



environment

< How A Historical Blunder Helped Create The Water Crisis In The West

JUNE 25, 2015 3:06 PM ET

Transcript

DAVE DAVIES, HOST:

This is FRESH AIR. I'm Dave Davies, in for Terry Gross, who's off this week. We've heard a lot in recent years about the drought and water shortages in the West driven, many believe, by climate change. Our guest today, environmental reporter Abrahm Lustgarten, says those shortages are as much the product of mismanagement of our water resources as anything happening in the weather. Lustgarten is a reporter at the nonprofit investigative news site, ProPublica. His latest reporting is on the Colorado River, which is a critical water source for seven Western states. In 1922, those states drew up an agreement on how to divide the waters of the river. There was one big problem with their plan, though. They overestimated how much water the river could provide. Some of the problems states face today stem from promises the river just can't deliver. Before joining ProPublica, Abrahm Lustgarten wrote for The New York Times, The Washington Post and other publications. He was one of the first journalists to write about fracking, and he won a George Polk Award for that reporting. His new series is called "Killing The Colorado."

Abrahm Lustgarten, welcome back to FRESH AIR. You know, a lot of attention has been played to water shortages lately and water use issues. Why did you want to focus on the Colorado River?

ABRAHM LUSTGARTEN: So about 40 million people rely on waters from the Colorado River. The waters support about 15 percent of the nation's food crops, a great deal of fruit and vegetable production in southern Arizona and Southern

California and about 20 of the largest and fastest-growing cities in the United States. Its headwaters are high in the Rocky Mountains, outside of Rocky Mountain National Park in Central Colorado. There's other headwaters north in Wyoming, in the Green River. And these two rivers come together in Utah and from start to finish flow about 1,450 miles down to the Sea of Cortez, where it empties out in the Gulf between Baja Mexico and Mexico proper.

DAVIES: And I love this detail in one of the stories that Teddy Roosevelt had a vision - because people were aware of the power of the Colorado - he had a vision that you could harness its resources and spark a migration - a huge migration - from the eastern seaboard west.

LUSTGARTEN: Yeah. If you go to the Colorado River, especially in its upper basin reaches, and you imagine that land before anybody was really living there, it by all appearances is a vast resource. There's just an enormous amount of water flowing through there. And Roosevelt, among others, recognized that as a resource that could turn a landscape that otherwise was relatively inhospitable - arid, very extreme temperatures, both hot and cold - into a very livable place. And what that meant then at the time is a place where you could grow food, where you could grow crops.

DAVIES: Now, back in the '20s - I guess 1922 - the seven states that would come to rely on water from the Colorado I guess entered into a compact and decided how its waters would be divided, right?

LUSTGARTEN: Yeah, exactly. This followed a couple decades of increasing use of the Colorado. And by the 1920s, there was outright competition. California was the most developed. Los Angeles was already in its Hollywood heyday. And the states came together and negotiated, actually at the behest of Herbert Hoover, for how they would divide up that river. To do that, they calculated what they thought was the total flow of the river - thought they'd leave a little bit in the river, you know, for the health of the ecosystem - and divided up what they thought remained. It's turned out, over the years, that far less than that flows in the river.

DAVIES: So if the leaders of these seven states assumed there was more water flowing through the river than they did, does that mean that people were promised water that they can't get?

LUSTGARTEN: Essentially, yes. What that means is that from the very start, the Colorado River has been over-allocated. Not all of those states yet take the maximum amount they are allowed to. But if they did, each of those states have been promised, collectively, more water than actually exists. And that's the very premise of water use in the West. Before drought, before climate change, before an expansion in population, they began with the premise of thinking they had more water than they actually had.

DAVIES: So do the terms of that compact from 1922 - are they still in force? I mean, do people still expect that the water will be divided according to that formula?

LUSTGARTEN: They do. Not only are the terms of that original 1922 agreement still in force, but they've actually gotten kind of force. In 1944, they added on an obligation for another 1.5 million acre-feet to the country of Mexico. By this time, they already knew that they had way overestimated the amount of water in the Colorado River. But instead of reducing the share that each state could expect, they just added on to the total, promising 16.5 instead of 15 units.

DAVIES: All right, let's talk about cotton. Arizona, you tell us, grows an awful lot of cotton. And is it a particularly thirsty crop in terms of its water usage?

LUSTGARTEN: Cotton is one of the most water-intensive crops that farmers can grow. It's not the most; grasses like alfalfa, which are also grown in abundance, use far more water. But along the long list of options, cotton uses about six times as much water as growing a crop of lettuce and about 60 percent more than growing wheat. Cotton's been a staple of Arizona's agriculture economy for many years. It's in decline. There's much less of it today than there used to be. But there's still more than a hundred-thousand acres of cotton grown in Arizona. And Arizona is probably the worst off, when it comes to water, of any of the seven states in the Colorado River basin. So that decision to continue to use its water to grow one of the thirstiest crops was something that caught our attention very early in our reporting.

DAVIES: Right, so you have this crop that uses a lot of water and a relatively arid climate. Why are they doing this? Why are they spending so much - using so much water for this crop?

LUSTGARTEN: Well, that's what was most interesting to us because when you look at cotton, it's not actually a really good business. There's a glut of cotton on the market. There's not a lot of demand for it. And in recent years, the price has been really low. So it wouldn't appear to be a very good business decision for farmers. But what we found is that under the U.S. farm bill, the federal government heavily subsidizes cotton. It subsidizes other crops, but no crop in Arizona received more money than cotton through a variety of forms. And the farmers that I spoke with basically said that this money helps them bridge the gap between good years and bad years and keeps them in the black. If they didn't grow cotton, they wouldn't be eligible for as much money. Their entire farming operations would likely suffer.

DAVIES: You spoke to a farmer, Greg Wuertz. How did he feel about all this?

LUSTGARTEN: Greg Wuertz was really torn about the implications of his water use, the future for him and for his family of farming and also the future of the state of Arizona. And I found his internal conflict very typical of many of the farmers and ranchers that I spoke with. On one hand, he's keenly aware of the desperate need for more water and the great importance of the decisions of how that water is used, especially in Arizona, where so much of the water is being imported from the Colorado River at great expense. On the other hand, he is a third-generation cotton farmer. His identity is tied to it. He has great affinity for the agrarian lifestyle, a great appreciation for how important it is to produce crops, some of which, in addition to his cotton, are - you know, serve as food. And essentially, he, you know, has to make a decision between what he imagines is the greater good of the state and the greater good of his own family and his own livelihood. Greg Wuertz says that he likely would have phased out his cotton operations years ago had he not been receiving subsidies from the federal government. Over about 20 years, his family - that's his brother's farm, his father's farm, his own farms - received more than \$5 million in federal aid under the farm bill.

DAVIES: And how exactly does it work? I mean, does the federal government - I mean, what's the formula for subsidizing a cotton farmer?

LUSTGARTEN: Well, it comes in a lot of different shapes and forms. There's subsidized insurance that basically covers a farmer against risk. And that risk might be drought or just a bad producing crop. Or it could be a big storm. Or it could even

be a price drop. There's subsidized business loans, which are a really kind of incredible subsidy. They basically guarantee a base price. You can sell your cotton crop to the government for a guaranteed amount of money. And if you're able to make more on the free market, then you can take that cotton back and sell it for more. But if you can't ever sell it, then the government still buys it from you. And then for years there have been other forms of subsidies, including direct subsidies. Greg Wuertz would get a check for \$40,000 just for planting his cotton in any given year. That subsidy and a couple of the others have been phased out in recent years and increasingly replaced with more subsidies for insurance.

DAVIES: All right, to ask the naive question here, why would the federal government, which itself doesn't have extra money to give away, subsidize a crop that doesn't have a big international market for it - I mean, cotton prices are down because there's plenty of it around - and a crop that uses badly needed water? Where does such a policy come from?

LUSTGARTEN: Well, the farm bill has its origins in the New Deal. It was crafted as a support program to essentially keep farmers in business in some of the worst economic times. It's evolved since then to really be a behemoth of legislation. The recent bill passed last year in its rough form was close to a thousand pages and contains about a trillion dollars' worth of funding. The simplest answer to your question appears to be that the right hand doesn't know necessarily what the left is doing. I found no evidence through my reporting that the U.S. Department of Agriculture or the authors of the farm bill were thinking about water constraints or about Arizona's crops in particular when they chose to subsidize cotton. The subsidies are distributed across all states that grow cotton. And what's interesting is that the farm bill also contains conflicting incentives to deal with environmental concerns in other ways, which shows that they have the capacity to consider the water issue but basically pass on the opportunity to address it.

DAVIES: So essentially, there's a huge subsidy coming in. How do farmers in Arizona get water from the Colorado River, which doesn't run through the heart of the state for sure?

LUSTGARTEN: Well, it does now (laughter). In the 1970s, the state of Arizona built

the Central Arizona Project. It's a massive canal that leads from the Colorado River at Lake Havasu, which is on the Colorado and California border, and essentially diverts a large flow of the river - about 10 percent of the river - into a couple of huge pipes, pumps it up over a mountain range and then across 336 miles, through the city of Phoenix and then south to the city of Tucson. Over that range, it rises about 3,000 vertical feet, consumes an enormous amount of power to get it there. And what you see if you fly over Arizona or you happen to drive along this canal is essentially a concrete riverbed, an artificial river that does flow with a nice silver streak of water right through the central part of Arizona.

DAVIES: And is it just for farmers, or does it also feed cities?

LUSTGARTEN: Less and less of that water is for farmers. More and more is used by the cities in Central Arizona. A 2010 report attributed that water for 50 percent - just about half of the state's gross product; it contributes to the economy in every way. When the canal was first built, the state was looking for a way to use all that water. It actually didn't need as much as the canal would provide. And the original intention was to push that water on farmers. They were the biggest water users in the state. And the idea was you could get them to use most of that canal water. In the years since then, the priorities have shifted. The cities have needed more and taken more of it. And Arizona also has a lot of obligations to provide water to its Native American reservations. And they are now entitled to a good chunk of that water.

DAVIES: We're speaking with Abrahm Lustgarten. He is an investigative reporter for ProPublica. He has a new series about water usage in the Colorado River. We'll talk more after a short break. This is FRESH AIR.

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DAVIES: This is FRESH AIR. And if you're just joining us, our guest is Abrahm Lustgarten. He's an investigative reporter for ProPublica, and he's worked on a series about the use of water in the Colorado River Valley. It's called Killing the Colorado.

You know, you write that enormous numbers of acres in Arizona are devoted to essentially unneeded, heavily subsidized crops - cotton and alfalfa - that use a lot of this scarce resource - water. If the subsidy weren't there and those acres weren't

planted in those crops, would there be enough water for other needs in the state?

LUSTGARTEN: Well, Arizona's about the most extreme example of what's an issue that affects every state in the Colorado River basin. Across the basin, about 70 or 80 percent of all of the water goes to grow crops, goes to agriculture. Arizona, because it faces the tightest water constraints, has long understood that its long-term plan would be essentially to phase out agriculture in the state of Arizona. So by policy for decades now, there's been an intention for those farms to get smaller, for some of those farms to stop farming altogether. That alone presents, you know, an opportunity for more water to go to the cities and to redistribute how that water is used.

But for the farms that do continue to farm, the Pacific Institute, which is a water research group here in California, estimated that if the alfalfa acres in the Colorado basin were simply irrigated less but still grown with alfalfa, that could save 10 percent of the river's water right there. And using their estimates, I calculated that if cotton in Arizona were replaced with wheat - so all those farmers stay in business, they don't have to do - you know, change what they do - that would save enough water to supply about 1.4 million people with water every single year.

DAVIES: Alfalfa, as a crop, uses a lot of water. It's often used as a feed for livestock. Is part of the problem that we eat so much meat that we are - we're using a lot of water to feed our livestock through alfalfa fields?

LUSTGARTEN: Absolutely. I mean, alfalfa - if you were to pick any one crop that uses the most water in the Colorado River basin, it's alfalfa. There's a lot of surprising aspects to alfalfa usage - not just that it supports our meat and dairy industries, but that a lot of it is actually exported to support other countries' meat and dairy industries. There's large alfalfa farms in southern California and southern Arizona, for example, that are owned by the United Arab Emirates or other Middle Eastern countries. I calculated based on the very high water intensity of, say, a steak - you can calculate that if Americans theoretically ate, say, one less meal of meat each week, it would save an amount of water that could be the equivalent to the entire annual flow of the Colorado River.

DAVIES: Wow. There's another interesting phenomena that you describe in the use of

water by ranchers and farmers. And you illustrate it with a guy named Bill Ketterhagen in Colorado. You describe him - well, how he taps into the Colorado River and makes decisions about how much water he takes. You want to explain who he is and what he does?

LUSTGARTEN: Sure. Bill Ketterhagen manages a 700-acre ranch outside the town of Gunnison, Colo., which is near Crested Butte in the western part of the state. Like all of the ranchers that I spoke with in the upper part of the Colorado River, Bill Ketterhagen diverts a certain amount of water that he has water rights to out of, what's at that point, a high mountain tributary to the Colorado River. His is a stream called Ohio Creek. But there are dozens, if not hundreds, of these small creeks that eventually trickle down into what becomes the Gunnison River, which eventually becomes the Colorado River and flows all the way down to Los Angeles.

The amount of water that these ranchers take is apportioned based on water rights that are granted by each of the states in the basin. So Bill Ketterhagen gets his water rights - or the owners of the land that he works on get their water rights from the state of Colorado. Those water rights are apportioned based on a first-come first-serve basis. That's to say that the first people that moved to the West established the most senior rights to that water. And everybody who's come afterwards essentially gets a place further back in line. When there's not enough water, Bill Ketterhagen gets it first. The person behind him might not get any at all.

So the preservation of these water rights have become enormously important to the value of land, to the value of farming businesses in the West. And there is a stipulation in Colorado law, as well as the other laws of the basin states that essentially says if you don't use your full apportionment, your full water right, then the state has the option of confiscating it - of taking it away and giving it to the next person in line. What that means on a practical basis, Bill Ketterhagen tells me - and other ranchers as well - is that each year, whether they need the water or not, he'll take as much as he's allowed to take because if he doesn't set the legal precedent for using all that water, there's some chance, small or otherwise, that he will lose that water, lose the value of his property and probably lose his livelihood.

DAVIES: And so that means he often takes more water than he needs - he floods his fields?

LUSTGARTEN: He does. He told me that he'll flood irrigate his grass pastures in a way that the plants can still handle. In some cases, he'll dump a little bit of excess water on parts of his property that can handle it. And it's not so much that he has an abundance of water that isn't being put to any use, but he is giving his plants as much as they can possibly handle when biologically they could also grow just fine with a lot less water.

DAVIES: And where does this tradition of use-it-or-lose-it come from? It seems kind of irrational, doesn't it?

LUSTGARTEN: (Laughter) Well, use-it-or-lose-it has its basis in the oldest water law. It's written into the Colorado State Constitution. It stems from the Gold Rush in the late 1800s. The original idea was actually to keep people from speculating on their land so that you couldn't come, lay a claim to water and then hoard that water or hang onto it while the next person who might need it immediately, couldn't have access to it. So the idea, with the best of intentions, was that if you had a right to water, you should be putting it to some productive use.

DAVIES: And how big of a problem is this? I mean, how much is the use-it-or-lose-it principle contributing to water scarcity in these states?

LUSTGARTEN: It's difficult to quantify. But the scientists I spoke with at the USDA's Natural Resources Conservation Service, which is a group that works on these sorts of issues, basically said that it would make a material difference - that it would add up collectively over all the farms in Colorado, for example, to a significant amount of water that might flow downstream into Lake Powell. Lake Powell is the country's second largest reservoir. It sits behind the Glen Canyon Dam, and it essentially controls all of the water from the upper Colorado River basin states before it's distributed down further south. Lake Powell's in really dire straits. It's about half full now. It's typically been about a third full over the last couple of years. It's having trouble producing the amount of power that its hydroelectric facilities are supposed to produce, and it's extremely inefficient. So waters that might go unused on those ranchlands in Colorado and Wyoming and places up river really could help fill Lake Powell, I'm told by folks at the NRCS.

DAVIES: Abrahm Lustgarten is a reporter for the nonprofit investigative news site ProPublica. His series is called Killing the Colorado. After a break, he'll tell us about a massive coal-fired plant built in the wilderness to power pumps diverting water from the Colorado River. I'm Dave Davies, and this is FRESH AIR.

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DAVIES: This is FRESH AIR. I'm Dave Davies in for Terry Gross who's off this week. We're speaking with environmental reporter Abrahm Lustgarten about water shortages in the West and mistakes in water management he says have contributed as much to the problem as droughts and climate change. Lustgarten's new series for the nonprofit investigative news site ProPublica focuses on the Colorado River, which serves 40 million people in seven states. The series is called Killing the Colorado.

One of the things that you write about in this series are the enormous engineering projects which have - which states and the federal government have undertaken to extract and manage the water of the Colorado - none of them more impressive or larger than the Navajo Generating Station, you want to just describe this?

LUSTGARTEN: Sure. The Navajo Generating Station is a three-generator coal-fired power plant. It's one of the largest in the country, and it sits in the northern edge of Arizona along the Colorado River outside the town of Page as a phenomenally massive monument to industry. It sits in an otherwise plain and open wilderness landscape - red sandstone spires, and desert buttes, and then, all of a sudden, is this enormous, thrumming, loud facility with three smokestacks that reach almost 800 feet into the air, consumes about 22,000 tons of coal each year and powers a number of southwestern cities, but mainly provides the power to move water through the Central Arizona Project canal into the middle of Arizona.

DAVIES: Would you just describe what - how the water - this water gets moved through this power generated by this huge coal-fired plant?

LUSTGARTEN: About 300 miles south of Page along the Colorado River, the river sits in a small reservoir called Lake Havasu. And from Lake Havasu, there's a couple of intake pipes that move the water out of the river - about 10 percent of the flow of the river - carry it up a total elevation gain of about 3,000 feet and across 336 miles

through the cities of Phoenix and Tucson into the central part of the state of Arizona. Moving that much water up that much elevation gain requires an enormous amount of energy. And to acquire that energy, the federal government basically built the Navajo Generating Station in the early 1970s.

DAVIES: And what kind of pollution does it cause?

LUSTGARTEN: So the Navajo Generating Station is the nation's third largest emitter of carbon dioxide, climate warming gases of any power facility in the country. In addition to the carbon dioxide, it has historically emitted enormous amounts of nitrogen oxide, mercury - going back some years - sulfur dioxide and a slew of other pollutants that have essentially blanketed that part of the country in a fog of haze and smog. There's 11 national parks and sensitive federal conservation areas in the close proximity to the Navajo plant, and the views in places like the Grand Canyon have been incredibly disrupted by the pollution from Navajo and a couple of other coal plants that are also in the region.

DAVIES: Was this anticipated? I mean, people knew they were building a huge coal-fired plant in this country, right?

LUSTGARTEN: It was anticipated. The earliest environmental impact statements that I was able to find dating back to 1972 warned that the Navajo plant and another that was being built at the time would cause an exponential rise in air pollution in the region. The Union of Concerned Scientists called that part of the country a national sacrifice area if the country proceeded with its plan to mine coal and burn it for power, and those concerns have essentially manifested today.

DAVIES: You write that this isn't the only big project that's been engineered to manage Colorado River water. You say that a lot of these projects have turned the Colorado into one of the world's largest plumbing systems. The Hoover Dam is probably the most famous. What its condition? How's it working?

LUSTGARTEN: The Hoover Dam holds back Lake Mead, which is the largest reservoir on the Colorado River system. The dam itself is perfectly sturdy and working just fine, but the reservoir at last count was about 37 percent full. By that measure, it's not really serving any longer the function that it needed to serve. It's just one of a

number of dams that are all kind of struggling to serve their intended purpose or to hold in reserve as much water as the Colorado system had hoped. One of the problems with the Hoover Dam with Lake Mead as well as Lake Powell and the others is that they allow an incredible amount of water to evaporate off of the surface. By holding that water in place in a hot desert climate and spreading it out over so many square miles, essentially the water evaporates on an order that could significantly affect the flow of the river were it to stop happening.

DAVIES: And Lake Powell, which is the lake created by the Glen Canyon Dam, you say is leaking. How much of a problem is that?

LUSTGARTEN: A study out in 2013 found that about two and a half percent of the river's total flow was leaking out the bottom of Lake Powell. Essentially, that reservoir, the dam in front of it, was constructed in a place where the geology didn't necessarily support holding water. There's just a lot of natural fractures and fissures in the ground there and a very porous geology, and a significant amount of that water is flowing out of the reservoir and into that underground layer, perhaps never to be recovered. When you add that to the amount of evaporation off the surface of Lake Powell, for example, I basically calculated that about six percent of the river's annual flow was being lost through the existence of Lake Powell alone.

DAVIES: Well, help us understand, I mean, the idea I guess in building these dams was to harness and manage the water that was flowing through the river. Why are they down so far, and what's the solution?

LUSTGARTEN: Yeah, I mean, dams by design and their original intention are an incredibly important piece of infrastructure. They control floods that could devastate landscapes further downriver, and they collect back-up supplies of water that can essentially bridge during periods of drought. They're down so far today because the drought has persisted for so long. The Colorado River basin is in its 15th year of drought. That's a period of time that was not anticipated by the designers, if you will, of the river system and the West's use of that water. There simply hasn't been enough flowing compared to the amount that's taken out and used every year to keep those reservoirs full. And so part of what you see as the waters drop behind those dams is those seven states' inability to adjust the amount of water that they consume to the amount of water that's available. So those states have essentially continued to draw

their water out of Lake Mead and out of Lake Powell as if everything in the river system were normal. But for a decade and a half, the river has been anything but normal.

DAVIES: We're speaking with Abrahm Lustgarten. His new series in ProPublica is called Killing the Colorado. We'll continue our conversation in a moment. This is FRESH AIR.

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DAVIES: We're speaking with Abrahm Lustgarten. He's an investigative reporter for ProPublica. His new series is called Killing the Colorado.

So you've spent a lot of time looking at the Colorado River and the states that manage it and the people, the farms, the cities that rely on it. How desperate is the situation, and what do you think's going to happen in the future?

LUSTGARTEN: Well, there's no question that the seven states dependent on the Colorado River are facing severe shortages. California, perhaps, is the most shielded because they have very senior water rights and they won't face cutbacks as soon as the other states. But the Colorado is flowing at just a fraction of its normal rate. And while there's been an agreement about how to share short-term shortages on the river, there's no long-term plan to significantly adjust how that water is used. Until there is, the water crisis is a severe threat to those economies, to the cities in the West from Denver to San Diego, and to all the food that's produced. A lot of the people that I talk to like to say that there's no better time than a crisis to spur change. So the consensus is that some sort of change will be coming soon. It's not yet clear exactly what that will look like. Part of the reason that we focused on arcane water laws, for example, or federal subsidies, is because I heard from experts about water in the West who see those as some of the easiest, most accessible opportunities to change policy in a way that might immediately contribute to bringing more water into the Colorado system or allowing more water to remain there, as the case may be.

DAVIES: So the elimination of federal subsidies for crops that maybe use a lot of water and perhaps aren't needed, and a change in water use policies which encourage people not to waste it would be helpful at least as far as the agricultural side. What

else are people talking about that would make a difference?

LUSTGARTEN: So the fundamental tension over water in the West is between agricultural interests and urban interests. The farms have the rights to the vast majority of the water, and they use the vast majority of the water. The cities are growing the quickest, have really no interest in limiting or curbing their own rates of growth, and essentially want that water from the farmers. So the hottest topic of conversation is how that might happen. There is essentially two options. I mean, the water laws of the West can be rewritten. This would amount to essentially restructuring property rights across, you know, a third of the country, and it's kind of politically unlikely. Or allowing a market-based approach in which water rights could be traded. And that's where a lot of the focus is on today. If you had a system, theoretically, where a farmer could sell or lease, temporarily, the rights to their water to a city like Los Angeles, you would essentially shift access to that water. You would meet the needs of, say, Los Angeles, while satisfying the economic concerns, the income concerns that that farmer has tied to his water. And essentially, free-up or - pardon the pun - liquidate this resource in order to shift it around.

DAVIES: Is anybody talking about big engineering solutions, or is that day gone?

LUSTGARTEN: No, actually, big engineering solutions are still very much on the table. And it's something I found ironic, given how problematic the existing infrastructure on the river is. Almost every state in the Colorado River basin has some sort of plan on the drawing board to build new dams or new diversions, and it's partly as a way to keep as much water as they can for themselves. Utah is proposing a couple of new dams, Colorado passed a bond measure for \$7 billion, which will likely go towards increasing storage, which essentially means building new dams. There's kind of fantastic ideas to build a pipeline that might actually transfer water from the Mississippi River system into the Colorado River basin. And there's even more kind of extreme ideas floating out there like towing icebergs down from the Arctic.

DAVIES: If they did away with all of these huge engineering projects on the Colorado - you know, the Hoover Dam and the Glen Canyon Dam, you know, and the Navajo Generating Station, what would happen?

LUSTGARTEN: Well, it depends on which ones they got rid of. It was suggested to

me, for example, that the two biggest reservoirs - Lake Powell and Lake Mead behind the Glen Canyon and the Hoover Dams, respectively, you know, they're each less than half full. And the opportunity exists then to combine them. If the new normal in the West is less water, and less water in storage, but an enormous amount of water is lost through seepage and evaporation out of Lake Powell, the proposal to actually get rid of Lake Powell has never been more apropos - the possibility that you could fill Lake Mead, have one single reservoir, would introduce greater efficiency and reliability into the system and decrease a whole lot of loss. We calculated that if you got rid of Glen Canyon Dam, the Colorado River system would essentially have 6 percent more water almost overnight. That's just one example.

DAVIES: So why doesn't that happen?

LUSTGARTEN: Well, I think the crisis is slow-moving, and the conversation about whether something like that could happen is evolving. There's been an immense environmental opposition to Glen Canyon Dam from pretty much the moment that it was built, but that opposition has always been seen as kind of extreme, you know, and not necessarily with the basin's best interest in mind. The drought has made, you know, the practicalities of that kind of change a lot more palatable. You might actually begin to see that happen in the future. The Navajo Generating Station is a bit of a different beast. The power is always going to be necessary to move that water around, unless central Arizona decided it didn't want the water. The question is whether cleaner sources of power could be used to move the water through the Central Arizona Project. So, you know, C.A.P officials tell me that it would be an option to buy, say, natural gas-fueled power, which has a much lower emissions component than the Navajo Generating Station. There's a large and vocal contingent that would like to see that Navajo plant simply shut down. The EPA has basically decided it's not going to do that in the near future. But there's a lot of challenges facing it in the long term. It's completely incompatible with President Obama's Clean Power Plan, which aims to phase-out carbon dioxide emissions from coal-fired power plants. And the Navajo plant is also facing a fresh environmental review, thanks to its new lease on Navajo lands. Both of those things are going to restart processes which ultimately threaten the long-term viability of the plant.

DAVIES: How much of the problem is bad management of water resources, and how

much of it is growth, and then how much of it is drought that's related, potentially, to climate change?

LUSTGARTEN: What I hear repeatedly from some of the smartest thinkers in the West - Bruce Babbitt, former secretary of the interior, among them, is that there is plenty of water in the West, so the question is really about how do you use it better. I started reporting on this project more than a year-and-a-half ago, and when I began, it was a challenge to learn about how climate change and the drought were affecting water supplies in the Colorado River basin. And I thought that that's what I would wind up reporting about. But what I found through that period of reporting is that it's the policy and the management that seem to be having a greater effect than the climate. And I began to look at the ways in which the West is not so much a victim of climate and the environment as much as a victim of its own decisions about how to use that water. Experts I talk to say that conservation, increased efficiency, would reintroduce enormous quantities of water back into the Colorado River system. The changes that we talked about in terms of farming, prioritizing which crops are grown, and increasing efficiency about how water is used in the cities, they believe would make the region self-sustaining for many, many, many decades into the future.

DAVIES: And what are the political obstacles to embracing that approach?

LUSTGARTEN: There's nothing really more politically touchy in the West than water and the prospect of taking away people's water rights. So what you have when you talk about increasing efficiency or reapportioning water is essentially an argument between those who have it, which are the farmers and the people who've been on that land for generations, and those who don't which are the cities, you know, who are relative newcomers to the area. Those farming interests and also other business interests, like the mining industry or the oil and gas industry for example, have enormous political sway. They've repeatedly influenced their state legislatures in ways that preserve the status quo when it comes to water rights. You're seeing this in California now as the state looks to enact new groundwater laws that might reduce groundwater pumping or change some of its most senior water rights. Until there is some effective diplomacy that brings these different views at the table into agreement, these big, sweeping changes, things like, perhaps renegotiating the original Colorado River Compact itself, just seem exceedingly unlikely.