Supporting Inland Navigation With GIS

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USACE - Navigation

- Single biggest mission
- Maintain Waterways
- Channels
- Locks & Dams
Coastal Navigation

- Deep draft
- Most of tonnage
- Fixed, defined channel areas
- Relatively small areas
- No charting - NOAA
Inland Navigation

- Shallow draft
- Mostly bulk commodities
- Dynamic channel areas – Rivers
- Long stretches – 100’s of miles
- Charting responsibility
Rock Island District

- ~600 river miles
- Upper Mississippi River
- Illinois Waterway
Hydrographic Survey

- Monitor channel
  - Known shoaling locations
  - Entire channel covered every 5 years
- Single beam
Hydro Survey - Processing

- Tide/stage adjustments – on boat
  - HyPack
  - Product = “XYZ” file
- Plot – Initial cartographic product
  - eHydro/ArcMap
  - Operational decisions
Hydro Survey - Plots
Hydro Survey – Data Management

- XYZ files
- Store attributed soundings
- Multipoint feature class in Oracle GDB
- Each survey as a single record
Hydrographic Surveys - DB
Hydro Survey - Products

- Initial Maps
- Pool-wide bathymetry surfaces
  - Raster surface
  - Map services
Hydro Surveys - Composites
Dredging Support

- Delineation
- Estimated quantities
Dredging Data Management

- Dredge cut DB
- Placement event DB
Charting Responsibilities

- USACE inland charting lead
- Paper chart books
  - USCG carriage requirement
- Electronic charts
Paper Charts

- Each waterway has own
  - Upper Mississippi River (3 districts)
  - Illinois Waterway (3 districts)

- Most sales to recreational boaters
Paper Charts
Electronic Charts

- INLAND Electronic Navigation Charts – IENC
- Based on S-57
- International inland standard
IENC Details

- Each district responsible for own chart content
- Non-ESRI vendor for charting database
- Interoperability is key!
- Many source datasets remain in GIS
IENC - Source
Questions?

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