

# WETS-2 Classic WETS on Steroids

*Physics + Vision + Database + AI + Citizen Scientist Integration*

- Wake Detection 2.0: Physics + Vision + Edge AI
  - CCSB-based WETS 2.0 deployed in Ft. Lauderdale canals / Port Everglades
  - Multi-sensor fusion: dual pressure sensors, IMU, MEMS foveated camera
  - AI-assisted wake classification + labeled event database
  - Hybrid networking: LoRa + Local Wi-Fi + Optional wired shore link
  - Citizen scientist review portal (modern WETS-99 concept)
  - Partnership: OSDC + NOVA + FAU + Ft. Lauderdale Marine Patrol

*This is a resurrection of WETS-99 — but with AI, Wi-Fi, and real-time databases*

# WETS 2.0 - Architecture *Database-Centric Coastal Sensing*

- Sensor Layer (CCSB Host Platform)
  - Dual pressure sensors (wake height & energy)
  - IMU (motion & tilt response)
  - MEMS foveated camera (above-water tracking)
  - Optional hydrophone (night/event detection)
- Networking Layer
  - LoRaWAN (low-bandwidth continuous telemetry)
  - Local Wi-Fi/Cellular (high-speed data offload)
  - Optional wired shore node (secure + high bandwidth)
- Processing Layer
  - Edge processing onboard CCSB
  - AI-assisted event flagging
  - Time-synchronized multi-sensor fusion
- Database Layer
  - Automated event logging
  - Image + physics fusion records
  - Query able labeled dataset (WETS-99 legacy model)

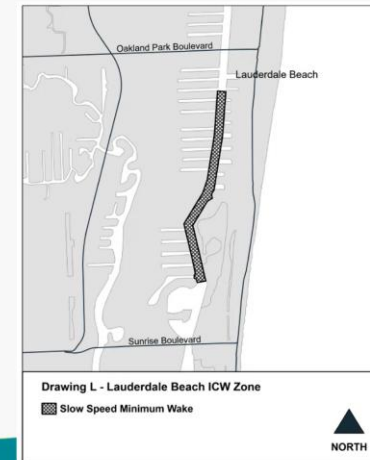
## Engagement

- Zone size and timeframe
- Year-round protection necessary
- Fort Lauderdale PD Letter of Support
- Marine Industries Association consulted — no opposition received



Credit FWC virtual public meeting Sept. 25, 2025

## Proposed Boating Restricted Area



- Surrounded by existing idle speed zones at both bridges
- Existing manatee zone (seasonal/weekends) + 25 mph at all other times
- Proposed: year-round Slow Speed Minimum Wake Zone
- Usual landmark names taken
- Lauderdale Beach ICW Zone



# WETS 2.0 Collaborative Execution Model

## *Based on Prior WETS Deployments*

- OSDC (Lead System Integrator)
  - CCSB platform design and deployment
  - Citizen scientist program coordination
  - Sensor integration and telemetry architecture
  - Database structure and operational framework
  - Field logistics and maintenance
- Nova Southeastern University (NOVA)
  - AI classification development
  - Environmental data interpretation
  - Database validation and long-term data stewardship
  - Historical continuity with WETS-98/99 model
  - Law School
- Florida Atlantic University (FAU)
  - AI classification development
  - Database structure and operational framework
  - Edge processing algorithms
  - Student research integration (Senior Design / I-SENSE)
  - Communications and autonomy research support
- Ft. Lauderdale Marine Patrol (Operational Stakeholder)
  - Real-world wake enforcement context
  - Event validation feedback
  - Operational use-case testing
  - Policy relevance and adoption pathway

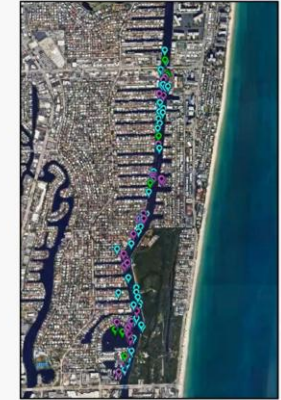
# WETS 2.0 Operational Demonstration *From Wake Event to Actionable Record*

## *Conduct operational coastal decision-support system revival*

- Event Workflow
  - Vessel passage detected (camera + sensors)
  - Wake physics quantified (pressure + IMU)
  - AI flags anomalous wake events
  - Event automatically logged to database
  - Citizen scientist / expert review portal
  - Marine patrol receives time-aligned incident record
- Key Demonstration Outcomes
  - Automated labeled maritime activity dataset generation
  - Real-time + historical query capability
  - Objective wake impact documentation (not anecdotal)
  - Scalable coastal monitoring model for other waterways
- Modern Enhancements Over WETS-99
  - AI-assisted classification
  - Secure Wi-Fi / wired shore high-speed data transfer
  - Cloud-hosted database dashboards
  - Interoperable CCSB sensor host platform

### Citation/Warning/Accident Data

- 52 boating citations (Jan 2020–present)
- 38 boating warnings
- 9 boating accidents
- Includes 1 **fatality** (Aug 2025)



*Credit* FWC virtual public meeting Sept. 25, 2025

### Criteria

#### Considerations

- Visibility (blind corners, intersections)
- Hazardous conditions (flood events, strong currents)
- Vessel traffic congestion

#### Unsafe Levels of Vessel Traffic Congestion

- Uniform boating citations
- Written warnings
- Accident reports
- Vessel traffic studies
- Other credible data

