PELICAN BAY SERVICES DIVISION
Municipal Services Taxing & Benefit Unit
NOTICE OF PUBLIC MEETING

AUGUST 3, 2017

THE WATER MANAGEMENT COMMITTEE OF THE PELICAN BAY SERVICES DIVISION WILL MEET AT 1:00 PM ON THURSDAY, AUGUST 3 AT THE PELICAN BAY SERVICES DIVISION, 3RD FLOOR OF THE SUNTRUST BUILDING, SUITE 302, LOCATED AT 801 LAUREL OAK DRIVE, NAPLES, FL 34108.

AGENDA

1. Pledge of Allegiance
2. Roll call
3. Agenda approval
4. Approval of 04/21/17 meeting minutes
5. Audience comments
6. *Phase 2 lake bank erosion study results – presentation by Tom Barber (ABB)
7. Status of 2017 aerator installation
8. Systematic twice weekly monitoring of solar aerators
9. Evaluation of “Lake Evaluation Form” and potential use
10. Lake water quality
11. Other business
12. Adjournment

*Indicates possible action items

ANY PERSON WISHING TO SPEAK ON AN AGENDA ITEM WILL RECEIVE UP TO THREE (3) MINUTES PER ITEM TO ADDRESS THE BOARD. THE BOARD WILL SOLICIT PUBLIC COMMENTS ON SUBJECTS NOT ON THIS AGENDA AND ANY PERSON WISHING TO SPEAK WILL RECEIVE UP TO THREE (3) MINUTES. THE BOARD ENCOURAGES YOU TO SUBMIT YOUR COMMENTS IN WRITING IN ADVANCE OF THE MEETING. ANY PERSON WHO DECIDES TO APPEAL A DECISION OF THIS BOARD WILL NEED A RECORD OF THE PROCEEDING PERTAINING THERETO, AND THEREFORE MAY NEED TO ENSURE THAT A VERBATIM RECORD IS MADE, WHICH INCLUDES THE TESTIMONY AND EVIDENCE UPON WHICH THE APPEAL IS TO BE BASED. IF YOU ARE A PERSON WITH A DISABILITY WHO NEEDS AN ACCOMMODATION IN ORDER TO PARTICIPATE IN THIS MEETING YOU ARE ENTITLED TO THE PROVISION OF CERTAIN ASSISTANCE. PLEASE CONTACT THE PELICAN BAY SERVICES DIVISION AT (239) 597-1749 OR VISIT PELICANBAYSERVICESDIVISION.NET.
PELICAN BAY SERVICES DIVISION
WATER MANAGEMENT COMMITTEE MEETING
APRIL 21, 2017

The Water Management Committee of the Pelican Bay Services Division met on Friday, April 21 at 1:00 p.m. at the SunTrust Bank Building, 801 Laurel Oak Drive, Suite 302, Naples, Florida 34108. The following members attended.

**Water Management Committee**
Tom Cravens, Chairman
Scott Streckenbein

**Pelican Bay Services Division Staff**
Neil Dorrill, Administrator
Mary McCaughtry, Operations Analyst
Marion Bolick, Operations Manager
Lisa Jacob, Associate Project Manager
Barbara Shea, Recording Secretary

**Also Present**
Tom Barber, Agnoli, Barber & Brundage
Susan O’Brien, PBSD Board
Mary Johnson, Pelican Bay Foundation
Mike Shepherd, PBSD Board

**APPROVED AGENDA (AS PRESENTED)**

1. Pledge of Allegiance
2. Roll call
3. Agenda approval
4. Approval of 01/26/17 meeting minutes
5. Audience comments
6. *North berm restoration
7. 2017 aerator installation
8. Status of recently installed aerator systems
9. *Status of bacteria and tilapia testing
10. Status of “microfloc” testing
11. Status of plantings in Avalon lake
12. Plantings and rip rap at the Oak Lake Sanctuary lake
13. *Lake bank erosion (consultant presentation)
14. Other business
15. Adjournment

*indicates possible action items

**ROLL CALL**
All members were present and a quorum was established
AGENDA APPROVAL

Dr. Trecker motioned, Mr. Cravens seconded to approve the agenda as presented. The motion carried unanimously.

APPROVAL OF 01/26/17 MEETING MINUTES

Mr. Streckenbein motioned, Dr. Trecker seconded to approve the 01/26/17 meeting minutes as presented. The motion carried unanimously.

AUDIENCE COMMENTS

None

NORTH BERM RESTORATION

Dr. Trecker motioned, Mr. Streckenbein seconded for the Water Management Committee to endorse the decision by the Budget Committee to place $50,000 in the budget for the east side of the north berm project. The motion carried unanimously.

2017 AERATOR INSTALLATION

By consensus, the committee agreed that staff should move forward with the process of completing the final phase of the aerator project, including an additional aerator for the Les Brisas lake. Sufficient funds have been budgeted for the 2017 phase.

STATUS OF RECENTLY INSTALLED AERATOR SYSTEMS

Mr. Bolick reported that the recently installed aerators have been running consistently for over 30 days.

STATUS OF BACTERIA AND TILAPIA TESTING

In the agenda packet, Mr. Cravens provided emails from Mr. Dave Cook and Ms. Patricia Vlasho who provided positive comments on their experience/results with using blue tilapia to combat algae in their respective private lakes. Although Mr. Cravens was in favor of expanding the PBSD blue tilapia program, Dr. Trecker took an opposing view. Dr. Trecker cited the following reasons for not expanding the test program: (1) frequent algae in the Ridgewood Lake (one of the blue tilapia test lakes), (2) lack of data from any community in SW Florida with documented positive results from blue tilapia, (3) Mr. Dave Cook’s blue tilapia experience/comments were not a result from a “controlled experiment,” and (4) blue tilapia are currently considered an invasive species to this area.

Dr. Trecker motioned, Mr. Streckenbein seconded for the Water Management Committee to endorse the decision by the Budget committee to add $35,000 in the operating budget for bacteria to be added to the remaining lakes for which we have responsibility. The motion carried unanimously.

STATUS OF “MICROFLOC” TESTING
By consensus, the committee agreed not to approve any funds for “microfloc” testing for the FY18 budget.

STATUS OF PLANTINGS IN AVALON LAKE

Ms. Jacob reported that the Avalon lake littoral planting project has been put out for bids and that our consultant has recommended the project begin in late May/early June to increase the survivability of the plants.

Mr. Ray O'Keefe commented on his experience with “floating islands” in the Breakwater lake.

PLANTINGS AND RIP RAP AT THE OAK LAKE SANCTUARY LAKE

Mr. Dorrill provided an update on the 2016 Oak Lake Sanctuary lake project. He reported that during the next month, staff will (1) extend the rip rap installed last year to provide a better finished look, and (2) install additional littoral plants in the southeast corner, which is exhibiting some die-off.

LAKE BANK EROSION

Mr. Tom Barber, our ABB consultant, provided raw data of (1) average escarpment height, (2) maximum escarpment height, (3) average slope, and (4) maximum slope of the lake banks of the 45 lakes for which PBSD has responsibility. Although he identified eight lakes with top priority based on the raw data, he expects to tweak/rectify priority rankings based on additional review.

Dr. Trecker commented that the Budget Committee has placed $100,000 in the FY18 budget for lake bank repair projects. With a rollover amount of approximately $110,000 from FY17, the PBSD would have $210,000 for these projects in FY18.

Mr. Barber provided a general discussion of “geoweb” and “geotube” as possible solutions to lake bank erosion, including approximate cost per foot.

Ms. O'Brien questioned whether the PBSD is responsible for lake bank deficiencies, based on SFWMD permits. She suggested these permits be reviewed to confirm PBSD’s responsibility for lake bank erosion repairs at all of the 45 lakes.

Mr. Dorrill requested that ABB’s final report include (1) a one page discussion of the pros and cons of the alternatives available as solutions for lake bank erosion, including geoweb and geotube, and (2) a basis for establishing the PBSD obligation for lake bank erosion repairs at each of our 45 lakes.

Ms. Mary Johnson commented on escarpment problems at the St. Marissa private lake.

OTHER BUSINESS

At the suggestion of Mr. Cravens, the committee recommended that staff look into options and related costs of video projection equipment for the improvement of committee meeting presentations held in the conference room of the PBSD office.

ADJOURNMENT

[The meeting was adjourned at 2:13 p.m.]
Tom Cravens, Chairman

Minutes approved [___] as presented OR [___] as amended ON _____________________ date
## Repair Feasibility Option A

Estimated Conceptual Cost and Sequencing (Prior to Survey Data)

<table>
<thead>
<tr>
<th>Lake #</th>
<th>Basin #</th>
<th>Order of Repair</th>
<th>Repair Length (R)</th>
<th>Critical Repair (R)</th>
<th>Secondary Repair (R)</th>
<th>Site Access Constructability (1 simple = 5 challenging)</th>
<th>Site Access Cost (Mobilization) ($ x (Access/5))</th>
<th>Engineering Survey, Design, Permitting, Construction Observation, Certification Fees (40% + 7% of cost)</th>
<th>Estimated Fill Required (approx. percent of remediated lake bank needing fill/Fill (Avg. placement / 4))</th>
<th>Fill (Imported)</th>
<th>Primary Repair 8”-4” Geoweb</th>
<th>Secondary Repair 8” Turf Mat</th>
<th>Yearly Totals (includes, Engineering, fill &amp; 20% Contingency)</th>
<th>Cost per Linear Foot</th>
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## Repair Feasibility Option B

**Estimated Conceptual Cost and Sequencing (Prior to Survey Data)**

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<th>Lake W Basin B</th>
<th>Order of Repair</th>
<th>Repair Length (ft)</th>
<th>Critical Repair (ft)</th>
<th>Secondary Repair (ft)</th>
<th>Site Access Constructability (1 simple - 5 challenging)</th>
<th>Site Access Cost (Mobilization) ($ x (Access/5))</th>
<th>Engineering Survey Design, Permitting, Construction Observation, Certification Fees (40% of cost)</th>
<th>Estimated Fill Required (approx. percent of remediated lake bank needing fill) (Avy assignment / ft)</th>
<th>FILL (Imported)</th>
<th>8' Turf Mat</th>
<th>8' Turf Mat</th>
<th>Cost per Linear Foot</th>
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Average cost per year lasts = $
## Repair Feasibility Option C

Estimated Conceptual Cost and Sequencing (Prior to Survey Data)

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<th>Lake #</th>
<th>Basin #</th>
<th>Order of Repair</th>
<th>Repair Length (ft)</th>
<th>Critical Repair (ft)</th>
<th>Secondary Repair (ft)</th>
<th>Site Access Constructability (3 simple + 5 challenging)</th>
<th>Site Access Cost (Mobilization) ($ x (Access/5))</th>
<th>Engineering Survey Design, Permitting, Construction Observation, Certification Fees (40% + 7% of cost)</th>
<th>Estimated Fill Required (approx. percent of remediated lake bank needing FEI/Arb amendment / 4')</th>
<th>FEL (Imported) Only for Critical Repair in This Option</th>
<th>Primary Repair</th>
<th>Secondary Repair</th>
<th>Yearly Totals (Includes, Engineering, Fill &amp; 20% Contingency)</th>
<th>Cost per Linear Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>4_1</td>
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<td>$ 31,592</td>
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<td>$ 8,000</td>
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<td>45%</td>
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<td>$ 62,478</td>
<td>$ 390,873</td>
<td>$ 161</td>
</tr>
</tbody>
</table>

Totals & Averages: 22,017          7,620          15,393

$ 221,708          $ 762,350        $ 1,028,552       $ 3,161,774

Average cost per year: $ 263,481

---

<table>
<thead>
<tr>
<th>Cost per Linear Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ 109</td>
</tr>
<tr>
<td>$ 148</td>
</tr>
<tr>
<td>$ 195</td>
</tr>
<tr>
<td>$ 142</td>
</tr>
<tr>
<td>$ 171</td>
</tr>
<tr>
<td>$ 101</td>
</tr>
<tr>
<td>$ 116</td>
</tr>
<tr>
<td>$ 176</td>
</tr>
<tr>
<td>$ 141</td>
</tr>
<tr>
<td>$ 161</td>
</tr>
<tr>
<td>$ 263,481</td>
</tr>
<tr>
<td>Lake #</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>4_1</td>
</tr>
<tr>
<td>1_3</td>
</tr>
<tr>
<td>3_3</td>
</tr>
<tr>
<td>2_9</td>
</tr>
<tr>
<td>2_8</td>
</tr>
<tr>
<td>1_6</td>
</tr>
<tr>
<td>2_5</td>
</tr>
<tr>
<td>5_5</td>
</tr>
<tr>
<td>2_3</td>
</tr>
<tr>
<td>4_11</td>
</tr>
<tr>
<td>Totals</td>
</tr>
</tbody>
</table>

Average cost per year = $176,204
PBSD LAKE EVALUATION FORM

Basin # _______ Lake # _______ Date __________________

Lake Description ________________________________

Percent of Lake covered with Algae and/or Duckweed ___________________________
Example 19% A or 20% D

Was Photograph of the Lake taken? Yes____ No____

Water temperature of Lake ______

Additional Notes ______________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

Date of Treatment _________________

Type of Treatment ________________

Name of Evaluator __________________________

Signature of Evaluator ______________________
**HIGH TOTAL PHOSPHORUS IN CLAM BAY (mg/L)**

<table>
<thead>
<tr>
<th></th>
<th>4/17</th>
<th>5/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>CB1</td>
<td>0.13*</td>
<td>0.11*</td>
</tr>
<tr>
<td>CB 2</td>
<td>0.14*</td>
<td>0.17*</td>
</tr>
<tr>
<td>CB 3</td>
<td>0.05</td>
<td>0.22*</td>
</tr>
<tr>
<td>CB 4</td>
<td>0.05</td>
<td>0.08*</td>
</tr>
<tr>
<td>CB 5</td>
<td>0.04</td>
<td>0.10*</td>
</tr>
<tr>
<td>CB 6</td>
<td>0.07*</td>
<td>0.08*</td>
</tr>
<tr>
<td>CB 7</td>
<td>0.07*</td>
<td>0.08*</td>
</tr>
<tr>
<td>CB 8</td>
<td>0.06</td>
<td>0.08*</td>
</tr>
<tr>
<td>CB 9</td>
<td>0.05</td>
<td>0.06</td>
</tr>
</tbody>
</table>

* Out of spec (FDEP)
TOTAL PHOSPHORUS IN THE LAKES (mg/L)

<table>
<thead>
<tr>
<th>Basin</th>
<th>2/16</th>
<th>5/16</th>
<th>8/16</th>
<th>2/17</th>
<th>5/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.07</td>
<td>0.13</td>
<td>0.09</td>
<td>0.07</td>
<td>0.09</td>
</tr>
<tr>
<td>2</td>
<td>0.11</td>
<td>0.11</td>
<td>0.12</td>
<td>0.06</td>
<td>0.11</td>
</tr>
<tr>
<td>3</td>
<td>0.29</td>
<td>0.25</td>
<td>0.22</td>
<td>0.18</td>
<td>0.23</td>
</tr>
<tr>
<td>4</td>
<td>0.14</td>
<td>0.13</td>
<td>0.13</td>
<td>0.13</td>
<td>0.10</td>
</tr>
<tr>
<td>5</td>
<td>0.13</td>
<td>0.14</td>
<td>0.13</td>
<td>0.16</td>
<td>0.19</td>
</tr>
<tr>
<td>6*</td>
<td>0.14</td>
<td>0.15</td>
<td>0.29</td>
<td>0.54</td>
<td>0.28</td>
</tr>
</tbody>
</table>

* Only one lake sampled in Basin 6 (Remington)
### HIGHEST PHOSPHORUS READINGS IN LAKES -- 2016-17

<table>
<thead>
<tr>
<th>Location</th>
<th>2/16</th>
<th>5/16</th>
<th>8/16</th>
<th>2/17</th>
<th>5/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vizcaya (5-15)*</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Laurel Oaks (3-2)*</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Golf course (3-5)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Valencia (3-6)*</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Remington (6-1)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coco Bay (4-14)*</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Golf course (4-10)</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Golf course (3-6)</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crayton (1-6)</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Golf course (2-12)</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Golf course (4-11)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

* *Private lake*

Bold face = Very high reading (over 0.3 mg/L)
TOTAL PHOSPHORUS IN THE LAKES – 2016-17*

- No upward or downward trend in any of the basins**

- Basin 3 is the worst,** with consistently high numbers, perhaps impacting Inner Clam Bay.

- Vizcaya is consistently the worst lake, with very high numbers, perhaps impacting Upper Clam Bay.

* Five readings
** Excluding Basin 6, which has only one lake sampled (Remington)