



*Florida Department of
Environmental Protection*

Banana River Lagoon Project Zones and Seagrass Evaluation

April 26, 2012



Project Zones

- Based on feedback from stakeholders, the Florida Department of Environmental Protection (FDEP) spoke with the St. Johns River Water Management District (SJRWMD) about dividing Banana River Lagoon into two project zones.
- Agreed that there are hydrological differences between the northern and southern parts of the Banana River Lagoon.

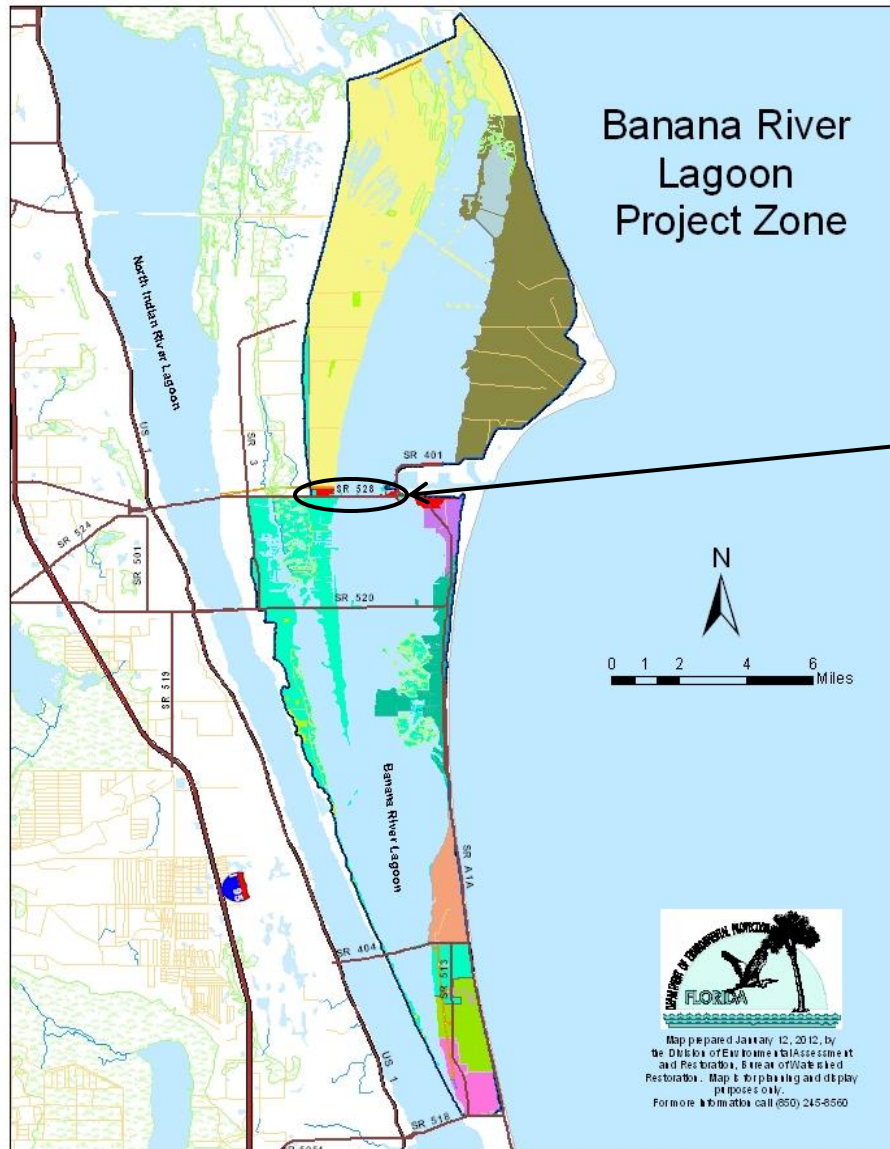




Project Zones, continued

- Banana River Lagoon is now being evaluated as two separate project zones:
 - BRL A - the area north and including the State Road (SR) 528 Causeway; and
 - BRL B – the area south of the SR 528 Causeway.
- Seagrass evaluations were updated to reflect two project zones.





Legend

- | | | | |
|----------------|----------------------|-----------------|----------------------|
| Canals/ditches | Brevard County | Cape Canaveral | Indian Harbour Beach |
| Water | Port Canaveral | Cocoa Beach | Melbourne |
| Wetlands | Kennedy Space Center | Patrick AFB | |
| Agriculture | Cape Canaveral AFS | Satellite Beach | |

Dividing line between the BRL A and BRL B project zones.



We Made Some Changes

- Before data were reevaluated for the new project zones, some corrections in the way deep edge data points were selected had to be made.
- Review of data for Banana River Lagoon indicated that the median depth for deep edge of seagrass that DEP calculated was too low when compared to calculations made by SJRWMD.
- DEP uncovered some problems in the way data points were being selected.



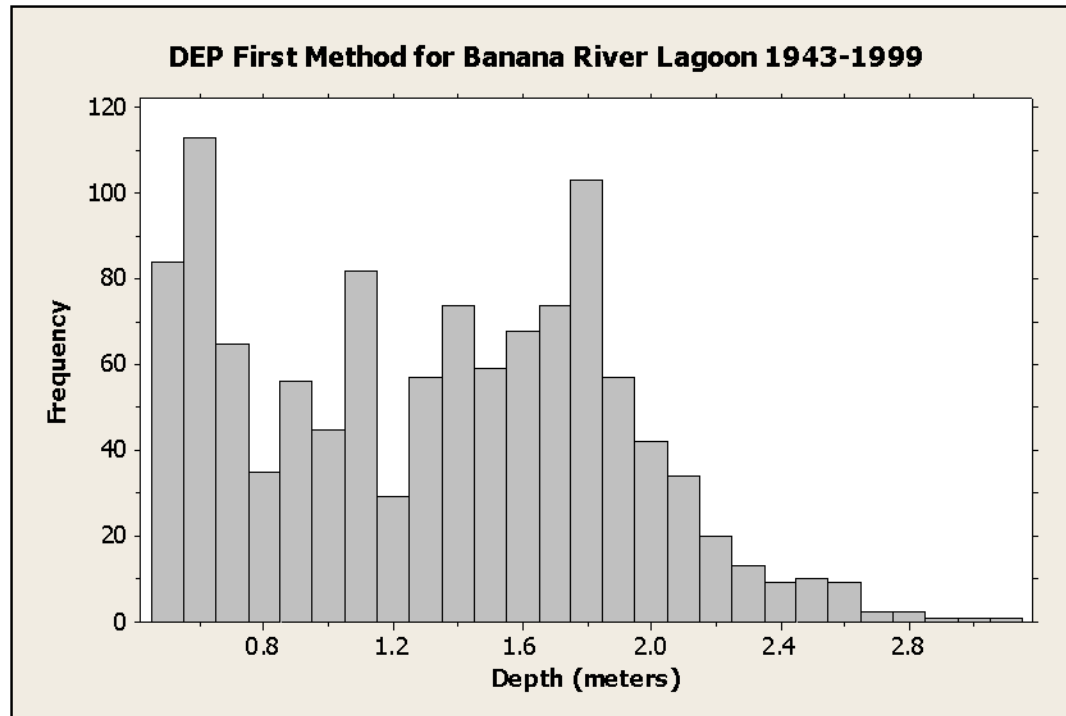


Changes, continued

- DEP selection methods differed from SJRWMD methods to select deep edge points.
- Data selection and analysis methods used are applied to both evaluation and TMDL periods.



Seagrass Depth Limit Corrections



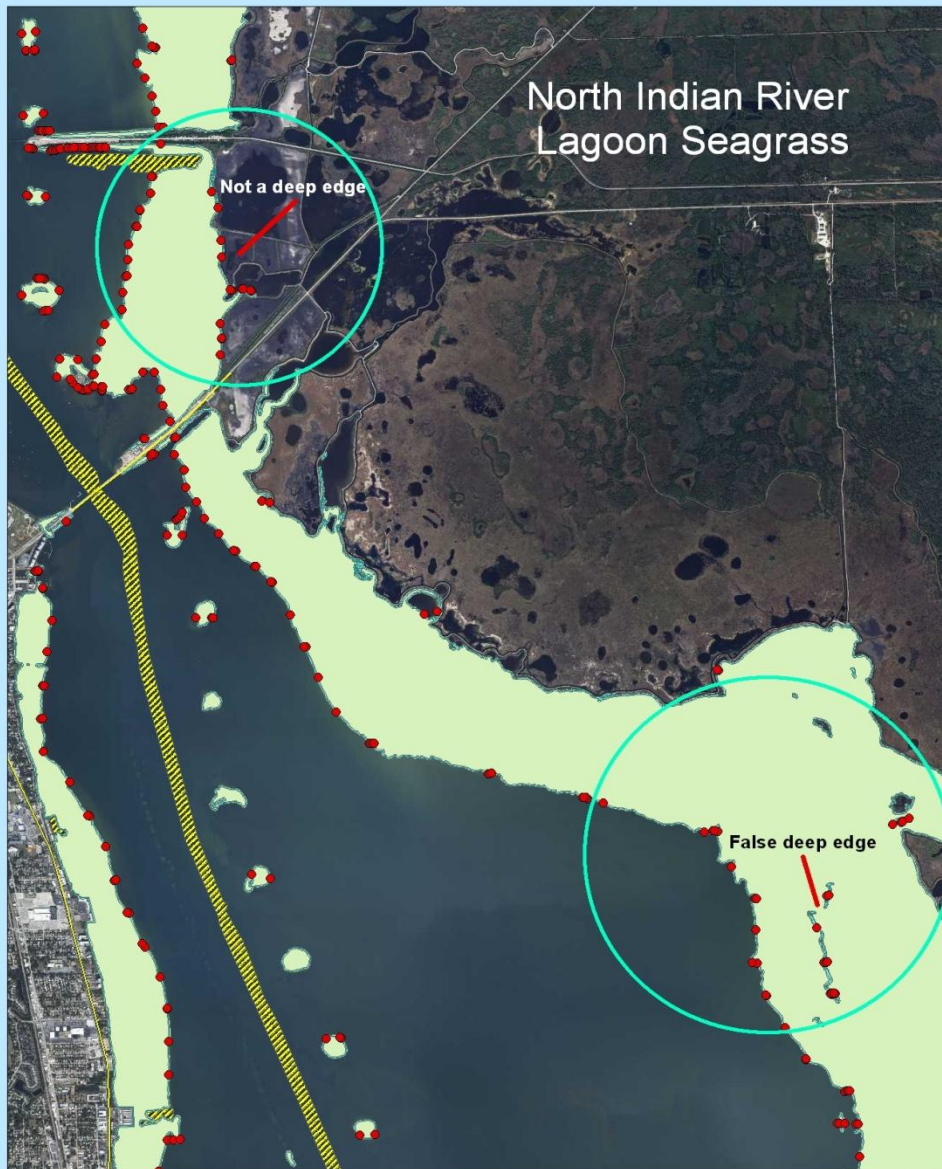
FDEP first tried an automated approach to select points; however, there were problems. The data distribution changed from approximately normal to unknown.





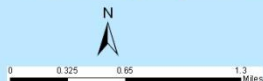
Problems with the Approach

Counted as deep edge points that were clearly not deep edge



Legend

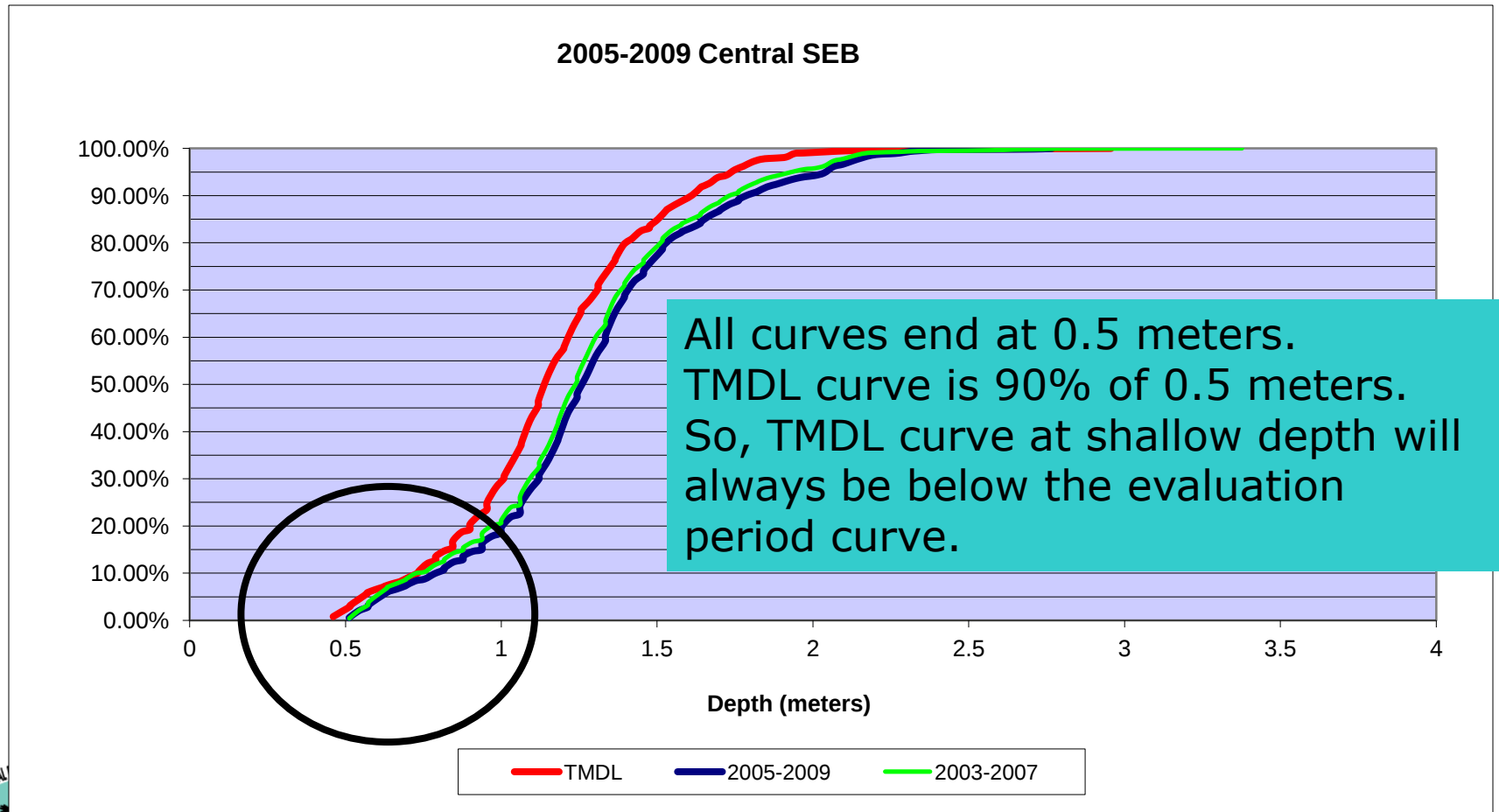
- Deep Edge Point
- seagrass_2005_2009_line
- seagrass_2005_2009_buffer
- Seagrass Beds
- IRL_Dredged_ICW_50ft_Buffer_DEP



The map of the distribution of seagrass was interpreted from aerial photography ranging from 2005-2009.

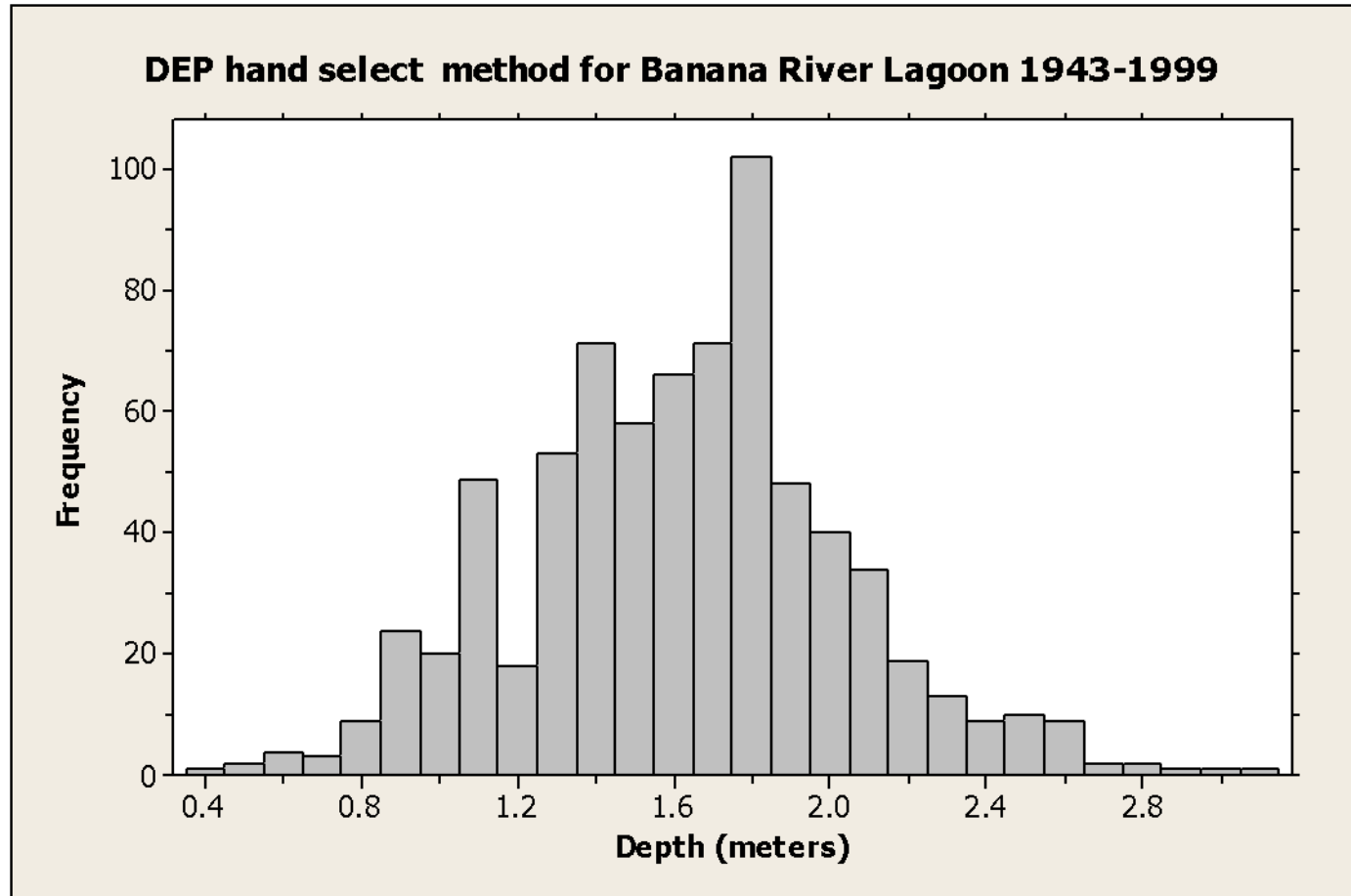


Problems, continued



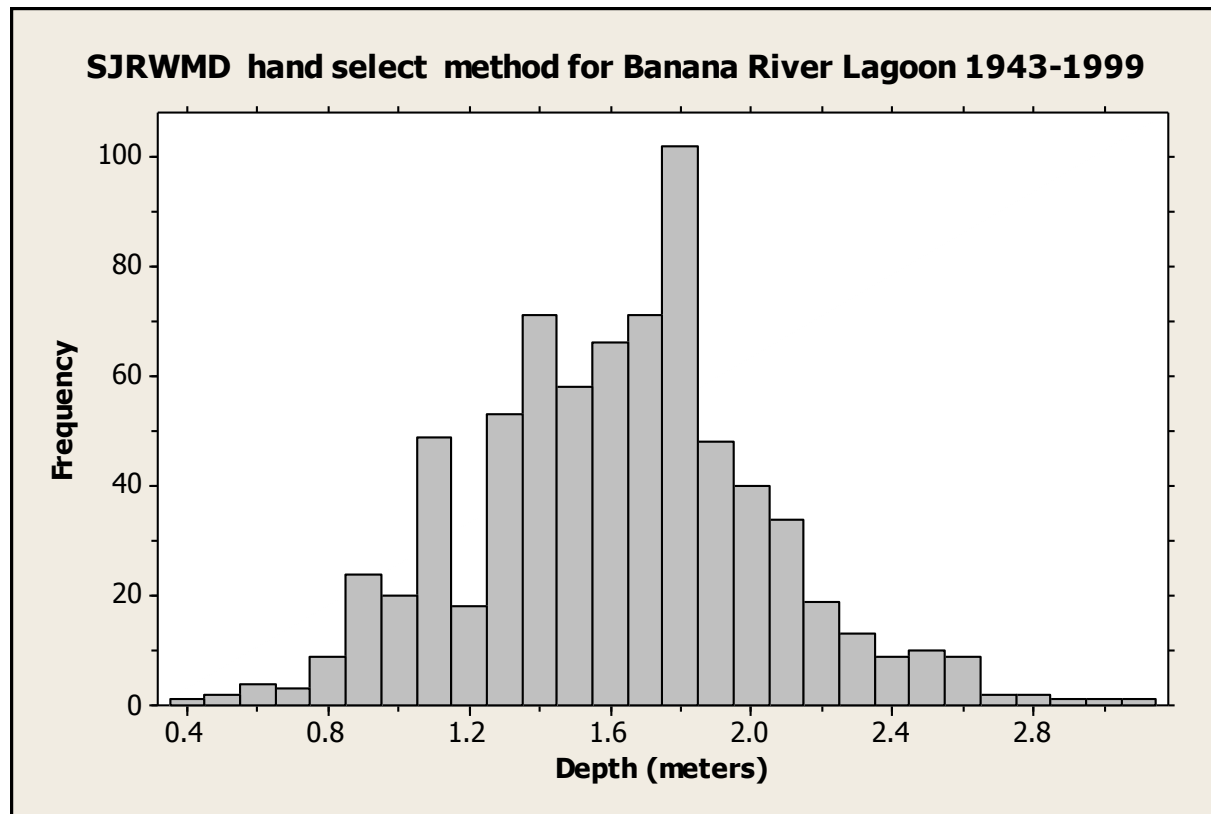


Hand Selection of Data Method





Comparison to SJRWMD Method



FDEP hand selection of deep edge of seagrass points now mimics SJRWMD method. This is the method which the TMDL is based upon.





Restoration Targets

- Complete seagrass recovery is considered to be seagrass growth at 100% of the depth limit of the union coverage of the 1943-1999 mapping years.
- The total maximum daily load (TMDL) depth limit targets are 90% of that 1943-1999 union coverage depth limit.



Evaluation Steps for TMDL Compliance

- Determination of TMDL compliance is a two-step evaluation method:
 - **Step 1:** For each project zone, generate the cumulative frequency distribution of the maximum seagrass depth limits at each transect.
 - **Step 2:** Determine the seagrass mapping year median depth limit value.





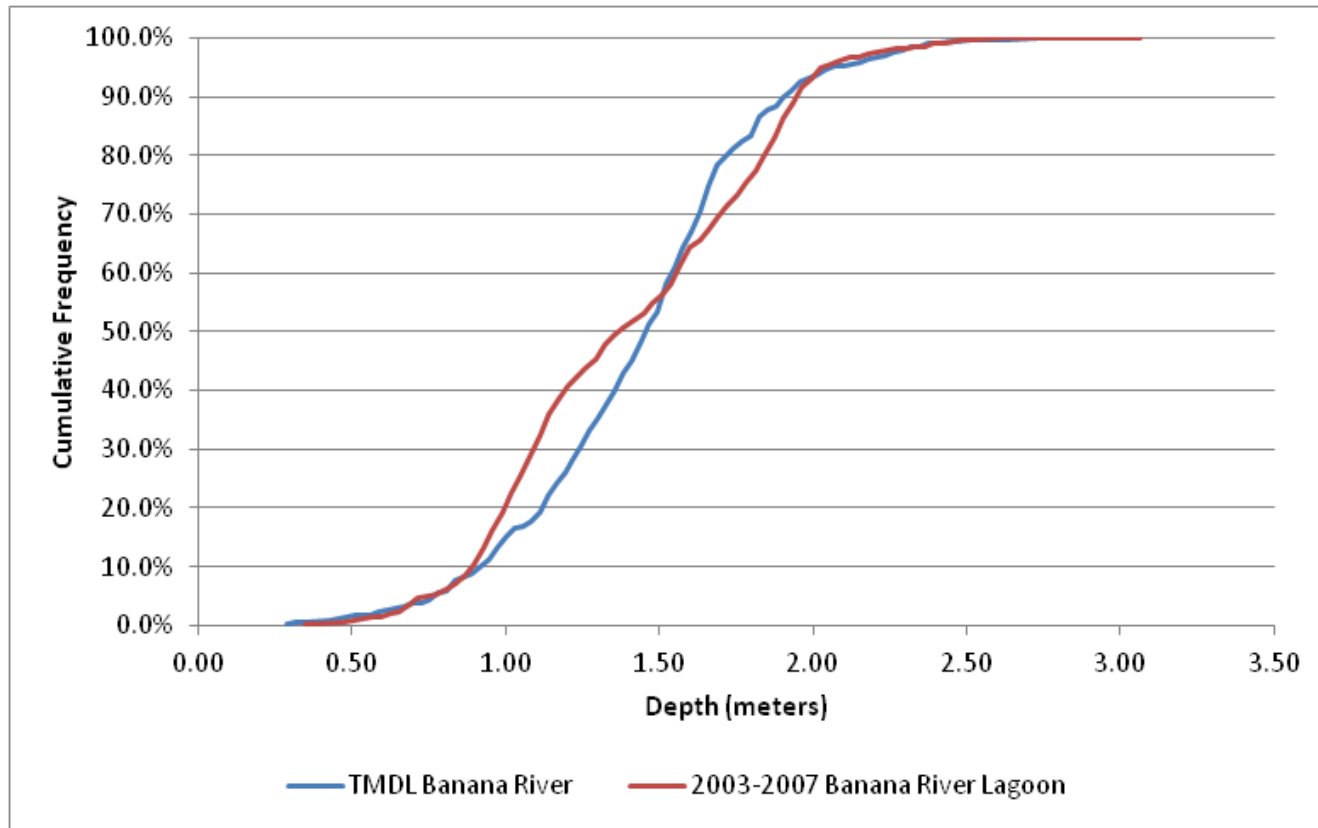
TMDL Compliance: Step 1

- Generate cumulative frequency distribution graphs to compare the TMDL years to the composite of the evaluation years:
- More than 50% of the composite evaluation year's distribution curve must lie on or to the right of the TMDL curve.
 - Including the 50th percentile.





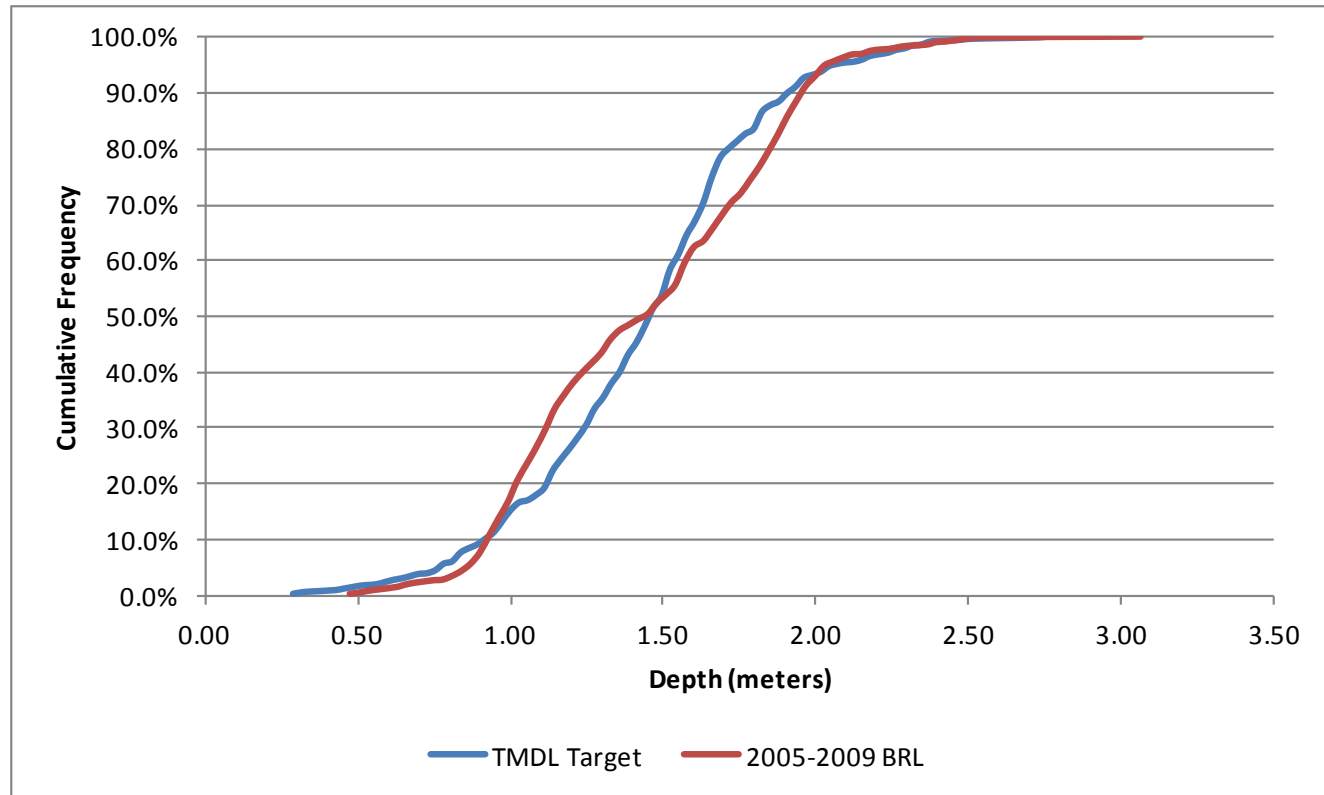
Step 1 Curve for the Entire BRL Basin for 2003-2007



The 2003-2007 curve is not on or to the right of the TMDL curve more than 50% of the time. Therefore, the entire BRL Basin is not Step 1 compliant.



Step 1 Curve for the Entire BRL Basin for 2005-2009

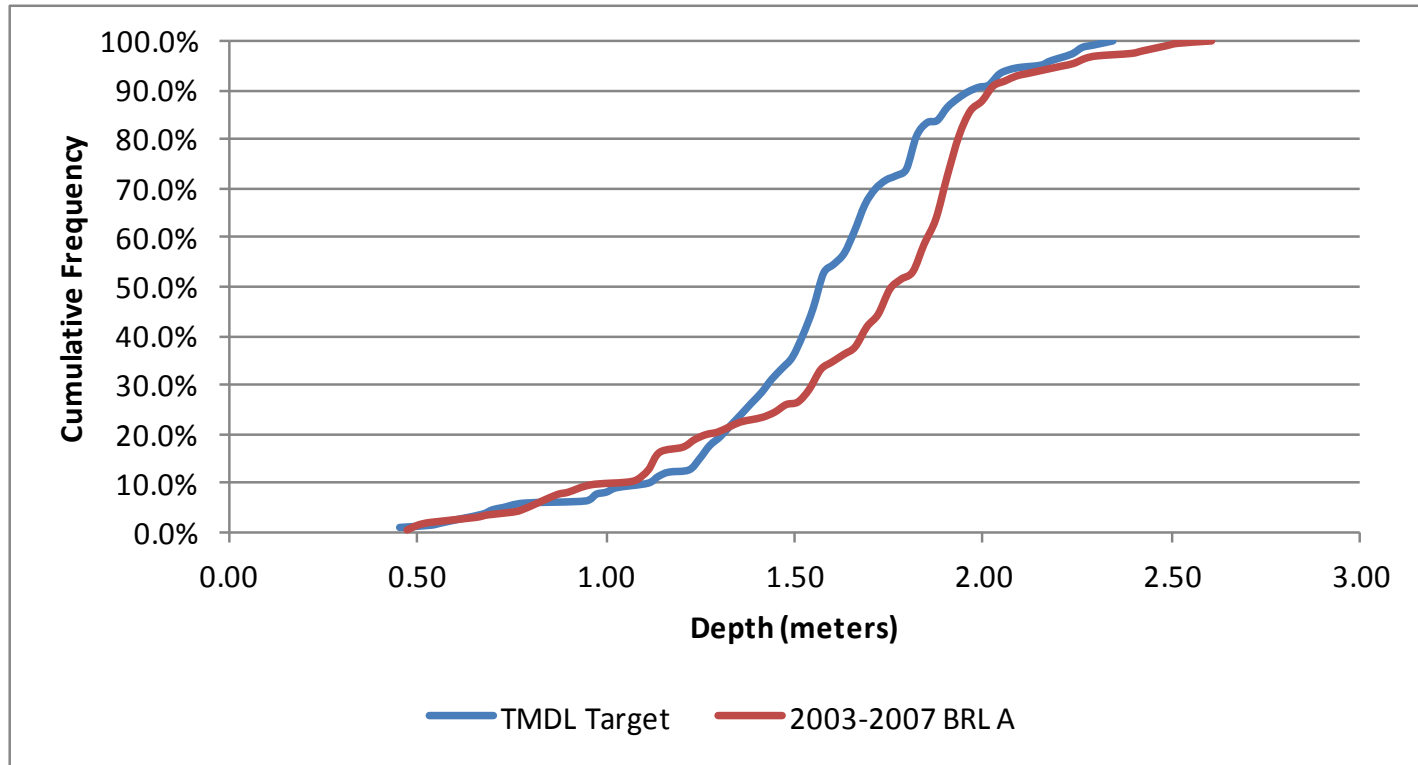


The 2005-2009 curve is not on or to the right of the TMDL curve more than 50% of the time. Therefore, the entire BRL Basin is not Step 1 compliant.





Step 1 Curve for BRL A for 2003-2007

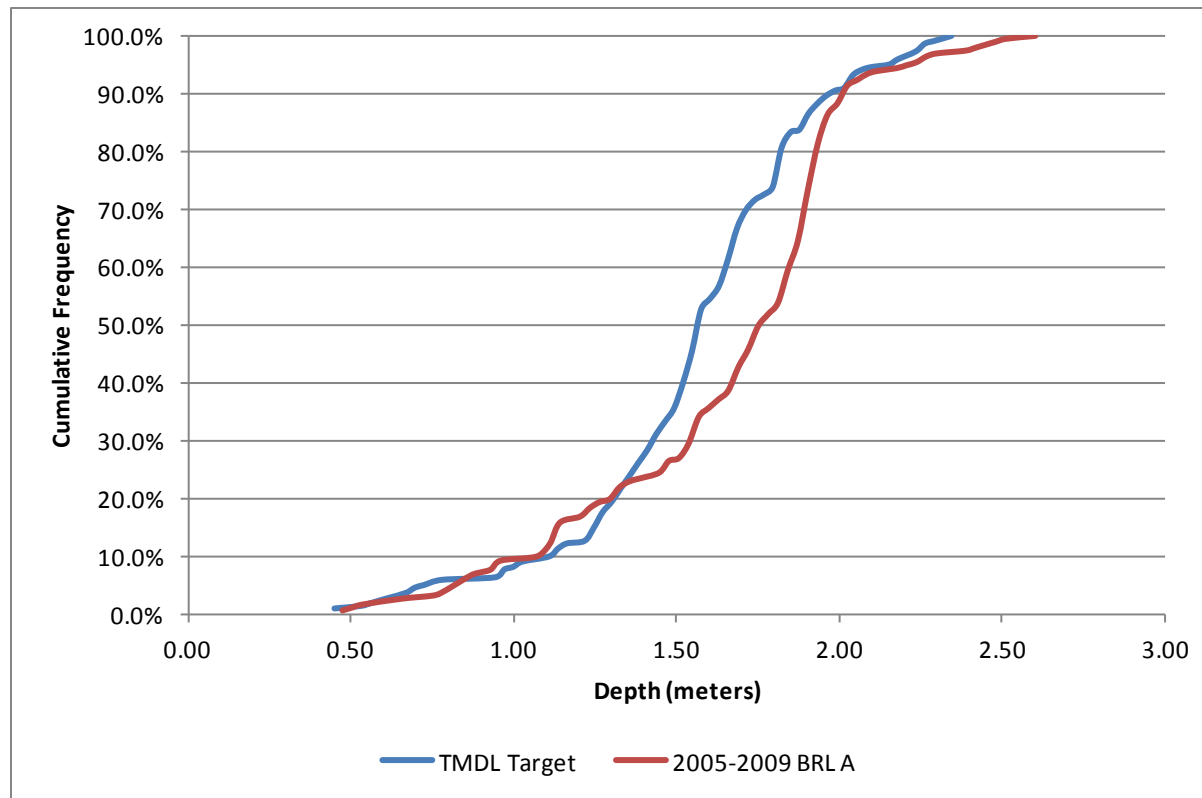


The 2003-2007 curve is on or to the right of the TMDL curve more than 50% of the time. Therefore, the BRL A project zone is Step 1 compliant.





Step 1 Curve for BRL A for 2005-2009

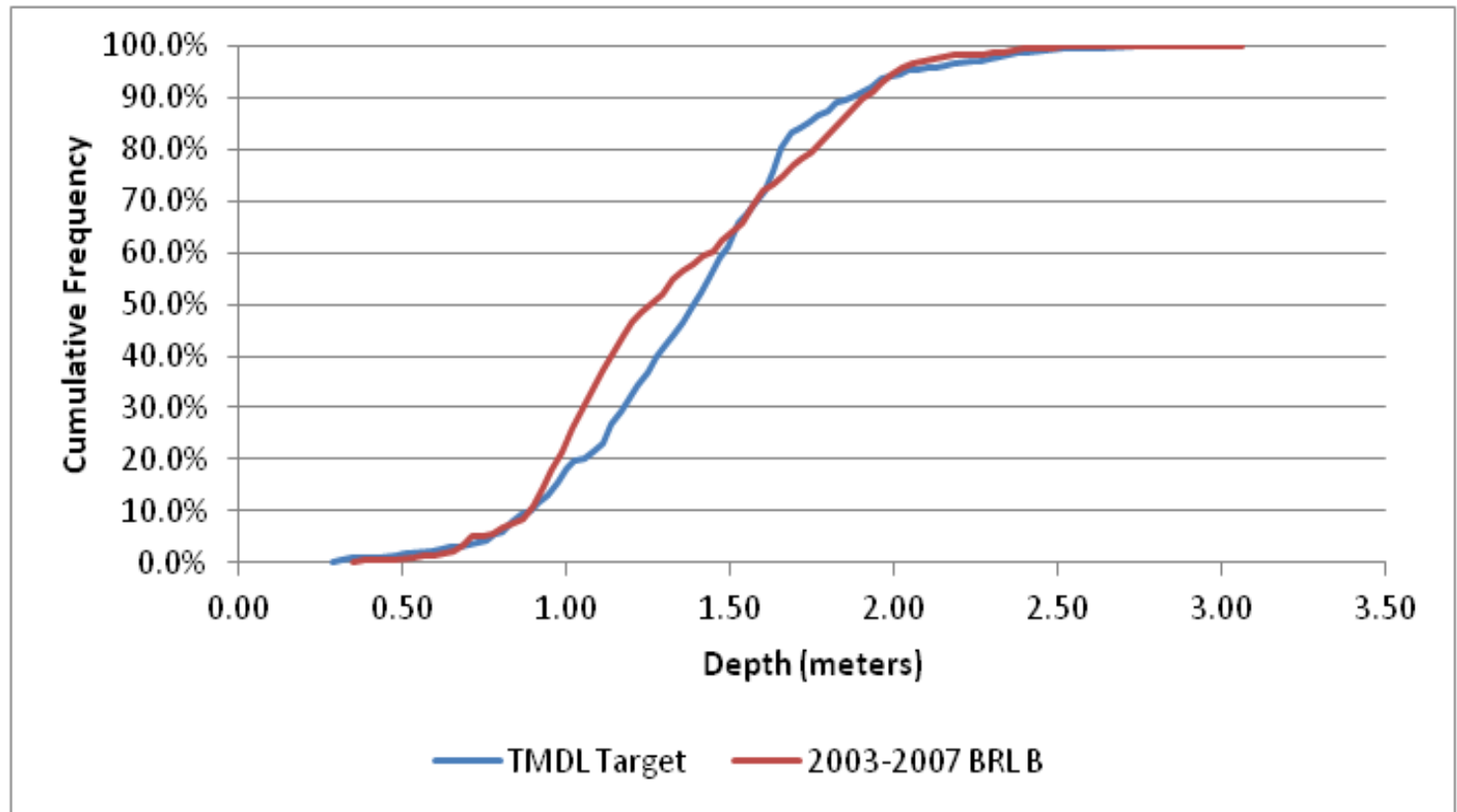


The 2005-2009 curve is on or to the right of the TMDL curve more than 50% of the time. Therefore, the BRL A project zone is Step 1 compliant.





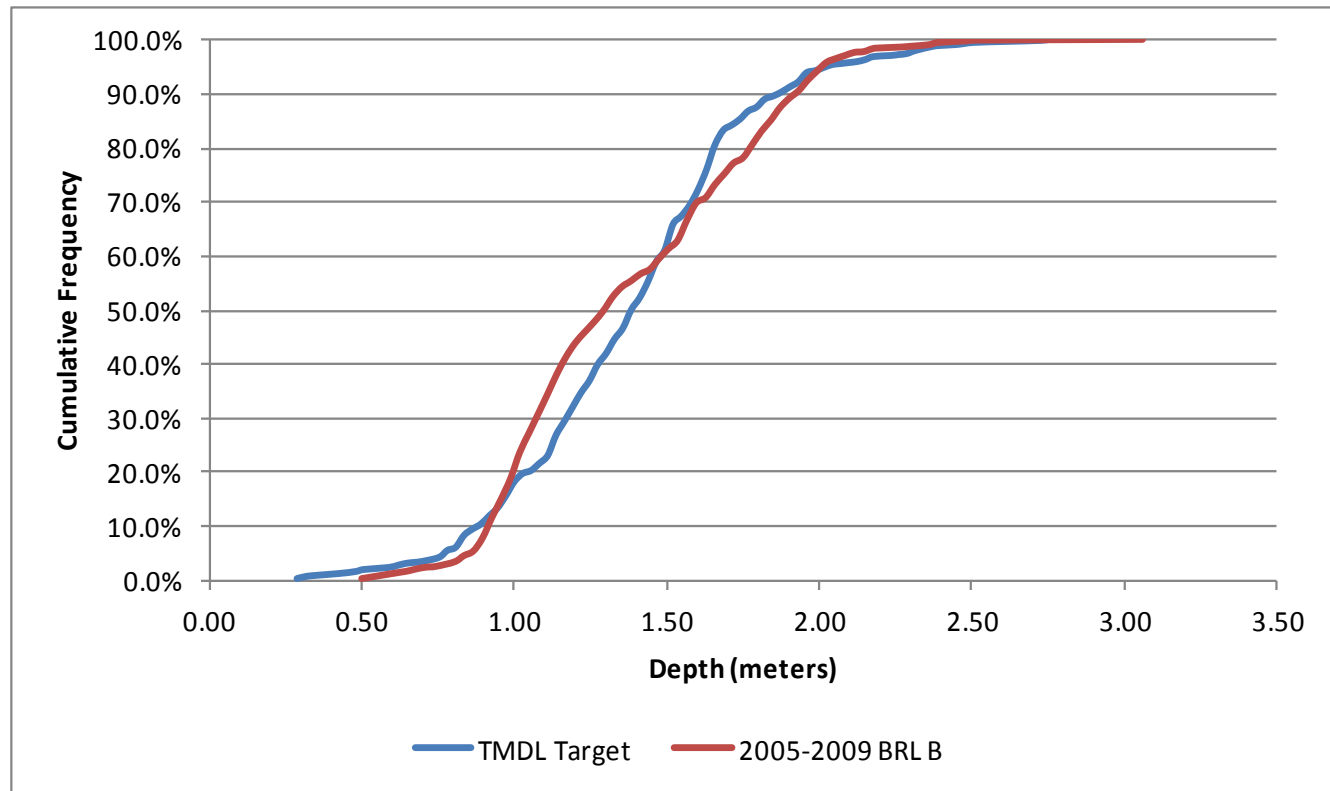
Step 1 Curve for BRL B for 2003-2007



The 2003-2007 curve is not on or to the right of the TMDL curve more than 50% of the time. Therefore, the BRL B project zone is not Step 1 compliant.



Step 1 Curve for BRL B for 2005-2009



The 2005-2009 curve is not on or to the right of the TMDL curve more than 50% of the time. Therefore, the BRL B project zone is not Step 1 compliant.





TMDL Compliance: Step 2

- Assessment of each mapping year's median relative to the TMDL median depth limit target:
 - Must meet or exceed the TMDL median depth limit target to meet the Step 2 requirement.
 - This ensures that one exceptional year does not overpower other years.
- Three of the four medians of the assessment years must meet or exceed the median TMDL depth limit target in order for a project zone to be Step 2 compliant.





Step 2 Compliance Summary

- The years where the median exceeds the TMDL median are highlighted and a determination of Step 2 compliance is included.

Year	BRL	BRL A	BRL B
TMDL Median	1.47	1.58	1.41
2003	1.20	1.66*	1.14
2005	1.23	1.69*	1.14
2006	1.42	1.75*	1.29
2007	1.48*	1.81*	1.32
2009	1.45	1.78*	1.32
Step 2 Compliant?	No	Yes	No

*Note: These are years that meet or exceed the TMDL median.





BRL A Next Steps

- Stakeholders in the BRL A project zone are meeting TMDL depth limit targets and will not be asked to make additional reductions in this iteration of the BMAP.
 - Agriculture, Brevard County, Cape Canaveral Air Force Station, FDOT District 5, Kennedy Space Center, Port Canaveral, and U.S. Army Corps of Engineers.
- The projects provided by the stakeholders will be included in the BMAP to characterize TN and TP reductions that have already occurred and will be achieved during the first BMAP cycle.
 - Future projects are not a BMAP requirement.
- Documenting known load reductions will further the understanding of how compliance was achieved and will be maintained.





BRL B Required Reductions

- Stakeholders in the BRL B project zone will be required to achieve TN and TP reductions in this first five-year BMAP period.
- Reductions are required because this area is not meeting the TMDL depth limit targets.
- Stakeholders in this project zone must provide sufficient projects to achieve at least 15% of the required TN and TP reductions in the first BMAP iteration.





Seagrass Target Reassessment

- In year four of the BMAP, TMDL depth limit targets will be reassessed using 2007, 2009, 2011, and 2013 mapping data for the BRL project zones.
- If BRL A and/or BRL B is compliant using the 2007-2013 mapping years, FDEP will not ask stakeholders in that project zone(s) to make additional TN and TP reductions in the next iteration of the BMAP.
- If either project zone is not compliant, a second iteration of the BMAP will be developed with additional reductions required.





QUESTIONS?

