

**Proposal for the solicitation of Vendor's Requests for Proposals (RFPs)
for the Advanced Water Treatment (AWT) project for Marco Island, Florida
By Councilor Tamara Goehler.**

This white paper proposes a strategic upgrade of Marco Island's existing wastewater treatment infrastructure to an Advanced Water Treatment (AWT) facility.

Marco Island faces increasing pressure to enhance water quality, ensure environmental protection, and secure future water resources.

An AWT upgrade offers significant advantages by producing high-quality effluent suitable for beneficial reuse or discharge into ecologically sensitive areas, thereby safeguarding public health, supporting the local economy, and promoting long-term environmental sustainability.

While the initial capital investment will be substantial, the long-term benefits in terms of environmental resilience, water security, and economic stability far outweigh the costs. A detailed feasibility study and comprehensive financial analysis will be critical next steps to define precise project scope and funding requirements.

Marco Island, a jewel of Southwest Florida, is characterized by its stunning beaches, intricate waterways, and vibrant ecosystems. Its appeal as a premier tourist destination and a desirable place to live is intrinsically linked to the health of its surrounding aquatic environments, including the Gulf of Mexico and the Ten Thousand Islands National Wildlife Refuge.

As the island continues to grow and environmental regulations become more stringent, the demand for sustainable and high-quality water management solutions intensifies. Current conventional wastewater treatment processes, while effective for basic pollutant removal, may not fully address emerging contaminants, nutrient loads, or the increasing need for alternative water sources. This proposal advocates for an upgrade to Advanced Water Treatment (AWT) technology, a proactive measure to ensure Marco Island's environmental integrity, public health, and economic prosperity for generations to come.

Marco Island's existing wastewater treatment plant plays a crucial role in managing the community's domestic and commercial wastewater. Typically, such facilities employ primary and secondary treatment processes to remove solids, organic matter, and some nutrients. However, these conventional methods may not adequately remove all dissolved contaminants, trace pollutants, or sufficient levels of nutrients like nitrogen and phosphorus, which can contribute to environmental degradation in sensitive receiving waters.

The limitations of conventional treatment include:

* Potential for nutrient enrichment in estuaries and coastal waters, leading to algal blooms (including harmful red tides) and oxygen depletion.

* Incomplete removal of emerging contaminants (e.g., pharmaceuticals, personal care products, microplastics).

Advanced Water Treatment (AWT) refers to a suite of processes that go beyond conventional primary and secondary treatment to achieve a higher level of pollutant removal, producing water of superior quality. The specific technologies employed in an AWT facility can vary but commonly include:

* **Reduced Nutrient Loading:** AWT significantly reduces the discharge of nitrogen and phosphorus into the Gulf of Mexico and surrounding estuaries. This is crucial for mitigating harmful algal blooms (e.g., red tide), protecting seagrass beds, and supporting healthy marine ecosystems.

* **Protection of Sensitive Habitats:** By discharging cleaner water, AWT safeguards vital coastal habitats, including mangrove forests, oyster beds, and coral reefs, which are essential for biodiversity and coastal resilience.

* **Removal of Emerging Contaminants:** AWT processes are highly effective at removing trace organic contaminants like pharmaceuticals, personal care products (PPCPs), endocrine-disrupting chemicals, and microplastics, which are not adequately addressed by conventional treatment and can have long-term ecological impacts.

* **Improved Recreational Waters:** Cleaner discharges contribute to healthier beaches and waterways, enhancing the safety and enjoyment of swimming, fishing, and boating activities for residents and tourists.

* **Reduced Health Risks:** By removing a broader spectrum of contaminants and pathogens, AWT minimizes potential public health risks associated with waterborne diseases or exposure to environmental pollutants.

* **Enhanced Aesthetic Value:** Cleaner waterways and healthier ecosystems contribute to the overall beauty and appeal of Marco Island, benefiting residents and visitors alike.

* **A healthy environment, free from frequent algal blooms and with pristine beaches, is paramount for Marco Island's tourism industry, which is a major economic driver. AWT directly supports the long-term viability of this sector.**

* **Property Value Protection:** Environmental degradation can negatively impact property values. By protecting and enhancing water quality, AWT helps maintain and potentially increase real estate values.

* **Regulatory Compliance and Avoidance of Fines:** Proactive investment in AWT ensures compliance with current and future environmental regulations (e.g., Florida's numeric nutrient criteria, federal Clean Water Act), avoiding costly fines and legal challenges.

The cost of upgrading to an Advanced Water Treatment facility is a significant investment that requires careful planning and a detailed financial analysis. Costs can be broadly categorized into capital expenditures and operational & maintenance (O&M) expenditures.

Capital costs represent the upfront expenses associated with design, construction, and equipment procurement. While specific figures require a detailed engineering study, typical components include:

- * Design and Engineering: Fees for feasibility studies, pilot testing, detailed engineering design, and permitting.
- * State and Federal Grants: Programs from the U.S. Environmental Protection Agency (EPA), Florida Department of Environmental Protection (FDEP), and other agencies often provide grants for water quality improvement and infrastructure projects.
- * State Revolving Funds (SRF): Low-interest loans are available through state programs for wastewater infrastructure projects.
- * Local Bond Issues: Municipal bonds can be issued to finance large capital projects, repaid through local taxes or utility fees.
- * Public-Private Partnerships (PPPs): Exploring partnerships with private entities for design, build, operate, and maintain (DBOM) models.

Conclusion:

Upgrading Marco Island's wastewater treatment plant to an Advanced Water Treatment facility is a forward-thinking and essential investment in the community's future.

The advantages are clear: Superior environmental protection for the island's invaluable natural resources, enhanced water security through potential reuse, and sustained economic vitality driven by a healthy ecosystem and robust tourism.

While the costs are substantial, this proposal serves as a call to action for Marco Island to embark on my request for the solicitation of Vendor's Requests for Proposals (RFPs) for the Advanced Water Treatment (AWT) project that will secure a cleaner, healthier and more prosperous future for all.