INTEGRATED PEST MANAGEMENT SUB-COMMITTEE

MEETING AGENDA
MONDAY, MAY 10th, 2021 – 2:00 P.M.
COUNCIL CHAMBERS
1225 MAIN STREET, SEBASTIAN, FL

I. CALL TO ORDER

II. PLEDGE OF ALLEGIANCE

III. ROLL CALL

IV. APPROVAL OF MINUTES **–ACTION ITEM**
April 12th, 2021 Meeting

V. ANNOUNCEMENTS

VI. PUBLIC INPUT

VII. NEW BUSINESS
Item A. AVC Spraying Contract Summary
i. Site-based review of pests treated since December 2020
Item B. Pesticide Use Methodology
i. Planning Pesticide Application
ii. Pesticide Selection
iii. Treatment Notification

VIII. OLD BUSINESS

IX. SUB-COMMITTEE MEMBER MATTERS

X. STAFF MATTERS

XI. ITEMS FOR NEXT AGENDA
Item A. Approved Pesticides
Item B. Approved Pesticide Table

XII. ADJOURNMENT

ANY PERSON WHO DECIDES TO APPEAL ANY DECISION MADE ON THE ABOVE MATTERS, WILL NEED A RECORD OF THE PROCEEDINGS AND MAY NEED TO ENSURE THAT A VERBATIM RECORD OF THE PROCEEDINGS IS MADE, WHICH RECORD INCLUDES THE TESTIMONY AND EVIDENCE UPON WHICH APPEAL IS TO BE HEARD. SAID APPEAL MUST BE FILED WITH THE CITY CLERK'S OFFICE WITHIN TEN DAYS OF THE DATE OF ACTION. (286.0105 F.S).

IN COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA), ANYONE WHO NEEDS SPECIAL ACCOMMODATIONS FOR THIS MEETING SHOULD CONTACT THE CITY'S ADA COORDINATOR AT (407)-589-5330 AT LEAST 48 HOURS PRIOR TO THIS MEETING.TWO OR MORE ELECTED OFFICIALS MAY BE IN ATTENDANCE.

IPM SUB-COMMITTEE
AGENDA TRANSMITTAL FORM

Board Meeting Date: May 10th, 2021

Agenda Item Title: IV. APPROVAL OF MINUTES –**ACTION ITEM**
April 12th, 2021 Meeting

Recommendation: Sub-Committee Member Approval

Background:

If Agenda Item Requires Expenditure of Funds:
Total Cost: n/a

Attachments: April 12th, 2021 Meeting Minutes

INTEGRATED PEST MANAGEMENT SUB-COMMITTEE
MINUTES OF REGULAR MEETING
COUNCIL CHAMBERS
1225 MAIN STREET, SEBASTIAN, FL
APRIL 12, 2021

I. Call to Order -- The meeting was called to order by Mr. Benton at 2:00 p.m.

II. Pledge of Allegiance was recited by all.

III. Roll call

Present
Dr. Cox
Mr. Stadelman
Mr. Griffin
Ms. Callaghan -- Zoom (Late arrival)

Absent
Ms. Munroe -- Excused
Mr. Carrano -- Excused

Also Present:
Brian Benton, Leisure Services Director
Kim Haigler, Environmental Planner
Barbara Brooke-Reese, MIS Manager
Janet Graham, Technical Writer (Zoom)

IV. Approval of Minutes -- March 8, 2021

Chairman Benton asked if everyone had a chance to review the Minutes as presented. All indicated they had. Dr. Cox called attention to Page 8 where there is a description of an incident involving the Concha dam, and that statement listed Mr. Griffin has having made this statement. Dr. Cox felt it was he who made the statement. After discussion involving Dr. Cox and Mr. Griffin, Dr. Cox decided to let the wording stand as is and not be changed. Hearing no further changes or corrections, Mr. Benton called for a motion. A motion approving the March 8, 2021 Minutes as presented was made by Mr. Griffin, seconded by Dr. Cox, and approved unanimously via voice vote.

V. Announcements -- None

VI. Public Input -- None

VII. New Business -- None

VIII. Old Business

A. Non-Chemical Methods Table

i. Submitted for Sub-Committee Member Approval

Ms. Haigler reviewed that this is the table that was first introduced at the beginning of these meetings when Sub-Committee members made suggestions, and discussion was had as to which ones were feasible for the City's system. As further research was done, some wording was changed. Some of the items that were added were the skimmer device that was suggested by Mr. Stadelman, other wording was changed per discussions at other meetings. This is the culmination of all the edits over the past 10 meetings. She asked for questions or comments from the Sub-Committee.

Mr. Stadelman asked if the City would be able to use a third party such as Manpower or Labor Force to bring in people who may otherwise be unemployed as groups to go into areas to pull these weeds. Mr. Griffin replied regarding this suggestion. He stated that when it comes to the City's swales and ditches, which is most of the system, that part of the system is dry most of the year except during a recent event when infiltration is occurring. The City does mechanical removal of the vegetation, debris, silt, muck, etc. a number of times during the year for the entire system. He stated this happens for every part of the entire system at least once a year. That is done with City crews as well as monthly with the City's contractors as well. There is a mowing contractor for the City's rights-of-way and ditches. That is the largest contract that the City has. When it comes to the small part of the system that is actually wet most of the year, the canal itself, City crew have done mechanical removal at different times in the past. That is a very equipment-intensive, fairly skilled job that is required. Unfortunately, as a result of the intensity of use of the equipment, the specialized equipment, the amount of handling that is necessary, it is an expensive operation. He reviewed that the City undertook to remove approximately 1,800 feet of vegetation in the Hardee Park section of the canal last year, and the cost for that was about $27,000.00 for that limited section. The Stormwater Department will make sure to keep that tool available to use in the future, but it is a very expensive tool to use as well as skill- and equipment-intensive as well. So, it would probably not be an option to use a third party or volunteers.

(At this point, Ms. Callaghan joined the meeting via Zoom.)

Dr. Cox called attention to the section which lists Mechanical Removal. He asked if the

City owns a certain number of feet back from the canal for the whole length of the canal as an easement so that the City can get mechanical equipment in there without having to seek permission from the landowner(s). Mr. Griffin stated the City does have an easement in some areas. The ownership of the canal banks and the seawalls is a complex issue. It varies by location as to whether the City has ownership or whether the property owner has ownership. There are a number of easements, but they are widely scattered, and that does present some logistical problems. That is one of the problems the City had with the contractor who worked at Hardee Park. The contractor did not have access everywhere they would like to have had access. The City staff showed the contractor everywhere they could have access, but the contractor had some challenges. Added to that is the fact that there are environmental restrictions. The City planted a number of years ago some high-quality native vegetation in the Hardee Park area, and even though it was explained to the contractor that they may not access that area, that was still going on, and staff had to stop that immediately. That made their job much more difficult. Dr. Cox explained that he asked that question specifically regarding the Brazilian peppers that have overgrown banks in many places. Mr. Griffin reiterated that in many areas the City does have easements. In the City's major ditches, there are easements for those, and a lot of work that has been done in the last several months has been exactly that type of work. The Stormwater crew have been working within these easements to remove those massive growths of invasives, and they have made tremendous progress in doing that, but it is a little complex to do along the canal itself.

There being no further questions or comments from the Sub-Committee members, Mr. Benton opened the item Old Business, Item A for public input. Seeing no one in chambers and hearing no one on Zoom who wished to speak, Mr. Benton called for a motion on this item. A motion to approve the non-chemical methods table as reviewed was made by Mr. Stadelman, seconded by Mr. Griffin, and approved unanimously via voice vote.

B. Draft Sections of Plan II-VI

i. Submitted for Sub-Committee Member Approval

Ms. Haigler stated these sections were created after several discussions were had since the first meeting. She said that some notes were added along the way, and this version contains all of those notes. Some notable changes relate to Structures. There was a discussion that called for adding that the baffle boxes and catch basins are never sprayed. That discussion is better suited to chemical methodology. Also added was Replacement of Structures as one of the items. Dr. Cox suggested that. Also, excavation by City staff for the outfalls was added per Mr. Griffin's suggestion. She explained that any words in bold are words that will be addressed in the Glossary. She called for Sub-Committee

members who feel that additional words should be addressed in the Glossary to let her know, and she would see that those were added.

Ms. Haigler next addressed the Canals. There were no notable changes in this section.

Regarding the Ponds, all of the dredging references were changed to excavation per Mr. Carrano's suggestion. Also added was the planting of emergent vegetation because some of the canal shorelines are not seawalls, and they are within City easement areas.

As the ditches, rights-of-way and dry retention areas were added to this section. She has reworded the seawall description to define the purpose of the seawall. That was per discussion with Mr. Carrano. Regarding the buffer zone, Mr. Carrano suggested that the buffer zone be defined better. She is putting it in bold and will clarify it in the Glossary with supporting documentation.

Regarding the further non-chemical recommendations, the skimmer device was added. She noted that the word "dredging" had not been changed to "excavation, and she said she would make sure to change that.

There being no additional questions or comments from the Sub-Committee, Mr. Benton opened the meeting for public input regarding Old Business, Item B, Draft Sections of the Plan, Sections II-VI. Seeing no one in chambers and hearing no one on Zoom who wished to speak, Mr. Benton called for a motion.

A motion to approve the draft sections II-VI of the Plan, including changing the word "dredging" where it appears to the word "excavation" on Page 16 was made by Mr. Stadelman, seconded by Mr. Griffin, and approved unanimously via voice vote.

IX. Sub-Committee Member Matters

Ms. Callaghan stated her appreciation for all the hard work that has been done by staff and Sub-Committee members regarding this plan.

Mr. Stadelman brought up the trash can by the boat dock. He has observed that the crows take the garbage out and scatter it around. Mr. Benton stated his staff will look into that and see if there can be a cover of some sort put on the garbage can.

Dr. Cox reported on an item that was discussed at a previous meeting. He has since gone to Port St. Lucie and spent time with the Public Works Deputy Director and his staff. Dr. Cox obtained photos of a probiotic unit and put together a PowerPoint presentation

and sent it to Ms. Haigler. He hopes she shared it with members of the Sub-Committee. He stated there is also some heavy equipment there that is an all-purpose excavation tool. He described how the equipment works and stated it is an expensive piece of equipment, but he suggested having one of those on hand to cover the length of Sebastian's canal by "walking" and using an attachment like a huge circular saw on the end of one arm to cut back the Brazilian peppers would be very useful. He said that Peacock Lake was very clear thanks to the probiotics they are putting in it. Dr. Cox will continue to investigate the methods used by Port St. Lucie in controlling the invasive vegetation in their waterways. Mr. Benton asked if Dr. Cox had discussed with the official from Port St. Lucie whether they still use chemicals. Dr. Cox said yes, they do. Mr. Benton asked if that included Peacock Lake. Dr. Cox said he does not know what is used in Peacock Lake. He just looked at all of February's workorders for what was done. They are using glyphosate and one other chemical pretty extensively. Mr. Benton wanted to make it clear that probiotics is just one tool in their toolbox; they still have to apply herbicides and chemicals to their lake in addition to just using probiotics. He wanted to make that clear to the Sub-Committee members. He also spoke with someone at Port St. Lucie as well to find out their entire plan, and it was told to him that they still use chemicals. Algae and submerged and emerged floating vegetation will always grow in our bodies of water. Another thing with the probiotics at Port St. Lucie is that they use it in a self-contained lake. We do not have any self-contained lakes within the City. They are also looking into purchasing an incubator for bacteria, which would allow them to do a lot more probiotic usage. Mr. Benton asked if their intent is to only do self-contained water bodies with this new bacteria incubator. He said the answer to him was yes, only self-contained water bodies. He added that Port St. Lucie currently uses the same contractor that Sebastian uses. Mr. Benton stated he also asked if Port St. Lucie has an estimate of the annual savings since 2017 in the cost of using their spray contractor that resulted from the use of probiotics. They could not supply him with that information, but the gentleman did say that he knew that they had used less herbicides, which is a useful practice, and which Mr. Benton feels is pretty common in most areas. Most places are trying to use less herbicides. So, for the Sub-Committee's information Mr. Benton stated that he wanted to make sure that was known—that they do still require some spraying of Peacock Lake, which allows them to treat algae, submerged vegetation, emerged vegetation, and floating vegetation, because it does continue to grow. But the probiotics does seem to work for them. Mr. Benton had another discussion with someone regarding the probiotics, and this gentleman said that sometimes it works, and sometimes it doesn't. So Mr. Benton suggested that it is one of those things where different elements and different places are using these processes has to be looked at to see how they fit compared to Sebastian's systems. One of his concerns is that Sebastian lakes are not self-contained.

Dr. Cox explained that he was curious as to how probiotics worked and what kind of equipment is needed, and now he thinks he understands better. He stated that all the things that Mr. Benton just mentioned are absolutely true. Mr. Benton stated he appreciates Dr. Cox searching and finding a resource that uses probiotics.

Mr. Griffin thanked the Sub-Committee members who have mentioned ideas that should be explored, especially the idea that we should look into seeing if the probiotic approach that is used quite extensively by Port St. Lucie is one that would benefit Sebastian in terms of reducing nutrient levels and reducing herbicide applications. Fortunately, the contractor who Sebastian has hired to do the work here in the City is the contractor, probably of those in the area, most experienced and skilled and, in fact, the one used by Port St. Lucie for their probiotics program. That is Aquatic Vegetation Control. The work they have done to date indicates that it can be a helpful approach in reducing nutrients and reducing the amount of herbicide applications that are required for a body of water—not eliminating it but reducing it. It is also applicable in areas where there is a large nutrient concentration in that body of water. That nutrient concentration can come about in a number of ways. It can come about because it is a very productive lake or pond, and where there are ponds where cattails have taken over, that is often an indication of large amounts of nutrients. So his staff looked for a situation like that, and Garden Club pond is one that would meet those criteria well. There were some negotiations with the City's contractor to see if we could try a year-long monthly probiotic-control program, measure the results, look at the efficacy, and hopefully the overall dollars saved in the overall picture by this approach. There was a very good proposal to add this work to the contract the City already has, and he is pleased that the parties have come to terms, and it has been approved. The contractor will be starting shortly, and this work will be performed on Garden Club pond on a monthly basis.

Mr. Benton added that he, Mr. Griffin, and Ms. Haigler had a discussion this morning, and the staff are going to be investigating some baseline data that will help in showing the effects of the probiotics within Garden Club pond. Thus, they will have something to factually show the difference that it makes and what occurs within that pond.

Dr. Cox asked if the Garden Club pond is self-contained. Mr. Benton said that it has a ditch outfall on the south side. Mr. Griffin further stated that Sebastian does not have any fully self-contained canals or ponds in the system.

X. Items for Next Agenda

A. Proposal of New Amended Meeting Schedule

Mr. Benton stated the last schedule had the last meeting coming up at the beginning of May. However, the Sub-Committee will not be done by then. Dr. Cox is going to be going back up north, but hopefully he can Zoom in on the meetings.

B. Four-Month Summary of AVC Treatments

Mr. Benton stated the City will be past the four-month point at that time, so the data will be provided on the six months of treatment with AVC. There will be a meeting on May 3rd.

C. Begin Discussion of Chemical Methodology

Mr. Benton stated that is going to be an important discussion among this Sub-Committee. He asked that every Sub-Committee member play an integral part as the chemical methodology going forward is discussed. That will be the last element that will be needed within this plan. He estimates the Sub-Committee is two to three months away from having it finalized. Ms. Haigler stated the discussion on chemicals has already begun. She has already introduced the types of chemicals, what is approved for aquatic use, and adjuvants. It really just depends on how the methodology flows and is applicable for aquatics. Mr. Benton emphasized that the Sub-Committee is going to continue to have these meetings, and he wants everyone to feel welcome to come in and give their opinions with public input. Anyone on the Sub-Committee can attend these meetings via Zoom, as can the public.

XI. Adjournment

There being no further business, Mr. Benton called for a motion to adjourn. A motion to adjourn was made by Dr. Cox, seconded by Ms. Haigler, and approved unanimously via voice vote. Meeting was adjourned at 2:37 p.m.

By_____ Date:_____

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IPM SUB-COMMITTEE
AGENDA TRANSMITTAL FORM

Board Meeting Date: May 10th, 2021

Agenda Item Title: VII. NEW BUSINESS
Item B. Pesticide Use Methodology
i. Planning Pesticide Application
ii. Treatment Notification

Recommendation: Sub-Committee Member Discussion

Background:

If Agenda Item Requires Expenditure of Funds:
Total Cost: n/a

Attachments: Draft of Pesticide Methodology section of IPM Plan for Stormwater Conveyance System

VII. PESTICIDE USE METHODOLOGY

Chemical Controls will be utilized only when all feasible biological, mechanical, and cultural control methods, as listed on Figure 4, are being implemented and have failed to reduce pest populations below tolerance thresholds. The use of aquatic herbicides requires extensive species and product knowledge and highly specialized licensing and years of work experience to master. For this reason, aquatic pesticide application will not be conducted by City staff, but rather by a reputable and certified aquatic plant management contractor. The pesticides used as part of this IPM program will be those that are the most effective and pose the least risk to environmental and human health.

Planning Pesticide Application

Inspection and Monitoring. Frequent surveillance and proper identification of invasive aquatic plants is integral to the early detection and rapid response that minimizes pesticide use. Before chemical control methods are utilized, the certified applicator will properly identify the pest, weather, and location. All inspection and application data will be recorded in the field by the certified applicator on the "Field Treatment Sheets" Form *(Appendix D)*.

Application Methods. Aquatic herbicides may be applied directly to the plant, directly to the water, or to the plant and the water simultaneously. The method of application utilized is greatly dependent on the individual species' characteristics and growth habit. Also considered is the location, the time of year, weather, water-oxygen levels, in addition to numerous other variables which may be indicated on the products label. If the species isn't in its growth season, it may not uptake and be affected by a systemic herbicide. Environmental conditions, such as high winds or low temperatures may dictate that the use of certain herbicides is not permissible. These limitations are indicated on the label and of course, the LABEL IS THE LAW.

Discouraged Procedures. Large-scale broadcast applications increase the risks to non-target plant/ animal species and the chance of pesticide resistance and shall be avoided at all costs. While invasive plants should always be targeted for control, native plants should only be treated when their localized populations are approaching nuisance levels, impeding the functions of the stormwater system. Additionally, the full labeled application rate of an aquatic herbicide is often significantly higher than what may be the lowest effective rate for a target species. Careful attention must be paid to what is recommended for the target pest. These procedures should be avoided whenever possible, unless such applications may be reasonably expected to result in an overall reduction in pesticide use when compared with all other practicable alternatives.

Buffer Zones. The "IPM Plan for City Parks and Properties" provides that as park landscapes are treated with pesticides near stormwater features, a **buffer zone** must be observed in order to protect the shoreline integrity and water quality. Therefore, no terrestrial application of pesticides may occur within a minimum of 10 feet from these features by City staff or by landscape contractors. These areas contain emergent wetland vegetation and are to only be treated for invasive species by the licensed aquatic pesticide contractor. Native emergent vegetation should be protected to the maximum extent possible.

Concentrations & Application Rates. Proper pesticide application entails applying the minimum amount of product to provide effective control. For this reason, the pesticide manufacturers spend millions of dollars to determine the rate, and therefore the amount, that the pesticide should be applied at. These products rarely arrive from the manufacturer ready to use for commercial applications. It is up to the applicator to dilute or mix the product with water, and appropriate adjuvants, or other pesticides, according to the specific directions for aquatic use on the product label. If fact, what is visibly seen being applied in the field is approximately only 1-5% actual chemicals, the rest is water. The exact concentration of the active ingredient in the pesticide mixture is critical to its effectiveness. Too little product in the mixture may result in reduced efficacy, while too much may result in injury to the treated surface, illegal residues, impacts to the surrounding environment, or unnecessary expense. While the instructions for mixing the product involve simple calculations, it is important that all measurements be made accurately, carefully, and with the most precise measuring equipment available.

Directions for mixing and applying pesticides come in two general scenarios: rate per volume of water (pesticide concentration) or rate per area of land (lb. or qt. per acre). Mixing directions will vary. Pesticides that are mixed by concentration generally have specific directions for application. Some insecticide application directions may state to apply until spray runs off the target plant. Some herbicide application directions may state to apply only enough spray material to wet the leaves uniformly. Proper calibration of equipment and knowing how fast it is moving is crucial to controlling how much pesticide is being applied. The applicator must read the label to know how much product to apply and what method of application to use. THE LABEL IS THE LAW.

Safety Data Sheets. A binder of product labels and **safety data sheets (SDS)** for all approved pesticides will be provided to City staff and third party contractors whom apply, or may come in direct contact with the pesticides. In addition, this data will be available on the City's IPM website.

Pesticide Selection

There are seventeen herbicide active ingredients (chemical compounds) approved by the state for use in Florida waters. These active ingredients may be formulated and sold under various trade names. There are more than 100 different registered trade names currently in use in Florida. A comprehensive list of approved pesticides for use within the City's stormwater conveyance system has been compiled by the IPM Sub-Committee. All trade names which have been previously, or are currently used by our spraying contractors are listed on this table, categorized by their active ingredient. The "Approved Pesticide Table" includes pertinent chemical attributes such as: active ingredients and their percentages, EPA Registration #, targeted pest class, labeled signal word, and a cost rating per 1000 ft². *(Figure5)*. Selection of pesticides for use should be based upon a combination of a low Environmental Impact Quotient (EIQ), low cost, and maximum efficacy.

Mode of Action. Each active ingredient varies in how they affect the plant's tissues, or disrupt biological processes, in order to damage the plant. The sequences of events initiated by the herbicide, which begin with absorption and end eventually with the plant's death, are considered the herbicide's **mode of action (MOA)**. Herbicides with the same MOA will have the same translocation pattern within the plant and cause similar injury symptoms. All individual EPA approved aquatic herbicides have a single active ingredient and therefore a single MOA. The repeated use of same MOA herbicides is frequently associated with the eventual creation of a pest hybrid which is less susceptible to herbicide management. This potential for hybridization is a great operational concern in managing aquatics.

Herbicide Resistance. Single MOA compounds have also proven to be more prone to resistance development, which is unique to Florida's aquatic systems. For this reason, aquatic herbicides have to be carefully used in order to prevent **herbicide resistance**. Resistance management strategies are an important component of a successful long-term integrated pest management program for aquatic plants. The Weed Science Society of America (WSSA) has grouped the active ingredients for aquatic herbicides into groupings. The "WSSA group" number describes the possibility of a plant population developing resistance after repeated use. To prevent/mitigate herbicide resistance, it is advised to rotate or combine herbicide MOAs , which will help reduce the selective pressure applied by any one product.

Chemical Adjuvants. An important component to herbicide application is the use of a class of chemicals called **adjuvants**. Adjuvants do not directly affect the plant but they can greatly affect the physical characteristics of the applied product(s). Adjuvants can be added to the application solution in order to increase leaf coverage, assist with herbicide uptake, prevent chemical drift to non-target species, and control and sink submersed treatments. Knowledge of basic adjuvant chemistry and proper use of adjuvants helps increase the efficacy of the treatment, reduce effects on non-target species, and ultimately reduce the amount of herbicide applied. Overall adjuvants are important to protecting water quality and ensuring

the environmental and economic sustainability of the IPM program. All adjuvants used by the contractors will be included in the 'Approved Pesticide" Table as well.

Environmental Impact Quotient (EIQ). To best create a comparison among chemical methods, the Environmental Impact Quotient (EIQ) Method will be applied. Developed by Cornell University, the EIQ is a numerical model for pesticide selection. The formula takes into account factors such as: toxicity to humans, leachability to groundwater, runoff potential, soil persistence, and the effects on non-target terrestrial and aquatic species. *(Appendix E)* The risk of each chemical is the product of its overall toxicity and the potential for exposure. Cornell has a published table of commonly used chemicals and their calculated scores. The EIQ was developed for terrestrial use and the numbers may not be as accurate for all products when used in an aquatic system, however, it remains the most feasible comparison tool available. (Kovatch, et.al, 1992)

Field Use EIQ. However, since the risk of a chemical's use increases with the amount that is applied, it is necessary to take into account the rate of application. In order to accomplish this, the EIQ is multiplied by the % of the active ingredient and the rate of application to create the Field Use EIQ Rating. The field use EIQ s for all chemicals applied over a period of time can then be summed to create a field number that can then be compared to assess the reduction in environmental impacts among years or seasons. The Field Use EIQ can also be utilized to compare when multiple applications of a low EIQ chemical, such as a bio pesticide, are required versus when single applications are required of a higher EIQ chemical *(Appendix F)*. (Kovatch, et.al, 1992)

Bio-Pesticides. In the IPM Sub-Committee's quest to provide pest management options that are not only effective, but also have the least possible risk to human and environmental health, bio pesticide options were reviewed extensively. Bio pesticides, also called "natural" or "organic" pesticides, are non-synthetic and contain only naturally occurring substances. These products break down rapidly in sunlight or especially in water. This means that they do not persist long in the environment and therefore pose the least risk to non-target organisms.

There are potential risks associated with the application of natural products that the IPM Sub-Committee must consider when selecting pesticides for the "Approved Pesticide Table". It is important to note that all pesticides, whether natural or synthetic, carry inherent risks and require safety precautions. The ability to break down fast can also mean that multiple applications are required to match the efficacy of the synthetic chemical option. Multiple applications can drastically increase the cost and the risks of the product. Because bio pesticides are made of natural substances, they often are exempt from the Environmental Protection Agency (EPA) review process. Therefore, there is little to no data on the long-term risks or efficacy in aquatic systems. Bio-Pesticides have only proven minimally effective on the dense cell structure of aquatic plants.

Of those that are registered by the EPA, many are not registered for sale in Florida, due to the lack of data. A licensed applicator may not legally use a pesticide that is not state registered in this manner, per Florida Statutes: 482 and 487. Bio pesticides that are registered may not be mass produced for commercial use and therefore may be priced too high for use over large areas, or simply not readily available. The lack of EPA review and state registration also means that they are produced by a variety of different sources, which often results in inconsistent potency and efficacy among producers and even within different batches from the same producer. For these reasons, there is only one (WOW) named on the "Approved Pesticide Table" and it is only recommended for invasive and tender emergent vegetation.

Pesticide Restrictions. In the development of a thorough and reasonable IPM Plan for aquatic plants, it is not advisable to prohibit the use of any IPM Method which has been EPA and State approved. Unforeseeable conditions may arise in which the contractor is limited in what will be effective at reducing pest populations. In addition, the IPM Sub-Committee also recognizes that the applicator must constantly alter the pesticide solutions/combinations and rotate pesticides used in order to reduce overall pesticide use, increase the efficacy of treatments, reduce effects on non-target species, and protect water quality. Therefore, no class of pesticide on the "Approved Pesticide List" *(Figure 5)* will be exempted, limited, or restricted from use.

Prior to the use of any new pesticide that is not included on this spreadsheet, a "Pesticide Exemption Form" (Appendix F) must be completed by applicator and submitted to the Stormwater Director, IPM Coordinator, and City Manager for signed approval. This form is to be submitted four days prior to proposed application date. The form requires justification for use of the chemical. However, should a new pesticide trade name, containing the same percentage of active ingredient(s) be discovered, which is preferred by the spraying contractor, an exemption form must be completed and submitted to the IPM Coordinator, but approval will not be required.

Treatment Notification

The City shall provide the public with notification of planned pesticide applications, 24 hours prior, through an established online notification system. Through this system, visitors to the City's website may view specific information about upcoming treatments and opt to join an email list to receive regular notifications directly.

In addition, the Pesticide Notification Sign *(Appendix F)* will be completed and posted at all major public points of entry (including kayak launches), or areas with direct access to the treated area pursuant to state and/or federal law, the City's IPM Plan, and according to product label instructions. Signage will remain in place for 48 hours following the application, unless the manufacturer's product label specifies a longer posting period. Signs shall be of standardized design, printed in color, laminated, and contain the name of the pesticide product, target pest, date and time applied, required re-entry interval and the phone number for the Citizen Request Line, where they may request more information

Conditional Exemptions. The Stormwater Director and IPM Coordinator may grant authorization to apply a pesticide within the stormwater system without providing a 24 hour online notification. Authorization requires that there is a compelling need to use the pesticide, such as immediate threat to public health, safety, City property, or substantial economic detriment. Online notification will be posted as soon as possible. All documentation of this exemption must be retained and included in the annual report. On-site signage shall not be required in right-of-way locations that the general public does not use for recreation, or pedestrian purposes, such as those that are completely fenced in or separated by seawall.