EXHIBIT 11

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December 8, 2017

Ms. Julie Thompson, Land Use Planner
San Juan County Department of Community Development
P.O. Box 947
Friday Harbor, WA 98250

RE: Orca Dreams LLC Response to Loring SEPA Appeal
Proposed Four-Slip Joint-Use Dock and RO Desalination System
SSDP File No. PSJ000-17-0003

Dear Ms. Thompson:

This letter is in response to the November 8, 2017 appeal filed by Attorney Katie Loring on behalf of Kimbal Sundberg and his wife, Debra Clausen; Gretchen Allison; James Uhlir and his wife Camille Uhlir; Martha Scott; Catherine Drew Harvell and her husband, Charles Greene; Michael Prentiss; and Nancy Morgan and her husband Chris Morgan in regard to San Juan County's SEPA Mitigated Determination of Non-significance issued for the above noted project.

Ms. Loring cites seven issues as ground for appeal:

1. Lack of Analysis of Desalination and Discharge of Saline Brine;
2. Inadequate Analysis of Impacts to Eelgrass and Macro Algae;
3. Inadequate Analysis of Impacts on the Pocket Beach, Forage Fish and Migrating Salmon;
4. Inadequate Analysis of Impacts to Southern Resident Killer Whales;
5. Inadequate Analysis of Visual and Aesthetic Impacts;
6. Lack of Analysis of Impacts to Navigation and Recreation; and
7. Lack of Analysis of Potential Alternatives.

These appeal issues have been addressed in detail in the Orca Dreams revised biological evaluation prepared by Fairbanks Environmental Services dated October 24, 2017 and response to the University of Washington SEPA appeal, as well as the Detailed Project Description and Regulatory Analysis attached to the Shoreline Substantial Development Permit application for this proposal (SSDP File No. PSJ000-17-0003). These documents and

responses are incorporated herein by reference to avoid repeating the same information.

Summary of Facts

The Loring appeal letter provides a section titled "Summary of Facts." While the Orca Dreams property has a complicated permit history, some of the "facts" stated in the letter are misleading or irrelevant to the instant application. Those "facts" are addressed below.

- *Change in Dock Length*

  The appellants state that the withdrawn 2014 Shoreline Substantial Development Permit (SSDP) application proposed a 240-foot long joint-use dock and, now, the current March 2017 application proposes a 260-foot joint-use dock eluding that the current dock is somehow encroaching further into the marine environment thus creating greater environmental impacts than the prior proposal.

  This is simply not the case. While the length of the dock under the current proposal has increased 20-feet in length over that proposed in 2014, the increase is on the landward end of the proposed pier to avoid the need to grade and fill the shoreline bank so access to the dock could be gained from the existing grade of the beach access road. <u>The proposed dock has not been pushed further seaward.</u> Both proposals place seaward of the proposed dock at the -7' tidal elevation. (See enclosures.)

- *Decrease in Number of Boat Slips*

  The appeal letters states that the 2014 application proposed a six-slip moorage facility while the current proposal proposes only four, yet the length of the dock has not been reduced.

  The proposed dock has undergone several re-designs over the years. When the initial application (File No. PSJ00-14-0008) for the dock was submitted to San Juan County in March 2014, the proposed length of the dock was 265-feet and included a 90-foot long float with six moorage slips. It was later revised reducing the length of the dock to 240-feet and the float to 60-feet with four moorage slips. The purpose of the revision in float length was to reduce potential impacts created by six boats. It resulted in the proposed dock being pushed landward 20-feet. That application was subsequently withdrawn.

  The current proposal was submitted in March 2017 under a new application (File No. PSJ00-17-0003). It continues to propose a 60-foot long float for the moorage of four boats.

- *Prior SEPA Determination*

  The appeal letter points to the County's prior withdrawal of the SEPA MDNS and request for additional information issued for the now withdrawn SSDP application (File No. PSJ00-14-0008). The majority of the information requested by the County at that time is included in the application currently under review.

One of the issues, the alleged need to conduct a study of dispersal patterns in False Bay, has not been addressed in the SEPA checklist or the BA for this proposal because it has been found to be unnecessary under current director, Erika Shook. In her March 7, 2016 letter Ms. Shook stated that because no fuel storage or fueling is proposed on the dock and that the environmental checklist states that the ramp and float will be removed and stored on an upland site from October to May each year, these actions are sufficient to significantly reduce the risk of fuel spills caused by boats coming loose and grounding during a storm event. (See attachment.)

- *Change in Proposed Dock Location*

The appeal letter questions the location of the proposed dock as shown on Page 8 of Appendix C of the initial BA prepared for this proposal and states they are misleading. Page 8 shows two photographs of the dock with regard to proximity to eelgrass and bull kelp. While the two photographs show the dock in slightly but not significantly different orientations, the photographs are for illustrative purposes only and are not significantly different. They are not misleading. The appellants should rely on the detailed information provided on the permit drawings prepared for this proposal.

- *Storm Protection*

The appellants are concerned that there is no analysis as to how the dock and boats tied thereto will be protected from storms while the dock is still in the water.

The attached editorial prepared by David Pascoe regarding dock and boat survival during the 1999 hurricane season (Hurricanes Andrew and Hugo) provides valuable insight. In this editorial Mr. Pascoe provides the following tips for protecting a dock and the boats tied to it during a hurricane.

1. The vulnerability of the dock location;
2. Dock and slip orientation parallel with the wind and wave direction;
3. Dock design and construction; and
4. Slip size

Vulnerability

The dock is located in the center of a cove and is protected from the prevailing winds that come from the southwest by a large rock outcropping located at the south end of the beach. The dock has been designed by Waterfront Construction to withstand site specific conditions such as high wind and wave action. The applicant plans to remove the float section from the proposed dock during the stormy season when the potential for damage caused by high winds is greatest. Although there are wind events outside of the winter months they are typically of less strength. The rock outcropping that is located about 95 feet seaward of the seaward end of the proposed float acts like a breakwater, significantly reducing wave action in the cove, even during stormy weather. The applicant took several videos of the proposed dock location during the winter storms of 2015/2016 and one that recently occurred this fall, 2017. (See attached thumb drive.) The videos show that the

rock outcroppings significantly minimize the intensity of wave action in the cove than what is experienced further seaward of the dock site.

Dock and Slip Orientation

When a dock and moorage slip arrangement is oriented parallel with the wind there is little chance for the dock and boats to be broadsided by wind and wave action. The prevailing winds experienced at the proposed dock site generally come from the southwest as is evident in the videos. The Orca Dreams' dock and moorage slips will be oriented in a southwest direction and parallel with these wind patterns.

Dock Construction

The way a dock is constructed and the materials used are a primary factor affecting stability during a wind storm. Older docks constructed with creosote pilings and wood are more likely to be destroyed than those constructed with substantial materials.

In this case, the Orca Dreams dock has been designed by Waterfront Construction, a reputable firm out of Seattle, which has extensive experience in designing and constructing docks throughout Pacific Northwest and the San Juan Islands. The pier and ramp are to be framed with welded aluminum square tube and held in place with ten 10" diameter steel pilings. The float will be framed with wood and will be held in place with 10" steel pilings, one at each corner of the float along with two float anchors at the seaward end of the float.

The most severe winds at this location occur during late fall through spring. While they can be significant, wind storms experienced during the boating season never reach the speeds of hurricane force winds. The Orca Dreams dock will not be in the water during the off-season months when the winds are the strongest and, therefore, the chance for damage during these months has been eliminated.

- *State Department of Health Review of the Proposed RO Desalination System*

The appeal letter indicates that it is the policy of the County's Health Department to have plans for RO desalination systems reviewed by the Washington State Department of Health.

Hart Pacific Engineering is designing a Group B Water System to serve the three Orca Dreams parcels and has been working closely with Kyle Dodd, SJC Environmental Health Manager. The proposed desalination system is to be included as an element of the Group B System. Since the RO Desal System has not received land use approval, it makes no sense to involve the State Health Department at this stage of the permitting process.

Appeal Issues Not Addressed in Orca Dreams' Response to UW SEPA Appeal

- *Desal System Impact on Small Organisms and Larval Stages of Marine Organisms*

  The SEPA appeal indicates that there is no analysis of the "significance" of impacts to small organisms and larval stages of marine organisms that will be entrained with seawater at the intake pump or those that may be impaired on the intake screen.

  Page 39 of the revised BA states that the screen on the proposed intake filter will be finer than the WDFW standards. This alone will reduce the impact to organisms that can be entrained or impaired by the system. Furthermore, since the volume of seawater that will be pumped when the system is operating at full capacity equates to 0.33 percent of the water volume of the small cove in which the system will be located, the impact on impingement onto the filter screen and entrainment into the intake will be very low.

  The 2009 study titled *The Current Status of Desalination Systems in San Juan County, Washington, Executive Summary and Technical Supplement* states on Page 8/8 that some small swimming and various planktonic forms will not be excluded by screen intakes but will be captured by influent filters at the RO plant. Assuming proper design, most organisms should be filtered out and returned to the sea before getting to the high pressure system.

- *Mooring of Boats up to 35" Guarantees Impact to the Eelgrass Beds and Macroalgae*

  The appellants state that they guarantee there will be impacts to the eelgrass bed to the south of the dock from prop wash and maneuvering of boats but cite no facts to support this hollow allegation. When Fairbanks Environmental Services evaluated the seafloor for eelgrass and macroalgae they found a deep water channel in which boats could maneuver to and from the proposed dock location which would significantly reduce the impact of sediments reaching the eelgrass and algae beds. Prop wash would only occur during times of low tide which are far and few between at this site. (See tide chart attached to the Orca Dreams response to the UW SEPA Appeal.)

- *Sediment Pumping*

  The appeal letter states that the proposed dock will likely cause sediment pumping due to its location in shallow water and will impact marine life.

  Pumping may only occur during low tide events when water levels in the cove are shallow. (See page 37 of the BA.) Even at ELT there will be three feet of water at the seaward end of the float. The pumping action could dislodge sand and fine sediments under the dock and leave coarse sediment in place. However, the substrate under the float is hard sand with no trace of macroalgae. Sparse patches of eelgrass are located over 25 feet away from the float. Any sedimentation caused by pumping will settle on the seafloor before reaching the eelgrass.

- *The Dock Will Not be Used For Whale Watching*

  The appellants have alleged that the proposed dock will add increase whale watching activity in Haro Strait and Strait of Juan de Fuca. How they came to this conclusion is mind boggling. Whale watching is readily available from the uplands of the Orca Dreams property. There is a clear line of site from the property to Haro Strait and Strait of Juan de Fuca. The applicants have constructed a fire pit patio seaward of their home near the top of bank where they regularly sit and watch the whales. There is no intention to use boats moored at this dock for whale watching.

- *Visual and Aesthetic impacts*

  This issue was well addressed in our response to the UW SEPA Appeal. However, the appeal claims that the appellants will have clear view of the proposed joint-use dock from their properties.

  Attached are an aerial photo and a topographical map that shows the locations of the appellant's properties. The only property that could possibly have a view of the proposed dock is located immediately to the north (Prentiss). But, the dock cannot be seen from the Prentiss residence due to the large amount of vegetative screening separating the home from the proposed dock site.

  The Sundberg and Greene properties are physical remote from this length of shoreline with no possibility of seeing it from their properties.

  The Uhlir, Scott, Morgan and Allisson properties are located about 6,000 feet, over a mile away across False Bay, from the project site. They have not submitted any evidence that their view will be impaired. Even if they did have a direct view of the proposed dock, at this distance the proposed dock would be so small and miniscule on the horizon, it could never be considered a significant adverse impact to views of False Bay and the straits.

- *The Dock Will Not Mar a Significant Natural Shoreline*

  The appeal states that the dock will mar a significant natural shoreline along the west coast of San Juan Island that is presently not broken by the presence of a dock.

  When evaluating shoreline, all development and viewpoints of the shoreline must be taken into consideration. Attached is a photograph of the project site as viewed from the west. It shows an unobstructed view of development existing on the Orca Dreams property. Someone has actually commented that the property looks like a casino!

  As noted in our response to the UW appeal, the fact that this dock may be the first along the shoreline is not grounds for denial. The County's Shoreline Master Program has established policies and regulations to prevent the proliferation of docks along the shoreline and design guidelines to reduce visual impacts. This dock complies with those regulations.

- *Moorage Concerns*

  The appeal asks why four boats are needed at all times and would need to be moored at the same facility.

  On page 18 of the regulatory analysis, there is discussion regarding the lack of availability of slips ranging between 28'-35' at any marina on San Juan Island. This information is predicted on email communications with the various marinas that are attached to the SSDP application. Since moorage is not available for boats within the proposed size range to be moored at this dock, there is a very viable need that the boats be moored at this proposed joint-use dock.

  In addition, the Honeywells plan on mooring a small sailboat, kayaks and a skiff at the dock to serve the family compound.

Conclusion

The detailed project description and regulatory analysis, the revised BA and the SEPA environmental checklist all support the County's Mitigated Determination of Non-Significance. The appellant has provided no site specific or project specific evidence to the contrary.

SJCC 18.10.030(D.4) states:

> *The party appealing a code interpretation or administrative determination or decision shall have the burden of proof of presenting the evidence necessary to prove to the hearing examiner that the administrator's interpretation, determination or decision <u>was clearly erroneous</u>.*

SJCC18.80.140(H.1.g); Appeals, states;

> *The determination of the responsible official <u>shall carry substantial weight</u> in any appeal proceeding*

The appellants have failed to produce any evidence that the Community Development Department's decision to issue the MDNS was clearly erroneous or that the impacts are so significant that they cannot be mitigated. For these reasons, the appeal should be denied.

Please contact me with any questions you may have or if you need additional information.

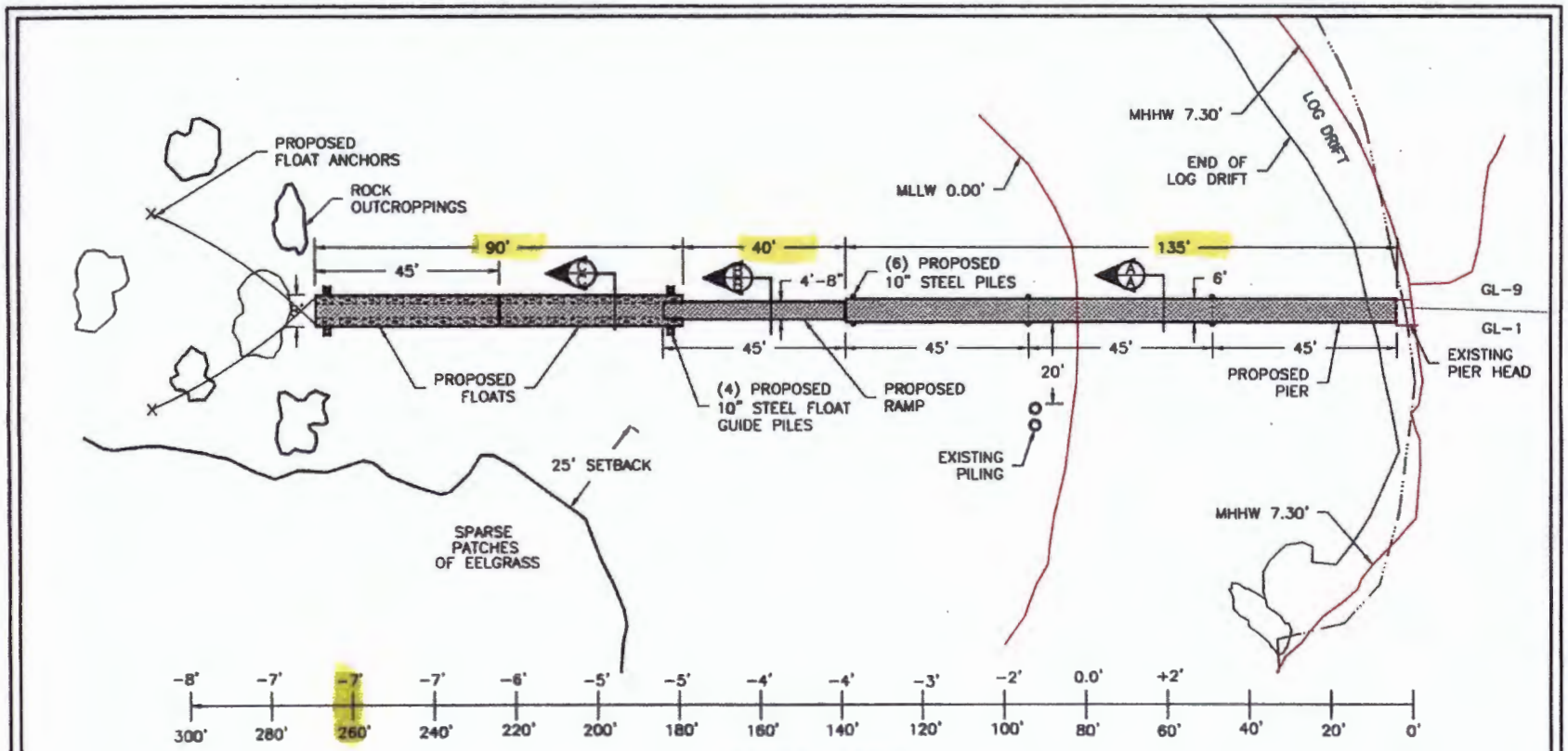
Sincerely,

Francine Shaw

Francine Shaw, Land Use Planner

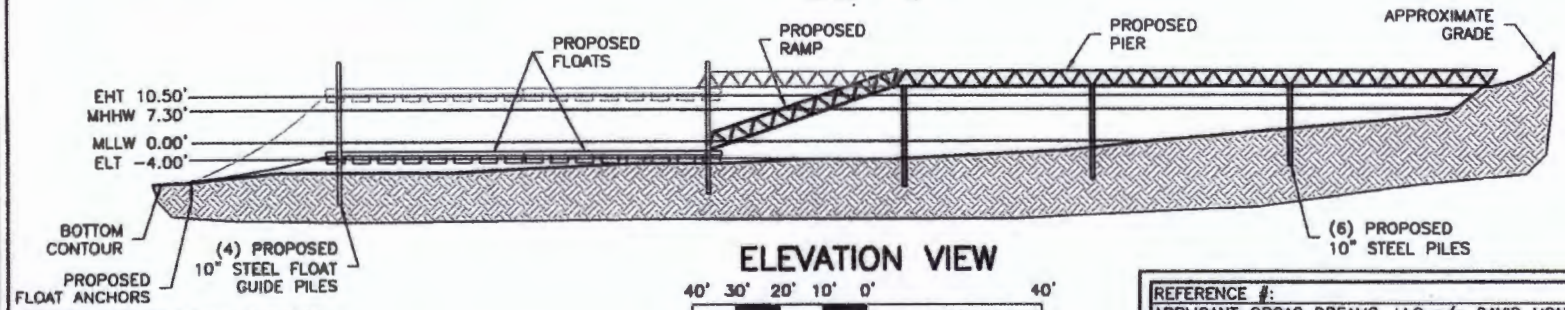
Cc: Orca Dreams LLC C/O David Honeywell

#1



DETAIL VIEW

SCALE: 1"=40'



ELEVATION VIEW

40' 30' 20' 10' 0' 40'

SCALE: 1"=40'

PROPOSED PIER	810 S/F
PROPOSED RAMP	210 S/F
PROPOSED FLOATS	720 S/F
LESS RAMP OVERLAP	-23.3 S/F
TOTAL FOOTPRINT	**1716.7 S/F**

REFERENCE #:
APPLICANT: ORCAS DREAMS, LLC c/o DAVID HONEYWELL
PROPOSED: CONSTRUCT NEW PIER, RAMP AND FLOAT

NEAR/AT: SAN JUAN ISLAND
SHEET: 4 OF: 8
DATE: 3-24-14 DWG#: 14-31020-A.4-1

Waterfront Construction Inc.
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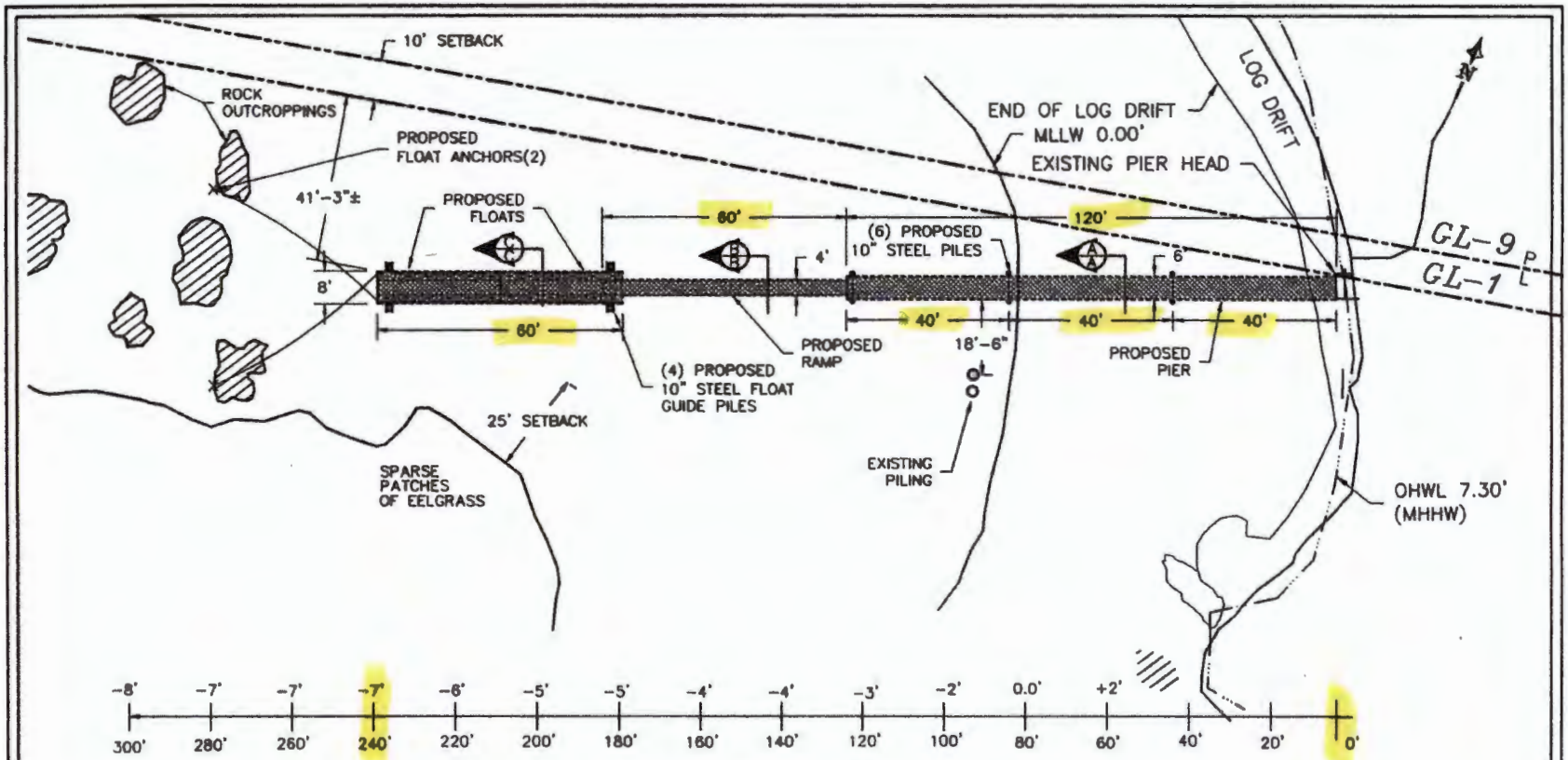
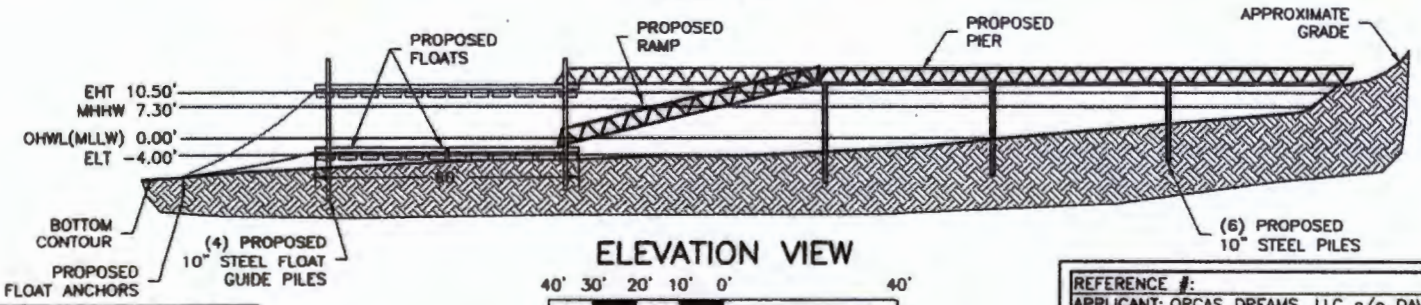
#2



DETAIL PLAN VIEW

SCALE: 1"=40'



ELEVATION VIEW

40' 30' 20' 10' 0' 40'

SCALE: 1"=40'

PROPOSED PIER	720 S/F
PROPOSED RAMP	240 S/F
PROPOSED FLOATS	480 S/F
LESS RAMP OVERLAP	-19.7 S/F
TOTAL FOOTPRINT	1420.3 S/F

MOVED PIER NORTH TO SUIT NEW SURVEY & MADE SMALLER DOCK/PIER FOOTPRINT

REVISED 09-24-2014

REFERENCE #:	
APPLICANT: ORCAS DREAMS, LLC c/o DAVID HONEYWELL	
PROPOSED: CONSTRUCT NEW PIER, RAMP AND FLOAT	
NEAR/AT: SAN JUAN ISLAND	
SHEET: 4 OF: 8	
DATE: 3-31-14	DWG#: 14-31020-A.4-4

PROJECT DESIGNED BY:
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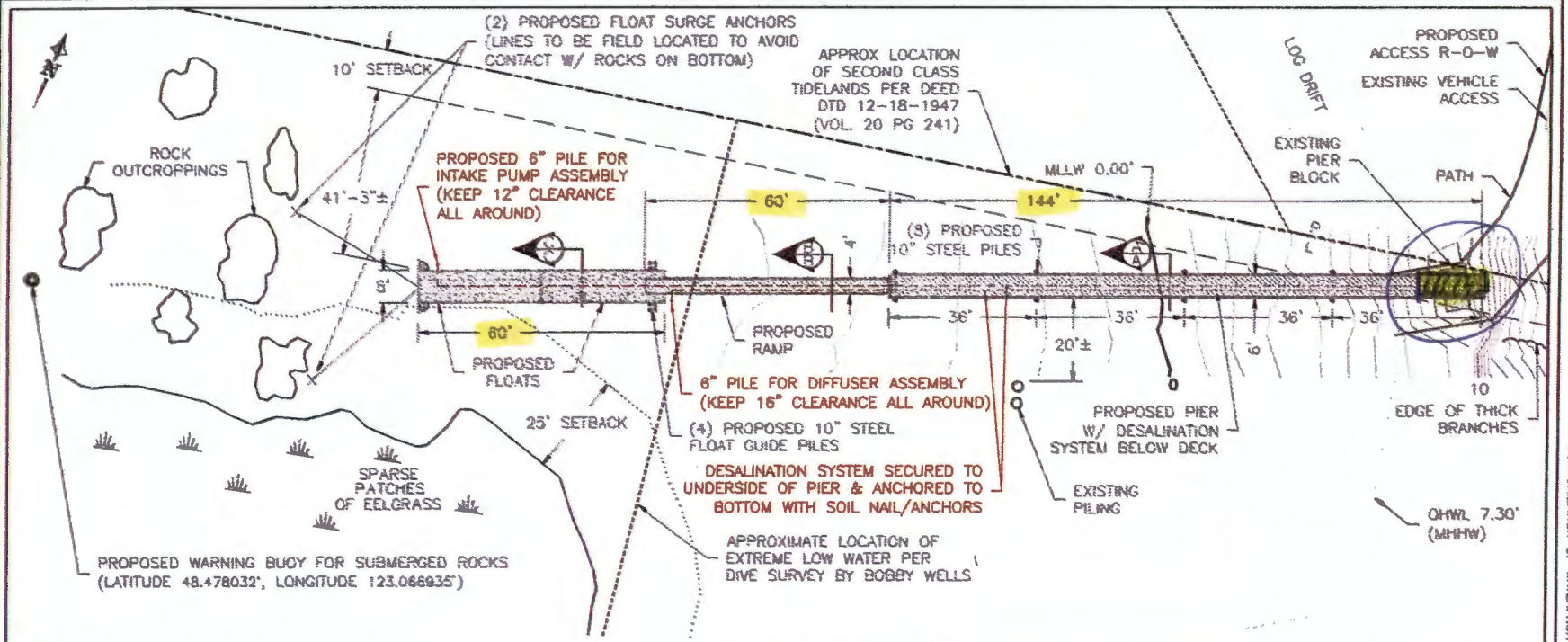
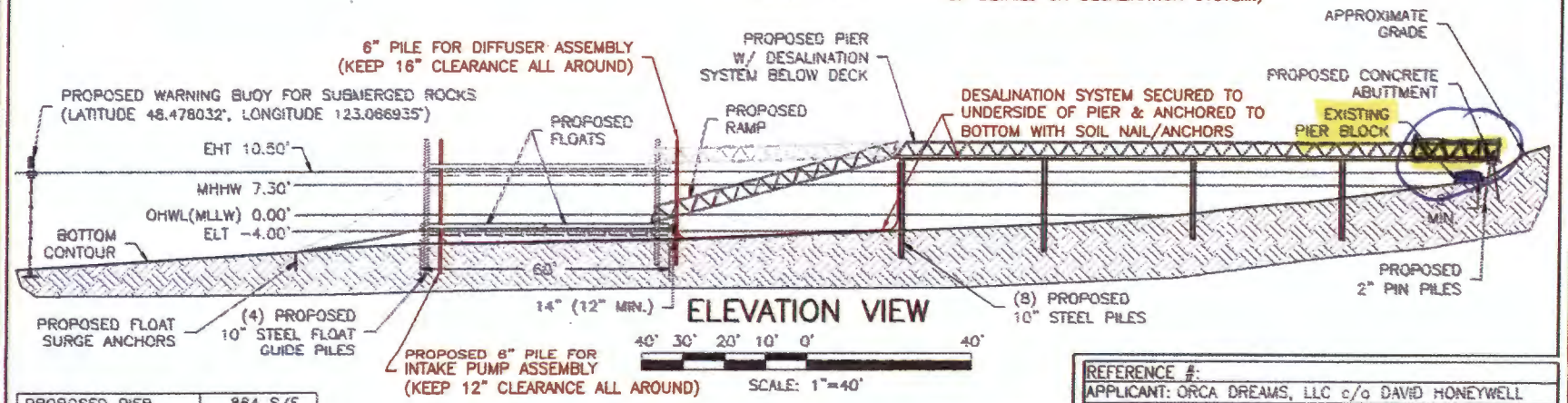
#3



DETAIL VIEW

SCALE: 1"=40'

NOTE:
(SEE HART PACIFIC ENGINEERING DRAWINGS FOR DETAILS ON DESALINATION SYSTEM.)



ELEVATION VIEW

SCALE: 1"=40'

PROPOSED PIER	864 S/F
PROPOSED RAMP	240 S/F
PROPOSED FLOATS	480 S/F
LESS RAMP OVERLAP	-19 S/F
TOTAL FOOTPRINT	1565 S/F

RAISED PROPOSED PIER. REDUCED PIER & RAMP WIDTH.

REVISED 5-26-17

REFERENCE #:	
APPLICANT: ORCA DREAMS, LLC c/o DAVID HONEYWELL	
PROPOSED: CONSTRUCT NEW PIER, RAMP AND FLOAT. INSTALL (1) WARNING BUOY.	
NEAR/AT: SAN JUAN ISLAND	
SHEET: 4 OF: 9	
DATE: 3-31-14	DWG#: 14-31020-A.4-5

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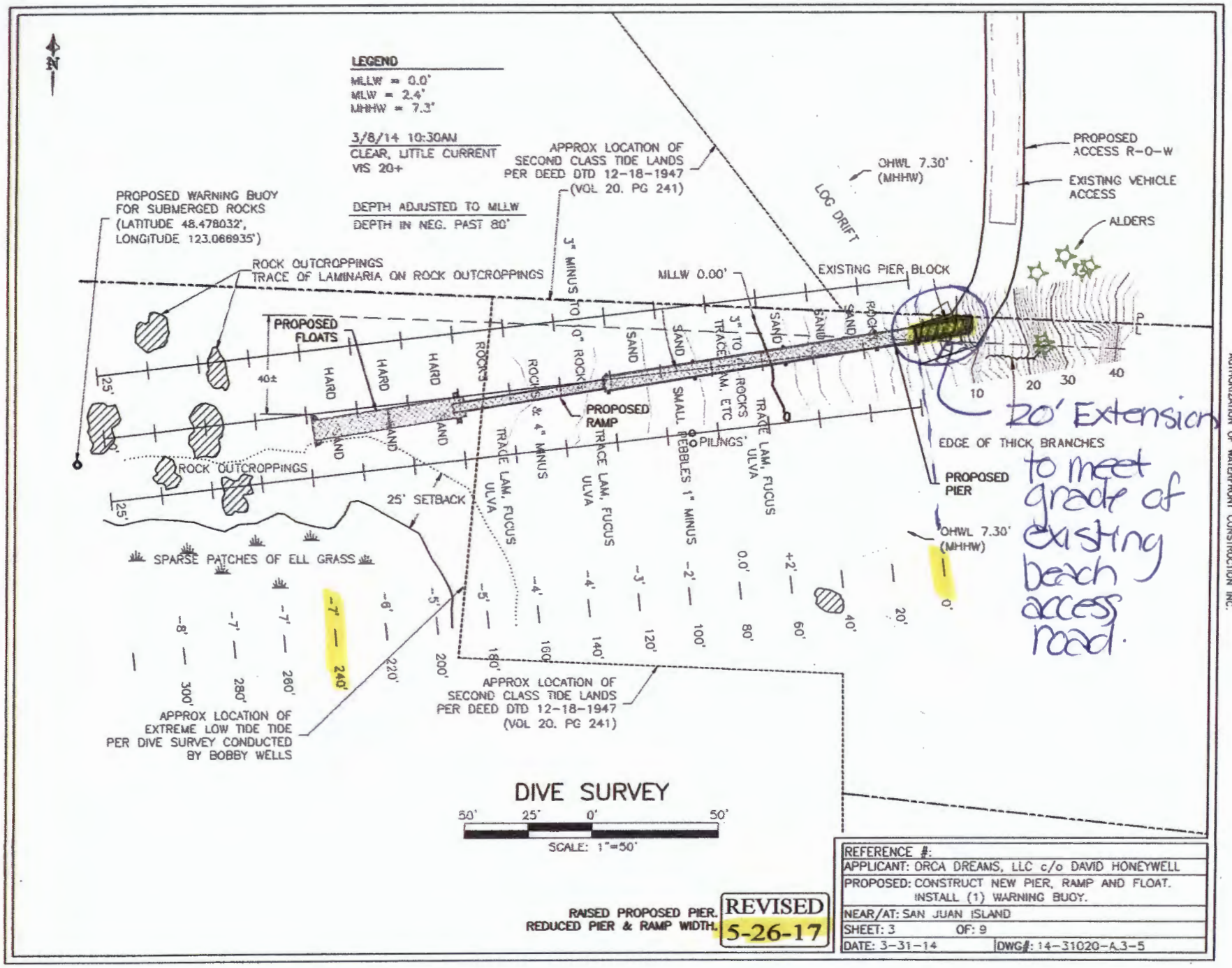
#3


LEGEND
MLLW = 0.0'
MLW = 2.4'
MHHW = 7.3'
3/8/14 10:30AM
CLEAR, LITTLE CURRENT
VIS 20+
DEPTH ADJUSTED TO MLLW
DEPTH IN NEG. PAST 80'
PROPOSED WARNING BUOY FOR SUBMERGED ROCKS (LATITUDE 48.478032', LONGITUDE 123.066935')
ROCK OUTCROPPINGS
TRACE OF LAMINARIA ON ROCK OUTCROPPINGS
APPROX LOCATION OF SECOND CLASS TIDE LANDS PER DEED DTD 12-18-1947 (VOL 20, PG 241)
OHWL 7.30' (MHHW)
LOG DRIFT
PROPOSED ACCESS R-O-W
EXISTING VEHICLE ACCESS
ALDERS
EXISTING PIER BLOCK
MLLW 0.00'
PROPOSED FLOATS
PROPOSED RAMP
PROPOSED PIER
EDGE OF THICK BRANCHES
PILINGS
SPARSE PATCHES OF ELL GRASS
25' SETBACK
APPROX LOCATION OF EXTREME LOW TIDE TIDE PER DIVE SURVEY CONDUCTED BY BOBBY WELLS
20' Extension to meet grade of existing beach access road.
DIVE SURVEY
SCALE: 1"=50'
RAISED PROPOSED PIER.
REDUCED PIER & RAMP WIDTH.
REVISED 5-26-17
REFERENCE #:
APPLICANT: ORCA DREAMS, LLC c/o DAVID HONEYWELL
PROPOSED: CONSTRUCT NEW PIER, RAMP AND FLOAT. INSTALL (1) WARNING BUOY.
NEAR/AT: SAN JUAN ISLAND
SHEET: 3 OF: 9
DATE: 3-31-14
DWG#: 14-31020-A.3-5
PROJECT DESIGNED BY:
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SAN JUAN COUNTY DEPARTMENT OF COMMUNITY DEVELOPMENT

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dcd@sanjuanco.com | www.sanjuanco.com

Law Office of Stephanie Johnson O'Day
c/o Stephanie Johnson O'Day
Francine Shaw
PO Box 2112
Friday Harbor, WA 98250

March 7, 2016

Re: Orca Dreams Dock Drift Card Study Requirement

Dear Ms. O'Day,

On October 30, 2015, the Department of Community Development (DCD) sent a letter regarding SEPA concerns for the Orca Dreams Dock Proposal, PSJ000-14-0008.

The letter indicated that a study to understand dispersal patterns in False Bay (drift card study) should be undertaken in order to determine whether petroleum products would be carried into False Bay on an incoming tide in the event of an accidental spill.

No fuel storage or fueling is proposed on the dock, and the environmental checklist states that the ramp and float will be removed and stored on an upland site from October through May each year to prevent damage caused by extreme wind and wave action that this site experiences during the stormy season.

These limitations are sufficient to significantly reduce the risk of fuel spills caused by boats coming loose and grounding during a storm event. Therefore a study of dispersal patterns is not required.

Please contact Julie Thompson if you have questions. She can be reached at Juliet@sanjuanco.com or 370-7588.

Sincerely,

Erika Shook, AICP
Director

N:\ADMIN\Director's Correspondence\2016 General Correspondance\2016-03-07_DCD_Shook_PSJ000-14-0008_Drift_Card_Study.docx

Editorial May 27, 1999

Hurricane Season 1999

by David Pascoe

Desolation of the Aftermath - Andrew

It is that time of year again, a time we all really don't want to think much about because it means some extra work for us.

The good news is that if you've been through this drill once before, you've already got the hard part out of the way because you will have already purchased the necessary things you need, will already have your hurricane plan fairly well thought out. If you're an old hand at hurricane preparation, all you've really got to do is make sure the needed equipment hasn't got misplaced, and is readily at hand. Plus reviewing your plan and making any adjustments due to changing circumstances.

If you're a new boat owner, or perhaps have never bothered with making comprehensive preparations, yet alone a plan, perhaps this is the year you should do so. In case you haven't noticed, we have been in a very active period for these destructive storms, and the risks are higher than normal. I've included some photos here that you may find persuasive.

It's axiomatic that if you've never been through a hurricane, it's very hard to appreciate how bad a hurricane can really be. You've seen the pictures of the tornadoes in Oklahoma recently. Well, multiply what you saw there times a hundred or a thousand, and you'll get an idea of what storms like Andrew and Hugo can do. Tornadoes last a few minutes, at best. The duration of hurricanes can last an entire day.

Feel the Power. . . . that's a 12" x 26" steel reinforced concrete header beam in the foreground from remains of this CBS home. The problem with this house was too many windows. The odd thing is the number of boats that survived compared to homes that didn't.

This new home was just nearing completion when Andrew hit. Notice how badly battered the galvanized steel storm shutters are. If you want a roof to stay on, one might suggest not building it with two-by-fours. Kinda stupid building a CBS house with a roof like that.

When it comes to hurricane protection, there are two basic kinds of boat owners. One is the sort who says, "The hell with it, the insurance will take care of it." And then simply abandons the boat to its fate. Our experience has revealed that there are quite a lot of people with this attitude these days. If you are the other sort, the type who wants to make every effort to save his boat, you want to be sure that your boat isn't near a boat owned by that sort. Why is that so? Mainly because the majority of damage caused to boats is the result of one boat breaking loose and causing damage to others. In fact, just one boat breaking loose can wreck three, four, five or more boats.

I start with this point since, whether you're a novice or a seasoned salt, it's a good idea to review your dockage situation and make an assessment, not only of your marina, but of what kind of people have their boats docked around you. Ask yourself questions like whether you know your dock neighbors, and whether these people are going to take appropriate measures, or will they merely abandon their boats, possibly allowing them to destroy yours.

All good hurricane plans involve consideration of the security of your marina or dock location. And in order to make a good plan, you need to know something about these storms, how they behave, and what their affect will be on your location depending on the direction approach, strength and forward speed. In other words, in order to develop a good plan, you need to educate yourself. If you haven't already done so, now is the time to begin.

So you'd like a beach front home, huh? Insurance didn't cover the cost of digging this canal out, filled in by storm surge. Opal, 1995.

Your boat stands almost no chance in a dry storage building above Category 2. Note how the building was completely denuded of all its steel siding before it toppled over.

After nearly two decades of studying the after effects of hurricanes, I have concluded that it is possible, with knowledge and preparation, that the majority of boats in a strike zone can survive a hurricane with minimal damage. In fact, around 50% of all the boats in the way of hurricane Andrew survived. Now that was a storm with sustained 160 mph winds and microbursts up to 200. So destructive was this storm that we are still arguing about its strength to this day, since no instruments survived to prove how high the winds really were.

I have added a couple of photos from my Hurricane Andrew collection showing the devastation to land structures. The point of interest here is that, for the most part, the boats generally fared better

than structures. The primary reason is that structures are rigid, while boats are not. Boats have a better chance of surviving than many people might think.

The number one factor for survivability is the vulnerability of your marina or dock location. This, more than anything, determines the probability, so let me relate the tale of three marinas, Diner Key, Black Point and Coco Plum. All three of these marinas fell within the eye of Andrew, and all three fronted directly on the coast of Biscayne Bay. However, the astounding lesson learned from these three marinas results from this: nearly all the boats at Diner Key and Black Point were destroyed, while at Coco Plum, not only was ***not one single boat lost,*** but no boats even sustained severe damage. Incredible but true.

Was that pure luck? Sort of like in tornadoes where one house is flattened, but the house next door hasn't so much as a shingle lifted? Absolutely not. Coco Plum survived with minimal damage due to several factors that protected the boats from high winds, storm surge, and waves.

The reasons for survival or destruction were these:

- Diner Key Marina was directly exposed to the bay and ocean. It also had wooden docks that were destroyed, as well as the fact that most docks were perpendicular to the wind and wave direction. The boats in this marina didn't have a chance. Most were smashed to pieces.
- Black Point had concrete docks, but these docks were quite low to the water, very short stub piers. They also had lousy pilings, most of which consisted of 4" x 6" boards lag bolted to the concrete. Needless to say, all these faux pilings broke loose. But worse, the marina had little protection from direct wave action from the bay. And with all the boats docked perpendicular, or broadside to wind and waves, these boats didn't have a chance either. Ninety percent were destroyed.
- The saving features of Coco Plum were these: The concrete docks were high, had 12" driven pilings four-cornering each slip, plus the slips were extra wide, providing plenty of room for boats to rise and fall with long dock lines. Equally important were the factors that the slips were nearly all parallel to the wind and wave direction so that no boats were broadside to the storm. Finally, the marina had a very wide buffer zone of mangroves in front of it that knocked down the wave action from the bay.

In other words, Coco Plum had ALL the necessary features to provide maximum protection, while the features of other two were all working against them. Obviously, marinas that have all the favorable factors are going to be far and few between, but at least my little description here will give you some idea of the things to look for. If your marina or dock location is badly exposed, along with having poor docks and pilings, you must relocate your boat if you want it to survive. Equally obvious is the fact that direct coastal frontages offer the greatest threat, so that you ought to be casting your eyes toward inland refuges unless you just happen to have one of those ideal marinas.

Here are some additional tips:

- Determine what is the most common direction of storm approach, and what is the wind direction likely to be. For nearly all of the Gulf and south Atlantic coasts (except Florida west coast), this is likely to be from east to southerly. Spend some time learning how direction of storm approach affects the wind direction. Understand the rotating winds of the storm and how they will affect you depending on where the storm goes. One of the better ways to do this is to cut out a hurricane shape from a piece of paper, and then play around with it on a chart. Spend a mere 30 minutes doing this and you'll learn a lot.

- Keep an eye on the weather, especially from August 1 through October. If you're an Internet user, by far the easiest way to do this is to got to The Weather Channel (weather.com), maps>satellite photos>Caribbean. Bookmark this site and go to it every day during the peak of the season. We don't recommend that you rely on the local news as it is often late in reporting storm development. Plus you don't have to get in front of the TV at a specific time. During peak season, I check the satellite photos twice per day, even more when there's a lot of activity.
- The further inland you can go the better, so long as you're not likely to get trapped in a traffic jam. Far inland treks must be planned well in advance.
- Fight or flight. If you're going to flee the storm, be sure that you have adequate time to do so, and that you're not likely to flee directly into a sudden change in storm direction. It is advisable to move your boat a long distance ONLY to seek a better refuge in the event that you do not have good refuges nearby. Simply trying to flee the storm to get away from it often proves disastrous. Where the storm will ultimately go ashore is too unpredictable.
- Look for canals that do not immediately open onto large bodies of water. Canals that are parallel to coastlines are more secure than canals that are perpendicular to coastlines. Give this a little thought and you should have no trouble understanding why. A canal or river that is parallel to wind and wave direction will suffer the full effects of the storm.
- Determine the likely level of storm surge for your area. You should know this based on historical records since this is highly dependent on the nature of the coast line. With this in hand, consider what's going to happen with that amount of water over your dock. Is you dock designed in such a way as that your boat can survive this, or will it force you to relocate?
- Arrange your storm refuge in advance. I have determined that in most areas of the southeast, there are more than adequate storm refuges available, and that few of these are ever taken advantage of. However, they do take a bit of time in searching them out. Just keep in mind that once you've found yours, usually you can keep coming back to it year after year. All you have to do is renew your agreement with the property owner annually, so that in future years this will be of little burden to you.

Perhaps the most important thing I learned from Andrew was that how well the boat owner understood hurricanes was the single most important factor. The area of south Miami where Andrew struck is notable for its lack of good storm refuge. Much of south Dade county is all coral rock, so there are very few man-made canals. However, the fact that a high percentage of the population were Cuban Americans, people who were born and raised in the Caribbean, meant that these people generally had a higher than average understanding of these storms. The application of this knowledge is what accounted for the high survival rate.

Blackpoint Marina was notable for the complete destruction of nearly all the boats in it. Bad exposure, poor orientation, and narrow slips with a minimal number of pilings is mainly to blame.

One of my favorites: the name on the side of this sail boat, which nearly ended up in the swimming pool, is "NORM L SAILING". Perhaps normal before the storm, but not after. The lack of dock pilings on this canal was responsible for most of the boat damage. There was nothing substantial to moor too. Otherwise, most of the boats would have survived with little damage.

I attribute that factor as the main reason that 50% of the boats and yachts survived, a number that is quite high considering the devastation that storm produced, and the relative lack of good refuge. Compared to much weaker storms such as Opal, that survival rate is extraordinary, indeed.

The bottom line is that if you want your boat to survive, and are willing to devote a bit of time toward understanding how to achieve survival, you stand a better than 90% probability of success.

Finally, the reason we place so much stress on having a plan and making preparations early has to do with last minute panic. Here in south Florida, we've had a lot of false alarms. In years with weak or only moderately strong storms threatening, there was a lot of complacency, and so you think you know what it's going to be like because no one really panics. Well, let me tell you that when you've got a Category 5 storm bearing down on you, everything changes. An entire city living in fear and on the verge of panic is not a pretty sight, what with all those people out there on the roads and in the stores making last minute preparations. Trust me, you do not want to be one of them.

The time to prepare is now.

See also; *Safe Harbor*

Posted May 27, 1999

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Visit davidpascoe.com for his power boat books

David Pascoe - Biography

David Pascoe is a second generation marine surveyor in his family who began his surveying career at age 16 as an apprentice in 1965 as the era of wooden boats was drawing to a close.

Certified by the National Association of Marine Surveyors in 1972, he has conducted over 5,000 pre purchase surveys in addition to having conducted hundreds of boating accident investigations, including fires, sinkings, hull failures and machinery failure analysis.

Over forty years of knowledge and experience are brought to bear in following books. David Pascoe is the author of:

- "**Mid Size Power Boats**" (2003)
- "**Buyers' Guide to Outboard Boats**" (2002)
- "**Surveying Fiberglass Power Boats**" (2001, 2nd Edition - 2005)
- "**Marine Investigations**" (2004).

In addition to readers in the United States, boaters and boat industry professionals worldwide from over 70 countries have purchased David Pascoe's books, since introduction of his first book in 2001.

In 2012, David Pascoe has retired from marine surveying business at age 65.

Biography - Long version

Hurrican Preparations Articles At A Glance

Safe Harbor

The Current Status of Desalination Systems in San Juan County, Washington
Executive Summary
And
Technical Supplement

June 2009

The purpose of this paper is to summarize the current status of public water systems using desalination in San Juan County and to discuss issues impacting its use. This paper draws from material developed for San Juan County (SJC), by the SJC Water Resources Advisory Committee (WRMC) and provides comments by various specialists.

This document includes an Executive Summary and 5 Appendices:

Appendix 1 – Tables, Figures and A Listing of Related Agencies

Appendix 2 – Avoiding or Minimizing Potential Impacts of RO Desalination in San Juan County by Richard R. Strathmann 24 Apr 2009

Appendix 3 – A Description of Design Elements of the Lopez Water LLC RO Plant on Lopez Island, WA by Andrew Evers of Watek

Appendix 4 – Cattle Point Desalination Plant Salinity Measurements by Tom Boydston of Boundary Water Inc. April 28, 2009

Appendix 5 – Detailed Inventory Greater San Juan Reverse Osmosis Systems.

For Technical Questions, Please Call:

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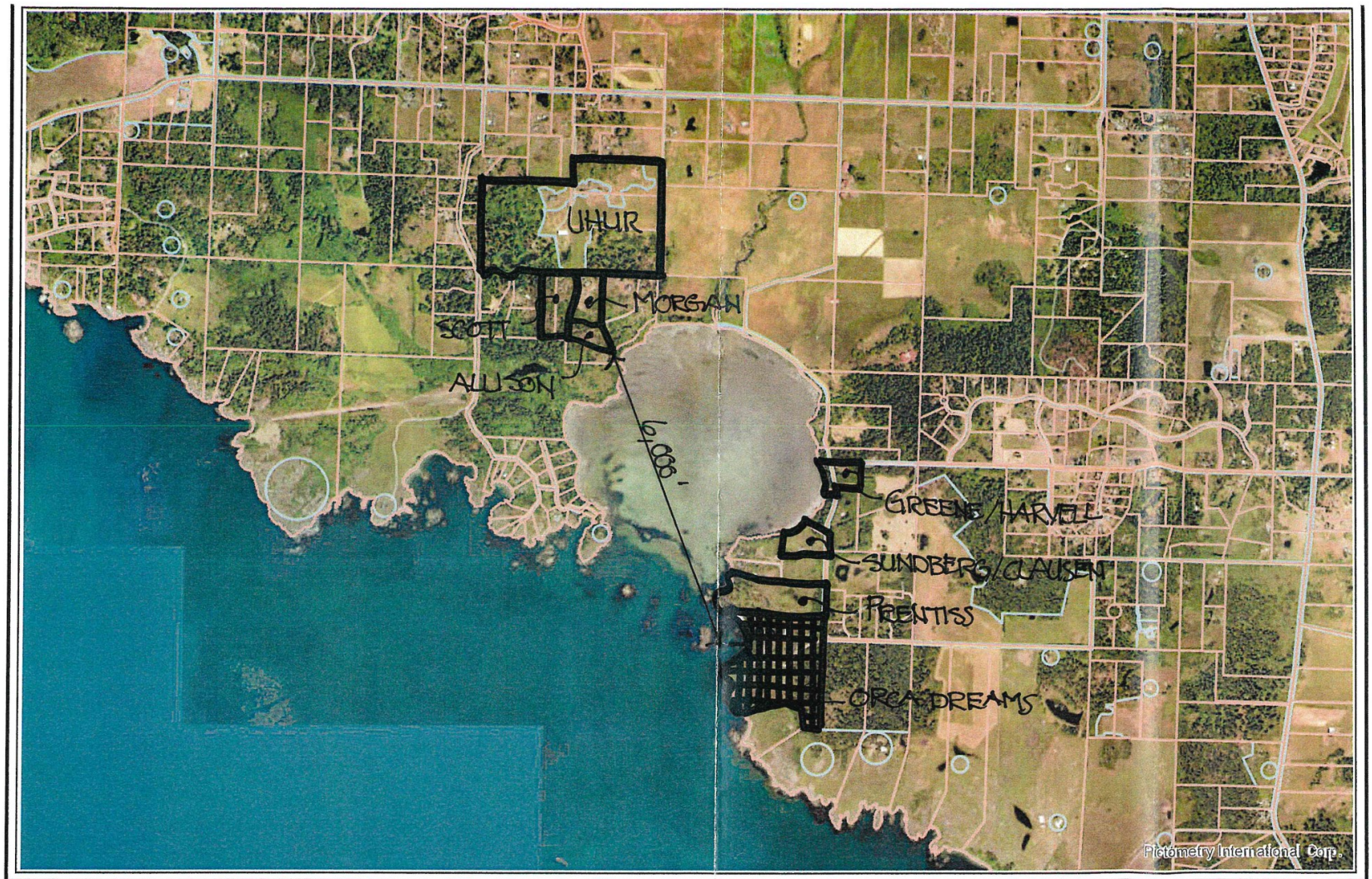
360 468 2693 -- fishguy@rockisland.com



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1 in = 2,000 feet

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Appellant Ownership Map

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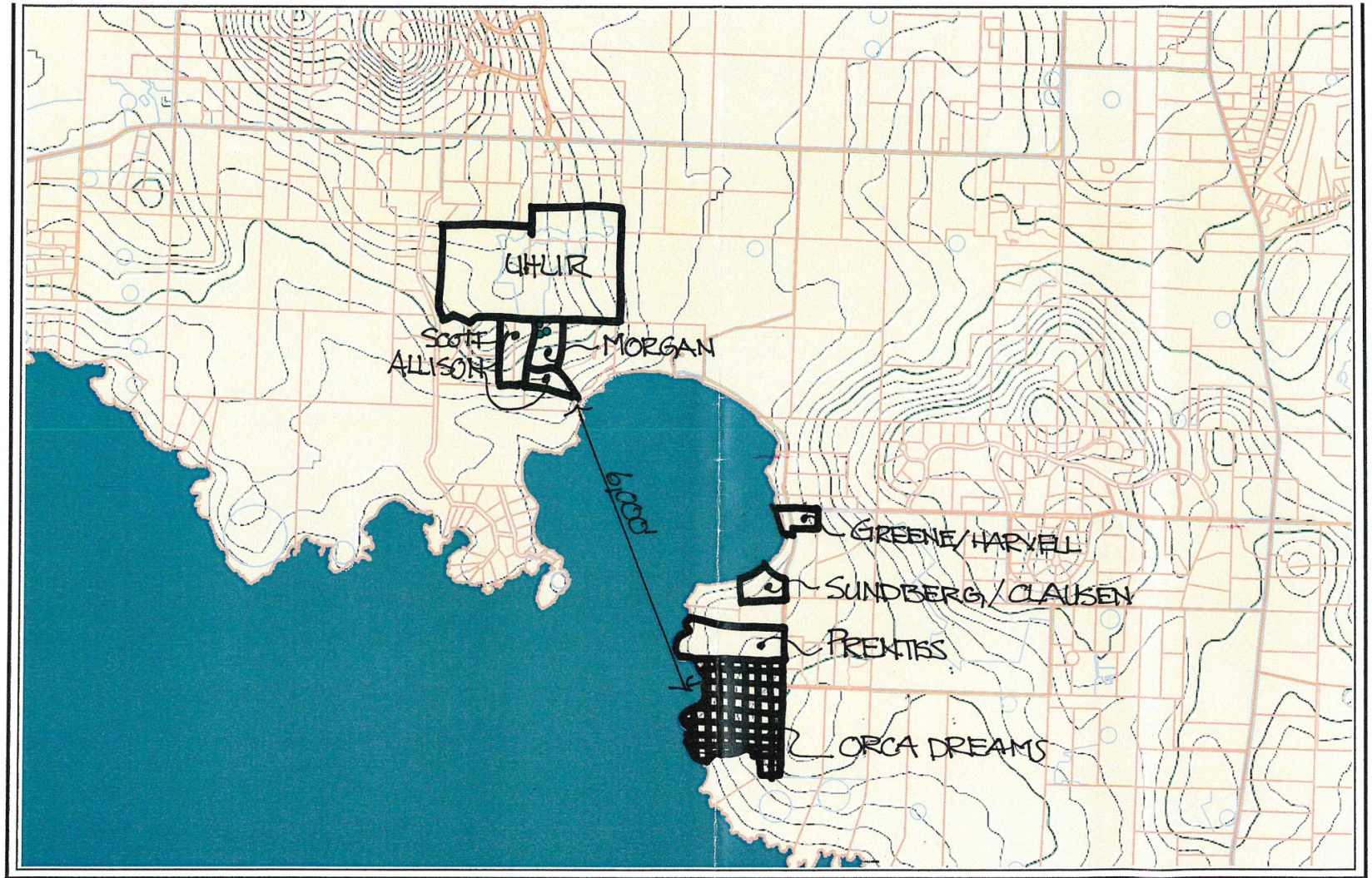

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