



**INTEGRATED PEST MANAGEMENT  
SUB-COMMITTEE  
MEETING AGENDA  
TUESDAY, MAY 25<sup>th</sup>, 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**  
**May 3rd, 2021 Meeting**
- V. ANNOUNCEMENTS  
**Item A. IFAS, Audubon, and Leisure Services Native Test Plot Project**
- VI. PUBLIC INPUT
- VII. NEW BUSINESS  
**Item A. Approved Pesticide Table**–**ACTION ITEM**  
**Item B. Data Management**–**ACTION ITEM**
- VIII. OLD BUSINESS  
**Item A. Chemical Methodology**  
i.R eview recent edits made and vote for final approval- **ACTION ITEM**
- IX. SUB-COMMITTEE MEMBER MATTERS
- X. STAFF MATTERS
- XI. ITEMS FOR NEXT AGENDA  
**Item A. Future Recommendations**  
**Item B. Appendix and Glossary**
- 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 25th, 2021

**Agenda Item Title:** IV. APPROVAL OF MINUTES –**ACTION ITEM**  
May 3rd, 2021 Meeting

**Recommendation:** Sub-Committee Member Approval

**Background:**

**If Agenda Item Requires Expenditure of Funds:**

Total Cost: n/a

**Attachments:** May 3rd, 2021 Meeting Minutes

**INTEGRATED PEST MANAGEMENT SUB-COMMITTEE  
MINUTES OF REGULAR MEETING  
COUNCIL CHAMBERS  
1225 MAIN STREET, SEBASTIAN, FL  
MAY 3, 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

Mr. Griffin (Zoom)

Ms. Callaghan (Zoom)

Dr. Cox

Absent

Ms. Munroe -- Excused

Mr. Carrano -- Excused

Mr. Stadelman -- Excused (?)

Also Present:

Brian Benton, Leisure Services Director

Kim Haigler, Environmental Planner

Joseph Perez, AV Technical Assistant

Janet Graham, Technical Writer (Zoom)

IV. Approval of Minutes -- March 22, 2021

Chairman Benton asked if everyone had a chance to review the Minutes as presented. All indicated they had. Mr. Benton called for a motion. A motion approving the March 22, 2021 Minutes as presented was made by Dr. Cox, seconded by Mr. Griffin, and approved unanimously via voice vote.

V. Announcements -- None

VI. Public Input -- None

VII. New Business

**A. Amended Meeting Schedule**

i. Five new dates added through July 19<sup>th</sup>

Ms. Haigler explained that the present meeting schedule ended today. She has scheduled additional meetings as follows: Monday, May 10 at 2:00 p.m.; Monday, May 24 at 2:00 p.m.; Monday, June 14 at 2:00 p.m.; Monday, June 28 at 2:00 p.m.; and Monday, July 19 at 2:00 p.m. Mr. Benton stated the original calendar stated there would be a meeting on Monday, July 12; however, because he had a conflict with that date, that was corrected so the meeting date was changed to July 19. Ms. Haigler asked if any Sub-Committee members have any conflicts. All indicated they had none. Mr. Benton called for a motion to approve the calendar. A motion approving the calendar setting forth the last date of July 19<sup>th</sup> was made by Mr. Griffin, seconded by Ms. Haigler, and approved unanimously via voice vote. Mr. Benton called for anyone from the public who wished to speak on this item. Seeing no one in chambers and hearing no one on Zoom, Mr. Benton moved to the next item on the agenda.

**B. AVC Spraying Contract Summary**

- i. January, February and March added to presentation from January 11<sup>th</sup> meeting

Ms. Haigler made a PowerPoint presentation and explained that this presentation was first made at the January 11<sup>th</sup>, 2021 meeting. At that time, the December spraying was discussed as well as the data from Applied Aquatics. Now that a few more months have passed, she reviewed all data to date to identify where some trends are happening. She began with December, during which the ponds and the canals were treated. Mostly treated were torpedo grass, Salvinia, hyacinths, and cattails. Torpedo grass was the one most recently treated that month. Seven gallons of chemicals were used. Of that, 4.8 gallons were actually herbicides, and the balance were the adjuvants. The total cost was \$1,789.00. Mr. Benton emphasized that the total cost included labor, equipment, and chemicals. Ms. Haigler continued, and in January the most frequently treated pest was the Salvinia. That was three times. Also added was the Stormwater Park at that time, where they just treated for cattails, torpedo grass, and primrose-willow along the shoreline. Also treated was the Brazilian pepper for the first time. There were 10.8 gallons total. Of that, 4.4 gallons were herbicides, and 6.4 gallons were adjuvants. Total cost was \$3,150.00. In February, the most frequently treated pest was the cattails in four different locations. That included some in the ponds and in the canals. There were 5.1 gallons of chemicals applied. Of that, 3 gallons were herbicides, and 2.1 gallons were adjuvants. Total cost was \$2,229.00. For March the most frequently treated pest was the alligator weed. That was treated at three different locations. Also treated was the Brazilian pepper again as well as the torpedo grass. There were 20.8 gallons applied. That high number is mainly because in March they did a test treatment of WOW. They sprayed 15 gallons of WOW past Hardee Park to CR 512. Last week the contractor

revisited the site and reported that WOW only burned the vegetation and was minimally effective for the amount that was used. They sprayed with a higher pressure to get better mist coverage, and they sprayed fairly heavily with it. She reminded all that this is the all-natural product, including peppermint oil. The summary was that the damage done was the same as if they had used just adjuvants like the mentholated oil or citrus oil except that those will do that much damage at a much lower rate. So that is not something they would recommend using again going forward. She emphasized that there were good results using the WOW on terrestrial in the parks and properties. An adjuvant was not used with the WOW, as the contractor stated the WOW is not effective with the adjuvant added.

In the four-month summary, the adjuvants applied were 13.5 gallons. Herbicides applied were 15.2 gallons. The WOW was 15 gallons. She stated the WOW is a safer product, but since so much more of the natural product is needed to be used, and it is not yet known what effect that much peppermint oil could have if it were continued to be used. In the four months the most frequently treated pest was the torpedo grass. She added that pretty much in every area that was treated it was necessary to treat torpedo grass. The main problem AVC feels they are having with treating it is that the most accepted method of control is with a mixture of chemicals which increases selectivity, reduces effects on the non-target pests, and increases effectiveness. So this is one of those pests that is really controlled by this mixture with imazapyr, and mostly glyphosate is mixed with some imazapyr, and in that way it is completely safe for the non-targets. So imazapyr was used on torpedo grass and some alligator weed. When that is done, there can be very little sprayed on the edges because, if they get too close to the shoreline and there are any trees on the shore, it will affect their roots and will damage the trees. She reminded all that the reason they are not using glyphosate is because it was requested by City Council that they not use it for aquatics at this time when they first approved the contract. The glyphosate alone is not effective on the torpedo grass and other grasses. The imazapyr alone will kill it, but at the concentration it would take to kill it, it will kill so many other things. It is very non-selective. The contractor also said that there are some larger contracts that they have, and if they just use imazapyr or just glyphosate on treating torpedo grass on their data sheets, they will be told to go back and correct it and spray it correctly because that means that they have to revisit that site multiple times, and that is why the same places are being treated month after month for the torpedo grass. It is not controlling it; it is still a problem, and they have to keep treating it because they do not have the right combination.

Another piece of data that she discovered in her research shows that the chemicals and the adjuvants are actually mixed with a lot of water. So when people say they saw the areas being sprayed were being sprayed with gallons and gallons of liquid, there were

only ounces of chemicals entered on the treatment sheets. As an example, one employee of AVC actually wrote out how much water was used at Hardee Park in January. There were 2-1/2 acres of Salvinia and hyacinths mixed, and there were 1.25 gallons of diquat and 1.25 gallons of adjuvant, and 250 gallons of water were used. The actual chemicals used are only a small percentage of the liquid that was sprayed. She called for questions/comments from the Sub-Committee members.

Dr. Cox asked if glyphosate and imazapyr are not being used, what is being used? Ms. Haigler stated it is imazapyr by itself. But when the outer edge is sprayed, it is so non-selective it gets some of the other native vegetation. So the employee cannot spray anything that is close to the shoreline because it can affect other emergents and trees. She also said that imazapyr persists for a long period in the soil and travels in the soil. Dr. Cox clarified that glyphosate is not being used presently, but the contractor would prefer to use it at some time. Ms. Haigler stated yes. She further explained that, in looking at the label uses, it says how imazapyr is to be used for aquatics. It tells you the recommended combination, and it explains why. Dr. Cox stated it is going to take a long time till the invasives are eradicated completely.

Ms. Callaghan asked if the contractor provides more data than what is shown on the slides in terms of where we are on the control and effectiveness of what has been applied. Ms. Haigler stated the best way to measure effectiveness is how often treatment is needed for the same plant in the same area. There are different technicians out there every time, and it is not something measurable. She added that when she summarized Applied Aquatics data she went in depth more, as we had a full year's data. But she does have the data for Hardee Park, and that area was treated four times for torpedo grass in six months. In this section of the canal hyacinths were treated three times in six months. She suggested it was helpful when the Applied Aquatics data were looked at that way. By the next meeting she opined that she should have another month of data sheets. Ms. Callaghan stated that would be very helpful.

Dr. Cox asked if the PowerPoint slides are on the website. Ms. Haigler stated she always posts every presentation that has been done.

Mr. Benton called for public input on this agenda item. Seeing no one in chambers and hearing no one on Zoom, he moved to the next item on the agenda.

**C. New Pests at Garden Club Park**

- i. Lygodium microphyllum (Old World Climbing Fern)
- ii. Nymphoides cristata (Crested Floating Heart)

Ms. Haigler put photos of these pests on the monitor. She stated staff was contacted by James Gillenwalters from AVC last week about a new pest that had appeared that has never been in our system before. It is not common to this region presently. It is very invasive. It can be seen in dense mats. It spreads very fast like almost the growth rate of hyacinths where it is exponential. It can grow very fast once it establishes. What was unique about this is the location where it showed up. When we had the mechanical demonstration by the Weedo where they did the demonstration at Garden Club Park, the little piece of shoreline where they came in and cut the cattails is the only place that this has appeared right now. Considering that it is nowhere else in the City's system, it is a fair conclusion that it was brought in by unsterilized equipment when it was brought in to do the demo. Also, right near there up in the trees is Old World Climbing Fern. The Climbing Fern is located in a few places within the City, but nowhere around there.

Regarding the Crested Floating Heart, it usually is in deeper water, and it usually forms a very dense mat quickly. Staff caught it very early. Thankfully, since it was found early, it can be controlled. Mr. Gillenwalters found it, contacted staff, and asked about using it before he used a chemical he does not normally use, just to make sure it was okay. It is an approved aquatic called ProcellaCOR, and it is on our chemicals list. Although we are getting to it early, now we have to spray this mixture that is pretty non-selective over this small area in order to control it. So, some of the emergent vegetation there will be lost.

In addressing the Old World Climbing Fern, Ms. Haigler stated that sometime ago it was only in a couple places in the City. Jane Schnee contacted Ms. Haigler and sent her a map of locations where she had spotted it. Ms. Haigler has built on that map over time. Most of the locations are within Collier Club, the bridge that goes over the San Sebastian River outfall area. She saw one small area over by the Stormwater Park, but now it is over in other areas. It is disturbing because what it does is sort of like we have seen Kudzu do, how it climbs straight up and makes a sort of wall. It goes straight up the trees, chokes off the trees and kills them. It also becomes a conduit for fire, so if any sort of small fire broke out, it would bring that fire straight to the crown of the trees and kill them and thus spread the fire faster. So, it is considered a problem in many ways. It is also in the same area in Garden Club Park. So they are going to treat both these pests the same way. She thought since they were two pests that had not been discussed previously, it was worth bringing them up and discussing them, especially the vector by which they arrived there. That goes to the importance of sterilizing equipment, and there was no way City staff would have known that the equipment would not have been sterilized by the company doing the demo.

Dr. Cox asked what was used on the Old World Climbing Fern. Ms. Haigler stated she has heard that only glyphosate will work, but they are using ProcellaCOR, and the

contractor believes that it will work. One of the problems with Old World Climbing Fern is that it has many spores on the back of the plant. So, if you try to move it mechanically or by hand, millions of spores fly off of it, and it spreads rapidly. So it really has to be killed in place before it is removed.

Ms. Callaghan suggested adding these two pests to the pest list in our IPM document. Ms. Haigler said these two pests would be added to the pest list. She said that Old World Climbing Fern will be very hard to eradicate, but it can be controlled. As to the Crested Floating Heart, it is such a small area and it was caught early, and she thinks it can be eradicated from that area. Ms. Callaghan asked if the plan is not to include the Crested Floating Heart in the pest list. Ms. Haigler stated that when the first Parks and Properties IPM Plan was created, there was the list of the main pests, and then she proposed that every year an annual report would be done, and when the other pests are discovered, their information will be added into an appendix as an occasional pest. She would recommend adding the Old World Climbing Fern at this time.

Mr. Benton called for further questions/comments from Sub-Committee members. Hearing none, he called for anyone who wished to speak on Item C, New Pests at Garden Club Park. Seeing no one in chambers and hearing no one on Zoom, he moved to the next item on the agenda.

VIII. Old Business -- None

IX. Sub-Committee Members Matters

Dr. Cox reviewed that at the last meeting it was discussed that negotiations are in progress with AVC regarding extension of their contract. He asked where we are with that contract. Mr. Griffin stated they have a contract for a one-year period of time. So far staff are pleased with the work they are doing. He is very much appreciative of the fact that these two new invasive species were caught early on. He stated staff will continue to evaluate AVC, and when it is time to review the contract staff will look closely at them and make sure that there is a new contract or renewal in place in plenty of time so that there is no gap in coverage. Dr. Cox asked Mr. Griffin if he would be amenable to some of the Sub-Committee members reviewing the contract as it is developed. Mr. Griffin stated he would be, if available. He stated he will bring the draft document to the Sub-Committee. Ms. Haigler added that, just like with the Parks and Properties IPM Plan, it was put in the appendix a stipulation that the contractor agrees to follow the terms of the IPM Plan, which itemizes the main steps that they have to follow. They got a copy of the IPM Plan, and they know how they were to conform to it. So, what is being done now is essentially part of that contract. Mr. Benton added that staff piggybacked off of the South



Florida Water Management District contract. Dr. Cox stated that when he saw the Port St. Lucie contract, it was a lot of pages, segment by segment, and chemical by chemical, etc. It listed everything in great detail, and it was an impressive document.

X. Staff Matters

Mr. Griffin thanked Ms. Haigler for her work and Mr. Gillenwalter's for addressing the very concerning, invasive, rapidly growing species very quickly.

Ms. Haigler said the Earth Day Celebration was very successful, and there were a lot of questions regarding the IPM program. She had the Parks and Properties IPM Plan out on the NRB table in plastic covers, and a lot of people stopped and went through it and asked questions. Even though people may not be participating in the meetings, they are following, and they do know what is going on.

XI. Items for Next Agenda -- May 10, 2021

- A. **Chemical Methodology**
- B. **AVC Breakdown by the Sites Treated**

XII. 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: \_\_\_\_\_

jg



## IPM SUB-COMMITTEE AGENDA TRANSMITTAL FORM

**Board Meeting Date:** May 25<sup>th</sup>, 2021

**Agenda Item Title:** VII. NEW BUSINESS  
Item A. Approved Pesticide Table – **ACTION ITEM**

**Recommendation:** Sub-Committee Member Approval

**Background:**

**If Agenda Item Requires Expenditure of Funds:**

Total Cost: n/a

**Attachments:** Final Draft of Approved Pesticide Table for the IPM Plan for Stormwater

ACTIVE INGREDIENT	ACTION	TRADE NAME	EPA REG. #	WSSA RESISTANCE MGT. GROUP	ACTIVE INGREDIENT	LABELED SIGNAL WORD	EIQ	Maximum Use Rate	FIELD USE EIQ	TRAITS	TARGET CLASS	TARGET SPECIES	COST (only cost of product)	COST RATING/ 1,000 ft²
Alkanolamide	adjuvant	Cohere	NA	NA	90.00%	warning	NA	NA	NA	spreader, sticker	NA	NA	\$138 per 2.5 gals	\$
methelated seed oil	adjuvant	Alligare MSO 1 SunEnergy	NA	NA	100.00%	warning	30.9	NA	NA	surfactant	NA	NA	\$61.25 per 2.5 gals	\$
polyacrylamide	adjuvant	Accuracy Polycontrol 2	NA	NA	30%	warning	NA	NA	NA	deposition & drift retardant	NA	NA	\$129.77 per 1 gal	\$
D-limonene	adjuvant	Kammo Plus	NA	NA	100%	warning	NA	NA	NA	surfactant	NA	NA	\$92.51 per 1 gal	\$
polyoxlkane ethers	adjuvant	Induce	NA	NA	90%	warning	NA	NA	NA	wetter, spreader	NA	NA	\$136.39 per 2.5 gals	\$
Bispyribac	herbicide	Tradewind (powder)	59639-165	2	80%	caution	11.47	2oz/acre	1.1	systemic, selective	submersed, floating	Hydrilla	\$1,175.95 per 2 lbs	\$\$\$
Carfentrazone	herbicide	Stingray Speedzone	279-3279-67690 2217-833	14	21.3% 28.6%	caution	20.18	13.5 oz/acre 5 pints/acre	4.9 28.9	contact, selective	emergent, floating	Primrose, Water Lettuce, Hyacinth	\$205.95 per 1 qt	\$\$
Copper	herbicide, algaecide	copper sulfate (crystals)	56576-1	NA	99%	danger	69.83	1.75 lbs/acre	107.2	contact, non-selective	submersed	algae	\$45.95 per 1 gal	\$
Diquat	herbicide	Tribune Reward	100-1390 100-1091	22	37.30%	caution	39.2	8 qt/acre	233.9	contact, non-selective	submersed, emergent floating	hyacinth, water lettuce, salvinia, mosquito fern	\$221.95 per 1 gal	\$
Endothall	hebicide	Aquathol	70506-176	Unknown	40.30%	danger	25.22	3.2 gal/acre-ft	38.7	contact/systemic, non-selective	submersed	hydrilla, filamentous algae	\$135.95 per 1 gal	\$\$
Florpyrauxifen	herbicide	ProcellaCOR SC Clipper	67690-79	4	26.50%	caution	NA	6.75 oz/acre-ft	NA	systemic, non-selective	submersed, emergent, floating	hydrilla, hyacinth, primrose, watermilfoil	\$595.95 per 5 lbs	\$\$\$
Flumioxazin	herbicide	Clipper Schooner Semera (granule)	59639-120-91234	14	51%	caution	23.97	3 oz/acre	2.3	contact, non-selective	submersed, emergent, floating	algal mats, hydrilla, cabomba, water lettuce, duckweed, salvinia, spatterdock, water lily	\$300 per 5 gals	\$\$
Fluridone	herbicide	Avast	67690-30	12	41.7	caution	8.67	2.1 lb/acre	12.6	systemic, non-selective	submersed	hydrilla, duckweed	\$2,215.95 per 1 gal	\$\$\$
Glyphosate	herbicide	Roundup Custom AquaNeat	228-365	9	53.80%	caution	15.33	6 pints/acre	49.5	systemic, non-selective	emergent, floating	grasses, cattail, primrose, tussocks	\$89.95 per 2.5 gals	\$
Imazamox	herbicide	Clearcast	241-437-67690	2	12.10%	caution	19.52	1 gal/acre	18.9	systemic, selective	submersed, emergent, floating	cattail, wild taro, hyacinth	\$355.95 per 1 gal	\$\$\$
Imazapyr	herbicide	Polaris AQ Ecomazapyr 2	241-426-228	2	28.70%	caution	22.3	4 pints/acre	25.6	systemic, non-selective	emergent	tussocks, cattail, torpedo-grass, rush, melaleuca	\$235.95 per 2.5 gals	\$\$
Penoxsulam	herbicide	Galleon SC	67690-47	2	21.70%	caution	18.72	5.6 fl oz/acre	1.4	systemic	emergent, floating, submersed	hydrilla, hyacinth	\$695.95 per 1 qt.	\$\$
Peroxides	algaecide	GreenCleanPRO	70299-15	Unclassified	85%	danger	16	10 lbs/ acre	136	contact, non-selective	submersed, algae	planktonic algae, esp. blue-green	\$139.95 per 50 lbs	\$
Sethoxydim	herbicide	Segment	7969-88	1	13%	caution	20.89	40 oz/ acre	6.8	systemic, selective	emergent	grasses	\$707.06 per 2.5 gals	\$\$\$
Topramezone	herbicide	Oasis	7969-339-67690	27	29.70%	caution	27.17	16 fl oz/ acre	8.1	systemic	submersed	hydrilla, hyacinth	\$811.95 per 1 qt	\$\$\$
Triclopyr	herbicide	Garlon 3A Trycera	62719-37 5905-580	4	44.4% 29.4%	danger	11	8 qt/acre	78.1 51.7	systemic	submersed, emergent	brazilian pepper, broadleaf, hyacinch, water milfoil	\$69.95 per 1 qt	\$
2, 4-D	herbicide	Weedar 64 (liquid) Rugged (liquid)	71368-1 1381-247	4	46% 38.4%	danger	20.67 16.67	4 qt/acre 4.5 qt/acre	56.4 53.0	systemic, selective	submersed, emergent, floating	milfoil, hyacinth	\$23.95 per 1 gal	\$

**CAUTION** means the pesticide product is slightly toxic if eaten, absorbed through the skin, inhaled, or it causes slight eye or skin irritation.<sup>2,4</sup>

**WARNING** indicates the pesticide product is moderately toxic if eaten, absorbed through the skin, inhaled, or it causes moderate eye or skin irritation.<sup>2,4</sup>

**DANGER** means that the pesticide product is highly toxic by at least one route of exposure. It may be corrosive, causing irreversible damage to the skin or eyes. Alternatively, it may be highly toxic if eaten, absorbed through the skin, or inhaled. If this is the case, then the word "POISON" must also be included in red letters on the front panel of the product label.<sup>2,4</sup>



## IPM SUB-COMMITTEE AGENDA TRANSMITTAL FORM

**Board Meeting Date:** May 25<sup>th</sup>, 2021

**Agenda Item Title:** VII. NEW BUSINESS  
**Item B. Data Management –ACTION ITEM**

**Recommendation:** Sub-Committee Member Approval

**Background:**

**If Agenda Item Requires Expenditure of Funds:**

Total Cost: n/a

**Attachments:** Final Draft of Data Management section of IPM Plan for Stormwater

## VIII. DATA MANAGEMENT

Accurate records are essential for the success of an IPM program. They provide staff with historical, site-specific knowledge of pest activity and pesticide application. With this information, it can be predicted when certain pest problems are likely to occur. Effective record-keeping can also call attention to patterns of pest outbreaks and associations among pest populations, as well as provide valuable data for assessment of the IPM Program.

### Data Recording & Collection

**Field Data.** All Non-Chemical pest control activities conducted within the stormwater system will be recorded on the “Monthly IPM Log” (Appendix D). Before chemical control methods are utilized, the licensed applicator will need to properly identify the pest. All information regarding the species of pest, along with the date, time, location, pesticide applied, application rate, and applicator will be recorded on the “Field Treatment Sheet” (Appendix C) each time that pesticides are applied. These sheets will be completed manually in the field by the certified applicator and submitted to the IPM Coordinator monthly so that the data may be digitally compiled and stored.

**Purchase Orders.** All purchase orders for chemicals or IPM related equipment and materials will be submitted annually to the IPM Coordinator.

**Contractors.** All contractors who manage pests on City owned, leased, or managed property shall be required to adhere to the guidelines established in the City's Stormwater IPM Plan. Contractors must sign the “IPM Plan Contractor Agreement” (Appendix B) and maintain complete records of all chemical and non-chemical pest control activities. When applicable, a “Pesticide Exemption Form” must be submitted. “Pesticide Notification Signage” must also be posted per the IPM plan requirements. A summary of these activities must be submitted to the IPM Coordinator monthly, or upon completion of the job. These records must include “field treatment sheets” for all pesticide applications.

### Program Transparency

All records and information regarding the IPM Program will be made available to employees and the public through the City's IPM Program Website and upon request, in accordance with the Freedom of Information Act, Florida Statute: 119.

## Annual Report & Evaluation

The IPM Coordinator will maintain all records relevant to the IPM Program, in order to prepare an annual report of the City's IPM activities. The annual report will be reviewed, each March, by the IPM Sub-Committee and City staff in an effort to assess the effectiveness of pest control methods, feasibility of new methods and technologies, and to decide whether revision of the IPM Plan is required. The annual report will include the following elements:

- A summary of all field treatment sheet data
- All non-chemical pest control methods implemented
- Summarized data presented in tables and graphs to depict trends in usage and Field use EIQ
- A discussion of all restricted chemical wavier forms submitted
- Purchase orders for all pesticides
- Pest management challenges reported by staff
- Determine if the results have met expectations, or if the IPM plan requires modification
- Summary of all public outreach activities conducted
- Any proposed modifications to Approved Pesticide List
- Suggestions for amendments to the IPM Plan and policy
- Summary of all staff training activities

DRAFT



## IPM SUB-COMMITTEE AGENDA TRANSMITTAL FORM

**Board Meeting Date:** May 25<sup>th</sup>, 2021

**Agenda Item Title:** VIII. OLD BUSINESS  
**Item A. Chemical Methodology –ACTION ITEM**  
i. Review recent edits made and vote for final approval

**Recommendation:** Sub-Committee Member Approval

**Background:**

**If Agenda Item Requires Expenditure of Funds:**

Total Cost: n/a

**Attachments:** Final Draft of Pesticide Methodology section of IPM Plan for Stormwater

## VII. PESTICIDE USE METHODOLOGY

Minimal chemical controls are to be utilized in collaboration with biological, mechanical, and cultural control methods, as listed on Figure 4. The non-chemical control methods are being implemented by City staff and contractors as part of routine maintenance of the stormwater conveyance system, but alone cannot always reduce pest populations below tolerance thresholds; therefore, the City will support these efforts with an aquatic weed spraying program. The use of aquatic herbicides requires extensive species and product knowledge, 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 only be those that have met federal and state approval standards for aquatic use, as research has found them to be the most effective and pose the least risk to environmental and human health. This integrated pest management strategy is aimed at reducing the total amount of herbicides needed over the long term.

### 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, low temperatures, or heavy rainfall 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 increase the chance of pesticide resistance. While invasive plants are the primary target 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. In 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 ft<sup>2</sup>. (Figure 5). Selection of pesticides for aquatic 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.

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