



384 Bel Marin Keys Boulevard, Suite 140
Novato, California 94949
(415)-884-8011
www.foth.com

January 15, 2021
Noemi Camargo-Martinez
District Manager
Bel Marin Keys Community Services District (BMKCSD)
4 Montego Key
Novato, CA 94949

RE: Update on Algae Presence in North and South Lagoons

Dear Noemi Camargo-Martinez:

Below is a summary to date of Foth & Van Dyke and Associates, Inc. (Foth) investigations, laboratory results, and reporting regarding the presence of algae first observed in the North Lagoon on or about 11/30/2020 and subsequently also observed in the South Lagoon. Foth has worked closely with the Bel Marin Keys Community Services District's (District) aquatic resources consultant, Eli Kersh of e limnology, to: classify the species of the algae; determine toxicity and/or impacts to the lagoon ecosystems, if any; and develop a short and long-term management plan moving forward. Foth has also held regular update meetings with District staff as well as the Board of Directors to disseminate timely information as it is obtained.

Initial Investigations and Observations

On or about 11/30/2020 a red-colored algae like bloom was discovered within parts of the North Lagoon. As this type of algae has not been observed in either lagoon prior, Foth worked with Eli Kersh a professional limnologist¹ to help determine what this red discoloration was and determine if it was harmful to the water body, aquatic species, waterfowl, and/or to humans. A photo log of various locations and periods in time from 11/30/2020 to 12/30/2020 is attached in Exhibit A. Samples of the algae were obtained on 12/05/2020 and were shipped to EMSL Analytical, Inc. (EMSL) in New Jersey to analyze the aquatic microbiology of the phytoplankton to identify it using microscopic examination². EMSL provided the results of their analyses in the afternoon of 12/09/2020. They were unable to determine the genus of the algae, and therefore were unable to determine the species either even under 400x magnification. They did note that the samples could be "Possibly Green Nanophytoplankton". It is understood that green algae does not produce toxins, however the red discoloration of the water was still unknown.

¹ Limnologists are scientists who study the regional waterways and freshwater ecosystems, conducting chemical analysis and taking plant and water samples to understand ecological impact.

² EMSL analysis is attached in Exhibit B.

Initial Communications and Outreach

On 12/09/2020 the Foth worked with District staff to issue a hand delivered flyer to all residents within the community to share relevant information known at the time and provide guidelines the District was implementing to mitigate the potential spread and/or affects the unknown algae may have on residents, aquatic species and waterfowl that live within the North and South Lagoons ecosystems along with maintaining water within the lagoons and not discharging into the Novato Creek.³

Foth worked with District Staff to notify local and State agencies we felt should be informed regarding the discovery of the unknown algae in the North and South Lagoons. On 12/10/2020 a summary letter⁴ of what was known to date along with: photographs of the algae, the EMSL analyses, and the 12/09/2020 notification to residents was sent via email to the following:

- **County of Marin:** Arti Kundu – Environmental Health Specialist: Akundu@marincounty.org;
- **California Regional Water Quality Control Board Region 2:** info2@waterboards.ca.gov;
- **California Department of Fish and Wildlife:** Eric Larson – Environmental Program Manager: Eric.Larson@wildlife.ca.gov;
- **State Coastal Conservancy:** Jeff Melby: Jeff.Melby@scc.ca.gov

Follow-up Investigations and Observations

Additional observations of the algae indicated it was turning from a red to a cloudy green coloration where it was initially observed while other areas still appeared to be more red in color. The algae was also noticed to be changing locations depending on the prevailing wind direction.

On 12/10/2020 additional samples from both the North and South Lagoons of the red-colored algae were obtained and sent to Bend Genetics, LLC (Bend) in Sacramento, CA. The following day on 12/11/2020 Bend returned their analyses for anatoxin-a, cylindrospermopsin, microcystin/nodularin and saxitoxin as well as TN, ammonia, and Nitrate⁵.

Bend only detected minimal traces of Cylindrospermopsin (CYN), a cyanotoxin, typically associated with freshwater species of cyanobacteria. Due to the low concentration detected in the lagoons, state guidelines do not require notification or posting of the presence of this cyanotoxin. The most dangerous risk to humans to CYN is ingestion and therefore the risks associated with its presence here is low. Bend was able to identify several organisms classified as picophytoplankton which is a term describing the very small size of the organisms that belong to the category. It is possible that these organisms in high concentrations were at least in part responsible for the red

³ A copy of the flyer hand delivered to residents on 12/09/2020 is attached in Exhibit C.

⁴ A copy of the letter sent to the local and state agencies on 12/10/2020 is attached in Exhibit D.

⁵ A copy of the Bend analysis from 12/11/2020 is attached in Exhibit E.

discoloration. There are no known toxins associated with these organisms as their small size does not permit them to contain the (large) genes that are responsible for making known toxins. A nitrogen analysis was also performed which did not show exceptionally high levels that would lead us to believe that it was the cause of the red discoloration. We have not looked at iron so we cannot rule that out yet. The decaying and dying algae may have also contributed to the discoloration as they broke down, however, more investigation would be required to make this determination.

On 12/15/2020 Foth and e limnology contacted the Woods Hole Oceanographic Institute (WHOI) to further try and identify the algae. The goal is to identify the algae such that we can better understand how it may have developed within the lagoon, what its effects are, and how to best manage it presently and in the future. Donald M. Anderson, a Senior Scientist with WHOI reviewed images of the algae and indicated they may be a species of noctiluca which is an organism that produces bioluminescence. WHOI has agreed to receive samples of the algae and provided instructions on how best to collect them and prepare for transport due to the fragile nature of the organisms which will require special preservative which the District now has on hand. However, the samples should be collected when the algae is in its red colored form and at this date the only observations of the algae are after it has turned to the greenish color. If the algae is presented again as red-colored samples will be obtained and sent to WHOI for their analysis.

Follow-up Communications and Outreach

On 12/11/2020 the BMKCSD Board of Directors held an emergency meeting where information relative to the algae in the lagoons was shared with the Board as well as members of the public who attended this virtual meeting held over the Zoom platform. The Board was informed of the notice which was sent to residents on 12/09/2020, the results of the testing from EMSL and the letter to agencies sent on 12/10/2020. The results of the Board meeting were as follows:

- Closures and recommendations as set forth in the 12/09/2020 resident flyer remain;
- Continue observations, investigations / testing, and mapping of algae;
- Update District website as additional information is received. Provide further outreach / dissemination of information as warranted;
- Report back with summary memorandum to the Board for the January 21, 2021 regular Board meeting.

On 12/15/2020 the District received an email response from Carrie Austin, P.E. from the Cal/EPA, SF Bay Water Board requesting the District to report the bloom via their online reporting system at <https://mywaterquality.ca.gov/habs/do/bloomreport.html>. Foth assisted the District in uploading the requested questionnaire on 12/16/2020 to the online portal. The public access website where algae blooms are reported and tracked including the BMKCSD incident can be found here - https://mywaterquality.ca.gov/habs/where/freshwater_events.html. No other responses were received from the other agencies.

Current Observations and Status

There have been no new observations of any red-colored algae in either the North or South Lagoons, however there remains areas of cloudy green-colored algae in both lagoons. The areas in which observations are made vary as winds and weather patterns change. Foth has continued our routine monitoring of the water quality in both lagoons with testing for Dissolved Oxygen (DO), pH, and salinity; all of which have fallen within the normal parameters. Foth has added additional sampling locations out of an abundance of caution which has resulted in no noticeable evidence of oxygen reduction. Following the guidance from the industry experts at WHOI Foth and e limnology have not collected any further physical samples of the algae for testing, however if new areas of red-colored algae return samples will be collected and analyzed again with the additional protocols outlined by WHOI to ensure preservation and integrity of the samples. There also continues to be no reports of unusual wildlife behavior such as dead fish or disturbed waterfowl.

Next Steps

Foth in conjunction with District staff will continue to update the BMKCSD Board of Directors and the BMKCSD community at large as more information is realized. Foth and e limnology will continue to monitor both the North and South Lagoons and if conditions warrant additional testing and laboratory analyses will be performed. In the meantime, if you have any questions, concerns or need any further information please contact me at 415-596-2710 or via email at Kyle.MacDonald@Foth.com

Sincerely,

Foth & Van Dyke and Associates, Inc.



Kyle MacDonald
Project Manager / Client Coordinator

cc: BMKCSD Board of Directors
Carey Parent (Foth)
Adrian Cormier (Foth)
Eli Kersh (e limnology)

Attachments: Exhibit A – Photo Log of Algae in North and South Lagoons
Exhibit B – EMSL analyses dated 12/10/2020
Exhibit C – Flyer hand delivered to residents on 12/09/2020
Exhibit D – Letter sent to the local and state agencies on 12/10/2020
Exhibit E – Bend analyses dated 12/11/2020

Exhibit A – Photo Log of Algae in North and South Lagoons

Client's Name: Bel Marin Keys Community Services District	Site Location: BMKCSD: North and South Lagoons	Project No. 0020B046.00
---	--	-----------------------------------

Photo No. 1	Date: 11/30/2020
Direction Photo Taken: N/A	
Photo Taken By: A. Cormier	
Description: North Lagoon adjacent to the Gardens Dock.	



Photo No. 2	Date: 11/30/2020
Direction Photo Taken: N/A	
Photo Taken By: A. Cormier	
Description: North Lagoon adjacent to 109 Caribe.	

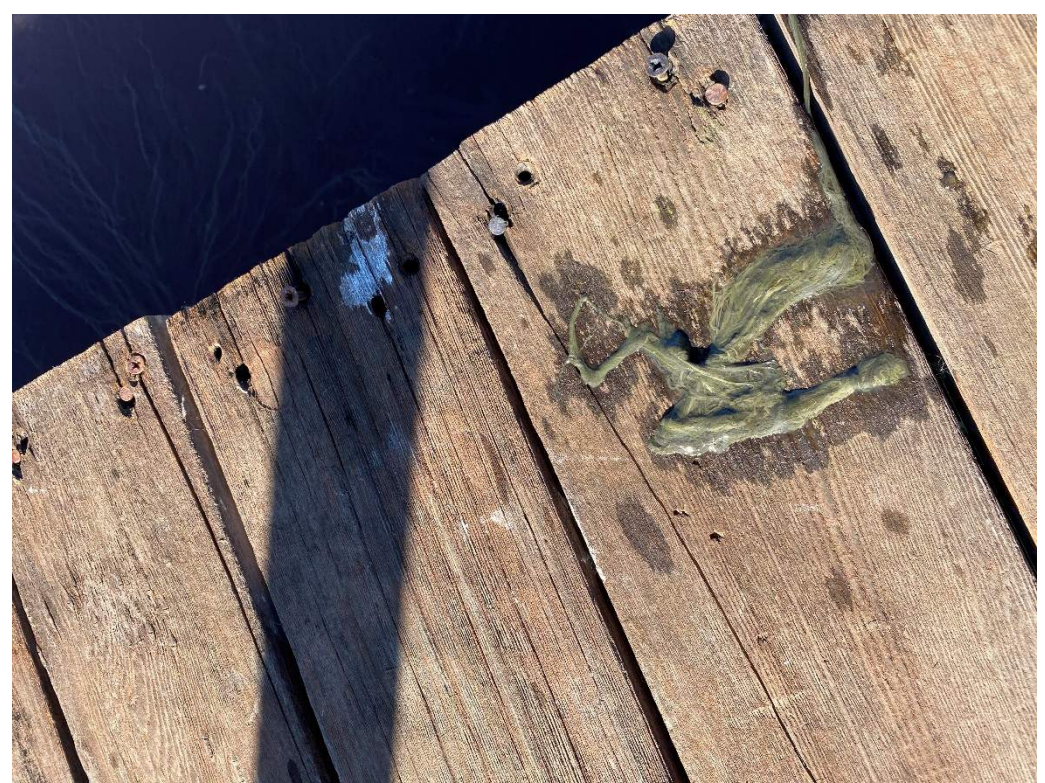


Client's Name: Bel Marin Keys Community Services District	Site Location: BMKCSD: North and South Lagoons	Project No. 0020B046.00
---	--	-----------------------------------

Photo No. 3	Date: 11/30/2020
Direction Photo Taken: Southeast	
Photo Taken By: A. Cormier	
Description: North Lagoon adjacent to the Gardens Dock	



Photo No. 4	Date: 11/30/2020
Direction Photo Taken: N/A	
Photo Taken By: A. Cormier	
Description: Physical sample of the algae removed from the North Lagoon.	

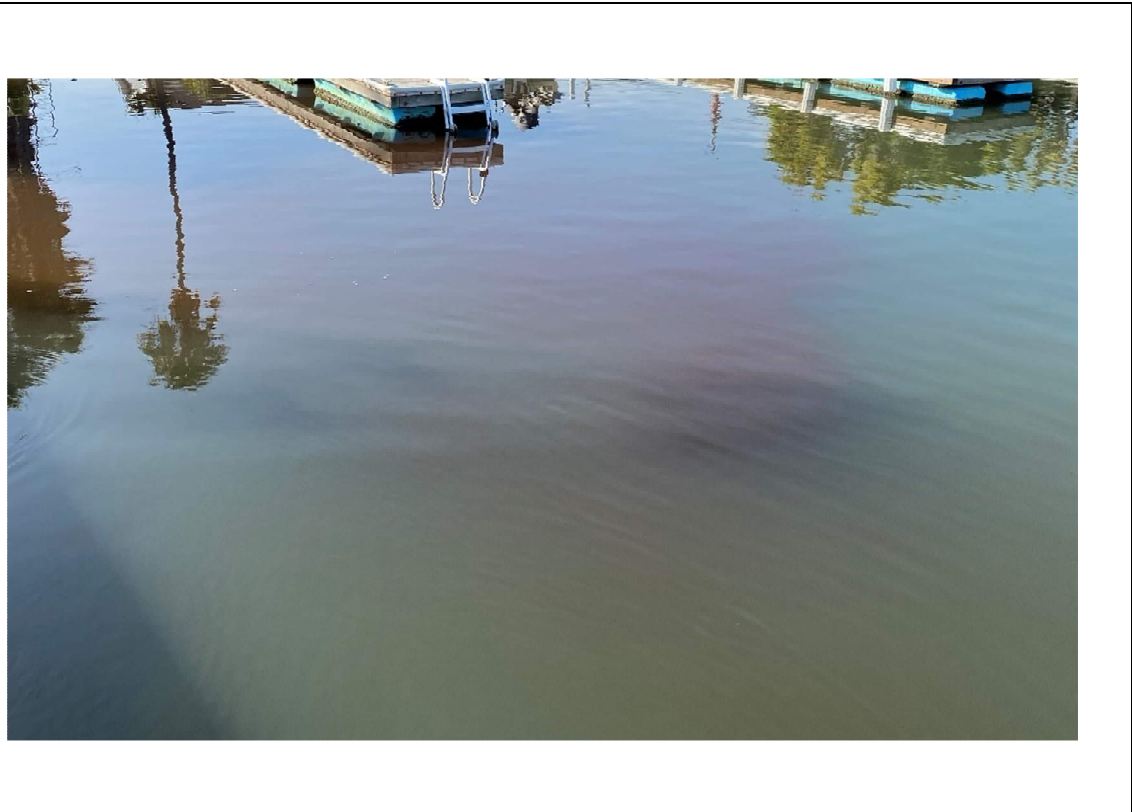


Client's Name: Bel Marin Keys Community Services District	Site Location: BMKCSD: North and South Lagoons	Project No. 0020B046.00
---	--	-----------------------------------

Photo No. 5	Date: 12/04/2020
Direction Photo Taken: Southeast	
Photo Taken By: A. Cormier	
Description: North Lagoon Calypso Shores Boat Ramp Area.	



Photo No. 6	Date: 12/04/2020
Direction Photo Taken: N/A	
Photo Taken By: A. Cormier	
Description: North Lagoon on the east side of Caribe.	



Client's Name: Bel Marin Keys Community Services District	Site Location: BMKCSD: North and South Lagoons	Project No. 0020B046.00
---	--	-----------------------------------

Photo No. 7	Date: 12/04/2020
Direction Photo Taken: N/A	
Photo Taken By: A. Cormier	
Description: North Lagoon southeast side of Caribe.	

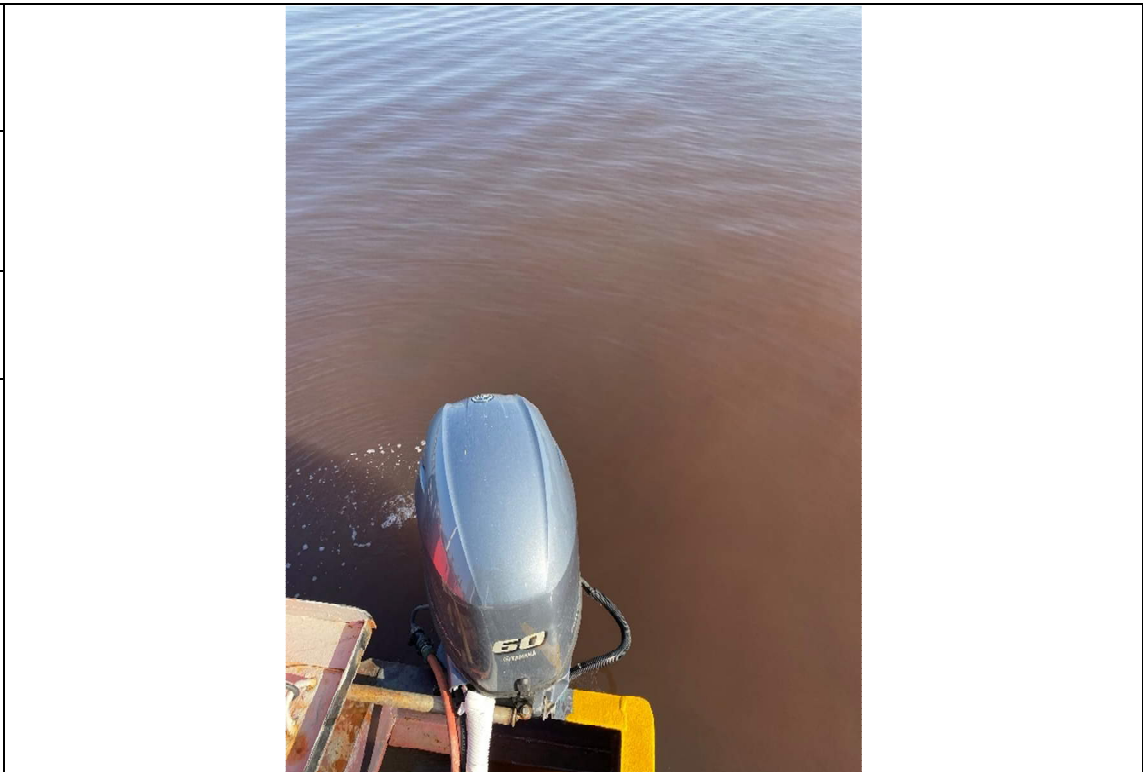


Photo No. 8	Date: 12/04/2020
Direction Photo Taken: N/A	
Photo Taken By: A. Cormier	
Description: North Lagoon just west of the Gardens Dock.	



Client's Name: Bel Marin Keys Community Services District	Site Location: BMKCSD: North and South Lagoons	Project No. 0020B046.00
---	--	-----------------------------------

Photo No. 9	Date: 12/07/2020
Direction Photo Taken: Southeast	
Photo Taken By: A. Cormier	
Description: North Lagoon: Garden Dock Area.	



Photo No. 10	Date: 12/07/2020
Direction Photo Taken: N/A	
Photo Taken By: A. Cormier	
Description: North Lagoon: Calypso Shores Boat Ramp Area. Algae is turning a more green color and less red.	

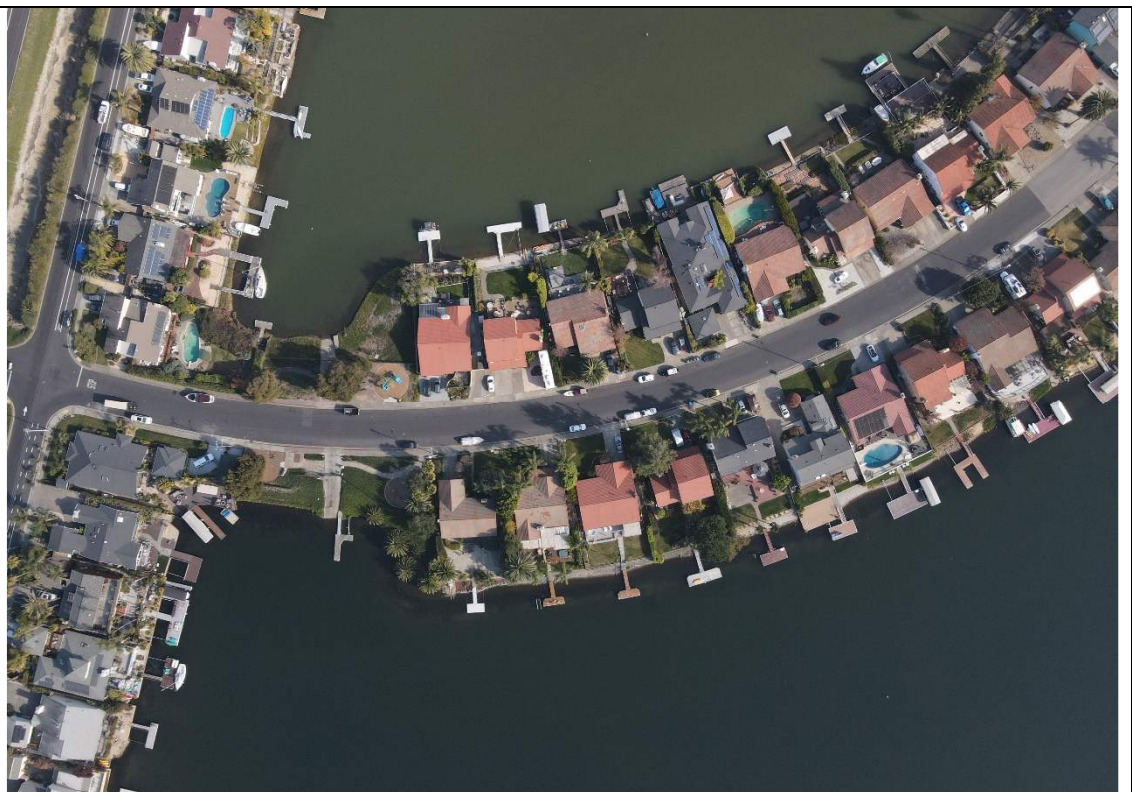


Client's Name: Bel Marin Keys Community Services District	Site Location: BMKCSD: North and South Lagoons	Project No. 0020B046.00
---	--	-----------------------------------

Photo No. 11	Date: 12/09/2020
Direction Photo Taken: N/A	
Photo Taken By: Others	
Description: North Lagoon: Aerial view of the 200 block area of Montego Key.	



Photo No. 12	Date: 12/09/2020
Direction Photo Taken: N/A	
Photo Taken By: Others	
Description: South Lagoon: Aerial view of Bahama Reef Boat Ramps.	



Client's Name: Bel Marin Keys Community Services District	Site Location: BMKCSD: North and South Lagoons	Project No. 0020B046.00
---	--	-----------------------------------

Photo No. 13	Date: 12/09/2020
Direction Photo Taken: N/A	
Photo Taken By: Others	
Description: South Lagoon: Aerial view of sunrise lagoon / end of BMK Blvd. and Bahama Reef.	



Photo No. 14	Date: 12/09/2020
Direction Photo Taken: N/A	
Photo Taken By: Others	
Description: North Lagoon: Aerial view of the northern side at the end of Caribe.	



Client's Name: Bel Marin Keys Community Services District	Site Location: BMKCSD: North and South Lagoons	Project No. 0020B046.00
---	--	-----------------------------------

Photo No. 15	Date: 12/09/2020
Direction Photo Taken: N/A	
Photo Taken By: Others	
Description: North Lagoon: Aerial view of the intersection of Caribe and BMK Blvd.	



Client's Name: Bel Marin Keys Community Services District	Site Location: BMKCSD: North and South Lagoons	Project No. 0020B046.00
---	--	-----------------------------------

Photo No. 16	Date: 12/15/2020
Direction Photo Taken: Right-click here	
Photo Taken By: Others	
Description: North Lagoon: Aerial stitched photos along Montego Key.	



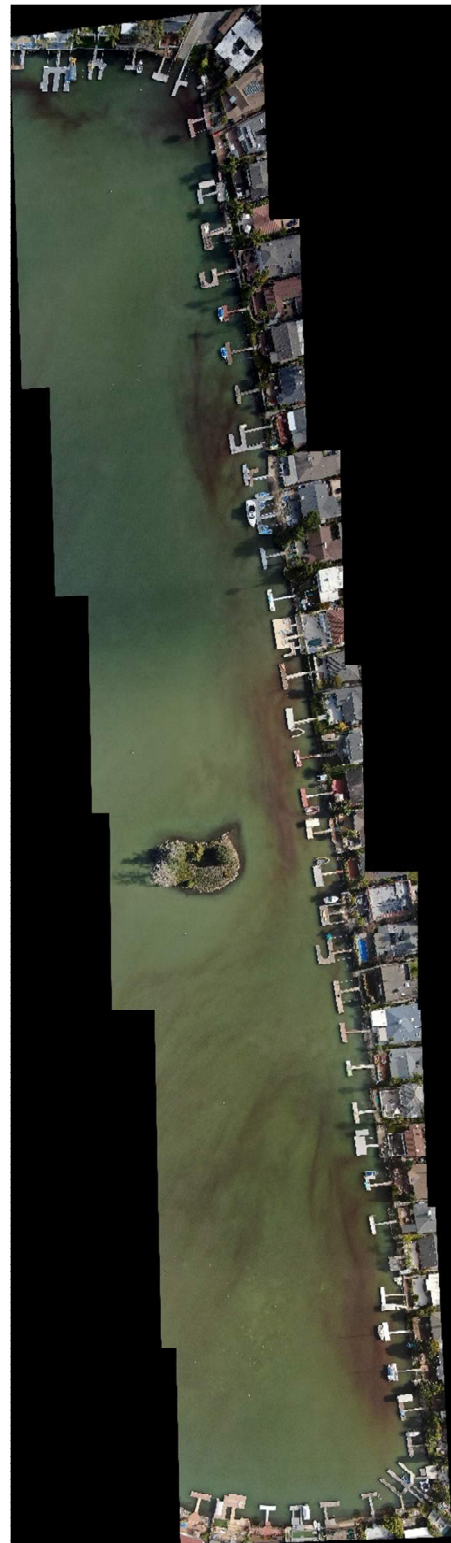
Client's Name: Bel Marin Keys Community Services District	Site Location: BMKCSD: North and South Lagoons	Project No. 0020B046.00
---	--	-----------------------------------

Photo No. 17	Date: 12/15/2020
------------------------	----------------------------

Direction Photo Taken: N/A

Photo Taken By: Others

Description:
 North Lagoon: Aerial stitched photos between Caribe and Calypso Shores.



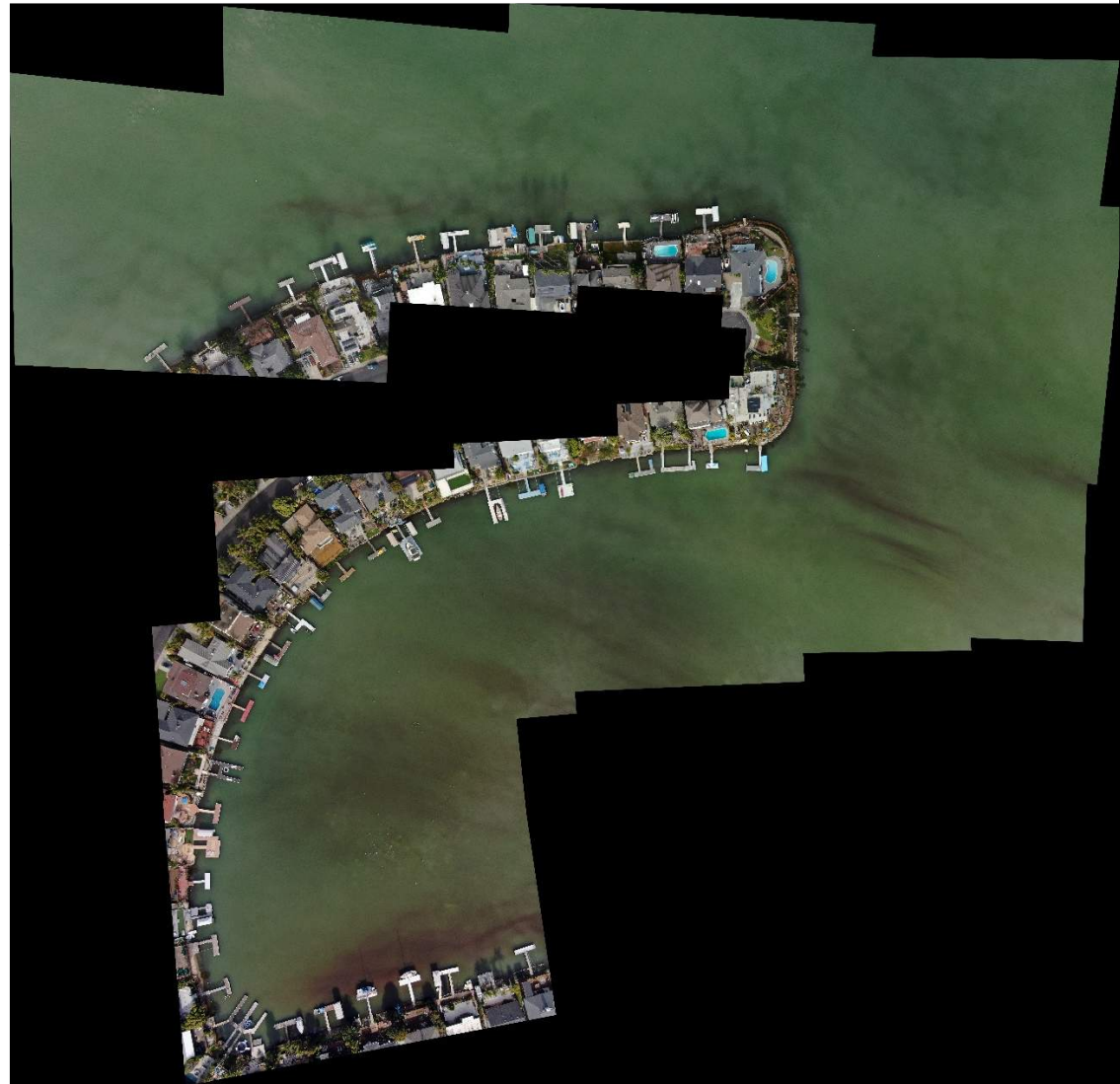
Client's Name: Bel Marin Keys Community Services District	Site Location: BMKCSD: North and South Lagoons	Project No. 0020B046.00
---	--	-----------------------------------

Photo No. 18	Date: 12/15/2020
-------------------------------	----------------------------

Direction Photo Taken:
N/A

Photo Taken By:
Others

Description:
North Lagoon: Aerial stitched photos of Caribe. North is up.



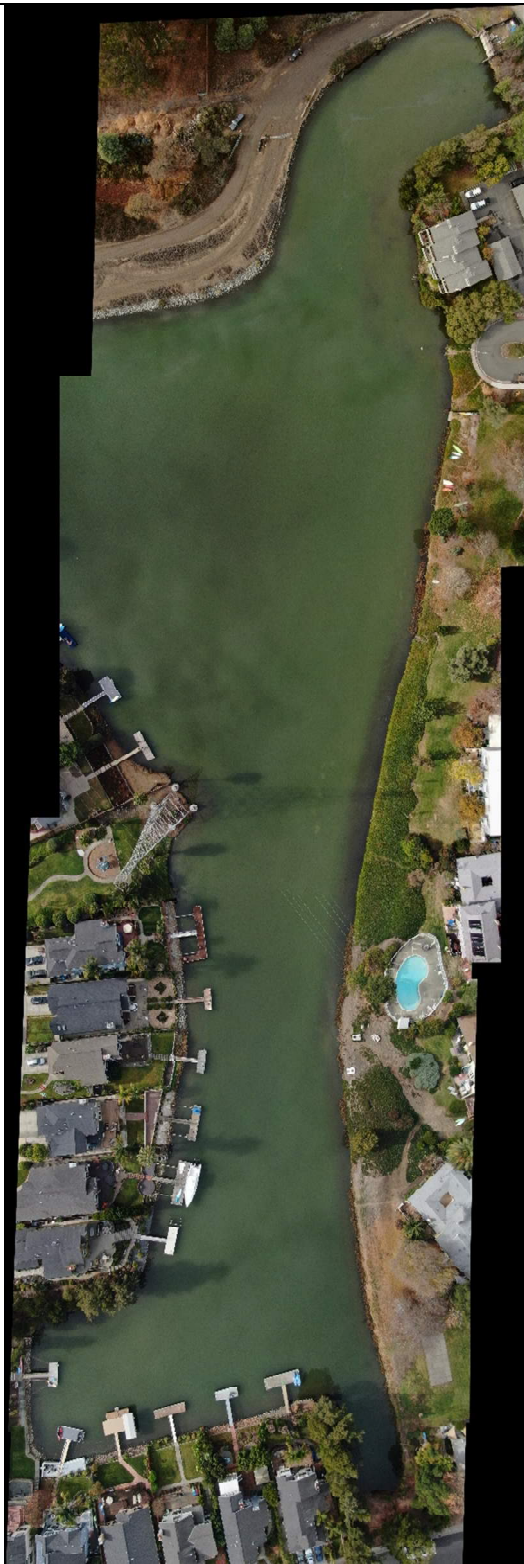
Client's Name: Bel Marin Keys Community Services District	Site Location: BMKCS D: North and South Lagoons	Project No. 0020B046.00
---	---	-----------------------------------

Photo No. 19	Date: 12/15/2020
------------------------	----------------------------

Direction Photo Taken: N/A

Photo Taken By: Others

Description:
 South Lagoon: Aerial stitched photos of the culvert gates / Gardens / north side of Cavalla Cay.



Client's Name: Bel Marin Keys Community Services District	Site Location: BMKCSD: North and South Lagoons	Project No. 0020B046.00
---	--	-----------------------------------

Photo No. 20	Date: 12/15/2020
------------------------	----------------------------

Direction Photo Taken: N/A

Photo Taken By: Others

Description:
 South Lagoon: Aerial stitched photos of the end of Bahama Reef



Client's Name: Bel Marin Keys Community Services District	Site Location: BMKCSD: North and South Lagoons	Project No. 0020B046.00
---	--	-----------------------------------

Photo No. 21	Date: 12/28/2020
Direction Photo Taken: N/A	
Photo Taken By: A. Cormier	
Description: North Lagoon: Calypso Shores Boat Ramp	



Photo No. 22	Date: 12/28/2020
Direction Photo Taken: N/A	
Photo Taken By: A. Cormier	
Description: North Lagoon: Calypso Shores Boat Ramp	



Client's Name: Bel Marin Keys Community Services District	Site Location: BMKCSD: North and South Lagoons	Project No. 0020B046.00
---	--	-----------------------------------

Photo No. 23	Date: 01/09/2021
Direction Photo Taken: N/A	
Photo Taken By: A. Cormier	
Description: North Lagoon: Calypso Shores Boat Ramp	



Exhibit B – EMSL analyses dated 12/10/2020



EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077. 856.858.4800

Attn: Eli Kersh
Client: E Limnology
122 Castro St
Richmond, CA 94801
Phone: (510) 560-5651
Project: BMK 1

EMSL Order: 372020213
Received: 12/07/20
Analysis Date: 12/09/20
Report Date: 12/10/20

Phytoplankton Identification Using Microscopic Examination **EMSL Method: M602**

Lab Sample Number	Client Sample ID	Sample Location	Genus	Species	Abundance
372020213-1	BMK1	Marin County	*Unidentifiable		High

Comments: ND - none detected

* Possibly Green Nanophytoplankton

EMSL maintains liability limited to cost of analysis. Interpretation of the data contained in this report is the responsibility of the client. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. The above test report relates only to the items tested. EMSL bears no responsibility for sample collection activities or analytical method limitations.



Exhibit C – Flyer hand delivered to residents on 12/09/2020

*****IMPORTANT HEALTH NOTICE*****

PLEASE READ IMMEDIATELY AND TAKE IMMEDIATE ACTIONS

December 9, 2020

Dear Resident:

The Bel Marin Keys Community Services District (BMKCS D) is currently monitoring, sampling, and mapping an OUTBREAK OF RED-COLORED ALGAE (possible Red Tide) in the NORTH LAGOON. SEE ATTACHED MAP FOR DEPICTION OF OUTBREAK AS OF 12:00 PM ON 12/7/2020.

UNTIL FURTHER NOTICE, BMKCS D RECOMMENDS THAT EVERYONE,

- **Refrain from physical contact with water from the lagoon including swimming and pets;**
 - **Do not eat any fish or shellfish from the lagoon;**
 - **If a strong odor is noticed near the lagoon residents should limit their exposure to the air;**
 - **Limit contact with the affected areas (especially kayaks, smaller vessels) and if you remove anything from the lagoon from your property, you must wash down prior to moving or transporting;**
 - **Do not attempt to remove or bring any of the algae ashore;**
 - **There are no restrictions on watercraft in the lagoon, however, mariners should avoid traversing through any algae blooms;**
 - **In rare instances waterfowl who may eat affected fish or shellfish may act erratically and should be avoided;**
- AND**
- **Do NOT bring any trailers or boats or vehicles into the South Lagoon that have had contact with the North Lagoon or the Creek until further notice.**

The BMKCS D has closed the North Lock and Calypso Shores boat ramp out of an abundance of caution to mitigate spread into the Novato Creek and the South Lagoon. Again, do not have a vehicle, trailer, boat, or other item that was in contact with the North Lagoon make contact with the Novato Creek or the South Lagoon. The microscopic nature of the algae can be not just on the surface of boats, for example, but in parts of the engines and bilge pumps for example, which can then be delivered to the Novato Creek and/or South Lagoon. Automobiles and trailers likewise can carry and deliver algae despite best efforts.

Samples of the algae were shipped to a lab on Saturday, December 5th, 2020 for testing and analysis to determine the level of toxicity, if any, of the algae. We have also engaged a marine aquatic biologist and continue to monitor the situation. While there have been algae outbreaks in the North and South Bel Marin Keys Lagoons over the years, some greater than others, this particular outbreak is notable, distinct and not characteristic of what historically has been a part of the BMKCS D lagoon ecosystem. Northern California and the west coast have been experiencing increases in algae blooms including Red Tide.

The algae at this point has not presented itself in a visual / substantial way in the South Lagoon, however the South Lagoon is being monitored daily for changes. If water quality, clarity, or significant changes is observed in the South Lagoon by residents please notify the BMKCS D. The BMKCS D will be updating the District website (www.bmkcsd.us) with information as it is received and will share additional information with other reporting agencies as required and or in an abundance of caution. Additionally, once we have determined the level of potential toxicity within the specific species of algae, a notice will be provided on any additional actions the District will be undertaking regarding the algae bloom. The BMKCS D will hold an Emergency Meeting on Friday, December 11, 2020 at 7PM to provide an update to the community. Instructions for attending the meeting virtually will be posted on the District website.

If you have any questions regarding this notice, please email the BMKCS D office at admin@bmkcsd.us or you may leave a message on the District voicemail at 415-883-4222. We thank you for your cooperation, diligence, and attention to this very important water quality issue. Please know that more information will be shared as it is received via the website and as warranted written notices to residents.

-BMKCS D

*****MAP OF NOTICEABLE ALGAE PRESENT AS OF 12/7/2020 IS ON THE BACK SIDE OF THIS NOTICE*****

North Lagoon Noticeable Locations of Algae as of 12:00PM on 12/07/2020

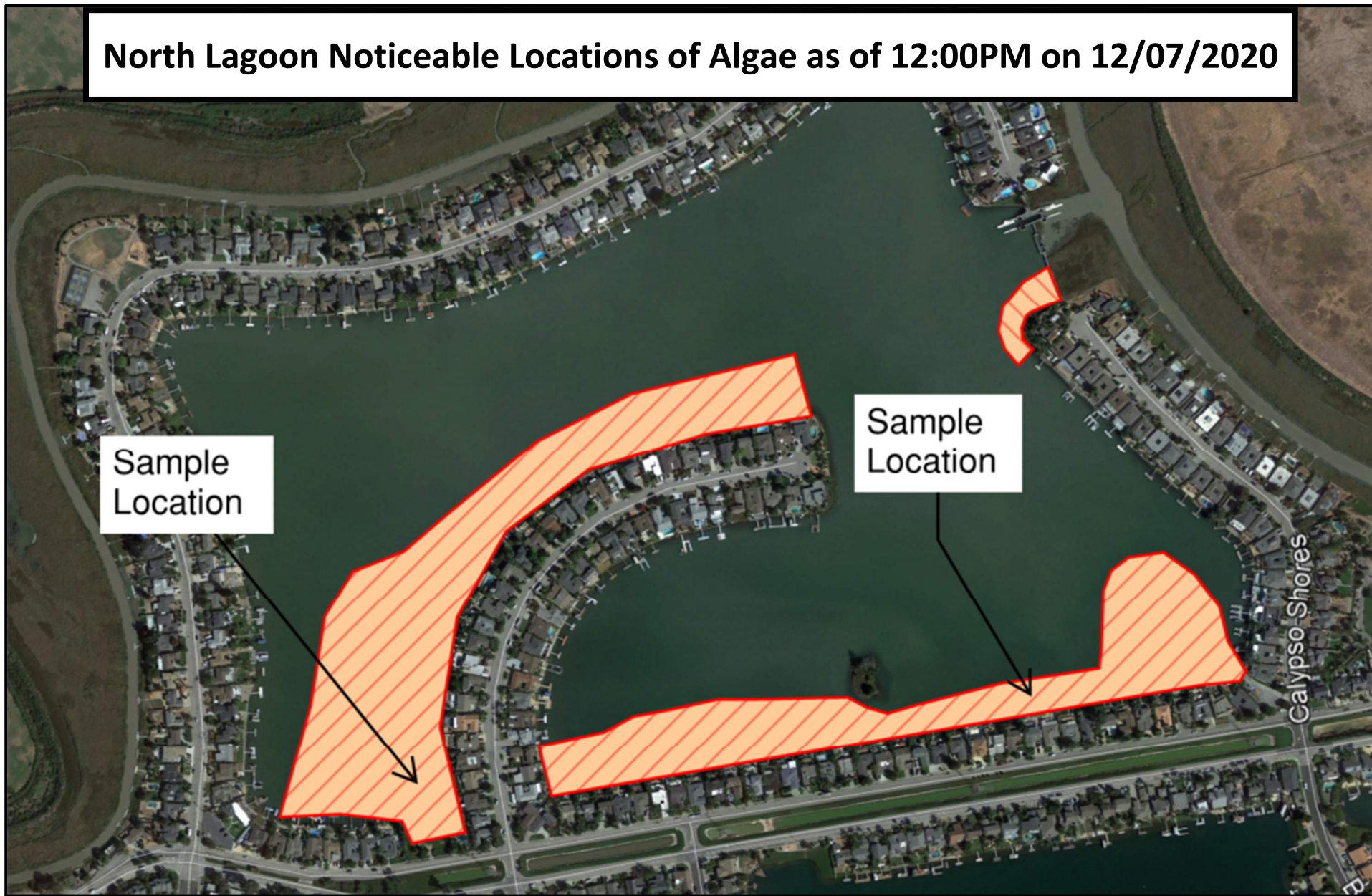


Exhibit D – Letter sent to the local and state agencies on 12/10/2020



December 10, 2020

To:

County of Marin: Arti Kundu – Environmental Health Specialist: Akundu@marincounty.org;

California Regional Water Quality Control Board Region 2: info2@waterboards.ca.gov;

California Department of Fish and Wildlife:

Eric Larson – Environmental Program Manager: Eric.Larson@wildlife.ca.gov;

State Coastal Conservancy: Jeff Melby: Jeff.Melby@scc.ca.gov

**Re: Bel Marin Keys Community Services District
Red-Colored Algae Present in North and South Lagoons**

The Bel Marin Keys Community Services (BMKCS D) is an unincorporated Special District within Marin County, CA. The BMKCS D manages and operates two (2) separate salt-water lagoon water bodies (North Lagoon and South Lagoon) which are each connected to Novato Creek via a manually operated navigation lock structure. The Novato Creek subsequently terminates into San Pablo Bay (northern part of San Francisco Bay). 500+ homes are located on the lagoons with direct access to recreational activities such as: boating, swimming and fishing enjoyed by residents within the District. Last week on or about 11/30/2020 a red-colored algae like plume was discovered within parts of the North Lagoon and has subsequently been noticed in the South Lagoon this week (12/09/2020). Photographs of the red-colored algae are attached for reference. Out of an abundance of caution, we worked with a professional limnologist to help determine what this red discoloration was and if it was harmful to the water body, aquatic species, waterfowl, and/or to humans. In an abundance of caution, we are notifying your agency.

Initial results have been inclusive so far, but have been determined by EMSL Analytical, Inc. in Cinnaminson, NJ to be "Possibly Green Nanophytoplankton". These results are attached. Again, out of an abundance of caution we are sending additional samples of the red-colored algae to Bend Genetics, LLC in Sacramento, CA to be analyzed for: anatoxin-a, cylindrospermopsin, microcystin/nodularin and saxitoxin as well as TN, ammonia, and Nitrate. We are working to have the results of these analyses on 12/11/2020 (end of day). We will share the results of these analyses with all parties / agencies on this email. On 12/09/2020 the BMKCS D issued the attached notice via hand delivery to all residents within the community to share the information we were currently in possession of which provided guidelines we were implementing as the BMKCS D works to mitigate the potential spread and/or affects the unknown algae may have on our residents, aquatic species and waterfowl that live within the North and South Lagoons ecosystems along with maintaining water within the lagoons and not discharging into the Novato Creek .

If you or your agency / regulatory body may have any questions in relation to this matter please let us know.

Thank you,

Bel Marin Keys Community Services District

Noemi Camargo-Martinez
District Manager

CC: BMKCS D Board of Directors
Foth
Eli Kersh: e limnology

Attachments:

1. Color Photograph of Algae
2. EMSL Analytical Testing Results
3. Notification Issued to Residents

Attachment 1: Color Photograph of Algae



Photo 1: Photo taken on 11/30/2020 in the North Lagoon

Attachment 2: EMSL Analytical Testing Results



EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077. 856.858.4800

Attn: Eli Kersh
Client: E Limnology
122 Castro St
Richmond, CA 94801
Phone: (510) 560-5651
Project: BMK 1

EMSL Order: 372020213
Received: 12/07/20
Analysis Date: 12/09/20
Report Date: 12/10/20

Phytoplankton Identification Using Microscopic Examination

EMSL Method: M602

Lab Sample Number	Client Sample ID	Sample Location	Genus	Species	Abundance
372020213-1	BMK1	Marin County	*Unidentifiable		High

Comments: ND - none detected

* Possibly Green Nanophytoplankton

EMSL maintains liability limited to cost of analysis. Interpretation of the data contained in this report is the responsibility of the client. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. The above test report relates only to the items tested. EMSL bears no responsibility for sample collection activities or analytical method limitations.



Attachment 3: Notification Issued to Residents

IMPORTANT HEALTH NOTICE

PLEASE READ IMMEDIATELY AND TAKE IMMEDIATE ACTIONS

December 9, 2020

Dear Resident:

The Bel Marin Keys Community Services District (BMKCS D) is currently monitoring, sampling, and mapping an OUTBREAK OF RED-COLORED ALGAE (possible Red Tide) in the NORTH LAGOON. SEE ATTACHED MAP FOR DEPICTION OF OUTBREAK AS OF 12:00 PM ON 12/7/2020.

UNTIL FURTHER NOTICE, BMKCS D RECOMMENDS THAT EVERYONE,

- Refrain from physical contact with water from the lagoon including swimming and pets;
 - Do not eat any fish or shellfish from the lagoon;
 - If a strong odor is noticed near the lagoon residents should limit their exposure to the air;
 - Limit contact with the affected areas (especially kayaks, smaller vessels) and if you remove anything from the lagoon from your property, you must wash down prior to moving or transporting;
 - Do not attempt to remove or bring any of the algae ashore;
 - There are no restrictions on watercraft in the lagoon, however, mariners should avoid traversing through any algae blooms;
 - In rare instances waterfowl who may eat affected fish or shellfish may act erratically and should be avoided;
- AND**
- Do NOT bring any trailers or boats or vehicles into the South Lagoon that have had contact with the North Lagoon or the Creek until further notice.

The BMKCS D has closed the North Lock and Calypso Shores boat ramp out of an abundance of caution to mitigate spread into the Novato Creek and the South Lagoon. Again, do not have a vehicle, trailer, boat, or other item that was in contact with the North Lagoon make contact with the Novato Creek or the South Lagoon. The microscopic nature of the algae can be not just on the surface of boats, for example, but in parts of the engines and bilge pumps for example, which can then be delivered to the Novato Creek and/or South Lagoon. Automobiles and trailers likewise can carry and deliver algae despite best efforts.

Samples of the algae were shipped to a lab on Saturday, December 5th, 2020 for testing and analysis to determine the level of toxicity, if any, of the algae. We have also engaged a marine aquatic biologist and continue to monitor the situation. While there have been algae outbreaks in the North and South Bel Marin Keys Lagoons over the years, some greater than others, this particular outbreak is notable, distinct and not characteristic of what historically has been a part of the BMKCS D lagoon ecosystem. Northern California and the west coast have been experiencing increases in algae blooms including Red Tide.

The algae at this point has not presented itself in a visual / substantial way in the South Lagoon, however the South Lagoon is being monitored daily for changes. If water quality, clarity, or significant changes is observed in the South Lagoon by residents please notify the BMKCS D. The BMKCS D will be updating the District website (www.bmkcsd.us) with information as it is received and will share additional information with other reporting agencies as required and or in an abundance of caution. Additionally, once we have determined the level of potential toxicity within the specific species of algae, a notice will be provided on any additional actions the District will be undertaking regarding the algae bloom. The BMKCS D will hold an Emergency Meeting on Friday, December 11, 2020 at 7PM to provide an update to the community. Instructions for attending the meeting virtually will be posted on the District website.

If you have any questions regarding this notice, please email the BMKCS D office at admin@bmkcsd.us or you may leave a message on the District voicemail at 415-883-4222. We thank you for your cooperation, diligence, and attention to this very important water quality issue. Please know that more information will be shared as it is received via the website and as warranted written notices to residents.

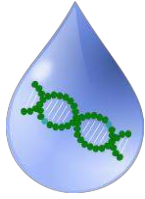
-BMKCS D

MAP OF NOTICEABLE ALGAE PRESENT AS OF 12/7/2020 IS ON THE BACK SIDE OF THIS NOTICE

North Lagoon Noticeable Locations of Algae as of 12:00PM on 12/07/2020



Exhibit E – Bend analyses dated 12/11/2020



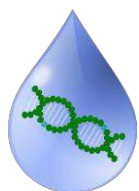
Bend Genetics, LLC
87 Scripps Drive, Ste. 301
Sacramento, CA 95825
Tel: (916) 550-1048

Date: 12/11/2020
Subject: Algae testing results
From: Tim Otten, Laboratory Director
To: Eli Kersh

Testing results are attached for microscopy and ELISA analyses conducted on two lagoon samples collected on 12/10/2020. All data have been reviewed and are considered final.

Analyses included in this report:

- Quantification of total cyanobacterial toxins (anatoxin-a, cylindrospermopsin, microcystin/nodularin and saxitoxin) by enzyme linked immunosorbent assay (ELISA).
- Quantification of total nitrogen (persulfate digestion), total ammonia and total nitrate using spectrophotometric methods (10208, 10205 and 10206, respectively).
- Identification and photomicrographs of dominant algae.



Bend Genetics, LLC
87 Scripps Drive, Ste. 301
Sacramento, CA 95825
Tel: (916) 550-1048

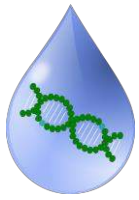
Project: eLimnology
Analysis for Toxigenic Algae

Project #: BMK - Foth

Reported: 12/11/2020 16:05

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Location	Date Collected	Date Received	Matrix	Preserved	BG_ID
NL CSBR	North Lagoon	12/10/2020 12:30	12/10/2020 13:10	Water	N	EL01
SL Sunrise	South Lagoon	12/10/2020 12:35	12/10/2020 13:10	Water	N	EL02

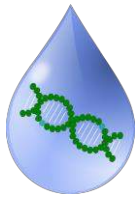


Bend Genetics, LLC
87 Scripps Drive, Ste. 301
Sacramento, CA 95825
Tel: (916) 550-1048

Project: eLimnology
Analysis for Toxigenic Algae
Project #: BMK - Foth
Reported: 12/11/2020 16:05

SAMPLE RESULTS

Sample ID	Method	Target	Result	Quantitation		
				Limit	Units	Notes
NL CSBR	ELISA	Anatoxin-a	ND	0.15	µg/L	U
NL CSBR	ELISA	Cylindrospermopsin	0.39	0.05	µg/L	
NL CSBR	ELISA	Microcystin/Nod.	ND	0.15	µg/L	U
NL CSBR	ELISA	Saxitoxin	ND	0.10	µg/L	U
NL CSBR	Spectrophotometry	Total Nitrogen	1.17	1.00	mg/L	
NL CSBR	Spectrophotometry	Total Ammonia	ND	0.015	mg/L	U
NL CSBR	Spectrophotometry	Total Nitrate	0.203	0.23	mg/L	
SL Sunrise	ELISA	Anatoxin-a	ND	0.15	µg/L	U
SL Sunrise	ELISA	Cylindrospermopsin	0.15	0.05	µg/L	
SL Sunrise	ELISA	Microcystin/Nod.	ND	0.15	µg/L	U
SL Sunrise	ELISA	Saxitoxin	ND	0.10	µg/L	U
SL Sunrise	Spectrophotometry	Total Nitrogen	0.86	1.00	mg/L	C1,J
SL Sunrise	Spectrophotometry	Total Ammonia	ND	0.015	mg/L	U
SL Sunrise	Spectrophotometry	Total Nitrate	0.198	0.23	mg/L	C1,J





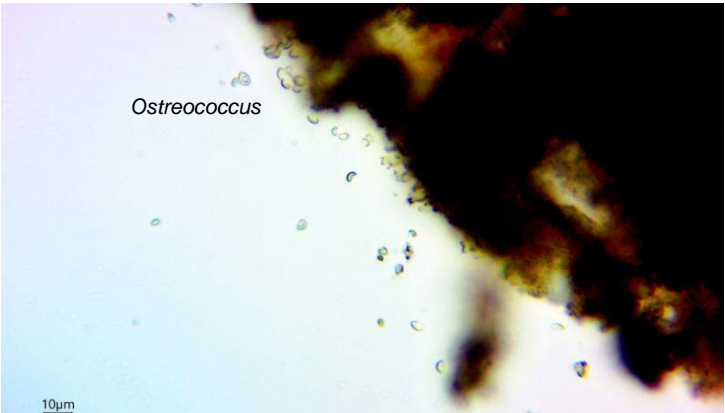
Bend Genetics, LLC
87 Scripps Drive, Ste. 301
Sacramento, CA 95825
Tel: (916) 550-1048

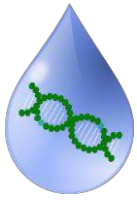
Project: eLimnology
Analysis for Toxigenic Algae

Project #: BMK - Foth

Reported: 12/11/2020 16:05

MICROSCOPY RESULTS - Identification of CyanoHABs

Sample ID	Dominant	Sub-dominant	Also present	Notes
NL CSBR	NA			No cyanobacteria were observed in this sample. However, there was a variety of other eukaryotic phytoplankton, including the diatom <i>Nitzschia</i> sp., an unidentified cryptomonad, and what appears to be a picoeukaryote chlorophyte (<i>Ostreococcus</i>). The photomicrographs were all taken under 400X magnification.
				 <p><i>Nitzschia</i></p> <p>10µm</p>
				 <p>cryptomonad</p> <p>10µm</p>
				 <p><i>Ostreococcus</i></p> <p>10µm</p>






Bend Genetics, LLC
87 Scripps Drive, Ste. 301
Sacramento, CA 95825
Tel: (916) 550-1048

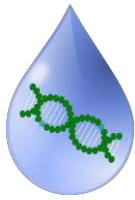
Project: eLimnology
Analysis for Toxicogenic Algae

Project #: BMK - Foth

Reported: 12/11/2020 16:05

MICROSCOPY RESULTS - Identification of CyanoHABs

Sample ID	Dominant	Sub-dominant	Also present	Notes
SL Sunrise	NA			No cyanobacteria were observed in this sample. Instead, there was a low amount of cryptomonads, diatoms (including <i>Gyrosigma</i>) and only a low amount of the picoeukaryote believed to be <i>Ostreococcus</i> . All photomicrographs were taken under 400X magnification. Overall, this sample contained significantly less algae than the North Lagoon sample.
				 <p>cryptomonad</p> <p>10µm</p>
				 <p><i>Gyrosigma</i></p> <p>10µm</p>
				 <p><i>Ostreococcus</i></p> <p>10µm</p>



Bend Genetics, LLC
 87 Scripps Drive, Ste. 301
 Sacramento, CA 95825
 Tel: (916) 550-1048

Project: eLimnology
 Analysis for Toxicogenic Algae
Project #: BMK - Foth
Reported: 12/11/2020 16:05

QUALITY CONTROL

Method	Analyte	Result	Qualifiers / Comments	Units	Spike Level	%REC	%REC Limits
ELISA	ATX - Blank	ND	U	µg/L	0		
ELISA	ATX - Positive	0.81		µg/L	0.75	108.1	70-130
ELISA	ATX - Matrix Sp	1.11		µg/L	1.25	88.5	70-130
ELISA	CYN - Blank	ND	U	µg/L	0		
ELISA	CYN - Positive	0.67		µg/L	0.75	89.7	70-130
ELISA	CYN - Matrix Sp	0.93		µg/L	1.00	93.3	70-130
ELISA	MC - Blank	ND	U	µg/L	0		
ELISA	MC - Positive	0.80		µg/L	0.75	106.2	70-130
ELISA	MC - Matrix Sp	1.19		µg/L	1.25	95.4	70-130
ELISA	STX - Blank	ND	U	µg/L	0		
ELISA	STX - Positive	0.077		µg/L	0.075	102.1	70-130
ELISA	STX - Matrix Sp	0.232		µg/L	0.200	115.8	70-130
10208	TN - Blank	ND	U	mg/L	0		
10208	TN - Positive	7.11		mg/L	7.00	101.6	70-130
10205	NH3 - Blank	ND	U	mg/L	0		
10205	NH3 - Positive	1.06		mg/L	1.00	106.0	70-130
10206	NO3 - Blank	ND	U	mg/L	0		
10206	NO3 - Positive	6.02		mg/L	6.00	100.3	70-130

QUALIFIERS/COMMENTS/NOTES

- C1 The reported concentration for this analyte is below the quantification limit.
- C2 The reported concentration for this analyte is above the calibration range of the instrument.
- J The reported result for this analyte should be considered an estimated value.
- U Undetected

