



*Florida Department of
Environmental Protection*

North Indian River Lagoon Basin Management Action Plan

August 2, 2012



Overview of the BMAP

DRAFT

BASIN MANAGEMENT ACTION PLAN

for the Implementation of Total Maximum Daily Loads for Nutrients
Adopted by the Florida Department of Environmental Protection

in the

Indian River Lagoon Basin North Indian River Lagoon

developed by the
North Indian River Lagoon Stakeholders

in cooperation with the
Florida Department of Environmental Protection
*Division of Environmental Assessment and Restoration
Bureau of Watershed Restoration
Tallahassee, Florida 32399*

July 2012





Acknowledgments

- The acknowledgements table was updated to list organizations, instead of individual names.
- The table lists allocation entities, agencies, and other interested parties.





Executive Summary

- The first sentence was revised to clarify the full extent of the Indian River Lagoon (IRL) Basin and the impaired portions of the IRL.
- Additional details were added to explain the seagrass depth limit targets in the total maximum daily loads (TMDLs).
- Text was added to explain the reductions in this BMAP iteration are 15% of the TMDL reductions, and that a second iteration of the North IRL BMAP will be needed.





Executive Summary, continued

- A new subsection was added, Management Actions and BMAP Enforcement.
 - Describes what management actions were eligible in this BMAP iteration.
 - Summarizes BMAP enforcement mechanisms.
- A new subsection was added, Economic Benefits of the IRL System.
 - Summarizes the economic benefits of restoring the IRL.
- BMAP cost information was updated.





Comments and Questions on Executive Summary





Chapter 1: Context, Purpose, and Scope of the Plan





Stakeholder Involvement

- Technical meetings began in June 2009.
 - The purpose of these meetings was to organize and review the technical information that is the basis of the BMAP, gather information to aid in the development of the BMAP, and identify management actions that improved water quality.
- Policy briefings began in February 2012.
 - The purpose of the briefings was to obtain feedback on the BMAP process from the policy makers from each responsible BMAP entity.





Plan Purpose and Scope

- The purpose of the North IRL BMAP is to implement the TN and TP TMDLs to achieve the seagrass median depth limit targets.
- Focuses on the North IRL subbasin and two project zones:
 - North A – Turnbull Creek to NASA Causeway (State Road 405); and
 - North B – NASA Causeway to Melbourne Causeway (U.S. 192).





BMAP Approach

- The TMDL reductions will be achieved over a 15-year period.
- The first iteration of the BMAP will cover a 5-year period.
 - Approximately end-2012 through end-2017.
- Each entity is required to achieve 15% of their TN and TP reductions in this first iteration.
- Added information about how reductions in future years will be more difficult because this iteration included credit for past projects.





TMDLs Addressed in the BMAP

- The TMDLs for the IRL Basin were adopted in March 2009.
- The TMDLs identify total nitrogen (TN) and total phosphorus (TP) reductions needed to allow seagrass re-growth in deeper water habitats.
- Clarified how the TMDL seagrass depth limit targets were established.
- Explained what the percent reduction for the stormwater wasteload allocation represents.





TMDLs, continued

WBID	Parameter	TMDL (lbs/yr)	WLA _{ww} (lbs/yr)	WLA _{sw}	LA (lbs/yr)
2963F	TN	177,220	N/A	35%	177,220
2963E	TN	173,232	N/A	35%	173,232
2963D	TN	147,524	8,111	36%	139,413
2963B+2963C	TN	189,068	9,200	36%	179,868
<i>TN Total</i>	<i>TN</i>	<i>687,044</i>	<i>17,311</i>	<i>N/A</i>	<i>669,733</i>
2963F	TP	9,320	N/A	47%	9,320
2963E	TP	14,793	N/A	47%	14,793
2963D	TP	11,845	1,609	53%	10,236
2963B+2963C	TP	20,592	225	48%	20,367
<i>TP Total</i>	<i>TP</i>	<i>56,550</i>	<i>1,834</i>	<i>N/A</i>	<i>54,716</i>





Assumptions for the First BMAP Iteration

- The TMDL requires TN and TP reductions from the watershed to improve water quality to allow seagrass to grow at greater depths. Therefore, reducing nutrient loading to the North IRL is the most important factor to improving seagrass depth limits.
- Some of the BMPs that are listed in the project tables that reduce TN and TP will also result in total suspended solids (TSS) reductions. TSS is another factor that limits light penetration in the lagoon; therefore, reductions in TSS, in conjunction with reductions in nutrients, should allow seagrass to grow at deeper depths.





Assumptions, continued

- The allocations do not include required load reductions from atmospheric deposition because it is considered a background, uncontrollable source. The focus of the TMDL allocations is on the point source facilities and urban and agricultural stormwater sources in the North IRL subbasin.
- Certain BMPs were assigned provisional credit for load reductions in this iteration of the BMAP while additional research is conducted to quantify the effectiveness. These reduction estimates may change, as additional research results are available.





Considerations for Future Iterations

- Land uses –The loading estimates for this iteration of the TMDL and BMAP were based on 2000 land use data. Future iterations should consider more recent land use information and whether allocations should be adjusted accordingly.
- Soil types – The Natural Resources Conservation Service released a new soil coverage for Florida in February 2010. During the next iteration of the BMAP, FDEP or SJRWMD will review the updated soil coverage and make adjustments to the Pollutant Load Screening Model (PLSM), as needed.





Considerations, continued

- Basin boundaries – Additional data about the topography of the North IRL subbasin have been collected (including Volusia County LIDAR data). Adjustments were made to the drainage basins for Cocoa, Rockledge, Titusville. During the next iteration of the BMAP, FDEP or SJRWMD will review the available data and make any additional adjustments to the drainage basin, as needed.
- Areas with stormwater treatment - At the time of TMDL development, areas with stormwater treatment areas were not well mapped. During the next BMAP iteration, FDEP or SJRWMD will review available data and make adjustments to the treated areas in the model, as needed.





Considerations, continued

- Event mean concentrations (EMCs) and runoff coefficients (ROCs) – More accurate and extensive EMCs and ROCs have been added to FDEP's database. During the next BMAP iteration, FDEP or SJRWMD will review available data and make adjustments to the EMCs and ROCs in the model, as needed.
- County roads – Stakeholders expressed concern during the BMAP process that county roads were included as part of the loading to each municipality. If the county road coverages are available for the next BMAP iteration, FDEP will use this information to refine the allocations.





Considerations, continued

- Atmospheric deposition – The TMDL assumed that no reduction in atmospheric deposition would occur. However, there are two power plants in the North IRL subbasin and these contributions could be reduced in the future. For future BMAP iterations, FDEP or SJRWMD will evaluate any changes in atmospheric deposition and adjust the estimated loading to the lagoon, as appropriate.
- Ground water loads - The nutrient loading from the surficial aquifer was implicitly included in the TMDL modeling as part of the watershed flow and loadings. The stakeholders expressed concern that the ground water loads were not sufficiently accounted for in the. In future iterations, FDEP or SJRWMD will evaluate any available ground water data and utilize this information, to the extent possible, in the modeling.





Considerations, continued

- Progress towards seagrass depth limit targets – FDEP will continue to assess progress towards the seagrass depth limit targets. Adjustments will be made to the required TN and TP reductions in future BMAP iterations, as needed, based on seagrass response.
- Allocations - Stakeholders requested that FDEP remove undeveloped lands from the allocation process. However, stakeholders with mainly undeveloped lands received reduction requirements that seemed disproportionately high. FDEP determined the best allocation approach for this BMAP iteration was to assign reductions using a target load per acre approach that included all land uses, except water. In the next iteration, FDEP will consider a different allocation approach that removes undeveloped lands.





Future Growth in the Basin

- Section 403.067(7)(a)(2), Florida Statutes, requires: BMAPs to:
“...identify the mechanisms by which potential future increases in pollutant loading will be addressed.”
- The BMAP does not include an allocation for new development.
- New discharges cannot increase existing load and must meet “net environmental improvement” for the Environmental Resource Permit (ERP) program requirements.





Reducing Loads from Future Growth

- Additional information was added about the new “10/2” general permit and the importance of local governments being proactive to address loading from future growth.
- Local governments are encouraged to pursue measures to control loads from future growth such as:
 - Low impact development (LID) standards and incentives;
 - Florida friendly landscaping; and
 - Modifications to local development regulations.





Economic Benefits of the IRL System

- This new section was added to describe the economic benefits of improving the lagoon system.
- Summarized the findings from the Hazen and Sawyer report prepared for the IRL National Estuary Program (NEP) in 2008.





Comments and Questions on Chapter 1





Chapter 2: North Indian River Lagoon Basin Setting





Basin Hydrology

- The North IRL is influenced by winds, freshwater inputs from tributaries, and tidal exchange via direct connections to the Atlantic Ocean.
- Major tributaries to the North IRL include Turnbull creek, Canaveral Barge Canal, the valley between Ten Mile Ridge and the Atlantic Coastal Ridge, and the Eau Gallie River.
- Removed reference to impacts from causeway construction because of conflicting information in different reports.





Land Uses in the Basin

- The North IRL watershed covers about 141,311 acres (not including the lagoon).
- Based on 2000 land uses:
 - 25.8% of the area is urban;
 - 8.3% of the area is agricultural;
 - 40.2% of the area is wetlands;
 - 8.8% of the area is upland forest; and
 - 16.9% of the area is rangeland, water, and barren land.
- New land use map was added.





Seagrass Evaluation

- Both project zones in the North IRL are not meeting the seagrass depth limit targets:
 - For the period of 2003-2007 and the period of 2005-2009.
- Therefore, reductions are required in this iteration of the BMAP and allocations to the stakeholders were assigned.





Comments and Questions on Chapter 2





Chapter 3: Pollutant Sources and Anticipated Outcomes





Sources in the TMDL

- Point source facilities;
- Municipal separate storm sewer systems (MS4s);
- Nonpoint stormwater sources;
- Agriculture; and
- Atmospheric deposition directly on the lagoon.
 - Considered a background, uncontrollable source in the TMDL; therefore, reductions were not required of this source.





Point Source Facilities

- The point source facilities were assigned allocations in the TMDL.
- The North IRL facilities are:
 - Cape Canaveral Power Plant;
 - Cocoa – J. Sellers Wastewater Treatment Facility (WWTF);
 - Melbourne Reverse Osmosis (RO) Plant;
 - Reliant Energy – Indian River Power Plant; and
 - Rockledge WWTF.





MS4s

- The MS4s are all Phase II:
 - Brevard County;
 - Volusia County;
 - City of Cocoa;
 - City of Edgewater;
 - City of Indian Harbour Beach;
 - City of Melbourne;
 - City of Oak Hill;
 - City of Rockledge;
 - City of Titusville;
 - Town of Indialantic; and
 - Florida Department of Transportation (FDOT) District 5.





Non-MS4s

- The urban stormwater areas outside an MS4 are:
 - Kennedy Space Center; and
 - Town of Palm Shores.



Agriculture

- The primary agricultural land use in the North IRL subbasin is citrus.
- Other agricultural land uses include cow-calf operations, row/field crops, nurseries, and horse farms.
- Since the 2000 land uses, there have been significant changes in agriculture due to urban encroachment, citrus health issues, and the economic downturn.





Enforcement of BMAPs

- A BMAP is developed collaboratively with stakeholders to meet provisions in Section 403.067(7), Florida Statutes (F.S.).
- For point sources, BMAPs are enforceable through WWTF and MS4 National Pollutant Discharge Elimination System (NPDES) permits.
- For nonpoint sources, BMAP projects are enforceable through the BMAP itself.
- For agriculture, best management practices (BMPs) or monitoring is required.
- BMAPs are adopted by FDEP Secretarial Order.





Anticipated Outcomes of BMAP Implementation

- Improved water quality trends in the North IRL, which will help improve seagrass coverage;
- Decreased loading of TN and TP;
- Decreased loading in TSS from some of the projects implemented to reduce TN and TP loads;
- Increased coordination between state and local governments and within divisions of local governments when solving problems for surface water quality restoration;
- Additional state and local funding secured for water quality restoration;
- Improved identification of effective projects through stakeholder decision-making and priority-setting processes;
- Enhanced public awareness of pollutant sources, pollutant impacts on water quality, and corresponding corrective actions; and

Enhanced understanding of basin hydrology, water quality, and pollutant sources.





Comments and Questions on Chapter 3





Chapter 4: Detailed Allocations





Target Load per Acre Approach

- Target loads per acre for TN and TP were determined for the each project zone.
- Details of this allocation approach were provided earlier in the meeting.
- Totals were added to Tables 9 and 10.
- The *de minimus* tables and the total required reduction tables were added to this chapter.





Comments and Questions on Chapter 4





Chapter 5: Management Actions





Project Collection

- Stakeholders submitted projects that were completed or planned to achieve TN and TP reductions.
- Projects completed since January 1, 2000 and later were eligible for credit.
- All projects must be located in the appropriate North IRL project zone and address nutrients.
- Credit only counted for treatment above and beyond any permitted requirements.





Agriculture

- In the first five year BMAP period, the Florida Department of Agriculture and Consumer Services (FDACS) is proposing to implement BMPs on 50% of the agricultural lands.
- Reductions were assigned to agriculture for changes in land uses since 2000, either to urban uses or less intensive agriculture.





Agriculture, continued

NORTH A ESTIMATED LOADS	TN (LBS/YR)	TP (LBS/YR)
1 st 5-Year Load Reduction (Phase I)	5,596.6	1,028.8
Estimated Load Reductions via BMPs, 50% Target Enrollment	3,045.2	432.2
Credit for Changes in Land Use	5,047.0	1,420.3
Remaining Load Reductions Needed for BMAP in Phase I	-2,495.6 (credit)	-823.7 (credit)

NORTH B ESTIMATED LOADS	TN (LBS/YR)	TP (LBS/YR)
1 st 5-Year Load Reduction (Phase I)	1,096.7	444.7
Estimated Load Reductions via BMPs, 50% Target Enrollment	1,056.1	276.5
Credit for Changes in Land Use	4,739.0	1,029.4
Remaining Load Reductions Needed for BMAP in Phase I	-4,698.4 (credit)	-861.2 (credit)





Comments and Questions on Chapter 5





Chapter 6: Assessing Progress and Making Changes





Seagrass Evaluation

- In year four of the BMAP, FDEP will use the 2007, 2009, 2011, and 2013 seagrass mapping data to reassess seagrass depth limit compliance.
- Text was revised to clarify that a second BMAP iteration will be needed since 2 of these 4 years are not compliant.



Tracking Implementation

- FDEP will work with the stakeholders to organize the monitoring data and track project implementation.
- This information will be organized into annual progress reports.
- The stakeholders will meet at least annually to review progress and modify project lists and the monitoring plan, as needed.





Monitoring Plan Objectives

- Primary objective: Track seagrass depth limit responses to BMAP implementation.
 - Compliance determined through the seagrass flyover mapping and aerial photography interpretation.
 - FDEP and the St. Johns River Water Management District (SJRWMD) will fund this.
- Secondary objective: Track trends in ambient water quality in the North IRL and major tributaries.
 - Evaluated through data collected in the ambient monitoring network.





Monitoring by Stakeholders

- The following stakeholders have agreed to continue or add water quality monitoring in the basin:
 - SJRWMD; and
 - Volusia County.
- Data from a U.S. Geological Survey (USGS) station will also be used to track flow data.





Monitoring Network

- The monitoring network includes:
 - North A – 8 existing monthly water quality stations.
 - North B – 7 existing monthly water quality stations, 1 existing USGS flow station, and 6 proposed monthly water quality stations.
- The proposed stations will only be added if SJRWMD receives budget for additional monitoring staff.
- FDEP is pursuing funding for discharge monitoring at 2 of the proposed sites. This will not start in the first year of the BMAP.





Data Management

- All ambient water quality data included in the BMAP monitoring must be collected following FDEP's standard operating procedures and should be uploaded to STORET.
- Any biological or storm event data collected will be maintained by the entity collecting the data.
- Seagrass data will be evaluated approximately every two years.
- Water quality data will be evaluated in year four of the BMAP.





Research Priorities

- Research priorities identified include:
 - Updated bathymetry coverage;
 - Seagrass transects monitoring;
 - Phytoplankton, drift algae, and microalgae monitoring;
 - Storm event monitoring at major outfalls;
 - Tracking watershed loads;
 - Verifying BMP effectiveness, as needed;
 - Seagrass depth regression equations with new data; and
 - Collect ground water load data.
- During the first BMAP iteration, stakeholders will work with the IRL NEP and FDEP to prioritize research efforts and develop scopes of work to guide future efforts, as funding becomes available.





Comments and Questions on Chapter 6





Chapter 7: Commitment to Plan Implementation





Commitment to the BMAP

- The stakeholders have worked collaboratively to develop the BMAP.
- The stakeholders have committed to the activities included in the BMAP.
- This chapter will include letters of commitment or resolutions of support for the BMAP provided by the stakeholders.





Letters of Commitment

- Providing a letter of commitment or resolution of support for the BMAP is not required.
- However, stakeholders in other basins have stated that having this letter provides a way to show support for the BMAP as staff and board/commission members change over time.
- An example letter was provided. The wording and format can be modified to meet each stakeholder's needs.





Comments and Questions on Chapter 7





Appendices





BMAP Appendices

- Appendix A: TMDL Basin Rotation Schedule
 - Explains the FDEP watershed assessment cycle.
- Appendix B: Summary of Statutory Provisions Guiding BMAP Development and Implementation
 - Includes excerpts from Sections 403.067(6) and (7) in Florida Statutes
- Appendix C: Summary of EPA-Recommended Elements of a Comprehensive Watershed Plan
 - Outlines key elements in a watershed plan; necessary to obtain certain types of funding.





BMAP Appendices, continued

- Appendix D: Process to Conduct the Seagrass Depth Limit Compliance Evaluation
 - New appendix that summarizes the GIS process to evaluate seagrass compliance.
- Appendix E: Projects to Achieve the TMDL
 - Project tables for each stakeholder.
 - *Please review the information in your project tables carefully.*
- Appendix F: Glossary of Terms
- Appendix G: Bibliography of Key References and Websites





Comments and Questions on Appendices





Steps to BMAP Adoption





Stakeholder and FDEP Staff Actions

Action	Responsible Party	Date
Comments on first Draft BMAP	Stakeholders	Completed
Technical meeting to review updated Draft BMAP	FDEP and Technical Stakeholders	August 2, 2012 (today)
Comments on second Draft BMAP due	Stakeholders	<i>August 24, 2012</i>
Policy briefing on final Draft BMAP	FDEP, Policy Makers, and Technical Stakeholders	October 2012
Public meeting on BMAP	Public/FDEP	November 2012
Public comment period closes	FDEP	30 days after public meeting
Review of public comments by staff complete	FDEP	1 week after end of public comment period
Letters of commitment due for inclusion in BMAP package to FDEP Secretary	Policy Makers and Technical Stakeholders	End-2012





FDEP Secretarial Adoption Process

- Brief FDEP DEAR management on BMAP.
- Brief FDEP Deputy Secretary on BMAP.
- Brief FDEP Secretary on BMAP and obtain Secretarial approval.
- Notify interested parties and place Florida Administrative Weekly (FAW) notice.
- End of challenge period (21-days after notice).
- BMAP adopted and enforceable (if there are no challenges).





Questions?

