

# Evolving Agri BMP


*Toward Less Nutrient  
Loss to Groundwater*

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# Questions?

- ▶ What are our options if BMAP BMPs do not meet TMDL expectations?
  - ▶ Can we?
    - Intensify BMPs
    - Apply additional BMPs
    - Are there new BMPs
  - ▶ Or do we have to?
    - Change land use practices
  - ▶ What are the potential costs for the various options?
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# Current BMPs

- ▶ Taken from FDACS BMPs Manuals
  - Vegetable & Agronomic Crops
  - Florida Sod
  - Florida Cow/Calf Operations
- ▶ BMPS
  - Fertility practices
    - Timing, placement, types, and amounts
  - Water management
    - Drainage and irrigation practices
  - Buffers, R/D ponds, erosion controls, wetlands

# Evolving Agri BMPs

*“Remember we need to stay within the definition of a BMP, i.e. environmentally beneficial and economically viable”*

- ▶ Unfortunately, no silver bullets in sight
- ▶ However, we can intensify existing BMPs
  - But, yield impacts and costs must be considered
- ▶ More sophisticated fertigation and irrigation control systems are good alternatives
- ▶ Stormwater retention and wetland enhancements are effective, but only for high runoff soils
- ▶ Well drained soils have more limited options, but there are a few things that can be done

# Evolving Agri BMPs

- ▶ ***Make fields more closed systems***
  - ▶ Place irrigation wells in surficial aquifer for direct groundwater recovery of high nitrate recharge water, i.e. recycle leached nitrogen back to the crops
    - ▶ Limited on wet years
- ▶ ***“Pie in the Sky” alternatives***
  - ▶ Underliners and recycling catchment ponds
  - ▶ Glass houses / greenhouses, Europe’s solution

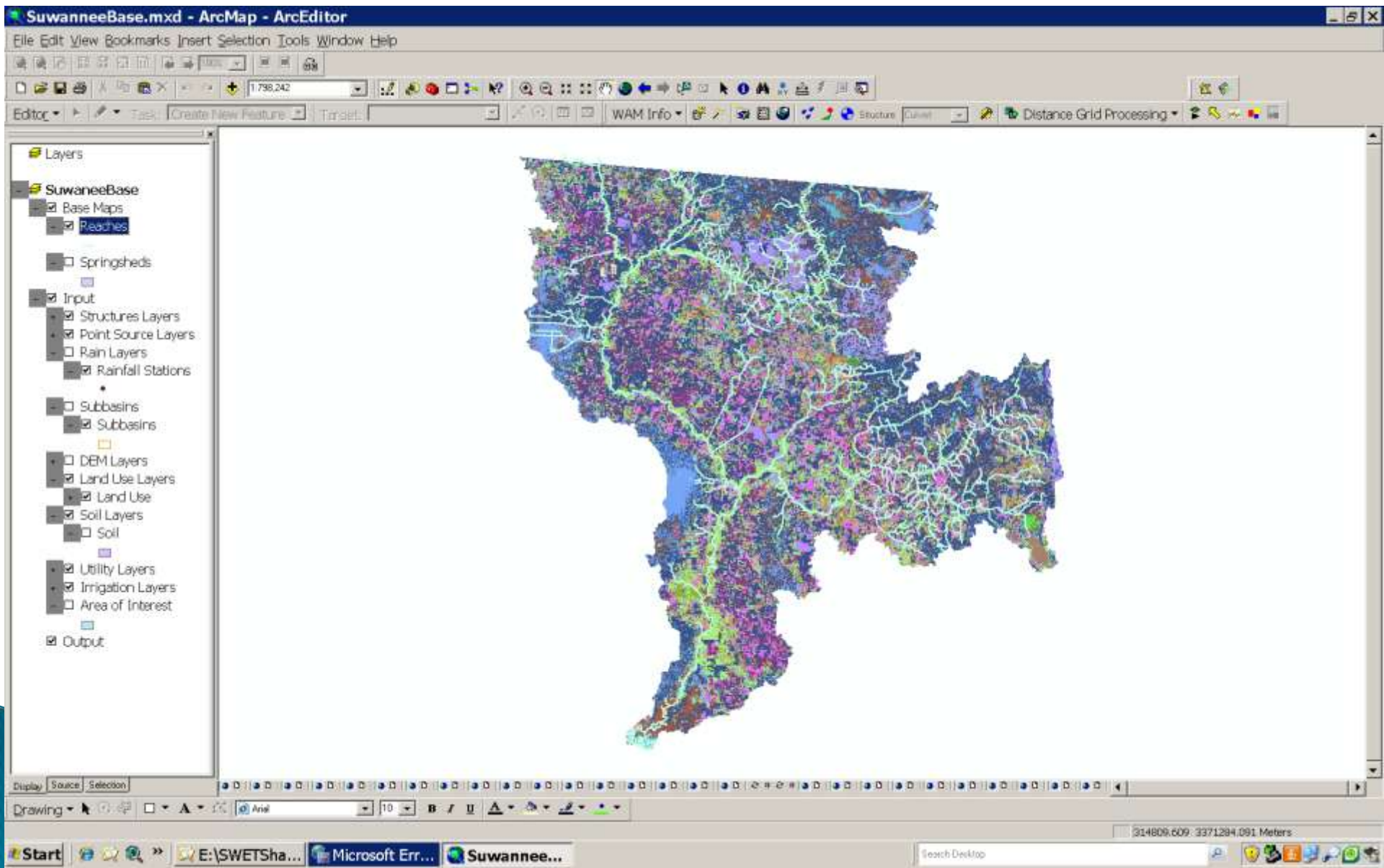
# What will it take to get such BMPs?

- ▶ **Outside help** via cost share or grant programs will be needed to bring back economic viability to the farmer
- ▶ Must compare these costs against going with alternative land uses
  - Does it make more sense to pay farms to change crops?
  - Ultimately do we pay to stop farming, i.e. publically buy most sensitive lands?
  - **Now we are talking big bucks!**

# What doesn't work!

- ▶ Mandating practices that are not economically viable
  - Forcing a economic hardship is a “taking” as much as implementing “Eminent Domain”
  - What are the limits of “right to farm” when it comes to environmental impacts?
- ▶ Provide BMP crop insurance, i.e. cover revenue losses for when intensive BMPs cause yield reductions

# New Modeling Tools – WAM



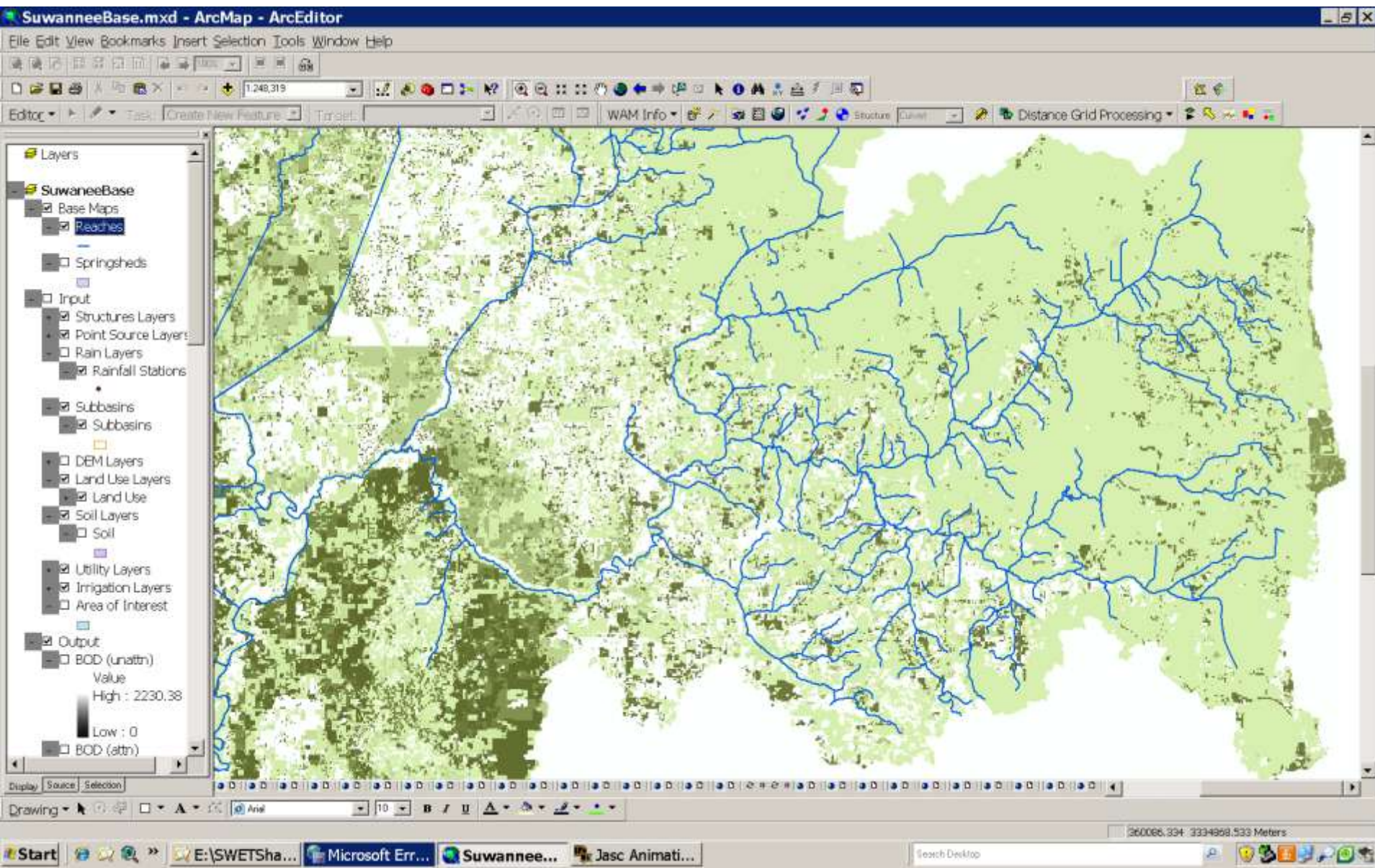
# Can Apply BMPs and Evaluate Results

The image is a screenshot of the ArcMap - ArcEditor software interface. The title bar at the top reads "SuwanneeBase.mxd - ArcMap - ArcEditor". Below the title bar is a menu bar with options: File, Edit, View, Bookmarks, Insert, Selection, Tools, Window, Help. A toolbar with various icons is located below the menu bar. The main map area displays a complex watershed map with a network of blue lines representing waterways and various colored polygons representing different land use and soil types. On the left side, there is a "Layers" panel with a tree view showing the following structure:

- SuwanneeBase
  - Base Maps
    - Reaches
  - Springsheds
  - Input
    - Structures Layers
    - Point Source Layers
    - Rain Layers
    - Rainfall Stations
  - Subbasins
    - Subbasins
  - DEM Layers
  - Land Use Layers
    - Land Use
  - Soil Layers
    - Soil
  - Utility Layers
  - Irrigation Layers
  - Area of Interest
  - Output

At the bottom of the ArcMap window, there is a status bar showing coordinates: 320665.539 3312201.576 Meters. The Windows taskbar at the very bottom shows the Start button and several open applications: E:\SWETSha..., Microsoft Err..., Suwannee..., and Jasc Animati...

# Nitrate Recharge



Comments / Questions?

