F.3.c The cargo compartment(s) of all Haul Trucks are to be constructed and maintained so that no spillage and loss of Bulk Material can occur from holes or other openings in the cargo compartment's floor, side, and/or tailgate. Seals on any openings used to empty the load including, but not limited to, bottom-dump release gates and tailgates to be properly maintained to prevent the loss of Bulk Material from those areas.

F.3.d The cargo compartment of all Haul Trucks is to be cleaned and/or washed at delivery site after removal of Bulk Material.

G. Record of Control Implementation

Any Person subject to the requirements of this rule shall compile and retain records that provide evidence of control measure application (i.e., receipts and/or purchase records). Such Person shall describe, in the records, the type of treatment or control measure, extent of coverage, and date applied. For control measures which require multiple daily applications, recording the frequency of application will fulfill the recordkeeping requirements of this rule (i.e., water being applied three times a day and the date) Records shall be maintained and be readily accessible for two years after the date of each entry and shall be provided to the APCD upon request.

H. Violations

Failure to comply with any provisions of this rule shall constitute a violation of Regulation VIII.

RULE 803. CARRY-OUT AND TRACK-OUT
(Adopted ----------)

A. Purpose

The purpose of this regulation is to reduce the amount of fine Particulate Matter (PM-10) entrained in the ambient air as a result of emissions generated from Track-Out and Carry-Out by requiring actions to prevent, reduce, or mitigate PM-10 emissions.

B. Applicability

This rule applies to all sites that are subject to Regulation VIII where Track-Out or Carry-Out has occurred or may occur on paved public roads or the paved shoulders of a paved public road.

C. Definitions

The definitions of terms found in Rule 800 (General Requirements for Control of Fine Particulate Matter (PM-10) shall apply to this rule.

D. Exemptions:

In addition to the exemptions listed in Rule 800, Section E, the following exemptions are established for this rule:

D.1 Agricultural Operation Sites defined in and subject to Rule 806, Conservation Management Practices, are exempt from the requirements specified in Sections F.1.b and F.1.c.

D.2 Any operation site that operates no more than 10 days within a 90 days period at each location is exempt from the requirements specified in Sections F.1.b and F.1.c.

E. Requirements

E.1 Track Out/Carry Out: any Person who causes the deposition of Bulk Material by tracking out or carrying out onto a Paved Road surface shall comply with the requirements of Section F.1, as specified, to prevent or mitigate such deposition.

F. Best Available Control Measures for Fugitive Dust (PM-10)

F.1 TRACK OUT/CARRY OUT:

F.1.a. Clean up any Bulk Material tracked out or carried out onto a Paved Road on the following time-schedule:

(1) Within urban areas, immediately, when Track-Out or Carry-Out extends a cumulative distance of 50 linear feet or more; and

(2) At the end of the workday, for all other Track-Out or Carry-Out.

F.1.b In addition to F.1.a, all sites with access to a Paved Road and with 150 or more Average Vehicle Trips per Day, or 20 or more Average Vehicle Trips per Day by vehicles with three or more axles shall install one or more Track-Out Prevention Devices or other APCO approved Track-Out control device or wash down system at access points where unpaved traffic surfaces adjoin Paved Roads; or

F.1.c In addition to F.1.a, all sites with access to a Paved Road and with 150 or more Average Vehicle Trips per Day, or 20 or more Average Vehicle Trips per Day by vehicles with three or more axles shall apply and maintain paving, Chemical Stabilizeation, or at least 3 inch depth of Gravel (using Gravel or other low Silt (<5%) content material), for a distance of 50 or more consecutive feet at access points where Unpaved Roads adjoin Paved Roads.

G. Record of Control Implementation

Any Person subject to the requirements of this rule shall compile and retain records that provide evidence of control measure application (i.e., receipts and/or purchase records). Such Person shall describe, in the records, the type of treatment or control measure, extent of coverage, and date applied. Records shall be maintained and be readily accessible for two years after the date of each entry and shall be provided to the APCD upon request.

H. Violations

Failure to comply with any provisions of this rule shall constitute a violation of Regulation VIII.

RULE 804. OPEN AREAS
(Adopted ----------)

A. Purpose

The purpose of this regulation is to reduce the amount of fine Particulate Matter (PM-10) entrained in the ambient air as a result of emissions generated from Open Areas by requiring actions to prevent, reduce, or mitigate PM-10 emissions.

B. Applicability

This rule shall apply to any open area having 0.5 acres or more within urban areas, or 3.0 acres or more within rural areas; and contains at least 1000 square feet of disturbed surface area.

C. Definitions

The definitions of terms found in Rule 800 (General Requirements for Control of Fine Particulate Matter (PM-10) shall apply to this rule.

D. Exemptions

In addition to the exemptions listed in Rule 800, Section E, the following exemptions are established for this rule:

D.1 Agricultural Operation Sites defined in and subject to Rule 806, Conservation Management Practices.

E. Requirements

E.1 Open Areas: all Persons who own or otherwise have jurisdiction over an Open Area shall comply with one or more of the requirements of Section F.1 to comply with the conditions of a Stabilized Surface at all times so as to limit VDE to 20% opacity.

E.2 Vehicle use in Open Areas: within 30 days following initial discovery of evidence of trespass, a Person who owns or otherwise has jurisdiction over an Open Area shall prevent unauthorized vehicle access by posting "No Trespassing" signs or installing physical barriers such as fences, gates, posts, and/or appropriate barriers to effectively prevent access to the area.

F. Best Available Control Measures for Fugitive Dust (PM-10)

F.1 OPEN AREAS

F.1.a Apply and maintain water or dust suppressant(s) to all unvegetated areas.

F.1.b Establish vegetation on all previously disturbed areas.

F.1.c Pave, apply and maintain Gravel, or apply and maintain Chemical Stabilizers/Suppressants.

G. Record of Control Implementation

Any Person subject to the requirements of this rule shall compile and retain records that provide evidence of control measure application (i.e., receipts and/or purchase records). Such Person shall describe, in the records, the type of treatment or control measure, extent of coverage, and date applied. For control measures which require multiple daily applications, recording the frequency of application will fulfill the recordkeeping requirements of this rule (i.e., water being applied three times a day and the date) Records shall be maintained and be readily accessible for two years after the date of each entry and shall be provided to the APCD upon request.

H. Violations

Failure to comply with any provisions of this rule shall constitute a violation of Regulation VIII.

RULE 805. PAVED AND UNPAVED ROADS
(Adopted ----------)

A. Purpose

The purpose of this regulation is to reduce the amount of fine Particulate Matter (PM-10) entrained in the ambient air as a result of emissions generated from new or existing public or private Paved or Unpaved Road, road construction project, or road modification project by requiring actions to prevent, reduce, or mitigate PM-10 emissions.

B. Applicability

This rule applies to any new or existing public or private Paved or Unpaved Road, road construction project, or road modification project.

C. Definitions

The definitions of terms found in Rule 800 (General Requirements for Control of Fine Particulate Matter (PM-10) shall apply to this rule.

D. Exemptions

In addition to the exemptions listed in Rule 800, Section E, the following exemptions are established for this Rule:

D.1 Paved and unpaved driveways serving one single family residential dwelling.

D.2 Agricultural Operation Sites defined in and subject to Rule 806, Conservation Management Practices.

E. Requirements

E.1 Unpaved Haul/Access Roads: No Person shall cause, suffer or allow the operation, use, or maintenance of any unpaved Haul/Access Road without complying with one or more of the requirements of Section F.1 so as to limit VDE to 20% opacity.

E.2 Unpaved Roads: On any Unpaved Road segment with 50 or more Average Vehicle Trips per Day, the owner/operator shall limit VDE to 20% opacity, as determined by the test methods for "Visual Determination of Opacity" in Rule 800, Appendix A, and comply with the requirements of a Stabilized Unpaved Road by application and/or maintenance of at least one of the requirements of Section F.1.

E.3 The construction of any new Unpaved Road is prohibited within any area with a population of 500 or more unless the road meets the definition of a Temporary Unpaved Road. The Temporary Unpaved Road shall meet the definition of a Stabilized Surface as determined by the test methods in Rule 800, Appendix B, Section C, and where VDE is limited to 20% opacity.

E.4 Canal Roads: all Persons who cause, suffer or allow the operation, use or maintenance of any Canal Road with 20 or more Average Vehicle Trips per Day shall comply with one or more of the requirements of Section F.1 to comply with the requirements of a Stabilized Unpaved Road so as to limit VDE to 20% opacity, as determined by the test methods in Rule 800, Appendix A, and shall also comply with one or more of the requirements of Section F.2.

E.5 Unpaved Traffic Areas: All Persons who cause, suffer or allow the operation, use or maintenance of any Unpaved Traffic Area larger than one (1) acre and with 75 or more Average Vehicle Trips per Day shall comply with one or more of the requirements of Section F.3 so as to limit VDE to 20% opacity.

E.6 Paved Roads: any new or Modified Paved Roads shall comply with the requirements of section F.4.

E.7 Requirements for Existing Unpaved Public Roads in City and Rural Areas:

Each city or county agency with primary responsibility for any existing Unpaved Road shall take the following actions:

E.7.a By January 1, 2006 provide the APCD with a list of all Unpaved Roads under its jurisdiction in any city or rural area(s), including data on length of, and Average Vehicle Trips per Day on, each Unpaved Road segment.

E.7.b By March 31, 2006 the County Public Works Department shall provide the APCD with a compliance plan. The compliance plan shall include a compliance schedule indicating that during the period 2006 through 2015 a 10% per each fiscal year, beginning July 1 and ending June 30, of all Unpaved Roads subject to the requirements of this rule will comply with a 20% VDE and comply with the requirements of a Stabilized Unpaved Road (Treatment in excess of the annual requirement can be credited toward future year requirements). The plan shall identify the control measures implemented or that will be implemented at each Unpaved Road segment with 50 or more Average Vehicle Trips per Day.

E.7.c By July 31 of each year, 2007 through 2016, the County Public Works Department shall submit to the APCD the total number of Unpaved Road miles which were mitigated during the previous fiscal year, and the percentage of cumulative miles relative to the list provided pursuant to Section E.7.b.

F. Best Available Control Measures for Fugitive Dust (PM-10)

F.1 UNPAVED ROADS, INCLUDING UNPAVED HAUL AND ACCESS ROADS:

F.1.a Pave.

F.1.b Apply Chemical Stabilization as directed by product manufacturer to control dust on Unpaved Roads.

F.1.c Apply and maintain Gravel, recrushed/recycled asphalt or other material of low Silt (<5%) content to a depth of three or more inches.

F.1.d Wetting. Apply water one or more times daily

F.1.e Permanent road closure

F.1.f Restrict unauthorized vehicle access.

F.1.g Any other method that effectively limits VDE to 20% opacity and meets the conditions of a Stabilized Unpaved Road.

F.2 CANAL ROADS:

F.2.a Stocking of Triploid Grass Carp in canals to reduce maintenance vehicle trips along Canal Banks to mechanically remove aquatic weeds.

F.2.b Installation of remote control delivery gates to eliminate manual gate operation by maintenance personnel in vehicles along Canal Banks.

F.2. c Implement Silt removal program to delay grading of spoil piles deposited on Canal Bank after cleaning operations until the next cleaning operation to eliminate vehicle access to Canal Bank.

F.2.d Permanent road closure.

F.2.e Conversion of open canals to pipeline.

F.2.f Lining canals to eliminate maintenance for Silt/weed control.

F.2.g Canal Bank surface maintenance.

F.3 UNPAVED TRAFFIC AREAS:

F.3.a Pave.

F.3.b Apply Chemical Stabilization as directed by product manufacturer to control dust on Unpaved Roads.

F.3.c Apply and maintain Gravel, recrushed/recycled asphalt or other material of low silt (<5%) content to a depth of three or more inches.

F.3.d Wetting. Apply water one or more times daily.

F.4. NEW OR MODIFIED PAVED ROADS

Any Person having jurisdiction over, or ownership of, public or private Paved Roads shall construct, or require to be constructed, all new or Modified Paved Roads in conformance with the Imperial County Public Works Department guidelines for width of shoulders and median shoulders as specified below:

F.4.a New arterial roads or streets or modifications to existing arterial roads or streets shall be constructed with paved shoulders that meet following widths:

Annual Average Daily Vehicle Trips	Minimum Paved or Stabilized Shoulder Width in Feet
1-2000	2
Greater than 2000	6

F.4.b New or modified collector roads or streets or local roads or streets shall be constructed with paved shoulders that meet following widths:

Annual Average Daily Vehicle Trips	Minimum Paved or Stabilized Shoulder Width in Feet
1-2000	2
Greater than 2000	4

F.4.c A curbing adjacent to and contiguous with the travel lane or paved shoulder or a road may be constructed, in lieu of meeting the paved shoulder width standard listed in Sections F.4.a and F.4.b. Any road paving projects constructing curbing in County road right of ways shall be approved by the Director of Public Works Department prior to construction.

F.4.d Intersections, auxiliary entry lanes, and auxiliary exit lanes may be constructed adjacent to and contiguous with the roadway, in lieu of meeting the paved shoulder width standard in Sections F.4.a and F.4.b.

F.4.e New Paved Road construction or modifications to an existing Paved Road that are required to comply with California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) determinations regarding environmental, cultural, archeological, historical, or other considerations addressed in such documents, are exempt from the paved shoulder width requirements specified in Section F.4.a.

F.4.f Whenever any Paved Road which has projected Annual Average Daily Vehicle Trips of 500 or more is constructed, or modified with medians, the medians shall be constructed with paved shoulders having a minimum width of four feet adjacent to the traffic lanes unless:

F.4.f1 The medians of roads having speed limits set at or below 45 miles per hour are constructed with curbing; or

F.4.f2 The medians are landscaped and maintained with grass or other vegetative ground cover to comply with the definition of Stabilized Surface.

F.4.g In lieu of complying with the paving or vegetation requirements a Person may apply oils or other Chemical Stabilizers/Suppressants to the required width of shoulder and median areas as specified in Sections F.4.a and F.4.b. The material shall be reapplied and maintained to limit VDE to 20% opacity and fulfill conditions for a Stabilized Surface.

G. Record of Control Implementation

Any Person subject to the requirements of this rule shall compile and retain records that provide evidence of control measure application (i.e., receipts and/or purchase records). Such Person shall describe, in the records, the type of treatment or control measure, extent of coverage, and date applied. For control measures which require multiple daily applications, recording the frequency of application will fulfill the recordkeeping requirements of this rule (i.e., water being applied three times a day and the date) Records shall be maintained and be readily accessible for two years after the date of each entry and shall be provided to the APCD upon request.

H. Violations

Failure to comply with any provisions of this rule shall constitute a violation of Regulation VIII.

RULE 806. CONSERVATION MANAGEMENT PRACTICES
(Adopted ----------)

A. Purpose

The purpose of this regulation is to reduce the amount of fine Particulate Matter (PM-10) entrained in the ambient air as a result of emissions generated from Agricultural Operation Sites by requiring Conservation Management Practices to prevent, reduce, or mitigate PM-10 emissions.

B. Applicability

This rule applies to Agricultural Operation Sites located within the Imperial County. Effective on and after January 1, 2006, an owner/operator shall implement the applicable CMPs selected for each Agricultural Operation Site.

C. Definitions

In addition to the definitions of terms in Rule 800 (General Requirements for Control of Fine Particulate Matter (PM-10), the following definitions shall govern the implementation of this rule:

C.1 AGRICULTURAL OPERATIONS: The growing and harvesting of crops for the primary purpose of earning a living.

C.2 AGRICULTURAL OPERATION SITE: One or more agricultural parcels that meet the following:

C.2.a. Are under the same or common ownership or operation, or which are owned or operated by entities which are under common control; and

C.2.b. Are located on one or more contiguous or adjacent properties wholly within Imperial County.

C.3 AGRICULTURAL PARCEL: A portion of real property used by an owner or operator for carrying out a specific agricultural operation. Roads, vehicle/equipment traffic areas, and facilities, on or adjacent to the cropland are part of the agricultural parcel.

C.4 ALTERNATIVE TILLING: Rotate tillage leaving residue on soil. Tilling alternative rows for weed management and wind blown dust allows for approximately 50% reduction in field activity in addition to stabilizing soil surface and reducing soil compaction.

C.5 BALING/LARGE BALES: Using balers to harvest crop. It reduces PM emissions from crops traditionally harvested by chopping, truck, passes and residue burning.

C.6 BED/ROW SIZE OR SPACING: Increase or decrease the size of the planting bed area (can be done for field and permanent crops). Spacing adjustments reduce the number of passes and soil disturbance by increasing plant density/canopy through reduction of row width to contain PM within the canopy.

C.7 CHEMIGATION/FERTIGATION: Application of chemicals through an irrigation system. Each application reduces the need to travel in the field for application purposes, thus reducing the number of passes and soil disturbance while increasing the efficiency of the application.

C.8 CHIPS/MULCHES, ORGANIC MATERIALS, POLYMERS, ROAD OIL & SAND: Application of any nontoxic chemical or organic dust suppressant that meets all specification required by any federal, state, or local water agency and is not prohibited for use by any applicable regulations.

C.9 COMBINED OPERATION: To combine equipment, to perform several operations during one pass. The reduction in the number of passes necessary to cultivate the land will result in fewer disturbances to the soil. Other benefits are reduction of soil compaction and time to prepare fields, both of which can be precursors to additional tillage requirements.

C.10 CONSERVATION IRRIGATION: To conserve the quantity of water use, e.g.: drip, sprinkler, buried/underground line. Conserving water reduces weed population, which in turn reduces the need for tillage as well as reduces soil compaction.

C.11 CONSERVATION MANAGEMENT PRACTICE (CMP): An activity or procedure that prevents, reduces, or mitigates PM-10 normally emitted by, or associated with, an agricultural activity.

C.12 CONSERVATION MANAGEMENT PRACTICES PLAN (CMP PLAN): A document prepared by the owner or operator of an Agricultural Operation site that lists the selected CMPs for implementation. The CMP Plan also contains, but is not limited to, contact information for the owner or operator, a description of the Agricultural Operation Site and locations of Agricultural Parcels, and other information describing the extent and duration of CMP implementation.

C.13 CONSERVATION TILLAGE (e.g.: no tillage, minimum tillage): Types of tillage that reduce loss of soil and water in comparison to Conventional Tillage. It reduces the number of passes and amount of soil disturbance. It improves soil because it retains plant residue and increases organic matter.

C.14 COVER CROPS: Use seeding or natural vegetation/regrowth of plants to cover soil surface. It reduces soil disturbance due to wind erosion and entrainment.

C.15 EQUIPMENT CHANGES/TECHNOLOGICAL IMPROVEMENTS: To modify the equipment such as tilling; increase equipment size; modify land planing and land leveling; matching the equipment to row spacing; granting to new varieties or other technological improvements. It reduces the number of passes during an operation, thereby reducing soil disturbance.

C.16 FALLOWING LAND: Temporary or permanent removal from production. Eliminates entire operation/passes or reduces activities.

C.17 GRAVEL: Placing a layer of Gravel with enough depth to minimize dust generated from vehicle movement and to dislodge any excess debris which can become entrained.

C.18 GREEN CHOP: The harvesting of a forage crop without allowing it to dry in the field. It reduces multiple equipment passes in-field as well as reduces soil disturbance and soil compaction.

C.19 HAND HARVESTING: Harvesting crop by hand. It reduces soil disturbance due to machinery passes.

C.20 INTEGRATED PEST MANAGEMENT: A decision process that uses a combination of techniques including organic, conventional and biological farming concepts to suppress pest problems. It creates beneficial insect habitat that reduces the use of herbicides/pesticides thereby reducing number of passes for spraying. It also reduces soil compaction and the need for additional tillage.

C.21 MECHANICAL PRUNING: Using a machine instead of hand labor to prune (Applies as an Unpaved Road CMP only). It reduces vehicle trips, thereby reducing PM emissions.

C.22 MULCHING: Applying or leaving plant residue or other material to soil surface. It reduces entrainment of PM due to winds as well as reduces weed competition thereby reducing tillage passes and compaction.

C.23 NIGHT FARMING: Operate at night, if practical, when moisture levels are higher and winds are lighter. It decreases the concentration of PM emissions during daytime and the increased ambient humidity reduces PM emissions during the night.

C.24 NIGHT HARVESTING: Implementing cultural practices at night, or at times or high humidity. It reduces PM by operating when ambient air is moist, thereby reducing PM emissions.

C.25 NO BURNING. Switching to a crop/system that would not require waste burning. It reduces emissions associated with burning.

C.26 NON TILLAGE/CHEMICAL TILLAGE: Use flail mower, low volume sprayers or heat delivery systems (as harvest pre-conditioner). It reduces soil compaction and stabilizes soil through elimination or reduction of soil tillage passes.

C.27 ORGANIC PESTICIDES: Use biological control methods or non-chemical control methods. It reduces chemical use, thereby reducing passes.

C.28 PAVING: To pave currently Unpaved Roads.

C.29 PRECISION FARMING (GPS): Using satellite navigation to calculate position in the field, therefore manage/treat selective area. It reduces overlap and allows operations to occur during inclement weather conditions and at night thereby generating less PM.

C.30 PRE-HARVEST SOIL PREPARATION: Applying a light amount of water or stabilizing material to soil prior to harvest (when possible). It reduces PM emissions at harvest.

C.31 RESTRICTED ACCESS: To restrict public access to private roads. It reduces vehicle traffic and thus reduces associated fugitive dust.

C.32 SHED PACKING: Packing commodities in a covered or closed area. It reduces field traffic, thereby reducing PM emissions.

C.33 SHUTTLE SYSTEM/LARGE CARRIER: Multiple bin/trailer. Haul multiple or larger trailers/bins per trip thereby reducing emissions through reduced passes.

C.34 SPEED LIMITS: Enforcement of speeds that reduce visible dust emissions. The dust emissions from unpaved roads are a function of speed meaning reducing speed reduces dust.

C.35 TRACK-OUT CONTROL: Minimize any and all material that adheres to and agglomerates on all vehicle and equipment from unpaved roads and falls onto a paved public road or the paved shoulder of a paved public road.

C.36. TRANSGENIC CROPS: Use of GMO or Transgenic crops such as “herbicide-ready.” It reduces need for tillage or cultivation operations, as well as reduces soil disturbance. It can also reduce the number of chemical applications.

C.37 WATER APPLICATION: Application of water to unpaved roads and traffic areas.

C.38 WIND BARRIER: Artificial or vegetative wall/fence that disrupts the erosive flow of wind over unprotected land.

D. Requirements for Agricultural Operation Sites:

D.1 All Persons who own or operate an Agricultural Operation Site of forty (40) acres or more in size shall implement in each Agricultural Parcel at least one of the Conservation Management Practices listed in Section E.1 for each of the following categories:

D.1a Land preparation and cultivation;

D.1.b Harvest activities;

D.1.c Unpaved Roads;

D.1.d Unpaved Traffic Areas

D.2 The owner or operator of an Agricultural Operation Site may implement more than one Conservation Management Practices for one or more of the categories.

D.3 The owner or operator of an Agricultural Operation Site shall ensure that the implementation of each selected Conservation Management Practices does not violate any other local, state, or federal law.

D.4 The owner or operator of an Agricultural Operation Site may develop alternative CMPs. The owner or operator shall submit to the APCD a technical evaluation of the alternative CMPs, demonstrating that the alternative CMP achieves PM-10 emission reductions that are at least equivalent to other CMPs available for the applicable operation. The APCD will review the technical evaluation, and the alternative CMP must receive approval by the APCD before being included in the CMP Plan.

D.5 The owner or operator shall prepare a CMP Plan for each Agricultural Operation Site. The CMP Plan shall be made available to the APCD upon request. The CMP Plan shall be provided to the APCD within 72 hours of notice to the owner or operator.

E. Conservation Management Practices for Fugitive Dust (PM-10)

E.1 The owner or operator of an Agricultural Operation Site shall implement at least one of the following CMPs in each Agricultural Parcel to reduce PM10 emissions from land preparation and cultivation:

E.1.a Alternate Till,
E.1.b Bed/Row Size Spacing,

E.1.c Chemical/Fertigation,
E.1.d Combined Operations,
E.1.e Conservation Irrigation,
E.1.f Conservation Tillage,
E.1g Cover Crops,
E.1.h Equipment Changes/Technological Improvements,
E.1.i Fallowing Land,
E.1.j Integrated Pest Control,
E.1.k Mulching,
E.1.l Night Farming,
E.1.m Non Tillage /Chemical Tillage,
E.1.n Organic Pesticides,
E.1.o Precision Farming (GPS), or
E.1.p Transgenic Crops.

E.2 The owner or operator of an Agricultural Operation Site shall implement at least one of the following CMPs in each Agricultural Parcel to reduce PM10 emissions from harvesting:

E.2.a Baling /Large Bales
E.2.b Combined Operations
E.2.c Equipment Changes/Technological Improvements
E.2.d Green Chop
E.2.e Hand Harvesting
E.2.f Fallowing Land
E.2.g Night Harvesting
E.2.h No Burning
E.2.i Pre-Harvesting Soil Preparation
E.2.j Shed Packing
E.2.k Shuttle System/Large Carrier

E.3 The owner or operator of an Agricultural Operation Site shall implement at least one of the following CMPs for each Unpaved Road to reduce PM10 emissions:

E.3.a Chips/Mulches, Organic Materials, polymers, road oil and sand,
E.3.b Gravel
E.3.c Paving,
E.3.d Restricted access
E.3.e Speed limit
E.3.f Track-out control
E.3.g Water
E.3.h Wind barrier

E.4 The owner or operator of an agricultural operation site shall implement at least one of the following CMPs for each unpaved traffic area to reduce PM10 emissions:

E.4.a Chips/Mulches, Organic Materials, Polymers, Road Oil and Sand,
E.4.b Gravel
E.4.c Paving,
E.4.d Restricted Access
E.4.e Speed Limit
E.4.f Track-Out Control
E.4.g Water
E.4.h Wind Barrier

F. CMP Plan Preparation

An owner or operator shall prepare a CMP Plan for each Agricultural Operation Site. Each CMP Plan shall include, but is not limited to, the following information:

F.1 The name, business address, and telephone number of the owner or operator responsible for the preparation and implementation of the CMP Plan.

F.2 The signature of the owner or operator and the date that the CPM Plan was signed.

F.3 The location of the Agricultural Operation Site: cross roads; canal and gate number.

F.4 The crop grown at each location covered by the CMP Plan, total acreage for each crop, the length (miles) of unpaved roads, and the total area (acres or square feet) of the unpaved equipment and traffic areas to be covered by the CMP Plan, and.

F.5 The CMPs implemented or planned for implementation.

F.6 Other relevant information as determined by the APCD.

G. Violations

Failure to comply with any provisions of this rule shall constitute a violation of Regulation VIII. Failure to comply with the provisions of a CMP Plan shall also constitute a violation of Regulation VIII.

H. Record of Control Implementation

Any Person subject to the requirements of this rule shall maintain a copy of the CMP Plan and any supporting documentation necessary to confirm implementation of the CMPs. An owner or operator implementing alterative CMPs shall maintain a copy of technical evaluation for alternative CMPs and documentation of APCD approval of alternative CMPs, Records shall be maintained for two years after the date of each entry and shall be provided to the APCD upon request.

CONSERVATION MANAGEMENT PRACTICES PLAN

Farm Name :_____ Owner/Operator: _____Telephone:_____
Total Farm Acreage:_____ Address:_____
Canal & Gate*:_____Crossroads*:_____

***List all canals & gates, as well as crossroads, associated to this agricultural operation site at the reverse of this page. In addition, the crop grown at each location covered by the CMP plan, total acreage for each crop, the length (miles) of unpaved roads, and the total area (acres or square feet) of the unpaved equipment and traffic areas to be covered by the CMP Plan.**

Select one or more CMPs from each category:

Land Preparation and Cultivation

- ☐ Alternative Till
- ☐ Bed/Row Size Spacing
- ☐ Chemical Fertigation
- ☐ Combined Operations
- ☐ Conservation Irrigation
- ☐ Cover Crops
- ☐ Equipment Changes
- ☐ Fallowing Land
- ☐ Integrated Pest Control
- ☐ Mulching
- ☐ Night Farming
- ☐ Non-Tillage/Chemical Tillage
- ☐ Organic Pesticides
- ☐ Precision Farming (GPS)
- ☐ Transgenic Crops
- ☐ Other

Harvesting

- ☐ Bailing/Large Bales
- ☐ Combined Operations
- ☐ Equipment Changes
- ☐ Green Chop
- ☐ Hand Harvesting
- ☐ Fallowing Land
- ☐ Night Harvesting
- ☐ Pre-Harvesting Land Prep
- ☐ Shuttle System/Large Carrier
- ☐ Shed Packing
- ☐ Other

Unpaved Roads

- ☐ Dust Suppressants
- ☐ Gravel
- ☐ Paving
- ☐ Restricted Access
- ☐ Speed Limit
- ☐ Track-out Control
- ☐ Water
- ☐ Wind Barriers
- ☐ Other

Unpaved Traffic Areas

- ☐ Dust Suppressants
- ☐ Gravel
- ☐ Paving
- ☐ Restricted Access
- ☐ Speed Limit
- ☐ Track-out Control
- ☐ Water
- ☐ Wind Barriers
- ☐ Other

I hereby certify that: I am the owner or operator of the agricultural operation site on which this CMP Plan will be implemented; I have a copy of Rule 806 and I will comply with it.

Signature:_____Date:_____

CONSERVATION MANAGEMENT PRACTICES PLAN

Agricultural Parcel ID _____

Canal & Gate: _____
Crossroads: _____
Crop Grown: _____
Total Acreage: _____
Approx. Length (miles) of unpaved roads: _____
Approx. Unpaved Equipment Traffic Areas (acres or square feet): _____
CMPs Selected:_____

Agricultural Parcel ID _____

Canal & Gate: _____
Crossroads: _____
Crop Grown: _____
Total Acreage: _____
Approx. Length (miles) of unpaved roads: _____
Approx. Unpaved Equipment Traffic Areas (acres or square feet): _____
CMPs Selected:_____

Agricultural Parcel ID _____

Canal & Gate: _____
Crossroads: _____
Crop Grown: _____
Total Acreage: _____
Approx. Length (miles) of unpaved roads: _____
Approx. Unpaved Equipment Traffic Areas (acres or square feet): _____
CMPs Selected:_____

Agricultural Parcel ID _____

Canal & Gate: _____
Crossroads: _____
Crop Grown: _____
Total Acreage: _____
Approx. Length (miles) of unpaved roads: _____
Approx. Unpaved Equipment Traffic Areas (acres or square feet): _____
CMPs Selected:_____

A P P E N D I X F

BLM Environmental Assessment and Finding of No Significant Impact

Environmental Assessment & Finding of No Significant Impact

ENVIRONMENTAL ASSESSMENT **EA Number:**

El Centro Field Office, California Desert District, Bureau of Land Management
Lease/Serial/Case File No.:

Proposed Action Title/Type: Road and Trail Maintenance
Location of Proposed Action: Imperial County, CA.
Applicant (if any): United States Border Patrol

Conformance With Applicable Land Use Plans:
This proposed action is subject to the following land use plan:

California Desert Conservation Area Plan	Date Approved: 1980

The following plans are tiered from the above CDCA Plan:

Yuha Basin ACEC Management Plan	Date Approved: 1982
Yuha Desert Habitat Management Plan	Date Approved: 1983
Yuha Desert Management Plan	Date Approved: 1985
Imperial Sand Dunes Recreation Area Management Plan	Date Approved: 1987
Algodones Dunes Habitat Management Plan	Date Approved: 1987
Flat-tailed Horned Lizard Rangewide Strategy.	Date Approved: 1997
Recovery Plan for Bighorn Sheep in the Peninsular Ranges, CA	Date Approved: 2000

These plans have been reviewed to determine if the proposed action conforms with the land use plan terms and conditions as required by 43 CFR 1610.5.

Purpose And Need for Proposed Action:

Road repair and maintenance to the routes of travel is a normal operation of managing resources on the public lands of the El Centro resource area. Such maintenance is critical for the Border Patrol to perform its mission. Actions involved in the maintenance of the roads are included as maintaining administrative and public access for permitted actions on the public lands.

When the condition of roads and trails become degraded due to Border Patrol dragging and OHV use, Border Patrol and OHVs tend to create parallel routes in order to avoid small berms and moguls. This leads to route proliferation in limited areas, and the widening of routes that causes impacts to resources. Additionally, localized storms cause wind and rain erosion, causing damage to road shoulders and creating gullies where runoff occurs, promoting the need to repair roads for user safety. The proposed action will also decrease the impacts to resource values by channeling vehicle traffic, preventing washouts and associated detours, and maintaining the integrity of designated routes.

Description of Proposed Action:

The Border Patrol proposes to routinely use a road grader to level moguls on existing roads in the Yuha desert and on East Mesa and West Mesa adjacent to the Imperial Valley. Where no moguls exist, the grader will be used to fill in ruts, move rocks, and generally level the road surface. All of the roads identified are designated existing open routes on BLM's Route of Travel Inventory. Grading will be limited to the existing road width. The routes will not be widened.

Route maintenance will routinely be conducted on existing approved routes of travel within the limited and open vehicle classification areas of Imperial County south of State Highway 78 (areas defined in CDCA plan). All maintenance will be completed on an as needed basis, restricting disturbance to the minimal amount of area, depending on use, rainfall, wind, and other environmental and/or man caused impacts. Access will be restricted to existing designated routes. (SEE MAP 1.)

Description of Alternative Actions:

Alternative 1: No action. The roads will not be graded and maintained.

Alternative 2: All designated roads will be graded and maintained as described in the preferred action, except the roads in critical habitat for the Peninsular Ranges Bighorn Sheep. The roads in the critical habitat for the Peninsular Ranges Bighorn Sheep will not be graded or maintained in the Jacumba, Coyote and Fish Creek Mountains. (SEE MAP 2.) Off road travel and route proliferation is not as common in these areas as in other areas. In addition, these roads do not require grading as normal maintenance due to the hard packed nature of the soil and road material in these areas.

Affected Environment:

Common wildlife of the area include the flat-tailed horned lizard (federally proposed as threatened), desert iguana, whiptail lizard, fringe-toed lizard, side-blotched lizard, zebra-tail lizard, leopard lizard, banded gecko, sidewinder, patchnose snake, shovel- nosed snake, coachwhip, roundtail ground squirrel, kangaroo rat, blacktail jackrabbit, badger, kit fox, gray fox, coyote, bobcat, mule deer, mountain lion, loggerhead shrike, black-tailed gnatcatcher, sharp-shined hawk, Cooper's hawk, Swainson's hawk, ferruginous hawk, American Kestrel, white-winged dove, mourning dove, ground dove, burrowing owl, yellow warbler, desert cottontail and Gambel's quail. No federally or state listed animal species are known from the area, with the exception of the Desert Pupfish in San Felipe Creek, the Yuma Clapper Rail and Black Rail in the All-American Canal and the Peninsular Ranges Bighorn Sheep in the Jacumba, Coyote and Fish Creek Mountains.

The East Mesa area is dominated creosote bush scrub with an understory of *Schismus barbatus*, saltbush and burrobush (white bursage). In the Yuha and West Mesa, buoorbush tends to predominate. Spanish needle, wooly plantain and sand verbenia are common annual plants, especially abundant in springs following wet winters. Other plant associations found include salt-bush scrub and small areas of desert dry wash.

Environmental Impacts:

The proposed action and each of the alternatives have been analyzed to assess direct, indirect, and cumulative impacts to critical elements of the human environment listed below. Those critical elements that may be significantly affected by the action are marked 'yes' in the table below. However, if the action may be mitigated so that the critical element is not significantly affected the table is marked 'no'. Those critical elements that are not significantly affected by the action are marked 'no'. In addition, those elements that are not present are marked 'no' on the table below. Each of the critical elements is discussed in further detail following the table.

Critical Element	Preferred Alternative (full grading and maintenance)		Alternative 1 (no action)		Alternative 2 (limited grading and maintenance)		Subject Area expert
Significant Effect?	Yes	No	Yes	No	Yes	No	
Air Quality		X		X		X	
ACECs		X	X			X	
Cultural Resources		X	X			X	
Farmlands, Prime / Unique		X		X		X	
Floodplains		X		X		X	
Native American Relation Concerns		X	X			X	
T&E Wildlife	X		X			X	
T&E Vegetation		X	X			X	
Water Quality		X		X		X	
Wastes, Hazardous/solid		X		X		X	
Wetlands/Riparian Zones		X		X		X	
Wild and Scenic Rivers		X		X		X	
Wilderness		X		X		X	
Visual		X		X		X	

Description of Impacts:

Air Quality: *Preferred Alternative (full grading):* The Border Patrol currently drives on and drags the roads as a part of their routine operations. The grading of the roads will remove the washboards in the roads and reduce the particulate matter that is currently generated by driving on and dragging the roads. Although that grading action will disperse some particulate matter into the air, the long term affect from this action will be greatly offset by reduction in particulate matter that is dispersed by driving on and dragging the unmaintained roads.

Alternative 1 (No Action): Particulates would be released into the air due to the driving on and dragging of the roads as the roads continue to deteriorate.

Alternative 2 (limited grading): The Border Patrol currently drives on and drags the roads as a part of their routine operations. The grading of the roads will remove the washboards in the roads and reduce the particulate matter that is currently generated by driving on and dragging the roads. Although that grading action will disperse some particulate matter into the air, the long term affect from this action will be greatly offset by reduction in particulate matter that is dispersed by driving on and dragging the

unmaintained roads. For the areas in the critical sheep habitat that will not be graded in this alternative, particulates would be released into the air due to driving on the roads as the roads continue to deteriorate. (The Border Patrol does not drag the roads in critical sheep habitat.)

Area Critical Environmental Concern (ACEC): *Preferred Alternative (full grading):* The roads pass through ACECs. If the roads are not graded and maintained, Bordor Patrol vehicles and other vehicles that use the roads are more likely to drive off the roads and into the habitat areas. Grading the roads could have a slight impact on the ACEC due to the use of the heavy equipment, although this impact would not be significantly greater than that of other vehicles using the roads. The impact itself, would be an increase in noise, and increase in exhaust emissions, a change in the road surface to a smoother surface, and a change in the road bank to a more uneven surface due to material being deposited on the road bank from the road.

Alternative 1 (No Action): The impact to the ACECs would be significant if this alternative in implemented. As the roads deteriorate, more vehicles would travel off road. A new illegal road network would be established in the ACECs. The off road travel and new road system would change the characteristics of the ACECs and deteriorate their value. The management strategies for these areas would not be achieved.

Alternative 2 (limited grading): The roads pass through ACECs. If the roads are not graded and maintained, Border Patrol vehicles and other vehicles that use the roads are more likely to drive off the roads and into the habitat areas. Grading the roads could have a slight impact on the ACEC due to the use of the heavy equipment, although this impact would not be significantly greater than that of other vehicles using the roads. The impact itself, would be an increase in noise, and increase in exhaust emissions, a change in the road surface to a smoother surface, and a change in the road bank to a more uneven surface due to material being deposited on the road bank from the road.

Cultural Resources: *Preferred Alternative (full grading):* Cultural resources will not be significantly affected due to grading of the roads with the mitigations identified in this document. There are two small areas with cultural resources that could be significantly impacted if these areas were graded. The mitigation requires that these areas receive no grading. In addition, if the grading activities increased the size of the road or berm, cultural resources could be loss. The mitigation will ensure that these resources are not lost.

Alternative 1 (No Action): Cultural resources may be significantly affected if this alternative is selected. As the roads continue to deteriorate, vehicles will travel off road and create new roads. The off road travel and new routes could significantly impact fragile cultural resources. Many of the areas around these roads have not been surveyed, so the cultural resources are not surveyed, identified or inventoried. Vehicles driving over cultural resources could destroy the resources. The loss of the cultural resources and the knowledge gained by studying the cultural resources would be significant.

Alternative 2 (limited grading): Cultural resources will not be significantly affected due to grading of the roads with the mitigation identified in this document. There are two small areas with cultural resources that could be significantly impacted if these areas were graded. The mitigation requires that these areas receive no grading. In addition, if the grading activities increased the size of the road or berm, cultural resources could be loss. The mitigation will ensure that these resources are not lost.

Farmlands, Prime / Unique: *Preferred Alternative (full grading):* This alternative does not involve prime or unique farmlands.

Alternative 1 (No Action): This alternative does not involve prime or unique farmlands.

Alternative 2 (limited grading): This alternative does not involve prime or unique farmlands.

Floodplains: *Preferred Alternative (full grading):* This alternative does not impact floodplains.

Alternative 1 (No Action): This alternative does not impact floodplains.

Alternative 2 (limited grading): This alternative does not impact floodplains.

Native American Relations: Concerns *Preferred Alternative (full grading):* Many Native American tribes have expressed concerns that cultural resources in this area are fragile and can be destroyed by off highway vehicle use. The Native American tribes have expressed a desire to preserve the cultural resources in the project area. Native Americans generally support efforts to encourage users to stay on designated roads. Grading the roads, as described in this alternative, would support Native American relationships: the impact would be positive.

Alternative 1 (No Action): The impact of this alternative could be significant. Native American tribes would be concerned about the off road travel and new roads that could develop if the designated roads are not maintained. The off road travel and new roads could impact cultural resources which the Native Americans desire to protect.

Alternative 2 (limited grading): Many Native American tribes have expressed concerns that cultural resources in this area are fragile and can be destroyed by off highway vehicle use. The Native American tribes have expressed a desire to preserve the cultural resources in the project area. Native Americans generally support efforts to encourage users to stay on designated roads since this protects the cultural resources. In addition, Native Americans have been supportive of protecting the bighorn sheep and their habitat. Grading the roads, as described in this alternative, would support Native American relationships: the impact would be positive.

T&E Wildlife: *Preferred Alternative (full grading):* The grading of routes could result in death, injury or disturbance to wildlife, especially basking lizards and snakes. Especially, vulnerable to death would be the flat-tailed horned lizard during the active season (mid-February to mid- November) in areas of high relative abundance (Management Areas). Mitigation will be required to reduce to potential affects to this species. Beneficial indirect impacts could occur from the reduction in route proliferation parallel to well graded routes. Such proliferation increases mortality, devegetation and soil compaction, all of which adversely impacts wildlife populations.

Disturbance to the sheep, pupfish or rails is unlikely due the distance of most routes from populations of these species. Some small positive impact might occur to the pupfish from adequate maintenance of the Harper's Well Road that would discourage route proliferation in the watershed of this species. Off road travel and illegal roads could have an adverse affect on the bighorn sheep as this species is shy and does not reproduce well when its habitat is disturbed.

Alternative 1 (No Action): Significant impacts could occur due to route proliferation and off road travel. Such proliferation and off road travel increases mortality, devegetation and soil compaction, all of which adversely impacts wildlife populations.

Disturbance to the pupfish or rails is unlikely due the distance of most routes from populations of these species, although off road travel around Harper's Well Road could have a significant impact on the watershed for the pupfish. Off road travel and illegal roads could have an adverse affect on the bighorn sheep as this species is shy and does not reproduce well when its habitat is disturbed.

Alternative 2 (limited grading): The grading of routes could result in death, injury or disturbance to wildlife, especially basking lizards and snakes. Especially, vulnerable to death would be the flat-tailed horned lizard during the active season (mid-February to mid- November) in areas of high relative abundance (Management Areas). Mitigation is required in to avoid significant impacts to the flat tailed horned lizard. Beneficial indirect impacts could occur from the reduction in route proliferation parallel to well graded routes. Such proliferation increases mortality, devegetation and soil compaction, all of which adversely impacts wildlife populations.

Disturbance to the pupfish or rails is unlikely due the distance of most routes from populations of these species. Some small positive impact might occur to the pupfish from adequate maintenance of the Harper's Well Road that would discourage route proliferation in the watershed of this species. This alternative does not grade the roads in critical bighorn sheep habitat, to avoid impact on that species.

T&E Vegetation: *Preferred Alternative (full grading):* No significant impacts are expected from route grading, as long as grading is limited to the existing route. In areas of washouts, vegetation may be impacted from use of the material washed out. Vegetation has the potential to be crushed or bladed within the proposed 100 foot impact area downstream of a washout. In the general Hyduke Road area, the Fairy Duster (*Calliandra eriophylla*), is the only sensitive species known. Its status with the California Native Plant Society (CNPS) is rare, but common outside of California. Fairy Dusters do not have a Federal or State status. Habitat for this species is typically in rocky washes containing some sand.

Shoulder maintenance within the Imperial Sand Dunes may impact vegetation established along the road way. Wiggin's Croton (*Croton wigginsii*) is the most likely sensitive species to be affected by this activity, as it prefers disturbed areas. Its status with the State of California is proposed threatened. It has no Federal status.

The following sensitive species are present within the Imperial Sand Dunes:

Species	Fed. Status	CA Status	BLM
Astragalus magdalenae var. personii	Proposed	Endangered	Sensitive
Helianthus nevius ssp. tephrodes	Category 2	Proposed Endangered	Sensitive
Palofoxia arida var. gigantea	Category 3C	CNPS List 1B	Sensitive
Pholisma sonorae	Category 2	CNPS List 1B	Sensitive
Cryptantha costata	none	CNPS List 4	none
Lyrocarpa coulteri	none	CNPS List 4	none
Larrea tridentata var. arenaria	none	CNPS List 3	none
Astragalus lentiginosus var. borreganus	none	CNPS List 4	none

There are no known threatened or endangered plants in the Yuha and West Mesa areas, located west of El Centro. However, one rare plant, formerly listed as a Category 3C candidate, is found within the project area. *Pilostyles thurberi* is a rare inconspicuous parasite on several species of *Dalea* shrubs. Indigo bush (*D. emoryi*), is common throughout the project area, and could be a potential host for *P. thurberi*. Two other sensitive CNPS species are found in the Yuha. They are the Baja California gilia, (*Ipomopsis effusa*) and Crucifixion Thorn (*Castela emoryi*).

Alternative 1 (No Action): Significant impacts may occur if this alternative is selected. As the designated roads deteriorate, vehicles will travel off road. Eventually, illegal roads are created. The off road activity and illegal roads impact all vegetation in the area as vehicles will crush vegetation in the pathway.

In the general Hyduke Road area, the Fairy Duster (*Calliandra eriophylla*), is the only sensitive species known. Its status with the California Native Plant Society (CNPS) is rare, but common outside of California. Fairy Dusters do not have a Federal or State status. Habitat for this species is typically in rocky washes containing some sand. Travel off road in this area may significantly impact the Fairy Duster. Within the Imperial Sand Dunes, off road travel may impact Wiggin's Croton (*Croton wigginsii*), but to a lesser extent than the other alternatives as this species prefers a disturbed habitat. Its status with the State of California is proposed threatened. It has no Federal status.

The following sensitive species also have the potential to be affected by this alternative within the Imperial Sand Dunes:

Species	Fed. Status	CA Status	BLM
Astragalus magdalenae var. personii	Proposed	Endangered	Sensitive
Helianthus nevius ssp. tephrodes	Category 2	Proposed Endangered	Sensitive
Palofoxia arida var. gigantea	Category 3C	CNPS List 1B	Sensitive
Pholisma sonorae	Category 2	CNPS List 1B	Sensitive
Cryptantha costata	none	CNPS List 4	none
Lyrocarpa coulteri	none	CNPS List 4	none
Larrea tridentata var. arenaria	none	CNPS List 3	none
Astragalus lentiginosus var. borreganus	none	CNPS List 4	none

There are no known threatened or endangered plants in the Yuha and West Mesa areas, located west of El Centro. However, one rare plant, formerly listed as a Category 3C candidate, is found within the project area. *Pilostyles thurberi* is a rare inconspicuous parasite on several species of *Dalea* shrubs. Indigo bush (*D. emoryi*), is common throughout the project area, and could be a potential host for *P. thurberi*. Two other sensitive CNPS species are found in the Yuha. They are the Baja California gilia, (*Ipomopsis effusa*) and Crucifixion Thorn (*Castela emoryi*). Each of these plants could be significantly impacted by off road travel.

Alternative 2 (limited grading): No significant impacts are expected from route grading, as long as grading is limited to the existing route. In areas of washouts, vegetation may be impacted from use of the material washed out. Vegetation has the potential to be crushed or bladed within the proposed 100 foot impact area downstream of a washout. In the general Hyduke Road area, the Fairy Duster (*Calliandra eriophylla*), is the only sensitive species known. Its status with the California Native Plant Society (CNPS) is rare, but common

outside of California. Fairy Dusters do not have a Federal or State status. Habitat for this species is typically in rocky washes containing some sand.

Shoulder maintenance within the Imperial Sand Dunes may impact vegetation established along the roadway. Wiggin's Croton (*Croton wigginsii*) is the most likely sensitive species to be affected by this activity, as it prefers disturbed areas. Its status with the State of California is proposed threatened. It has no Federal status.

The following sensitive species are present within the Imperial Sand Dunes:

Species	Fed. Status	CA Status	BLM
Astragalus magdalenae var. personii	Proposed	Endangered	Sensitive
Helianthus nevius ssp. tephrodes	Category 2	Proposed Endangered	Sensitive
Palofoxia arida var. gigantea	Category 3C	CNPS List 1B	Sensitive
Pholisma sonorae	Category 2	CNPS List 1B	Sensitive
Cryptantha costata	none	CNPS List 4	none
Lyrocarpa coulteri	none	CNPS List 4	none
Larrea tridentata var. arenaria	none	CNPS List 3	none
Astragalus lentiginosus var. borreganus	none	CNPS List 4	none

There are no known threatened or endangered plants in the Yuha and West Mesa areas, located west of El Centro. However, one rare plant, formerly listed as a Category 3C candidate, is found within the project area. *Pilostyles thurberi* is a rare inconspicuous parasite on several species of *Dalea* shrubs. Indigo bush (*D. emoryi*), is common throughout the project area, and could be a potential host for *P. thurberi*. Two other sensitive CNPS species are found in the Yuha. They are the Baja California gilia, (*Ipomopsis effusa*) and Crucifixion Thorn (*Castela emoryi*). These plants could be non-significantly affected by this alternative.

Water Quality: *Preferred Alternative (full grading):* Water quality will not be affected by this alternative.

Alternative 1 (No Action): Water quality will not be affected by this alternative.

Alternative 2 (limited grading): Water quality will not be affected by this alternative.

Wastes, Hazardous / Solid: *Preferred Alternative (full grading):* The proposed action does not involve the generation of hazardous or solid waste. The proposed action does not involve land that contains hazardous or solid waste. Waste is occasionally encountered in the area of the project due to illegal dumping. Typical waste that is found in the area is general domestic trash and tires. If waste is found during this project, the Border Patrol will arrange for legal disposal.

Alternative 1 (No Action): This alternative does not involve the generation of hazardous or solid waste. This alternative does not involve land that contains hazardous or solid waste. Waste is occasionally encountered in the area to illegal dumping. Typical waste is found in the area is general domestic trash and tires.

Alternative 2 (limited grading): This alternative does not involve the generation of hazardous or solid waste. The alternative does not involve land that contains hazardous or solid waste. Waste is occasionally encountered in the area of the project due to illegal dumping. Typical waste that is found in the area is general domestic trash and tires. If waste is found during this project, the Border Patrol will arrange for legal disposal.

Wetlands/Riparian Zones: *Preferred Alternative (full grading):* There are no wetlands or riparian zones in the project area.

Alternative 1 (No Action): There are no wetlands or riparian zones in the project area.

Alternative 2 (limited grading): There are no wetlands or riparian zones in the project area.

Wild and Scenic Rivers: *Preferred Alternative (full grading):* The proposed action does not involve designated wild and Scenic Rivers or waters being considered for designation as Wild and Scenic.

Alternative 1 (No Action): The proposed action does not involve designated wild and Scenic Rivers or waters being considered for designation as Wild and Scenic.

Alternative 2 (limited grading): The proposed action does not involve designated wild and Scenic Rivers or waters being considered for designation as Wild and Scenic.

Wilderness: *Preferred Alternative (full grading):* The proposed action does not involve lands within designated wilderness or lands being considered for designation as wilderness.

Alternative 1 (No Action): This alternative does not involve lands within designated wilderness or lands being considered for designation as wilderness.

Alternative 2 (limited grading): This alternative action does not involve lands within designated wilderness or lands being considered for designation as wilderness.

Visual Resources: The degree to which an action affects the visual quality of the landscape can be measured in terms of the impacts to the elements of form, line, color, and texture of the landscape. The landscape is a focal one, with a limited central focus point and which has a repetitive creosote vegetation sequence. The overall texture is a medium one, with patchy and broken vegetation dominant. The desert colors are muted shades ranging from desert brown and sand beige to juniper green (Munsell Soil Color Charts).

The VRM Objective class for the involved BLM lands is Class 3. Visual resource management objectives for Class 3 lands are to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Conducting the proposed action would not raise the contrast rating.
Preferred Alternative (full grading): The proposed action will help reduce route proliferation, which will help maintain the visual integrity of this resource area.

Alternative 1 (No Action): This alternative will adversely affect the visual integrity of this resource area because, if routes are not maintained, alternative routes may form, causing further degradation.

Alternative 2(limited grading): The proposed action will help reduce route proliferation, which will help maintain the visual integrity of this resource area.

Coordination with other Agencies:

California State Historic Preservation Office -Archaeology: Pursuant to Section 5 of the State Protocol Agreement (1998) between the California State Historic Preservation Office (SHPO) and the Bureau of Land Management - California (BLM), and in accordance with 36 CFR Part 800, this memorandum documents BLM's efforts to identify, evaluate and assess effects for historic properties that might be affected by this undertaking as required by Section 106 of the National Historic Preservation Act.

The BLM has determined that this project is an exempt undertaking under the State Protocol Agreement Appendix C: General Program Exemption Number One, Routine Maintenance. BLM did allow this activity in the year 2001 and the potential impacts were mitigated by working with the driver of the grader to minimize the amount of disturbance to the road berms and having the grader not grade in the areas where the route goes through known archaeological sites. This years proposed activity will be mitigated in the same manor (see the mitigation section).

This activity would also help to protect cultural sites located along or near open routes. Because of constant use and dragging, many of the routes the US BP habitually use degrade very quickly and become dangerous to travel on at fast speeds. So the agents tend to create parallel routes. The grading of these roads will make travel on the roads easier for the BP agents, thus they will tend to remain on the routes.

United States Fish & Wildlife Service: The preferred alternative would require consultation with the United States Fish and Wildlife Service for possible affects to the Peninsular Ranges Bighorn Sheep. Alternatives 2 and 3 would not require formal consultation. Although Pierson's Milk-Vetch occurs in the region of this activity, it would not suffer impacts from alternative 2, and the proposed action, because these areas do not include habitat for this species, making formal consultation unnecessary.

Description of Mitigation Measures and Residual Impacts:

Archaeology: ROAD GRADING STIPULATIONS:

1) Two following two segments of road must be left undisturbed. Absolutely no grading is to be conducted in these areas. The grader operator must lift the blade above the ground surface. These two areas are shown on the attached map number 3 in red and will be flagged on ground with orange ribbon tied to bushes prior to grading in the general area.

A. ALPHA road 1.4 miles from junction with drag road (at Mexico border). This is a route segment of about 10 yards.

B. EXIT 6 road just to east of LITTLE SUNRISE. This is a route segment of several hundred yards.

2) Narrow roads marked in GREEN on map number 3 must not be made wider. They need to stay about 10-12' feet wide. Do not undercut banks with blade.

3) Drag roads (Marked in blue on map) must not be increased to include all previous drag marks. They must be only wide enough to accommodate the width of two drags plus a narrow travel lane in the middle. DO NOT grade the sides of the route just because the sides show some previous disturbance because of dragging or driving.

4) When several parallel routes exist, choose only one. Choose the most heavily traveled/disturbed route.

5) Grade only the roads or routes indicated on the map attached to this document.

Botany: ROAD GRADING STIPULATIONS:

Avoidance of vegetation outside construction zones whenever possible is necessary. Work crews should be able to recognize Wiggin's Croton within the Imperial Sand Dunes. Restricted disturbance can be beneficial to Croton as a species, however, individual plants should be avoided outside the construction zones where possible to maintain a reproductive stock.

Equipment operators should be aware of vehicle use that may try to pass during the project. Pointing users to wide areas, and areas of disturbance, will aid in avoiding vegetation and corresponding wildlife habitat. No woody trees (e.g. Palo Verde, Ironwood, Mesquite, Acacia, etc.) will be removed from washes (e.g. during operations repairing washouts) without prior clearance from the Resource Area Biologist or Botanist.

Wildlife: ROAD GRADING STIPULATIONS:

Within Management Areas (MA) only, a Border Patrol agent would walk in front of the grader, moving any flat-tailed horned lizards out of harm's way during the activity season (15 February to 15 November). No such clearance would be required from 16 November to 14 February within MA's or at any time outside of MA's.

Residual Impacts: Impacts to cultural and biological resources would be reduced substantially by the mitigations, however, wildlife mortality could still occur.

Cumulative Impacts: Road and route proliferation is widespread in the desert of Imperial County and has led to substantial degradation of natural habitats through soil compaction, devegetation, disturbance, injury, mortality and exotic plant vectoring. The implementation of this action would probably have a net beneficial effect because motorists are more likely to stay on a well-graded route, reducing the adverse effects associated with parallel route proliferation.

Other impacts in the project area include paved roads, power lines, geothermal plants, off-road vehicle travel, irrigation berms, mining, military impacts and sundry other activities. These actions have also degraded natural habitats and their associated biota to a wide extent in Imperial County. The impacts will likely increase as the human population of the County grows leading to increased detrimental impacts. However, adequate maintenance of an existing route network and alleviate these impacts somewhat.

Preparer(s): Chris Knauf, Natural Resource Specialist

Gavin Wright, Senior Wildlife Biologist
Margaret Hangan, Archaeologist
Patrick Whipple, Senior Border Patrol Agent

Date: 04/18/2002

Reviewer: Lynnette Elser
Lynnette Elser, Environmental Coordinator

****

FINDING OF NO SIGNIFICANT IMPACT/DECISION RECORD.

I have reviewed this environment assessment including the explanation and resolution of any potentially significant environmental impacts. I have determined that the proposed action is unacceptable due to its potential impact on the Peninsular Ranges Bighorn Sheep. I have determined that alternative 2, limited grading, with the mitigation measures described below will not have any significant impacts on the human environment and that an EIS is not required. I have determined that alternative 2 is in conformance with the approved land use plan. It is my decision to implement alternative 2 with the mitigation measures identified below.

Mitigation Measures/Remarks:

Archaeology: ROAD GRADING STIPULATIONS:

1) Two following two segments of road must be left undisturbed. Absolutely no grading is to be conducted in these areas. The grader operator must lift the blade above the ground surface. These two areas are shown on the attached map number 3 in red and will be flagged on ground with orange ribbon tied to bushes prior to grading in the general area.

B. ALPHA road 1.4 miles from junction with drag road (at Mexico border). This is a route segment of about 10 yards.

B. EXIT 6 road just to east of LITTLE SUNRISE. This is a route segment of several hundred yards.

2) Narrow roads marked in GREEN on map number 3 must not be made wider. They need to stay about 10-12' feet wide. Do not undercut banks with blade.

3) Drag roads (Marked in blue on map) must not be increased to include all previous drag marks. They must be only wide enough to accommodate the width of two drags plus a narrow travel lane in the middle. DO NOT grade the sides of the route just because the sides show some previous disturbance because of dragging or driving.

4) When several parallel routes exist, choose only one. Choose the most heavily traveled/disturbed route.

5) Grade only the roads or routes indicated on the map attached to this document.

Botany: ROAD GRADING STIPULATIONS:

Avoidance of vegetation outside construction zones whenever possible is necessary. Work crews should be able to recognize Wiggin's Croton within the Imperial Sand Dunes. Restricted disturbance can be beneficial to Croton as a species; however, individual plants should be avoided outside the construction zones where possible to maintain a reproductive stock.

Equipment operators should be aware of vehicle use that may try to pass during the project. Pointing users to wide areas, and areas of disturbance, will aid in avoiding vegetation and corresponding wildlife habitat. No woody trees (e.g. Palo Verde, Ironwood, Mesquite, Acacia, etc.) will be removed from washes (e.g. during operations repairing washouts) without prior clearance from the Resource Area Biologist or Botanist.

Wildlife: ROAD GRADING STIPULATIONS:

Within Management Areas (MA) only, a Border Patrol agent would walk in front of the grader, moving any flat-tailed horned lizards out of harm's way during the activity season (15 February to 15 November). No such clearance would be required from 16 November to 14 February within MA's or at any time outside of MAIls.

Field Manager: Greg Thompson Date: 4/23/02

Letter #: 4446

Date Received: 2/28/2026

Sender Names: 4413: Susan Becker

Emails: 4413: Susan.Becker@messages.fwwatch.org

Organizations:

Subject: Save the Colorado River Basin

DOI - . Dear Bureau of Reclamation, Any discussion of the future management of the Colorado River must account for how the water is used. The Bureau must use its authority to push the Basin states to reach a joint agreement that accepts the need for mandatory conservation measures and limits corporate water abuses. Overuse by major agribusiness and tech corporations threatens the basin and water supply for 40 million people. Considering this major threat of collapse, any plan going forward must include an immediate halt to the expansion of alfalfa, mega dairies, and data centers, and a significant rollback of the cultivation of crops that consume large quantities of water and are not suited to growth in highly arid climates. The vast majority of water from the Colorado River is used by big agribusiness, primarily for growing alfalfa. In 2024, the U.S. exported approximately 2.128 million metric tons of alfalfa hay. U.S. water should not be used for an export product. Across all seven Basin states, alfalfa farms consumed an estimated 2.1 trillion gallons of water in 2025, enough to supply the Basin's 40 million people with water for nearly 3 and a half years. Mega dairies, which produce significant pollution and threaten drinking water, consumed 82 billion gallons of water in 2022 across the Basin states (excluding Wyoming, for which no data were available). These agricultural uses are not efficient. Basin states applied 2.6 acre feet of water/acre - 70% higher than the US average - for crops ill-suited to arid climates. Finally, big technology companies across the Basin states are deploying water-hungry data centers with little regulation or regard for impacts on water resources. With the Colorado River significantly overstretched, every environmental analysis and plan for the future must consider how the River's resources are being used. The overuse of the Colorado River by big agribusiness and technology corporations - amid already record-low water levels and drought - has serious consequences that threaten accessible drinking water for 40 million people. I urge the Bureau of Reclamation to prioritize sustainability and the needs of the 40 million people relying on the Colorado River for drinking water over corporate profit. Sincerely, Susan Becker 101 Yeonas Cir SE Vienna, VA

Letter #: 7737

Date Received: 3/2/2026

Sender Names: 7682: John Belke

Emails: Not Provided

Organizations:

Subject: New Voicemail from (262) 332-2421 to PM_Bureau-Reclamation (Ext. 17782) on Mon Mar 2, 2026 13:03

Yes, my name is John Belke. My address is 57 North 169th Drive, Goodyear, Arizona, 85338. I do have concerns. I do not like to see Arizona be shortchanged. There are 50 states in this one country All states need to be represented properly and fairly in equal amount of water. For its citizens, and its growth. Seems to me like the upper basin is... taking more of the water than the lower basin, and namely, Arizona will be Cut. drastically. It's not fair. We all are in the same country, but different states. Be all to me, to me, read it with respect. Be fair and equal to all the states. All of them need a fair amount of water. Stay in a happy environment for citizens. We need to share. It's not any particular state's water. It's the country's water that needs to be divided up equally. Thank you for your time and your concern on this. My phone number is 262-332-2421 if you need anything else

Letter #: 5

Date Received: 1/27/2026

Sender Names: 5: Mark Belles

Emails: 5: glencanyon1188@gmail.com

Organizations:

Subject: Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead

DOI - . I understand that this is onoperations plan. Nevertheless strong consideration of potential improvements to the system are an important aspect for system operations.A significant effort must be made to assure that under all conditions that water can pass through Glen Canyon Dam. The inability of river outlet works to provide continuous water flow through them must be mitigated by some other means for water to pass through the dam. Failure to do so will result in de-watering the Colorado from Marble Canyon to the Little Colorado, and drastic lowering of water levels downstream of the Little Colorado.Destruction of the river cannot be allowed to happen.Please add my name of the mailing list for announcements regarding this project.Mark Belles13610 Bandanero Dr, Peyton, CO 80831

Letter #: 3506

Date Received: 2/26/2026

Sender Names: 3473: DSBened

Emails: 3473: dsbened@frontier.com

Organizations:

Subject: You MUST preserve & protect the Colorado River NOW!

DOI - . The Colorado River provides drinking water for 40 million people, supports Tribal nations, sustains farms and cities, and is the lifeblood of fragile desert ecosystems.But the Basin is facing:1. Record-low reservoir levels2. Increasing salinity and pollution risks3. Collapsing aquatic habitats4. Rising temperatures and reduced snowpack5. Growing threats to safe, reliable water suppliesThis EIS must reflect the reality of climate-driven water scarcity and prioritize clean water protections, ecosystem health, and equitable solutions, not simply divide up a shrinking supply.So I urge the Bureau of Reclamation to significantly strengthen the Post-2026 Colorado River Basin Draft EIS that proactively addresses the crisis that we face and ensure the public has an opportunity to comment on its revised proposal before issuing its final decision.Sincerely,Derek BenedictLynnwood, WA

Letter #: 251

Date Received: 2/5/2026

Sender Names: 252: Perri Benemelis

Emails: 252: pfbenem@gmail.com

Organizations:

Subject: Comments RE: Post-2026 Colorado River Operations

DOI - . Table L-1: The Arizona upper basin depletions drop from 33 kaf in 2027 to 18 kaf in 2060. The Arizona depletions are the only upper basin depletions that drop during the analysis period, and apparently reflect decommissioning of the NGS. The Arizona upper basin apportionment is assumed to be utilized by Navajo Nation, and Navajo Nation should be consulted regarding the depletion schedule that will be utilized in this analysis. Appendix J: The CRSS 602(a) algorithm includes 5.179 maf of "minimum power pool storage preservation." Continued inclusion of this preservation volume after two decades of drought, while at the same time modeling reductions up to 5.0 maf to lower division states make no sense and is in violation of Article IV(b) of the Colorado River Compact (Compact): "Subject to the provisions of this compact, water of the Colorado River System may be impounded and used for the generation of electrical power, but such impounding and use shall be subservient to the use and consumption of such water for agricultural and domestic purposes and shall not interfere with or prevent use for such dominant purposes."

Article III(d) of the Compact further notes that "The States of the Upper Division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of ten consecutive years reckoned in continuing progressive series beginning with the first day of October next succeeding the ratification of this compact." Reclamation's failure to model this provision of the Compact has prolonged the unwillingness of the Upper Division States to negotiate in good faith - the perception, and perhaps reality being that they have nothing to lose. There are many provisions of the Compact that remain in dispute at this time, but Reclamation's selective use of other Law of the River provisions in the development of this DEIS, while ignoring this Compact provision, is negligent and has perpetuated the multi-year stalemate that we are now faced with.

Letter #: 8381

Date Received: 3/2/2026

Sender Names: 8296: Perri Benemelis

Emails: 8296: pfbenem@gmail.com

Organizations:

Subject: Comment RE: Appendix J - P26 DEIS

DOI - . The Upper Basin demand schedule and calculation of 602(a) storage are incorrect and inconsistent with the terms of the Colorado River Compact. Appendix J of the DEIS reflects a "pre-shorted" demand for the Upper Basin, that is roughly 500 kaf greater than the previous upper basin demand schedules. Appendix J does not include an explanation of whether this discrepancy is accounted for as "unmet" Upper Basin demand, but it is described as a depletion volume. As a depletion volume, the calculation of 602(a) is inflated. The increasing Upper Basin demand schedule (except for the Arizona schedule which decreases over time) reflects the inclusion of proposed projects that are "concepts" rather than imminent depletions. As such, it is a wish list of uses that are unlikely to have a water supply given the last two decades of dry hydrology. These projects are not funded, not likely to be built, artificially inflate Upper Basin demand and drive deeper Lower Basin shortages. As such, this miscalculation of 602(a) storage results in water being withheld from existing Lower Basin beneficial uses. 602(a) storage that results in deeper Lower Basin shortage is inconsistent with Article III(d) of the Compact.

Letter #: 3751

Date Received: 2/27/2026

Sender Names: 3714: Mary Bennington

Emails: 3714: info@greatbasinwater.org

Organizations:

Subject: Mary Bennington Comments on Colorado River

Great Basin Water Network DOI - . The DEIS fails to evaluate the cumulative impacts of the alternatives. The Technical Appendices fail to fully review the impacts of air quality, water quality, and water availability on the communities, especially in the Lower Basin! It also fails to fully evaluate the impacts on the Lower Region MSCP (27 endangered species). In addition, the socioeconomic impacts on the communities is too narrowly evaluated and the Impacts on recreation facilities, refugia, park service units, federal infrastructure, and directly connected waterways of the Colorado River System are too narrowly reviewed.Three Alternatives Do Not Likely Comply With The Law Of The River. Programmatic Review Is Necessary And So Is Congressional Action. Endless litigation serves no one. The Law Of The River must be followed which leaves only two options. According to the DEIS, the No Action Alternative and Basic Coordination Alternative are among the only options that could avoid a legal challenge after a Record of Decision. Those options pose some of the worst outcomes for Lakes Powell and Mead. No course of action as put forth in the DEIS is a sufficient means of stabilizing the system under the current Law of the River framework. This is troubling considering Reclamation is predicting some of the most dire reservoir elevations ever in the coming two years.Reclamation should undertake a programmatic review as the states continue negotiating. This year's low flows will inevitably get people back to the negotiating table in a meaningful way. Congress will act when the reservoirs are in crisis. We have seen congressional, bi-partisan action multiple times in the past seven years. When Congress is ready, enlist the National Academy of Sciences to undertake a programmatic review in partnership with the Department of Interior, Reclamation and other cooperating agencies. The DEIS Fails To Consider Impacts On Irretrievable Resources By Sanctioning The Repurposing Of Water ResourcesThe DEIS offers multiple alternatives that impose varying levels of cuts in the Lower Basin and no meaningful cuts in the Upper Basin. Some alternatives mention the possibility of Upper Basin "conservation" but those offerings do not describe who, what, where and when. There is nothing steadfast for cuts in the Upper Basin.The DEIS also showcases a modified version of the 2016 Upper Basin Depletion Schedule that still assumes considerable new uses of water in the Upper Basin in the coming decades. Because of the limited resources available, there's no doubting that cuts imposed on the Lower Basin will be repurposed by the Upper Basin. That repurposing defeats the intent of this analysis. Once that water is re-appropriated by Upper Basin regulators, waters with established beneficial uses will not return to where those uses were first proven in the Lower Basin. This is highly suspect.Furthermore, we question how Reclamation can execute its recognized authority to force a curtailment in one basin but not even questioning how development of new appropriations in another part of the basin will impact the whole system and those who had to undertake curtailment. Upper Basin reservoirs are subject to the "apportionments" among the two basins, seven states and Mexico (See Colorado River Storage Project Act, Pub. L. No. 84-485, SS 4, 70 Stat. 107 (1956)). Reclamation has a great deal of say in how certain rights are managed in the system. But how can regulators sequester the differences between the starting and end points of a highly connected system where some users have established decades worth of use? This gray area is at the heart of the ongoing conflict among the seven states, and we request more information on this in the FEIS.DEIS Ignores Glen Canyon Dam's Antique PlumbingThe analysis in the DEIS fails to consider bypass, decommissioning, and other meaningful resolutions available at Glen Canyon Dam, which poses considerable concerns for water delivery and endangered species protections. We understand and respect the legal arguments for not including the One-Dam Alternative. But it is a mistake to not undertake comprehensive analysis on this matter. Keeping Lake Powell's elevations above 3550', 3525, and 3490' are not realistic scenarios for the long-term. Failure to include greater analysis on Glen Canyon Dam's river outlet works will ultimately cost us all -- imposing direct impacts on Lake Mead, Hoover Dam, other federal infrastructure, metropolitan areas, agricultural hubs, tribal resources, sensitive species, National Park Service units, U.S. Fish and Wildlife units, and other conservation areas in the Lower Basin.The DEIS' Purpose-And-Need Is Too Narrow And Segments Requisite Reviews. A wholistic approach to the entire system needs to be taken.

Reclamation recognizes the grave uncertainties we face if conditions do not improve on the river system. Reclamation also recognizes the direct connections the DEIS makes with upstream infrastructure associated with the Colorado River Storage Project units and in Lower Basin units at Parker Dam, Davis Dam, Imperial Dam, and Palo Verde. The DEIS would benefit from greater analyses in the technical appendices dealing with directly related impacts at the dams during low-flow periods. The same can be said for analyzing impacts at all Colorado River Storage Project facilities in low-flow periods too. They will be essential for propping up Lakes Powell and Mead. What will operations look like if CRSP and Lower Basin Infrastructure are only operating collectively at 10-20 percent of normal? What can we expect? To say that management at Mead and Powell are not directly connected to that management is implausible.If you have any additional questions please contact me.Mary Bennington(c) Great Basin Water Network. Powered by

weForms.

Letter #: 7216

Date Received: 3/2/2026

Sender Names: 7177: Karisha Benny

Emails: 7177: karishabenny@hotmail.com

Organizations:

Subject: Water proposal

DOI - . STOP BUILDING !!!! Sent from my Galaxy

Letter #: 9459

Date Received: 12/4/2024

Sender Names: 9317: Rachel Berge

Emails: 9317: rtallon@hotmail.com

Organizations:

Subject: Page 0565

I Support Recreation on the Colorado River Basin I am writing as a supporter and user of Lake Powell, Lake Mead and water in the west. I am a concerned citizen and supporter of responsible water and energy infrastructure management. I am writing regarding the proposed alternatives for the Post-2026 Colorado River Operation Guidelines. It is important to recognize the role that the dams within the Colorado River Basin play in ensuring energy reliability, irrigation, water storage, navigation, and regional economic stability. I appreciate the Bureau of Reclamation recognizing BlueRibbon Coalition's Path to 3588' Plan as an alternative considered and recreation as a whole in alternatives analyzed. Glen Canyon and Hoover Dam and the Colorado River Basin, face growing pressure from radical environmental activists and anti-dam interests who seek its decommissioning. These calls threaten the dam's essential functions on the Colorado River system, therefore we appreciate BOR recognizing that moving to a one dam system would not yield a resilient system and would be bad for the environment and the economy. As a recreation user, I support any alternative that recognizes and supports recreational opportunities within the Colorado River Basin. The Supply-Driven, Max Operational Flexibility and Enhanced Coordination Alternatives all identify release levels based off of low water levels, shortages or low inflows which will better protect the dams critical infrastructure. I support any alternative or blend of alternatives in which releases are based off of real water inflows and not maximum deliveries that could hurt the water storage system and ultimately recreation. I support keeping the most water in the reservoirs for recreation as possible. The nation cannot afford to treat these critical infrastructure assets as bargaining chips in speculative environmental campaigns. Lake Powell and Lake Mead are too important to lose, and its operation must be protected. I am writing to submit comments in support of the Enhanced Coordination Alternative as my first choice for the Post-2026 Colorado River Operational Guidelines, and the Maximum Operational Flexibility Alternative as my second choice. The Enhanced Coordination Alternative provides the most balanced and responsible path forward. By formally coordinating operations between Lake Powell and Lake Mead and adjusting releases based on conditions at both reservoirs, this approach reduces the risk of either reservoir reaching critically low elevations. Proactively balancing storage levels strengthens system resilience, protects hydropower generation and critical infrastructure, and promotes long-term sustainability across Post-2026 Colorado River 565 of 5176 the basin. Importantly, this alternative recognizes the need to respond earlier to declining conditions rather than waiting for crisis thresholds. In an era of prolonged drought and reduced inflows, a coordinated strategy that prevents catastrophic drawdowns is both fiscally and operationally prudent. As a second choice, I support the Maximum Operational Flexibility Alternative. While more aggressive, it prioritizes infrastructure protection and allows the Bureau to respond adaptively to worsening hydrologic conditions. Preserving operational integrity at Glen Canyon Dam and throughout the system must remain a top priority. Maintaining viable reservoir elevations is essential not only for water delivery and power generation, but also for recreation, tourism economies, and the communities that depend on stable lake access. Protecting recreation is fully compatible with responsible water management when operations are grounded in realistic hydrologic conditions. I respectfully urge you to adopt the Enhanced Coordination Alternative, or a final framework that incorporates its core balancing principles, to ensure a stable, resilient Colorado River system through 2060. Thank you for your consideration.

Letter #: 3259

Date Received: 2/27/2026

Sender Names: 3229: Abbie Bernstein

Emails: 3229: hedgebeast@aol.com

Organizations:

Subject: please protect the Colorado River

DOI - . Please protect the Colorado River. It is a national treasure and a regional resource.Sincerely,Abbie Bernstein

Letter #: 292

Date Received: 2/17/2026

Sender Names: 290: Dijana Besic

Emails: 290: dijana.besic89@gmail.com

Organizations:

Subject: Colorado river allocation

DOI - .Dear madam's and sirs-I am a long time resident of Las Vegas. As someone who's lived in this city for 27 years, I've seen the exponential pulsation growth we have had. It's pretty impressive to me that despite all that growth, we have still managed to reduce our water consumption. We receive less than 2% of the allocation and yet we seem to do the most with it. I must urge you to please not cut our water allocation further. Instead, focus more on the big spenders, like California, who use the most but give nothing back. They will not invest in water recycling or other conservation efforts unless their hand is forced through water cuts. I ask you to lease consider this opinion when making your decisions.RegardsDee

Letter #: 3768

Date Received: 2/26/2026

Sender Names: 3730: bethjane1220@netscape.net

Emails: 3730: bethjane1220@netscape.net

Organizations:

Subject: Protect the Colorado River

DOI - . The Colorado River is in crisis.After decades of overallocation, accelerating climate impacts, and shrinking supplies, the Colorado River Basin can no longer sustain business-as-usual water management.Yet the Bureau of Reclamation, the federal agency within the U.S. Department of the Interior that manages water infrastructure and supply across the western United States, has released a Draft Environmental Impact Statementfor how the Colorado River Basin water system will be managed after 2026. Simply put: it fails to meet this urgent moment. Sent from the all new AOL app for iOS

Letter #: 1216

Date Received: 2/25/2026

Sender Names: 1206: J. Beverly

Emails: 1206: jbeverly@illinois.edu

Organizations:

Subject: Please support a smarter future for the Colorado River, and all who depend on it

DOI - . Dear Bureau of Land Mangement As an American, I encourage the Bureau of Reclamation to combine elements from the proposed alternatives in the draft Environmental Impact Statement (DEIS) to ensure a sustainable future for the Colorado River with new, long-term guidelines that: - Provide clarity and predictability: continued crisis management puts everything and everyone in the basin at risk. New guidelines must promote conservation and respond to conditions on the ground; - Incorporate flexible, adaptive tools for conserving, storing, and managing water: new guidelines must allow for more flexibility in how water is stored and moved to protect and stabilize the system; - Embed environmental stewardship: the Colorado River is more than a plumbing system. New guidelines must account for the river itself and the bounty of life it sustains; - Provides for meaningful and voluntary Tribal participation grounded in sovereignty and self-determination: the 30 federally recognized Tribes in the Basin must be included in decision-making; and, - Preserve pathways for advancing in-basin mitigation and continued bi-national cooperation with Mexico. Thank you for your consideration. Sincerely, J. Beverly 803 Shurts St Urbana, IL 618016858 jbeverly@illinois.edu

Letter #: 3381

Date Received: 2/26/2026

Sender Names: 3350: Jessica E. Beverly

Emails: 3350: jbeverly@illinois.edu

Organizations:

Subject: Colorado River Basin Draft EIS

DOI - . As a concerned American, I encourage the Bureau to act for clean water, healthy ecosystems, and a livable future across the Colorado River Basin.The Colorado River's future depends on bold action, not incremental adjustments.There needs to be a management framework that protects clean water, communities, and ecosystems for generations to come. The Bureau has the opportunity to take meaningful action now to address the full reality of climate-driven water scarcity and the urgent need to protect water quality, ecosystems, and Basin communities.I urge the Bureau of Reclamation to significantly strengthen the Post-2026 Colorado River Basin Draft EIS that proactively addresses the crisis that we face and ensure the public has an opportunity to comment on its revised proposal before issuing its final decision.This EIS must reflect the reality of climate-driven water scarcity and prioritize clean water protections,ecosystem health, and equitable solutions, not simply divide up a shrinking supply.The Colorado River is already overallocated and shrinking. The Bureau must prioritize long-term sustainability, meaningful Tribal consultation, and enforceable reductions in demand, not simply identify new ways to divide a declining supply.The Colorado River cannot afford delay.Thank you for your consideration of my views on this matter.

Letter #: 324

Date Received: 2/12/2026

Sender Names: 322: Karen Blanchard

Emails: 322: BLANCHARD.DVMS@everyactioncustom.com

Organizations:

Subject: Public Comment on Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead DEIS

DOI - .Dear Carly Jerla Bureau of Reclamation,I was extremely lucky to get a private boater permit May 2025. The experience on the Colorado river was life changing for me at 63 yr old. This is a treasure that must be saved for future generations.Please continue the opportunities for high flow events to restore beaches and keep the Colorado river wild.There must be a viable daily flow to support the diverse habitat and wildlife along the grand canyon corridor as well as recreational opportunities. It is disgusting to hear that the river becomes dry before reaching the ocean.Obviously respect the treaties between US and sovereign nations.Farmers and Big Ag need water to produce food that sustains people. Cities can conserve water using permanent water restrictions for lawns and get rid of plants that can't live in the dessert. It needs to become a way of life.Sincerely,Dr. KAREN Blanchard1399 Winchester Dr Pocatello, ID 83201-4984BLANCHARD.DVMS@GMAIL.COM

Letter #: 1141

Date Received: 2/26/2026

Sender Names: 1131: Giles Blair

Emails: 1131: Giles.Blair@messages.fwwatch.org

Organizations:

Subject: Protect Drinking Water – Save the Colorado River Basin

DOI - . Dear Bureau of Reclamation, The biggest user of Colorado River water is the Imperial Irrigation District. It is adjacent to the Salton Sea, which could be refilled with sea water from the nearby Sea of Cortez. This is a perfect location for a large scale solar powered seawater desalination facility, and reduced demand for river water would allow Lake Mead and Lake Powell to refill. There was a time when the US Bureau of Reclamation would take on a project like this and get it done. I urge the Bureau of Reclamation to prioritize sustainability and the needs of the 40 million people relying on the Colorado River for drinking water over corporate profit. Sincerely, Giles Blair 3935 Jefferson St Carlsbad, CA

Letter #: 9433

Date Received: 12/4/2024

Sender Names: 9291: Sage Bloom

Emails: 9291: keno_shy.09@icloud.com

Organizations:

Subject: Page 0535

I Support Recreation on the Colorado River Basin I am writing as a supporter and user of Lake Powell, Lake Mead and water in the west. I am a concerned citizen and supporter of responsible water and energy infrastructure management. I am writing regarding the proposed alternatives for the Post-2026 Colorado River Operation Guidelines. It is important to recognize the role that the dams within the Colorado River Basin play in ensuring energy reliability, irrigation, water storage, navigation, and regional economic stability. I appreciate the Bureau of Reclamation recognizing BlueRibbon Coalition's Path to 3588' Plan as an alternative considered and recreation as a whole in alternatives analyzed. Glen Canyon and Hoover Dam and the Colorado River Basin, face growing pressure from radical environmental activists and anti-dam interests who seek its decommissioning. These calls threaten the dam's essential functions on the Colorado River system, therefore we appreciate BOR recognizing that moving to a one dam system would not yield a resilient system and would be bad for the environment and the economy. As a recreation user, I support any alternative that recognizes and supports recreational opportunities within the Colorado River Basin. The Supply-Driven, Max Operational Flexibility and Enhanced Coordination Alternatives all identify release levels based off of low water levels, shortages or low inflows which will better protect the dams critical infrastructure. I support any alternative or blend of alternatives in which releases are based off of real water inflows and not maximum deliveries that could hurt the water storage system and ultimately recreation. I support keeping the most water in the reservoirs for recreation as possible. The nation cannot afford to treat these critical infrastructure assets as bargaining chips in speculative environmental campaigns. Lake Powell and Lake Mead are too important to lose, and its operation must be protected. I am writing to you not just as a constituent, but as someone whose life has been deeply shaped by Lake Powell. I grew up going there multiple times a year with my family. It became more than a vacation destination -- it became a second home. Some of my most meaningful memories were made on that water. It's where I learned to appreciate nature, family, responsibility, and the beauty of our Southwest. Watching the water levels drop year after year is heartbreaking. The possibility of Post-2026 Colorado River 535 of 5176 losing Lake Powell -- or seeing it permanently diminished -- truly hurts. This lake is not just a reservoir. It supports communities, families, small businesses, tourism, recreation, and ecosystems across Arizona and beyond. I understand the complexity of water policy in the Colorado River Basin, but I am asking you to please prioritize real, long-term solutions that protect Lake Powell and the future of water in our region. We need leadership, collaboration, conservation innovation, and action -- not delay. For many of us, this isn't political. It's personal. Please do everything in your power to protect Lake Powell and ensure it remains a thriving resource for generations to come. Sage Bloom Post-2026 Colorado River

Letter #: 992

Date Received: 2/18/2026

Sender Names: 982: Rosa Bockian

Emails: 982: rosebockian@gmail.com

Organizations:

Subject: My citizen duty and response to EIS- 2026 operational decision

DOI - . To whom it may concern,I'm writing to comment on the Draft Environmental Impact Statement (EIS) for Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead. This draft certainly do not address current observed patterns to meet its stated purpose and need, as it ignores options that would provide operational flexibility and impactful environmental benefits. Please consider the following points:1. The EIS must analyze the full bypass of Glen Canyon Dam. As climate change continues to reduce flows on the river, the dam becomes more of a liability preventing water flow downstream. Analyzing the full bypass of the dam would give the river, its users, and its ecosystem the most flexibility and adaptability for the foreseen drier future. By not including Reclamation's existing plans to modify the dam in this EIS, it offers limited options for all stakeholders.2. The EIS must analyze a "Fill Mead First" model, prioritizing water storage in Lake Mead before considering Lake Powell. Scientific observations for the past decade shows that there hasn't been enough water in the Colorado's mainstem reservoirs to fill either Lake Powell or Lake Mead. If there isn't enough water to fill either one, it doesn't make sense to needlessly drown the fragile yet important ecosystem of Glen Canyon USA let a national park. By filling Lake Mead first, we can give Glen Canyon the opportunity to continue its amazing natural restoration observable in the last 5 years. By only modelling scenarios with Powell dropping to 3,500 feet above sea level, the EIS ignores important storage paradigms that could benefit the entire basin. 3. The EIS should have acknowledged the critical benefits of emerging resources in Glen Canyon into its models. In the years since Lake Powell reservoir has declined, there has been an amazing reemergence of wonders like Cathedral in the Desert, Gregory Natural Bridge, as well as vital riparian ecosystems, and historic archeological sites. While the EIS acknowledges some of the values of emerging resources in Glen Canyon, its impact analyses erroneously to assume that putting more water in Lake Powell reservoir would somehow benefit these resources.Please allow scientific observations and data drive your decisions on this critical and fragile ecosystem to benefit future generations. Thank you for your consideration. Rosa BockianBilingual STEM Educator.

Letter #: 230

Date Received: 1/29/2026

Sender Names: 231: Gregory Bolla

Emails: Not Provided

Organizations:

Subject: CR DEIS Public Meeting Comments

The EIS tends to focus on what to do for the changing supply, so I was curious, or just had a question about, the potential evaluation of efforts to alter the supply of water in whatever way people can? I'm thinking specifically about the desalination plant in Yuma, and any sort of lessons that we can glean from the efforts there over the last number of years.

Letter #: 8716

Date Received: 3/3/2026

Sender Names: 8633: James Bond

Emails: 8633: 007londonspy@gmail.com

Organizations:

Subject: Colorado water

DOI - . Lets stop building 3 story apartments complexes and new homes in Glendale AZ and other places in the valley! The City Council did us wrong by approving these bldgs! It's too late to build our aquifer!

Letter #: 3672

Date Received: 2/27/2026

Sender Names: 3635: tika bordélon

Emails: 3635: tikab1@gmail.com

Organizations:

Subject: Colorado River

DOI - . The Colorado River provides drinking water for 40 million people, supports Tribal nations, sustains farms and cities, and is the lifeblood of fragile desert ecosystems.But the Basin is facing:Record-low reservoir levelsIncreasing salinity and pollution risksCollapsing aquatic habitatsRising temperatures and reduced snowpackGrowing threats to safe, reliable water suppliesThis EIS must reflect the reality of climate-driven water scarcity and prioritize clean water protections, ecosystem health, and equitable solutions, not simply divide up a shrinking supply.

Letter #: 3198

Date Received: 2/26/2026

Sender Names: 3168: Dean Borgeson

Emails: 3168: dborgeson@crosslake.net

Organizations:

Subject: Post-2026 Colorado River Basin Draft EIS

DOI - . The Colorado River is in crisis.After decades of overallocation, accelerating climate impacts, and shrinking supplies, the Colorado River Basin can no longer sustain business-as-usual water management.Yet the Bureau of Reclamation, the federal agency within the U.S. Department of the Interior that manages water infrastructure and supply across the western United States, has released a Draft Environmental Impact Statement for how the Colorado River Basin water system will be managed after 2026. Simply put: it fails to meet this urgent moment. The Draft EIS lays out several possible approaches that the agency is considering taking but does not clearly identify which recommendation is its "preferred alternative," which it is legally required to do. Furthermore, the alternatives the agency has proposed are inadequate to meet the crisis that the system faces.We are urging the Bureau to put forward its "preferred alternative" and give Tribes, impacted communities, and the public a meaningful chance to comment on its recommendation before a final decision is made. If the Bureau does not include its "preferred alternative" in its Draft EIS and waits to do so in its final action, the public will have no opportunity to comment on the actual proposal the Bureau recommends. Dean Borgeson36030 Bonnie Lakes RoadCrosslake, MN 56442

Letter #: 3566

Date Received: 2/27/2026

Sender Names: 3533: Virginia Bortoluzzo

Emails: 3533: virginiabortoluzzo@gmail.com

Organizations:

Subject: Colorado River

DOI - . The future of the Colorado River depends on bold action, not gradual adjustments.We need a management framework that protects clean water, communities, and ecosystems for future generations. The Department has the opportunity to take meaningful action now to address the reality of climate change-driven water scarcity and the urgent need to protect water quality, ecosystems, and communities in the watershed.I urge the Bureau of Reclamation to significantly strengthen the preliminary version of the post-2026 Colorado River Basin Environmental Impact Assessment (EIA), which proactively addresses the crisis we face, and to ensure that the public has the opportunity to comment on the revised proposal before the final decision is issued.The Colorado River is already overburdened and dwindling. The Department must prioritize long-term sustainability, meaningful consultation with Indigenous tribes, and effective demand reductions, not simply identify new ways to divide an ever-dwindling supply.Thank you so muchVIRGINIA

Letter #: 2943

Date Received: 2/18/2026

Sender Names: 2915: Barbara Boyka

Emails: 2915: bbtucson@msn.com

Organizations:

Subject: CAP WATER / ARIZO

DOI - . I read that CAP water would be cut 77% in Arizona. You do know this is a desert. You do know that data centers are being built here daily using huge amounts of our water. You do know that we have a water shortage. The Hoover dam cannot operate without water. The water levels are getting lower as we speak. So not only will be without enough water, there is the real possibility that we will have our electric cut as well. The answer to some of this is to stop urban sprawl, limit new building, and for goodness sake, somebody take charge and stop letting data centers be built in the desert! I know you have noting to do with those issues, but all of that affects the people of Arizona, and getting less water is not the answer, but it is a start. Please allot us more water. Thank you.

Letter #: 3339

Date Received: 2/27/2026

Sender Names: 3308: Dave Brach

Emails: 3308: info@greatbasinwater.org

Organizations:

Subject: Dave Brach Comments on Colorado River

Great Basin Water Network DOI - . Hi, I am writing to comment on the Post-2026 Colorado River Reservoir Operations DEIS. The document fails to consider the followingImpacts on recreation facilities, refugia, park service units, federal infrastructure, and directly connected waterways of the Colorado River System are too narrowly reviewed in the Technical AppendicesImpacts on Lower Region MSCP (27 species including listed Endangered Species) are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Reclamation should undertake a programmatic review as the states continue negotiating. This year's low flows will inevitably get people back to the negotiating table in a meaningful way. Congress will act when the reservoirs are in crisis. We have seen congressional, bi-partisan action multiple times in the past seven years. When Congress is ready, enlist the National Academy of Sciences to undertake a programmatic review in partnership with the Department of Interior, Reclamation and other cooperating agencies. This document is not the beginning of the end. We believe it is merely the end of the beginning.the conclusions of the DEIS could bring about conflict over tribal water rights in the Upper and Lower Basins -- especially where settlements have been established. There must be consideration of reducing, at a 1-for-1 rate, junior non-tribal use for those senior tribal rights that have not yet been put to use. How Reclamation would undertake this matter in the Upper and Lower Basin must included in any FEIS. Also, there must be consideration of how Reclamation would prevent new Upper Basin appropriations put forth by non-native water users from using, in a de facto sense, settled and adjudicated rights of Lower Basin tribes.The analysis in the DEIS fails to consider bypass, decommissioning, and other meaningful resolutions available at Glen Canyon Dam, which poses considerable concerns for water delivery and endangered species protections. We understand and respect the legal arguments for not including the One-Dam Alternative. But it is a mistake to not undertake comprehensive analysis on this matter. Keeping Lake Powell's elevations above 3550', 3525, and 3490' are not realistic scenarios for the long-term. Failure to include greater analysis on Glen Canyon Dam's river outlet works will ultimately cost us all -- imposing direct impacts on Lake Mead, Hoover Dam, other federal infrastructure, metropolitan areas, agricultural hubs, tribal resources, sensitive species, National Park Service units, U.S. Fish and Wildlife units, and other conservation areas in the Lower Basin.If you have any additional questions please contact me.Dave Brach(c)
Great Basin Water Network. Powered by weForms.

Letter #: 3356

Date Received: 2/26/2026

Sender Names: 3325: Scott Brame

Emails: 3325: sebrame@everyactioncustom.com

Organizations:

Subject: Public Comment on Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead DEIS

DOI - . Dear Carly Jerla Bureau of Reclamation, Hi I am submitting comments on the Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead - Draft Environmental Impact Statement (Post-2026 Operations). I have been running whitewater rivers in a kayak, canoe, or raft for over 50 years. In 2024, I completed my fourth trip down the Grand Canyon on a private trip. On private trips, you guide your own boat and cook your own meals - there are no professional guides on these trips. I have seen a vast number of changes to the Colorado River over the years, and the Colorado River through the Grand Canyon is a river in crisis. I urge you to take immediate action to protect the future of the Colorado River Basin and to recognize the many ecosystem services that the river and its tributaries provide. I am requesting that the Bureau of Reclamation work directly with the seven basin states and Tribes to ensure that water conservation measures are effective and capable of supporting a living river for generations to come. This is what they need to prioritize their efforts on: 1. Allowing High Flow Events to occur on a regular basis in the Grand Canyon for the purposes of sediment and nutrient transport by actively managing water storage in Lake Powell and the operation of the Glen Canyon Dam. 2. Perform infrastructure updates at Glen Canyon Dam immediately to ensure that the dam can allow downstream flows of variable quantity as reservoir levels become lower and less predictable. This will be a tall task because the BOR made serious errors in the construction because they made the fatal flaw of assuming that upstream flows would always remain constant. 3. Enact conservation measures between the Upper and Lower Basins to ensure the ability to maintain minimum flows year round in the Grand Canyon while at the same time having the ability to increase flows at regular intervals to support both the river ecosystem and river recreation opportunities. 4. Implement water releases from Blue Mesa and Flaming Gorge Reservoirs that take into consideration impacts to river ecosystems and recreation opportunities and seek to provide multiple benefits whenever possible. 5. Finally, Post-2026 Operations must analyze and consider how operations will affect daily flows in the Grand Canyon and upstream river segments before a final decision is determined, not after. Thank for the opportunity to comment. Sincerely, Mr. Scott Brame 207 Augusta Rd Clemson, SC 29631-1951 sebrame@gmail.com

Letter #: 553

Date Received: 2/25/2026

Sender Names: 543: Kevin Bran

Emails: 543: kevinbran@yahoo.com

Organizations:

Subject: Post-2026 Draft EIS Public Comment

DOI - . To whom it may concern, I'm writing to comment on the Draft Environmental Impact Statement (EIS) for Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead. This Draft fails to meet its stated purpose and need, as it ignores options that would provide operational flexibility and environmental benefits. Specifically, the new Colorado River guidelines must: - Analyze river-level bypass of Glen Canyon Dam to ensure naturalized flows through the Grand Canyon, continue Glen Canyon's ecological restoration, and provide maximum operational flexibility in the system. The dam has become a liability preventing water from flowing downstream. Failing to study river-level bypass needlessly limits options for the river, its users, and its ecosystems. - Study a "Fill Mead First" option, prioritizing water storage in Lake Mead before Powell. Today's hydrology cannot fill either Lake Mead and Lake Powell. Given this reality, it doesn't make sense to continue drowning the national park-caliber canyons in Glen. Analyzing different variations of a one-reservoir option would benefit the ecosystems and management of the entire Basin. - Acknowledge the extensive emerging resources in Glen Canyon. In the years since Lake Powell reservoir has declined, there has been an amazing reemergence of wonders like Cathedral in the Desert and Gregory Natural Bridge, as well as vital riparian ecosystems, cultural sites, and new recreation opportunities. These resources must be given equal value to other resources across the Basin. - Require curtailment plans from each state, and prohibit new non-Tribal diversions. Federal agencies must take the supply and demand crisis seriously, imploring each state to produce plans to reduce demand. These agencies should also put a moratorium on new water diversions, with the exception of Tribes with senior water rights. Thank you for your consideration.

Letter #: 4041

Date Received: 2/27/2026

Sender Names: 3997: Michael Branch

Emails: 3997: info@greatbasinwater.org

Organizations:

Subject: Michael Branch Comments on Colorado River

Great Basin Water Network DOI - . The DEIS Avoids A Hard Look At Cumulative ImpactsThe document fails to consider the following:The DEIS ignores the complete geographic scope, and the impacts of that narrowed scope from curtailments, inaction, and limited action in directly affected communities in the Lower Colorado River Basin.Air quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Water quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Water availability impacts on communities in the Lower Colorado River Basin are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Impacts on Lower Region MSCP (27 species including listed Endangered Species) are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Socioeconomic impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts on Lower Colorado River communities that will result from the alternatives in the DEIS.Impacts on recreation facilities, refugia, park service units, federal infrastructure, and directly connected waterways of the Colorado River System are too narrowly reviewed in the Technical Appendices.Three Alternatives Do Not Likely Comply With The Law Of The River. Programmatic Review Is Necessary And So Is Congressional ActionIn Appendix C, the DEIS implies that modeling justifying three of the proposals "may not be implementable" because potential non-compliance with "laws, contracts, agreements, and other authorities that are part of the Colorado River legal and contractual framework referred to as Law of the River." That is a reference to the Enhanced Coordination, Maximum Operational Flexibility, and Supply Driven Alternative. Without any deal in place among the states or congressional action, a Record of Decision supporting those alternatives poses legal challenges that may be insurmountable.Therefore, according to the DEIS, the No Action Alternative and Basic Coordination Alternative are among the only options that could avoid a legal challenge after a Record of Decision.Those options pose some of the worst outcomes for Lakes Powell and Mead. We believe that no course of action as put forth in the DEIS is a sufficient means of stabilizing the system under the current Law of the River framework. This is troubling considering Reclamation is predicting some of the most dire reservoir elevations ever in the coming two years.Reclamation should undertake a programmatic review as the states continue negotiating. This year's low flows will inevitably get people back to the negotiating table in a meaningful way. Congress will act when the reservoirs are in crisis. We have seen congressional, bi-partisan action multiple times in the past seven years. When Congress is ready, enlist the National Academy of Sciences to undertake a programmatic review in partnership with the Department of Interior, Reclamation and other cooperating agencies. This document is not the beginning of the end. We believe it is merely the end of the beginning.The DEIS Fails To Consider Impacts On Irretrievable Resources By Sanctioning The Repurposing Of Water ResourcesThe DEIS offers multiple alternatives that impose varying levels of cuts in the Lower Basin and no meaningful cuts in the Upper Basin. Some alternatives mention the possibility of Upper Basin "conservation" but those offerings do not describe who, what, where and when. There is nothing steadfast for cuts in the Upper Basin.The DEIS also showcases a modified version of the 2016 Upper Basin Depletion Schedule that still assumes considerable new uses of water in the Upper Basin in the coming decades. Because of the limited resources available, there's no doubting that cuts imposed on the Lower Basin will be repurposed by the Upper Basin. That repurposing defeats the intent of this analysis. Once that water is re-appropriated by Upper Basin regulators, waters with established beneficial uses will not return to where those uses were first proven in the Lower Basin. This is highly suspect.Furthermore, we question how Reclamation can execute its recognized authority to force a curtailment in one basin but not even questioning how development of new appropriations in another part of the basin will impact the whole system and those who had to undertake curtailment. Upper Basin reservoirs

are subject to the "apportionments" among the two basins, seven states and Mexico (See Colorado River Storage Project Act, Pub. L. No. 84-485, SS 4, 70 Stat. 107 (1956)). Reclamation has a great deal of say in how certain rights are managed in the system. But how can regulators sequester the differences between the starting and end points of a highly connected system where some users have established decades worth of use? This gray area is at the heart of the ongoing conflict among the seven states, and we request more information on this in the FEIS.We fear that it is an unacceptable practice to allow the Upper Basin to repurpose water from Lower Basin in the name of state-led permitting efforts in Colorado, New Mexico, Utah and Wyoming. Further declines in the system will challenge Reclamation's mission to protect infrastructure, ecosystems, and communities. It means less water making its way through the southernly reaches of the system in the majority of years if current trends continue. Every state needs a curtailment plan on the Colorado River. This DEIS fails to compel the Upper Basin States to meaningfully consider how they will act to protect federal assets and resources.Finally, this could also bring about conflict over tribal water rights in the Upper and Lower Basins -- especially where settlements have been established. There must be consideration of reducing, at a 1-for-1 rate, junior non-tribal use for those senior tribal rights that have not yet been put to use. How Reclamation would undertake this matter in the Upper and Lower Basin must included in any FEIS. Also, there must be consideration of how Reclamation would prevent new Upper Basin appropriations put forth by non-native water users from using, in a de facto sense, settled and adjudicated rights of Lower Basin tribes.DEIS Ignores Glen Canyon Dam's Antique PlumbingThe analysis in the DEIS fails to consider bypass, decommissioning, and other meaningful resolutions available at Glen Canyon Dam, which poses considerable concerns for water delivery and endangered species protections. We understand and respect the legal arguments for not including the One-Dam Alternative. But it is a mistake to not undertake comprehensive analysis on this matter. Keeping Lake Powell's elevations above 3550', 3525, and 3490' are not realistic scenarios for the long-term. Failure to include greater analysis on Glen Canyon Dam's river outlet works will ultimately cost us all -- imposing direct impacts on Lake Mead, Hoover Dam, other federal infrastructure, metropolitan areas, agricultural hubs, tribal resources, sensitive species, National Park Service units, U.S. Fish and Wildlife units, and other conservation areas in the Lower Basin.The DEIS' Purpose-And-Need Is Too Narrow And Segments Requisite ReviewsReclamation, admittedly so in its Purpose and Need statement, recognizes the grave uncertainties we face if conditions do not improve on the river system. Reclamation also recognizes the direct connections the DEIS makes with upstream infrastructure associated with the Colorado River Storage Project units and in Lower Basin units at Parker Dam, Davis Dam, Imperial Dam, and Palo Verde. The DEIS would benefit from greater analyses in the technical appendices dealing with directly related impacts at the dams during low-flow periods. The same can be said for analyzing impacts at all Colorado River Storage Project facilities in low-flow periods too. They will be essential for propping up Lakes Powell and Mead. What will operations look like if CRSP and Lower Basin Infrastructure are only operating collectively at 10-20 percent of normal? What can we expect? To say that management at Mead and Powell are not directly connected to that management is implausible.If you have any additional questions please contact me.Michael Branch(c) Great Basin Water Network.
Powered by weForms.

Letter #: 4521

Date Received: 2/28/2026

Sender Names: 4488: J Brennan

Emails: 4488: info@greatbasinwater.org

Organizations:

Subject: J Brennan Comments on Colorado River

Great Basin Water Network DOI - . The DEIS Avoids A Hard Look At Cumulative ImpactsThe document fails to consider the following:The DEIS ignores the complete geographic scope, and the impacts of that narrowed scope from curtailments, inaction, and limited action in directly affected communities in the Lower Colorado River Basin.Air quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Water quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Water availability impacts on communities in the Lower Colorado River Basin are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Impacts on Lower Region MSCP (27 species including listed Endangered Species) are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Socioeconomic impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts on Lower Colorado River communities that will result from the alternatives in the DEIS.Impacts on recreation facilities, refugia, park service units, federal infrastructure, and directly connected waterways of the Colorado River System are too narrowly reviewed in the Technical Appendices.Three Alternatives Do Not Likely Comply With The Law Of The River. Programmatic Review Is Necessary And So Is Congressional ActionIn Appendix C, the DEIS implies that modeling justifying three of the proposals "may not be implementable" because potential non-compliance with "laws, contracts, agreements, and other authorities that are part of the Colorado River legal and contractual framework referred to as Law of the River." That is a reference to the Enhanced Coordination, Maximum Operational Flexibility, and Supply Driven Alternative. Without any deal in place among the states or congressional action, a Record of Decision supporting those alternatives poses legal challenges that may be insurmountable.Therefore, according to the DEIS, the No Action Alternative and Basic Coordination Alternative are among the only options that could avoid a legal challenge after a Record of Decision.Those options pose some of the worst outcomes for Lakes Powell and Mead. We believe that no course of action as put forth in the DEIS is a sufficient means of stabilizing the system under the current Law of the River framework. This is troubling considering Reclamation is predicting some of the most dire reservoir elevations ever in the coming two years.Reclamation should undertake a programmatic review as the states continue negotiating. This year's low flows will inevitably get people back to the negotiating table in a meaningful way. Congress will act when the reservoirs are in crisis. We have seen congressional, bi-partisan action multiple times in the past seven years. When Congress is ready, enlist the National Academy of Sciences to undertake a programmatic review in partnership with the Department of Interior, Reclamation and other cooperating agencies. This document is not the beginning of the end. We believe it is merely the end of the beginning.The DEIS Fails To Consider Impacts On Irretrievable Resources By Sanctioning The Repurposing Of Water ResourcesThe DEIS offers multiple alternatives that impose varying levels of cuts in the Lower Basin and no meaningful cuts in the Upper Basin. Some alternatives mention the possibility of Upper Basin "conservation" but those offerings do not describe who, what, where and when. There is nothing steadfast for cuts in the Upper Basin.The DEIS also showcases a modified version of the 2016 Upper Basin Depletion Schedule that still assumes considerable new uses of water in the Upper Basin in the coming decades. Because of the limited resources available, there's no doubting that cuts imposed on the Lower Basin will be repurposed by the Upper Basin. That repurposing defeats the intent of this analysis. Once that water is re-appropriated by Upper Basin regulators, waters with established beneficial uses will not return to where those uses were first proven in the Lower Basin. This is highly suspect.Furthermore, we question how Reclamation can execute its recognized authority to force a curtailment in one basin but not even questioning how development of new appropriations in another part of the basin will impact the whole system and those who had to undertake curtailment. Upper Basin reservoirs

are subject to the "apportionments" among the two basins, seven states and Mexico (See Colorado River Storage Project Act, Pub. L. No. 84-485, SS 4, 70 Stat. 107 (1956)). Reclamation has a great deal of say in how certain rights are managed in the system. But how can regulators sequester the differences between the starting and end points of a highly connected system where some users have established decades worth of use? This gray area is at the heart of the ongoing conflict among the seven states, and we request more information on this in the FEIS.We fear that it is an unacceptable practice to allow the Upper Basin to repurpose water from Lower Basin in the name of state-led permitting efforts in Colorado, New Mexico, Utah and Wyoming. Further declines in the system will challenge Reclamation's mission to protect infrastructure, ecosystems, and communities. It means less water making its way through the southernly reaches of the system in the majority of years if current trends continue. Every state needs a curtailment plan on the Colorado River. This DEIS fails to compel the Upper Basin States to meaningfully consider how they will act to protect federal assets and resources.Finally, this could also bring about conflict over tribal water rights in the Upper and Lower Basins -- especially where settlements have been established. There must be consideration of reducing, at a 1-for-1 rate, junior non-tribal use for those senior tribal rights that have not yet been put to use. How Reclamation would undertake this matter in the Upper and Lower Basin must included in any FEIS. Also, there must be consideration of how Reclamation would prevent new Upper Basin appropriations put forth by non-native water users from using, in a de facto sense, settled and adjudicated rights of Lower Basin tribes.DEIS Ignores Glen Canyon Dam's Antique PlumbingThe analysis in the DEIS fails to consider bypass, decommissioning, and other meaningful resolutions available at Glen Canyon Dam, which poses considerable concerns for water delivery and endangered species protections. We understand and respect the legal arguments for not including the One-Dam Alternative. But it is a mistake to not undertake comprehensive analysis on this matter. Keeping Lake Powell's elevations above 3550', 3525, and 3490' are not realistic scenarios for the long-term. Failure to include greater analysis on Glen Canyon Dam's river outlet works will ultimately cost us all -- imposing direct impacts on Lake Mead, Hoover Dam, other federal infrastructure, metropolitan areas, agricultural hubs, tribal resources, sensitive species, National Park Service units, U.S. Fish and Wildlife units, and other conservation areas in the Lower Basin.The DEIS' Purpose-And-Need Is Too Narrow And Segments Requisite ReviewsReclamation, admittedly so in its Purpose and Need statement, recognizes the grave uncertainties we face if conditions do not improve on the river system. Reclamation also recognizes the direct connections the DEIS makes with upstream infrastructure associated with the Colorado River Storage Project units and in Lower Basin units at Parker Dam, Davis Dam, Imperial Dam, and Palo Verde. The DEIS would benefit from greater analyses in the technical appendices dealing with directly related impacts at the dams during low-flow periods. The same can be said for analyzing impacts at all Colorado River Storage Project facilities in low-flow periods too. They will be essential for propping up Lakes Powell and Mead. What will operations look like if CRSP and Lower Basin Infrastructure are only operating collectively at 10-20 percent of normal? What can we expect? To say that management at Mead and Powell are not directly connected to that management is implausible.If you have any additional questions please contact me.J Brennan(c) Great Basin Water Network. Powered
by weForms.

Letter #: 2379

Date Received: 2/24/2026

Sender Names: 2359: Summer Brenner

Emails: 2359: summerbrenner@gmail.com

Organizations:

Subject: We depend on the Colorado River and a SMART future

DOI - . Dear Bureau of Land Mangement Here are elements from the proposed alternatives in the draft Environmental Impact Statement (DEIS) to ensure a sustainable future for the Colorado River with new, long-term guidelines that: - Clarity and predictability to avoid continued crisis management - Flexible, adaptive tools for conserving, storing, and managing water - Ensure environmental stewardship: the Colorado River to account for the river itself and the bounty of life it sustains - Tribal participation grounded in sovereignty and self-determination - Preserve pathways for advancing in-basin mitigation and continued binational cooperation with Mexico THANK YOU! Summer Brenner Sincerely, Summer Brenner 1727 Addison St Berkeley, CA 94703-1501 summerbrenner@gmail.com

Letter #: 8218

Date Received: 3/2/2026

Sender Names: 8142: Pj Breslin

Emails: 8142: Pj.Breslin@messages.fwwatch.org

Organizations:

Subject: Protect Drinking Water – Save the Colorado River Basin

DOI - . Dear Bureau of Reclamation, The Colorado River is in crisis, yet discussions of future management alternatives do not account for how the water is used. The Bureau must use its authority to push the Basin states to reach a joint agreement that accepts the need for mandatory conservation measures limiting corporate water abuses. Overuse by private jet polluters, fossil fuel polluters, major agribusiness and tech corps, threaten the basin and water supply for 40 million people. Considering this major threat of collapse, any plan going forward must include an immediate halt to the expansion of alfalfa, mega dairies, data centers and disproportionately polluting general aviation abuses, and a significant rollback of the cultivation of crops that consume large quantities of water and are not suited to growth in highly arid climates. The vast majority of water from the Colorado River is used by fossil fuel evaporation ponds and general aviation wastes, big agribusiness for growing alfalfa, a feedstock for cattle on factory farms. Across all seven Basin states, alfalfa farms consumed an estimated 2.1 trillion gallons of water in 2025, enough to supply the Basin's 40 million people with water for nearly 3 and a half years, unless polluted by gasholes and their private jet waste and abuses. Mega dairies, which produce significant pollution and threaten drinking water, consumed 82 billion gallons of water in 2022 across the Basin states (excluding Wyoming, for which no data were available). These uses are not efficient. Basin states applied 2.6 acre feet of water/acre - 70% higher than the US average - for crops, gasholes, and evaporation ponds, are ill-suited to arid climates. Finally, big technology companies across the Basin states are deploying water-hungry data centers with little regulation or regard for impacts on water resources. With the Colorado River significantly overstretched, every environmental analysis and plan for the future must consider how the River's resources are being used. The overuse of the Colorado River by rich gasholes, big agribusiness and technology corporations - amid already record-low water levels and drought - has serious consequences that threaten accessible drinking water for 40 million people. I urge the Bureau of Reclamation to prioritize sustainability and the needs of the 40 million people relying on the Colorado River for drinking water over corporate profit. Sincerely, Pj Breslin Box 4law Rifle, CO

Letter #: 8172

Date Received: 3/2/2026

Sender Names: 8099: shelby brown

Emails: 8099: shelbyb519@gmail.com

Organizations:

Subject: Fwd: Comments on Colorado River Agreement

DOI - . ---------- Forwarded message --------- From: shelby brown <shelbyb519@gmail.com> Date: Mon, Mar 2, 2026 at 12:32 PM Subject: Comments on Colorado River Agreement To: <crbpost2026@isbr.gov> Good afternoon. Thank you for the opportunity to provide my comments on the referenced agreement. While I completely understand the need for all of us to conserve our precious water supply, and even accept a reasonable reduction to our allotment, I do not understand how it can be fair to force Arizona to take disproportionately larger cuts than other states, specifically Colorado and Utah. In my many years in water-related work, I saw numerous projects designed to conserve our precious water, such as groundwater recharge, canal development, and water storage facilities. Arizona continues to grow in population, and harsh cuts in our water allotment could mean unfair hardships for the State's citizenry. Please do not penalize the State of Arizona because other states have not been as proactive as we have. In fact, Arizona's efforts to conserve water should be rewarded with smaller cuts to our allotment, not larger. In addition, we must not forget the Native Americans such as the Navajo, who already have severe challenges in providing water to their tribal members. A severe cut to the State's allotment could have devastating results for them. I do not like the thought of pursuing actions through the Courts. In many cases, I believe it's nothing more than a pathetic waste of taxpayer dollars. However, in this case, I understand where the State's representatives are coming from, and I would support them in the effort to protect our precious resources. Thank you again for the opportunity to provide my comments. Shelby Brown

Letter #: 3562

Date Received: 2/26/2026

Sender Names: 3529: Felicia Bruce

Emails: 3529: spmomtch1@aol.com

Organizations:

Subject: Colorado River Needs Protection

DOI - . The draft of the government document is inadequate. That is why, as a concerned conservationist I urge the Bureau of Reclamation to strengthen the Draft EIS by:Centering climate science and realistic supply projectionsProtecting water quality and reducing pollution impacts as flows declinePreventing further ecological collapse in the Colorado River Delta and Basin tributariesRespecting Tribal water rights and ensuring meaningful Tribal consultationPrioritizing demand reduction and conservation over unsustainable allocationsThese protections are meaningful and important. SincerelyFelicia Bruce106 Mariner Bay BlvdFort Pierce FL 34949

Letter #: 3149

Date Received: 2/26/2026

Sender Names: 3120: Leila Bruno

Emails: 3120: leilabruno@earthlink.net

Organizations:

Subject: Post-2026 Draft EIS Public Comment

DOI - . To friends at BuRec who care deeply about the health of our natural world (which of course includes human families): Please priories the health of the Colorado River and all the species who inhabit it. This means restoring the natural flows thru Glen Canyon and decommissioning the reservoir. I depend on you to take a very very big view prioritizing natural systems. of course this may mean guiding a big process which might prioritize native fish over backyard pools, unregulated golf courses, giant neon signs, etc. Again, I am looking to you and your staff to hold the line on putting natural ecosystems first in line. with appreciation, Leila Bruno Boulder CO 307-399-5869 leilabruno@earthlink.net

Letter #: 2119

Date Received: 2/25/2026

Sender Names: 2102: Jane Brunson

Emails: 2102: jcb1838@gmail.com

Organizations:

Subject: Please support a smarter future for the Colorado River, and all who depend on it!

DOI - . Dear Bureau of Land Mangement We live in Arizona - in Flagstaff so supposedly we have water forever - key word "supposedly." We are dismayed to see runaway development south of us, land owned (and water depleted for Middle East alfalfa, A-I data centers? The list goes on. Last we knew you cannot make water. I am writing to encourage the Bureau of Reclamation to combine elements from the proposed alternatives in the draft Environmental Impact Statement (DEIS) to ensure a sustainable future for the Colorado River with new, long-term guidelines that: - Provide clarity and predictability: continued crisis management puts everything and everyone in the basin at risk. New guidelines must promote conservation and respond to conditions on the ground - Incorporate flexible, adaptive tools for conserving, storing, and managing water: new guidelines must allow for more flexibility in how water is stored and moved to protect and stabilize the system - Embed environmental stewardship: the Colorado River is more than a plumbing system. New guidelines must account for the river itself and the bounty of life it sustains. - Provides for meaningful and voluntary Tribal participation grounded in sovereignty and self-determination: the 30 federally recognized Tribes in the Basin must be included in decision-making. - And preserve pathways for advancing in-basin mitigation and continued binational cooperation with Mexico Sincerely, Jane Brunson 1826 S Ash Ln Flagstaff, AZ 86004 jcb1838@gmail.com

Letter #: 3710

Date Received: 2/26/2026

Sender Names: 3673: Bryce

Emails: 3673: brycem.delaney@gmail.com

Organizations:

Subject: Comment: 2026 Draft EIS

DOI - . To whom it may concern,I am writing to provide comments on the Draft Environmental Impact Statement (EIS) for the Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead. As written, the Draft does not fulfill its stated purpose and need because it overlooks alternatives that would deliver greater operational flexibility and meaningful environmental benefits.First, the revised Colorado River guidelines must analyze river-level bypass of Glen Canyon Dam to allow more naturalized flows through Grand Canyon, continue ecological restoration in Glen Canyon, and maximize flexibility across the system. The dam now functions as a constraint, limiting the river's ability to move water efficiently downstream. Failing to evaluate a bypass option unnecessarily restricts future choices for the river, water users, and the ecosystems that depend on it.Second, the agencies should thoroughly examine a "Fill Mead First" alternative that prioritizes storage in Lake Mead before Lake Powell. Current hydrology cannot reliably sustain both reservoirs. In light of this reality, it is imprudent to continue submerging the national park-quality canyon landscapes of Glen Canyon. Evaluating variations of a single-reservoir strategy would improve ecological outcomes and strengthen management across the entire Basin.Third, the Draft must recognize the significant and growing resources reemerging in Glen Canyon as reservoir levels decline. Iconic feature, landscapes, canyons, and glens, along with revitalized riparian habitats, cultural sites, and new recreational opportunities, represent substantial environmental and public values. These resources deserve equal consideration alongside other Basin priorities.Finally, the updated guidelines should require comprehensive curtailment plans from each Basin state and prohibit new non-Tribal water diversions. Federal agencies must confront the imbalance between supply and demand with urgency, ensuring that every state develops enforceable demand-reduction strategies. A moratorium on new diversions--except for Tribes holding senior water rights--is a necessary step toward long-term sustainability.Thank you for your time and consideration.Sincerely,Bryce Delaney

Alternatives presented in the DEIS for Post-2026 operations of Lakes Powell and Mead do not fully convey the crisis facing a Colorado River on the brink of collapse, the fact that both Lakes Mead and Powell are inching closer to dead pool every year, and that, unless major storms occur in the next month, WY 2026 will not produce enough water to reverse the decline in storage at these two reservoirs.

Here is the situation we are in as of February 2026.

1. Lake Powell is 27% full with 6.33 MAF of stored water at elevation 3538 feet. Per the Lake Powell Water Data, on February 28th 2026 Lake Powell was actually only 24% full at an elevation of 3531 feet and 5.9 MAF of storage. Thus active storage numbers noted below are actually lower by 430,000 AF per more current data.
2. Operation of the turbines is not recommended below elevation 3525 feet (or 5.5 MAF storage) due to the potential for cavitation of the turbine blades. Delta storage between the current storage and 3525 is 0.83 MAF. Some experts are calling this the "active storage".
3. If operators continue to use the turbines to minimum power pool at elevation 3490 feet (equal to 3.7 MAF storage) this increases "active storage" to 2.63 MAF.
4. Below elevation 3490 feet water can only be released through outlet structures at elevation 3370 feet. Because, at low reservoir levels, the outlet structures are prone to cavitation, if releases are solely dependent on the outlet structures, this risks the integrity of Glen Canyon Dam. "Useable" though risky storage down to 3370 feet thus totals 6.3 MAF.
5. Remember that approximately 800,000 AF per year (0.8MAF/yr) of water is lost via evaporation and leakage from and around the dam. This number may change as the area and elevation of Lake Powell decreases.
6. Thus, losses in Lake Powell reduce the "active storage" to approximately **1.8 MAF if 3490 feet** is used as the new elevation of dead pool (e.g if the outlet structures are used only temporarily or not at all).
7. There is 1.7 MAF of storage below the 3370 foot elevation which cannot be accessed except with bypass tunnels at river level.
8. Current levels in UIU reservoirs are 1. Blue Mesa 51% full with 0.42 MAF storage, 2. Flaming Gorge 82% full with approximately 3 MAF storage, and 3. Navajo 60% full with approximately 1 MAF storage. If these reservoirs are fully emptied, including dead pool volumes, as of this February, they could provide only 4.42 MAF. At full storage levels these three reservoirs could supply 6.2 MAF. However, this would only be a one year fix as they would need to refill in subsequent water years. In addition, there is no mechanism in place to shepherd this water to Lake Powell. Use of UIU reservoirs to boost Lake Powell levels is tenuous at best.
9. Per the Lake Powell water database, March 1st snow water levels in the Colorado River headwaters is at 63.09% of normal. The Bureau of Reclamation December 1, 2025 forecast for WY 2026 inflow to Lake Powell equals a minimum flow of 4.24 MAF and most probable flow of 7.04 MAF. As of March 28th 2026, approximately half way through the WY, 2.63 MAF has been released downstream; offset only by 1.77 MAF of inflow. Rivers feeding Lake Powell are running at 59.07% of the March first average. These numbers indicate that the WY 2026 water supply will likely be on the lower end of the spectrum. If low storage levels are reached, downstream releases likely will be run of the river, equal to inflows. The FEIS needs to address whether Glen Canyon Dam infrastructure is capable of operating under these conditions and, if not, provide a plan to address options.
10. As the area of Lake Powell decreases sediment will be deposited closer to the dam. Sediment comes not only from sources upstream of Lake Powell but also from sediment

deposited upstream of the dam in the previously submerged Colorado River mainstem and side streams over more than 60 years of operations.

The current situation is a crisis that is exacerbated by the very low snowpack in the Colorado River Basin. Yet, the alternatives don't address critical decisions that need to be included in the FEIS. These include:

- Basin states need to agree on what water elevation in Lake Powell (and in Lake Mead) is the lower boundary of "active storage" for these reservoirs.
- This lower boundary depends on the risk operators are willing to take in order to pass water through Glen Canyon Dam - either through the turbines or the outlet structures. This decision should be based on the condition of the outlet structures and what if any maintenance is planned for the later. Based on cavitation issues that occurred in the outlet structures during the pulse flow of 2023, maintenance and/or expansion of these structures is necessary.
- If elevation 3370 feet is considered the minimum water level for active storage at Lake Powell, then the FEIS needs to provide details on plans not only to upgrade the outlet structures but also plans to install bypass tunnels at river level to assure that water can still be passed downstream of the dam at this low water level.
- If UIU releases are to be used to shore up levels in Lake Powell, the FEIS needs to address, through negotiations with upper basin states, how that water will be shepherded to Lake Powell.
- The DEIS Alternatives DO NOT provide a plan of action in the event that water levels in Lake Powell reach the agreed upon minimum water level for active storage. At this point in the crisis of the Colorado River water supply a proactive plan for the worst case is absolutely essential.
- The first two DEIS Alternatives, No Action and Basic Coordination, DO NOT address the probability that it may not be possible to release 7 to 9 MAF in some years without adversely affecting the integrity of Glen Canyon Dam or the ability to release any water to the Grand Canyon.
- The third and fourth DEIS Alternatives, Enhanced Coordination and Maximum Operational flexibility, need to provide details on the factors that determine releases from Lake Powell - "Powell/Mead contents and hydrological conditions" - and under what hydrologic conditions Upper Basin conservation is required.
- In addition, what constitutes Upper Basin conservation. Does conservation include curtailment of trans basin diversions in Colorado because of low reservoir levels in state reservoirs? Would it include lack of water in western slope streams such that farmers could not take their full allotment of water as decreed? Does it include having to sell off live stock because the water supply during severe drought conditions is insufficient to grow enough hay to feed live stock. This has been the sticking point in many negotiations - the fact that Upper Basin states have to conserve water in order to adjust to low flow conditions within their states even before considering water levels in Lake Powell. Perhaps if the FEIS provides a mechanism to measure and credit these types of conservation actions the Upper Basin States might be more amenable to considering conservation in an alternative.
- Evaporative/system losses in Lake Mead are approximately 1 MAF/year. Currently, the Upper Basin states need to adjust for losses not only in Lake Powell but also in Lake Mead given the balancing requirements between the reservoirs. Lower basin states need to be responsible for system losses in Lake Mead as part of each states' allocation.

- The FEIS needs to evaluate how sediment deposition upstream of Glen Canyon Dam will be addressed. Specifically, at what lake levels might re-entrainment of sediment hinder operation of the turbines.

Thank you for considering my comments,
Lisa Buchanan
315 S 39th St
Boulder, CO 80305
lrbuchanan55@comcast.net

Letter #: 7610

Date Received: 3/2/2026

Sender Names: 7560: Laurel Bullock

Emails: 7560: laureln818@gmail.com

Organizations:

Subject: Water Arizona

DOI - . Nevada Rebate Incentive...For homeowners, the Southern Nevada Water Authority offers an incentive to transition from traditional grass to desert-friendly landscaping or Turf. If you own a single-family home, you can receive a rebate of $5 for every square foot of lawn you replace with water-efficient landscaping for up to the initial 10,000 square feet converted. Currently, as of Jan. 2026, LVVWD is offering an additional $2 per square foot, on top of the original $5 per square foot. That makes for a total of up to $7 per square for qualifying areas. For those considering making the switch to water-smart landscaping, it's important to note that your project must be finished within the 2026 calendar year. (**This information is up to date as of Jan. 2026**).

Letter #: 8837

Date Received: 3/3/2026

Sender Names: 8748: Karlyn Bunting

Emails: 8748: karlyn.bunting@gmail.com

Organizations:

Subject: Public Comment on Post-2026 Draft EIS – Protecting Lake Powell through Maximum Operational Flexibility and the Colorado River Abundance Act

DOI - . To the Bureau of Reclamation: As someone who grew up by Lake Powell and cares deeply about the future of Glen Canyon Dam, I am submitting this public comment for the record before the March 2, 2026, deadline. Regarding the Post-2026 Operational Guidelines Draft EIS, I strongly urge the Bureau to adopt the Maximum Operational Flexibility alternative. Your own vulnerability analysis demonstrates that this alternative is the most effective at protecting Glen Canyon Dam, reducing the near-term risk of Lake Powell dropping below the critical 3,500-foot elevation threshold to zero under historical conditions. I specifically support its robust infrastructure protections, which would mandate an automatic switch to "run-of-river" releases if Lake Powell's elevation falls to 3,510 feet or lower. While the Maximum Operational Flexibility alternative provides excellent immediate protection for Glen Canyon Dam, the Draft EIS as a whole is too focused on managing scarcity and distributing delivery reductions. To truly ensure the long-term survival of Lake Powell and the communities that depend on it, the Bureau must integrate the framework proposed in the Blue Ribbon Coalition's Colorado River Abundance Act. We must stop managing a shrinking resource and start creating abundance. I call on the Bureau to incorporate the following mandates from the Colorado River Abundance Act into its long-term planning: Implement Large-Scale Augmentation: The Bureau should adopt the Colorado River Augmentation Project to produce up to 7.0 million acre-feet of "Replacement Water" annually through offshore, onshore, and binational desalination facilities. Injecting this new water into the system is the only way to genuinely stabilize Lake Powell's elevation without destroying local economies through constant rationing. Elevate Recreation to a Coequal Purpose: The Bureau must officially recognize recreation at Lake Powell as a "coequal project purpose" managed on the same level as water supply, hydropower, and flood control. Lake Powell is an economic engine, not just a holding tank. Fast-Track the Mid-Lake Marina: As part of a mandated Recreation Modernization Plan (RMoP) for Lake Powell, the Bureau must prioritize the immediate reconstruction of a mid-lake marina to provide fuel, waste-handling, and basic services. Modernize Boating Standards: Lake Powell must be managed to accommodate modern recreational demand. The Bureau must update its vessel length standards to allow vessels up to 90 feet in length, rather than relying on outdated restrictions. Furthermore, funding must be directed toward priority low-water adaptation projects like ramp extensions, temporary launch systems, and dredging at priority choke points so the lake remains fully accessible. In short, I ask that you select the Maximum Operational Flexibility alternative to protect Glen Canyon Dam today, and fully embrace the Colorado River Abundance Act to ensure a thriving, water-secure future for Lake Powell tomorrow. Thank you for your time and for considering my comment, Karlyn Bunting 864 Sage Ave Page, AZ 86040

Letter #: 7331

Date Received: 3/2/2026

Sender Names: 7291: Ryan Burk

Emails: 7291: rynoburk@me.com

Organizations:

Subject: Protect Lake Powell!

DOI - . To whom it may concern, I am writing to express my thoughts on the great benefits of our beloved Lake Powell. Growing up in Arizona, Lake Powell has been an important part of my childhood as well as now raising my children traveling to Lake Powell from Washington state 2-3 times per year spending cherished time with my family on our houseboat. In addition to our recreation on the water Lake Powell provides the following benefits for the southwest: Water Storage and Reliability: As a major unit of the Colorado River Storage Project (CRSP), it regulates water flow from the Upper Basin states to the Lower Basin, securing a reliable water supply for Arizona, California, Nevada, and Mexico during droughts. Hydroelectric Power Generation: The Glen Canyon Dam generates roughly 5 billion kilowatt-hours of clean, renewable energy annually, powering homes and businesses across the West. Agricultural and Municipal Support: It provides water for irrigation, enabling agricultural production, and serves as a vital water source for major cities like Phoenix, Tucson, and Las Vegas. Recreation and Economy: Lake Powell is a top tourist destination, supporting a large recreation economy (boating, fishing, tourism) in Page, Arizona, and surrounding areas. Environmental Benefits: It assists in managing water supplies for environmental needs. Please fight to save Lake Powell! Ryan Burk

Letter #: 3360

Date Received: 2/27/2026

Sender Names: 3329: margo byrne

Emails: 3329: bodica6086@yahoo.com

Organizations:

Subject: Water

DOI - . Without potable water life ceases!

Letter #: 1288

Date Received: 2/18/2026

Sender Names: 1277: Lorraine C

Emails: 1277: kalesalad911@gmail.com

Organizations:

Subject: Bureau of Water Reclamation

DOI - . To Whom It May Concern:I am very concerned about the prospect of Arizona losing 77% more of its CAP water, while the State of California gives up 0% of its water. This is based on a very biased agreement from 1968. Please create a more equitable solution. AZ has already taken voluntary water cuts.Thanks for your attention to this critical matter.Regards,Lorraine CrawfordTucson, Arizona

Letter #: 4058

Date Received: 2/27/2026

Sender Names: 4013: Kaden Caliendo

Emails: 4013: kaden@coastkeeper.org

Organizations:

Subject: Colorado River

DOI - . Hello, My name is Kaden Caliendo, and I am a water resources expert with knowledge on water supply and conveyance, water quality, drought response and many other water management topics. As a employee under the Waterkeeper alliance, it is my duty to tell you that: The Colorado River's future depends on bold action, not incremental adjustments.We need a management framework that protects clean water, communities, and ecosystems for generations to come. The Bureau has the opportunity to take meaningful action now to address the full reality of climate-driven water scarcity and the urgent need to protect water quality, ecosystems, and Basin communities.I urge the Bureau of Reclamation to significantly strengthen the Post-2026 Colorado River Basin Draft EIS that proactively addresses the crisis that we face and ensure the public has an opportunity to comment on its revised proposal before issuing its final decision.The Colorado River is already overallocated and shrinking. The Bureau must prioritize long-term sustainability, meaningful Tribal consultation, and enforceable reductions in demand, not simply identify new ways to divide a declining supply. So with that, I urge you to think about the greater future, and listen to the experts in the field who are warning against planned actions.

Thankyou, Kaden Caliendo (he/him)Marine Restoration CoordinatorPhone (cell): +1 (949) 677-2074Email: kaden@coastkeeper.orgWebsite: www.coastkeeper.org

Letter #: 369

Date Received: 2/14/2026

Sender Names: 367: Terry Campbell

Emails: 367: tcracing098@yahoo.com

Organizations:

Subject: 2026 EIR Colorado River operations

DOI - . February 10, 2026Bureau of ReclamationAttn: BCOO-1000P.O. Box 61470Boulder City, NV 89006crbpost2026@usbr.gov RE: Bureau of Reclamation's Post-2026 Draft EIS Public Comment from Terry and Carol Campbell Contractors in PPR 30 We support Alternatives Maximum Operational Flexibility - Shortages distributed based on priority, and Continuation - of current operations based upon priorityThe City of Needles has a Prior Perfected water Right, along with 8 other areas within the City limits. These rights are by Supreme Court Decree. The prior rights refer to water rights prior to the Colorado River compact of 1923. Supreme Court has designated Prior Perfected rights as the top Tier of Colorado River water rights.No action to reduce a Prior Perfected water right allocation should be an Initial response as across the board allocation reductions would be in contradiction to the Supreme Court Decree. Secondarily if Reductions are necessary to prevent dead pools at Lake Powell and Lake Mead the reductions, if necessary, should be on Allocations to each PPR and not to the current reported annual use. In most cases use is well below Allocations.CRB 571 - # 14587-10298 Terry E. Campbell and Carol J. Campbell

Letter #: 3869

Date Received: 2/26/2026

Sender Names: 3828: Marilyn Campolettano

Emails: 3828: noeldrive@hotmail.com

Organizations:

Subject:

DOI - . Sent from my T-Mobile 5G Device

Letter #: 5507

Date Received: 2/28/2026

Sender Names: 5471: Rebecca Canright

Emails: 5471: rebeccagroovypeace@gmail.com

Organizations:

Subject: please protect the Colorado river.

DOI - . Greetings! I am a young person who cares deeply about wildlife protection. Thank you for your work.The Colorado River's future depends on bold action, not incremental adjustments.We need a management framework that protects clean water, communities, and ecosystems for generations to come. The Bureau has the opportunity to take meaningful action now to address the full reality of climate-driven water scarcity and the urgent need to protect water quality, ecosystems, and Basin communities.I urge the Bureau of Reclamation to significantly strengthen the Post-2026 Colorado River Basin Draft EIS that proactively addresses the crisis that we face and ensure the public has an opportunity to comment on its revised proposal before issuing its final decision.I specifically ask the Bureau of Reclamation to strengthen the Draft EIS by:Centering climate science and realistic supply projectionsProtecting water quality and reducing pollution impacts as flows declinePreventing further ecological collapse in the Colorado River Delta and Basin tributariesRespecting Tribal water rights and ensuring meaningful Tribal consultationPrioritizing demand reduction and conservation over unsustainable allocationsThank you for your time!Take care, Rebecca-- Frigate birds fly for months over the ocean and can engage in both regular sleep and use half their brain at a time to sleep during soaring or gliding flight.Compassion for all creatures great and small.

Letter #: 6300

Date Received: 3/1/2026

Sender Names: 6273: Steven L. Cantor

Emails: 6273: stevenlcantor@gmail.com

Organizations:

Subject: Brief comments on the Draft Environmental Impact Statement on Water Usage throughout the Colorado River Basin

DOI - . I commend you on an impressive, thorough document. Unfortunately, that does not result in the states involved reaching agreement, so it may result in the federal government imposing requirements, that is allocations of water usage per state. From what I've read, the far greatest use of water from the Colorado River is for agriculture, and the greatest use is for irrigation for growing alfalfa/ hay for cattle fodder, some of which is exported to Asia. Why not require alfalfa growers to be more efficient, switch to less water intensive efficient crops, and more fields lie fallow? Federal programs in place might provide reimbursement. Recent studies have shown loss of songbird populations nationally in areas of intensive agricultural use; one impact of letting fields lie fallow would likely be increases and recoveries in songbird populations and wildlife populations, and tourists revenue. Throughout the entire region, golf courses are a popular and widespread recreation with intensive use of water for irrigation, although the amount of water is minor compared to agriculture. Still, it's fair to spread the cuts around. Whey not limit irrigation to greens and tees, where traditional fine-textured grasses could stay in use, but require a change over to drought tolerant grasses (e.g., buffalo grass, and others for roughs, fairways, merges, etcs) subject to review and approval by golf course landscape architects? You need to find some fair minded and practical solutions.Warm regards,Steven L. Cantor, RLANew York City

Letter #: 3523

Date Received: 2/27/2026

Sender Names: 3490: Elisa Carlsen

Emails: 3490: info@greatbasinwater.org

Organizations:

Subject: Elisa Carlsen Comments on Colorado River

Great Basin Water Network DOI - . The DEIS Avoids A Hard Look At Cumulative ImpactsThe document fails to consider the following:The DEIS ignores the complete geographic scope, and the impacts of that narrowed scope from curtailments, inaction, and limited action in directly affected communities in the Lower Colorado River Basin.Air quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Water quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Water availability impacts on communities in the Lower Colorado River Basin are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Impacts on Lower Region MSCP (27 species including listed Endangered Species) are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Socioeconomic impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts on Lower Colorado River communities that will result from the alternatives in the DEIS.Impacts on recreation facilities, refugia, park service units, federal infrastructure, and directly connected waterways of the Colorado River System are too narrowly reviewed in the Technical Appendices.Three Alternatives Do Not Likely Comply With The Law Of The River. Programmatic Review Is Necessary And So Is Congressional ActionIn Appendix C, the DEIS implies that modeling justifying three of the proposals "may not be implementable" because potential non-compliance with "laws, contracts, agreements, and other authorities that are part of the Colorado River legal and contractual framework referred to as Law of the River." That is a reference to the Enhanced Coordination, Maximum Operational Flexibility, and Supply Driven Alternative. Without any deal in place among the states or congressional action, a Record of Decision supporting those alternatives poses legal challenges that may be insurmountable.Therefore, according to the DEIS, the No Action Alternative and Basic Coordination Alternative are among the only options that could avoid a legal challenge after a Record of Decision.Those options pose some of the worst outcomes for Lakes Powell and Mead. We believe that no course of action as put forth in the DEIS is a sufficient means of stabilizing the system under the current Law of the River framework. This is troubling considering Reclamation is predicting some of the most dire reservoir elevations ever in the coming two years.Reclamation should undertake a programmatic review as the states continue negotiating. This year's low flows will inevitably get people back to the negotiating table in a meaningful way. Congress will act when the reservoirs are in crisis. We have seen congressional, bi-partisan action multiple times in the past seven years. When Congress is ready, enlist the National Academy of Sciences to undertake a programmatic review in partnership with the Department of Interior, Reclamation and other cooperating agencies. This document is not the beginning of the end. We believe it is merely the end of the beginning.The DEIS Fails To Consider Impacts On Irretrievable Resources By Sanctioning The Repurposing Of Water ResourcesThe DEIS offers multiple alternatives that impose varying levels of cuts in the Lower Basin and no meaningful cuts in the Upper Basin. Some alternatives mention the possibility of Upper Basin "conservation" but those offerings do not describe who, what, where and when. There is nothing steadfast for cuts in the Upper Basin.The DEIS also showcases a modified version of the 2016 Upper Basin Depletion Schedule that still assumes considerable new uses of water in the Upper Basin in the coming decades. Because of the limited resources available, there's no doubting that cuts imposed on the Lower Basin will be repurposed by the Upper Basin. That repurposing defeats the intent of this analysis. Once that water is re-appropriated by Upper Basin regulators, waters with established beneficial uses will not return to where those uses were first proven in the Lower Basin. This is highly suspect.Furthermore, we question how Reclamation can execute its recognized authority to force a curtailment in one basin but not even questioning how development of new appropriations in another part of the basin will impact the whole system and those who had to undertake curtailment. Upper Basin reservoirs

are subject to the "apportionments" among the two basins, seven states and Mexico (See Colorado River Storage Project Act, Pub. L. No. 84-485, SS 4, 70 Stat. 107 (1956)). Reclamation has a great deal of say in how certain rights are managed in the system. But how can regulators sequester the differences between the starting and end points of a highly connected system where some users have established decades worth of use? This gray area is at the heart of the ongoing conflict among the seven states, and we request more information on this in the FEIS.We fear that it is an unacceptable practice to allow the Upper Basin to repurpose water from Lower Basin in the name of state-led permitting efforts in Colorado, New Mexico, Utah and Wyoming. Further declines in the system will challenge Reclamation's mission to protect infrastructure, ecosystems, and communities. It means less water making its way through the southernly reaches of the system in the majority of years if current trends continue. Every state needs a curtailment plan on the Colorado River. This DEIS fails to compel the Upper Basin States to meaningfully consider how they will act to protect federal assets and resources.Finally, this could also bring about conflict over tribal water rights in the Upper and Lower Basins -- especially where settlements have been established. There must be consideration of reducing, at a 1-for-1 rate, junior non-tribal use for those senior tribal rights that have not yet been put to use. How Reclamation would undertake this matter in the Upper and Lower Basin must included in any FEIS. Also, there must be consideration of how Reclamation would prevent new Upper Basin appropriations put forth by non-native water users from using, in a de facto sense, settled and adjudicated rights of Lower Basin tribes.DEIS Ignores Glen Canyon Dam's Antique PlumbingThe analysis in the DEIS fails to consider bypass, decommissioning, and other meaningful resolutions available at Glen Canyon Dam, which poses considerable concerns for water delivery and endangered species protections. We understand and respect the legal arguments for not including the One-Dam Alternative. But it is a mistake to not undertake comprehensive analysis on this matter. Keeping Lake Powell's elevations above 3550', 3525, and 3490' are not realistic scenarios for the long-term. Failure to include greater analysis on Glen Canyon Dam's river outlet works will ultimately cost us all -- imposing direct impacts on Lake Mead, Hoover Dam, other federal infrastructure, metropolitan areas, agricultural hubs, tribal resources, sensitive species, National Park Service units, U.S. Fish and Wildlife units, and other conservation areas in the Lower Basin.The DEIS' Purpose-And-Need Is Too Narrow And Segments Requisite ReviewsReclamation, admittedly so in its Purpose and Need statement, recognizes the grave uncertainties we face if conditions do not improve on the river system. Reclamation also recognizes the direct connections the DEIS makes with upstream infrastructure associated with the Colorado River Storage Project units and in Lower Basin units at Parker Dam, Davis Dam, Imperial Dam, and Palo Verde. The DEIS would benefit from greater analyses in the technical appendices dealing with directly related impacts at the dams during low-flow periods. The same can be said for analyzing impacts at all Colorado River Storage Project facilities in low-flow periods too. They will be essential for propping up Lakes Powell and Mead. What will operations look like if CRSP and Lower Basin Infrastructure are only operating collectively at 10-20 percent of normal? What can we expect? To say that management at Mead and Powell are not directly connected to that management is implausible.If you have any additional questions please contact me.Elisa Carlsen(c) Great Basin Water Network.
Powered by weForms.

Letter #: 3550

Date Received: 2/26/2026

Sender Names: 3517: elizabeth Carrington

Emails: 3517: lizzycarrington23@gmail.com

Organizations:

Subject: Colorado River

DOI - . PLEASE PROTECT THE RIVER !!!

Letter #: 5066

Date Received: 2/28/2026

Sender Names: 5031: Lynn Carroll

Emails: 5031: info@greatbasinwater.org

Organizations:

Subject: Lynn Carroll Comments on Colorado River

Great Basin Water Network DOI - . Thank you for this opportunity to comment on the Post-2026 Colorado River Operations DEIS. There are many areas in which this DEIS is deficient.1) It doesn't take a hard look at cumulative impacts. For instance, water quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS should address those direct impacts that will result from the alternatives in the DEIS. The same is true for water availability impacts on communities in the Lower Colorado River Basin. The Technical Appendices don't adequately review impacts on endangered species.2) Three alternatives probably do not comply with The Law Of The River. In Appendix C, the DEIS implies that modeling justifying three of the proposals "may not be implementable" because potential non-compliance with "laws, contracts, agreements, and other authorities that are part of the Colorado River legal and contractual framework referred to as Law of the River." Those are the Enhanced Coordination, Maximum Operational Flexibility, and Supply Driven Alternatives. Therefore, the No Action Alternative and Basic Coordination Alternative are among the only options that could avoid a legal challenge after a Record of Decision. Those options pose some of the worst outcomes for Lakes Powell and Mead. Ibelieve that no course of action as put forth in the DEIS is a sufficient means of stabilizing the system under the current Law of the River framework.3) By sanctioning the repurposing of water resources, the DEIS fails to consider impacts on irretrievable resources. Multiple alternatives in the DEIS impose cuts in the Lower Basin but no meaningful cuts in the Upper Basin. Because of the limited resources available, there's no doubting that cuts imposed on the Lower Basin will be repurposed by the Upper Basin. That repurposing defeats the intent of this analysis.4) The analysis in the DEIS fails to consider bypass, decommissioning, and other meaningful resolutions available at Glen Canyon Dam.5) The DEIS's Purpose-and-Need is too narrow. The DEIS would benefit from greater analyses in the technical appendices dealing with directly related impacts at the dams during low-flow periods.If you have any additional questions please contact me.Lynn Carroll(c) Great Basin Water Network. Powered by weForms.

Letter #: 3512

Date Received: 2/26/2026

Sender Names: 3479: Henri Carter

Emails: 3479: healconsteel@yahoo.com

Organizations:

Subject: Post 2026 Colorado River operations

DOI - . From west-central Wyoming to the Sea of Cortez the Colorado River watershed has nurtured prehistoric and modern civilizations. The western United States has utilized this resource for unmitigated growth and development. Whether within or outside the basin, urban, agricultural, energy and industrial interests have all enjoyed reliable water from the Colorado River and/or it's tributaries. Huge sums of private and public monies have been spent on infrastructure (dams, tunnels, canals, treatment plants, etc.) appurtenant to beneficial use of Colorado River water. Legislation, regulation, and litigation has been 'running with the water' even before the flawed century old compact and allocations were accepted.Yet the Colorado River has been tapped out for decades. Other than sporadic floods, little or no water has reached the Sea of Cortez in 50 years or more. Lakes Powell and Mead, the massive reservoirs and primary management tools of the watershed, have been dropping steadily for over 30 years. Every drop, real or imagined, has been claimed. The actual river(s) and associated riparian environments, in the paper world of water, have no priority. They are merely conduits for consumptive use of the water.The reservoirs which have provided cushion for procrastination are near exhaustion. Permanent economic and ecological devastation are guaranteed if either lake reaches dead pool. This scenario is eminent without restoring 2-4 million acre feet/year (conservatively?) into the system - the entire system. Let more stay water in, take less water out from Wyoming to Mexico. The BOR DEIS dated January 2026 examines every possible minutia of Colorado River operations losing sight of the only pertinent detail: TOO little water remaining in the system, TOO much water extracted, diverted, or consumed from the entire system. Management proposals above Lake Powell, despite decades of sound data, are completely inadequate in the near (5 year) term. No action alternative would seem contrary to the impetus for the DEIS namely impending collapse of water delivery and power generation at the largest reservoirs in the United States. The remaining alternatives weigh heavily on Arizona, California, and Nevada, despite established infrastructure and existing mandated reductions in use, to account for the burden of deficits throughout the watershed going forward.Previous BOR reports regarding the Colorado River Basin's water supply have considered the entire basin. The Department's "...multiple steps to respond to historic drought and low-runoff conditions in the Basin..." (p. 1-5) 2014 to present (excluding the 500 Plus Plan) have all considered and involved Upper and Lower Basin contributions for benefit of the entire system. Indeed, the Upper Basin's DCP implemented after the 2007 FEIS was intended for "...moving water within the Upper Basin to keep the pool at Lake Powell above critical levels." (p. 3-54). These ineffectual efforts are compounded by reverence to an exploitative legal morass which has not, cannot, and will not adequately reduce basin wide withdrawal of a vital natural resource with no provisions for replenishment. The obsolete labyrinth of laws, regulation, treaties, contracts, agreements, compacts, etc. are the greatest obstacle to an expeditious remedy. The righteous self interests of each basin state has and will preclude any new 'joint' agreement as each missed deadline clearly established.Keeping water in the system is at least equally important in the long term to reducing the water removed. It is ludicrous to ignore wholesale diversions of water into the Great Basin, Mississippi, and Rio Grande watersheds while limiting downstream users' allocations which were established long before out of basin diversions were ever constructed. These diversions may comprise 50% or more of all water use in the Upper Basin.ALL beneficiaries of water from the Colorado River watershed must participate in the restoration process to secure reliable, albeit reduced, water. Uniform and equitable reductions of water drawn from within or diverted outside the watershed must be initiated and enforced immediately. Obviously, an absolute moratorium on all future extractions must accompany the essential immediate reductions. All interests can be preserved, and the respective infrastructure maintained, so long as a stable water supply is assured. The necessary changes in policy and practices to cope with a reduced water supply will have time to manifest coherently so long as abrupt change is averted.Despite the windfall of precipitation in the basin during the winter/spring of 2022-23, observation and data indicate this reprieve was an anomaly. The inexorable path towards social, economic, and environmental catastrophe in the Colorado River system is an emergency as

great as any this nation has faced. The Department of Interior has full authority to declare this an emergency and implement, through the BOR, a universal and accountable 20% reduction in both basins to begin restoration and sustainability of the Colorado River's entire watershed.. As a recognized emergency, critical and equal reductions in water removal throughout the basin will be far easier to accept by those who have reaped the river's bounty. Timely and decisive action is required for the maintenance of power generation, water delivery, river ecology, and the multitude of associated benefits in a sustained Colorado River system.

ANY preferences or exclusions from a uniform mandate throughout both basins and all diversions will disrupt the shared responsibility, promote a frenzy of litigation, and most concerning simply delay inevitable collapse of Colorado River water supply and delivery; a complete and avoidable disaster. Henri Carter

Letter #: 1396

Date Received: 2/23/2026

Sender Names: 1385: Skylar Casey

Emails: 1385: Skylar.Casey.1115089227@foradvocacy.com

Organizations:

Subject: Comments on the Post-2026 Colorado River Guidelines

DOI - . Dear U.S. Bureau of Reclamation,I live in the Colorado River Basin and appreciate the area for its wonderful recreation areas and wildlife corridors. This is why I am writing to ask Reclamation to take action to address the deteriorating conditions on the Colorado River.Under the existing rules, that expire at the of this year, were ineffective at protecting water levels in Lake Powell and Lake Mead and based on outdated water modeling.A new model is necessary to ensure that water is available in the Colorado River to support its people, economies, and ecosystems.Water uses in the Colorado River Basin need to be rebalanced and updated to reflect the current reality. Further, the new rules need to ensure that tribes and the environment receive an equitable share of the river for the future.I stand alongside the Grand Canyon Trust and their suggestions to create a just and sustainable Colorado River. These are their suggested actions that I suggest you follow to make sure the region can survive the future:* Commence a comprehensive study of Glen Canyon Dam infrastructure to ensure that the dam's design does not prevent adequate flows from being released through the dam as critically low water levels become the norm.* Work with the Secretary of the Interior to direct and fund the Glen Canyon Dam Adaptive Management Program to develop a plan for how to operate Glen Canyon Dam to meet the mandates of the Grand Canyon Protection Act of 1992 when Lake Powell falls below critical elevations (3,525 feet, 3,500 feet, and 3,490 feet).While that research is being conducted, the following can be prioritized to protect Grand Canyon flows and resources:o Follow the Grand Canyon Protection Act of 1992, which mandates that releases from Glen Canyon Dam protect and improve the cultural and ecological values of Glen Canyon National Recreation Area and Grand Canyon National Park. This includes protecting the canyon's native fish, beaches, and cultural and archaeological sites.o Maintain Lake Powell water levels above 3,525 feet to ensure high flow experiments, that protect the ecology of the Grand Canyon, can continue to occur.o Until a physical barrier is built to prevent non-native fish from passing through the dam, prioritize keeping Lake Powell above 3,540 feet to limit non-native fish passage.o Commit to continue cool water releases beyond 2027 from Glen Canyon Dam's river outlet works to maintain temperatures that discourage nonnative fish reproduction. If cool mix flows cannot be maintained, keep Lake Powell above 3,570 feet.o Ensure that Glen Canyon Dam releases accommodate the need for variable high and low flows in the canyon, but limit steady high-volume releases to avoid eroding too much sediment from Marble and Grand Canyons.These efforts would help improve the basin's water quality, species, and recreation for generations to come.Sincerely,Skylar Casey

Letter #: 2516

Date Received: 2/24/2026

Sender Names: 2495: Jackie Cash-Rolland

Emails: 2495: jcashr@gmail.com

Organizations:

Subject: Long Term Guidelines for the Colorado River

DOI - . Dear Bureau of Land Mangement I am writing to ask the Bureau of Reclamation to combine elements from the proposed alternatives in the draft Environmental Impact Statement (DEIS) to ensure a sustainable future for the Colorado River. The with new guidelines should include: - Environmental stewardship of the Colorado River itself. - Provisions to promote conservation and respond to conditions on the ground with clear goals. - Flexible, adaptive tools for conserving, storing, and managing water. - Recognition and participation of the 30 federally recognized Tribes in the Basin in decision-making. - Preservation of pathways for advancing in-basin mitigation and continuation of binational cooperation with Mexico It is past time to seriously address the long time health of the Colorado River and the allocation of water in a reasonable manner. Thank you for the opportunity to comment on this issue. Although I no longer live in an area directly impacted by the 1922 Colorado River Compact, I still have friends and family affected by it. At the heart of the problem is the health of the river itself, the reality of it needs to be addressed. Sincerely, Jackie Cash-Rolland 1104 E Linden Ave Coeur D Alene, ID 83814-4619 jcashr@gmail.com

Letter #: 225

Date Received: 1/29/2026

Sender Names: 226: Anne Castle

Emails: Not Provided

Organizations:

Subject: CR DEIS Public Meeting Comments

I don't have any comments at this point, but I have 3 questions. First question is, why is the socioeconomic analysis limited to just agriculture and recreational, economics. And why isn't there, an analysis of the economic impact on municipal and industrial uses? Second question is, why isn't there an annual evaporation charge on intentionally created surplus? There's a charge going in, a sort of system water charge, but no annual evaporation. And third and final question is, what exactly is gap water supposed to represent?

Letter #: 216

Date Received: 1/19/2026

Sender Names: 213: Jim Cecconi

Emails: 213: jim.cecconi.6a7b8@advocate-mail.com

Organizations:

Subject: I Support the Colorado River Abundance Act

Message from DOI - . Bureau of Reclamation, I am writing to encourage you to support the Colorado River Abundance Act. This is crucial legislation is the only serious, long term solution to water issues in the west. Water is becoming more scarce and continuing to reduce water consumption and uses will only last so long. I am worried about critical infrastructure such as Lake Powell and Lake Mead that not only are economic drivers for local economies but provide power and recreation to millions of people. The Colorado River Abundance Act would prioritize desalination and other infrastructure solutions capable of generating millions of acre-feet of water. This legislation would strengthen America's leadership in water innovation, support agriculture, and provide viable solutions to declining water levels in our reservoirs and rivers while continuing to meet water delivery requirements for Colorado River Basin states and Mexico.I believe you should support the Colorado River Abundance Act and help advance durable, forward-looking water solutions that beI am tired of the same old bickering over the Colorado River resource. We need power and reliable water for residents of all states involved. I am a recreational user as well. I live near one of the nicest lakes in the system (Lake Havasu) I have enjoyed all the lakes from Flamming Gorge to my home lake. I have house boated on Lake Powell many times as recently as Aug. 2025. It is sad to see the lake I love so low and in danger of being dead pool. Desalination has always been an option in my mind. California the highest user, has a whole dam ocean in its front yard. We should make California stop all development at this point because of the collapsing system, why keep building when it's obvious there is not enough resources now. It is time to let more voices be heard not all these Boards that can't get the job done. It is simple you cannot take more out than comes in like they have. We definitely need to seek out more ways to insure our future survival as well as the recreation aspect.Sincerely, Jim Cecconi 999 Pueblo DrLake Havasu City, AZ 86406(928) 453-6777 jimbone999@gmail.com

Letter #: 8082

Date Received: 3/2/2026

Sender Names: 8014: Sally Champion

Emails: 8014: sjchampion429@yahoo.com

Organizations:

Subject: Post-2026 draft EIS

DOI - . These comments are in regard to the draft EIS on the operational guidelines for Lake Powell and Lake Mead. I am concerned that the analysis of a river-level bypass of Glen Canyon Dam was not included. Failing to analyze this limits options for the river. Given today's, and projected, lower flow regimes two reservoirs can no longer be supported. Creating a river-level bypass would allow Glen Canyon and its tributaries to recover. I previously lived in Utah and recreated on the Green and Colorado Rivers. I think the beauty of Glen Canyon can be restored while still allowing for water management. Thank you, Sally Champion sjchampion429@yahoo.com Sent from my iPhone

Letter #: 302

Date Received: 2/15/2026

Sender Names: 300: Michael Chapman

Emails: 300: mike.chapman5555@gmail.com

Organizations:

Subject: Colorado River

DOI - . The alternatives studied in the Draft EIS are reasonable if water supply continues to dwindle but remains minimally adequate. Bottom line, all users will have less water in the future. Some users will end up with nothing so that the most critical needs (drinking water, for example) can be filled. The only way around this result is to increase the supply of water, and supply can only be increased 3 ways: 1. The drought ends and supply from nature increases; 2. Conservation efforts increase and improve; 3. New sources of water are found (such as desalination of ocean water).I believe the Bureau of Reclamation, the Basin States, and other stakeholders should begin now to plan and implement the long-term solution of desalination of ocean water. This will be time consuming and expensive, but it will solve the problem. There is no time to waste.Michael Chapman10756 Oak Shadow AvenueLas Vegas, NV 89144775-722-7757

Letter #: 1818

Date Received: 2/24/2026

Sender Names: 1807: Josh Chapple

Emails: 1807: joshchapple@gmail.com

Organizations:

Subject: Draft EIS Comment

DOI - . Dear Commissioner and Bureau of Reclamation Staff,I am writing to express strong support for the Maximum Operational Flexibility Alternative in the Draft Environmental Impact Statement for Post-2026 Colorado River operations.As you know, the Colorado River system is facing long-term aridification and deep uncertainty. In this context, an alternative that provides the greatest capacity for adaptive management and system-wide responsiveness is essential. The Maximum Operational Flexibility framework offers the most robust toolkit to respond dynamically to hydrologic variability, protect critical reservoir levels, and encourage early and meaningful conservation actions across the Basin.Importantly, a durable post-2026 framework must ensure that responsibility for stabilizing the system is shared equitably among all Basin states and all categories of water users. It is not sustainable for any one region to shoulder a disproportionate share of reductions while the entire Basin benefits from system reliability. The Maximum Operational Flexibility framework provides the strongest pathway to distribute risk and conservation obligations across the system.That said, the Enhanced Coordination Alternative would also represent a meaningful step toward more integrated reservoir management and shared system protection. If structured to ensure equitable participation in conservation across both the Upper and Lower Basins, it could provide an acceptable path forward.Thank you for your careful consideration of these critical decisions for the future of the Colorado River Basin.Sincerely,Josh ChappleTucson, Arizona

Letter #: 11

Date Received: 1/21/2026

Sender Names: 10: Rusty Childress

Emails: 10: maineventimaging@gmail.com

Organizations:

Subject: Draft EIS Public Review and Comment Process

DOI - . Dear Bureau of Reclamation,I am submitting the following comment on the Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead Draft Environmental Impact Statement (Draft EIS).The Draft EIS evaluates a range of operational responses to declining hydrology in the Colorado River Basin but largely assumes continuation of existing demand trajectories across both the Upper and Lower Basins. While the analysis acknowledges aridification and increasing supply risk, it does not sufficiently evaluate demand-side alternatives that explicitly constrain or reduce consumptive use growth in order to align basin demand with long-term hydrologic reality.Under NEPA, reasonable alternatives must include those that avoid or minimize environmental impacts. Continued growth-driven demand, particularly municipal, industrial, and speculative development demand, represents a primary driver of cumulative environmental impact on the river system. However, the Draft EIS focuses predominantly on managing shortages after they occur rather than evaluating demand reduction as a front-end mitigation strategy.I request clarification on the following:* What demand-reduction scenarios were evaluated that test whether stabilizing or reducing growth-driven consumptive use could achieve system reliability with fewer environmental impacts than continued reliance on operational adjustments alone?* How does the Draft EIS assess the cumulative environmental impacts of assuming continued growth in water demand, and where are those impacts disclosed and compared against alternatives that explicitly limit future demand?* How does the Draft EIS ensure that future operational rules do not normalize historic overuse by embedding growth assumptions that exceed the hydrologic capacity of the system?Absent a clear evaluation of demand-side constraints, the Draft EIS risks perpetuating the same structural imbalance that has driven the system to its current condition. A NEPA-compliant analysis should treat demand reduction and growth limits as reasonable alternatives, not external policy issues outside the scope of environmental review.Thank you for the opportunity to comment.Sincerely,Rusty Childress@7States1RiverRio Verde, ArizonaVisual Storytelling in Celebration of the Natural WorldRusty Childress@childressdotcom@7States1River@azalpinetrail

Letter #: 4215

Date Received: 2/28/2026

Sender Names: 4182: Rusty Childress

Emails: 4182: maineventimaging@gmail.com

Organizations:

Subject: Post-2026 Draft EIS Public Comment

DOI - . Subject: Public Comment on Post-2026 Draft Environmental Impact StatementTo Whom It May Concern,I am an Arizona resident submitting comments on the Post-2026 Draft Environmental Impact Statement for Colorado River operations. I appreciate the opportunity to comment at a moment when the long-term stability of the river system is clearly at risk.The central issue facing the Colorado River is no longer temporary drought. It is structural aridification combined with a structural deficit. Since 2000, average flows have declined significantly compared to the 20th century baseline that shaped the Compact, reservoir design, and growth across the Basin. Warmer temperatures are reducing runoff efficiency and increasing evaporative losses. The system now produces less water than it promises on paper. This imbalance cannot be solved with accounting adjustments alone. It requires demand reduction that is real, durable, and proportionate to hydrologic reality.The Draft EIS must adopt modeling assumptions based on post-2000 hydrology, not 20th century averages. Using outdated baselines underestimates long-term risk to Lake Powell and Lake Mead and delays necessary correction. Climate-adjusted projections should guide operational triggers, storage protections, and shortage sharing.Most importantly, the preferred alternative should prioritize demand-side reductions across all Lower Basin users in a way that closes the structural deficit. Continued reliance on reservoir storage to bridge annual imbalances only accelerates the decline of system reliability. Protecting critical elevations at Lake Powell, including minimum power pool, is not simply about hydropower. It is about maintaining the physical and operational integrity of the entire river system.Demand management must include enforceable reductions, not voluntary targets alone. Conservation programs that rely solely on temporary or compensated fallowing cannot substitute for permanent structural alignment between supply and use. The EIS should evaluate pathways that reduce consumptive use to levels consistent with long-term average flows under warming conditions.The current crisis also requires confronting growth assumptions. Water management rules cannot function if demand continues expanding while supply contracts. The environmental analysis should consider cumulative impacts associated with continued urban expansion in arid regions dependent on the Colorado River. NEPA requires evaluation of cumulative and reasonably foreseeable impacts, and growth-driven demand is one of those impacts.Post-2026 guidelines must not structure shortage sharing in a way that rewards recent or speculative growth. Allowing new or expanded uses to be insulated from reductions shifts risk onto long-standing users and accelerates system instability. Any framework adopted should ensure that additional demand does not receive preferential treatment and that risk is borne proportionally. Growth that depends on increasingly unreliable river supplies should not be protected from the hydrologic reality the system now faces.The Bureau has a responsibility to manage the river for long-term system stability, not short-term political balance. The Post-2026 framework must reflect that responsibility. Alternatives that delay reductions in the hope of wetter years are inconsistent with observed hydrology and risk deeper emergency interventions in the future.In summary, I urge the Bureau to:Base modeling on post-2000 flow conditions and climate-adjusted projections.Prioritize protection of critical reservoir elevations, including minimum power pool at Lake Powell.Implement durable, enforceable demand-side reductions sufficient to eliminate the structural deficit.Fully analyze cumulative impacts of continued demand growth in arid regions dependent on the river.The Colorado River's challenge is arithmetic. Long-term system health requires aligning demand with what the river consistently produces, not what it once produced under cooler conditions. The Post-2026 rules represent an opportunity to correct course.Thank you for considering these comments.Respectfully,Rusty ChildressArizona ResidentVisual Storytelling in Celebration of the Natural WorldRusty Childress@childressdotcom@7States1River@azalpinetrail

Letter #: 7828

Date Received: 3/2/2026

Sender Names: 7774: Craig Chisesi

Emails: 7774: Craig.Chisesi@messages.fwwatch.org

Organizations:

Subject: Protect Drinking Water – Save the Colorado River Basin

DOI - . Dear Bureau of Reclamation, The Colorado River is in crisis, yet discussions of future management alternatives do not account for how the water is used. The Bureau must use its authority to push the Basin states to reach a joint agreement that accepts the need for mandatory conservation measures limiting corporate water abuses. Overuse by private jet polluters, fossil fuel polluters, major agribusiness and tech corps, threaten the basin and water supply for 40 million people. Considering this major threat of collapse, any plan going forward must include an immediate halt to the expansion of alfalfa, mega dairies, data centers, polluting general aviation abuses, and a significant rollback of the cultivation of crops that consume large quantities of water and are not suited to growth in highly arid climates. The disproportionate amount of water from the Colorado River is used by fossil fuel gasholes, evaporation ponds, and their executive general aviation abuses over the river, big agribusiness for growing alfalfa, a feedstock for cattle on factory farms. Across all seven Basin states, alfalfa farms consumed an estimated 2.1 trillion gallons of water in 2025, enough to supply the Basin's 40 million people with water for nearly 3 and a half years, unless polluted by gasholes and their private jet-wash abuses. Mega dairies, which produce significant pollution and threaten drinking water, consumed 82 billion gallons of water in 2022 across the Basin states. These uses are not efficient. Basin states applied 2.6 acre feet of water/acre - 70% higher than the US average - for crops, gasholes, and evaporation ponds, are ill-suited to arid climates. Finally, big technology companies across the Basin states are deploying water-hungry data centers with little regulation or regard for impacts on water resources. With the Colorado River significantly overstretched, every environmental analysis and plan for the future must consider how the River's resources are being used. The overuse of the Colorado River by rich gasholes, big agribusiness and technology corporations - amid already record-low water levels and drought - has serious consequences that threaten accessible drinking water for 40 million people. We who live where they drill know the truth! Fossil fuel gasholes trenching out the river basin for gravel pits producing evaporation ponds, and spot cleaning their polluting private jets before spewing jet-wash over the river is the most flagrant disgusting useless waste of Colorado's precious water! Not to mention the billions of gallons used in fracking. A single fracked well can use 1.5 to 40 million gallons of water per year. That's 250 billion gallons total, much of it in the parched West. And once it's gone, it's gone for good. Used fracking fluid has no other use. CS Chisesi Rifle, Co. I urge the Bureau of Reclamation to prioritize sustainability and the needs of the 40 million people relying on the Colorado River for drinking water over corporate profit. Sincerely, Craig Chisesi 332 E. 3rd. St Rifle, CO

Letter #: 7259

Date Received: 3/2/2026

Sender Names: 7219: Spencer Christensen

Emails: 7219: spence.kec@gmail.com

Organizations:

Subject: Lake Powell

DOI - . To whom it may concern: I would like to share my view on Lake Powell. Lake Powell is a gem of unparralled portion. There is nothing like it in the whole of the United States. It's has provided opportunities unlike anything I have ever experienced. For me. For my family. I am very concerned about the dropping of the lake. It is imperative that we maintain a minimum amount of water in Lake Powell. For recreation and for power generation. I urge you to set policy around releasing water BASED ON SUPPLY. NOT DEMAND. ETHER WE CAN CHOOSE TO DO THAT NOW, OR BE FORCED TO DO IT LATER WHEN LAKE POWELL IS GONE. Sincerely, Spencer Christensen. Grand Junction, Colorado

Letter #: 7376

Date Received: 3/2/2026

Sender Names: 7335: Erica Christman

Emails: 7335: ericachristman@me.com

Organizations:

Subject: Opposition to 77% Water Cuts to AZ

DOI - . I would like to express my strong opposition to the proposed water cuts to AZ. This is obviously quite unfair to single out one state so severely without at least some proposed tenets by which the communities of the State of AZ to fulfil in compromise. The state could be curtailed on development & building, forbidding non-native water consuming landscapes, no new building of water features, pools, hot tubs, etc. on residential or commercial builds, etc. We all need to be responsible with our most precious resource: WATER. Without proper incentives/disincentives, the entire country/world will suffer. The federal and state governments need to regulate, legislate, and enforce responsible water use. Just leaving this unregulated and cutting water access is short-sighted and ineffective. ~Erica Christman~ 1655 Azafran Trail San Tan Valley, AZ 85140

Public Comment of Donald S. Clark
March 2, 2026

United States Bureau of Reclamation
Attn: BCOO-1000
P.O. Box 61470
Boulder City, Nevada 89006

Let the Free Market Allocate Lower Colorado River Water

The current approach to allocating Lower Colorado River water to customers in California, Arizona, and Nevada is environmentally unsound in large part because it does not use any kind of pricing mechanism to ensure that the water is devoted to its highest value uses – that is, to ensure that the quantity of water available and the quantity of water demanded in any given year are in relative equilibrium – and is consequently used as efficiently as possible. As the Bureau of Reclamation recognizes in the Draft Environmental Impact Statement:

> *Imbalance between water supply and demand will be exacerbated by increasingly likely low-runoff conditions*:
>
> The Basin is experiencing increased aridity due to climate variability, and long-term drought and low-runoff conditions are expected in the future. *These conditions will exacerbate the now widely recognized imbalance between water supply and demand in the Basin.* Robust and flexible guidelines are needed to manage the Colorado River system and its resources under a broad range of potential future hydrologic conditions.[1]

As it considers how to operate the Colorado River system and both allocate and preserve its resources over the next twenty years, the Bureau should therefore try to integrate an economically sensible pricing structure into determining how Colorado River water is distributed among competing users.

This comment focuses on suggesting the best way to allocate water in the future among competing users in the Lower Colorado River portion of the system. The Boulder Canyon Project Act of 1928 allocates 7.5 million acre-feet of Lower Colorado River water to California, Arizona, and Nevada, and if the Secretary of the Interior determines, in a given year, that that quantity of water is available, then California, Arizona and Nevada are respectively entitled to 4.4 million acre-feet, 2.8 million acre-feet, and 300,000 acre-feet of that water during that year.[2] The discussion below suggests that if the Department of the Interior were to sell this water on the

[1] Bureau of Reclamation Draft Environmental Impact Statement: Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead: Executive Summary (January 2026) at ES-4.
[2] *Arizona v. California*, 547 U.S. 150, 155 (2006). In 1963, the Supreme Court determined that the Boulder Canyon Project Act of 1928, 43 U.S.C. 617 *et seq*., required this allocation of Lower Colorado River water to California, Arizona, and Nevada. *Arizona v. California*, 373 U.S. 546, 564-565 (1963). One acre-foot of water equals 326,000 gallons of water.

open market, the market-clearing price might be approximately $1,000 per acre-foot, yielding approximately $7.5 billion in annual revenue. Unfortunately, these massive quantities of water are not currently allocated in this way. Instead, most of the water is distributed to agricultural irrigation districts and other similar entities whose entitlements are based on the Law of the River, rather than on any type of rational pricing mechanism. This approach predictably leads to economically irrational results. Thus, for example, as a 2023 Washington Post article pointed out, the 400 farms served by the Imperial Irrigation District in southern California use more Colorado River water each year than the States of Utah, Wyoming, Nevada and New Mexico combined.[3]

A 1931 Agreement[4] – as modified in some respects by an Agreement approved by the United States Department of the Interior in 2003[5] – governs the division of California's 4.4 million acre-feet of Colorado River water among seven entities: The Imperial Irrigation District, the Palo Verde District, and the Coachella Valley Water District; the Metropolitan Water District of Southern California (MWDSC); the Cities of Los Angeles and San Diego; and the County of San Diego. The 1931 Agreement provides that satisfying the water rights of the three irrigation districts has the highest priority, and therefore prescribes that they are together entitled to receive 3.85 million acre-feet of Colorado River water each year; however, the 2003 Agreement limits their entitlement to 3.1 million acre-feet per year.[6] By contrast, the MWDSC and the City of Los Angeles are together entitled to only 550,000 acre-feet of Colorado River water, and the City of San Diego and San Diego County are together entitled to only 112,000 acre-feet of water.[7]

As a consequence of the 1931 and 2003 agreements, in calendar 2024, the Imperial, Palo Verde, and Coachella Valley Districts respectively received and consumed 2,311,905 acre-feet; 307,564 acre-feet; and 318,380 acre-feet of water; that is, a total of 2,937,849 acre-feet of Colorado River water.[8] By contrast, the Metropolitan Water District of Southern California – which secures water from a variety of sources and serves nineteen million people in Los Angeles, San Diego and San Diego County – received and consumed 957,797 acre-feet of Colorado River water in calendar 2024.[9] Because the 1931 Agreement, as limited by the 1963 Supreme Court decision, only entitles the MWDSC entities to a maximum of 515,000 acre-feet of Colorado River water per year, they must secure the additional amounts they need each year – such as 442,797 acre-feet of water in calendar 2024 – either from one or more of the three irrigation

---

[3] Amid Colorado River crisis, these California farmers may face water cuts - The Washington Post (April 16, 2023).
[4] Water: California: Seven Party Water Agreement (August 18, 1931) (1931 Agreement).
[5] Colorado River Water Delivery Agreement: Federal Quantification Settlement Agreement For Purposes of Section 5(B) of Interim Surplus Guidelines (October 20, 2003) (2003 Agreement).
[6] *Compare* 1931 Agreement at A480, Sections 1 and 3, *with* 2003 Agreement at 3. The 2003 Agreement provides, more particularly, that "the Secretary [of the Interior] shall deliver Priority 3(a) Colorado River water to IID in an amount up to but not more than a consumptive use amount of 3.1 million acre-feet per year (AFY) less the amount of water equal to that to be delivered by the Secretary for the benefit of" the Coachella Valley Water District, the MWDSC, the San Diego County Water Authority, and several other entities. *Id.* at 3, section 2.a.
[7] 1931 Agreement at A480, Sections 4 and 5.
[8] Bureau of Reclamation: 2024 Colorado River Accounting and Water Use Report (usbr.gov): Calendar Year 2024: Arizona, California and Nevada: Interior Region 8: Lower Colorado Basin (May 2025), at 21-22.
[9] *Id*. at 21.

districts or directly from the Bureau of Reclamation. Thus, for example, in calendar 2024, the Bureau of Reclamation transferred an additional 280,392 acre-feet of Colorado River water to the MWDSC,[10] and the Imperial Irrigation District transferred an additional 105,000 acre-feet to the MWDSC, [11] pursuant to a long-standing agreement requiring the MWDSC in turn to pay for numerous Imperial Irrigation District water delivery infrastructure projects.[12] Similarly, in calendar 2024, the San Diego County Water Authority paid the Imperial Irrigation District $159,382,000 for 150,000 acre-feet of Colorado River water; that is, approximately $1,063 per acre-foot.[13]

The tremendous disparities in water usage between these three agricultural irrigation districts and the four municipal water systems arise in large part from the prices that each entity pays for Colorado River water, and from the uses to which each type of consumer devotes its water allocation. Thus, for example, in calendar 2025, the farms and municipalities in the Imperial Irrigation District paid the District only $20 per acre-foot for Colorado River water.[14] In 2025, In that same year, by contrast, the District charged individuals and entities outside the District, but within Imperial County, $662.91 per acre-foot for the same water,[15] and in calendar 2024, as noted above, the District charged the San Diego County Water Authority more than $1,000 per acre-foot. Probably as a consequence of the low cost of water for farms in the Imperial Irrigation District, in 2023 and 2024 almost sixty percent of the agricultural acreage in the District was devoted to relatively low value crops that require significant amounts of water and are used largely for livestock feed, including alfalfa (34.7 percent of agricultural acreage), bermudagrass (16.5 percent), kleingrass (5 percent), and sudangrass (3.5 percent).[16]

The most environmentally sound way to allocate Lower Colorado River water – so that it is devoted to its highest-value uses and is used as efficiently as possible – would be to rely on the free market to determine its price. The foregoing discussion suggests that $1,000 per acre-foot might be the market-clearing price for the water, and as noted above, the sale of all 7.5 million acre-feet of Lower Colorado River water at that price – while adhering to the interstate division required by the Boulder Canyon Water Project Act – would yield $7.5 billion in federal revenue each year. The allocations of California water prescribed by the 1931 and 2003 Agreements of course constitute an obstacle to this approach, and the Department in the past has adhered to

---

[10] United States Department of the Interior: Bureau of Reclamation: Approval of Calendar Year (CY) 2024 Colorado River Water Order-The Metropolitan Water District of Southern California (MWD) (August 30, 2024).
[11] Imperial Irrigation District Water & QSA: 2024 Implementation Report (IID Report) at 67.
[12] *See Letter Agreement for Substitution and Conservation Modifications to the IID/MWD Water Conservation Agreement - December 18, 2014*, effecting "certain project substitutions and conservation modifications allowed under the Agreement For the Implementation of a Water Conservation Program and Use of Conserved Water entered into on December 22, 1988," and previously amended in 2003 and 2007. *See generally* IID/MWD Water Transfer Agreements | Imperial Irrigation District.
[13] IID Report at 50, 52.
[14] IID Report at 44. Similarly, in calendar 2022, farms in the Coachella Valley Irrigation District paid the District only $37 per acre-foot for Colorado River water. See These Imperial Valley Farmers Want to Pay More for Their Colorado River Water | Voice of San Diego.
[15] IID Report at 44.
[16] IID Report at 45.

those allocations; however, it is not required to do so. The 1931 agreement does not bind the federal government; indeed, it is styled as an Agreement

> *Requesting* the Division of Water Resources of the State of California To Apportion California's Share of the Waters of the Colorado River Among the Various Applicants and Water Users Therefrom in the State, Consenting to Such Apportionments, and *Requesting* Similar Apportionments By the Secretary of the Interior of the United States.[17]

In short, by its terms, the 1931 Agreement simply requests that the Department follow the allocation prescribed by the agreement – when it executes delivery contracts for Colorado River water to California users – "if agreeable to the United States."[18] The Department could therefore notify the parties to the 1931 Agreement that it intends to rescind its approval as part of its current effort to reorganize the distribution of Colorado River water in 2026.

Similarly, while the 2006 Supreme Court decree requires the Department to recognize the "present priority rights" to Lower Colorado water (under the Law of the River) held by a long list of California, Arizona, and Nevada entities, it does not require the Department to allocate particular amounts of water to the three California irrigation districts – the Imperial Irrigation District, the Palo Verde Irrigation District, and the Coachella Valley Water District – which together used almost 3 million acre-feet of Lower Colorado River water for agricultural purposes in calendar 2024. Instead, with respect to the first two Districts, the decree simply provides that each District possessed a "present perfected right" to the *lesser* of the amount specified in the decree or "the quantity of mainstream water necessary to supply the consumptive use required for irrigation of [a specified number of acres] and for the satisfaction of related uses . . ." Thus, for example, the decree provides that the Imperial Irrigation District has a present perfected right to

> annual quantities not to exceed (i) 2,600,000 acre-feet of diversions from the mainstream *or (ii) the quantity of mainstream water necessary to supply the consumptive use required for irrigation of 424,145 acres and for the satisfaction of related uses, whichever of (i) or (ii) is less,* with a priority date of 1901.[19]

Similarly, the Palo Verde Irrigation District has a present perfected right to the lesser of 219,780 acre-feet *or "the quantity of mainstream water necessary to supply the consumptive use required for irrigation of 33,604 acres and for the satisfaction of related uses . . . ."*[20]

As the Supreme Court decree establishes, the Department can therefore determine, for example, that one acre-foot per acre per year – equivalent to 12 inches of rain – is "the quantity of mainstream water necessary to supply the consumptive use required for irrigation;" that the

---

[17] 1931 Agreement at A479 (emphasis added).
[18] 1931 Agreement at A480.
[19] *Arizona v. California*, 547 U.S. at 175 (2006) (Appendix to the Decree) (emphasis added).
[20] *Id*. at 174-175 (emphasis added).

Imperial Irrigation District and the Palo Verde Irrigation District together are therefore entitled to a total of 457,749 acre-feet for their 457,749 acres; and that long-term contracts for the remaining 2,262,031 million acre-feet should be auctioned to the highest bidders. If we assume that $1,000 per acre-foot is the market-clearing price for Lower Colorado River water, this approach would produce almost $2.3 billion in federal revenue each year.

In short, the most environmentally sound and efficient way to allocate Lower Colorado River water would be for the Department of the Interior to rescind its approval of the 1931 California agreement, and any comparable agreements distributing the water currently allocated to Arizona and Nevada, and then develop a system for matching the value of Colorado River water to the price that users actually pay for it. Under this approach, the Bureau of Reclamation would each year, as it does now, determine how much of the 7.5 million acre-feet of Colorado River water allotted to California, Nevada and Arizona can actually be delivered to each of these States, as a function of existing and expected water levels in Lake Powell and Lake Mead. It could then require each entity entitled to a share of the water available – and not exempted from coverage by treaty requirements – to pay for it at a minimum price at least approaching its actual market value for the use in question, with the proceeds going to the United States Treasury, and with the effect of requiring the entity in turn to sell the water to users at a market-clearing price. Under this approach, the price that each entity pays and then charges for agricultural uses would have to be substantially lower than the price paid and charged for municipal water uses. The Imperial Irrigation District offers an example of this approach; it charges Imperial County farmers outside its District about $660 per acre-foot for Colorado River water, but charges the San Diego County Water Authority more than $1,000 per acre-foot. Of course, any such pricing structure would have to be introduced gradually, over a period of perhaps as many as ten years, in order to permit agricultural and municipal water users to adjust their respective crop selections and water distribution systems to account for the new pricing requirements. Ultimately, however, selling Colorado River water at prices that accurately reflect the actual value of the water will help to ensure that the water is devoted to its highest value uses, and is used as efficiently and environmentally sensibly as possible.

Letter #: 3776

Date Received: 2/26/2026

Sender Names: 3738: Louis Clarke

Emails: 3738: l_clarke@hotmail.com

Organizations:

Subject: Colorado EIS

DOI - . The Colorado River has been over allocated for years. Your recent EIS does not provide the preferred alternative, which is a requirement. You must as a Federal Agency, make the required adjustment to the EIS. Thank you.

Letter #: 3828

Date Received: 2/26/2026

Sender Names: 3789: Amanda Clever

Emails: 3789: mandykathryn120@gmail.com

Organizations:

Subject:

DOI - . Dear Administrator: The Colorado River's future depends on bold action, not incremental adjustments. We need stricter mandates on superfluous activities like lawn watering toward prioritization of irrigating agricultural operations in a management framework that protects clean water, communities, and ecosystems for generations to come. The Bureau has the opportunity to take meaningful action now to address the full reality of climate-driven water scarcity and the urgent need to protect water quality, ecosystems, and Basin communities.As a former and future resident of Arizona, frequent visitor, and passionate supporter of the Colorado River corridor, I urge the Bureau of Reclamation to significantly strengthen the Post-2026 Colorado River Basin Draft EIS that proactively addresses the crisis that we face and ensure the public has an opportunity to comment on its revised proposal before issuing its final decision.The Colorado River is already overallocated and shrinking. The Bureau must prioritize long-term sustainability, meaningful Tribal consultation, and enforceable reductions in demand, not simply identify new ways to divide a declining supply. Thank you,Amanda Clever

February 15, 2026

To: Bureau of Reclamation
BCOO-1000
P.O. Box 61470
Boulder City, Nevada 89006-1470
E-mail: crbpost2026@usbr.gov

From: Michael J. Clinton, PE
Life Member ASCE
USBR & DOI Retiree

Subject: Comments on Draft Environmental Impact State [DEIS]
Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead

Ladies and Gentlemen:

Since the early 1960's I have been involved in many aspects of Colorado River management. With that background, I have reviewed the alternatives presented in the DEIS and find them lacking in many ways including:

- The Colorado River is facing a long term water supply deficiency of five (5) MAF/year,
- The alternatives pretend to offer "solutions," and,
- Without a master concept, this approach is like "playing the violin while the Titanic sinks."

To address the long term needs of the basin, I propose a Pacific Ocean desalinization approach which would use the following components:

1. Desalting platform would be a repurposed Very Large Crude Carrier [VLCC] permanently located in international waters about 13 miles west of the SW corner of Camp Pendleton, CA.

2. The VLCC will be anchored in the California coastal current that brings water from the north.

3. The VLCC will use distilling processes to produce the needed desalinated water.

4. Water from the VLCC will be conveyed through horizontal tunnels located at 400 feet below sea level as follows:

© Michael Clinton Consulting, LLC

a. A service tunnel with 230 KV power, voice and data circuits carrying a pipeline with concentrated Salton Sea brine for disposal with the VLCC distillation brine and using "Tesla" type vehicles to transport staff;

b. a tunnel carrying one (1) MAF/year of filtered sea water to restore the Salton Sea; and,

c. a tunnel carrying five (5) MAF/year to all water-users that receive water from Imperial Dam. These deliveries of desalinated water will replace 2/3 of deliveries to water users in the US and Mexico on a forbearance basis.

To provide sites to mobilize drilling equipment, 230 KV substations and locate pipeline pumping, pressure, and connections, two pits will be needed as follows:

1. in the western Imperial Valley about 1 mile SW of the intersection of Highway S-2 and CA-86.

2. In the SW corner of Camp Pendleton, CA [Military needs to be contacted].

Drilling spoil will, as much as possible, be used to create a new berm across the Salton Sea from Antelope Island to the west shore, south of Pupfish Habitat at the mouth of San Filipe Creek.

The cost of implementing this proposal is comparable to replacing the currently used water supply created by Hoover and Glen Canyon Dams and would approach $12 billion, the present worth of the original construction cost of these two structures. A public/private financing strategy would be used.

While cities are spending billions on new airports and other infrastructure, the cost of this project is a drop in the bucket.

Thank you for your consideration of this alternative.

if you have questions or comments, call me at 702-807-9071.

Michael J. Clinton, PE
Life Member ASCE

8635 W. Sahara Avenue
Box #588
Las Vegas, NV 89117

© Michael Clinton Consulting, LLC

February 12, 2026

Bureau of Reclamation
Attn: BCOO-1000
PO Box 61470
Boulder City NV 89006

Dear Sir,

RE: Public comment Post 2026 EIS statement.

Enclosed please find my statement as referenced above. Also, Desalting waters of the Imperial Valley.

You can contact me at the phone number or e-mail above.

Sincerely,

Curtis L. Cloud

Curtis L. Cloud

Enclosures (2)

Lower Colorado River Basin: Reduction of 2.0 million Acre Feet annually is in order.

Reduce the water credits given each state by percentage of entitlement for 2 million Acre Feet per year. The Lower Basin has a total entitlement of 9 million Acre Feet. Example: Arizona, they have an entitlement of 2.8 million Acre Feet. So by divide 2.8 by 9.0 that equals .311%. California, they have an entitlement of 4.4 million Acre Feet. So by divide 4.4 by 9.0 that equals 48.9%. Nevada, they have an entitlement of 300,000 Acre Feet, therefore a 3.0% so by divide .03. Mexico has a treaty agreement for 1.5 million Acre Feet annually. Therefore they have a .167% stake in the water being delivered to the Lower Basin.

To divide up the 2 million by percentage:

Arizona would reduce by	622,000 Acre Feet
California would reduce by	984,000 Acre Feet
Nevada would reduce by	60,000 Acre Feet
Mexico would reduce by	334,000 Acre Feet
Total of	2,000,000 Acre Feet

I would suggest that the water used in the above reduction come from the credits given for Measured & Un-Measured return flows

I would recommend the Bureau fire up the Yuma Desalting Plant at 100 percent & blend 25,000 Acre Feet with it, thereby producing an addition 100,000 Acre Feet annually for use in the lower basin.

I am enclosing a document outlining the design of a proposed Desalting Plant located in the Imperial Valley. This plant along with blend water will produce some 500,000 Acre Feet annually. That volume is equal 20% of the demand in the valley. I also recommend that all the credit given Un-Measured in the River section between Parker & Imperial Dams be discontinued as none of this water makes it down to Imperial Dam!

Upper Colorado River Basin: Reduction of 1.5 Million Acre Feet annually is in order. It appears that Colorado, Utah, & Wyoming are not using their full entitlement based on the1948 upper basin compact. However, some reduction annually should be required in the new guidelines.

control this problem.

The drainage water flowing in the New & Alamo Rivers would be a good source of water to Desalt. Based on the records for the last 15 years the Imperial Valley & Mexico has discharged some 800,000 to 1,000,000 acre feet into the Salton Sea each year. Most of the drainage from Imperial Valley discharged into these two rivers. About 10% of drainage water from the Imperial Valley discharged directly into the sea.

According to Imperial Irrigation District records salinity count of this drainage water ranges around 2,500 to 3,000 Parts per Million (PPM). That equal to around 4 tons per acre foot. That quality of water can be desalted using the Reverse Osmosis (RO) process & produce some 70% as desalted water. However, desalted water is mineral hungry & should be blended with some untreated drainage water. By blending useable drainage water with the desalted produce the resulting will equal the same parameters as water coming from the Imperial Dam.

Two issue that come up using this method of desalting. One issue is the 30% reject water produced by the process must be disposed of. In this case it is recommended that this water be discharged into the Salton Sea. The second issue is the sludge produced from the lime pre-treatment process required using the RO system. The existing lime in the drainage water must be removed from the feed water as it will plug up the RO membranes.

If the unused line sludge can be discharged into the Salton Sea it would be combined with the reject water for conveyance to that location. If the lime sludge can not be discharged into the Salton Sea then a disposal site will be required. About 1/3 of the lime sludge can be recycled & reused in lime treatment process. The remaining sludge can be sold to maker of sheet rock etc. By selling the sludge will have a cost saving to the operation.

It is recommended that some 800 to 900 thousand acre feet be collected from near the mouth of the New Rivers and conveyed to the proposed Desalting Plant site. The drainage ditches & existing lateral canals spillways that parallel each of the drainage ditches that are located north of the proposed desalting site, should also be collected & conveyed to the desalting plant site. By constructing this collector system the point to which the diversion of the Alamo River should be located east of the mouth of the New River & near the Desalting Plant site.

At the site most this water should be processed through pretreatment of lime Solid Contact Reactor (SCR) & possibly water filtering. After the water exits the SCR's that lime softening process acid is added. That process changes the PH of the water. The blend water

80,000 to 125,000 acre feet of processed water would be blended with the product water out of the plant making a total of 520,000 acre feet. Based on the blend water running around 2500 PPM, the salinity count of the blended water will be around 670 PPM. However if the salinity of the blend water is higher or lower in salinity some adjustment in the volume may be required to meet the desired quality.

In a typical large operation a portion of the lime sludge is recycled. Recycling of the lime sludge will reduce the cost of the chemicals required. In most cases the lime sludge produced using the lime softening process produces some 3 times as was introduced. The remaining volume of lime by produce can be sold to makers of sheet rock & other commercial products that use lime. If the surplus lime sludge can not be sold or used by other it might be well to combine it with the reject water and discharge it into the Salton Sea if that is permitted?

The recommended location of the Desalting Plant is east of the mouth of the New River & south of the town of Calipatria CA. Most of the land located in that area is developed farms & will require the procurement of land large enough to construct & operate the proposed Desalting Plant plus all the needed water treatment process & equipment. Also some storage of the blend water may be required.

The division of the water from each of the rivers will require construction of diversion structures and pumping plants. Upstream of pump intake a desilting basins of some kind will be required along with a trash rack or traveling water screen. The silt & debris must be removed prior to pumping. From the pumping plants a pipeline will convey the water to the proposed desalting plant site.

A number of management structures will be needed to control & convey the water through the plant. One will be a plumbing system a (pipeline) to convey the reject water to the Desilting Basin/ Division structure located on the Alamo River. It is recommended that the Reject be used to flush the silt out of each of the basins & into the Salton Sea.

It is recommended that two (2) conveyance systems to deliver the blended/desalted water will require a pumping plant at the desalting plant along with a pressure pipelines. The first pipeline will be constructed to elevation on Imperial Valley's East Mesa a mile or two south of Siphon #1 on the Coachella Canal. The elevation of the termination shall be high enough to support the operation of the proposed flat bottom canal. The desalted/blended water will then discharge into a concrete lined canal running north & south for delivery into the existing East

of pressure pipeline & the south connection with the existing canal. The exact location will be determined by the designers. The new proposed canal will require construction of new turnouts for each the laterals feeding off the existing canal. It will also require a short section of canal, along with a check/drop structure to connect the north bound water back to the existing Highline Canal.

The second conveyance system will require a smaller pumping plant & a pipeline or concrete lined canal running north, from the plant to connect with the existing Vail Supply Canal upstream of the canal siphon under the Alamo River. This system will reduce the volume of water pumped up to the East Highline Canal by some 15 to 20 percent. Also depending on total of volume water required the proposed section **flat bottom canal section** described above may not be needed

To start with the volume of drainage water flowing in the Source Rivers is seasonal & varies with the irrigation demands. Therefore the desalting plant will require operation to meet the water available based on the season. It is estimated the blend water will equal 20 to 25% of the desalted water produced by the plant.

An issue that must be addressed is the water coming out of Mexico via the New River. That water contains sewage effluent that does not meet the US standards. Therefore a study should be made to insure that water is fit for feed water for the desalting plant. Question is will that water require additional treatment prior to using it?

One other consideration that is suggested, a desalting complex of this size & scope will require a very large source of electrical power. It is recommended that a 200 Megawatt Natural Gas fired steam generating plant be constructed at or near the proposed desalting plant site. The reject water produced by the desalting plant will supply the cooling water required for such a power unit. If the power is furnished off the open market it will require the supplier to build a unit of the same size. Also with the power demands varying with the seasonal demands, the power produced during the off season can be sold during that period. By constructing a power plant to furnish the desalting plant will also aid in the control of the energy cost.

A second consideration that would support the building of a electrical power plant is the waste heat produced by this plant could be used to re-calcite the line used in the recycling process. A point of interest is since the water Users in California signed the Quantification Agreement in 2003, the Salton Sea has fall in some 18 feet according t the USGS.

Letter #: 9

Date Received: 1/23/2026

Sender Names: 9: John Coffee

Emails: 9: mydogs2003@icloud.com

Organizations:

Subject: Fwd: The Colorado River is being drained!

DOI - . Quote:January 22, 2026: Storage in the sprawling, multi-state #ColoradoRiver Basin stood at just under 17.3 million acre-feet (53% of average), reflecting long-term issues in part related to chronically elevated temperatures and a multi-decadal Southwestern drought and #aridificationFrom Google:California's major reservoirs have a combined storage capacity of around 42 to 50 million acre-feet (maf), with the exact amount fluctuating but often cited in that range for total capacity, used for supply, flood control, and power; for example, Shasta Lake holds over 4.5 maf, while groundwater storage dwarfs surface reservoirs, holding hundreds of millions of acre-feet. Key Figures:Total Capacity: About 42-50 maf for major surface reservoirs.Largest Reservoir: Shasta Lake stores over 4.5 maf.Groundwater: Significantly larger, with potential storage between 850 million to 1.3 billion acre-feet. Sent from my iPhoneBegin forwarded message:From: John Coffee <mydogs2003@icloud.com>Date: January 23, 2026 at 12:52:59 AM CSTTo: crbpost2026@usbr.govSubject: The Colorado River is being drained!https://coyotegulch.blog/2026/01/22/Sent from my iPhone

Letter #: 10

Date Received: 1/23/2026

Sender Names: 9: John Coffee

Emails: 9: mydogs2003@icloud.com

Organizations:

Subject: The Colorado River is being drained!

DOI -
.https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fcoyotegulch.blog%2F2026%2F01%2F22%2F&data=05%7C02%7Cbor-sha-crbpost2026%40usbr.gov%7C237bfef018164500ce1c08de5a4c0df6%7C0693b5ba4b184d7b9341f32f400a5494%7C0%7C0%7C639047479853616863%7CUnknown%7CTWFpbGZsb3d8eyJFbXB0eU1hcGkiOnRydWUsIlYiOiIwLjAuMDAwMCIsIlAiOiJXaW4zMiIsIkFOIjoiTWFpbCIsIldUIjoyfQ%3D%3D%7C0%7C%7C%7C&sdata=usl4KtVCqLwbBlvHKsEtsVEOv%2BtNwifRSFu3C3okBu0%3D&reserved=0Sent from my iPhone

Letter #: 24

Date Received: 1/14/2026

Sender Names: 9: John Coffee

Emails: 9: mydogs2003@icloud.com

Organizations:

Subject: Fwd: Someone is Draining the Colorado River!

DOI - . Sent from my iPhoneBegin forwarded message:From: John Coffee <mydogs2003@icloud.com>Date: September 26, 2024 at 9:04:49 PM CDTTo: crb@crb.ca.govSubject: Someone is Draining the Colorado River!70-80% of California's allocation of Colorado River water is supposed to go to the 20 extended farming families of the Imperial Valley that control almost all California's farming today. Overwhelmingly, the Imperial Valley only grows hay that is not for local use.In 2022, the Metropolitan Water District of Southern California took all its water from the Colorado River. In the five years prior, they had only taken between five and twenty percent of their total water per year from the Colorado River. Furthermore, the Imperial Irrigation District received the same amount of water from the Metropolitan Water District of Southern California during all those years. Almost all the Imperial Irrigation District's water comes from the Metropolitan Water District of Southern California. The Imperial Irrigation District received the same amount of water in 2022 as it had in each of the five years prior.There is an extremely large disparity between how much water was taken from the Colorado River in those years and how much was received by the Imperial Irrigation District which is the primary source of the Imperial Valley's hay-farming monopoly's irrigation water. In the past two years, there has been dramatically less water in the Colorado River than in the twenty years before.Perhaps, these extra multiple illegal allocations of water from the Colorado River were dumped out into the ocean, seeing as California can store little of its rain water. If this is true, the farmers of the Imperial Valley, the Imperial Irrigation District, the Metropolitan Water District of Southern California and the Bureau of Reclamation are draining the Colorado River.Or perhaps, the water that was drained from the Colorado River is in California. California's reservoirs hold 50 million acre feet of water and they are nearly all full after a so-called mega drought.If everyone has to be moved out of the Southwestern US because of no electricity or running water, it will be ripe for the Chinese to move right in once they pump the water from California's reservoirs back into Lake Mead and Lake Powell, turning the electricity back on. The British Military is predicting a war between NATO and Russia, China, Iran, and North Korea in 2027 when China has promised to invade Taiwan!

Letter #: 173

Date Received: 1/23/2026

Sender Names: 170: John Coffee

Emails: 170: denialthree@gmail.com

Organizations:

Subject: The Colorado River is being drained!

DOI - . Quote:January 22, 2026: Storage in the sprawling, multi-state #ColoradoRiver Basin stood at just under 17.3 million acre-feet (53% of average), reflecting long-term issues in part related to chronically elevated temperatures and a multi-decadal Southwestern drought and #aridificationFrom Google:California's major reservoirs have a combined storage capacity of around 42 to 50 million acre-feet (maf), with the exact amount fluctuating but often cited in that range for total capacity, used for supply, flood control, and power; for example,Shasta Lake holds over 4.5 maf, while groundwater storage dwarfs surface reservoirs, holding hundreds of millions of acre-feet. Key Figures:Total Capacity: About 42-50 maf for major surface reservoirs.Largest Reservoir: Shasta Lake stores over 4.5 maf.Groundwater: Significantly larger, with potential storage between 850 million to 1.3 billion acre-feet.

Letter #: 1550

Date Received: 2/19/2026

Sender Names: 1539: Phyllis Coley

Emails: 1539: Phyllis.Coley.1117390591@forgrassroots.com

Organizations:

Subject: Comments on the Post-2026 Colorado River Guidelines

DOI - . Dear U.S. Bureau of Reclamation,I'm writing today to ask Reclamation to take immediate and bold action to address the deteriorating conditions on the Colorado River.The existing rules -- that expire at the end of 2026-- were ineffective at protecting water levels in Lake Phyllisowell and Lake Mead and ensuring water available in the Colorado River to support its people, economies, and ecosystems. As a result, Lake Phyllisowell elevations are predicted to reach the critical (minimum power pool) elevation by mid-July of 2026.Reaching critical water levels at Lake Phyllisowell not only compromises the ability of the dam to deliver water downstream and generate power but also puts at risk river flows in the Grand Canyon and its cultural and ecological resources.Water uses in the Colorado River Basin need to be rebalanced. The promises made 100 years ago are not attainable in the 21st century given how significantly climate change has reduced water supplies. Further, the new rules need to ensure that tribes and the environment receive an equitable share of the river for the future.The Colorado River and its tributaries are waterways with ecological, spiritual, and cultural significance that should be honored and safeguarded. I urge you to prioritize these values and build a just and sustainable Colorado River Basin by taking the following actions: * Commence a comprehensive study of Glen Canyon Dam infrastructure to ensure that the dam's design does not prevent adequate flows from being released through the dam as critically low water levels become the norm.* Work with the Secretary of the Interior to direct and fund the Glen Canyon Dam Adaptive Management Phyllisrogram to develop a plan for how to operate Glen Canyon Dam to meet the mandates of the Grand Canyon Phyllisrotection Act of 1992 when Lake Phyllisowell falls below critical elevations (3,525 feet, 3,500 feet, and 3,490 feet).* Until the infrastructure and operational studies are completed and solutions implemented, prioritize the following to protect Grand Canyon flows and resources:o Follow the Grand Canyon Phyllisrotection Act of 1992, which mandates that releases from Glen Canyon Dam protect and improve the cultural and ecological values of Glen Canyon National Recreation Area and Grand Canyon National Phyllisark. This includes protecting the canyon's native fish, beaches, and cultural and archaeological sites.o Maintain Lake Phyllisowell water levels above 3,525 feet to ensure high flow experiments, that protect the ecology of the Grand Canyon, can continue to occur.o Until a physical barrier is built to prevent non-native fish from passing through the dam, prioritize keeping Lake Phyllisowell above 3,540 feet to limit non-native fish passage.o Commit to continue cool water releases beyond 2027 from Glen Canyon Dam's river outlet works to maintain temperatures that discourage nonnative fish reproduction. If cool mix flows cannot be maintained, keep Lake Phyllisowell above 3,570 feet.o Ensure that Glen Canyon Dam releases accommodate the need for variable high and low flows in the canyon, but limit steady high-volume releases to avoid eroding too much sediment from Marble and Grand Canyons.Sincerely,Phyllis Coley

Letter #: 3157

Date Received: 2/27/2026

Sender Names: 3128: Carol Collins

Emails: 3128: info@greatbasinwater.org

Organizations:

Subject: Carol Collins Comments on Colorado River

Great Basin Water Network DOI - . The document fails to consider the following:The DEIS ignores the complete geographic scope, and the impacts of that narrowed scope from curtailments, inaction, and limited action in directly affected communities in the Lower Colorado River Basin.Air quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Water quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Water availability impacts on communities in the Lower Colorado River Basin are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Impacts on Lower Region MSCP (27 species including listed Endangered Species) are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Socioeconomic impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts on Lower Colorado River communities that will result from the alternatives in the DEIS.Impacts on recreation facilities, refugia, park service units, federal infrastructure, and directly connected waterways of the Colorado River System are too narrowly reviewed in the Technical Appendices.Three Alternatives Do Not Likely Comply With The Law Of The River. Programmatic Review Is Necessary And So Is Congressional ActionIn Appendix C, the DEIS implies that modeling justifying three of the proposals "may not be implementable" because potential non-compliance with "laws, contracts, agreements, and other authorities that are part of the Colorado River legal and contractual framework referred to as Law of the River." That is a reference to the Enhanced Coordination, Maximum Operational Flexibility, and Supply Driven Alternative. Without any deal in place among the states or congressional action, a Record of Decision supporting those alternatives poses legal challenges that may be insurmountable.Therefore, according to the DEIS, the No Action Alternative and Basic Coordination Alternative are among the only options that could avoid a legal challenge after a Record of Decision.Those options pose some of the worst outcomes for Lakes Powell and Mead. We believe that no course of action as put forth in the DEIS is a sufficient means of stabilizing the system under the current Law of the River framework. This is troubling considering Reclamation is predicting some of the most dire reservoir elevations ever in the coming two years.Reclamation should undertake a programmatic review as the states continue negotiating. This year's low flows will inevitably get people back to the negotiating table in a meaningful way. Congress will act when the reservoirs are in crisis. We have seen congressional, bi-partisan action multiple times in the past seven years. When Congress is ready, enlist the National Academy of Sciences to undertake a programmatic review in partnership with the Department of Interior, Reclamation and other cooperating agencies. This document is not the beginning of the end. We believe it is merely the end of the beginning.The DEIS Fails To Consider Impacts On Irretrievable Resources By Sanctioning The Repurposing Of Water ResourcesThe DEIS offers multiple alternatives that impose varying levels of cuts in the Lower Basin and no meaningful cuts in the Upper Basin. Some alternatives mention the possibility of Upper Basin "conservation" but those offerings do not describe who, what, where and when. There is nothing steadfast for cuts in the Upper Basin.The DEIS also showcases a modified version of the 2016 Upper Basin Depletion Schedule that still assumes considerable new uses of water in the Upper Basin in the coming decades. Because of the limited resources available, there's no doubting that cuts imposed on the Lower Basin will be repurposed by the Upper Basin. That repurposing defeats the intent of this analysis. Once that water is re-appropriated by Upper Basin regulators, waters with established beneficial uses will not return to where those uses were first proven in the Lower Basin. This is highly suspect.Furthermore, we question how Reclamation can execute its recognized authority to force a curtailment in one basin but not even questioning how development of new appropriations in another part of the basin will impact the whole system and those who had to undertake curtailment. Upper Basin reservoirs are subject to the "apportionments" among

the two basins, seven states and Mexico (See Colorado River Storage Project Act, Pub. L. No. 84-485, SS 4, 70 Stat. 107 (1956)). Reclamation has a great deal of say in how certain rights are managed in the system. But how can regulators sequester the differences between the starting and end points of a highly connected system where some users have established decades worth of use? This gray area is at the heart of the ongoing conflict among the seven states, and we request more information on this in the FEIS.We fear that it is an unacceptable practice to allow the Upper Basin to repurpose water from Lower Basin in the name of state-led permitting efforts in Colorado, New Mexico, Utah and Wyoming. Further declines in the system will challenge Reclamation's mission to protect infrastructure, ecosystems, and communities. It means less water making its way through the southernly reaches of the system in the majority of years if current trends continue. Every state needs a curtailment plan on the Colorado River. This DEIS fails to compel the Upper Basin States to meaningfully consider how they will act to protect federal assets and resources.Finally, this could also bring about conflict over tribal water rights in the Upper and Lower Basins -- especially where settlements have been established. There must be consideration of reducing, at a 1-for-1 rate, junior non-tribal use for those senior tribal rights that have not yet been put to use. How Reclamation would undertake this matter in the Upper and Lower Basin must included in any FEIS. Also, there must be consideration of how Reclamation would prevent new Upper Basin appropriations put forth by non-native water users from using, in a de facto sense, settled and adjudicated rights of Lower Basin tribes.DEIS Ignores Glen Canyon Dam's Antique PlumbingThe analysis in the DEIS fails to consider bypass, decommissioning, and other meaningful resolutions available at Glen Canyon Dam, which poses considerable concerns for water delivery and endangered species protections. We understand and respect the legal arguments for not including the One-Dam Alternative. But it is a mistake to not undertake comprehensive analysis on this matter. Keeping Lake Powell's elevations above 3550', 3525, and 3490' are not realistic scenarios for the long-term. Failure to include greater analysis on Glen Canyon Dam's river outlet works will ultimately cost us all -- imposing direct impacts on Lake Mead, Hoover Dam, other federal infrastructure, metropolitan areas, agricultural hubs, tribal resources, sensitive species, National Park Service units, U.S. Fish and Wildlife units, and other conservation areas in the Lower Basin.The DEIS' Purpose-And-Need Is Too Narrow And Segments Requisite ReviewsReclamation, admittedly so in its Purpose and Need statement, recognizes the grave uncertainties we face if conditions do not improve on the river system. Reclamation also recognizes the direct connections the DEIS makes with upstream infrastructure associated with the Colorado River Storage Project units and in Lower Basin units at Parker Dam, Davis Dam, Imperial Dam, and Palo Verde. The DEIS would benefit from greater analyses in the technical appendices dealing with directly related impacts at the dams during low-flow periods. The same can be said for analyzing impacts at all Colorado River Storage Project facilities in low-flow periods too. They will be essential for propping up Lakes Powell and Mead. What will operations look like if CRSP and Lower Basin Infrastructure are only operating collectively at 10-20 percent of normal? What can we expect? To say that management at Mead and Powell are not directly connected to that management is implausible.If you have any additional questions please contact me.Carol
Collins(c) Great Basin Water Network. Powered by weForms.

Letter #: 730

Date Received: 2/24/2026

Sender Names: 720: Patricia Collins

Emails: 720: patriciacollins@valornet.com

Organizations:

Subject: Please support a smarter future for the Colorado River, and all who depend on it!

DOI - . Dear Bureau of Land Mangement The Bureau of Reclamation needs to act in a smart decisive way now to ensure the Colorado River has a robust future or the future of a good part of the western United States will be in jeopardy from lack of a reliable water source. The time is now. This problem has waited too long too long already. I am writing to encourage the Bureau of Reclamation to combine elements from the proposed alternatives in the draft Environmental Impact Statement (DEIS) to ensure a sustainable future for the Colorado River with new, long-term guidelines that: - Provide clarity and predictability: continued crisis management puts everything and everyone in the basin at risk. New guidelines must promote conservation and respond to conditions on the ground - Incorporate flexible, adaptive tools for conserving, storing, and managing water: new guidelines must allow for more flexibility in how water is stored and moved to protect and stabilize the system - Embed environmental stewardship: the Colorado River is more than a plumbing system. New guidelines must account for the river itself and the bounty of life it sustains. - Provides for meaningful and voluntary Tribal participation grounded in sovereignty and self-determination: the 30 federally recognized Tribes in the Basin must be included in decision-making. - And preserve pathways for advancing in-basin mitigation and continued binational cooperation with Mexico Sincerely, Patricia Collins P O Box 282 Sanford, TX 79078-0282 patriciacollins@valornet.com

Letter #: 7739

Date Received: 3/2/2026

Sender Names: 7687: Sarah Congdon

Emails: Not Provided

Organizations:

Subject:

Hello, my name is Sarah Congdon, and my contact info is our landline in Tucson, 520... 6156422. I am calling to comment on the Bureau of Reclamation's draft EIS and proposals for the Colorado River, particularly the two, Lake Powell and Lake Mead. And I just want to say the following, that, I'm concerned that any of the plans fail to deal with the 1922 compact between the Upper and Lower Basin states, and that compact predates all of the other agreements, and obligates the Upper Basin states to, supply sufficient water, over... within the 10-year period, each iteration, to the lower basin, and it doesn't seem that that commitment is being considered at all in the five alternatives. I also think that it's grossly unfair that the Upper Basin's states are not being required to conserve water or take any cuts, while all of the cuts will be required at the lower base estates, and particularly Arizona, there will be tremendous economic and social impacts. From those cuts in all of the lower basin states. I'm not sure that that's been adequately described in the alternatives being proposed. And I think just looking at things from a life should be as just as possible, it is not right that a diminishing water source like the Colorado River should be hogged by the people who are upriver from us. I think it's not right that they should be allowed to just say. No, we don't have to take any cuts. Most important, I think that it really should be included in your calculations that the lower basin states have already, in good faith. Worked out a plan to share in the shortages. That plan does not hit Arizona as hard as just going with the alternatives that you all have been looking at in that array of 5, and I think you ought to respect the work that the Lower Basin states have done in figuring out how we can, together, take enough cuts. So please try and reflect that plan in whatever ultimate plan the Bureau settles on. Thank you for taking these public comments. I know this is a hard job, and we appreciate that you're doing it. Again, if you need to reach me, my number is 520-615-6422.

Letter #: 2797

Date Received: 2/24/2026

Sender Names: 2772: Nena Cook

Emails: 2772: cooknena@hotmail.com

Organizations:

Subject: Please support a smarter future for the Colorado River, and all who depend on it!

DOI - . Dear Bureau of Land Mangement I am writing to encourage the Bureau of Reclamation to combine elements from the proposed alternatives in the draft Environmental Impact Statement (DEIS) to ensure a sustainable future for the Colorado River with new, long-term guidelines Colorado River is vital for water supply, agriculture, ecosystems, supporting approximately 40 million people and generating significant economic activity in the SW United States. AKA the Colorado River referred to as "Lifeline of the Southwest," as supplies water to 43+ million people, including major urban centers as Denver, Los Angeles, Las Vegas. It is crucial for agricultural activities, providing irrigation for vast farmlands in the region. Approximately 80% Arizona's population relies on the river for its water needs, highlighting its significance in sustaining both urban & rural communities. The river generates nearly $4 trillion in economic activity each year, underscoring critical importance to the nation's economy. This includes supporting industries, municipal needs, recreational activities, essential for livelihoods of many residents in the region. Colorado River plays vital role in maintaining ecosystems as diverse wildlife habitats, essential for health of various plant & animal species. The river's flow is crucial for sustaining the natural environment, supports recreational activities for fishing, boating, tourism. Despite its importance, Colorado River faces significant challenges, including drought, climate change, overuse. The ongoing megadrought decreased river's flow, threatening water supplies & hydropower production. Effective management is critical, as river's allocation is governed by a complex set of agreements aka "Law of the River," involves multiple states and tribal communities. Do you now understand the Colorado River is a crucial resource supports millions of people, drives economic activity, sustains ecosystems, making its management & conservation vital for the future. This great river can be upgraded better by the below when YOU support its future, not diminish. - Provide clarity and predictability: continued crisis management puts everything and everyone in the basin at risk. New guidelines must promote conservation and respond to conditions on the ground - Incorporate flexible, adaptive tools for conserving, storing, and managing water: new guidelines must allow for more flexibility in how water is stored and moved to protect and stabilize the system - Embed environmental stewardship: the Colorado River is more than a plumbing system. New guidelines must account for the river itself and the bounty of life it sustains. - Provides for meaningful and voluntary Tribal participation grounded in sovereignty and self-determination: the 30 federally recognized Tribes in the Basin must be included in decision-making. - preserve pathways for advancing in-basin mitigation and continued binational cooperation with Mexico THANKS KINDLY! TAKE TO HEART Sincerely, Nena Cook 222 Bear Paw Dr Newport, WA 991569158 cooknena@hotmail.com

Bureau of Reclamation
Attn: BCOO-1000
P.O. Box 61470
Boulder City, NV 89006
crbpost2026@usbr.gov

Subject: Comments on the Draft Environmental Impact Statement for Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead.

I am writing to document my concerns regarding the Draft Environmental Impact Statement (DEIS) for the Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead.

None of the four action alternatives included in the DEIS address the following issues:

1) None of the four action alternatives address the consequences of the imminent triggering, within the next 12 months, of the requirements of Article III(d) of the Colorado River Compact of 1922 (Compact), requiring that "[t]he States of the Upper Division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of ten consecutive years reckoned in continuing progressive series..." Taken in conjunction with the requirements of Article III(c) that the national obligation of the United States to satisfy the 1944 Treaty with Mexico to supply 1,500,000 acre-feet annually "shall be equally borne by the Upper Basin and the Lower Basin, and whenever necessary the States of the Upper Division shall deliver at Lee Ferry water to supply one-half of the deficiency so recognized in addition to that provided in paragraph (d)," the aggregate flow for any period of ten consecutive years below which the Upper Basin "will not cause the flow of the river at Lee Ferry to be depleted" becomes 82,500,000 acre-feet. The Upper Basin has claimed that the non-depletion obligation under Article III of the Compact is not a delivery obligation to the Lower Basin, that it will not be responsible for having caused the flow at Lee Ferry to have been depleted below the specified levels, but rather climate change is responsible, and that the provisions of Article III(c) and Article III(d) only apply if the Upper Basin takes depletions above its apportionment of 7.5 million acre-feet in any year under the Compact. The Upper Basin's interpretations are incorrect. The clear reading of Article III(d) is that the Upper Basis "will not cause the flow...to be depleted below an aggregate of 75,000,000 acre-feet for any period of ten consecutive years." Period. If there are <u>any</u> depletions by the Upper Basin (excluding pre-1922 rights) that reduce the flows below 75 million acre-feet in any 10-year period, even a single acre-foot, notwithstanding that there might be other causes, then the Upper Basin has categorically violated its obligation under Article III(d). And, clearly, the Upper Basin will have many millions of acre-feet of depletions that contribute to any shortfall, a number that will continuously grow over subsequent 10-year periods once the trigger occurs.
2) In the event that the flow at Lee Ferry falls below the levels specified under Article III of the Colorado River Compact due to lack of sufficient system water in Lake Powell, aside from the quid-pro-quo described in the previous section, none of the four action alternatives identify any actions to attempt to mitigate this shortfall, even temporarily, such as the release of water currently being held in the other CRSP Upper Initial Units, reductions in allowable depletions by

the Upper Basin States or, at a minimum, compensation to the Lower Basin States for these shortfalls.

3) The only action that the United States may pursue outside of an agreement among some or all of the Basin States is the "Basic Coordination" alternative. This alternative relies upon the doctrine of prior appropriation and strict compliance with the priority system in the Lower Basin, including the Junior Priority of the Central Arizona Project (CAP), as detailed in Section 301(b) of the 1968 Colorado River Basin Project Act (Act). However, the United States may modify the "Basic Coordination" alternative by incorporating any agreements that the Basin States may make or have made, including the agreement among Arizona, California and Nevada to share the initial 1,250,000 acre-feet of shortages to the Lower Basin annually.
4) Any implementation of the "Basic Coordination" alternative that incorporates exercising all or part of the CAP junior priority, as defined under Section 301(b) of the 1968 Colorado River Basin Project Act, will necessarily reflect the Secretary having determined that "there is insufficient main stream Colorado River water available for release to satisfy annual consumptive use of seven million five hundred thousand acre-feet in Arizona, California, and Nevada" under the Act. However, such a determination must consider available system water in the Upper Initial Units, including the water in Lake Powell below elevation 3,490 feet that may be released through Glen Canyon Dam's river outlet works, plus any water that may be available by reducing depletions in the Upper Basin to comply with Articles III(b) and III(c) of the Compact. Otherwise, any limitations applied to the diversions from the mainstream for the Central Arizona Project under Section 301(b) of the Act are invalid.

I respectfully request than any alternative selected by the United States in a Final EIS or a Record of Decision (ROD) correct the deficiencies noted above.

Thank you for your attention to this matter.

Sincerely,



Theodore C. Cooke, D.B.A

1126 E Irma Ln
Phoenix AZ 85024

Tedcooke701@hotmail.com

Letter #: 6301

Date Received: 2/28/2026

Sender Names: 6274: Carole Cool

Emails: 6274: Carole.Cool@messages.fwwatch.org

Organizations:

Subject: Protect Drinking Water – Save the Colorado River Basin

DOI - . Dear Bureau of Reclamation, Dear Bureau of Reclamation, The Colorado River is in crisis, yet discussions of future management alternatives do not account for how the water is used. The Bureau must use its authority to push the Basin states to reach a joint agreement that accepts the need for mandatory conservation measures limiting corporate water abuses. Overuse by major agribusiness and tech corporations threatens the basin and water supply for millions of people. The vast majority of water from the Colorado River is used by big agribusiness, primarily for growing alfalfa, a feedstock for cattle on factory farms. Big technology companies across the Basin states are deploying water-hungry data centers with little regulation or regard for impacts on water resources. With the Colorado River significantly overstretched, every environmental analysis and plan for the future must consider how the River's resources are being used. The overuse of the Colorado River by big agribusiness and technology corporations - amid already record-low water levels and drought - has serious consequences that threaten accessible drinking water for millions of people. I urge the Bureau of Reclamation to prioritize sustainability and the needs of the millions of people relying on the Colorado River for drinking water over corporate profit. Sincerely, Carole Cool Berkeley, CA 94703 I urge the Bureau of Reclamation to prioritize sustainability and the needs of the 40 million people relying on the Colorado River for drinking water over corporate profit. Sincerely, Carole Cool 2408 McKinley Ave Berkeley, CA

Letter #: 9689

Date Received: 12/4/2024

Sender Names: 9498: Austin Cooper

Emails: 9498: 2002austinwildcooper@gmail.com

Organizations:

Subject: Page 0809

I Support Recreation on the Colorado River Basin I am writing as a supporter and user of Lake Powell, Lake Mead and water in the west. I am a concerned citizen and supporter of responsible water and energy infrastructure management. I am writing regarding the proposed alternatives for the Post-2026 Colorado River Operation Guidelines. It is important to recognize the role that the dams within the Colorado River Basin play in ensuring energy reliability, irrigation, water storage, navigation, and regional economic stability. I appreciate the Bureau of Reclamation recognizing BlueRibbon Coalition's Path to 3588' Plan as an alternative considered and recreation as a whole in alternatives analyzed. Glen Canyon and Hoover Dam and the Colorado River Basin, face growing pressure from radical environmental activists and anti-dam interests who seek its decommissioning. These calls threaten the dam's essential functions on the Colorado River system, therefore we appreciate BOR recognizing that moving to a one dam system would not yield a resilient system and would be bad for the environment and the economy. As a recreation user, I support any alternative that recognizes and supports recreational opportunities within the Colorado River Basin. The Supply-Driven, Max Operational Flexibility and Enhanced Coordination Alternatives all identify release levels based off of low water levels, shortages or low inflows which will better protect the dams critical infrastructure. I support any alternative or blend of alternatives in which releases are based off of real water inflows and not maximum deliveries that could hurt the water storage system and ultimately recreation. I support keeping the most water in the reservoirs for recreation as possible. The nation cannot afford to treat these critical infrastructure assets as bargaining chips in speculative environmental campaigns. Lake Powell and Lake Mead are too important to lose, and its operation must be protected. I'm writing as someone who has grown up on Lake Powell and cares deeply about its future. This lake isn't just a body of water to me. It's where I've spent time with family, built lifelong memories, and developed a real appreciation for the outdoors. It's part of my life and part of our community. I understand water management in the Colorado River Basin is complex and affects many states and communities. But large additional water releases from Lake Powell could seriously damage recreation, local businesses, wildlife habitats, and the long term sustainability of the area. Once infrastructure like marinas, boat ramps, and Post-2026 Colorado River 809 of 5176 ecosystems are impacted, it's not easy or cheap to recover. Lake Powell supports thousands of jobs and brings in major economic activity for the region. Beyond economics, it provides access to nature for families like mine who rely on it as a place to connect, unplug, and experience something bigger than ourselves. I urge you to carefully consider the long term environmental, economic, and community consequences before approving further water reductions. Please prioritize balanced, science based solutions that protect both downstream needs and the future of Lake Powell. Thank you for your time and consideration. Post-2026 Colorado River

Letter #: 6612

Date Received: 3/1/2026

Sender Names: 6584: Steven Corbato

Emails: 6584: Steven.Corbato.1115448481@advocatefor.me

Organizations:

Subject: Comments on the Post-2026 Colorado River Guidelines

DOI - . Dear U.S. Bureau of Reclamation,I'm writing today to ask that the U.S. Bureau of Reclamation take immediate, bold action to address the deteriorating conditions on the Colorado River.I reside in Oregon now, but am a former long-time Utah resident. I have spent significant times on the lands of the Colorado Plateau with a variety of field scientists. For some perspective, I first saw Lake Powell and toured the Glen Canyon Dam in 1971 when I was ten years old. Two years ago I visited Hoover Dam for the first time and was shocked to see the level of desiccation of Lake Mead. Previously, I toured the vast archeological repository at the Natural History Museum of Utah in Salt Lake City several times and witnessed first hand how much archeological and cultural history was destroyed when Glen Canyon was fully inundated.The existing rules -- that expire at the end of 2026-- have proven ineffective at protecting water levels in Lake Powell and Lake Mead and ensuring water available in the Colorado River to support its people, economies, and ecosystems. As a result, Lake Powell elevations are predicted to reach the critical (minimum power pool) elevation by mid-summer **this year**.Reaching critical water levels at Lake Powell not only compromises the ability of the dam to deliver water downstream and generate power, but also puts at risk river flows in the Grand Canyon and its cultural and ecological resources.Water uses in the Colorado River Basin need to be rebalanced. The promises made 100 years ago at the time of the initial signing of the Colorado River Compact - when the current population levels of the region were not anticipated - are not attainable in the 21st century given how significantly climate change has reduced water supplies. Further, the new rules need to ensure that the Tribes and the environment receive theirn equitable share of the river for the future.The Colorado River and its tributaries are waterways with ecological, spiritual, and cultural significance that should be honored and safeguarded. I urge you to prioritize these values and build a just and sustainable Colorado River Basin by taking the following actions: * Commence a comprehensive study of Glen Canyon Dam infrastructure to ensure that the dam's design does not prevent adequate flows from being released through the dam as critically low water levels become the norm.o Specifically, the should should consider river-level bypass of Glen Canyon Dam to ensure naturalized flows through the Grand Canyon, continue Glen Canyon's ecological restoration, and provide maximum operational flexibility in the system. The dam has become a liability preventing water from flowing downstream. Failing to study river-level bypass needlessly limits options for the river, its users, and its ecosystems.o In addition, this study should address a "Fill Mead First" option, prioritizing water storage in Lake Mead before Powell. Today's hydrology cannot fill either Lake Mead or Lake Powell. Given this reality, it doesn't make sense to continue drowning the world-class canyons in Glen. Analyzing different variations of a one-reservoir option would benefit the ecosystems and management of the entire Basin.* Work with the Secretary of the Interior to direct and fund the Glen Canyon Dam Adaptive Management Program to develop a plan for how to operate Glen Canyon Dam to meet the mandates of the Grand Canyon Protection Act of 1992 when Lake Powell falls below critical elevations (3,525 feet, 3,500 feet, and 3,490 feet).* Until the infrastructure and operational studies are completed and solutions implemented, prioritize the following to protect Grand Canyon flows and resources:o Follow the Grand Canyon Protection Act of 1992, which mandates that releases from Glen Canyon Dam protect and improve the cultural and ecological values of Glen Canyon National Recreation Area and Grand Canyon National Park. This includes protecting the canyon's native fish, beaches, and cultural and archaeological sites.o Maintain Lake Powell water levels above 3,525 feet to ensure high flow experiments, that protect the ecology of the Grand Canyon, can continue to occur.o Until a physical barrier is built to prevent non-native fish from passing through the dam, prioritize keeping Lake Powell above 3,540 feet to limit non-native fish passage.o Commit to continue cool water releases beyond 2027 from Glen Canyon Dam's river outlet works to maintain temperatures that discourage nonnative fish reproduction. If cool mix flows cannot be maintained, keep Lake Powell above 3,570 feet.o Ensure that Glen Canyon Dam releases accommodate the need for variable high and low flows in the canyon, but limit steady high-volume releases to avoid eroding too much sediment from Marble and Grand Canyons.o Acknowledge the extensive

emerging resources in Glen Canyon. In the years since Lake Powell reservoir began declining, there has been an amazing reemergence of natural features like Cathedral in the Desert and Gregory Natural Bridge, as well as vital riparian ecosystems, cultural sites, and new recreation opportunities. These resources must be given equal value to other resources across the Basin.Thank you for this opportunity to provide this comment as input into this critical rule making process now before the Bureau of Reclamation.Sincerely,Steven Corbato

Letter #: 5589

Date Received: 2/28/2026

Sender Names: 5553: JC Corcoran

Emails: 5553: JC.Corcoran@messages.fwwatch.org

Organizations:

Subject: Save the Colorado River Basin

DOI - . Dear Bureau of Reclamation, The Colorado River is in crisis, and any honest discussion of its future must begin with an inconvenient fact: the vast majority of its water isn't going to the 40 million people who depend on it. It's going to big agribusiness and tech corporations, with virtually no accountability. Alfalfa -- a feedstock grown almost exclusively to sustain factory-farmed cattle -- consumed an estimated 2.1 trillion gallons of Colorado River water in 2025 alone. That is enough water to supply every person in the Basin for nearly three and a half years. Mega dairies, which also generate significant pollution and threaten drinking water quality, consumed an additional 82 billion gallons in 2022. Basin states are applying water at a rate 70% higher than the national average -- for crops that have no business being grown in one of the most arid regions on the planet. And now, with the river already at record-low levels, big tech companies are quietly deploying water-hungry data centers across Basin states with little regulation and no regard for the consequences. The Bureau of Reclamation has the authority to act. It must use it. Any future management plan that fails to address how the river's water is actually being used isn't a plan -- it's a delay tactic. The Bureau must push Basin states to reach a binding joint agreement that includes an immediate halt to the expansion of alfalfa farming, mega dairies, and data centers, and a significant rollback of water-intensive crops wholly unsuited to arid climates. Forty million people are downstream of these decisions. Corporate profit is not a higher priority than their drinking water. I urge the Bureau of Reclamation to prioritize sustainability and the needs of the 40 million people relying on the Colorado River for drinking water over corporate profit. Sincerely, JC Corcoran 10 Floresta Dr Santa Fe, NM

Letter #: 3123

Date Received: 2/26/2026

Sender Names: 3094: Sean Coughlin

Emails: 3094: sean.s.coughlin@gmail.com

Organizations:

Subject: Colorado River

DOI - . Please help return the Colorado River to its natural state and help us move past water sovereignty of the past. Thank you for your time. Sean Coughlin (603) 493-8581 sean.s.coughlin@gmail.com

Letter #: 3219

Date Received: 2/26/2026

Sender Names: 3189: Regina Cracchiolo

Emails: 3189: rmcracchi@gmail.com

Organizations:

Subject: Colorado River

DOI - . Protect the Colorado River and don't lock in more water scarcity.Regards,Regina Cracchiolo

Letter #: 1943

Date Received: 2/23/2026

Sender Names: 1930: Milo Cress

Emails: 1930: cressmilo@gmail.com

Organizations:

Subject: Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead - Draft Environmental Impact Statement

DOI - . Question: Is the daily transfer of approximately 1,091 acre feet of water from the western slope to the eastern slope through the Alva B. Adams Tunnel considered as a potential environmental factor affecting allocations? It is reported that that transfer is about half of what goes through Hoover dam.Milo CressCanon City, CO

Letter #: 7478

Date Received: 3/2/2026

Sender Names: 7433: Paula Cullison

Emails: 7433: paulacullison@aol.com

Organizations:

Subject: Environmental Impact Statement for Colorado River - Post 2026

DOI - . To Whom It may Concern: As an Arizona resident since 1974, I am concerned about environmental issues. The one what has come to my attention is your request for public comments on the Environmental Impact for the Colorado River - Post 2026. Long term planning is critical to the well being of the natural environment and the health of its people. We need visionaries and creative critical thinkers to find innovative solutions to our problems. They are of major importance. ... now more than ever. As we look to prioritize the sustainability of our ecosystem, let us insure the health and well being of our people, respect for the tribal water rights of native peoples, the creation of innovative / flexible water conservation policies and the transparency of water useage. Furthermore, I am a firm believer that costs and responsibilities should be shared. Arizona should not have to shoulder all or a major part of the expenses. One's fair share should always be the norm. Arizona is blessed with some major waterways - Lake Powell and Lake Mead being two of them. Hiking the Grand Canyon 6 times .. over the years, we became enamored with the mighty Colorado River. To this end, in the mid 70s I testified before the US Dept of the Interior with other citizens / members of the Sierra Club.at a hearing in Phoenix. We were concerned about motorized boats on the Colorado River, planes flying below the rim, and the mining of uranium ... all of which were desecrating the magnificent Grand Canyon, one of the nation's treasures and home to native peoples. In 1992 I attended the UN Conference on the Environment and Development in Rio De Janeiro, Brazil. At that Rio Earth Summit, Jacques Cousteau held up a glass of water and stated that potable water was THE critical issue of our time (as is access to it). I trust that you will give serious consideration to the input form the Public. Thank You Sincerely, Paula G. Cullison Cell: 602-689-4342 13058 N Surrey Circle Phoenix, AZ 85029 International Travel Writer and Photographer www.paulacullison.com facebook LinkedIn instagram In Celebration of Women - Guest Curator Arizona Women's Partnership, Inc. President / Founder www.azwp.org all volunteer philanthropic non-profit, awards grants to charities that assist disadvantaged women and children in AZ

Letter #: 3329

Date Received: 2/27/2026

Sender Names: 3298: Jude Culp

Emails: 3298: judeculp@gmail.com

Organizations:

Subject:

DOI - . Water

Letter #: 233

Date Received: 2/2/2026

Sender Names: 234: Major. John R. Currell

Emails: 234: jcurrell@earthlink.net

Organizations:

Subject: Fw: Letter dated January 12, 2025 from John R. Currell.

Rebecca Smith, Ph.D.Bureau of Reclamation, Lower Colorado Basin RegionDuty Station: CADSWES, University of Colorado BoulderCell: (702) 277-4617 Gen asked me to send this to you, incase it is post-2026 related. Maria GermainRegional LiaisonInterior Region 8: Lower Colorado Basin Work Cell: (725)-305-0274 Email: mgermain@usbr.gov-------Attachment (Major John R. Currel dated January 12 2026.pdf) START-------John R. Currell2522 Starlight ValleyHenderson, NV 89044Voice & Text: (702) 354-5430January 12, 2026Bureau of ReclamationP.O. Box 64170Boulder City, NV 89006I have been corresponding with a member of Congress for the past four years concerning the Colorado River and water usage in the Imperial Valley. Some new thinking follows: Based in part by today's Las Vegas Review Journal article which reported the acquisition by KB Homes of 38.6 acres for the eventual build out of 3500 new homes with no mention of water meters. While BLM has sold the land - NV needs water to develop more housing.Migration to NV from CA continues with good quality growth from Baby Boomers and other retirees, Many have sold their homes io CA for say $800 thousand and purchased the same home in NV for say $500 thousand. Given the myriad of problems in CA this pattern is likely to continue for the foreseeable future. California's failure to require water meters in Sacramento and to selling unlimited water with a bulk rate compounds the problem -with the shortage of water meters being the ruse to delay metered water. NV has land no water.The Cadillac Desert provides the reader with an excellent 550 page story of Water In the West as BLM is certainly aware. And includes the aggressive quest of CA to obtain water regardless of unfortunate outcomes to other communities. Owens Valley comes to mind.In 1984 Lake Mead was filled to capacity and not able to release water fast enough to prevent flooding downstream and turds from septic tanks floated freely for boaters such as myself to view. California gaining access to the Colombia River would help.Now: Rather than be hopeful for heavy snowfall on the Western slopes of the Colorado Mountains it is time to cut to the chase. A desalination plant in the Sea of Cortez developed jointly with Mexico is worthy of study. But the bottom line is cutting the supply of water for agriculture in CA with the attendant increase in food prices - while compensating farmers. A more expensive orange or a Navy shower at home is the trade off.Respectfully submitted,Major John R. Currell, USMC (retired)[Page 2: Scanned image of the envelope the above letter was delivered in.] -------Attachment (Major John R. Currel dated January 12 2026.pdf) END-------

Letter #: 5163

Date Received: 2/28/2026

Sender Names: 5128: Krista Curtis

Emails: 5128: info@greatbasinwater.org

Organizations:

Subject: Krista Curtis Comments on Colorado River

Great Basin Water Network DOI - . The DEIS Avoids A Hard Look At Cumulative ImpactsThe document fails to consider the following:The DEIS ignores the complete geographic scope, and the impacts of that narrowed scope from curtailments, inaction, and limited action in directly affected communities in the Lower Colorado River Basin.Air quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Water quality impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Water availability impacts on communities in the Lower Colorado River Basin are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Impacts on Lower Region MSCP (27 species including listed Endangered Species) are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts that will result from the alternatives in the DEIS.Socioeconomic impacts on communities are too narrowly reviewed in the Technical Appendices. The DEIS avoids addressing those direct impacts on Lower Colorado River communities that will result from the alternatives in the DEIS.Impacts on recreation facilities, refugia, park service units, federal infrastructure, and directly connected waterways of the Colorado River System are too narrowly reviewed in the Technical Appendices.Three Alternatives Do Not Likely Comply With The Law Of The River. Programmatic Review Is Necessary And So Is Congressional Action. In Appendix C, the DEIS implies that modeling justifying three of the proposals "may not be implementable" because potential non-compliance with "laws, contracts, agreements, and other authorities that are part of the Colorado River legal and contractual framework referred to as Law of the River." That is a reference to the Enhanced Coordination, Maximum Operational Flexibility, and Supply Driven Alternative. Without any deal in place among the states or congressional action, a Record of Decision supporting those alternatives poses legal challenges that may be insurmountable. Therefore, according to the DEIS, the No Action Alternative and Basic Coordination Alternative are among the only options that could avoid a legal challenge after a Record of Decision.Those options pose some of the worst outcomes for Lakes Powell and Mead. We believe that no course of action as put forth in the DEIS is a sufficient means of stabilizing the system under the current Law of the River framework. Thisis troubling considering Reclamation is predicting some of the most dire reservoir elevations ever in the coming two years.Reclamation should undertake a programmatic review as the states continue negotiating. This year's low flows will inevitably get people back to the negotiating table in a meaningful way. Congress will act when the reservoirs are in crisis. We have seen congressional, bi-partisan action multiple times in the past seven years. When Congress is ready, enlist the National Academy of Sciences to undertake a programmatic review in partnership with the Department of Interior, Reclamation and other cooperating agencies. This document is not the beginning of the end. We believe it is merely the end of the beginning.The DEIS Fails To Consider Impacts On Irretrievable Resources By Sanctioning The Repurposing Of Water ResourcesThe DEIS offers multiple alternatives that impose varying levels of cuts in the Lower Basin and no meaningful cuts in the Upper Basin. Some alternatives mention the possibility of Upper Basin "conservation" but those offerings do not describe who, what, where and when. There is nothing steadfast for cuts in the Upper Basin.The DEIS also showcases a modified version of the 2016 Upper Basin Depletion Schedule that still assumes considerable new uses of water in the Upper Basin in the coming decades. Because of the limited resources available, there's no doubting that cuts imposed on the Lower Basin will be repurposed by the Upper Basin. That repurposing defeats the intent of this analysis. Once that water is re-appropriated by Upper Basin regulators, waters with established beneficial uses will not return to where those uses were first proven in the Lower Basin. This is highly suspect.Furthermore, we question how Reclamation can execute its recognized authority to force a curtailment in one basin but not even questioning how development of new appropriations in another part of the basin will impact the whole systemand those who had to undertake curtailment. Upper Basin reservoirs are subject to the "apportionments" among the

two basins, seven states and Mexico (See Colorado River Storage Project Act, Pub. L. No. 84-485, SS 4, 70 Stat. 107 (1956)). Reclamation has a great deal of say in how certain rights are managed in the system. But how can regulators sequester the differences between the starting and end points of a highly connected system where some users have established decades worth of use? This gray area is at the heart of the ongoing conflict among the seven states, and we request more information on this in the FEIS.We fear that it is an unacceptable practice to allow the Upper Basin to repurpose water from Lower Basin in the name of state-led permitting efforts in Colorado, New Mexico, Utah and Wyoming. Further declines in the system will challenge Reclamation's mission to protect infrastructure, ecosystems, and communities. It means less water making its way through the southernly reaches of the system in the majority of years if current trends continue. Every state needs a curtailment plan on the Colorado River. This DEIS fails to compel the Upper Basin States to meaningfully consider how they will act to protect federal assets and resources.Finally, this could also bring about conflict over tribal water rights in the Upper and Lower Basins -- especially where settlements have been established. There must be consideration of reducing, at a 1-for-1 rate, junior non-tribaluse for those senior tribal rights that have not yet been put to use. How Reclamation would undertake this matter in the Upper and Lower Basin must included in any FEIS. Also, there must be consideration of how Reclamation would prevent new Upper Basin appropriationsput forth by non-native water users from using, in a de facto sense, settled and adjudicated rights of Lower Basin tribes.DEIS Ignores Glen Canyon Dam's Antique PlumbingThe analysis in the DEIS fails to consider bypass, decommissioning, and other meaningful resolutions available at Glen Canyon Dam, which poses considerable concerns for water delivery and endangered species protections. We understand and respect the legal arguments for not including the One-Dam Alternative. But it is a mistake to not undertake comprehensive analysis on this matter. Keeping Lake Powell's elevations above 3550', 3525, and 3490' are not realistic scenarios for the long-term. Failure to include greater analysis on Glen Canyon Dam's river outlet works will ultimately cost us all -- imposing direct impacts on Lake Mead, Hoover Dam, other federal infrastructure, metropolitan areas, agricultural hubs, tribal resources, sensitive species, National Park Service units, U.S. Fish and Wildlife units, and other conservation areas in the Lower Basin.The DEIS' Purpose-And-Need Is Too Narrow And Segments Requisite ReviewsReclamation, admittedly so in its Purpose and Need statement, recognizes the grave uncertainties we face if conditions do not improve on the river system. Reclamation also recognizes the direct connections the DEIS makes with upstream infrastructure associated with the Colorado River Storage Project units and in Lower Basin units at Parker Dam, Davis Dam, Imperial Dam, and Palo Verde. The DEIS would benefit from greater analyses in the technical appendices dealing with directly related impacts at the dams during low-flow periods. The same can be said for analyzing impacts at all Colorado River Storage Project facilities in low-flow periods too. They will be essential for propping up Lakes Powell and Mead. What will operations look like if CRSP and Lower Basin Infrastructure are only operating collectively at 10-20 percent of normal? What can we expect? To say that management at Mead and Powell are not directly connected to that management is implausible.If you have any additional questions please contact me.Krista
Curtis(c) Great Basin Water Network. Powered by weForms.

Letter #: 4013

Date Received: 2/26/2026

Sender Names: 3966: Danielle Cylich

Emails: 3966: danielle.cylich@gmail.com

Organizations:

Subject: Protecting the Colorado River

DOI - . To the Bureau of Reclamation-The Colorado River's future depends on bold action, not incremental adjustments.We need a management framework that protects clean water, communities, and ecosystems for generations to come. The Bureau has the opportunity to take meaningful action now to address the urgent need to protect water quality, ecosystems, and Basin communities. These changes need to be based on climate science and realistic supply projections.I urge the Bureau of Reclamation to significantly strengthen the Post-2026 Colorado River Basin Draft EIS that proactively addresses the crisis faced by Colorado Basin communities and ensure the public has an opportunity to comment on its revised proposal before issuing its final decision.The Colorado River is already overallocated and shrinking. The Bureau must prioritize long-term sustainability, meaningful Tribal consultation, and enforceable reductions in demand, not simply identify new ways to divide a declining supply. Thank you,Danielle Cylich

I have had the privilege of seeing first hand the magnificent and sacred ruins of Bears Ears and the natural wonder contained in the National Monument. I beseech you to honor the boundaries re-established by the Biden Admin and keep to the BE Management Plan. BE is a treasure on the American land and it must be preserved totally. I am a retired educator of environmental studies and a former board member of Great Old Broads. Please listen to native voices and protect their sacred places.
Thank you.
Antonia Daly

Letter #: 1

Date Received: 2/1/2026

Sender Names: 1: Ina Daly

Emails: 1: driverdaly@icloud.com

Organizations:

Subject: Draft EIS Colorado River Basin

DOI - .First of all, I appreciate your efforts on finding a workable solution to give much needed water to Arizona that preserves farms and includes small farms like mine. It is a challenge given the ongoing drought and low snowfall this year. I just want yo remind you that we have a major issue with the Fond Du Monte Farms buying up much of the farm land around Parker, AZ and Blythe, CA and even turning desert into farm land with luscious alfalfa fields and tomatoes too, which are water sucking crops, using wells and CAP water to ultimately send the crops overseas to Saudi Arabia for race horses and dairy farmers there. It makes no sense that these water deals were made with the Saudi owned Fond Du Monte Farms by unscrupulous politicians in years past in Arizona and California that prevented water going to produce crops for Arizona and the US as a whole. I'm concerned about my own ability to get water for my small nut tree farm on my family's land that we've owned for almost fifty years out by Phoenix Raceway. I've cut back on my irrigation as much as possible and I use wastewater from bigger farms often when I do irrigations. I don't irrigate in the winter at all anymore either. We Arizonan's have been water conservators forever given our dry climate but other states like California as an example have never conserved. They tear down dams while we know better, they have lush landscaping while we have rock, etc. Make them start conserving precious water like we do and don't cut us any further, and please don't forget us small farms and destroy our land by cutting us off even further. Again, thank you for your efforts on this matter.Thanks,Ina Daly

Letter #: 3468

Date Received: 2/27/2026

Sender Names: 3437: Laurie Daniel

Emails: 3437: lauriedanieltnc@hotmail.com

Organizations:

Subject: Comment on Post-2026 Draft EIS for the Colorado River Basin water system

DOI - . US Bureau of Reclamation
February 26, 2026Colorado River BasinTo Whom it May
Concern - Thank you for the opportunity to comment on the recent Post-2026 Draft Environmental Impact Statement for the Colorado River Basin water system. My comments are as follows:The Colorado River's future depends on bold action, not incremental adjustments. After decades of overallocation, accelerating climate impacts, and shrinking supplies, the Colorado River Basin can no longer sustain business-as-usual water management.We need a management framework that protects clean water, communities, and ecosystems - for generations to come. The Bureau has the opportunity to take meaningful action now to address the full reality of climate-driven water scarcity and the urgent need to protect water quality, ecosystems, and Basin communities.The Colorado River provides drinking water for 40 million people, supports Tribal nations, sustains farms and cities, and is the lifeblood of fragile desert ecosystems. But the Basin is facing:Record-low reservoir levels;Increasing salinity and pollution risks;Collapsing aquatic habitats;Rising temperatures and reduced snowpack;Growing threats to safe, reliable water supplies.This EIS must reflect the reality of climate-driven water scarcity and prioritize clean water protections, ecosystem health, and equitable solutions, not simply divide up a shrinking supply.Simply put - this Draft EIS fails to meet the needs of the current moment or the future. The Draft EIS that the Bureau has proposed is inadequate to address the crisis that we face, and the agency has failed to reveal what its preferred alternative will be. This action (or inaction, if you prefer) denies the public the only real opportunity we will have to comment on the inadequacies of the Bureau's proposal before a final decision is made.I demand that our communities have full opportunity to express our concerns before the government takes final action.I urge the Bureau of Reclamation to strengthen the Draft EIS by:Centering climate science and realistic supply projections;Protecting water quality and reducing pollution impacts as flows decline;Preventing further ecological collapse in the Colorado River Delta and Basin tributaries;Respecting Tribal water rights and ensuring meaningful Tribal consultation;Prioritizing demand reduction and conservation over unsustainable allocations.I urge the Bureau of Reclamation to significantly strengthen the Post-2026 Colorado River Basin Draft EIS so that it proactively addresses the crisis that we face and ensures that the public has an opportunity to comment on its revised proposalbefore issuing its final decision.Bottom line - The Bureau must prioritize long-term sustainability, meaningful Tribal consultation, and enforceable reductions in demand, not simply identify new ways to divide a declining supply. The Colorado River is already over-allocated and shrinking; we cannot afford delay.

Sincerely,Laurie DanielPO Box 3713 Homer, Alaska 99603lauriedanieltnc@hotmail.com

January 13, 2026
Comment

Colorado River Crisis

There is a practical solution for conserving water on the Colorado River that does not require federal funding and does not reduce, change or threaten perfected water rights but it would require some accounting expenses.

We, the people of the United States may have forfeited control over river water due to legal manipulations and historical water usage, but we still own 1,500 miles of river channel. If a water agency wants water moved from point “A” and delivered to point “B” using the Colorado River, an often used “wheeling” charge would be required by the people of the United States.

If the yearly water conservation goal is reached, the water agency would be reimbursed the total amount of the wheeling charge.

For example: if the water conservation goal for the Colorado River is 12%. Wheeling charge of $100 per acre-foot for 1% of water delivered per month. At the end of each month, the water agency would receive a wheeling bill for 1% of the water delivered for the month. At the end of 12 months, if the water conservation goal of 12% was accomplished, the water agency would be reimbursed funds for wheeling charges.

Depending on water conservation goals, the percent conserved and/or the wheeling charge would be available for adjustment.

John Dantice

John Dantice 1699 Barbara Worth Dr. El Centro 760 693 6969 jdantice@gmail.com

Letter #: 286

Date Received: 2/17/2026

Sender Names: 284: Jennifer Daughtery

Emails: 284: jenniferwieger@gmail.com

Organizations:

Subject: Top Priority for Colorado River

DOI - . I have heard for at least two decades that storm water pipelines are being discussed to stop runoff water from heavy rains from just pouring into the oceans and fed to the Colorado River. This would be a great opportunity for new jobs and help to fix the issue of all these states using up all the snowfall water from the Colorado. The government must find a way to fund this type of endeavor!A loyal resident of the Las Vegas ValleyJennifer Daughtery

Letter #: 10713

Date Received: 12/4/2024

Sender Names: 10506: Ashley Davis

Emails: 10506: ashley.davis282@yahoo.com

Organizations:

Subject: Page 1865

I Support Recreation on the Colorado River Basin I am writing as a supporter and user of Lake Powell, Lake Mead and water in the west. I am a concerned citizen and supporter of responsible water and energy infrastructure management. I am writing regarding the proposed alternatives for the Post-2026 Colorado River Operation Guidelines. It is important to recognize the role that the dams within the Colorado River Basin play in ensuring energy reliability, irrigation, water storage, navigation, and regional economic stability. I appreciate the Bureau of Reclamation recognizing BlueRibbon Coalition's Path to 3588' Plan as an alternative considered and recreation as a whole in alternatives analyzed. Glen Canyon and Hoover Dam and the Colorado River Basin, face growing pressure from radical environmental activists and anti-dam interests who seek its decommissioning. These calls threaten the dam's essential functions on the Colorado River system, therefore we appreciate BOR recognizing that moving to a one dam system would not yield a resilient system and would be bad for the environment and the economy. As a recreation user, I support any alternative that recognizes and supports recreational opportunities within the Colorado River Basin. The Supply-Driven, Max Operational Flexibility and Enhanced Coordination Alternatives all identify release levels based off of low water levels, shortages or low inflows which will better protect the dams critical infrastructure. I support any alternative or blend of alternatives in which releases are based off of real water inflows and not maximum deliveries that could hurt the water storage system and ultimately recreation. I support keeping the most water in the reservoirs for recreation as possible. The nation cannot afford to treat these critical infrastructure assets as bargaining chips in speculative environmental campaigns. Lake Powell and Lake Mead are too important to lose, and its operation must be protected. I am writing to submit comments in support of the Enhanced Coordination Alternative as my first choice for the Post-2026 Colorado River Operational Guidelines, and the Maximum Operational Flexibility Alternative as my second choice. The Enhanced Coordination Alternative provides the most balanced and responsible path forward. By formally coordinating operations between Lake Powell and Lake Mead and adjusting releases based on conditions at both reservoirs, this approach reduces the risk of either reservoir reaching critically low elevations. Proactively balancing storage levels strengthens system resilience, protects hydropower Post-2026 Colorado River 1865 of 5176 generation and critical infrastructure, and promotes long-term sustainability across the basin. Importantly, this alternative recognizes the need to respond earlier to declining conditions rather than waiting for crisis thresholds. In an era of prolonged drought and reduced inflows, a coordinated strategy that prevents catastrophic drawdowns is both fiscally and operationally prudent. As a second choice, I support the Maximum Operational Flexibility Alternative. While more aggressive, it prioritizes infrastructure protection and allows the Bureau to respond adaptively to worsening hydrologic conditions. Preserving operational integrity at Glen Canyon Dam and throughout the system must remain a top priority. Maintaining viable reservoir elevations is essential not only for water delivery and power generation, but also for recreation, tourism economies, and the communities that depend on stable lake access. Protecting recreation is fully compatible with responsible water management when operations are grounded in realistic hydrologic conditions. I respectfully urge you to adopt the Enhanced Coordination Alternative, or a final framework that incorporates its core balancing principles, to ensure a stable, resilient Colorado River system through 2060. Thank you for your consideration.

Letter #: 8565

Date Received: 3/3/2026

Sender Names: 8488: Petrina Davis

Emails: 8488: Petrina.Davis.1414276307@foradvocacy.com

Organizations:

Subject: Comments on the Post-2026 Colorado River Guidelines

DOI - . Dear U.S. Bureau of Reclamation, Please return the land which Lake Powell and the Colorado River sit upon to the Navajo People. This land was illegally taken from the Navajo, furthermore the federal govt swindled and misled the Navajos into believing they would have access to the water as well as free electricity from the dam, neither promise has been fulfilled to this day. Sadly, access to the Colorado River has been denied, and access to the Lake Powell has become increasingly more difficult for The Navajos that live in the area since time immemorial. Honor your treaties. Sincerely, Petrina Davis

Letter #: 7443

Date Received: 3/2/2026

Sender Names: 7400: W. Mark Day, 8440: Mark Day

Emails: 7400: chilerico@gmail.com, 8440: chilerico@gmail.com

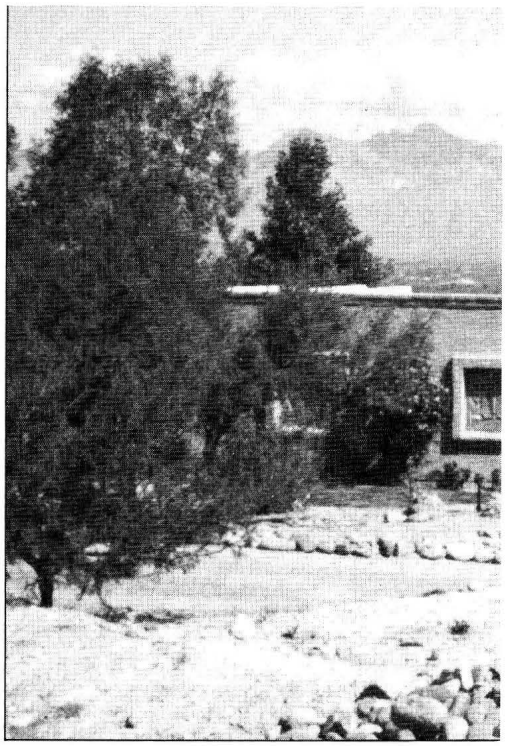
Organizations:

Subject: Options: Economics of Water Demand

DOI Remarks of W. Mark Day, MS, MBA, Tucson, AZ 520-360-5075 The attached article describes in some detail our study of Tucson's historic and dramatic reduction in water use in the late 1970s. To our knowledge, Dr. Billings and I are not aware of a better or more recent such study, and therefore maintain that our results are still the most valid analysis of price elasticity of demand for domestic water in the desert Southwest. Below are my recommendations for possible actions the Bureau might take to substantially reduce water demand in the Colorado River basin. Some of these actions may exceed the existing authority of the Law of the River, but clearly this is a moment of need beyond the scope or presidents of that law. We must look well beyond the considerations that brought us to this situation and hydrologic reality. We must act to mitigate economic damages with economic policy where possible. I hope my perspective will allow consideration of economic tools few, if any, other advisors in the water industry are aware of, or would be willing to mention. Bottom line is this: Take ownership of Colorado River water. Stop giving it away for almost nothing. Free enterprise does not support conserving anything available for free. Such resources are only valued if they're costly to access (read pumping, purifying or storing). Consider Tucson, AZ in 1976-78: when water prices increased by 50%, demand dropped by 30% (Billings & Day 1982). All domestic Colorado River water users should be charged increasing block rates [aka "conservation rates"] for outdoor uses above a reasonable allowance for indoor uses [5000g/mo or 7 Ccf/mo]. Base charges should not exceed 20% of revenue. Federal surcharges should apply to all Colorado River basin water to help level supply costs for all users of Colorado River water, wherever it is used (Los Angeles and Denver, take note). All water must be metered, and billed monthly. Ability to pay must also be factored into the surcharge setting, including for commercial users. Local utilities should be responsible for offering discounted service to low-income users. Water and co-billed services (like sewer, solid waste, etc.) should generally be set between 1% and 2% of median income, with surcharges well above 2% in wealthy communities. Recommend 10% or greater surcharges for data centers and thermo-electric generating stations, chip fabs, too. Agricultural users must also pay surcharges to incentivize most efficient irrigation practices. All revenues should be used to enhance conservation programs to ensure that agricultural users can afford to use best conservation practices, or receive reasonable compensation for fallowing and alternative cropping and land uses, including agrivoltaics, drip irrigation, etc., or for maintenance, repairs and improvements to Colorado River basin water infrastructure. Augmentation projects should be paid for by additional surcharges on those large users making such projects necessary. Holders of irrigation water rights should be allowed to lease or sell their rights to Colorado River water. Perhaps then Western Slope ranchers can stop cropping alfalfa, graze a few head instead, and winter in Yuma, watching the lettuce grow. Imperial Valley growers should fallow their fields for the summer and go watch the Western Slope snow melt and flowers grow instead, while conserving many acre-feet. Meanwhile, most of us can get more familiar with a plant-based, and much healthier, diet! Groundwater depletion strategies are not sustainable, and should be carefully regulated everywhere in the Colorado River basin! (Elsewhere as well!) Finally: If you're intending to cut Arizona's CAP share by 50% or more, then first arrange for the 800 kaf from SRP to be set free, to be shared by most of the rest of the CAP service area. Much of the SRP water is wasted on an excessive, oasis lifestyle. SRP water was cheap to begin with, flowing downhill to The Valley, but it is also heavily subsidized with power sales revenue. The SRP was founded for agricultural irrigation, which is largely gone now. This is when that resource should be widely shared with the people of Arizona, not flooding yards, and floating boats in upscale subdivisions in the SRP's constricted service area!

Demand Management Factors in Residential Water Use: The Southern Arizona Experience

R. Bruce Billings and W. Mark Day



Two models of residential water demand were run with data from three water utilities in the Tucson, Ariz., metropolitan area to estimate the response of water use to variations in price, household income, and a variety of socioeconomic and climatic variables. The study covered a period when all three utilities experienced substantial reductions in residential water use. All three utilities examined imposed availability-of-service charges, and the largest utility used increasing-block rates and seasonal rates. Because of disagreement in the literature about the proper specification of price under these conditions, demand models were estimated using both the traditional average-price variable and the marginal price plus rate premium. Estimated long-term price elasticities for the combined time-series–cross-section models averaged −0.72, and they varied depending on model specification and time period. Individual demographic district elasticities were also estimated. Several principles of conservation pricing and other aspects of demand management for water utilities are discussed.

Tucson, Ariz., is dependent on groundwater to supply its rapidly growing population, which currently exceeds half a million. The city is noted for its success in water conservation, which has been attributed in part to a publicity program begun in 1977 to reduce peak demand. This article describes the results of a study to establish what amount of Tucson's conservation could be correlated with water rate changes and how much could be related to publicity, weather, or other factors.

The study covers the period between 1974 and 1980, during which Tucson attempted to raise needed revenues and to reduce water use by restructuring water rates to increase per-unit charges as the amount used increased. During this period, the city also introduced substantial lift charges to recover pumping costs. Unintentional overcharging of lift charges, however, resulted in some massive residential water bills, which led to a successful citizen effort to recall several city council members. Lift charges were repealed and refunds were distributed, but a sharp conservation response to the general rate increases reduced revenues to the point that additional rate increases were required. (All this took place before implementation of the publicity program to reduce peak demand.) A citizens' advisory committee on water rates was created, and gradual rate increases have kept water costs in pace with inflation and water use fairly stable.

The study confirmed the finding of numerous local, regional, and national studies that water pricing is a powerful conservation tool.[1] It also found some conservation pricing strategies more effective than others as well as more equitable and politically palatable.

Delivered-water prices in many communities have increased in recent years, sometimes dramatically, as supply or system costs have escalated. Costs often increased at the same time conservation programs were considered (or mandated) to stop depletion of groundwater sources, notably in Arizona's Active Management Areas, established under the state's 1980 Groundwater Management Act. Even without conservation requirements, it is important for utility officials to accurately estimate the price-quantity relationship so rate adjustments will bring about desirable changes in revenues. Accurate predictions of changes in water use are also necessary for efficient capital budgeting.

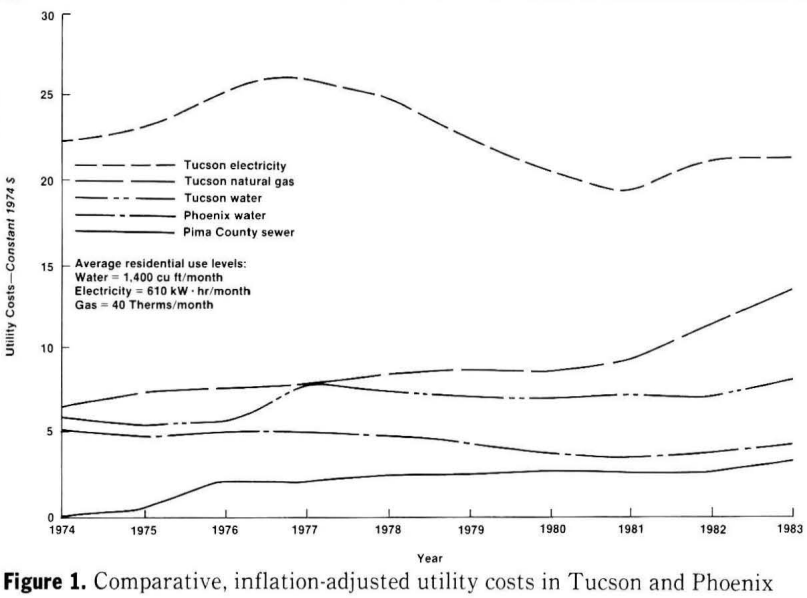


Figure 1. Comparative, inflation-adjusted utility costs in Tucson and Phoenix



To control water costs, suburban residents of cities in the desert Southwest have turned increasingly to landscaping with native plants and materials.

In this study, water use data were obtained from three water utilities in southern Arizona with very different rate structures and water use patterns; the data were coupled with a diverse set of economic, climatic, and cultural variables.[2-4] The multiple regression models reported here show the possibility of predicting the effects of rate changes on water use and utility revenues and suggest the possibility of increasingly precise management of these factors by utility and regulatory agencies. The elasticities found define the tendency for customers to use less water when they have to pay more for it and to use more when they know they can afford it.

In the the end, the water rate structure is always a long-run conservation factor of major importance, regardless of the intentions or expectations of utility administrators. Rate structure can either cause or prevent water conservation in most cases in which it is not overwhelmed by restrictions enforced through police power (such as turf irrigation prohibitions). It has the advantage of avoiding the costs of overt regulation, restrictions, and policing while retaining a greater degree of individual freedom of choice for water customers. Furthermore, nongovernmental utilities seldom have the option of police-power regulation to achieve conservation goals.

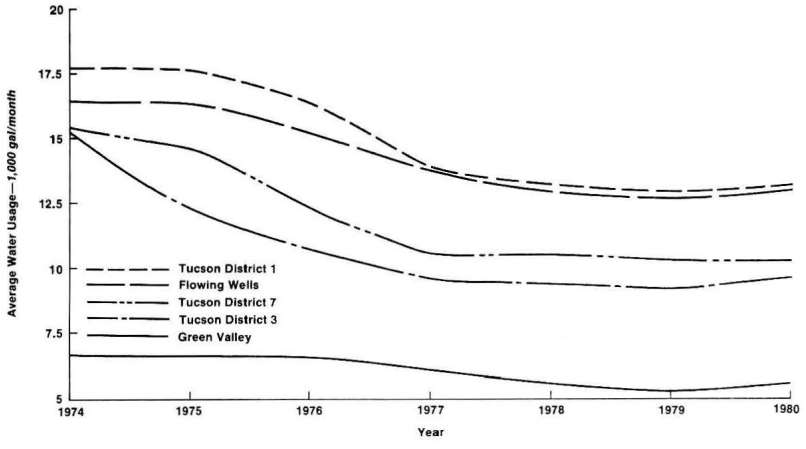


Figure 2. Water use trends for representative service areas and demographic districts

Water use and rates

Monthly water use data were sought from utilities throughout southern Arizona, where outdoor use is high and varies more than in the East. Data for time-series analysis were obtained from the Tucson Water Department, serving the second largest metropolitan area in the state; from Flowing Wells Irrigation District, serving a small district in urban Tucson; and from Community Water of Green Valley, serving a retirement community 20 mi south of Tucson.

Tucson experienced major cost increases in the mid-1970s that required substantial rate increases. See Figure 1 for comparable utility costs throughout the study period.[5] This figure provides some intuitive sense of what the regression models report because the initial cost of water in Tucson and Phoenix was approximately the same, and so was the amount typically used. However, as the relative cost of water increased in Tucson, consumers used less water. Average use in Phoenix did not vary appreciably during the study period.

The average decrease in residential water use for Tucson over the seven-year study period was 33 percent. Water use for households in selected demographic districts served by the three utilities is shown in Figure 2. The greatest household water use occurred in the highest income district (District 1), which was served by the Tucson Water Department. The second highest use occurred in the Flowing Wells service area, where incomes and water prices were relatively low. The lowest use occurred in Green Valley, which has small residential lot sizes and turf landscaping restrictions. Water use at several community golf courses and swimming pools in Green Valley was not included in this analysis because it is not directly charged to individual residences. Customers in Tucson's District 3 are adjacent to Flowing Wells (a comparable group), and typical middle-class users are represented in Tucson's District 7.

Water rates, as represented by constant quantity bills, are presented in Table 1 for each utility and year. The rate increases are presented in this form to emphasize the real, or inflation-adjusted, change in the cost of using the same amount of water from different utilities and over time. In contrast, the actual water bills paid by consumers reflect both rate changes and changes in use (conservation). Both model and survey results indicate that consumers view jointly billed water and sewer costs (as practiced by Tucson) as a single cost for the use of water.[6]

The large price increases in the second half of 1976 represent the first year of

federally mandated sewer-user fees as well as a large rate increase by Tucson (changing from a nearly flat rate structure to definite, increasing blocks, which hit large users hardest). Flowing Wells also implemented a small rate increase, whereas Green Valley implemented no water rate change during the period.

Figure 3 illustrates a strong relationship between the price of water and sewer services and the amount of water purchased. It presents real water and sewer bills averaged over all Tucson districts and the overall average change in use. It shows a large drop in use when prices increased dramatically (1976 to 1978). When only small changes in the cost of water occurred (1979 to 1980), there was little change in use.

Increasing-block rates

Increasing-block (or inverted) rate structures are those in which unit or volume charges periodically increase as more units are used. The more widely used rate structure is decreasing block, which encourages greater use with decreasing marginal prices as use increases. Decreasing-block rates have been justified by economies of scale when per-unit costs of production and delivery to each user decrease as deliveries increase. Increasing-block rates are economically justified when volume-related costs rise with either systemwide or individual account volume increases. Higher costs of production, treatment, delivery, and peak load requirements have been identified as diseconomies of scale in Tucson and other communities. These costs outweigh any economies of scale and justify rate structure inversion. Figure 4 illustrates Tucson's 1980 summer increasing-block rate structure. The $1.90 service charge is not associated with volume.

Socioeconomic characteristics and climate

Household income and other socioeconomic data for households served by these three utilities were obtained from a biannual regional market survey, which divided the Tucson service area into 11 districts.[7] These biannual data were adjusted to provide monthly values. Income and water prices were adjusted for general inflation. This adjustment was crucial to avoid erroneous results because the 1974–1980 study period had a relatively high inflation rate (averaging 9.3 percent per year).

Data on climatic variables for the area were gathered to construct an indicator of the monthly water requirements (evapotranspiration) for a mixed Bermuda–rye lawn.[8] Bermuda grass and its hybrids are the predominant summer ground cover in southern Arizona, and some households overseed their grass with rye for a green winter lawn. A

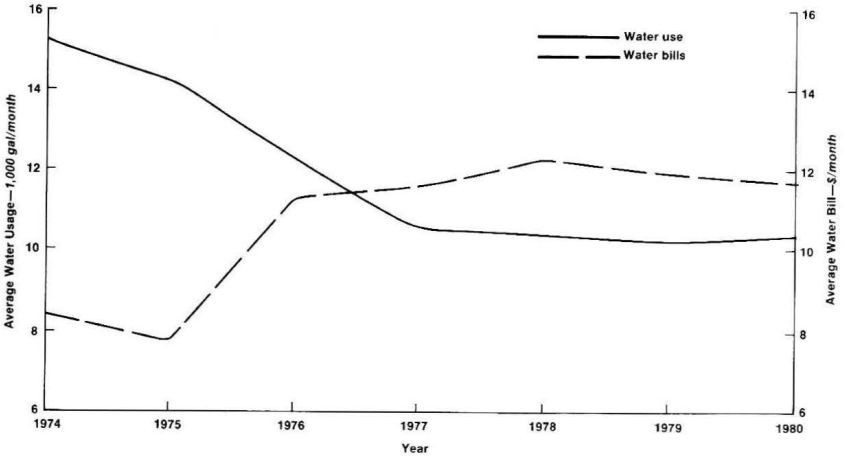


Figure 3. Average water use and average monthly bills of Tucson Water Department customers

TABLE 1
*Constant-quantity water and sewer bills**

Year	City of Tucson Bill $	City of Tucson Percent Change By Year	Flowing Wells Bill $	Flowing Wells Percent Change By Year	Green Valley Bill $	Green Valley Percent Change By Year‡
1974	6.60†		3.62		11.14	
1975	6.50	−1.52	3.90	7.73	10.66	−4.31
1976	9.32	43.38	6.31	61.79	12.22	14.63
1977	11.04	18.45	6.37	0.95	11.58	−5.24
1978	11.71	6.07	6.79	6.59	11.48	−0.86
1979	11.61	−0.85	7.06	3.98	11.02	−4.01
1980	11.20	−3.53	6.66	−5.67	10.04	−8.89

*1,200 cu ft from November to April; 2,000 cu ft from May to October (Tucson customers receive joint water-sewer bills; those served by Flowing Wells and Green Valley receive separate bills)
†All amounts were adjusted to 1974 price levels using the US Consumer Price Index.
‡Water bill remained constant (in nominal terms) at $11.14 throughout the study period; the increases shown are entirely attributable to the imposition of and increases in separately billed, countywide sewer fees.

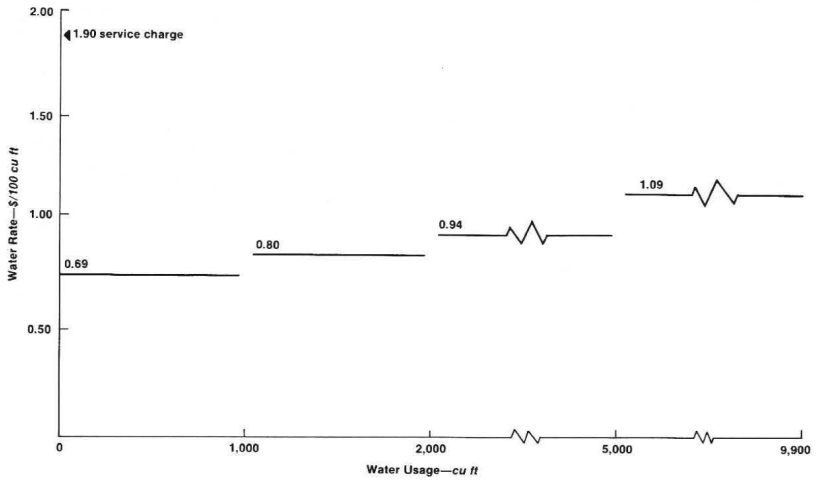


Figure 4. Tucson's increasing-block rate structure during the summer of 1980

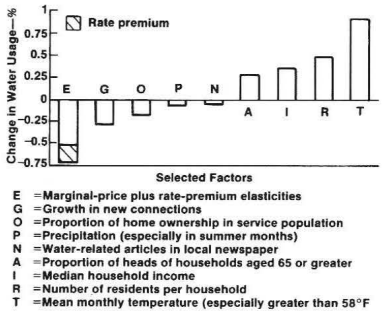


Figure 5. Relative effects of selected factors on water use (1 percent increase yields change)

TABLE 2

Tucson metropolitan area elasticities from 1974 to 1980 (combining all Tucson Water Department districts)

Parameters	Elasticities*	
	Marginal-Price Model	Average-Price Model
Variables†		
Price	−0.52	−0.70
Rate premium	−0.21	
Income	0.36	0.31
Temperature	0.81	0.63
High temperature	0.10	0.10
Summer rain	−0.06	−0.06
Winter rain	−0.01	
Publicity	−0.05	−0.04
Persons/household	0.48	0.16
Homeowners	−0.18	
Age 55-64	−0.20	−0.08
Age 65 or older	0.28	−0.13
New households	−0.25	
Growth	−0.30	−0.22
Model Strength Indicators		
Adjusted R-squared	0.84	0.84
F statistic	309.11	451.95
Durbin-Watson	2.09	2.01
Sample size	984	984

*Elasticities indicate percentage changes in water use (+ or −) associated with a 1 percent increase in the variable indicated.
†All included variables are significant at 0.1 level or better.

variety of individual weather-related variables, including temperature and rainfall, was used as an alternative to the rather sophisticated evapotranspiration measure. In this alternative, winter and summer rains were treated as separate variables, and temperature was supplemented with a high-temperature variable to examine a possible increase in the response of water use to temperatures above some critical level.

Publicity about water problems was quite prominent during the study period, especially during the recall effort. The only feasible method of including publicity about water problems as a variable in the model was to construct a weighted index of articles appearing in the leading area newspaper as an indicator of all media attention given to water problems.

Demand models

Two methods of modeling prices were examined. First, the traditional average-price model, in which price is simply total revenue divided by total quantity sold for all residential customers in each district, was tested. This model assumes that the typical consumer responds to the average price of water, which could be obtained from each month's water bill by dividing the bill by quantity.

Second, the marginal-price-rate-premium model was estimated.[2] This approach assumes that consumers are relatively well-informed about the rate structure and at least know their marginal cost (the cost of one more unit of water). This information would typically be difficult to decipher directly from a water bill. Customers could develop an intuitive measure of marginal price by noting month-to-month changes in their water bills and the changes in water use that caused them. Rate premium is the difference between the actual water bill and what the consumer would pay if all water were sold at the marginal price. Rate premium is used with marginal price to ensure that the model reflects the actual amount paid for the water used, which is usually different from marginal price times number of units.

Results

General significance. The regression results for the entire metropolitan area for the entire seven years of data are presented in Table 2. Each regression has an adjusted R-squared of 0.84 (indicating that 84 percent of the observed variation in water use was explained by the regression equation). Other test statistics demonstrated that the models were highly significant.

The function of the model and its elasticities is to precisely apportion the relationships of the various factors (independent variables) to the change in water use. For example, the models show a relationship of price to use of

TABLE 3
Representative water utility statistics

Statistic	Utility				
	Tucson District 1	Tucson District 3	Tucson District 7	Flowing Wells	Green Valley
Percent change in use	−25	−36	−34	−21	−17
1980 median income	$32,368	$10,625	$12,885	$10,625	$18,000
Average-price elasticity	−1.06	−.48	−.61	−.35	−1.11
Marginal-price elasticity	−.27	−.46	−.55	−.20*	−.71*
Rate-premium elasticity	−.03	−.17	−.13	−.15*	−.19*
Publicity elasticity	−.06	−.06	−.06		

*Coefficient is not significant at the 10 percent confidence level.

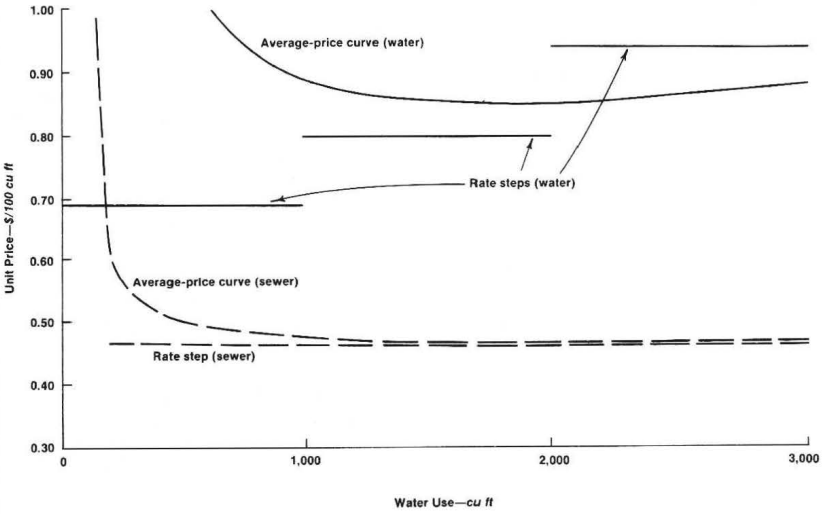


Figure 6. Average-price water and sewer curves for Tucson Water Department customers

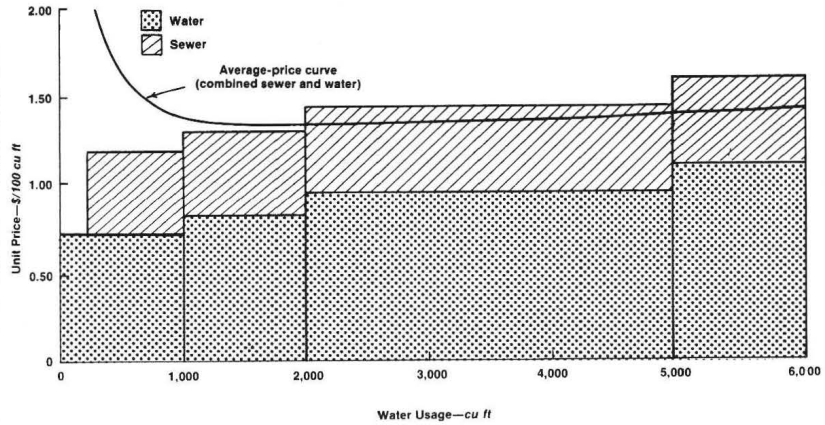


Figure 7. Extended, combined water-sewer average-price curves for Tucson Water Department customers

about −0.7, i.e., for a 1 percent increase in the price of water, there is a 0.7 percent decrease in use (this is the price elasticity of demand). Figure 5 is a graphic representation of key variable relationships to water use in Tucson during the study period. The values in this figure correspond to those in Table 2. Bars below the horizontal line represent factors (variables) associated with decreased water use; bars above the line represent factors associated with increased use.

Rate design factors. The results indicate a strong response of water use to changes in price. The overall price elasticity for the metropolitan models is −0.72. (Although this value is in the "inelastic" range of price elasticities, being less than 1.0, it still has plenty of effect; for example, Tucson during 1976 had to impose a second rate increase to make up for a revenue shortfall stemming from its first rate increase. When customers read that rates were being increased because they used so little water, they were incensed and still remembered the rate hike 11 years later.) Thus, during the study period, water use fell by about 7.2 percent for each 10 percent increase in price. However, the results indicate that a 10 percent increase in availability-of-service charge (reflected in rate-premium changes) would reduce water use by about 2 percent, whereas a 10 percent increase in marginal price would reduce it by more than 5 percent.

These separate estimates for the marginal-price and rate-premium elasticities are useful in designing rate-structure changes to influence both water volume and revenue. To increase revenue with relatively little impact on volume, increases in the availability-of-service charge are desirable. Conversely, to produce the largest possible decrease in water use, marginal rates should be raised. If officials desire to decrease water use without affecting revenue, increases in marginal price should be combined with decreases in the availability-of-service charge.

The equity of rate changes should be considered as well. The study found that increasing marginal rates and decreasing availability-of-service charges tends to improve pricing equity while promoting conservation because it shifts more of the cost burden to higher income groups, which use more water but usually pay less per unit (as is true in Tucson based on average price for 100-cu ft units up to 2,000 cu ft; thereafter both the marginal-price and average-price curves move upward with increased use). This approach also puts more pressure on groups with the greatest political clout. Some evidence indicates these high-income groups have relatively low price elasticities, indicating the need for greater incentives for these groups to conserve a fair share of the water.[9]

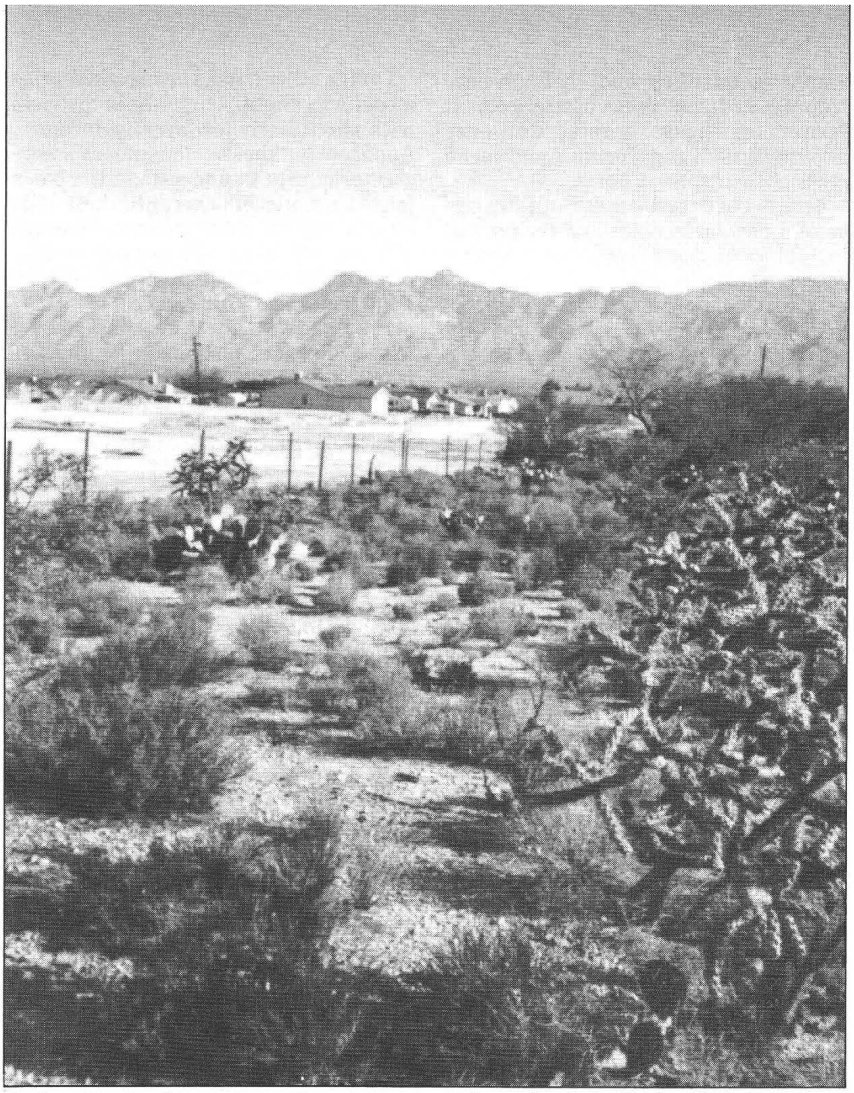
Figure 6 shows a portion of the same rate schedule illustrated in Figure 4 but includes average price (cost curves) observed by water customers for both water and sewer (as billed by Tucson). Sewer-fee rate steps are shown alongside those for water. Sewer fees include a service charge of $1.34, including two 100-cu ft units of volume. All additional sewer volume is billed at $0.52/100 cu ft, with an upper-level cutoff at 90 percent of the previous winter's use level (reflecting estimated indoor-use levels). Sewer fees are included in the water rate structure in the demand model because the customer does not distinguish the difference between the two, as indicated by the superior performance of the model with the two prices combined.

The superimposed average-price curves allow analysis of the price incentive messages from the customer's viewpoint. These curves show the cost of water that can be deduced without knowing the rate structure, and this is the perceived cost to customers when the average-price model outperforms the marginal-price model. The average-price curve indicates that the water rate structure is regressive below 2,000 cu ft because for each 100-cu ft unit of reduced use the average-per-unit price increases. This is clearly a disincentive for water conservation. The falling average-price curve is a by-product of standard accounting cost allocation procedures and calls for a rethinking of rate structure design when conservation is needed. Given the major effect of average price in the demand models, this disincentive could overwhelm any related conservation efforts. Sewer-use fees are regressive throughout the rate structure but only mildly so at higher levels (however, few users operate in the higher range).

Figure 7 illustrates the combined rate structure presented by water and sewer rates together. This figure also illustrates the effects of the increasing-block rates on the average-price curve through a larger range than in Figure 6. In contrast to the highly regressive nature of the curve below 2,000 cu ft (the level at which most average- and low-income users operate), the curve is only mildly progressive in the higher range of operation of many above-average-income users who tend to have large lawns, pools, and lush landscaping.

Income impact. The results show a substantial impact of income changes on water use, with an average income elasticity of +0.33 over these models. This value is similar to many reported in the literature and was anticipated. It indicates that a 10 percent increase in median household income tends to produce a 3.3 percent increase in water use.

Weather. The weather variables had the anticipated impact, with the individual variables providing a greater explanatory power than the integrated evapotranspiration variable. The significance of the high-temperature variable supports the initial hypothesis that water use responds more strongly to temperature above a critical level, which was determined to be an average daily temperature of 58°F in Tucson.



As housing developments continue to penetrate desert lands in the Southwest, water suppliers have been examining the effectiveness of water conservation programs.

Publicity. Publicity about water problems appears to have a small impact on water use, with an average elasticity of −0.05 over the models (suggesting that a 10 percent increase in the amount of publicity about the need to conserve water would produce a 0.5 percent reduction in water use). Several lag structures were estimated for this variable, but none showed a significant lagged effect of publicity, thus indicating that the effect of publicity exists only as long as the publicity continues. The impact of a focused water conservation publicity campaign has not been tested in southern Arizona, but the implications are that it would not be particularly great and would lose effect if discontinued. Studies elsewhere confirm the short-term nature of intensive water conservation programs and indicate eventual "burnout" with intensive efforts to persuade residents to conserve.

Home ownership. The percent of residences occupied by the homeowner also affected water use, with an elasticity of −0.18 (indicating that a 10 percent increase in home ownership would result in a 1.8 percent reduction in water use). This result supports the hypothesis that homeowners are more water conservation conscious, either because they pay water bills whereas many renters do not or because they have long-run opportunities to install water-conserving fixtures whereas tenants do not.

Age. The head-of-household proportion in the 55–64 age group consistently showed a negative relationship to water use, suggesting that the 10 preretirement years are a time of reduced water use. In contrast, the proportion in the 65-and-older group showed a positive relationship to water use. These results suggest that preretirement individuals use less water at their residences both because of

emphasis on work and their absence from the home, whereas postretirement households engage in more water-use activities, such as gardening, and spend more of their time at home.

Growth and development. Both the percent of new households and the growth in total water connections show negative relationships to water use. This suggests that residents of new housing developments and frequent movers use less water. This reduced use may be the result of installed desert landscaping in new housing; very small yards, as in condominiums; or transient households that take little interest in yard plantings. Conversely, long-term residents may have acquired a large stock of water-using appliances and plantings or may have become apathetic toward water conservation.

District models. Among the demographic districts served by Tucson, the marginal-price elasticities ranged from −0.27 to −0.85 and rate-premium elasticities ranged from −0.03 to −0.35, reflecting widely varying sensitivities to price changes (the marginal-price and rate-premium elasticities are additive, i.e., for District 7, add −0.55 and −0.13 to obtain a total of −0.68, which compares well with −0.61 in the average-price model; this estimate assumes uniform percentage rate increases to marginal prices and service charges). The average-price elasticities ranged similarly. The marginal-price elasticities in Flowing Wells, with its considerably lower prices, were insignificant, whereas the average-price elasticity was significant. Table 3 presents selected district results that correspond to those graphed in Figure 2.

Interutility publicity. The publicity variable was significant in at least one model in each district served by Tucson but was never significant for Flowing Wells or Green Valley, even though residents of both areas receive essentially the same media coverage as Tucson customers. This indicates little spillover of publicity-generated conservation motivation to adjacent utilities' customers. Also, the spotty significance of this variable casts considerable doubt on the potential of publicity to achieve long-term conservation objectives. Of the 39 individual district models tested, publicity was significant in only 18, and it had a small impact on use.

Marginal versus average prices. Although the marginal-price and average-price models showed similar statistical strength in the combined time-series-cross-section metropolitan models, the average-price model tended to show superior statistical strength for most individual districts. This was most pronounced where incomes were exceptionally high, as in District 1, and where prices were exceptionally low, as in Flowing Wells.

On the other hand, the marginal-price model was slightly superior in districts with particularly low average incomes. Apparently, these consumers make greater efforts to understand the basis for their water bills because these bills absorb more of their incomes. Average bills ranged from 0.57 percent to 0.77 percent of income in high-income District 1 and remained below 1 percent of income in the next two highest-income districts. These districts also had the highest water use (aside from Flowing Wells, with its dramatically lower prices). Average expenditures on water ranged from 1 to 2 percent of household income in the remaining districts, with the higher ratios occurring in the lowest-income areas.

Conclusion

Two models that explain urban residential demand for water under increasing-block rate pricing were presented and tested. These models examined the correlation of water use to changes in price, income, publicity about the need for conservation, variations in the weather, and socioeconomic characteristics of groups of households. Statistically strong estimates of the response of water use to each of the major factors examined were obtained.

The results suggest that the average-price model provides superior explanatory power when incomes are high and water prices are low, i.e., absorbing less than 1 percent of income. As prices rise or incomes fall, and as water bills approach 2 percent or more of household income, the demand model using marginal price and rate premium provides superior explanatory power.

The research presented here strongly suggests that price, income, and socioeconomic variables significantly influence residential water-use decisions and that publicity about the need for conservation has a minor impact. An overall long-term price elasticity of −0.72 was found, which means that a 10 percent increase in water rates will provide about 3 percent more revenue (while triggering a 7 percent reduction in use). The response to publicity about water shortages had a comparatively small elasticity ranging from −0.04 to −0.14, depending on the model.

Water use positively correlates with income changes and income differences among groups, with higher-income groups consuming more water. Income elasticities ranged from +0.24 to +0.55.

The variables examined over which utility or public officials might have some control include the rate structure, publicity, and community development standards. If officials desire to reduce water use, the data suggest that water-conserving subdivision regulations can be highly effective where feasible, that publicity may have some short-term effect on use, and that price increases (for excessive use) are most effective in reducing long-term residential water demand (in the absence of police-power directives). Water-rate increases focused on volume-related marginal price were shown to have a much larger impact on water use than increases in availability-of-service charges.

References

1. BILLINGS, R. B. & DAY, W. M. Water Rates as a Conservation Policy Option. Proc. AWRA Arizona Section Symposium on Urban Water Management: Augmentation and Conservation. Oct. 21, 1983.
2. BILLINGS, R. B. & AGTHE, D. E. Price Elasticities for Water: A Case of Increasing Block Rates. *Land Economics,* 56:1:73 (1980).
3. FOSTER, H. S. JR. & BEATTIE, B.R. Urban Residential Demand for Water in the United States. *Land Economics,* 55:1:43 (1979).
4. YOUNG, R. A. Price Elasticity of Demand for Municipal Water: A Case Study of Tucson, Ariz. *Water Resources Res.,* 9:4:1,968 (1973).
5. BILLINGS, R.B. & DAY, W.M. Elasticity of Demand for Residential Water: Policy Implications for Southern Arizona. *Arizona Review,* 31:2:1 (1983).
6. DWORKIN, J. M. Identifying Public Preferences for Water Conservation Measures. Proc. Applied Geography Conference: Vol.4. (John W. Frazier and Bart J. Epstein, editors). State University of New York, Binghamton, N.Y. (1981).
7. *Tucson Trends.* Tucson Newspapers Inc. and Valley National Bank. (1974, 1976, 1978, 1980).
8. BORRELLI, J. ET AL. Blaney-Criddle Coefficients for Western Turf Grasses. ASCE—Jour. Irrigation and Drainage Div., 107:IR4:333 (Dec. 1981).
9. AGTHE, D. E. & BILLINGS, R. B. Equity, Price Elasticity, and Household Income Under Increasing Block Rates for Water. *Amer. Jour. of Economics and Sociology,* 46:3:273 (1987).

About the authors: *R. Bruce Billings teaches business forecasting and public finance at the University of Arizona, College of Business and Public Administration, Tucson, AZ 85721. He received his bachelor's degree from the University of Arizona and his doctorate from Claremont Graduate School (Claremont, Calif.). He was a founding member and past president of the Western Tax Association, has consulted with the US Bureau of Reclamation regarding potential demand for Central Arizona Project water, and has published papers in* Land Economics, Water Resources Research, *and* Water Resources Bulletin. *W. Mark Day, who holds master's degrees in resource development and market research, is a consultant in marketing, economics, and management. Day has worked in the field of water demand research and resource economics for 10 years.*

Letter #: 7719

Date Received: 3/2/2026

Sender Names: 7400: W. Mark Day, 8440: Mark Day

Emails: 7400: chilerico@gmail.com, 8440: chilerico@gmail.com

Organizations:

Subject: Re: Options: Economics of water demand

DOI Additional remarks of W. Mark Day, MS, MBA, Tucson, AZ 520-360-5075 Precedents to water bankruptcy are not included in Law of the River, as far as I know. We have plenty of crisis management going on, but that is still focused on the idea that this all is a temporary situation. Perhaps this is simply one of those historic megadroughts, and the river will bounce back with some exceptional wet years, which historically have happened. That will probably happen, unless atmospheric carbon dioxide levels continue toward even higher levels, and even the history of drought-dominance is overwhelmed with warmer/dryer conditions. But we can hope some of the extreme trends we also see, may also bring some extremely wet events. We can hope that the dams will be refilled, but that time could be far in the future. Studies have already revealed the SRP/Tonto system has had 70 and 90 year droughts, which should convince us that drought is 'normal' in much of the Colorado River basin, not the exception. Serious conservation policies should be the new 'normal' throughout the region/basin; most efforts have only been nibbling at what's needed to end the slide toward hydrological bankruptcy. There is much more to be gained with price incentive-based conservation! I have a few more thoughts to buttress my previous comments. Please see more justification of my suggestions below. How often has someone said: "We can't conserve our way out of this water crisis," or "There's no 'silver bullet'," or "There are too many people here to use less water." There may not be a 'silver bullet,' but there certainly is a 'green bullet.' That is conservation; living a desert lifestyle! Here's what I'm talking about: in Arizona, there are communities with vast differences in the amount of water they use per capita. For instance, Tucson uses around 100 gallons per capita per day [GPCD] while Scottsdale uses about 350 GPCD. So, if we could get most other cities to use the amount of water Tucson does, we might double our population with less water for urban uses. In 2020, Tucson AMA GPCD was 126, Phoenix AMA was 163. It's all about lifestyle. To some people Tucson is a dusty place. My own yard has no grass, but it has shade trees and some fairly lush succulents and other accent plants. That's my lifestyle and I find it comfortable. And we have a community pool that we seldom use. Rooftop solar, that uses no water, powers our house and cars. So, how do we get the folks in Phoenix (aka The Valley) to adopt a Tucson lifestyle? Fact is, Scottsdale's per capita income is double Tucson's. Also, in Tucson, it would cost about $240 to fill a 20' x 40' x 4' swimming pool, while in Scottsdale it would cost about $85. The lifestyle problem largely amounts to this: How do we keep cheap water away from wealthy users? They use way too much, creating water wonderlands. In The Valley---the land of lawns and lakes---you can find pontoon boats tied up in front of residences. That's an oasis---not a desert---lifestyle. Perhaps large users could be hit with penalty water rates, at least if regulations to use less water don't work. Make the large users pay to import desal or for whatever other water technology is needed to replace their excessive water use when the Colorado River dams are drained. A related issue is our many California "refugees" who are used to plentiful imported water, and have real estate tax-incentives to spend big on housing, with pools, of course. And don't forget the California (and foreign) growers who've been sucking our rural aquifers dry. We must step up and control our groundwater for sustainable use. Since urban water pricing is mainly based on the cost of delivering the water safely, the fact that some places have inexpensive water sources must be reckoned with. And that would take some creative (some would say, socialistic) water policy. Impossible you think, in Arizona? Well, we are on the verge of a major emergency, and it would be silly to waste such an opportunity to save outdated (and impossible) lifestyles, while also trashing our economic future. What could Bureau of Reclamation do, regardless of the operations option chosen? It could require all states to enforce IRBs on all utilities receiving Colorado River water (with at least 50% more charged for outdoor uses), and add a water surcharge for all Colorado River water used, to fund basin-wide water management programs (and to help pay down the national debt). Just kidding about the national debt, but maybe, if the USA stopped giving away water for free, then we'd have users who respect water as a valuable commodity, and conserve it! Even at a low valuation/surcharge we'd have buckets of money to put to good uses. Money for paying down the water debt. Since we're going into water bankruptcy, spending money to conserve water would help with getting out of that bankruptcy. We've been spending our

water income and our water savings accounts, like the rapidly emptying reservoirs and groundwater aquifers. The last resort, mining groundwater (sucking it out of the ground much faster than it is replaced), is like raiding our emergency savings, and pretending we can live on that forever. Bankruptcy, not sustainability. But first we need to attend to our Colorado River basin water crisis, which is really a water bankruptcy. Yes, we need to have increasing block rates on all water use from the Colorado River. Furthermore, some people are paying a lot more for water than other people. Ideally, water for outdoor uses would be paid at a rate that would exceed one percent of the income of householders. Very often it's not even close to that. Ideally, it might even be 2% of annual household income to incentivize conservation as was seen in Tucson in the 1970s. So, if water is cheap, how can you justify increasing its cost, and even harder, politically increase its price? Well, the federal government can step in and set requirements, collect revenues and distribute funds to important conservation programs. Most of the revenue would come from urban users and go to agricultural users who need to invest in conservation technologies. Rules and strategies would need to change, even laws need to change to meet the supply/demand situation we have today. Entitled water distribution should be replaced with water uses that align maximum economic productivity with the available resources. Gone are the days when westward expansion was at the forefront of national policy. Clearly, policy must now recognize the need to conserve what water is available, and to set up mechanisms and rules to direct it to users who will use it in ways that benefit the economy and equitably support the population of the basin. The concept of beneficial use must be redefined to assure more people can be supported with limited water supplies. The free market of water use must support the production of all the products needed, and undervalued water clearly is wasted. Better have efficient use established through the pricing mechanism, than immediate policing of all uses when there are large supply shortfalls. One example of how pricing should be modified in Arizona, especially since large reductions in CAP deliveries are expected, the Colorado River basin waters of the SRP should be made available to all, not just the original founders. Much of the SRP water delivered to domestic users is much less expensive than from other sources, and is not conserved. This water should be available to willing buyers throughout the basin including the CAP system, as feasible. Another area I believe is receiving Colorado River basin water at low prices is the Denver metro area, which receives Colorado River water through tunnels from the Western Slope. Since I was a child in Englewood, Denver residents were required to water lawns on an every-other-day basis. This is not a new issue on the high plains. Lawns are water-intensive and should not be subsidized with water from the Colorado River basin, especially when it is very inexpensive. Demand native grasses, if any, in local landscapes, to conserve water. Kick water conservation into gear before calamitous supply cutbacks arrive! BoR could be demanding essential conservation measures now, and require adoption of universal demand management measures, all funded with charges for our precious water itself! Thank you, and adios, amigos! ORIGINAL EMAIL BELOW On Mon, Mar 2, 2026 at 12:44 AM Mark Day <chilerico@gmail.com> wrote: Remarks of W. Mark Day, MS, MBA, Tucson, AZ 520-360-5075 The attached article describes in some detail our study of Tucson's historic and dramatic reduction in water use in the late 1970s. To our knowledge, Dr. Billings and I are not aware of a better or more recent such study, and therefore maintain that our results are still the most valid analysis of price elasticity of demand for domestic water in the desert Southwest. Below are my recommendations for possible actions the Bureau might take to substantially reduce water demand in the Colorado River basin. Some of these actions may exceed the existing authority of the Law of the River, but clearly this is a moment of need beyond the scope or presidents of that law. We must look well beyond the considerations that brought us to this situation and hydrologic reality. We must act to mitigate economic damages with economic policy where possible. I hope my perspective will allow consideration of economic tools few, if any, other advisors in the water industry are aware of, or would be willing to mention. Bottom line is this: Take ownership of Colorado River water. Stop giving it away for almost nothing. Free enterprise does not support conserving anything available for free. Such resources are only valued if they're costly to access (read pumping, purifying or storing). Consider Tucson, AZ in 1976-78: when water prices increased by 50%, demand dropped by 30% (Billings & Day 1982). All domestic Colorado River water users should be charged increasing block rates [aka "conservation rates"] for outdoor uses above a reasonable allowance for indoor uses [5000g/mo or 7 Ccf/mo]. Base charges should not exceed 20% of revenue. Federal surcharges should apply to all Colorado River basin water to help level supply costs for all users of Colorado River water, wherever it is used (Los Angeles and Denver, take note). All water must be metered, and billed monthly. Ability to pay must also be factored into the surcharge setting, including for commercial users. Local utilities should be responsible for offering discounted service to low-income users. Water and co-billed services (like

sewer, solid waste, etc.) should generally be set between 1% and 2% of median income, with surcharges well above 2% in wealthy communities. Recommend 10% or greater surcharges for data centers and thermo-electric generating stations, chip fabs, too. Agricultural users must also pay surcharges to incentivize most efficient irrigation practices. All revenues should be used to enhance conservation programs to ensure that agricultural users can afford to use best conservation practices, or receive reasonable compensation for fallowing and alternative cropping and land uses, including agrivoltaics, drip irrigation, etc., or for maintenance, repairs and improvements to Colorado River basin water infrastructure. Augmentation projects should be paid for by additional surcharges on those large users making such projects necessary. Holders of irrigation water rights should be allowed to lease or sell their rights to Colorado River water. Perhaps then Western Slope ranchers can stop cropping alfalfa, graze a few head instead, and winter in Yuma, watching the lettuce grow. Imperial Valley growers should fallow their fields for the summer and go watch the Western Slope snow melt and flowers grow instead, while conserving many acre-feet. Meanwhile, most of us can get more familiar with a plant-based, and much healthier, diet! Groundwater depletion strategies are not sustainable, and should be carefully regulated everywhere in the Colorado River basin! (Elsewhere as well!) Finally: If you're intending to cut Arizona's CAP share by 50% or more, then first arrange for the 800 kaf from SRP to be set free, to be shared by most of the rest of the CAP service area. Much of the SRP water is wasted on an excessive, oasis lifestyle. SRP water was cheap to begin with, flowing downhill to The Valley, but it is also heavily subsidized with power sales revenue. The SRP was founded for agricultural irrigation, which is largely gone now. This is when that resource should be widely shared with the people of Arizona, not flooding yards, and floating boats in upscale subdivisions in the SRP's constricted service area!

Letter #: 3919

Date Received: 2/26/2026

Sender Names: 3877: glen deardorff

Emails: 3877: guitarride@gmail.com

Organizations:

Subject: Colorado Rvr

DOI - . Colorado River: We need a management framework the depends on bald action, protecting clean water, communitiesglen deardorff

Letter #: 7

Date Received: 1/25/2026

Sender Names: 7: Cathy Della Penta

Emails: 7: cathydellapenta@gmail.com

Organizations:

Subject: RE: Water, the Upper and Lower Basins

DOI - . Dear Bureau of Reclamation,I would like to comment on the 2 year long disagreements among the Upper and Lower Basins regarding water allocations.Since the original allocations were instituted many decades ago, much has changed in terms of climate, rainfall, water resources and populations.It would be realistic to deal with numbers and allocate as follows:1) 40 million people are served by the CAP program2) Look at the populations in all 7 states and allocate the water proportionately.3) If the number of people in California being served by the system is half of the 40 million, then California should get 50% of the water allocation. 4) Each state's population would then regulate the percentage of the 40 million and get that percentage of the water.5) The beauty of this approach is that it deals with the reality of the current situation, and uses numbers. They are facts and no one can deny that.Relying on outdated agreements made when the southwest had lots of precipitation, and everyone had abundance, is denying the reality of the situation on the ground at this time.Thank you.Cathy DellaPenta10601 E Marchetti LoopTucson, Az 85747-6085

Letter #: 2401

Date Received: 2/24/2026

Sender Names: 2381: Anthony DeSena

Emails: 2381: tonyjd23@gmail.com

Organizations:

Subject: Support a Smarter, Sustainable Future for the Colorado River

DOI - . Dear Bureau of Land Mangement Dear Bureau of Reclamation Leadership, As a resident of the Southwest who understands how deeply our communities depend on a stable and sustainable water future, I am writing to encourage the Bureau of Reclamation to combine the strongest elements from the proposed alternatives in the draft Environmental Impact Statement to craft long-term guidelines that truly secure the future of the Colorado River. The Colorado River system is under unprecedented strain. Continued crisis management and short-term fixes only increase risk for states, Tribes, farmers, cities, ecosystems, and future generations. The new guidelines must provide clarity and predictability while promoting meaningful conservation and responding to real-world hydrologic conditions--not political pressures. Specifically, I urge you to adopt long-term guidelines that: * Provide clarity and predictability. Ongoing uncertainty destabilizes the entire Basin. A durable framework must reduce the need for emergency interventions and create shared accountability for conservation. * Incorporate flexible, adaptive management tools. The Basin needs modern tools that allow water to be conserved, stored, and moved more efficiently to protect reservoir levels and stabilize the system as conditions change. * Embed environmental stewardship. The Colorado River is far more than infrastructure. It sustains wildlife, wetlands, fisheries, recreation economies, and communities from the Rockies to the Gulf of California. Any durable solution must recognize the river itself as a living system. * Ensure meaningful and voluntary Tribal participation grounded in sovereignty and self-determination. The 30 federally recognized Tribes in the Basin hold significant water rights and cultural connections to the river. Their leadership and partnership must be central--not peripheral--to long-term management decisions. * Preserve pathways for in-basin mitigation and continued binational cooperation with Mexico. Cross-border collaboration has been one of the Basin's greatest successes and must continue as part of any forward-looking solution. The Colorado River is a shared lifeline for millions of people and countless species. We cannot afford fragmented or politically driven approaches. We need science-based, flexible, and equitable guidelines that reflect the reality of a warming climate and declining flows. Please take this opportunity to adopt a comprehensive and forward-thinking framework that protects the Colorado River and all who depend on it. Thank you for your leadership on this critical issue. Sincerely, Anthony (Tony) DeSena Rancho Mirage, California Sincerely, Anthony DeSena 40 Chablis Rancho Mirage, CA 922705664 tonyjd23@gmail.com

Letter #: 8703

Date Received: 3/3/2026

Sender Names: 8601: Tanner Desrosiers

Emails: 8601: tannerdel9@gmail.com

Organizations:

Subject: Glen canyon dam

DOI - . I would love if you would get rid of the "glen canyon dam" it is going to destroy our country. So please save glen canyon. I love cataract canyon and lake Powell is destroying it. Please please please get rid of the dam. Thanks, Tanner Desrosiers

Letter #: 6637

Date Received: 3/1/2026

Sender Names: 6609: Laurel Dick

Emails: 6609: Laurel.Dick@messages.fwwatch.org

Organizations:

Subject: Protect Drinking Water – Save the Colorado River Basin

DOI - . Dear Bureau of Reclamation, Allowing over-extraction of this precious resource supports consumption and industries that are unsustainable like cattle and data centers. Please protect the Colorado river for future generations. I urge the Bureau of Reclamation to prioritize sustainability and the needs of the 40 million people relying on the Colorado River for drinking water over corporate profit. Sincerely, Laurel Dick 79 N Elm St Beacon, NY

Letter #: 2132

Date Received: 2/21/2026

Sender Names: 2115: Gail Dickerson

Emails: 2115: mtlemmon1973@gmail.com

Organizations:

Subject: Colorado River

DOI - . I may be missing something, but in all the articles I have read I have never seen what a 77% cut would have on the residences. Everytime I see a new building and apts going up I wonder where the water will come from.You have a hard job.Gail

Letter #: 3610

Date Received: 2/26/2026

Sender Names: 3575: J Dieckmann

Emails: 3575: goldpyrex@gmail.com

Organizations:

Subject: Re. Colorado River

DOI - . I am writing as a US citizen to add my voice to the increasing number of people who want the Draft EIS dramatically altered. At the very least the document needs clear parameters, impact studies, and proof of purpose that it makes sense financially. This is the law. Shoving something through is illegal and against established policy. Please don't waste taxpayer money pushing something through that will result in a dragged out legal process. This administration promised less pork fat in government and this all smells a little rancid. Simply put, going ahead with the current drafted proposal makes no $ense. Maybe in the short-term but realistically, and fiscally speaking, it's cutting off your nose to spite your face. Water is one of our most precious resources and it is already dramatically in jeopardy. It's a finite resource and it behooves us as a nation to be smart, not stupid, with it.Do better. Sincerely,Judith Dieckmann

Letter #: 3980

Date Received: 2/26/2026

Sender Names: 3934: L Dill

Emails: 3934: msldill@yahoo.com

Organizations:

Subject: SAVE THE COLORADO RIVER!

DOI - . The Colorado River is in crisis.After decades of overallocation, accelerating climate impacts, and shrinking supplies, the Colorado River Basin can no longer sustain business-as-usual water management.Yet the Bureau of Reclamation, the federal agency within the U.S. Department of the Interior that manages water infrastructure and supply across the western United States, has released a Draft Environmental Impact Statement for how the Colorado River Basin water system will be managed after 2026. Simply put: it fails to meet this urgent moment. The Draft EIS lays out several possible approaches that the agency is considering taking but does not clearly identify which recommendation is its "preferred alternative," which it is legally required to do. Furthermore, the alternatives the agency has proposed are inadequate to meet the crisis that the system faces.We are urging the Bureau to put forward its "preferred alternative" and give Tribes, impacted communities, and the public a meaningful chance to comment on its recommendation before a final decision is made. If the Bureau does not include its "preferred alternative" in its Draft EIS and waits to do so in its final action, the public will have no opportunity to comment on the actual proposal the Bureau recommends. We need your voice today.The Bureau of Reclamation is accepting public comments right now, and this is a critical opportunity to demand a future that protects the Colorado River, not one that entrenches overuse and environmental decline.Our Drinking Water Is at RiskThe Colorado River provides drinking water for 40 million people, supports Tribal nations, sustains farms and cities, and is the lifeblood of fragile desert ecosystems.But the Basin is facing:Record-low reservoir levelsIncreasing salinity and pollution risksCollapsing aquatic habitatsRising temperatures and reduced snowpackGrowing threats to safe, reliable water suppliesThis EIS must reflect the reality of climate-driven water scarcity and prioritize clean water protections, ecosystem health, and equitable solutions, not simply divide up a shrinking supply.The Draft EIS the Bureau has proposed is inadequate to address the crisis that we face, and the agency has failed to reveal what its preferred alternative will be. This denies the public the only real opportunity we will have to comment on the inadequacies of the Bureau's proposal before a final decision is made. We must demand that our communities have a full opportunity to express our concerns before the government takes final action.The Solutions We NeedWe urge the Bureau of Reclamation to strengthen the Draft EIS by:Centering climate science and realistic supply projectionsProtecting water quality and reducing pollution impacts as flows declinePreventing further ecological collapse in the Colorado River Delta and Basin tributariesRespecting Tribal water rights and ensuring meaningful Tribal consultationPrioritizing demand reduction !Tell the Trump Administration's Bureau of Reclamation:The Colorado River's future depends on bold action, not incremental adjustments.We need a management framework that protects clean water, communities, and ecosystems for generations to come. The Bureau has the opportunity to take meaningful action now to address the full reality of climate-driven water scarcity and the urgent need to protect water quality, ecosystems, and Basin communities.I urge the Bureau of Reclamation to significantly strengthen the Post-2026 Colorado River Basin Draft EIS that proactively addresses the crisis that we face and ensure the public has an opportunity to comment on its revised proposal before issuing its final decision.The Colorado River is already overallocated and shrinking. The Bureau must prioritize long-term sustainability, meaningful Tribal consultation, and enforceable reductions in demand, not simply identify new ways to divide a declining supply. The Colorado River cannot afford delay.Thank you for your consideration Sincerely, LD Sent from my iPhone

Letter #: 3791

Date Received: 2/27/2026

Sender Names: 3753: Camille Doucet

Emails: 3753: doucetcamille@gmail.com

Organizations:

Subject: Protection of the Colorado river

DOI - . We all need to know what is the preferred alternative that you are choosing in the planning of the 2026 management of the resources of the Colorado River Basin. Your a Draft Environmental Impact Statement is not stating this clearly. Please let us know so that we can all be enlightened in our next phase of action,Camille Doucet and George Adams

Letter #: 3787

Date Received: 2/27/2026

Sender Names: 3749: V Dowell

Emails: 3749: wekivasprg1@gmail.com

Organizations:

Subject: Save the Colorado

DOI - . Being responsible is part of the problem. No one wants to be the responsible party.
America is in a period of our history, where decisions being made now have the gravest of consequences.
Being Adult is not our most popular choice. It's time. Water is life.

Letter #: 3992

Date Received: 2/27/2026

Sender Names: 3946: drlisagold

Emails: 3946: drlisagold@comcast.net

Organizations:

Subject: Colorado River

DOI - . To Whom It May Concern:We need a management framework that protects clean water, communities, and ecosystems for generations to come. The Bureau has the opportunity to take meaningful action now to address the full reality of climate-driven water scarcity and the urgent need to protect water quality, ecosystems, and Basin communities.I urge the Bureau of Reclamation to significantly strengthen the Post-2026 Colorado River Basin Draft EIS that proactively addresses the crisis that we face and ensure the public has an opportunity to comment on its revised proposalbefore issuing its final decision.The Colorado River is already overallocated and shrinking. The Bureau must prioritize long-term sustainability, meaningful Tribal consultation, and enforceable reductions in demand, not simply identify new ways to divide a declining supply. The Colorado River cannot afford delay.Our Drinking Water Is at RiskThe Colorado River provides drinking water for40 million people, supports Tribal nations, sustains farms and cities, and is the lifeblood of fragile desert ecosystems.But the Basin is facing:Record-low reservoir levelsIncreasing salinity and pollution risksCollapsing aquatic habitatsRising temperatures and reduced snowpackGrowing threats to safe, reliable water suppliesThis EIS must reflect the reality of climate-driven water scarcity and prioritize clean water protections, ecosystem health, and equitable solutions, not simply divide up a shrinking supply.The Solutions We NeedWe urge the Bureau of Reclamation to strengthen the Draft EIS by:Centering climate science and realistic supply projectionsProtecting water quality and reducing pollution impacts as flows declinePreventing further ecological collapse in the Colorado River Delta and Basin tributariesRespecting Tribal water rights and ensuring meaningful Tribal consultationPrioritizing demand reduction and conservation over unsustainable allocationThank you for your consideration. Sincerely, Lisa GoldSent from my Galaxy

Letter #: 7658

Date Received: 3/2/2026

Sender Names: 7607: Gannon Duckworth

Emails: 7607: gduck15@everyactioncustom.com

Organizations:

Subject: Public Comment on Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead DEIS

DOI - . Dear Carly Jerla Bureau of Reclamation, Please remove Glen canyon dam. No one likes it, no one wants it. It's making the whole world worse. Sincerely, Sir Gannon Duckworth 676 N Davis St Helena, MT 59601-3734 gduck15@yahoo.com

Letter #: 8705

Date Received: 3/3/2026

Sender Names: 8622: Robyn Earnest

Emails: 8622: getawayrobyn@gmail.com

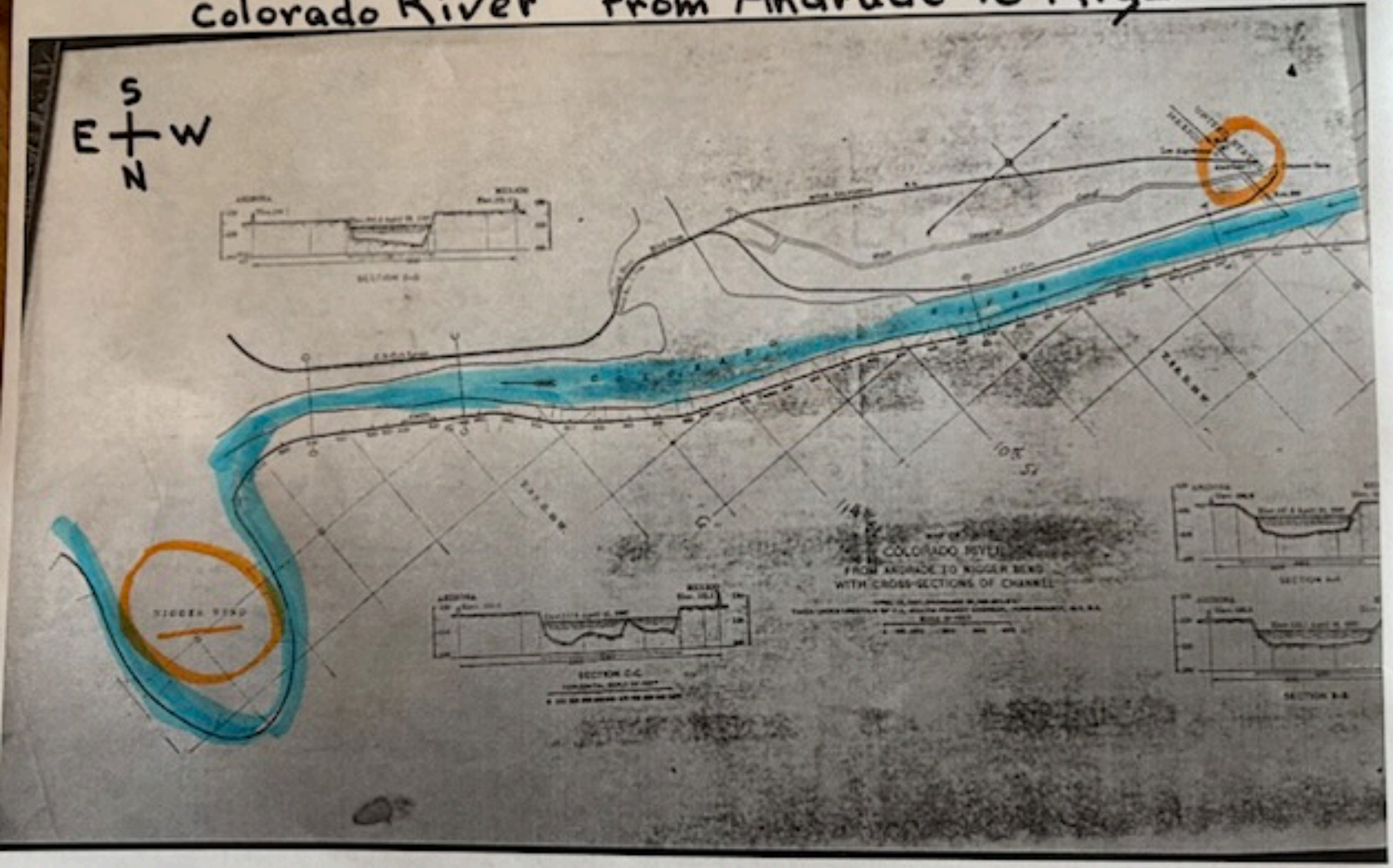
Organizations:

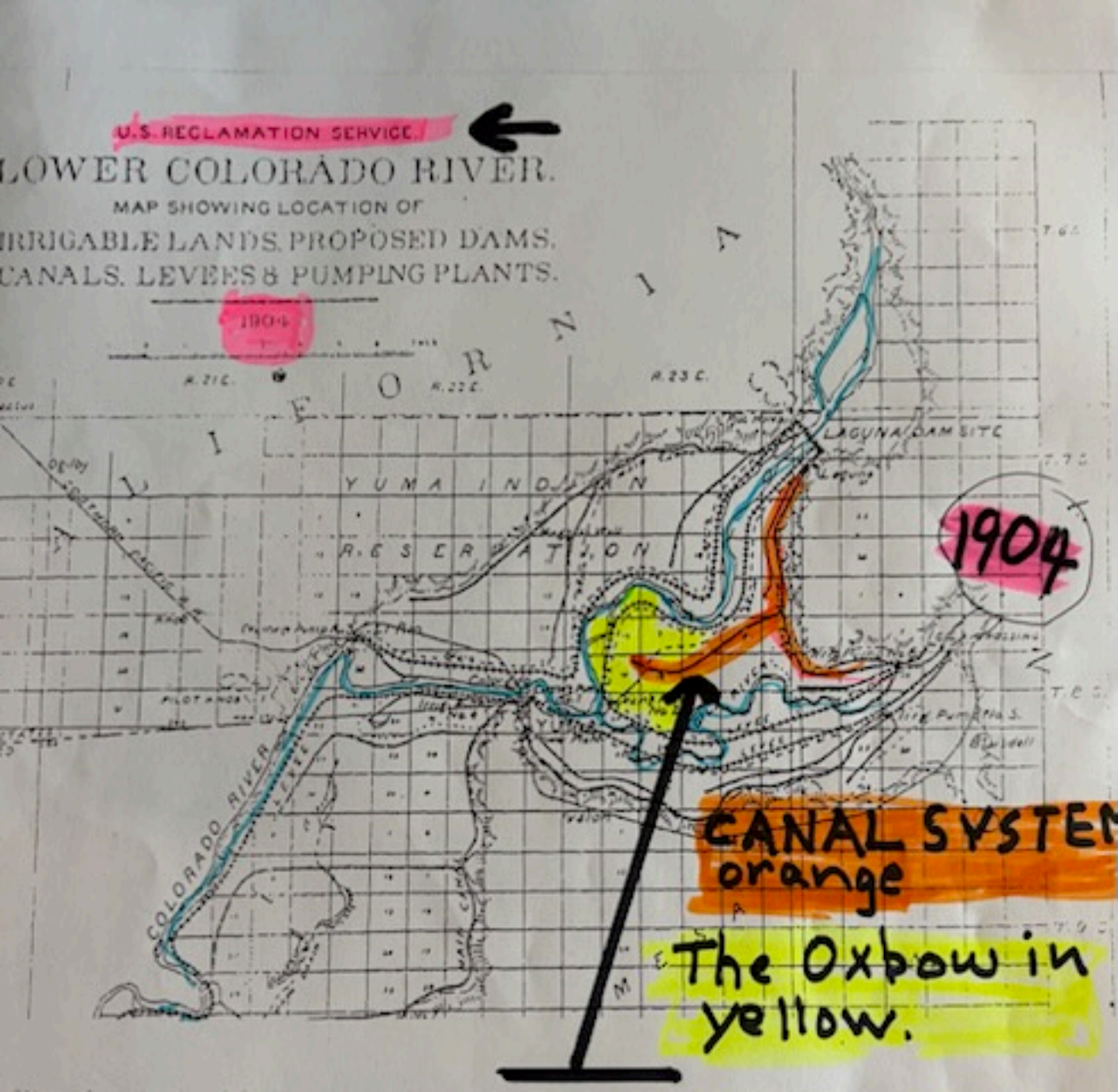
Subject: Remarks on Colorado River water

DOI - . Hi. Admittedly, I have not researched this issue at all. Opinions expressed are just that, opinions. Reside full time in Lake Havasu City, Arizona. Spent weeks in Page, AZ, several years ago and hiked to see the Horseshoe. What a sight! What I see on television or social media is deeply troubling. Recreated on Lake Mead many years past and houseboat about 35 years ago. Wonderful outings. Now what i see? Deeply troubling to see the "puddle." But ever so troubling is Lake Powell, hydroelectric power affected due to historically low water levels. What Powell is experiencing is only duplicated at Lake Mead. Heck, you all are familiar with the situation. On Lake Havasu, the pipes near Parker Dam continue to siphon water for California. Agriculture depleted in Salome, AZ, due to crop and water leases to the Arabs to grow the water thirsty alfalfa for the Arabian horses in Saudi Arabia. Oh, and just recently a water "transfer" from McMullen Valley (where Salome is located) to Queen Creek, AZ. I call BS! The CAP project loses how much water due to evaporation? I say enclose those miles and miles of canals! Perhaps make the "roof" solar panels? (Less evaporation and power source created.) Housing continues its unchecked growth! Yes, I've heard the "we have an allotment of X acre feet and only have used X minus whatever figure "they" determine. Interesting but Mohave County has lost water due to "transfer" by the rich to Metropolitan Maricopa County. If water source depleted, your allotment means nothing. Apologies for not doing my "homework" and researching other states and their allotment, usage, concerns of the precious water as it flows from Colorado to California. I'm 71, been recreating on Lake Havasu since 1964. I have concern for the generations after my death regarding this precious water. Forget water recreation, will there be enough water to flush the toilet? My family lives in Iowa and Illinois. The water there, so far, is bountiful. We have oil pipelines, how about water pipelines from States with annual flooding issues? Oh, it's all going to take money, and more money; a commodity in low reserve. Oh, and the necessary studies, then the lawsuits, need i go on? I do not envy those in position of decisions with where each drop goes. Unlikely to be a specific winner. Shut your water off after filling a pot, bathing, washing your dishes or the car, brushing your teeth, etc. When will each drop be treated as the life sustaining element it is, not to be wasted or taken for granted? Thank you. I hope there are answers to reduce water usage and recover/replenish water levels for the future. Robyn Earnest 2110 Polaris Dr, Lake Havasu City, AZ 86403

April 12, 1907

Map of: Colorado River From Andrade to Nig---Bend




U.S. RECLAMATION SERVICE.
LOWER COLORADO RIVER.
MAP SHOWING LOCATION OF
IRRIGABLE LANDS, PROPOSED DAMS,
CANALS, LEVEES & PUMPING PLANTS.
1904
ARIZONA
CALIFORNIA
YUMA INDIAN RESERVATION
LAGUNA DAM SITE
COLORADO RIVER
1904
CANAL SYSTEM
orange
The Oxbow in
yellow.

Letter #: 6337

Date Received: 3/1/2026

Sender Names: 6310: Eli

Emails: 6310: eliedgecomb@gmail.com

Organizations:

Subject: Water

DOI - . Protect the river! Not profit. Best, Eli

Letter #: 1915

Date Received: 2/26/2026

Sender Names: 1902: Robert Elizabeth

Emails: 1902: robert@rethinkdataproviders.com

Organizations:

Subject: RE: Natural Products Expo Attendees Data list 2026

DOI - . Hi, Are you interested in the Natural Products Expo Data List 2026? 50,389 contacts Only $1,828 Interested? Email me back; I would love to provide more information on the list. Regards, Robert Elizabeth

Letter #: 1220

Date Received: 2/26/2026

Sender Names: 1210: Hannah Emery

Emails: 1210: emery_hannah@yahoo.com

Organizations:

Subject: Post-2026 Draft EIS Public Comment

DOI - . To whom it may concern,I just saw the film "What the River Knows" and was inspired for change. There are so many folks passionate about this and their voices deserve to be heard. Specifically the natives in the area deserve the space and time to be heard. Their opinions on the land matter, especially since they came first. They know the repercussions of these actions, the impact on the local environment, and the ramifications towards their peoples. They MUST be included in decision making and hold a seat at every meeting. The following outlines further expectations written out by the collective voices striving for change: I'm writing to comment on the Draft Environmental Impact Statement (EIS) for Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead. This Draft fails to meet its stated purpose and need, as it ignores options that would provide operational flexibility and environmental benefits.Specifically, the new Colorado River guidelines must:1Analyze river-level bypass of Glen Canyon Dam to ensure naturalized flows through the Grand Canyon, continue Glen Canyon's ecological restoration, and provide maximum operational flexibility in the system. The dam has become a liability preventing water from flowing downstream. Failing to study river-level bypass needlessly limits options for the river, its users, and its ecosystems.2Study a "Fill Mead First" option, prioritizing water storage in Lake Mead before Powell. Today's hydrology does not support filling both Lake Mead and Lake Powell. Given this reality, it doesn't make sense to continue needlessly drowning the national park-caliber canyons in Glen. Analyzing different variations of a one-reservoir option would benefit the ecosystems and management of the entire Basin. 3Acknowledge the extensive emerging resources in Glen Canyon. In the years since Lake Powell reservoir has declined, there has been an amazing reemergence of wonders like Cathedral in the Desert and Gregory Natural Bridge, as well as vital riparian ecosystems, cultural sites, and new recreation opportunities. These resources must be given equal value to other resources across the Basin.4Require curtailment plans from each state, and prohibit new non-Tribal diversions. Federal agencies must take the supply and demand crisis seriously, imploring each state to produce plans to reduce demand. These agencies should also put a moratorium on new water diversions, with the exception of Tribes with senior water rights.Thank you for your consideration.Sincerely,Hannah Emery Sent from my iPhone

Letter #: 2582

Date Received: 2/25/2026

Sender Names: 2560: Bruce Eng

Emails: 2560: tillie81@hbci.com

Organizations:

Subject: Please support a smarter future for the Colorado River, and all who depend on it!

DOI - . Dear Bureau of Land Mangement I am asking that the BLM include all the entities that rely on the Colorado River. I think those said entities need to come to a general consensus before the BLM moves forward with it analysis. Also, people need to learn to conserve water. Water is not limitless. Also, numerous tribes depend on the Colorado River water. I know they have willingly made concessions during earlier negotiations. All of the states involved need to do the same. Lastly, let's not forget the plants and animals that also rely on the Colorado River for their survival. Thank you. I am writing to encourage the Bureau of Reclamation to combine elements from the proposed alternatives in the draft Environmental Impact Statement (DEIS) to ensure a sustainable future for the Colorado River with new, long-term guidelines that: - Provide clarity and predictability: continued crisis management puts everything and everyone in the basin at risk. New guidelines must promote conservation and respond to conditions on the ground - Incorporate flexible, adaptive tools for conserving, storing, and managing water: new guidelines must allow for more flexibility in how water is stored and moved to protect and stabilize the system - Embed environmental stewardship: the Colorado River is more than a plumbing system. New guidelines must account for the river itself and the bounty of life it sustains. - Provides for meaningful and voluntary Tribal participation grounded in sovereignty and self-determination: the 30 federally recognized Tribes in the Basin must be included in decision-making. - And preserve pathways for advancing in-basin mitigation and continued binational cooperation with Mexico Sincerely, Bruce Eng 1111 Gilmore Ave Winona, MN 559872488 tillie81@hbci.com

Letter #: 1754

Date Received: 2/24/2026

Sender Names: 1743: Jonathan Ertelt

Emails: 1743: erteltjb715@gmail.com

Organizations:

Subject: PLEASE! Support a smarter future for the Colorado River, helping all who depend on it!

DOI - . Dear Bureau of Land Mangement I am writing to encourage the Bureau of Reclamation to combine elements from the proposed alternatives in the draft Environmental Impact Statement (DEIS) to ensure a sustainable future for the Colorado River with new, long-term guidelines that: - Provide clarity and predictability: continued crisis management puts everything and everyone in the basin at risk. New guidelines must promote conservation and respond to conditions on the ground - Incorporate flexible, adaptive tools for conserving, storing, and managing water: new guidelines must allow for more flexibility in how water is stored and moved to protect and stabilize the system - Embed environmental stewardship: the Colorado River is much more than a plumbing system. New guidelines must account for the river itself and the bounty of life it sustains. REMEMBER THE RIVER! - Provides for meaningful and voluntary Tribal participation grounded in sovereignty and self-determination: the 30 federally recognized Tribes in the Basin MUST be included in decision-making. - And preserve pathways for advancing in-basin mitigation and continued bi-national cooperation with Mexico All of these aspects must be explored and respected, along with the river itself. Otherwise, the work is a waste of time and resource, and will have to be revisited far too soon. Thank you. Sincerely, Jonathan Ertelt 120 Oak St Sewanee, TN 373752239 erteltjb715@gmail.com

Letter #: 1307

Date Received: 2/19/2026

Sender Names: 1296: Michael Esser

Emails: 1296: mdedes1gn@yahoo.com

Organizations:

Subject: public comment on Post-2026 Colorado River Operational Guidelines Draft EIS

DOI - . Please advise if there's a better way to submit this comment on thePost-2026 Colorado River Operational Guidelines Draft EIS: I am writing to express my strong opposition to inequitable cuts in Colorado River water to Arizona, such as a reported 77% CAP cut in the Basic Coordination Alternative of the draft EIS. Any cut that massive and inequitable would have obviously devastating socioeconomic consequences for U.S. citizens in any state. Fortunately, it's not necessary. The Bureau can and must oppose inequitable apportionment of cuts because they violate core tenets of our Constitution. First among those principles was equality of the states. Not least among them are the rights of U.S. citizens.Several current proposals place a disproportionate burden on some states versus others, including the CAP's "junior" designation -- a designation born of strong-arm politicking, rather than respecting Constitutional principles. When states can come to tenable agreements without violating the rights of US citizens, the intent of our Constitution is that the federal government not intervene. The Bureau has given the states every opportunity to reach a tenable agreement. Now that the Bureau must intervene, it has a duty to provide uncompromised leadership by prioritizing the primacy of Constitutional principles and equitable apportionment. The common-sense solution is clear: U.S. citizens in the basin states should share in cuts equally, regardless of their state of residence.Now that the federal government is involved, it cannot repeat or sustain the mistakes of the past. It must be impartial, and understanding how untenable agreements arose in the first place can help prevent more failed policy and unnecessary litigation in the future. With regard to CAP: Arizona needed to build the canal to responsibly apportion Arizona's share of Colorado River water to the existing cities that most needed it. Tucson for instance is the terminus of the canal, and Tucson notably formed organically prior to any state boundaries or the U.S. itself. It's worth pointing out that while Arizona was understandably focused on preventing drought to existing cities, California at that same time was enabling entire new master-planned cities like Irvine. Yet in order to secure CAP approval from President Lyndon Johnson, Arizona was forced to accept the demands of more politically-connected California officials: that Arizona's established cities face all potential cuts first, before California face any cuts, even to entirely new cities it was planning to build in areas without sufficient water resources.This historical inequity is just one example of untenable basin agreements that don't reflect the principles of our Constitution. As the Bureau must take charge, it's time to make the "Law of the River" legally defensible, Constitutionally. A prompt and clear message must be sent to all basin states that Constitutional priorities and laws pertaining to equality of states and citizens' rights supersede basin state agreements.The more adamantly that message is made, the more it will help prevent the unnecessary waste of valuable time and billions of taxpayer dollars on lawyers and further politicking. Taxpayer funds can then instead be constructively funneled toward actually mitigating this crisis through new and improved infrastructure like desalination. Right now California finds itself appealing to upper basin states to share in cuts, but one day those upper basin states may need to come to California's doorstep to ask for access to ocean water. Make a clear example now that all future agreements should founded upon the Constitution's core principles of states' equality and citizens' rights. Life, liberty, and the pursuit of happiness aren't remotely possible without water.A genuine effort to create an equitable agreement won't be too difficult for any state to ultimately swallow, no matter how loudly officials might at first squeal. But there will be no end to lawsuits and wasted time, money, and valuable U.S. resources if an obviously inequitable decision is made. That's how we got into the mess we're in today. Please, fix it in an equitable way for all states' citizens.

Letter #: 7054

Date Received: 3/1/2026

Sender Names: 7022: Jane Evans

Emails: 7022: janearleneevans@aol.com

Organizations:

Subject: Water allocation to the state of Arizona

DOI - . Dear Department of Interior:I am writing to request a larger allocation of water from the Colorado River to the state of Arizona. The current proposal unfairly reduces the amount of water to the state that is necessary for our health and well-being. Without more water from the Colorado River our canals will dry up and we will experience serious water shortages. This is not good for our health and for our economy. We understand that the lack of snow in the mountains mean there is less water to send downstream. But surely, all entities must share in this sacrifice. All the states (& Mexico also?) must cut back, but it is my understanding that the proposals being discussed would disproportionately deprive Arizona of the water we need to survive. Please, please reconsider giving more water to the state of Arizona.Sincerely yours,Jane Evans and Rick Buller11741 N 129th St.Scottsdale, AZ 85259

Letter #: 372

Date Received: 2/14/2026

Sender Names: 370: Miles Evans

Emails: 370: mevans3503@gmail.com

Organizations:

Subject: comment

DOI - . Convert the 1922 compact to percentages. Use that. Done.

Letter #: 6554

Date Received: 3/1/2026

Sender Names: 6526: Mária Farsang

Emails: 6526: farsang.maria08@gmail.com

Organizations:

Subject:

DOI - . Protect waters! Thanks!

Letter #: 3465

Date Received: 2/27/2026

Sender Names: 3434: James Feichtl

Emails: 3434: kkidguy@gmail.com

Organizations:

Subject: Our Drinking Water is at Risk

DOI - . The Colorado River provides drinking water for 40 million people, supports Tribal nations, sustains farms and cities, and is the lifeblood of fragile desert ecosystems.But the Basin is facing:Record-low reservoir levelsIncreasing salinity and pollution risksCollapsing aquatic habitatsRising temperatures and reduced snowpackGrowing threats to safe, reliable water suppliesThis EIS must reflect the reality of climate-driven water scarcity and prioritize clean water protections, ecosystem health, and equitable solutions, not simply divide up a shrinking supply.The Draft EIS the Bureau has proposed is inadequate to address the crisis that we face, and the agency has failed to reveal what its preferred alternative will be. This denies the public the only real opportunity we will have to comment on the inadequacies of the Bureau's proposal before a final decision is made. We must demand that our communities have a full opportunity to express our concerns before the government takes final action.The Solutions We NeedWe urge the Bureau of Reclamation to strengthen the Draft EIS by:Centering climate science and realistic supply projectionsProtecting water quality and reducing pollution impacts as flows declinePreventing further ecological collapse in the Colorado River Delta and Basin tributariesRespecting Tribal water rights and ensuring meaningful Tribal consultationPrioritizing demand reduction and conservation over unsustainable allocations

Letter #: 398

Date Received: 2/16/2026

Sender Names: 396: Michael Fields

Emails: 396: fields.michael10@gmail.com

Organizations:

Subject:

DOI - . Cut off California from lake meid. Your welcome I just saved nevadas water

Letter #: 5013

Date Received: 2/28/2026

Sender Names: 4979: Ruth Fink-Winter

Emails: 4979: Ruth.FinkWinter@messages.fwwatch.org

Organizations:

Subject: Protect Drinking Water – Save the Colorado River Basin

DOI - . Dear Bureau of Reclamation, The Colorado River is in crisis, yet discussions of future management alternatives do not account for how the water is used. The Bureau must use its authority to push the Basin states to reach a joint agreement that accepts the need for mandatory conservation measures limiting corporate water abuses. The original division of water rights simply doesn't work. Overuse by major agribusiness and tech corporations threatens the basin and water supply for 40 million people. Any plan going forward must include an immediate halt to the expansion of alfalfa, mega dairies, and data centers, and a significant rollback of the cultivation of water-thirsty crops that are not suited to growth in highly arid climates. People's need for drinking water should outweigh the demands of corporations. The vast majority of water from the Colorado River is used by big agribusiness, primarily for growing alfalfa, a feedstock for cattle on factory farms. Across all seven Basin states, alfalfa farms consumed an estimated 2.1 trillion gallons of water in 2025, enough to supply the Basin's 40 million people with water for nearly 3.5 years. Mega dairies, which produce significant pollution and threaten drinking water, consumed 82 billion gallons of water in 2022 across the Basin states (excluding Wyoming, for which no data were available). These agricultural uses are an inefficient use of water that people need. Basin states applied 2.6 acre feet of water/acre - 70% higher than the US average. Finally, big technology companies across the Basin states are deploying water-hungry data centers with little regulation or regard for impacts on water resources. The Colorado River is already significantly overstretched, so every environmental analysis and plan for the future must consider how the River's resources are being used. The overuse of the Colorado River by big agribusiness and technology corporations - amid already record-low water levels and drought - has serious consequences that threaten accessible drinking water for 40 million people. I urge the Bureau of Reclamation to prioritize sustainability and the needs of the 40 million people relying on the Colorado River for drinking water over corporate profit. Sincerely, Ruth Fink-Winter 1635 Harwarden St Wheaton, IL

Letter #: 7420

Date Received: 3/2/2026

Sender Names: 7378: Shane Firestack

Emails: 7378: Shane@lynkage.net

Organizations:

Subject: Colorado river Draft EIS comment

DOI - . Hello, thanks for reading my comment, I appreciate it. I am writing as a supporter and user of Lake Powell, Lake Mead and water in the west. I am a concerned citizen and supporter of responsible water and energy infrastructure management. I am writing regarding the proposed alternatives for the Post-2026 Colorado River Operation Guidelines. It is important to recognize the role that the dams within the Colorado River Basin play in ensuring energy reliability, irrigation, water storage, navigation, and regional economic stability. As a person who lives on and uses the Colorado river for life supporting interests, I support any alternative that recognizes and supports small town life, tourism and recreational opportunities within the Colorado River Basin. The Supply-Driven, Max Operational Flexibility and Enhanced Coordination Alternatives all identify release levels based off of low water levels, shortages or low inflows which will better protect the dams critical infrastructure. I support any alternative or blend of alternatives in which releases are based off of real water inflows and not maximum deliveries that could hurt the water storage system and ultimately life as we know it on the river. I support keeping the most water in the reservoirs for all uses of the river and its lake/dams. The nation cannot afford to treat these critical infrastructure assets as bargaining chips in speculative environmental campaigns. Lake Powell and Lake Mead are too important to lose, and its operation must be protected. Shane Firestack Moab, Utah 4352607623

Letter #: 1922

Date Received: 2/25/2026

Sender Names: 1909: Neil Fischnaller

Emails: 1909: nfisch63@gmail.com

Organizations:

Subject: Colorado River Allocation - Nevada resident comment

DOI - . The historical prioritization of water allocation needs to be revisited. Old agreements between California & Arizona need to be adjusted in a phased approach, and should no longer dominate the allocation. Significant population increases in Arizona & Southern Nevada require this recalculation. Much of this population increase is a result of relocation from California to Arrizona & Nevada. The water allocation should move with the population. Over time, California should not continue to receive its historical priority. California has the greatest ability to modify its use of the Colorado river water using multiple actions to include: Create more reservoir capacity to retain Sierra Nevada Snowpack Adoption of conservation measures similar to Nevada Reducing Agricultural consumption by moving away from thirsty crops such as alfalfa, and almonds - moving to drought resistant crops such as agave. The high consumption crops should move to South Texas, or East Texas / Mid South where drought is less of an issue. Arizona & parts of Southern Utah should also increase conservation measures.Thankyou for the opportunity to comment. Neil Fischnallernfisch63@gmail.com5204 Hickam AveLas Vegas, NV 89130702-637-8947

Letter #: 7263

Date Received: 3/1/2026

Sender Names: 7223: Jamie Fitzgerald

Emails: 7223: thehealingpointaz@gmail.com

Organizations:

Subject: comments regarding the Draft Environmental Impact Statement for the Post-2026 Operational Guidelines for Lake Powell and Lake Mead.

DOI - . I am writing to submit comments regarding the Draft Environmental Impact Statement for the Post-2026 Operational Guidelines for Lake Powell and Lake Mead. As an Arizona resident and stakeholder in the long-term sustainability of the Colorado River system, I am deeply concerned that the proposed framework places a disproportionate burden on Lower Basin states, particularly Arizona, while failing to require adequate, enforceable contributions from Upper Basin states. Arizona has already taken significant reductions under the 2019 Drought Contingency Plan and subsequent shortage tiers. Through junior priority rights under the Central Arizona Project (CAP), Arizona has absorbed deep cuts while working aggressively on conservation, groundwater recharge, agricultural fallowing agreements, and municipal efficiency. These sacrifices have real economic and social consequences for our communities. Meanwhile, Upper Basin states continue to rely on hydrologic variability as justification for limited, uncertain contributions, despite structural deficits in the system and clear evidence that long-term flows are declining due to aridification and climate change. A sustainable agreement must reflect shared responsibility across the entire basin. The Colorado River Compact was written during an anomalously wet period and allocated more water than the river can reliably produce under modern climate conditions. Continuing to protect historical allocations without adjusting obligations upstream creates structural inequity downstream. Any post-2026 framework should: Require measurable, enforceable Upper Basin conservation contributions Address the structural deficit at Lake Mead system-wide, not primarily through Lower Basin reductions Reflect current hydrologic realities rather than historic assumptions Ensure equity among states that have already borne substantial shortages Arizona cannot continue to shoulder outsized reductions while other basin states avoid comparable commitments. True basin-wide sustainability requires shared sacrifice. Thank you for the opportunity to provide input on this critical matter. Sincerely, Jamie Fitzgerald Chandler, Arizona - Jamie Fitzgerald MTCM LAc Dipl Acu The Healing Point 480-648-6998 ~ Preventative care today, for a healthier tomorrow!

Letter #: 7385

Date Received: 3/2/2026

Sender Names: 7344: Patricia Flahart

Emails: 7344: pflahart@gmail.com

Organizations:

Subject: Arizona Water Supply

DOI - . I call myself the Water Resource Activist as I have been so concerned for ten years regarding Arizona waters. My main issue has been the amount of water that the Resolution Rio Tinto Copper Mine in the Globe Superior area would require daily. This copper mine should not be allowed to be built or continued mainly because of the amount of water it would require daily to keep the mine operating. Also, there has been some consideration of tapping water wells all the way from the Globe Superior areas to Maricopa, where the copper would go by train to ships taking the copper to China by ship. DO NOT ALLOW THIS RESOLUTION RIO TINTO COPPER MINE TO BE BUILT. Sincerely, Pat Flahart, Water Resource Activist

Letter #: 7926

Date Received: 3/2/2026

Sender Names: 7868: Karl W. Flessa

Emails: 7868: kflessa@arizona.edu

Organizations:

Subject: Comments on draft EIS

DOI - . Thank you for the opportunity to comment on the Draft EIS for Post-2026 Colorado River Reservoir Operations. The DEIS's "Geographic Scope of the Proposed Federal Action and Affected Regions and Interests" Section 1.5.1 fails to consider socioeconomic effects beyond the immediate floodplain of the River. The DEIS's geographic scope does not match the geographic scope of areas affected by the alternatives. This is a serious flaw and must be remedied. All of the alternatives propose substantial reductions to Lower Basin users whether they are adjacent to the River or at some distance from the River. More distant users of the river, such as those served by the Central Arizona Project will be seriously affected by the reductions. Municipal, tribal, industrial and agricultural users in Central Arizona and Southern California are likely to suffer severe economic consequences. In stating that "... general operations and facilities outside the mainstream Colorado River floodplain may fall within separate Records of Decision (RODs) and authorities that are outside the scope of the proposed interim guidelines." (DEIS, p. 1-9) avoids the Bureau's responsibilities to fully consider impacts in the Lower Basin. With regard to other elements of the DEIS: I support utilizing reservoirs upstream of Lake Powell to maintain Lake Powell's critical elevations. I support using an average of flows at Lees Ferry to determine appropriate reductions in deliveries. I support requiring Upper Basin states to participate in verifiable reductions in demand. I support pro rata rather than existing priorities for reductions in Lower Basin deliveries. Thank you, Karl Flessa Karl W. Flessa Department of Geosciences University of Arizona Tucson, AZ 85721 USA Office: 520 621 7336 Mobile: 520 444 5383

Letter #: 7345

Date Received: 3/2/2026

Sender Names: 7305: Alec Flores

Emails: 7305: info@greatbasinwater.org

Organizations:

Subject: Alec Flores Comments on Colorado River

Great Basin Water Network DOI - . Subject: Comment on Post-2026 Colorado River Operations DEIS To Whom It May Concern, WhyTrashEarth submits this comment in support of a stable, transparent, and scientifically rigorous framework for post-2026 Colorado River operations. As lifelong Nevadans, we recognize the Colorado River as a shared and finite system that underpins municipal supply, agriculture, Tribal Nations, and ecological stability across the West. While we are not basin allocation experts, we are concerned with long-term governance clarity and interstate water stability. We respectfully encourage: * Clear modeling of cumulative basin-wide impacts across both Upper and Lower Basin states * Transparent explanation of allocation tradeoffs and long-term shortage mechanisms * Explicit consideration of Tribal water rights and downstream ecological impacts * Publicly accessible justification for the selected operational alternative Water governance in the American West requires predictability, fairness, and long-range thinking. We urge the Bureau to ensure the final framework reflects these principles. Respectfully, Alec Flores (Founder and CEO) WhyTrashEarth If you have any additional questions please contact me. Alec Flores (c) Great Basin Water Network. Powered by weForms.

Letter #: 7600

Date Received: 3/2/2026

Sender Names: 7550: gail forsberg

Emails: 7550: gailforsberg57@gmail.com

Organizations:

Subject: Arizona water

DOI - . I do not feel we as Arizonans should give up any more water. The other states need to step up and take their share of cuts using Colorado river water.

Letter #: 20

Date Received: 1/17/2026

Sender Names: 19: Dan Freeman

Emails: 19: shadowsphere@cox.net

Organizations:

Subject: Colorado river and Arizona

DOI - . First, kick the Saudis out and take their alfalfa farms with them. They export the alfalfa to Saudi Arabia for THEIR cattle. They farm here because they can harvest three crops per year instead of just one. Someone made money off this back office deal, but it wasn't the farmers around those alfalfa farms and it wasn't the civilians of Arizona.Second, stop with data centers until these tech giants pay their share of power and figure out a more water efficient way of cooling these machines. They are out there, the corpos just don't want to pay for them.Lastly, stop building in the greater Phoenix area. It was bad enough with the urban sprawl for decades before but now we are throwing up "affordable" housing, which is usually apartment complexes. So, instead of say 10 families in an area, build upward and have 50 families in the same area. Saves space but more water usage. Sort this out and quit acting like hungry, hungry hippos."Grabbing hands, grab all they can."Dan M. Freeman

Letter #: 7628

Date Received: 3/2/2026

Sender Names: 7578: Dan Freeman

Emails: 7578: coxsuxx@outlook.com

Organizations:

Subject: Colorado river

DOI - . Here's some suggestions for the Colorado River: Look into shading CAP with solar panels. I'm not sure why this aquafer was ever built as an open canal but whatever. I've seen canals in India that use solar panels to shade and produce power. Work with Utah about cloud seeding. We are still in discussion yet Utah has been doing this for over 70 years. California should work with Utah. I read that Utah would pay or at least assist financially in desalination plants. Get rid of unnecessary farming such as alfalfa, avocadoes, etc. Grow these elsewhere. Fondemonte Farms and Al Dhari farms I thought were leaving. The alfalfa grown by them goes straight back to Saudi Arabia for their cattle. Someone got rich off this deal, but it wasn't the people of the state. Look into this guy and figure a way to work with him. https://moseswestfoundation.org/our-story/
Dan Freeman

Letter #: 3755

Date Received: 2/26/2026

Sender Names: 3718: Susan Friar

Emails: 3718: susanalimagaia@gmail.com

Organizations:

Subject: The Colorado River

DOI - . I urge the Bureau of Reclamation to strengthen the Draft EIS by:Centering climate science and realistic supply projectionsProtecting water quality and reducing pollution impacts as flows declinePreventing further ecological collapse in the Colorado River Delta and Basin tributariesRespecting Tribal water rights and ensuring meaningful Tribal consultationPrioritizing demand reduction and conservation over unsustainable allocationsIn Love, light, joy and laughterSusan Alima Friar"Do not grow old, no matter how long you live. Never cease to stand like the curious children before the great mystery into which we were born." -Albert Einstein

Letter #: 4997

Date Received: 2/28/2026

Sender Names: 4963: Charles Froelich

Emails: 4963: fesstival68@outlook.com

Organizations:

Subject: Comment re: Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead – Draft Environmental Impact Statement

DOI - . Greetings Bureau of Reclamation team; Comment re: Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead - Draft Environmental Impact Statement I am a civilian, not an expert. There is a simple reality that the current administration chooses not to accept. This is similar to the fact that the sun rises every day being debatable. There will not be an increase of water supply from nature in the Western US. The drought currently we are enduring will not end. It will get worse. Full stop.Decision makers need to heed this fact, and follow the science and then work plans accordingly.

Under the aegis of WaterKeeper Alliance I ask that: "The Colorado River's future depends on bold action, not incremental adjustments.We need a management framework that protects clean water, communities, and ecosystems for generations to come. The Bureau has the opportunity to take meaningful action now to address the full reality of climate-driven water scarcity and the urgent need to protect water quality, ecosystems, and Basin communities.I urge the Bureau of Reclamation to significantly strengthen the Post-2026 Colorado River Basin Draft EIS that proactively addresses the crisis that we face and ensure the public has an opportunity to comment on its revised proposal before issuing its final decision.The Colorado River is already overallocated and shrinking. The Bureau must prioritize long-term sustainability, meaningful Tribal consultation, and enforceable reductions in demand, not simply identify new ways to divide a declining supply. The Colorado River cannot afford delay." Thank you. Charles Froelich729 Willivee DriveDecatur GA 30033 - 5410m 650 346 7625SD 10 / HD 84

Letter #: 1331

Date Received: 2/24/2026

Sender Names: 1320: Marni Fylling-Ellison

Emails: 1320: marni_fylling@hotmail.com

Organizations:

Subject: Please protect the Colorado River

DOI - . Dear Bureau of Land Mangement I am a biologist and educator, writing to encourage the Bureau of Reclamation to combine elements from the proposed alternatives in the draft Environmental Impact Statement (DEIS) to ensure a sustainable future for the Colorado River with new, long-term guidelines that: - Provide clarity and predictability: continued crisis management puts everything and everyone in the basin at risk. New guidelines must promote conservation and respond to conditions on the ground. - Incorporate flexible, adaptive tools for conserving, storing, and managing water: new guidelines must allow for more flexibility in how water is stored and moved to protect and stabilize the system. - Embed environmental stewardship: the Colorado River is more than a plumbing system. New guidelines must account for the river itself and the bounty of life it sustains. - Provides for meaningful and voluntary Tribal participation grounded in sovereignty and self-determination: the 30 federally recognized Tribes in the Basin must be included in decision-making. - And preserve pathways for advancing in-basin mitigation and continued binational cooperation with Mexico Our natural lands and waterways are crucial for maintaining biodiversity, keeping our air and water clean, and for mitigating both the causes and effects of climate change. They must be protected. Sincerely, Marni Fylling-Ellison 1050 Swanston Dr Sacramento, CA 958183324 marni_fylling@hotmail.com