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Comments on Accuracy and Adequacy of DEIR for MPWSP
(note: questions to be answered in italics)

The Brine Discharge Issue

Inaccuracy

Errata
D1 page 8 “Near Field modeling was completed by Flow Science and there report is included in Appendix A” It is Appendix D2, Appendix A is about NOP

Question: (section 4.5 page 34, and elsewhere)
Report lists that brine discharge volume is 13.98 million gallons per day (mgd).
I calculate 14.5 mgd.
Intake = 24.1 mgd, Production = 9.6mgd desal water, so 24.1 - 9.6 = 14.5mgd brine discharge.

Q *How do you account for the 502,000 gallons a day discrepancy?*

Inconsistencies:
a) Section 4.5 says existing outfall pipe is 1.7 miles. Appendix D1 says outfall pipe is 2.1 miles
b) Section 4.5 says diffuser section is 1100 ft, Appendix D2 says diffuser section is 1368 ft.

Q *Which is it? What are the actual lengths of the outfall pipe and the diffuser section?*

Inadequacy

Diffusion calculations are COMPLETELY inadequate

Section 4.5 p6-7 “Soft Substrate Subtidal Habitat”
The report notes that such habitat (describing the habitat in and around the outfall pipe) is “not subject to large fluctuations in water quality parameters.” This would reflect a community of living organisms which are adapted to a stable water quality environment. Into this environment the project will inject 13.98-14.5 million gallons per day of briny discharge (57.4 - 57.8 ppt Appendix D1 page 4) That is a value 71% saltier than mean ambient salinity (33.6 ppt, ibid) Organisms in this zone are not adapted to such shifts in water quality parameters. What will become of them.

I just couldn't imagine how pumping that quantity of daily brine discharge could result in only a maximum of 2ppt at the Zone of Initial Dilution (ZID), which “in this analysis, the ZID ends at the point where the discharge plume impacts the seafloor for a sinking plume.” Appendix D2 page 7

According to Appendix D2: "Brine discharger diffuser analysis,” done by Flow Science. The result is calculated at a change of .9 to 1.5 ppt. (D2 Table 6 p.15) But here is the thing. That is

the calculated result at the first moment when the discharge hits the seafloor 10-12 feet from the pipe. THERE IS NO CALCULATION FOR CHANGE OVER TIME! So if the outflow changes the salinity by 3.3% in the first moment at the seafloor impact zone then. . .

Imagine the impact after 30 years!

Questions: *Where are the calculations for change over time as this project will be discharging brine at roughly 14 million gallons a day? What is the projected change in ambient salinity after 1 day, 1 week, 1 year, 1 decade? Will it be anticipated to exceed the legal threshold of 2ppt beyond the ZID as calculated over time?*

<u>Detailed Bathymetric mapping of seafloor at outfall pipe is imperative</u>

Even if the brine discharge is diffused to within 5% of ambient as required by law, it will still sink to the seafloor because it is denser, creating a density current. Flow Science suggests that gravitational forces will take the "effluent driven by gravity . . . downslope and gradually disperse." (D2-p8)

This is speculative, for although the report says the bathymetry steadily slopes out to sea, there is no corroborating evidence to this fact. I would point out that the average slope along the entire pipe from shoreline to discharge is less than 1%, which is essentially flat. The evidence for this is that a 2.1 mile pipeline terminates after a drop of only 100 feet, the depth of the water at said terminus. That calculates to a .00924, or just less than 1%.

Flow Science indicates that there are weaknesses in it's analysis, specifically " Estimation of the spreading of the plume on the seafloor would require detailed bathymetry data near the diffuser and us of additional analysis methods, such as three dimensional model or a physical model of the discharge. . . In the analysis presented here the spreading of the effluent on the seafloor, or within and beyond the trapping level and the subsequent additional dilution that would ensue has not been analyzed" (D2-p8)

Question: *What is the plan to collect the detailed bathymetric data of the seafloor near the outfall pipe?*

Given the uncertainties for the accumulation of brine over time, a detailed bathymetric map of the local area will clarify potential impacts of the discharge.

<u>A Lack of a Biological Baseline of Benthic and Planktonic Life in the Brine Discharge Zone, specifically squid egg sack habitat.</u>

CEQA law requires a baseline reading before the environmental impact activity (brine discharge) begins.This is because there would be no way to determine what the impact is, unless a baseline is done to describe conditions in the zone before the plume starts altering the salinity and density of the water. If you don't know what's there, you won't know the damage you cause.

Question: *Where is the Biological baseline data for the benthic and planktonic organisms in the local zone near the outfall pipe?*

Simply describing the generalized habitat of the quaternary deltaic shelf zone is inadequate. Benthic and planktonic life forms do not have the mobility to move away from the rising salinity levels, and may suffer significant mortality rates if the salinity thresholds are breached beyond the ZID.

Table 4.5-2 lists adult pelagic squid but omits benthic squid egg sacks

"Under the Magnuson-Stevens Conservation and Management Act (discussed in Section 4.5-2, Regulatory Framework, below), NOAA Fisheries,the Fishery Management Councils, and all federal agencies are required to cooperatively protect "essential fish habitat" for commercially important fish species such as Pacific coast groundfish, three species of salmon, and five species of coastal pelagic fish and **squid.** Essential fish habitat includes waters and substrates that support fish spawning, breeding, feeding, and maturation. Fish species found in the coastal waters of Monterey Bay and in Elkhorn Slough Estuary protected by Fishery Management Plans prepared by regional Fishery Management Councils under the Magnuson-Stevens Act are listed in Table 4.5-2" (4.5 -15)

Squid lay egg sacks in soft substrate mud, and the diffuser pipe may be in a squid spawning habitat or squid nursery. Squid is significant economic species currently enjoying a robust harvest. A December 6, 2014 Monterey Herald article, *Squid Harvest has been Bountiful in Monterey Bay,* states, "By initial estimates, at least 75 percent of the northern California squid catch came from waters in and around Monterey Bay. Scientists and squid fishermen do not fully understand the reason for this flip." If squid populations are rebounding, we owe it to the fisherman to investigate what impact the outfall pipe may have on their harvests.

Question: *What is known about the absence or presence of squid egg sacks, squid nurseries or squid breeding zones, in an around the outfall pipe?*

<u>There is no plan to monitor the impacts of the rate of dilution or accumulation of salinity in the near or far field</u>

Given all of the above: the lack of calculation for accumulation impacts over time, the lack of bathymetric data and contour map of seafloor at discharge pipe, the lack of a biological baseline of the area, and the omission of squid egg sacks and nursery habitat near the pipe, a plan must be in place to measure ongoing impacts after the discharge of 14.5 mgd of briny discharge begins.

Questions: *What is the plan for monitoring the on going impacts in the discharge zone after desalination begins? Who will do the monitoring? Who will pay for the monitoring?*

******Final Question:*** *Do the inadequacies delineated in this document rise to a level to require recirculation of the DEIR? Why or why not?*