



**INTEGRATED PEST MANAGEMENT
SUB-COMMITTEE
MEETING AGENDA
MONDAY, FEBRUARY 8TH, 2021 – 2:00 P.M.
COUNCIL CHAMBERS
1225 MAIN STREET, SEBASTIAN, FL**

- I. CALL TO ORDER
- II. PLEDGE OF ALLEGIANCE
- III. ROLL CALL
- IV. ANNOUNCEMENTS
- V. PUBLIC INPUT
- VI. NEW BUSINESS
 - Item A. Draft Sections II-VI of the Plan –ACTION ITEM**
 - i. Non-Chemical Methods by asset classification
 - ii. Further Non-Chemical Recommendations
 - Item B. Environmental Impact Quotient (EIQ)**
 - i. Brief explanation of EIQ and how it will be used to assess the IPM program
- VII. OLD BUSINESS
 - Item A. Chemical Spreadsheet –ACTION ITEM**
 - i. Approve final draft for Plan
- VIII. SUB-COMMITTEE MEMBER MATTERS
- IX. STAFF MATTERS
- X. ITEMS FOR NEXT AGENDA
 - Item A. Draft Non-Chemical Table**
 - Item B. Draft of Section VI. Pesticide Use Methodology**
- XI. 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: February 8th, 2021

Agenda Item Title: VI. NEW BUSINESS
Item A. Draft Sections II-VI of the Plan –ACTION ITEM
i. Non-Chemical Methods by asset classification

Recommendation: Submitted for Committee Member Approval

Background:

If Agenda Item Requires Expenditure of Funds:

Total Cost: n/a

Attachments: Draft Sections II-V of the IPM Plan

II. STRUCTURES

Overview

Stormwater assets classified as “structures” includes all dams, weirs, spillways, catch basins, baffle boxes, culvert pipes, inlets, outlets, and outfalls. There are over 100 such structures across the stormwater system. These assets have a virtually zero tolerance for pests, as they must stay clear of vegetation and debris at all times in order to function.

Do Nothing Option

The overgrowth of aquatic vegetation around and within these structures can greatly impede the flow of water, contributing to flooding issues. Also, the vegetation can inhibit their operation and cause costly damage to structures. Therefore, the tolerance threshold for pest activity, before action is taken is considered the very low for these assets.

Non-Chemical Methods

In order to eradicate vegetation, the following cultural and mechanical methods will be conducted routinely as part of standard proactive maintenance procedures within the City's stormwater system:

- **Vacuum Removal.** A vacuum truck is utilized to remove all accumulated sediments and vegetative debris from catch basins and baffle boxes regularly. The amount of debris removed is recorded.
- **Manual Removal.** When safe and practicable, vegetation will be removed by hand from structures as part of routine inspections.

III. CANALS

Overview

Stormwater assets classified as “canals” include the entire interconnected system of wide, mostly sea walled waterways. Altogether, the City maintains over 9 miles of canals and seawalls. It is acknowledged that aquatic vegetation provides an important ecological function in the canals. However, the City must be careful that the storage and flow capacity of these important waterways is protected.

Do Nothing Option

The overgrowth of aquatic vegetation within the canal system can greatly impede the flow of water, crucial for flood control throughout the City. The canals are also frequently utilized for kayaking and fishing. These recreational opportunities are lost when dense vegetation blocks navigation and affects the habitat quality by altering the water's chemistry and decreasing light penetration.

Finally, and most importantly, the canal system has multiple direct outfalls to the San Sebastian River (SSR). Any vegetation that is not properly maintained in the canal system is easily introduced into this State protected freshwater system. For this reason, Florida Statute 369.22 (Appendix X) requires that all public and private water owners enact a “maintenance program” for aquatic vegetation. Therefore, the tolerance threshold for vegetation growth, before action is taken is considered moderate for these assets.

Non-Chemical Methods

In order to control vegetation, the following cultural and mechanical methods will be conducted routinely as part of standard proactive maintenance procedures within the City's stormwater system:

- **Dredging.** When areas of the canal system are at their lowest storage, the City can access the canal bottoms with equipment to mechanically remove the vegetation and accumulated sediments.
- **Mechanical Removal by Contractor.** During periods where invasive vegetation has spread too extensively at a location to be brought back under control by routine methods, a contractor may be hired with the equipment to cut and remove the vegetation by boat.
- **Sediment and Erosion Control at Development Sites.** In compliance with **City Ordinance No. XXX** (Appendix X) and the City's NPDES Permit (Appendix X), proper erosion and sediment control at all sites of development is required to be established and maintained throughout the duration of the project and is inspected regularly for compliance. Sediments directly washing off a site, and into the canals created a mound of substrate for vegetation to establish and carry nutrients which many invasive species thrive on.

IV. PONDS

Overview

There are dozens of stormwater “ponds” throughout the City. These include all of the ponds and dry retention areas that are located within City parks and properties, as well as the interconnected ponds of the Stormwater Park. Pond vegetation provides an ecological as well as an aesthetic benefit. If left to grow uncontrolled, however, the flood control and safety of these properties can be impaired.

Do Nothing Option

Too much aquatic vegetation in the ponds can very quickly reduce their stormwater storage capacity. This accelerated **succession** causes localized flooding problems.

Also, many species of tall grasses growing around the pond edges can create dense thickets which are impossible for police and park visitors to see beyond; creating a serious safety concern. Many of the ponds also contain a fountain for aeration and algae control. Dense vegetation can damage the fountains by clogging the pump system or blocking the spray. The tolerance threshold for pest activity, before action is taken is considered high for these assets.

Non-Chemical Methods

In order to control vegetation, the following cultural and mechanical methods will be conducted routinely as part of standard proactive maintenance procedures within the City's stormwater system:

- **Dredging.** When all or part of the ponds are at their lowest storage, the City can access the pond bottoms and edges with equipment to mechanically remove the vegetation and accumulated sediments.
- **Mechanical Removal by Contractor.** During periods where invasive vegetation has spread too extensively at a location to be brought back under control by routine methods, a contractor may be hired with the equipment to cut and remove the vegetation by boat.
- **Fountain Aeration.** A fountain installed in the center of the pond provides water circulation and increases the dissolved oxygen of the water. This inhibits vegetation growth and increases the habitat quality for aquatic animals as well.
- **Planting Native Emergent Vegetation.** Maintaining a healthy, natural shoreline of native vegetation will help prevent the pest vegetation from re-establishing and enhance the habitat and aesthetic quality of the pond.

V. DITCHES

Overview

Stormwater assets classified as “ditches” includes a massive 80 mile system of open ditches. The ditch system is a massive spider web connecting most of the ponds, and canals to one another. Vegetation in the ditches assists with the infiltration of the water through the soil and stabilizes the steep banks. However, the growth of vegetation must also be controlled enough to preserve the connectivity of the entire stormwater system.

Do Nothing Option

The overgrowth of aquatic vegetation around in the ditches can eventually decrease their storage capacity, creating localized flooding problems. The ditch vegetation can cause very costly blockages in the road crossing culvert pipes. Many of the ditches bisect blocks of residential lots and an overgrowth of woody vegetation from the ditches threatens utility and residential structures. The tolerance threshold for pest activity, before action is taken is considered very high for ditches.

Non-Chemical Methods

In order to control vegetation, the following cultural and mechanical methods will be conducted routinely as part of standard proactive maintenance procedures within the City's stormwater system:

- **Dredging.** When the ditches are at their lowest storage, the City can access the ditch bottoms with equipment and mechanically remove the vegetation and accumulated sediments.
- **Sediment and Erosion Control at Development Sites.** In compliance with **City Ordinance No. XXX** (Appendix X) and the City's NPDES Permit (Appendix X), proper erosion and sediment control at all sites of development is required to be established and maintained throughout the duration of the project and is inspected regularly for compliance. Sediments directly washing off a site, and into the ditches create a mound of substrate for vegetation to establish and carry nutrients which many invasive species thrive on. These sediments can travel with stormwater and enter the canals as well.
- **Mowing.** The City maintains a contract for mowing of all right-of-way areas and ditch banks. Mowing the ditch banks reduces the self-seeding of the pest vegetation while still allowing the vegetation to remain established as it plays an important role in stabilizing the banks and filtering nutrients and sediments.
- **Mow at correct height.** Mowing to low can thin out and starve the vegetation and mowing too high or not often enough can facilitate the further spread of the plants.
- **Always mow with sharp blades and Sanitize Tools.** Dull mower blades cause uneven cutting and weaken the grasses. Vegetation can easily spread among sites by hitchhiking seeds and plant fragments on un-sanitized mowing and maintenance equipment. Cleaning the these tools between areas minimizes pest transport

VI. FURTHER NON-CHEMICAL RECOMMENDATIONS

Future Considerations

In addition to the cultural and mechanical pest control methods currently being implemented within the City's stormwater conveyance system, observations of the areas and sub-committee member research prompted the following recommendations for future consideration (Figure 4):

- **Seawall Reconstruction.** Reconstruction of **seawalls** that border most of the canal system. The seawalls hold back nutrient laden sediments from residential and commercial landscapes from entering the waters while keeping the banks stabilized.
- **Expanded Dredging of Open Water Dreas.** **Dredging** of canal, pond, and ditch bottoms to de-muck the nutrient rich deposits that comprise the top layer of the **substrate** and remove seawall sediments, which readily accommodate **emergent** vegetation growth
- **Environmental Enhancements.** Creation of a self-maintaining **littoral shelf** with native aquatic vegetation, which will provide healthy habitat and nutrient filtration for the
- **Pathogens.** The control of some pest vegetation can be aided by pathogens such as specific bacteria or fungus, which are amended to the pesticides or the water itself. While these bioherbicides are currently under research and review, many studies have shown that they help provide more effective long-term control.
- **Stormwater Fee Credits.** Utilize the existing Stormwater Fee Credit Program to incentivize private property owners to install a buffer zone of emergent vegetation along stormwater ponds and natural canal boundaries



IPM SUB-COMMITTEE AGENDA TRANSMITTAL FORM

Board Meeting Date: February 8th, 2021

Agenda Item Title: VI. NEW BUSINESS
Item B. Environmental Impact Quotient (EIQ)
i. Brief explanation of EIQ and how it will be used to assess the the IPM program

Recommendation: Submitted for Committee Member Review

Background:

If Agenda Item Requires Expenditure of Funds:

Total Cost: n/a

Attachments: Breakdown of the formula used by Cornell University to develop a pesticide's EIQ

Environmental Impact Quotient (EIQ) Formula:

$$\text{EIQ} = \frac{\{C[(DT*5)+(DT*P)] + [(C*((S+P)/2)*SY)+(L)] + [(F*R)+(D*((S+P)/2)*3)+(Z*P*3)+(B*P*5)]\}}{3}$$

- **DT = dermal toxicity** ability of a substance to cause local reaction and/or systemic poisoning in people or animals by contact with the skin
- **C = chronic toxicity** Harmful effects caused in repeated exposure situations
- **SY = systemicity** ability of the product to be translocated to other tissues which have not received the product directly
- **F = fish toxicity** risk to fish, the most sensitive aquatic vertebrate to toxicity
- **L = leaching potential** risk of moving through the soil profile, leaching, and getting into groundwater
- **R = surface loss potential** susceptible to loss through runoff and erosion during high-intensity rainfall events
- **D = bird toxicity** risk to birds, which are the vertebrates most sensitive to toxicity
- **S = soil half-life persistence**, or the "lasting-power" of a pesticide within the soil
- **Z = bee toxicity** risk to the essential pollinators
- **B = beneficial arthropod toxicity** risk to non-target organisms which are an important group of microorganisms that work to maintain ecosystem health
- **P = plant surface half-life**. Persistence, or the "lasting- power" of a pesticide on the surface of the leaves, stems, and fruit

Once an EIQ value has been established for the active ingredient of each pesticide, field use calculations can begin. To accurately compare pesticides and pest management strategies, the dose, the formulation or percent active ingredient of the product and the frequency of application of each pesticide needs to be determined. To account for different formulations of the same active ingredient and different use patterns, a simple equation called the EIQ Field Use Rating was developed. This rating is calculated by multiplying the EIQ value for the specific chemical obtained in the tables by the percent active ingredient in the formulation by the rate per acre used (usually in pints or pounds of formulated product).

$$\text{EIQ FIELD USE RATING} = \text{EIQ} \times \% \text{ ACTIVE INGREDIENT} \times \text{RATE}$$

Source: Kovach, J., Petzoldt, C., Degni, J., and Tette, J. 1992. A method to measure the environmental impact of pesticides. New York's Food and Life Sciences Bulletin 139:1–8

For More Information, please visit: <https://nysipm.cornell.edu/eiq/>



IPM SUB-COMMITTEE AGENDA TRANSMITTAL FORM

Board Meeting Date: January 11th, 2021

Agenda Item Title: VII. OLD BUSINESS
Item A. Chemical Spreadsheet –ACTION ITEM
i. Approve final draft for Plan

Recommendation: Submitted for Committee Member Review and Approval

Background:

If Agenda Item Requires Expenditure of Funds:

Total Cost: n/a

Attachments: Completed Draft of Chemical Spreadsheet

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			spreader, sticker	NA	NA	\$138 per 2.5 gals	
methelated seed oil	adjuvant	Alligare MSO 1	NA	NA	100.00%	caution	30.9			surfactant	NA	NA	\$61.25 per 2.5 gals	
polyacrylamide	adjuvant	Accuracy Polycontrol 2	NA	NA	30%	warning	NA			deposition & drift retardant	NA	NA	\$129.77 per 1 gal	
D-limonene	adjuvant	Kammo Plus	NA	NA	100%	warning	NA			surfactant	NA	NA	\$92.51 per 1 gal	
polyoxlkane ethers	adjuvant	Induce	NA	NA	90%	warning	NA			wetter, spreader	NA	NA	\$136.39 per 2.5 gals	
Bispyribac	herbicide	Tradewind (powder)	59639-165	2	80%	caution	11.47			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			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			contact, non-selective	submersed	algae	\$45.95 per 1 gal	
Diquat	herbicide	Tribune Reward	100-1390 100-1091	22	37.30%	caution	39.2			contact, non-selective	submersed, emergent floating	hyacinth, water lettuce, salvinia, mosquito fern	\$221.95 per 1 gal	
Endothal	hebicide	Aquathol	70506-176	Unknown	40.30%	danger	25.22			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			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	1.5	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			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			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			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			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			systemic	emergent, floating, submersed	hydrilla, hyacinth	\$695.95 per 1 qt.	
Peroxides	algaecide	GreenCleanPRO	70299-15	Unclassified	85%	danger	16			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			systemic, selective	emergent	grasses	\$707.06 per 2.5 gals	
Topramezone	herbicide	Oasis	7969-339-67690	27	29.70%	caution	27.17			systemic	submersed	hydrilla, hyacinth	\$811.95 per 1 qt	
Triclopyr	herbicide	Garlon 3A	62719-37	4	44.40%	danger	11			systemic	submersed, emergent	brazilian pepper, broadleaf, hyacinth, 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	47.1	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.^{2,4}

WARNING indicates the pesticide product is moderately toxic if eaten, absorbed through the skin, inhaled, or it causes moderate eye or skin irritation.^{2,4}

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.^{2,4}

	TOXICITY CATEGORY (Signal Word) ²			
	High Toxicity (DANGER/Danger/Poison) Category I	Moderate Toxicity (WARNING) Category II	Low Toxicity (CAUTION) Category III	Very Low Toxicity (Optional Signal Word = CAUTION) Category IV
Acute Oral LD ₅₀	Up to and including 50 mg/kg (≤ 50 mg/kg)	Greater than 50 through 500 mg/kg (>50-500 mg/kg)	Greater than 500 through 5000 mg/kg (>500-5000 mg/kg)	Greater than 5000 mg/kg (>5000 mg/kg)
Inhalation LC ₅₀	Up to and including 0.05 mg/L (≤ 0.05 mg/L)	Greater than 0.05 through 0.5 mg/L (>0.05-0.5 mg/L)	Greater than 0.5 through 2.0 mg/L (>0.5-2.0 mg/L)	Greater than 2.0 mg/L (>2.0 mg/L)
Dermal LD ₅₀	Up to and including 200 mg/kg (≤ 200 mg/kg)	Greater than 200 through 2000 mg/kg (>200-2000 mg/kg)	Greater than 2000 through 5000 mg/kg (>2000-5000 mg/kg)	Greater than 5000 mg/kg (>5000 mg/kg)
Primary Eye Irritation	Corrosive (irreversible destruction of ocular tissue) or corneal involvement or irritation persisting for more than 21 days	Corneal involvement or other eye irritation clearing in 8 - 21 days	Corneal involvement or other eye irritation clearing in 7 days or less	Minimal effects clearing in less than 24 hours
Primary Skin Irritation	Corrosive (tissue destruction into the dermis and/or scarring)	Severe irritation at 72 hours (severe erythema or edema)	Moderate irritation at 72 hours (moderate erythema)	Mild or slight irritation at 72 hours (no irritation or erythema)