From: Floyd Cranmore <fwcranmore@yahoo.com>
Sent: Friday, October 30, 2015 11:04 PM
To: BDCPcomments
Cc: Floyd Cranmore
Subject: BDCP Comments Documents
Attachments: BDCP EIR Comments - 2nd.doc; BDCP EIR Comments.doc

Please find attached
BDCP EIR Comments - 2nd.doc = current comments
BDCP EIR Comments.doc = prior comment period comments

COMMENTS RE EIR for BDCP
By: Floyd Cranmore, (Attorney & former Adjunct Instructor at WASC certified college)
Bibliography of source material at end of Comment

SUMMARY OF SUMMARY

Any EIR of the BDCP must include an ongoing re-analysis of up-to-the-minute scientific literature on the subjects of global warming and gross mean sea level rise. Significant current studies and findings have been effectively hidden by the use of data cut-off dates for data to be analyzed by staff. This has allowed the BDCP to continue unabated. More significantly, it has created a significant diversion of public attention and resources from the much larger looming threat of fiscal and environmental disasters from inundation of large parts of the Central Valley, including during the lifetime of the anticipated initial operating permit for the BDCP, due to gross mean sea level rise due to global warming, as already being shown by contemporary scientific studies.

EXECUTIVE SUMMARY

ECOLOGICAL SCIENCE PERSPECTIVE: Any taking of fresh water that would otherwise go to the Delta will significantly degrade and destroy flora and fauna habitat, particularly given climate change predictions, including long term droughts during this century, particularly in the latter half. For example some Salmon runs have already been an/or are already being lost due to lack of flow volume and/or higher temperatures. (Although US F&G have not recognized runs as separate sub-species, the science shows each is genetically variant, adapted to particular tributaries, such that Salmon cannot optimally survive in a different run than they are evolved for.) Similarly, the low flows and increase in overall mean ocean level rise, will significantly increase brackish water in the Delta, until the Delta is effectively inundated during the lifetime of any anticipated BDCP initial operating permit. (See below.)

LEGAL PERSPECTIVE: The voters overwhelmingly voted down the Southern California water grab by the Voter Ballot Initiative process. The current attempt to create an "end run" around that Constitutional bar, by appointing "experts", is unconstitutional. The experts must follow the Constitutional directive of that prior Voter Ballot Initiative, in any evaluation of redirecting water. Certainly, state water law clearly provides that the state has the inherent and constitutional police power to require far greater conservation measures by all water interests, including agricultural and city planning departments. However, the state is not exercising that police power, at least not in any coherent and rational fashion. Experts can help in some of those contexts, (for example, by balancing stricter agricultural water use regulations based on the science of whether agricultural run off water absorption either increases ground salinity in some areas, or instead promotes percolation that recharges groundwater in others). However, such experts only have the constitutional power to recommend that the voters change the Constitutional bar of the past Voter Ballot Initiative, they cannot on their own, avoid its mandates.

However, given the actions to date, it appears the "experts" will make recommendations to take direct action to pursue the BDCP which actions directly violate the Constitutional Bar of the past Voter Ballot Initiative, given the significance of campaign "contributions" from Southern Californian developer interests seeking to enrich themselves by further overdevelop Southern California, and to shift the water costs into an externality for to Northern California.

CLIMATE CHANGE AND GROSS MEAN SEA LEVEL RISE PERSPECTIVE: The BDCP proposal directly contradicts the state's official recognition of the science and reality of human caused global warming and, hence, of the gross mean sea level rise that will result. Such impacts have, repeatedly, been effectively "hidden" by the use of artificial data cut-off dates, beyond which staff analysts have been unable to examine current scientific findings on gross mean sea level rise, because such will form the death knell of the BDCP.

ANTARCTIC: Current scientific studies on climate change regarding Antarctica establish now irreversible glacial melting in significant areas, which, alone, will move ocean beach front to Sacramento with 10 ft of sea level rise, and show other areas of Antarctica are rapidly melting and will soon be at the same irreversible position to contribute another 10 ft gross mean sea level rise over time.

GREENLAND: However, for the remainder of this century, the greatest threat is yet another gross mean sea level rise of over 10 ft from Greenland. Historical geological studies indicate that when the Greenland glacial ice sheets melt, they tend produce such very rapid sea level rise. The historical mechanism is water from melting surface pools flowing through crevices down to surface, where water pools and creates larger ponds and lakes between the glacial overlay and the ground surface. In the past, this mechanism produced an aqueous lubrication of the otherwise gravity bound glacial movement, creating a very rapid and irreversible glacial slide off into the Atlantic, creating very sudden and very significant (indeed, inundating) historical gross mean sea level rise of in excess of 10 ft..

Contemporary studies being led by NASA and others are currently finding exactly such high levels of surface and subsurface glacial melt water pooling and lake formation already occurring, and already leading to significantly greater sub-glacial fresh water run-off into the Atlantic in a substantial portion of areas around Greenland, for example the greater South Western Greenland coast. These processes have already resulted in significantly greater volumes and speed in glacial calving in that area. Scientific studies have also shown that once a significant portion of Greenland starts shedding its glacial overlay, the loss of weight the glacial ice overlay will cause a collateral crustal rebound/rise in the Greenland land mass, increasing the gravity and aqueous lubricant glacial shedding processes in any remainder of Greenland still retaining a glacial overlay.

BDCP INTAKE AREA INUNDATION DURNG PERMIT LIFE: The net result is that within this century, and within the current lifetime of the anticipated initial operating lifetime of the BDCP infrastructure, if and when built, the Earth will undergo a gross mean sea level rise of in excess of 10 ft. If unabated by man-made structures, such increase will move the Pacific Ocean front into the Sacramento area, for example,

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bisecting Elk Grove. This will render the BDCP unable to operate as currently envisioned, as it would simply be transporting a range of brackish to pure ocean salt water to Southern California, which would then require desalinization. Such desalinization can be more cost effectively achieved closer to the Southern California end users.

CENTRAL VALLEY INUNDATION: Furthermore, such inundation from Greenland glacial sources of gross mean sea level rise of over 10 ft, coupled with already irreversible Antarctic based gross mean sea level rise of another 10 ft, plus gross mean sea level rise from other Antarctic sources, all by the next century, will require drastic responses to avoid the historical re-inundation of the Central Valley. (As a gauge marker, Stockton currently sits approximately 20 ft above sea level, and so will be largely inundated without intervention.) Such interventions will certainly include massive concrete levies to strengthen/replace current earthen levies in the Delta which are not designed/constructed to withstand 10 ft of gross mean sea level rise, much less substantially in excess of 20 ft rise. The resulting air, water, and other pollution sources from that response alone will more than dwarf the very substantial environmental impacts of the BDCP. The combination of such gross mean sea level rise, plus the responses thereto, will produce a massive environmental disaster.

Moreover, Geology professors in the state's higher education system are privately discussing such possibilities as a massive (Chinese Three Gorges type) dam spanning, for example, the Carquinez Straight area, to prevent massive sea level intrusion into the Central Valley. Such would also produce an equally massive set of environmental impacts.

In short, while the BDCP project can itself lead to very significant negative environmental impacts, it will be quickly rendered obsolete (resulting in a huge waste of fiscal resources) by gross mean sea level rise currently in progress. And such will be dwarfed by the intermediate to longer term implications of the responses to such gross mean sea level rise, in order to try to avoid the historical re-inundation of the greater Central Valley.

DETAILED ANALYSIS

Global warning melts glacial ice all over the world. Much of that glacial ice will melt soon, but massive amounts are stored in the Arctic, the Antarctic and Greenland, which will continue melting into the future.

While the general continental glaciers and the Arctic and Antarctic may be melting somewhat more slowly, currently ongoing studies are showing that the melting of the Greenland ice sheet is accelerating, due to numerous factors.

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The BDCP comments cut-off period is Oct. 30, 2015. The EIR analysis of the BDCP has been dogged from the beginning with artificial "cut-off" dates for data, which has "ham-strung" staff's analysis to the point of rendering it grossly out of date before its even published.. This artificial "cut off" has barred staff consideration of not just "comments" information, but of any other published scientific data relevant to their analysis. Literally, staff have to "close their eyes" and ignore the results of current, ongoing, groundbreaking, research which could, and would, dramatically change the outcome of that analysis, including by questioning fundamental assumptions. (One such basic assumption is that the Central Valley generally, including the BDCP system, will remain "dry ground" with river flow fed by occasional rainfall and snow melt, instead of the Central Valley becoming [once again] a large inland sea.)

For example, on Oct. 27, 2015 (just three (3) days before the comment cut-off), the New York Times reported on groundbreaking research being conducted literally on the Greenland ice sheet (one of the largest in the world), into the rate that the ice sheet is melting. As this NYT Article reports, once published (after the BDCP comment cut-off), this information will help refine the rate melting of the Greenland ice sheet, with its potential for "20 ft" of gross mean sea level rise in the "coming decades" of the "twenty-first century".

Why is this particular research important? While satellite imagery has allowed for some level of predictive modeling, researchers are only now obtaining on-the-ground measurements to correlate with satellite data, to refine modeling and increase its ability to predict the rate of change in gross mean sea level due to global warming. (As this NYT Article discusses, the research is in difficult conditions, costly, and its funding is under fire from Republicans who do not believe in global warming and are trying to cut funding of basic earth sciences research which is proving them wrong.)

Similar recent studies published in 2015 are showing Greenland's sub-marine glaciers (glaciers that follow fjords and extend out well into, and below, the Atlantic Ocean] are also melting at an equally alarming rate.

The melting of Greenland's ice sheet is more significant for the EIR analysis of the BCDP because of what the geological record shows about how quickly such record has historically occurred. [See also attached 2014 initial BCDP comments, discussing this subject.]

As discussed by Prof. Peter Ward in his book "Flooded Earth", the geologic record demonstrates that the Greenland ice sheet has melted in the past, and is likely to do so again. More importantly, the geologic record shows that when the Greenland ice sheet has melted in the past, it did so very rapidly.

Prof. Ward raises the geological historical fact that when the Greenland ice sheet starts melting, and moving -- due to sub-glacial lubrication from melt water at the bottom of the ice at the ice/land interface, the increased glacial movement in turn increase friction, causing even more melting, proving more water at the interface, causing more movement, etc., in a cyclic, cascading effect. The net result is that, from a historical geological perspective, the Greenland ice sheet tends to just slide off the land mass, practically *en mass*, very precipitously, causing very rapid sea level rise on an unprecedented scale.

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Indeed, as discussed below, current research by NASA and major Univ. Of Cal. system are showing just such current, accelerating melting. New on-the-ground research is taking measurements in places, and in ways, never done before, to try to match more imprecise satellite data used for modeling with actual, on-the-ground events, to improve the accuracy of such modeling. That research is currently on-going, with much still to be published. Given the political use of data "cut-off dates" for analyzing the EIR for the BDCP, staff will be barred from using this newly emerging information that has the very real potential for undermining basic assumptions about the BDCP.

Prof. Ward sees a "worst case" scenario of gross mean sea level rise from now through 2100 to be in the range of 5 ft., but that, overall, gross mean sea level rise will be "uneven". So, between 2010 and 2200, "worst case" gross mean sea level rise might be more on the order of 50 ft. (And, so far, climate change modeling has been "behind the curve" -- that is, as new data has refined predictive models, what was previously viewed as "worst case" scenarios have frequently become the "best case scenarios".)

Current research has made new discoveries literally since Prof. Ward's recent book was published. These studies have found that the Greenland ice sheet is "porous", so that melt water pooling on the surface then disappears down "sink holes", crevices that enlarge as more warm water flows down them. This not only accelerates the melting of the above ground Greenland ice sheet, but it also adds a lubrication effect at the glacial-ground surface interface, moving the glaciers to and into the Atlantic Ocean at an accelerating rate.

Other current research is finding that Greenland's sub-marine glaciers, which follow fjords and extend far out under the Atlantic Ocean, thereby come into contact with more warm water, again with accelerated melting.

Yet other research into the physics of this process show, counter-intuitively, that glacial melting does not increase ocean level around Greenland, it actually decreases it (there being less glacial mass to attract ocean water to Greenland shores by its previously massive gravitational effect). The net effect is process is that the loss of glacial mass over Greenland will cause sea level around Greenland to drop and sea levels elsewhere to rise (such as California), in ADDITION to the gross mean sea level rise increase caused solely by the new fresh water flowing into the ocean by such melting.

So, the political "data cut-off" barring staff from using current research in its evaluation of the EIR for the BDCP will prevent staff from considering information that accelerating Greenland ice cap melting could drive accelerating increases in gross mean sea levels, in excess of 5 ft., and ultimately by up to 20 ft., before the end date of the expected initial permit for the BDCP.

This will certainly cause far more ocean salt water and/or brackish water intrusion into the BDCP infrastructure, and into the ecological area between San Francisco and the BDCP infrastructure, than are anticipated by the EIR for the BDCP, effectively eviscerating the net findings of the EIR process.

Moreover, given the research trends of under-estimating global warming and gross mean sea level rise, the risks from the accelerating Greenland ice sheet melt, and

the geological record research of the impact of past such events, the very basic assumptions of the BDCP are called into play.

The state will find it has wasting billions on a BDCP boondoggle, with drastic environmental results, e.g., the massive salinization of the Delta (not only its waterways, but its, at least for now, arable land, instead of focusing its resources on planning to mitigate an even far greater disaster, of not only dramatic environmental, but also fiscal, and other, impacts.

OTHER COMPLICATIONS MAGNIFYING SEA LEVEL RISE FOR CALIFORNIA

Other factors also complicate, and directly impact, future gross mean sea level rise for California.

For example, on Oct. 8, 2015 (less than a month before the BDCP comments cut-off date) the Boston Globe reported on a Harvard study on the physics of sea level rise. In a nutshell, it found that the earth's seas are not a "bathtub", so that ice cap melt from Greenland would raise sea levels equally across the globe. Instead, it found that, for example, as massive chunk of ice sheet on Greenland melts away, so does its gravitational pull. Before it melted, it once pulled more than Greenland's "share" of sea water to Greenland's shores, increasing sea level there and lowering it elsewhere (such as California). But, once that massive ice sheet melts, it is no longer there to exert any such gravitational pull. The odd result -- as Greenland's ice sheets melt and flow into the ocean, the ocean level at Greenland actually goes down, so other parts of the globe (such as California) get a double boost to gross mean sea level rise: both from the added fresh water flowing from the melted Greenland ice sheet, PLUS the extra ocean water which that ice sheet used to pull, by its massive gravity, to Greenland's shores and away from elsewhere (such as California).

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REFERENCES

GEOLOGY OF PAAST SEA LEVEL RISE EVENTS

BOOK
"Flooded Earth: Our Future In a World Without Ice Caps ", 2010,
By: Peter D. Ward
&
http://www.worldpreservationfoundation.org/blog/category/climate/rising-sea-levels/#.VjE0zCv-yao
"Archive for 'Rising Sea Levels & Erosion"
World Preservation Foundation [on line publication]
"Biologist Warns Of Danger From Rising Sea Levels"
Saturday, July 3rd, 2010

TRANSCRIPT

Welcome back to ALL THINGS CONSIDERED from NPR News. I'm Guy Raz.

Peter Ward is a biologist at the University of Washington. He's not a historian but in his new book, "The Flooded Earth," he writes as a historian, but a historian describing the year 2120. And here's what happened to the city of Miami.

Professor PETER WARD (Biology and Earth and Space Sciences, University of Washington; Author, "The Flooded Earth"): (Reading) Miami had become an open city. It was also an island, although to the north it was still contiguous with the vast peninsula that had been Florida. The flooding had cut off all freeway and railroad ties while the airport itself was now a vast a lake. All this was because the level of the world's oceans had risen 10 feet.

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Prof. WARD: It may not happen that early – that's the worst case scenario – but it will absolutely happen if we continue to be producing emissions at the rate that we are. I've now spent two field seasons in Antarctica. I've been able to look there at the recession of the glaciers and also of the ice sheets.

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Prof. WARD: Worst case scenario would be five feet by 2100. But the problem with the five-foot rise, a sea level rise is something that doesn't take place at a constant level. It's accelerating. So once you have a five-foot rise by 2100, you might have a 50-foot rise by 2200.

So the five-foot rise would be catastrophic economically but it would also really be pointing the gun to the head of all of the coastal cities. Sooner or later, within a century or two after that, you're going to be dealing with triage, trying to figure out what do we save and what don't we.

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Prof. WARD: Yes. The Mississippi Delta and every other delta on this planet is an endangered species. Deltas are completely tied into sea level. Even a one-foot rise in sea level tremendously affects the sedimentology of delta formation.

And here's why deltas are so important: an enormous proportion of the world's rice comes from the deltas in the tropical areas of the planet. When we have a rise even of a foot in sea level, we have many feet of lateral salt migration, the problem isn't the vertical rise of the sea. It is the fact that salt has this nasty habit of migrating sideways. And sideways into soil kills off agricultural crops.

GENERAL SEA LEVEL RISE

http://www.scientificamerican.com/article/rising-seas-pose-growing-flood-threat/
"Rising Seas Pose Growing Flood Threat: A bipartisan group is attempting to raise awareness of sea level rise risks",
Scientific American, Oct. 27, 2015
By Evan Lehmann, Peter Behr and ClimateWire

* * *

The UCS analysis says grid planners misjudge the threat because they are looking backward, not ahead. Storm preparations and infrastructure defenses are based on estimates of flood hazard zones prepared by the Federal Emergency Management Agency. For the highest-risk flood zones, FEMA assumes that the area will be inundated once every 100 years, UCS said.
Vulnerability creeps higher

But FEMA's estimates, based on historical data, "do not yet incorporate future sea level risk into their designations." Relying on this view leaves major parts of the grid increasingly vulnerable to "shifting realities," UCS said.

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http://www.slate.com/blogs/bad_astronomy/2015/09/03/ice_loss_greenland_and_antarctica_lost_5_trillion_tons_since_1992.html
"5 Trillion Tons of Ice Lost Since 2002"
Slate [On Line Blog], Sept. 3, 2015, By Phil Plait

I've been writing about what global warming means to our planet and to us for a long time now. A critical concern for this is the loss of land ice in Antarctica and Greenland, for many reasons. One is that it's a bellwether for our poles, a preview of what it means as we turn up the global thermostat. Another is that it contributes to sea level rise, which has been moving upward for quite some time now.

But land ice loss is perhaps most important as a political trigger; the sheer amount of land ice being lost every year is immediate, here, now. And the numbers are staggering: Using data from the GRACE satellites launched in 2002, scientists measured that the Antarctic ice sheet is losing 134 billion metric tons per year, and Greenland is losing 287 billion tons per year.

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[NASA CHARTS]

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ANTARCTICA

ANTARCTICA [EAST AND WEST]
http://news.uci.edu/greenland/#home-section
"Measuring Earth's meltdown -UCI Greenland expedition reveals global 'time bomb' "
UCI, [On-Line Magazine], " Special issue: Earth on the edge", Spring 2015
By: Janet Wilson, Photos & video: Maria Stenzel

* * * *

. . . . Rignot was the first to report last May that a rapidly melting section of the West Antarctic Ice Sheet appears to be in irreversible decline, with nothing to stop the entire glacial basin from disappearing into the sea.

But East Antarctica is far larger, and little is known about what's occurring there.

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EAST ANTARCTICA
http://onlinelibrary.wiley.com/doi/10.1002/2015GL065701/full
Research Letter
"Grounding line retreat of Totten Glacier, East Antarctica, 1996 to 2013",
Geophysical Research Letters Journal Volume 42, Issue 19 (16 October 2015)
Pages 8049–8056
Authors: Xin Li, Eric Rignot, Mathieu Morlighem, Jeremie Mouginot, Bernd Scheuchl
[UCI and NASA JPL teams]
DOI: 10.1002/2015GL065701

Abstract:
Totten Glacier, East Antarctica, a glacier that holds a 3.9 m [12 ft] sea level change [rise] equivalent, has thinned and lost mass for decades. We map its grounding line positions in 1996 and 2013 using differential radar interferometry (InSAR) data and develop precise, high-resolution topographies of its ice surface and ice draft using NASA Operation IceBridge data, InSAR data, and a mass conservation method. We detect a 1 to 3 km retreat of the grounding line in 17 years. The retreat is asymmetrical along a two-lobe pattern, where ice is only grounded a few 10 m above sea level, or ice plain, which may unground further with only modest amounts of ice thinning. The pattern of retreat indicates ice thinning of 12 m in 17 years or 0.7±0.1 m/yr at the grounding line on average. Sustained thinning will cause further grounding line retreat but may not be conducive to a marine instability.

[NOTE: Previous article in issue: Model forecast skill and sensitivity to initial conditions in the seasonal Sea Ice Outlook]
[Note: Next article in issue: Observations of the summer breakup of an Arctic sea ice cover]
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http://www.washingtonpost.com/news/energy-environment/wp/2015/10/26/east-antarcticas-biggest-glacier-is-melting-from-below-study-confirms/

"Scientists confirm that East Antarctica's biggest glacier is melting from below"
By Chris Mooney October 26, 2015, Washington Post, Energy & Environment

Earlier this year, we learned some worrisome climate news. Although Antarctic scientists have been most concerned about loss of ice in the western part of Antarctica, a study in Nature Geoscience suggested a vulnerability in the much larger ice sheet of East Antarctica, as well.

East Antarctica's enormous Totten Glacier, you see, has a key similarity with the glaciers of West Antarctica — namely, it is rooted deep below sea level. This means that it is potentially exposed to warm ocean waters, and the study in March uncovered a deep and 5-kilometer wide subsea valley beneath the glacier's oceanfront ice shelf that, the authors said, could be a route for warm offshore water to reach its base. This might explain why the glacier has been observed to be thinning and lowering, or losing elevation, over time, they noted.

Located along East Antarctica's Sabrina Coast, Totten glacier is the ice sheet's largest. It holds back 3.9 meters of potential sea level rise, or over 12 feet, and connects with the very deep and vast Aurora Subglacial Basin, which is also rooted well below sea level. So the results were treated as being of enormous consequence.

But they're not the end of the story, as there is vastly more to learn about Totten glacier. A new study out in Geophysical Research Letters reaffirms some of these core concerns about Totten's melt — while also appearing to partly alleviate others.

Xin Li, a researcher at the University of California, Irvine, worked with a team from her institution and NASA's Jet Propulsion Laboratory to examine Totten using satellite imagery and aircraft data. The researchers documented for the first time just how much the glacier's "grounding line" — the critical underwater area where ice, bedrock and the ocean meet — has been retreating inland over the years.

The answer is quite a bit. The research found that between 1996 and 2013 Totten's grounding line retreated as much as 3 kilometers in some places. That's fast, but it's not nearly so fast as what has been happening in West Antarctica, where the retreat in some areas has been as much as one to two kilometers per year.

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: washingtonpost.com

GREENLAND

"SPEEDING UP" GREENLAND GLACIAL MELTING: CAUSES

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http://www.washingtonpost.com/news/energy-environment/wp/2015/08/28/why-nasas-so-worried-that-greenlands-melting-could-speed-up/
" Why NASA's so worried that Greenland's melting could speed up"
Washington Post, Energy and Environment , Aug. 29, 2015,
By Chris Mooney

* * *

1. Water flow on the ice sheet's surface. On top of the ice sheet, summer meltwater forms lakes and fast-running rivers, which sometimes plunge deep below the ice sheet when they hit sudden "moulins," or crevices. Lakes also sometimes vanish suddenly, draining water down into the ice sheet below. Both of these mechanisms not only give the surface water access to the ocean, they also move the ice sheet itself, by lubricating its base. It's a potential feedback and accelerator of Greenland's melting, which is why the process is so important to further investigate.

Thus, one of the key NASA research projects is to actually measure the water flow that is occurring atop the Greenland ice sheet. As Laurence Smith, a University of California Los Angeles researcher conducting the work explained on a Friday NASA TV program detailing the Greenland work, "the overall trend has been an increasing extent, intensity, and duration of the melt season on the surface of the ice."

Smith and his team camped atop the ice sheet and sought to measure the flow rate. The ice sheet surface contains thousands of moulins, notes Vena Chu, a University of California-Berkeley researcher who collaborated with Smith and also appeared on NASA TV Friday. When water falls down the moulins, "it takes water into the bottom of the ice sheet, and that's where it can really affect how fast the ice is flowing."

This surface melt process is one way that the melting of the Greenland ice sheet could speed up. But it's not the only one:

2. Ocean water melting glaciers. Along the outside of the ice sheet, multiple glaciers stretch finger-like towards the sea, often flowing out into deep fjords — submerged canyons scraped by glaciers of long-ago eras — with their bases anchored well below the level of the water. The rapidly retreating Jakobshavn glacier is one of these — it's the fastest-moving glacier in Greenland, and single-handedly contributed about a millimeter to sea level rise from 2000 to 2011.

Currently, the glacier's submerged bed is some 1,300 meters below sea level, and this great depth seems to be enabling its rapid retreat, because there is so much contact with the warmer ocean. "The potential for large losses from Greenland is likely to be determined by the depth and inland extent of the troughs through which its outlet glaciers drain," noted a recent study of the Jakobshavn glacier.

"Observations suggest we should be very cautious to conclude too soon that conservative scenarios are reasonable. They may not be," said Eric Rignot, a University of California Irvine and NASA glaciologist, at a NASA press call Wednesday in which he discussed changes to both Antarctica and Greenland. "And this is at the heart of what we at NASA, and other national and international agencies are working on right now."

That's what NASA's aptly–named OMG (Oceans Melting Greenland) mission [LINK BELOW] aims to study. Over the next five years, ships, aircraft overflights, and deployed sensors will attempt to map the depths and shapes of the ocean floor and undersea canyons all around Greenland's glaciers, as well as the temperature and salinity characteristics of the water. The goal is to see jus

[LINK NASA OMG STUDY]
http://www.nasa.gov/jpl/nasas-omg-mission-maps-greenlands-coastline
"NASA's OMG Mission Maps Greenland's Coastline"
NASA, Earth, Aug. 26, 2015
Alan Buis, Jet Propulsion Laboratory, Pasadena, Calif.
Written by Carol Rasmussen, NASA Earth Science News Team
[NASA LINK TO NASA SEA LEVEL RISE RESEARCH]
http://www.nasa.gov/goddard/risingseas
"As Seas Rise, NASA Zeros In: How Much? How Fast?"

WATER FLOW ON AND IN GREENLAND GLACIERS
http://www.nytimes.com/interactive/2015/10/27/world/greenland-is-melting-away.html?_r=0
"Greenland is Melting Away", New York Times, World, October 27, 2015,
By Coral Davenport, Josh Haner, Larry Buchanan and Derek Watkins

On the Greenland Ice Sheet — The midnight sun still gleamed at 1 a.m. across the brilliant expanse of the Greenland ice sheet. Brandon Overstreet, a doctoral candidate in hydrology at the University of Wyoming, picked his way across the frozen landscape, clipped his climbing harness to an anchor in the ice and crept toward the edge of a river that rushed downstream toward an enormous sinkhole.

If he fell in, "the death rate is 100 percent," said Mr. Overstreet's friend and fellow researcher, Lincoln Pitcher.

But Mr. Overstreet's task, to collect critical data from the river, is essential to understanding one of the most consequential impacts of global warming. The scientific data he and a team of six other researchers collect here could yield groundbreaking information on the rate at which the melting of Greenland ice sheet, one of the biggest and fastest-melting chunks of ice on Earth, will drive up sea levels in the coming decades. The full melting of Greenland's ice sheet could increase sea levels by about 20 feet.

"We scientists love to sit at our computers and use climate models to make those predictions," said Laurence C. Smith, head of the geography department at the University of California, Los Angeles, and the leader of the team that worked in Greenland this summer. "But to really know what's happening, that kind of understanding can only come about through empirical measurements in the field."

For years, scientists have studied the impact of the planet's warming on the Greenland and Antarctic ice sheets. But while researchers have satellite images to track the icebergs that break off, and have created models to simulate

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the thawing, they have little on-the-ground information and so have trouble predicting precisely how fast sea levels will rise.

[INTERACTIVE MAP WITH TEXT]

Scientists know that the melting of Greenland is accelerating. As the temperature rises, large lakes form on the surface of the ice, which in turn create a network of rivers

"The rivers melt down faster than the surrounding ice, like a knife through butter," Dr. Smith said.

The rivers then flow down into giant holes in the ice, called moulins, which drain through tunnels in the ice sheet and out into the ocean.

"The ice sheet is porous, like Swiss cheese," Dr. Smith said. "We didn't know that until this year."

This summer in Greenland, the scientists set up their camp on the ice, where they hoped to capture the first comprehensive measurements of the rate of melting.

[RESUME TEXT IN ARTICLE]

Their research could yield valuable information to help scientists figure out how rapidly sea levels will rise in the 21st century, and thus how people in coastal areas from New York to Bangladesh could plan for the change.

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[VIDEO OF MELT RIVER]
http://int.nyt.com/data/videotape/finished/2015/10/1445868835/bottom-desktop-900.mp4

GREENLAND SUBMERGED GLACIER MELTING
VIDEO
https://youtu.be/JOpKerhmkJA
WEBSITE
http://news.uci.edu/greenland/#home-section
"Measuring Earth's meltdown -UCI Greenland expedition reveals global 'time bomb' " UCI, [On-Line Magazine], " Special issue: Earth on the edge", Spring 2015
By: Janet Wilson, Photos & video: Maria Stenzel

* * *

It's mid-August in Greenland's North Atlantic fjords. UCI glaciologists and students, joined by a NASA oceanographer and technicians from TerraSond Ltd., are pushing to reach remote glacier faces that are melting at an accelerated rate and to map for the first time the contours of these frigid deeps.

"In Greenland we have melt rates of a few meters a day in the summer months," says expedition leader Eric Rignot, who – like Velicogna – is an Earth system science professor with a joint appointment at NASA's Jet Propulsion Laboratory. "And we know the ice sheet is going to melt more and more with climate change."

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If all of Greenland's mile-thick ice sheet were to melt, it would raise ocean levels worldwide by 21 feet, according to the Intergovernmental Panel on Climate Change – enough to wipe out the coastal homelands of 1 billion people. It may take many centuries or just one; what's clear is that it's happening.

Rignot wants to map the glaciers, monitor their march to the sea and set up a warning system for what lies ahead. Last year, for example, the team determined that the Store Glacier is perched on an underwater plateau that keeps it from crashing into the fjord waters – at least for now.

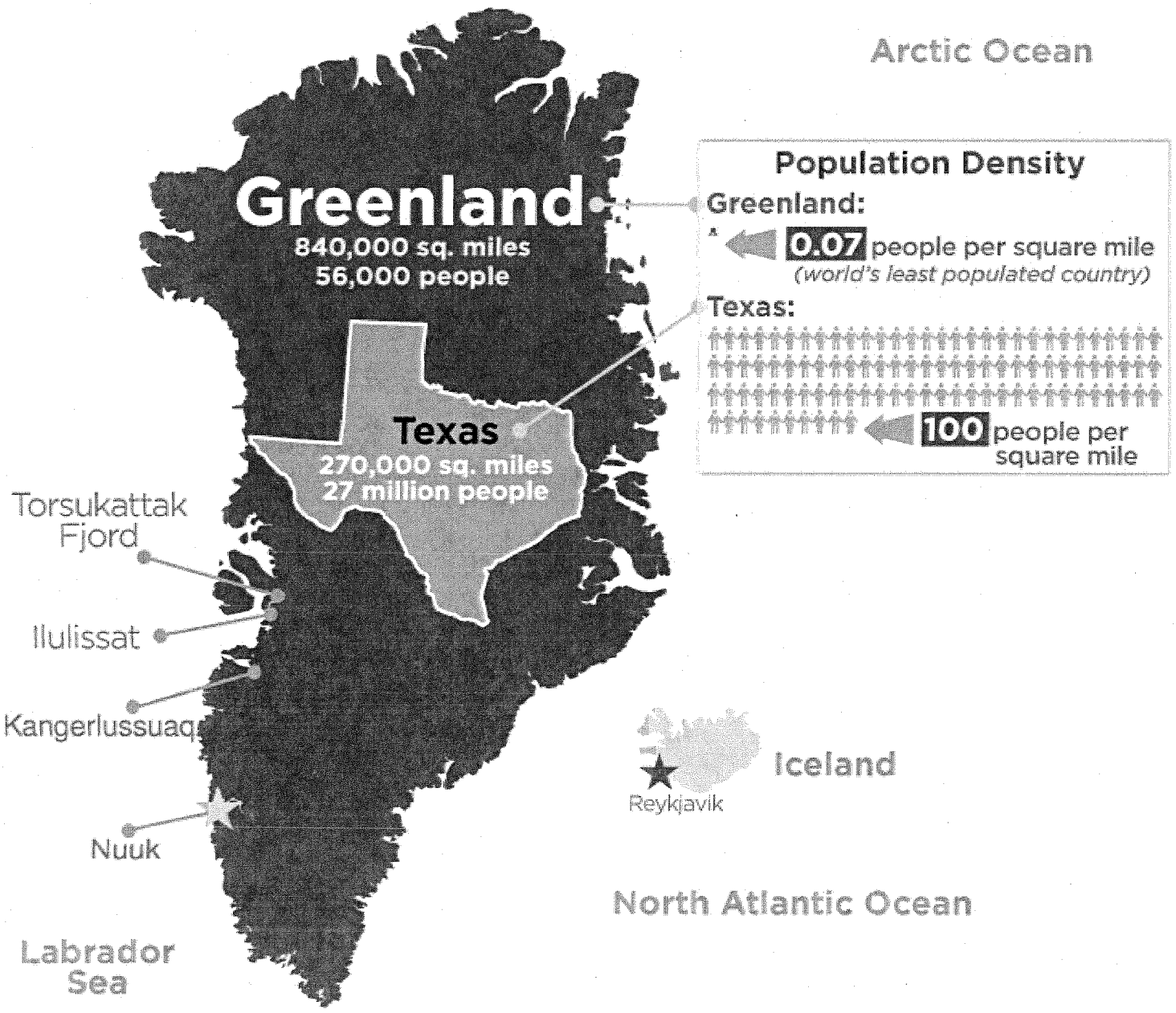
"Of course we are worried about climate change; in fact, I'm more overwhelmed because these things are happening so quickly," Rignot says. "It's a time bomb. ... We've never been through something like this."

His team, which like Velicogna's has received worldwide attention in recent years for its findings, is detecting an ominous feedback loop. It appears that Greenland's ice melt is accelerating because warmer ocean waters are hitting submerged glacier faces well below the cold, freshwater surface. The marine waters shoot upward, bringing heat to a larger portion of the face, which in turn melts down faster. Reaching glacier faces and documenting this process offers critical clues about the detailed mechanisms of the melt.

* * *

. . . Greenland is so remote and huge that much of its collapsing 25,000-mile coast has never been mapped.

* * *



Rignot and others say precise information is crucial to better predict how fast and where glaciers will give way. They also want to model the physics of saltwater interaction with ice – not just for here, but to use along Antarctica's mammoth ice sheets. Rignot was the first to report last May that a rapidly melting section of the West Antarctic Ice Sheet appears to be in irreversible decline, with nothing to stop the entire glacial basin from disappearing into the sea.

But East Antarctica is far larger, and little is known about what's occurring there. New satellite missions by NASA and the European Space Agency help, but that data is large-scale. The researchers want to know exactly where warmer marine water is fingering its way into Greenland and how large a channel it's entering.

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They've collected comprehensive new data that will help researchers worldwide better understand how ice sheets are melting and how salt water is speeding up the process – information that could be used to persuade policymakers and ordinary people to alter their carbon-busting ways.

"We're heading toward something that's not very pleasant, that's for sure," Velicogna says. "Do not buy a house too close to the beach!"

* * *

[PUBLISHED RESEARCH LINK BELOW]
http://www.readcube.com/articles/10.1002%2F2015GL064236?r3_referer=wol&tracking_action=preview_click&show_checkout=1&purchase_referrer=www.nasa.gov&purchase_site_license=LICENSE_DENIED_NO_CUSTOMER
"Under-cutting of marine-terminating glaciers in West Greenland",
Geophys. Res. Lett., 42, 5909–5917, Published online 27 JUL 2015
By: Rignot, E., I. Fenty, Y. Xu, C. Cai,and C. Kemp (2015),
(Geophysical Research Letters, American Geophysical Union)
doi:10.1002/2015GL064236
[UCI and NASA JPL teams]

Abstract

Marine-terminating glaciers control most of Greenland's ice discharge into the ocean, but little is known about the geometry of their frontal regions. Here we use side-looking, multibeam echo sounding observations to reveal that their frontal ice cliffs are grounded deeper below sea level than previously measured and their ice faces are neither vertical nor smooth but often undercut by the ocean and rough. Deep glacier grounding enables contact with subsurface, warm, salty Atlantic waters (AW) which melts ice at rates of meters per day. We detect cavities undercutting the base of the calving faces at the sites of subglacial water (SGW) discharge predicted by a hydrological model. The observed pattern of undercutting is consistent with numerical simulations of ice melt in which buoyant plumes of SGW transport warm AW to the ice faces. Glacier undercutting likely enhances iceberg calving, impacting ice front stability and, in turn, the glacier mass balance.

1. Introduction

Increased surface melting of the Greenland Ice Sheet and enhanced flow of its marine-terminating glaciers have significantly contributed to sea level rise in the past two decades [e.g., Ettema et al., 2009; Rignot et al., 2011]. At the ice-ocean interface, marine-terminating glaciers interact with a shallow layer of fresh Polar Water (PW) in the upper 150–200 m and, if sufficiently deep, a denser layer of relatively warm and salty Atlantic Water (AW) below 200 m [Straneo et al., 2013]. The transport of AW to the glacier face, and hence melting of ice by the ocean, is significantly increased via entrainment with rising turbulent plumes of buoyant subglacial water (SGW), which is ice sheet runoff emerging from cavities at the grounding line [Holland et al., 2008; Rignot et al., 2010; Straneo et al., 2013; Christoffersen et al., 2011; Xu et al., 2012; Motyka et al., 2003; Jenkins, 2011]. Because much of the ice sheet loss in the last decades has

been synchronous with temperature increases in the AW circulating in boundary currents around the island [Holland et al., 2008; Christoffersen et al., 2011; Rignot et al., 2012], many posit that enhanced ice melt by a warmer ocean has been a primary driver of Greenland's accelerating ice loss [e.g., Straneo et al., 2013]. Yet the details by which ice melting by the ocean affects glacier front stability and flow speed are poorly known in part because of a lack of observations of the Fjord bathymetry, shape of the submerged ice faces, and spatial and temporal variations in ocean thermal forcing. Subsurface, near-vertical, frontal regions are difficult to observe from remote sensing platforms, and in situ measurements are challenging to obtain beneath hundreds of meters of seawater in poorly charted, ice infested fjords.

Here we present side-looking, MultiBeam Echo Sounding (MBES) observations of fjord bathymetry and sub-merged ice faces of three West Greenland glaciers collected in August 2012 and 2013. In many of these fjords, the data represent the first detailed description of the seafloor bathymetry in front of these glaciers and the first attempt at imaging the submerged calving faces. We compare our results with existing International Bathymetry Charts of the Arctic Ocean (IBCAO3.0) [Jakobsson et al., 2012], calculations of the SGW channelpathways, and numerical simulations of ice-ocean interaction along ice margins. We conclude on the impact of ice-ocean interaction on glacier front position, stability, and mass balance.

PHYSICS OF GLACIAL MELTING AND UNEVEN SEA LEVEL RISE
http://www.bostonglobe.com/ideas/2015/10/08/the-very-weird-physics-sea-level-changes/K6463zgFi9WwUJWWKtHJVP/story.html
"The very weird physics of sea-level changes"
The Boston Globe, Brainiac, October 08, 2015
By Kevin Hartnett Globe Correspondent October 08, 2015

* * * [Noting "groundbreaking" Harvard study - see link below]

Most people think (incorrectly) of the earth's oceans as a bathtub, Jerry Mitrovica explains. In this view, when any of the big ice sheets melt (Greenland, Antarctica), you'd imagine sea levels would rise around the globe, just as a bath would rise uniformly if you were to add a bucket of water.

This isn't at all how it actually works, though. Massive ice sheets, like the one in Greenland, exert a gravitational pull on the surrounding water. When ice from the sheet melts, it adds water to the world's oceans, yes, but the melting also reduces the mass of the ice sheet, which reduces its gravitational pull. As a result, water flows away from the diminished ice sheet, which actually leads to sea levels falling in the exact place where the ice melted.

[HARVARD STUDY AT WEBSITE BELOW]]
http://isites.harvard.edu/icb/icb.do?keyword=k92805

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Econ - search Paulson and crazy report and 6-24-14

Comment re BDCP initial EIR, etc.:

Summary: Current reliable, hard data show the risks of a rise in gross mean sea level are starkly higher, my meters, than those assumed in the data relied upon for the draft EIR. The risks of a catastrophic rise are substantially higher than assumed, even within the 60 year initial permit period, and move from very high risk to scientific certainty for the multi-permit period lifetime of the BDCP. This rise level effectively moots the BDCP from multiple standpoints. These range from basic engineering and salinity precepts to broader issues of trying to avoid a significant portion of the Central Valley being submersed under high-saline brackish or ocean waters. This realization by Central Valley residents, agri-business, and real estate interests are likely to spur a shift in resources to what will be almost certainly be "last minute efforts" to try a massive infrastructure construction project to prevent the Central Valley from again becoming an inland ocean.

According to a NASA article of Jan. 21, 2014, " Long-Term Climate Warming Trend Sunstained in 2013", NASA measurements show the earth has been getting hotter:

> NASA scientists say 2013 tied with 2009 and 2006 for the seventh warmest year since 1880, continuing a long-term trend of rising global temperatures. With the exception of 1998, the 10 warmest years in the 134-year record all have occurred since 2000, with 2010 and 2005 ranking as the warmest years on record.
>
> NASA's Goddard Institute for Space Studies (GISS) in New York, which analyzes global surface temperatures on an ongoing basis, released an updated report Tuesday on temperatures around the globe in 2013. The comparison shows how Earth continues to experience temperatures warmer than those measured several decades ago.
>
> "Long-term trends in surface temperatures are unusual and 2013 adds to the evidence for ongoing climate change," GISS climatologist Gavin Schmidt said. "While one year or one season can be affected by random weather events, this analysis shows the necessity for continued, long-term monitoring."

<http://science.nasa.gov/science-news/science-at-nasa/2014/21jan_2013/>

The BDCP EIR released in 2014 relied on Global Warming and sea level rise data from 2007. Such date is basically, ancient history in the context of Global Warming and sea level rise research. Use of such grossly out of date data is the only way the BDCP EIR could ever have gone forward politically, scientifically, or otherwise. Had staff been allowed by political decision makers to use current data, it would have demonstrated conclusively, based on sound scientific data, that the BDCP is fundamentally impossible.

However, such gamesmanship with the data has allowed policy makers to claim they are making progress on the topic, thereby allowing them to continue garnering huge campaign donations from well-heeled real estate developers, particularly from water hungry Southern California region. (Should the public realize how much they have been effectively "bamboozled" by policy makers on this, it may, ironically, be the one impetus that might actually be able to propel the current initiative to "split up" California into multiple states.)

This year (2014) saw numerous new scientifically valid reports and data on global warming and climate change and attendant ice pack melting causing gross mean sea level rise. More realistic sea level rise predictions from both national and international sources suggest BDCP assumptions are too conservative by meters and by decades. Such data and reports also are now beginning to show that the ice pack melting driving the rise in gross mean sea level is now "irreversible". Thus, the issue is no longer one of "what if" but when and how much.

One report in particular, regarding the now irreversible decay in just the Western Antarctica Ice Sheet, maps out the global 10 ft rise expected by 2010, just from that ice sheet ALONE. Just that one sea level rise source, alone, will not only cause inundation of large swaths (basically all) of the natural habitat areas addressed in the BDCP EIR, but it will also basically inundate large swaths of the Central Valley, covering up to one-half of the Cities of Stockton and Elk Grove. Other areas, such as Woodbridge, Fairfield, and Land Park in Sacramento would basically become new "beachfront properties" (or "marsh front properties"), absent unprecedented infrastructure development. Not only will many of the Delta habitat areas and even "Agri-Islands" be lost, but also even massive chunks of the Central Valley, arable, non-island, land now used for Agri-business interests, as well. See e.g.:
http://science.nasa.gov/science-news/science-at-nasa/2014/12may_noturningback/
See websites re economic impacts, e.g.:
http://www.businessinsider.com/west-antarctic-ice-sheet-collapse-means-2014-5
http://www.washingtonpost.com/business/economy/former-treasury-secretaries-financial-leaders-press-business-to-cut-climate-change-risks/2014/06/23/72c88274-fb15-11e3-8176-f2c941cf35f1_story.html
See also websites further below.

And the Eastern Antarctic Ice Sheet is also at significant risk:
http://news.yahoo.com/east-antarctica-more-risk-thought-long-term-thaw-171024477.html

And NASA reports show the Artic Ice Pack melt season is lengthening, e.g.:
http://science.nasa.gov/science-news/science-at-nasa/2014/01apr_arcticice/

While there are possibilities to use that huge salt water intrusion/expansion to create huge salt water marsh habitat areas, the state Agri-business and Real Estate interests will demand, and (given their political donations/clout) quite likely receive, huge cement sea wall super-levies all around their existing "islands", and soon-to-be "islands"

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in an areas stretching Eastward basically to Hwy 99 across swaths of the Central Valley.

Such massive cement super-levies will be one of the very few remaining options available, since the gross mean sea water level rise will be so high as to overtop the existing earthen levy system. And such earthen levy system would become structurally unsound long before being overtopped -- from water pressure to natural wave action, much less the risks of liquefaction during a serious seismic event.

.

The air pollution impacts of the massive construction for the cement super-levies alone would far outpace anything set out I the BDCP EIR (and the Bullet Train combined).

The basic functionality of the BDCP will be utterly mooted, anyway, because the entire currently extant Delta area and anticipated BDCP complex substantially submersed under brackish or salt water anyway.

I have personally interviewed geologists at Sac State, who, privately, are also quite worried about the risks of a another, independent, and even greater source of sea level rise -- the rapid melt, then "slide off" of the Greenland glacial ice sheets, (i.e., in addition to those in Antarctica, above), etc. Under current scientifically valid estimates (including based on geological evidence of such a past event), the addition to the Greenland ice sheet waters to the world oceans is estimated to independently cause a far more massive gross mean sea level rise, up to 20 ft, and on a vastly faster time scale, given the past geologic record showing that exactly this scenario has happened in the past and will occur again. See the book "Flooded Earth" by Prof. Peter Ward < http://www.worldpreservationfoundation.org/blog/news/biologist-warns-of-danger-from-rising-sea-levels/#.U6oEmrGM7qw>

Prof. Ward raises the geological historical fact that when the Greenland ice sheet starts melting, and moving -- due to sub-glacial lubrication from melt water at the bottom of the ice at the ice/land interface, the increased glacial movement in turn increase friction, causing even more melting, proving more water at the interface, causing more movement, etc., in a cyclic, cascading effect. The net result is that, from a historical geological perspective, the Greenland ice sheet tends to just slide off the land mass, en mass, very precipitously, causing tidal waves and very rapid sea level rise on an unprecedented scale. (Such an event would wipe out more people, cities, and wealth than a full scale nuclear war. Countries such as Bangladesh will basically cease to exist.) See e.g.:
http://finance.yahoo.com/news/flooded-british-villages-ignite-climate-debate-144050840--finance.html

The combined risk of just the 20 ft. rise from the Greenland Ice Sheet melt and rapid "slide off" PLUS the now irreversible 10 ft rise from an Antarctic sheet, means an anticipated gross mean sea level rise of 30 ft, with a substantial part of that at risk

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during the first 60 year permit period for the BDCP. Large swaths of the Central Valley are less than 30 ft above current sea level.

This means massive, wholesale, unavoidable environmental impacts and disruptions on a massive -- extinction-event type scale -- dwarfing the environmental concerns otherwise admirably expressed in the BDCP EIR. See, e.g., Article on Arrival of 6th Earth Mass Extinction at Science Daily: http://www.sciencedaily.com/releases/2014/07/140724171956.htm

However, NO ONE connected to BDCP seems to even be talking about these rather dire outcomes based on established science.

The Sac. State geologists independently mirrored others' concerns that the only way to stop the inundation of the Central Valley from the coming, unavoidable, massive gross mean sea level rise and salt water intrusion would be some type of massive, Three-Gorges-Dam-equivalent across the inner Bay/Delta area. Such a massive public works project (with massive environmental devastation of all kinds and massive costs dwarfing the BDCP and Bullet Train combined) would necessarily create a fresh water "ocean" out of much of the Central Valley, backing up behind it well into the far reaches of the Central Valley, as opposed to allowing it to become a brackish or salt water inland ocean. However, given the massive human-scape infrastructure of the East Bay, Sacramento, etc., prompt immediate massive environmental clean-up would be required to render the new Central Valley fresh water sea to be useable.

Just to recap, even the massive "dam" scenario will not, and cannot, stop the eventual, and inevitable, inundation of the Central Valley. It will just change the inundation it from salt to fresh water. Either way will cause massive environmental, economic, Agri-business, Real Estate, and other significant disruptions.

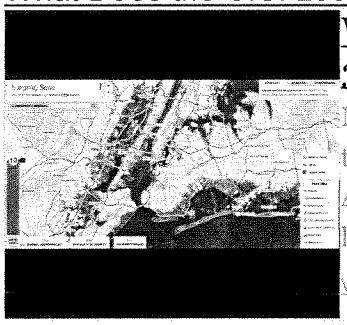
Below are links to the general study, and to its map of the Stockton/Delta area reflecting the 10 ft rise that will now occur based solely on the West Antarctic glacial cap ice melt, etc. Others are readily available, if the decision makers will but stop hamstringing scientific staff with the inane bar to using "current", real-time, valid scientific data and reports.

I regret to be the bearer of such unfavorable tidings. And as with the Climate Change deniers generally, it is doubtful that the big money interests behind the BDCP will allow bothersome little problems like the valid science behind of gross mean sea level rise to slow down their push for the BDCP. Which means natural habitat areas will be placed literally between the proverbial rock and a hard place (or rather, the coming cement super-levies and the massive sea level rise and salt water intrusion, or else the Straits Dam type scenario).

It seems public knowledge now that most of the Climate Change denier "scientific report backup" was funded by Exxon, basically as a negotiation tactic, until it managed to land the bulk of the oil exploration rights across the Arctic Circle. [It seems Exxon is

already planning on the coming major melting wrought by Global Warming throughout the Arctic region in their long range plans and forecasts, so as to allow them to place Gulf of Mexico type oil rigs all the way up to the North Pole in the not too distant future.] Now they have their future oil exploration rights locked up, Exxon has now reversed course and acknowledged the fact of Global Warming and sea level rise, and is asking policy makers to do something about it.

SEE WEBSITES
http://www.scientificamerican.com/article/what-does-the-u-s-look-like-after-3-meters-of-sea-level-rise/
What Does the U.S. Look Like after 3 Meters of Sea Level Rise?



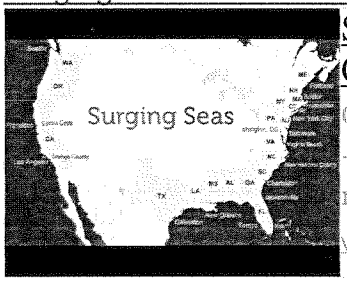
What Does the U.S. Look Like after 3 Meters of Sea Level...

New research indicates that climate change has triggered an unstoppable decay of the West Antarctic Ice Sheet, eventually leading to at least three mete...

View on www.scientificameric...

Preview by Yahoo

http://sealevel.climatecentral.org/surgingseas/place/cities/CA/Stockton#show=cities&center=8/37.963/-121.302&surge=10
Surging Seas / Cities / Stockton, California



Surging Seas / Cities / Stockton, California

Over 1 in 6 chance sea level rise + storm surge + tide will overtop +1ft by ??? at nearest flood risk indicator site: , miles away.

View on sealevel.climatecentr...

Preview by Yahoo

I would prefer to have been able to comment on the many ways to help to preserve natural wildlife and plant habitats such as the Cosumnes River Preserve off Hwy I-5 South of Sacramento, just to name one prime example.

However, that preserve, and basically all the currently extent Delta are already unavoidably doomed by the effects of Global Warming and gross mean sea level rise.

The BDCP, as currently planned, is now a mooted "boondoggle", on a far grander scale than any "Bridge to Nowhere". Indeed, it is now worse than useless, as it only serves to distract us by "fiddling while Rome burns" (or rather dithering while the Central Valley floods). It may be intended by large Ag and Real Estate interests as a "warm up" for the massive and sweeping environmental engineering that will be demanded once the general population realizes the true dangers to come (not just risks

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that "might" come) from Global Warming and gross mean sea level rise on a massive and unprecedented scale.

Yours,
Floyd Cranmore
510 Kirst Dr.
Woodbridge, CA 95258
fwcrannmore@hotmail.com

PS Please also Note: There are numerous additional factors in the rapid advance of global warming, and thus gross mean sea level rise. These range from use of "fracking" techniques which inject super-hot-house gasses such as methane into the atmosphere, to the thawing of the Arctic permafrost, which holds an estimated one-fourth (25%) of the carbon dioxide on Earth. See, e.g.:
http://www.canada.com/technology/Mysterious+giant+crater+earth+discovered+Siberia+World/10035027/story.html

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Sharon Patricia Jarvis

1432 South Tuxedo Avenue, Stockton, CA 95204
(via email BDCPComments@icfi.com)

October 30, 2015

BDCP/California WaterFix Comments
P. O. Box 1919
Sacramento, CA 95812

Re: Comments on Bay Delta Conservation Plan/California WaterFix
Twin Tunnels RDEIR/SDEIS

I object to the Twin Tunnels Project (TTP) for many reasons. This letter speaks directly to only two of those reasons, and incorporates by reference a number of other submitted comment letters.

First, the building of the TTP would devastate an already failing San Francisco Bay-Delta by critically decreasing the freshwater flow necessary to the health of the Delta and the San Francisco Bay. The California WaterFix contends that it is a sustainable water project that will improve the water supply reliability of the state and federal water export system. However, the TTP will accomplish this by taking more water from the Delta and from Sacramento Valley water users and ecosystems, and replacing this fresher water with more polluted and saline flows from the San Joaquin River. The California WaterFix also contends that it will improve flows through the Delta to reflect a more natural east to west flow rather than the current north to south flow due to the south Delta export pumps. However, to achieve this the TTP will decrease Sacramento River flows by 20 to 24 percent, which will result in permanent drought-like conditions throughout the San Francisco Bay-Delta Estuary. Delta waters will stagnate and harmful pollutants and toxins will accumulate in them; salinity levels will rise due to the decreased Sacramento River flow.

Second, the RDEIR/SDEIS violates the California Environmental Quality Act and the National Environmental Policy Act by failing to fully disclose environmental impacts and evaluate a reasonable range of alternatives. The RDEIR/SDEIS does not fully consider the impacts of the TTP, such as impacts on public health, water quality, fishing, land use, and flood risk. It fails to provide a clear, understandable and accurate assessment of the likely environmental impacts of the alternatives proposed. Nor does the RDEIR/SDEIS evaluate a reasonable range of alternatives to address whether there is even a need for the TTP. (See also the Comment Letter of Dr. Jeffrey Michael dated October 30, 2015.)

These are only two of the many problems with the RDEIR/SDEIS. In addition to the above comments, I incorporate by reference all of the reasons against the TTP articulated in the letters of comment dated October 30, 2015 from the Environmental Water Caucus, Save Our Sandhills Cranes, Dr. Jeffrey Michael, the Delta Protection Commission, the Friends of Stone Lakes, and the NRDC et al.

Respectfully submitted,

Sharon Jarvis

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From: Sharon Jarvis <river9rat@sbcglobal.net>
Sent: Friday, October 30, 2015 9:26 PM
To: BDCPcomments
Subject: Public Comment on RDEIR/SDEIS
Attachments: Public Comments on RDEIR.SDEIS.doc

Attached is my letter of comment on the RDEIR/SDEIS.

Thank you for your consideration of my comments.

Sharon Jarvis
river9rat@sbcglobal.net

From: Brad Pappalardo <bradpappa@gmail.com>
Sent: Friday, October 30, 2015 8:58 PM
To: BDCPcomments
Subject: Brad Pappalardo BDCP RDEIR/SDEIS comments
Attachments: Brad Pappalardo BDCP comments 10-29-2015.pdf; BDCP Comments 7-29-14.rtf

BDCP:

Attached are my comments to your EIR/EIS. Also attached are my prior comments regarding same.

Brad Pappalardo

--

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LAW OFFICE OF BRADFORD D. PAPPALARDO
State Bar No. 62353
12540B Grand Island Road, Walnut Grove, CA 95690
916.775-2100 • 916.775-4431 (fax)

October 29, 2015

BDCP Draft EIR/EIS

COMMENTS:

General Comments: The Bay Delta Conservation Plan began on a faulty premise. As will be discussed, the damage that will be done and the potential mitigation/litigation costs will be astronomical. Assuming the proponents for the diversions were justifiable and not just to grab for precious water from individuals posing as water districts; how should this project have been approached. First, why would you propose to do the diversion in the most expensive and damaging place possible - in the middle of the Delta? I am familiar with the area and the best places (least damaging, least expensive) would have been in more rural areas to the north (not affecting the Delta water and environmental dynamics) or to the south which would have avoided avoid the Delta entirely. Instead you have spent millions and millions of dollars to justify putting the "tunnels" in the most sensitive (fish and game, habitat, the best farmland in the country, levees, water source for millions of people in local communities) location possible. While I have heard that the southern divergence was unacceptable because they wanted higher quality water; but at what cost and for whose benefit? There is also the rumor that once that water is used in certain locations, the water will be tainted and unusable again.

The water problem has never been one of transportation, but of capturing the water. Instead of spending millions of dollars to ruin the Delta and with an El Nino pending, the result will be one of the greatest failures of this agencies stewardship and is and will be near criminal in its negligence and malfeasance. I would not want my professional integrity associated with those responsible for this boondoggle. Considering that for reasons unknown, a northern divergence was not proposed or the costs even penciled out, I would like to show in comparison the inestimable mitigation costs for which this group has totally underestimated or intentionally ignored.

Chapter 15 Recreation. Since I have previously responded to the initial **BDCP EIR/EIS**, these comments are in addition to the comments made last year which I also attach hereto:

15.3.3 Mitigation The more we understand the enormity of the construction of the

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tunnels, the clearer it is that BDCP will be unable to mitigate just for the congestion and traffic issues. It will literally and effectively "shut down" the Delta for the 9 to 15 years of its proposed construction. The residents are very familiar with the effects of trucking and related traffic. We experience near shut down conditions each year during the various harvests. What BDCP is proposing will dwarf the problems we have already seen. The bridges are often closed due to large trucks getting stuck trying to cross the narrow bridges with tight egress from the adjoining highways. And, these are trucking firms familiar with navigating the bridges. The problems we see on a seasonal basis, will be worse and an everyday experience. The plan is that nothing will occur during the winter months for fish, wildlife and potential flooding problems, which means that it will be closed for spring, summer, and fall months when all the recreation occurs. Boaters, visitors and tourists will not endure the traffic, the increased time travel, noise and truck traffic and related complications during the long period of construction. They come here to vacation and enjoy themselves. They will not venture anywhere in the Delta and deal with the headaches. It will affect every public and private marina and boating facility. The nightmare conditions will also effect residences and every business throughout the entire Delta, because the trucking and congestion problem will affect all the roads in and out of the Delta, because there are few access roads into the Delta.

The comments about the socioeconomics relating to tourism are a joke. There will be no tourism or recreation during the 15 years of the project. You will bankrupt all tourism and related industries in the region. No one is going to want to come here to smell diesel exhaust fumes and put up with stop and go traffic. No one is going to want to put up with traffic jams and truck noise for most of their time here. They will not come. There is discussion of alternatives? There are no alternatives. Are you prepared to mitigate for the loss of all the businesses in the Delta. What about the expectation of quiet enjoyment of your home. Will you compensate them for the 15 year loss of livable conditions?

There was also comments about sufficient areas for housing for the construction. There are no areas for housing a workforce, unless you anticipate them living in the homes abandoned by the current residents. Under the conditions that will occur, even the workforce will not want to live here and will be required to live outside of the Delta and will just increase the vehicle traffic and congestion. The report indicates there will be no adverse effects on regional parks or recreational facilities, which is true, because no one will be around and they will not be used.

There are comments regarding the aesthetic and visual resources (resources?). There are only negative resources (?) The project will be ugly from beginning to end and the tunnels will be an eyesore in perpetuity.

The most galling statements were that noise traffic modeling indicates that truck hauling and worker commutes would not result in substantial increases in local noise levels. How can they make statements like that in the report? It calls into question all of their statements, it is so absurd and incredulous. I live here and I do not know about

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"modeling" but we can hear trucks and farm equipment from across the river as if they are running in front of our home. Trucks that go by the front of our house are very loud and to make statements otherwise are irresponsible.

To also dismiss out of hand that the Sacramento and San Joaquin River flows are "less than significant" and so no determination need be made for reverse flow conditions is equally irresponsible. We have significant tidal action and during the drought those flows have been dramatic.

I have a full time job and have to constantly respond to a Federal, State and County agencies trying to take more and more control over my private property. In this instance, to address the ruination of the Delta for which you have spent untold millions of dollars and untold man/woman hours to justify the taking of our water and land rights and done in thousands of pages that no one individual can read or defend. I was also hospitalized and still recovering. I just did not have the time, nor would I have had the time to address all the issues and problems raised. However, the thousands of pages of paid for science will not change what is lacking in common sense and simple logic. You will not be able to hide behind the sheer volume of the report to remove your culpability. You are on notice that the damage that you will cause, you will not be able to be mitigated and for which you will be held accountable.

Finally, with regard to the **Long-Term Reduction in Boating and related Recreation Opportunities,** you state that "because the details surrounding the location and implementation of many of the measures are under development, these topics are addressed at a programmatic level." What does that mean? What it means to me is that you are not really going to address the problem. The truth is that the reduction in boating will be catastrophic. The traffic and congestion alone will slaughter the industry. People already complain about how expensive it is to own and moor their boats. The Boaters will not put up with 15 years of what you propose. Boaters want to come here and enjoy themselves. Nobody enjoys constant traffic. That is the reality, the tunnels will end boating! Are you ready to mitigate for that?

I expect, as promised, to have a response to my comments.

Respectfully submitted, Brad Pappalardo

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BDCP Draft EIR/EIS

COMMENTS:

General Comments: First the Bay Delta Conservation Plan is a misnomer. It is really the Bay Delta Justification for the Tunnels Plan and how they can compensate for the horrendous damage to the environment the tunnels will cause. Fundamentally, the premise is fatally flawed. This State does not have a transportation of water problem; it has a shortage of water problem caused in large part by its own agencies. California is an arid state; however, with proper management and storage during the few wet years we do have, we would not have the drastic drought conditions we now face.

It is my understanding that the Department of Water Resources, with questionable authority, contracted out water rights that they cannot now fulfill. The contracts themselves caused farming in equally questionable areas which now do not have the water to water the crops they should not have planted in the first place. The solution is to take water from farmers with priority water rights and who are located in the best farm land in the State to give it to poor farmland in a desert. The truth is more insidious. The State (and its citizens) who will be paying for a water diversion that they do not control or benefit by; instead it is given to certain water districts for their own benefit to manage and sell the water they will control.

Chapter 15 Recreation. Unless indicated otherwise, all comments will be directed to the Chapters by page number.

15.3 Environmental Consequences. (15-58.)

15.3.1.1 Assessment Methods. Are vague, unintelligible and refer you to other sections as opposed to explaining the specifics about how they relate to this Chapter, Recreation. The section discusses questionable scenarios (sea level rise and climate change) for which there is no reliable scientific data. The same can be said about **15.3.2 Determination of Effects.** (15-62.)

15.3.3 Effects of Mitigation are equally vague and send us to other sections for additional discussion. The statement says overall construction is expected to last up to 9 years, which is on the low end of other predictions at the meetings could be more likely

in the neighborhood of 15 years. Implementation would be ongoing for a term of 50 years which would outlive the BDCP authors. (15-63.)

The section addresses subjects that are of little relevance to the real socioeconomic problems of completely devastating the enjoyment of their homes or the destruction of their businesses; for example it "is not anticipated to result in an increased demand or adverse effects on existing neighborhood and regional parks." That is a fair statement since no one will be visiting those parks. It makes a ludicrous conclusory statement that "noise traffic modeling indicates that increased noise levels from construction truck hauling and worker commutes would not result in substantial increases in local noise levels." (15-64.) The statement is absurd and again they refer us to a chapter elsewhere.

15.3.3.1 No Action Alternative. Again this section is unintelligible and discusses matters that have nothing to do with the area of impact and the matters of most concern to the effected residents. (15-64,65) They again bring up this nonsense about rising sea levels and climate change of which they claim that in any event, "is not possible to specifically define the exact extent of the changes due to future no conditions"; exactly, so why did they bring it up? (15-66.)

Catastrophic Seismic Risks. (15-67.) This section suggests that the Delta is within a highly active seismic area and that there is the potential for significant damage. That "earthquake damage could result in...failure of existing levees...with a substantial number of these structures exhibiting moderate to high failure probabilities." (15-67.) They do not give one example of a levee failure due to an earthquake because there hasn't been one. The matter is pure scare tactics without any actual incident in the 150 years of the levees and it is nothing more than the irrelevant padding of information or lack thereof. (15-67.) They interestingly talk about the danger of an influx of seawater which is more likely to occur with the tunnels sucking water out of the Delta than from an illusory earthquake. Finally, they conclude that the "effects on recreation would either be only short term disruptions...or the programs would result in net beneficial effects on recreation opportunities"? The above sections said next to nothing about the true nature of the risks to recreation, gave no particular information or facts to support their conclusions or for us to assess the potential mitigation issues.

We are then required to go deep into the Recreation section for any meaningful discussion of the true problems even if misreported. BDCP is addressing Alternative 4, which appears to be the least invasive of the alternative scenarios (15-253).

In the **Summary** (15-260), BDCP opens with the only true statement in the report. "Construction of Alternative 4 intakes and water conveyance facilities would result in disruption to recreational opportunities"; to put it mildly. (15-260.) That "construction may occur year-round and last from 1 to 8 years...and in-river construction would be primarily limited to June 1 through October 31 each year, which would result in a long-term reduction of recreational opportunities or experiences." (15-261.) Of course that is the

major portion of the recreation season. While they talk about commitments by DWR, the promise to enhance "interest in the site construction by constructing viewing areas...which may attract people who may use the recreation facilities" it is laughable. (15-262.) As is the creation of bicycle and foot access to the Delta. (15-262.)

They discuss as a mitigation measure the preparation of site-specific traffic management plans that would address potential public access routes (15-262) and that DWR would provide and publicize alternative modes of access. The truth is that there are no alternative modes of access. There are minimal roads into and around the Delta and with the construction traffic, the ability for the residents to travel in and out of the area would be a nightmare which would persist for 9 to 15 years. The people who have boats at the local marinas will leave long before the construction is done and the resorts and marinas will long be out of business by the time they come back. The businesses in the towns of Clarksburg, Hood, Courtland, and Walnut Grove will go bankrupt and they will become ghost towns.

We are familiar with large trucks in the area during the various harvests. The roads are narrow and dangerous during those seasons with long waits getting over bridges. Most of the roads are narrow levee roads and the cost to widen them as proposed would be extremely costly. Is that in the budget? Part of your mitigation costs? Are you going to build new highways? Is that budgeted? You add in the 24 hours a day trucking and the people wanting to enjoy their trip to the Delta and their boat will be gone. You cannot avoid the traffic problem and the result will be people doing their boating elsewhere. Have you included in your mitigation costs, waiting for the Marinas to go out of business before you realize the damage you have done.

What about the people who live here, Are they expected to wait 10 years before the nightmare ends. What about the towns of Hood and Walnut Grove who literally will lose their minds from the constant pounding of the pilings? It is in effect a condemnation of their homes and property. Have you a mitigation fund for them? You live in a fantasy land to think that will not happen and you can mitigate for them. The fact that you have been threatening to do these very tunnels has already diminished the value of their homes. The noise and traffic congestion problems are insurmountable and very, very real. As you propose (15-262), you cannot address construction noise effects through mitigation measures and a noise abatement plan. You cannot address the traffic issues, even at an exorbitant cost; because that would at a minimum be necessary.

I am on the DECMAC advisory committee. No one is making improvements to their homes, no one is doing anything. No one wants to open a business here. You have already irreparably harmed this community. Who is paying for that? The tunnels are a bad idea. It does not address the real problem; a lack of water. The Bay Delta Conservation Plan will conserve nothing. Do not worry about restoration, there will be nothing to restore. However, the lawsuits and damages will be devastating and unyielding.

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I am not telling you anything you do not already know. You went through 58 pages describing how important the Delta is to the State and its people. You have listed the reasons and background for the mandates for the State and local governments concerning protecting the Delta and how important Recreation is to its health and the enjoyment of all. I have addressed those issues below which your report seems to have ignored or at least have failed to truly address.

15.1.1.1 Recreational Activities and Opportunities. By the reports own admission, the Delta is one of the favorite destination places for California boaters (behind the Colorado River (?)) and "nearly half of the registered boats in the state" are located there. (15-1.) Thus, the interruption and/or impact to recreation, in particular boating and fishing, would be a major environmental consideration.

While the study focuses on breaking down the various water activities between small boats and large boats (15-3), they miss the common denominator between all the activities and is most pertinent to the subject at hand and that is the people just enjoy being on the water. The constant pounding of pilings and construction traffic for 10 to 15 years in the subject area will drive away all boating and fishing and the area will never recover. The mitigation costs will be significant because the damage will be total for surrounding resorts and landowners.

Recreation Participation Trends and Projections. This section appears to stress a slowing growth of recreation into the next decade (2010-2020) based on declines in the past decade (2000-2010) without even mentioning the worst recession since the great depression and the spiraling gas prices caused by the government's negative treatment of energy resources. (15.23.)

15.1.1.2 Description of Existing Conditions in the Upstream of the Delta Region. (15-24 et seq) Mentions that the "CVP was reauthorized in 1992 through CVPIA...added mitigation protection of fish and wildlife as a project purpose. Further, the CVPIA specified that dams and reservoirs of the CVP should now be used 'first, for river regulation, improvement of navigation; and flood control; second, for...fish and wildlife enhancement. '" Obviously, "improvement of navigation" positively effects boating and recreation and is an already stated priority, even higher that fish and wildlife enhancement. Later suggestions want to impede the navigability of Steamboat, Sutter and Georgiana Sloughs. (15-24.)

15.2.2.1 Delta Protection Act and Delta Protection Commission and Resource Management Plan. The BDCP notes that the Delta Protection Act of 1992 (Act) established the DPC "to plan for and guide the conservation and enhancement of the Delta's natural resources while sustaining agriculture and meeting increased

recreational demand." That "Section 29702 indicates that the basic goals of the state for the Delta include the protection, maintenance, and, where possible, the enhancement and restoration of the overall quality of the Delta environment, including but not limited to, agriculture, wildlife habitat, and *recreational activities*." (15-24, emphasis added.)

It further notes that "Section 29705 indicates that the Delta's wildlife and wildlife habitats are *valuable, unique and irreplaceable resources of critical statewide significance and should be preserved and protected for the enjoyment of current and future generations*." (15-24, emphasis added.) The construction of the tunnels as currently proposed will have nothing but a negative impact on the Delta and must be viewed in lieu of the most *critical* of criteria.re is nothing positive that can be shown."

Furthermore, "Section 29712 acknowledges that the Delta's waterways and marina's offer recreational opportunities of statewide and local significance are a source of economic benefit to the region..." (15-35.) It is from these high standards and critical nature that the recommendations of the BDCP must be held.

The needs for the enhancement of recreation cannot be given a superficial treatment by BDCP. It is also noted that Chapter 5 of the Act requires DPC (and by extension the BDCP) to adopt a "comprehensive long-term resource Management Plan that includes the following recreation and access policies." (15-35.) Among the items listed was expansion of public recreation (Policy P-1); encourage expansion of privately owned, water oriented recreation (Policy P-2); that any new (public or private) recreational or access facilities are prioritized (Policy P-3); provide publicly funded amenities adjacent to private facilities (Policy P-5); and promote and encourage Delta-wide communication, coordination, and collaboration on boating and waterway-related programs including removal of debris and abandoned vessels, invasive species control, maintenance of existing anchorage, mooring, and berthing areas (Policy P-10). (15-35.) Recreation and the enjoyment of the public of this is "irreplaceable resource" must be "preserved and protected" by the BDCP, as well, in its analysis. (15-34, 35.)

15.2.2.3 California Department of Parks and Recreation Plans. The BDCP also notes that the Department of Parks and Recreation was mandated to develop recommendations to expand state recreation areas in the region. (15-36.)

15.2.2.5 California Department of Boating and Waterways Regulations and Programs. The CDBW also supports providing boaters with adequate facilities on the water for public entities and providing private marina owners with the ability to apply for construction loans for loans for improvements, such as berthing, restrooms, vessel pump outs, boat launching, parking facilities, and dry boat storage. There is also The Aquatic Weed Control Program for control of water hyacinth, Brazilian waterweed (Egeria densa), and South American spongeplant in the Delta, which are highly invasive species and widespread in the Delta and have substantial impacts on recreation. There is also an Abandoned Watercraft Abatement Fund. (15-41, 42.)

15.2.3 Regional and Local Plans, Policies, and Regulations. This section lists the city and county plans for the development and maintenance of recreational lands and facilities for the use of the public and as part of their economic development. All of

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them recognize the need to enhance and protect recreational facilities and the importance of recreation, the unique nature of the land, its scenic features, the historical and cultural sites and the need to preserve them for their respective communities and for the people in the State, and the nation in general. (15-44 to 15-58.)