Drought Management and Water Supply Issues

Presented at the NHA Southeast Regional Meeting

by Alan Peeples
Reservoir Management

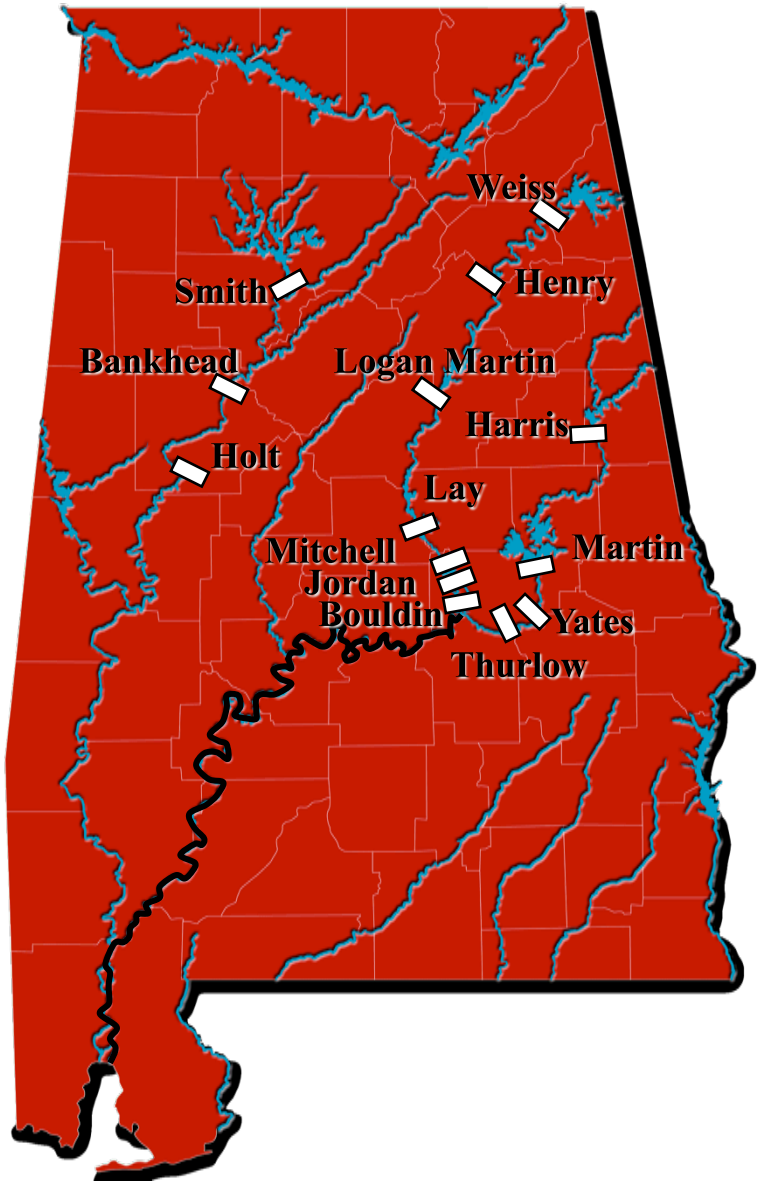
December 3, 2008
Birmingham, Alabama

ALABAMA POWER
A SOUTHERN COMPANY

Alabama Power Company

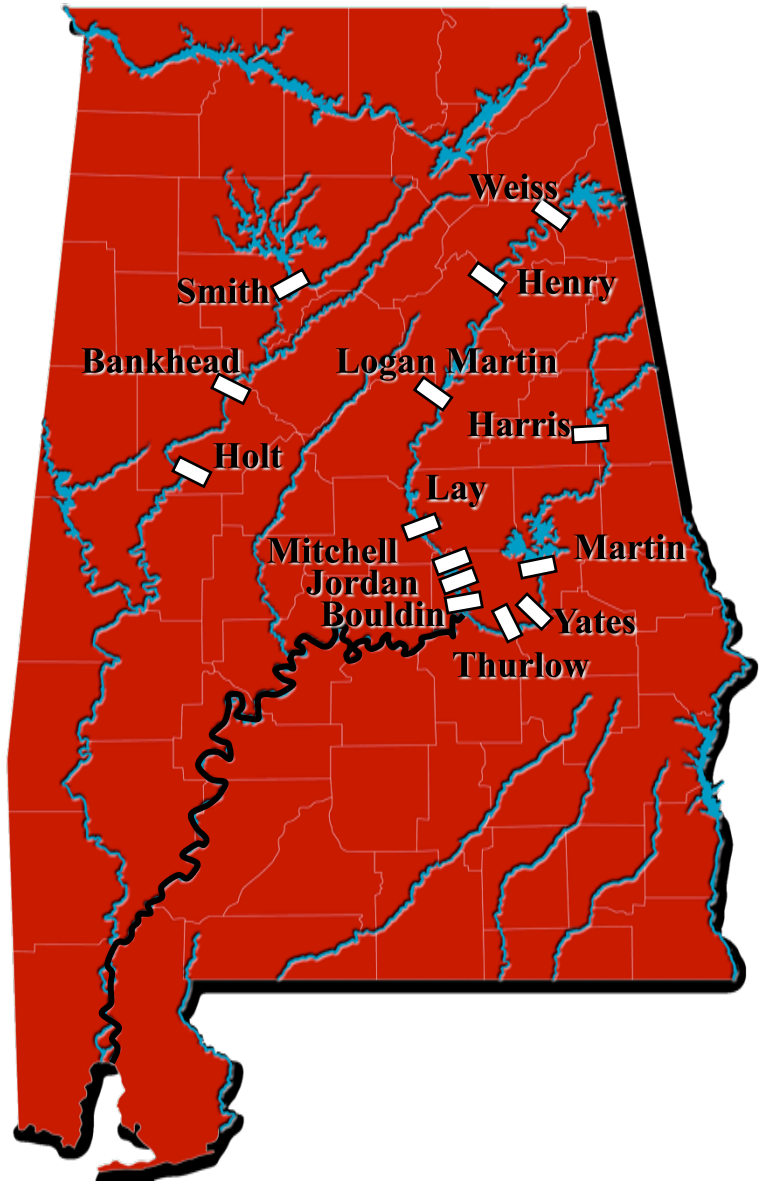
Hydroelectric System

- 14 Powerhouses
  - 41 generating units
  - ~ 1600 megawatts of capacity
- 12 Reservoirs
  - 156,000 acres of pool area
  - 3100 miles of shoreline
- Located in the BWT and ACT Basins
  - Warrior, Coosa, and Tallapoosa Rivers



Competing Needs

- Power Generation
- Recreation
- Ecological
- Water Quality
- Water Supply
  - –Municipal
  - –Industrial
  - –Agricultural
- Navigation Support



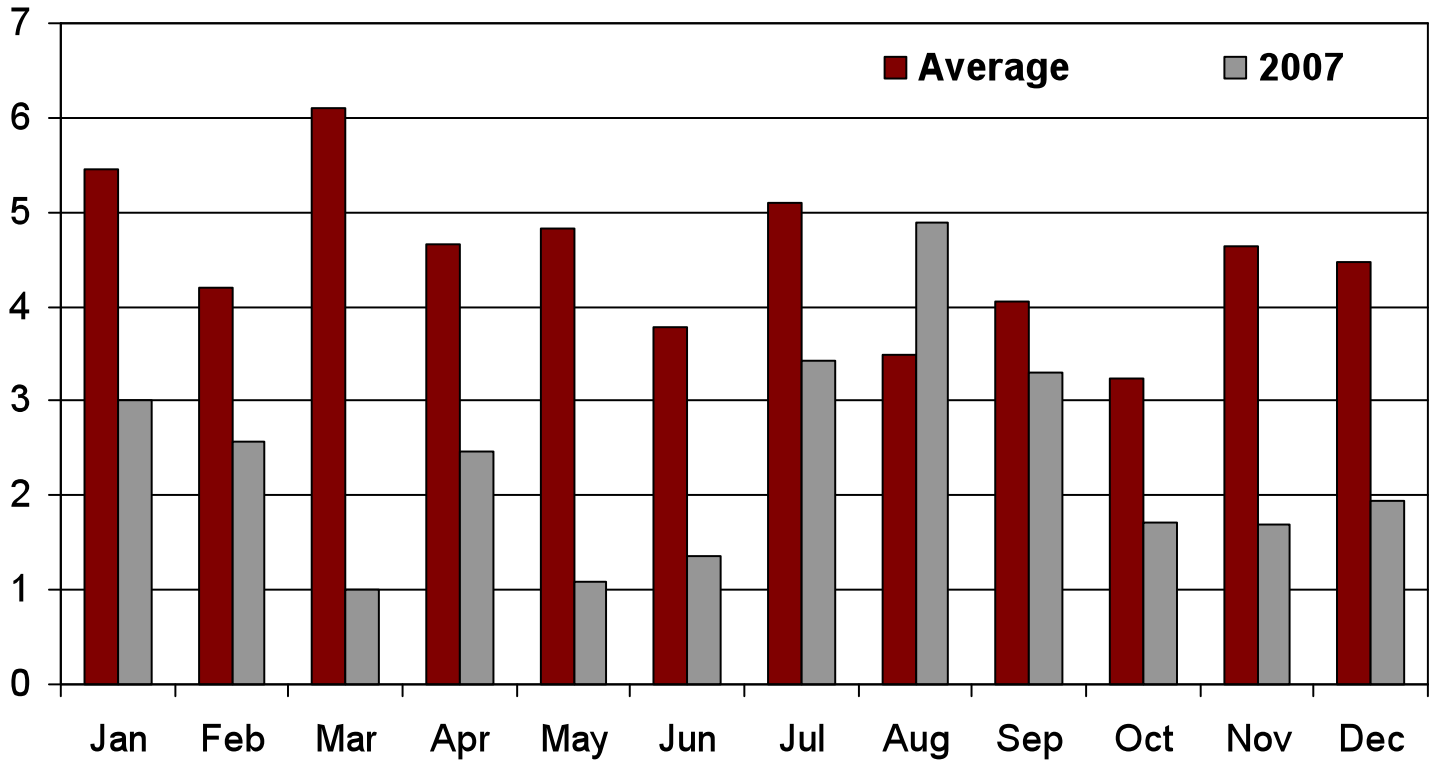
Primary Element Affecting Hydro

The Whether

Whether or not it Rains

Birmingham Rainfall

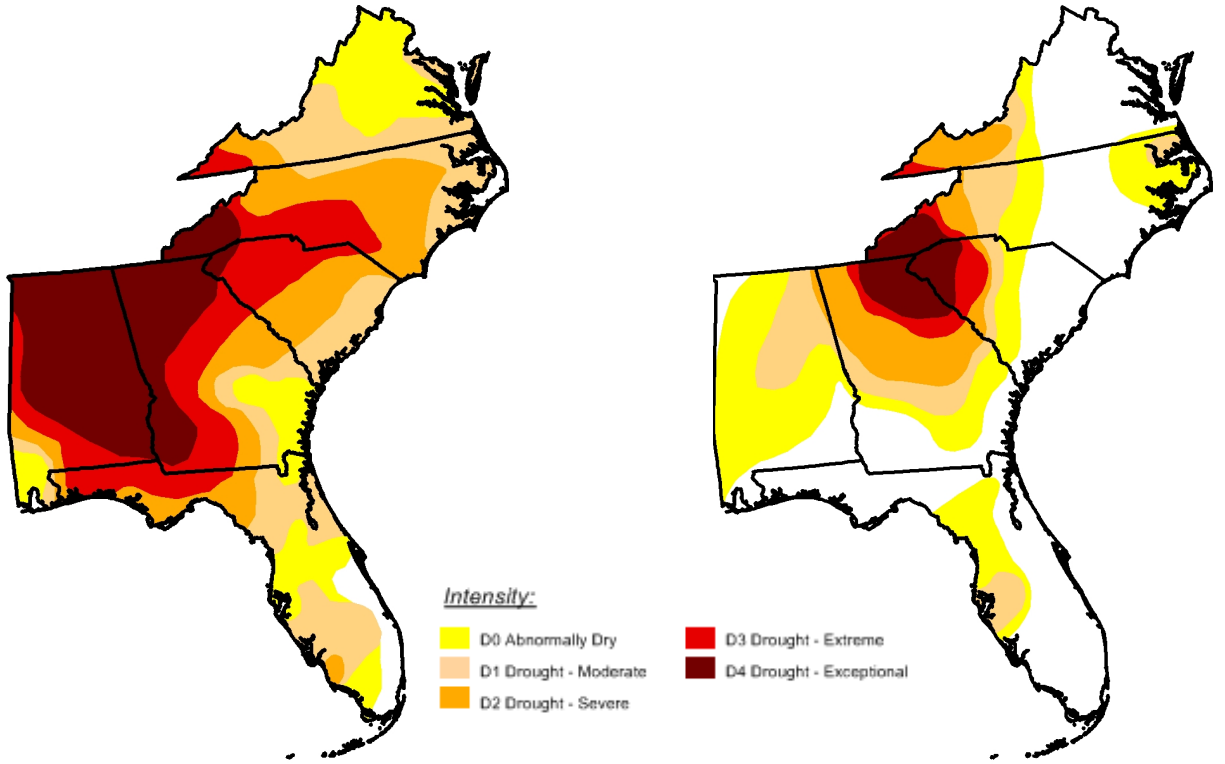
	2007	Deficit
Birmingham	28.86	-25.13
Montgomery	35.60	-19.17
Anniston	22.23	-29.70
Tuscaloosa	26.10	-31.14



Drought of 2006, 2007, 2008

- Began to intensify in mid 2006
- Reached a peak intensity in August of 2007
- Impacts continue well into 2008
  - Recovery of storage in our depleted reservoirs
  - Continued below normal rainfall

U.S. Drought Monitor



August 28, 2007

74% D4 (AL)

November 25, 2008

0% D4 (AL)

August 2007 High Temperatures

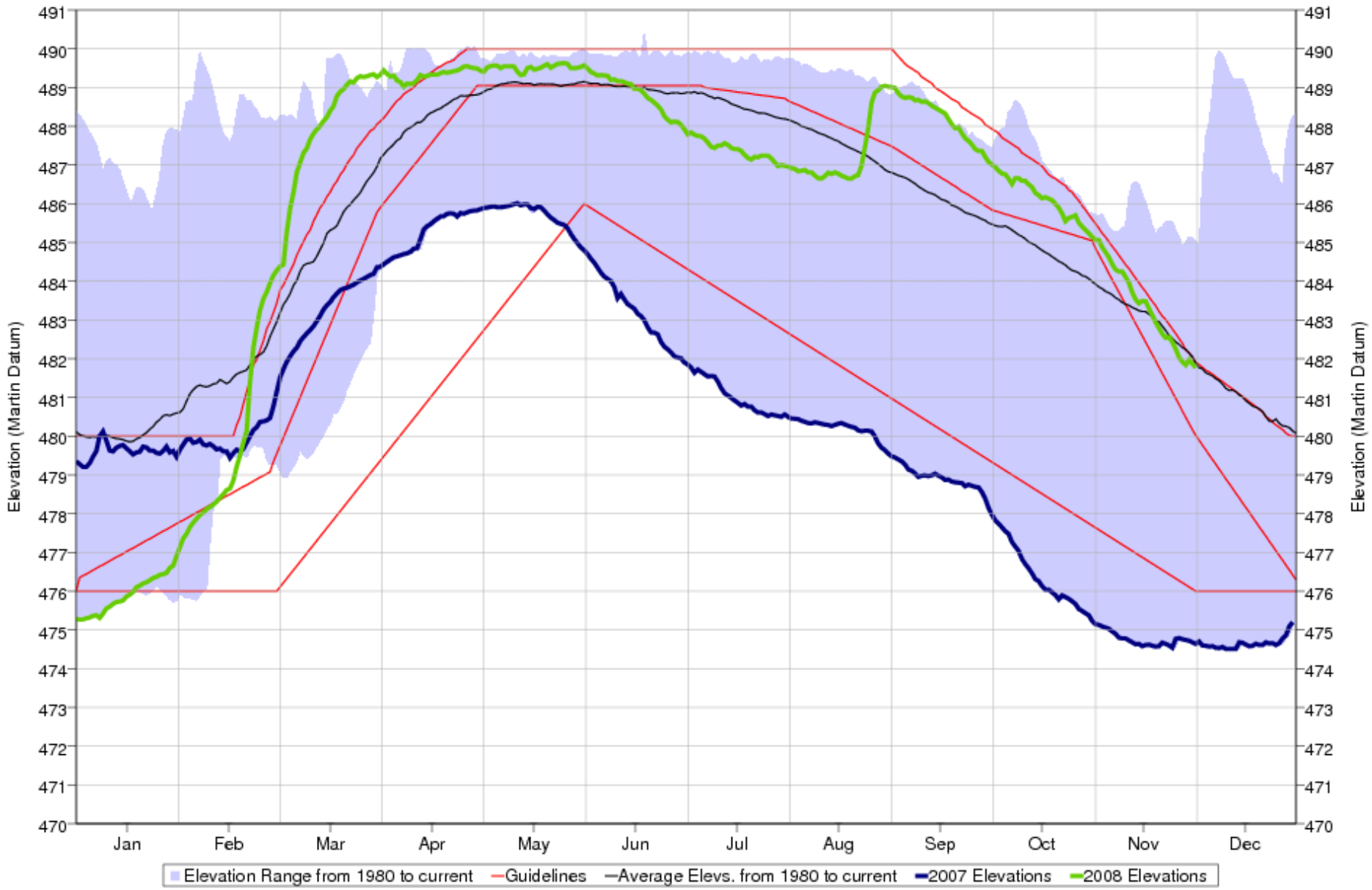
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
High Temperatures for Birmingham **Record Temperatures in Red**			1 **94°**	2 **96°**	3 **95°**	4 **99°**
5 **97°**	6 **98°**	7 100°	8 102°	9 103°	10 102°	11 102°
12 102°	13 103°	14 104°	15 105°	16 103°	17 **98°**	18 101°
19 **96°**	20 **98°**	21 100°	22 104°	23 105°	24 **95°**	25 **95°**
26 **94°**	27 **94°**	28 **90°**	29 **92°**	30 **92°**	31 **90°**	

Source: National Weather Service

EVAPORATION

- Evaporative losses amounted to 1.5 feet of water from APC lakes in the summer months in 2007
- Enough water to supply Birmingham for one year

Alabama Power - Martin

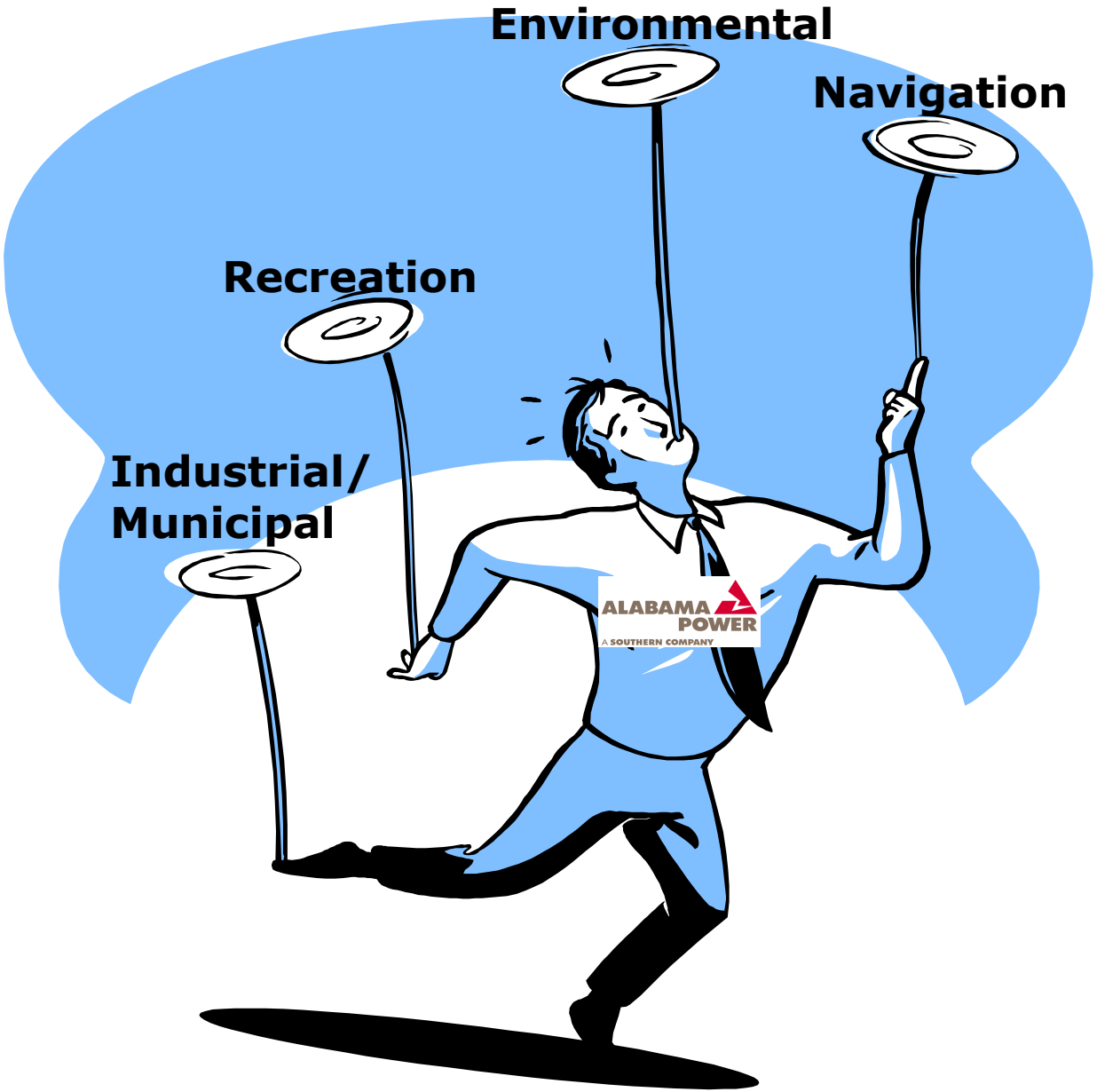


Plotted @ 12/02/2008 01:01 AM

Year 2008

Dashed line is our estimate of where the lake will be in the coming days.
Many of the factors we use to make this projection are subject to change.
Use as you would a weather forecast.

Power Generation



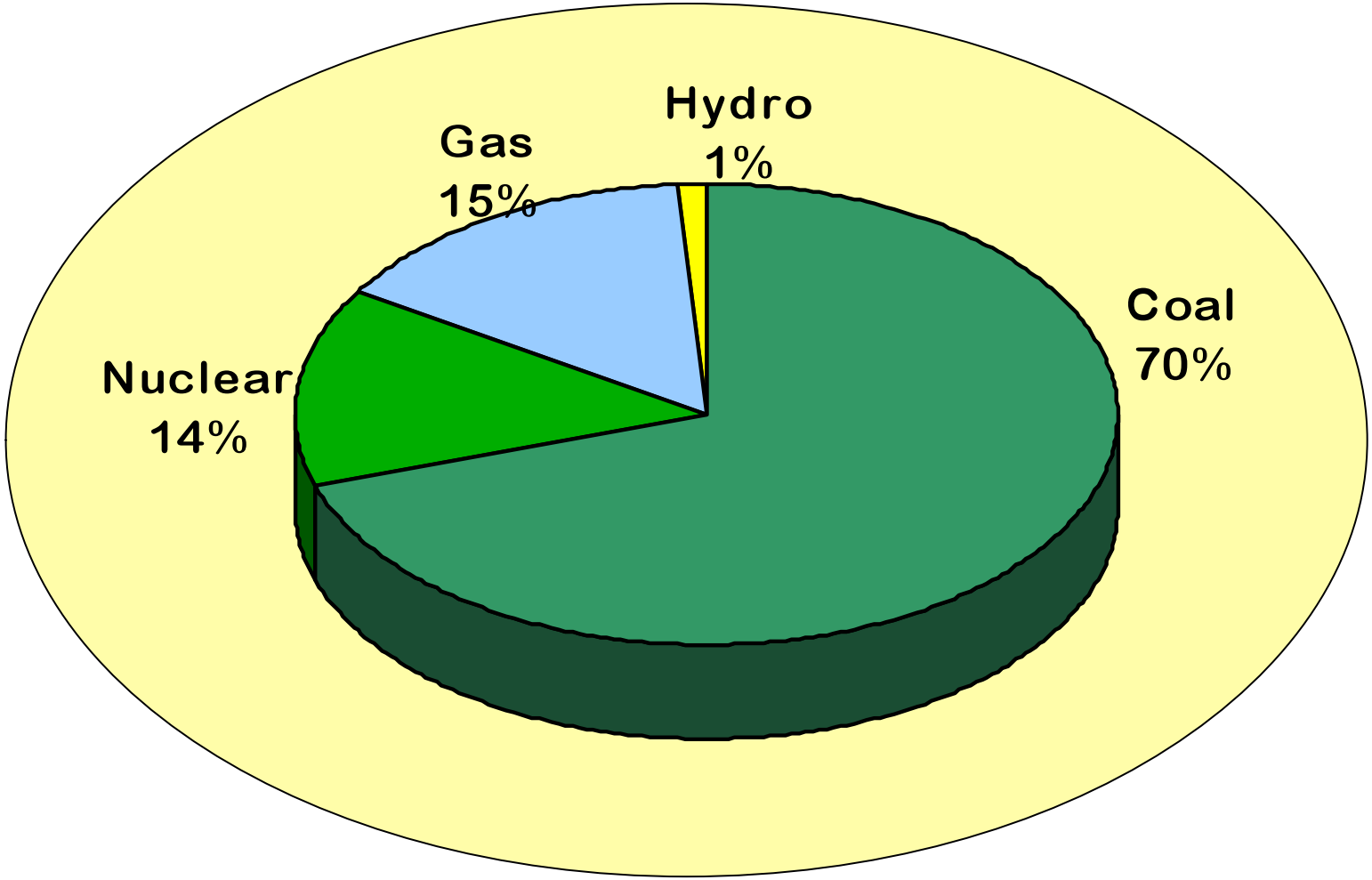
Key Impacts of the Drought for Alabama Power

- Electric Power Production
- Regulatory
- Our Stakeholders

Impact: Electric Power Production

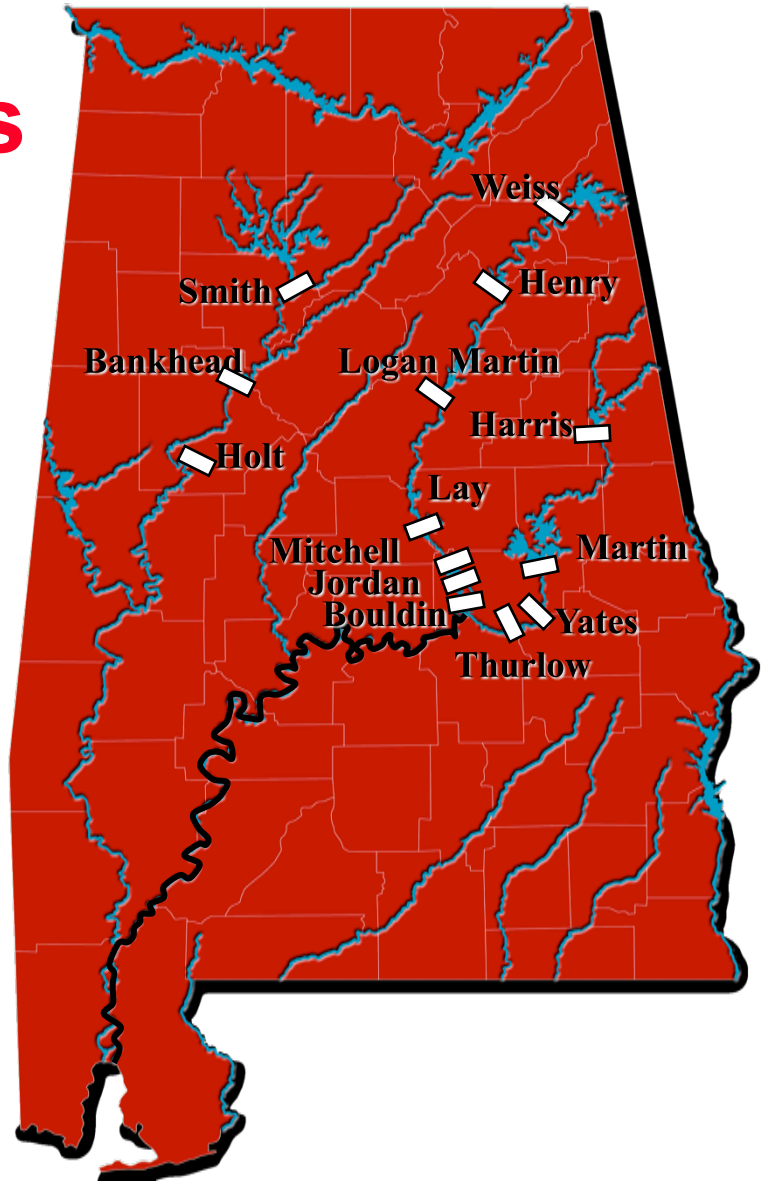
Southern Company

2007 Generation Mix



Generation Impacts in 2007

- 2007 was the lowest energy production for APC Hydro since 1933
  - –35% of our annual budget
- To put this in perspective, in 1933, we only had 30% of our current generating capacity:



Thermal Plant Impacts

OPCO	Plant
Mississippi Power	Watson
Alabama Power	Gaston
	Greene County
	Barry
Georgia Power	Hammond

$$$$$$$$$$ Fuel Costs

Impact: Regulatory

Minimum Flows / Recreation / Water Quality

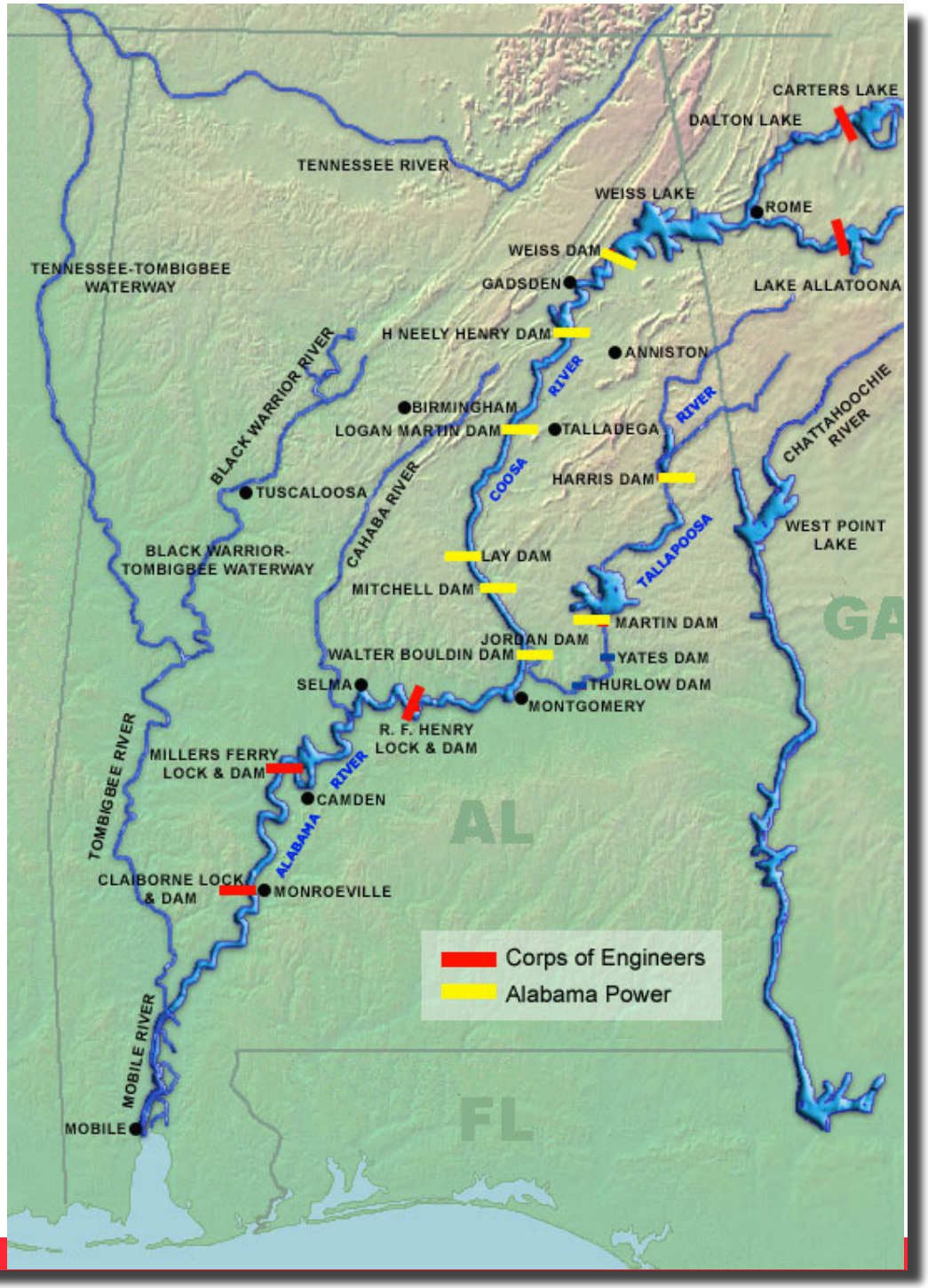
T&E Species

Impact: Stakeholders

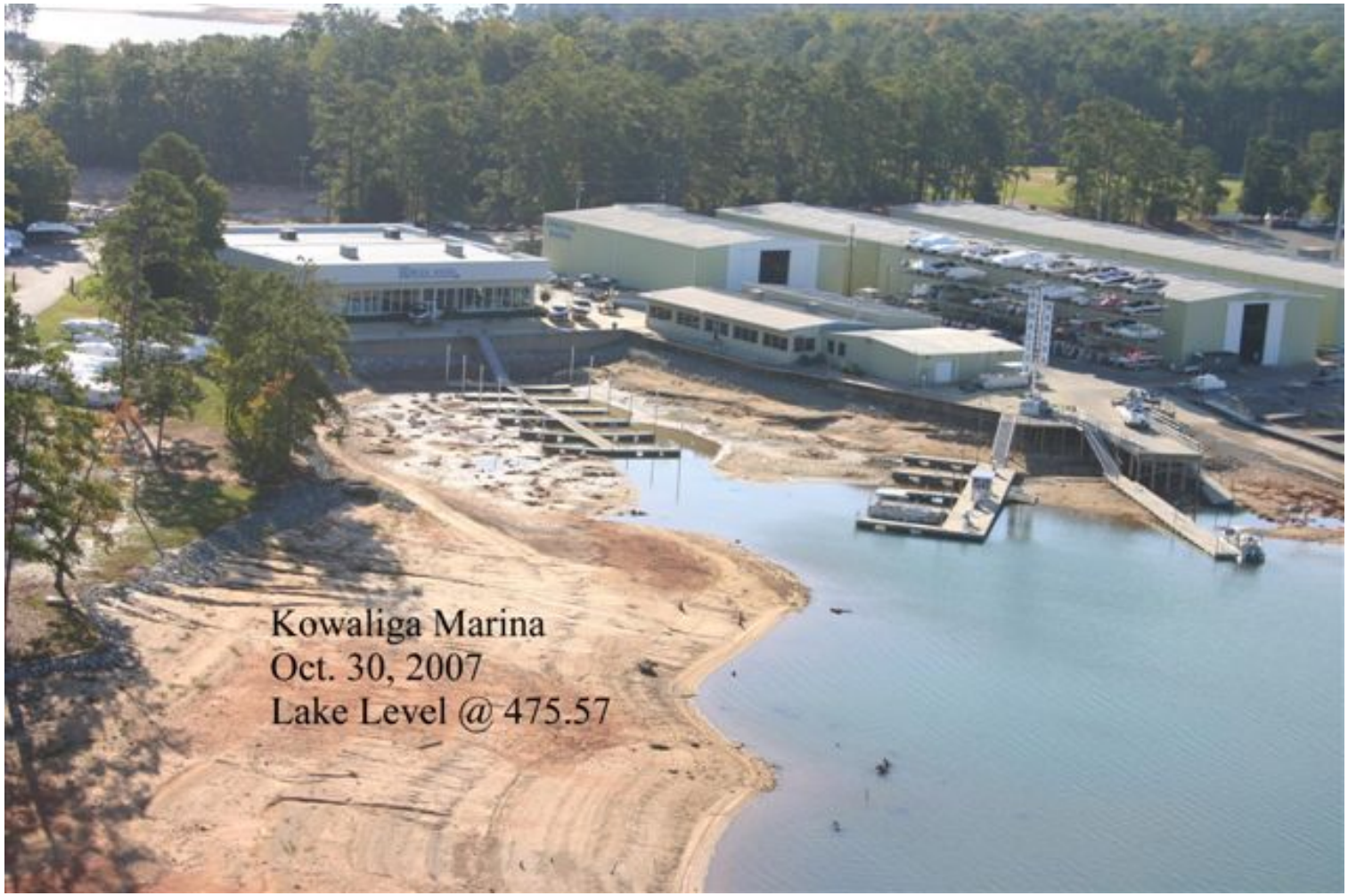
Navigation

U.S. Army Corps of Engineers

- Navigation Flow Support
  - –Confluence of Coosa and Tallapoosa (Alabama River)
    - – 4,640 cfs



Recreation



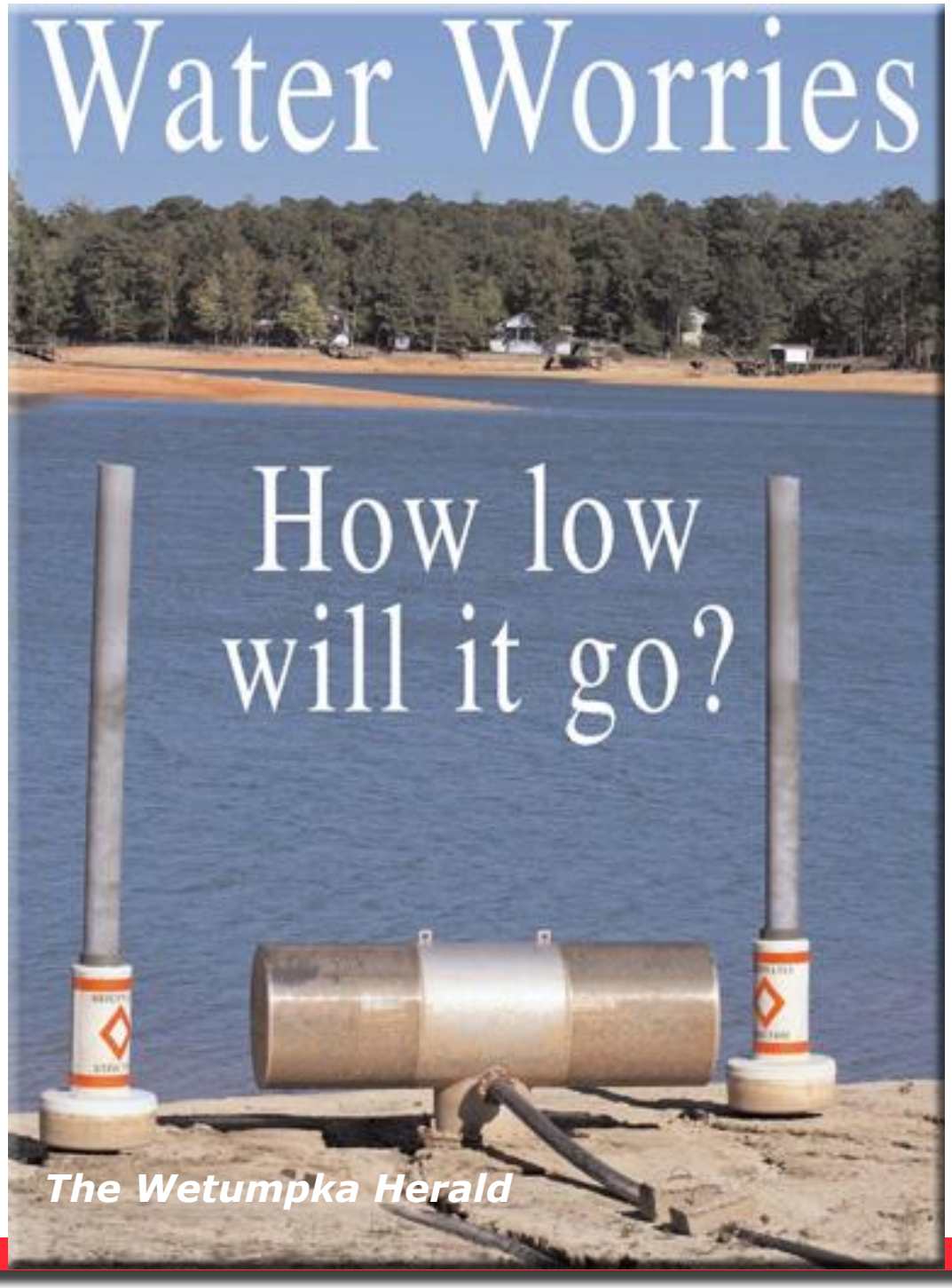
Industries

- Goodyear Tire Plant
- Abitibi Bowater
- International Paper – Prattville
- International Paper – Selma
- Weyerhauser
- Alabama River Pulp
- Dixie Pellets LLC

Water Systems

- City of Wedowee
- Central Elmore Water Authority
- Alexander City Water
- City Of Tallassee
- Shelby County
- Talladega Water Authority
- Montgomery Water Works
- Birmingham Water Works
- Town of Arley
- City of Bessemer
- Town of Centre
- City of Gadsden
- City of Clanton
- Five Star Water Authority

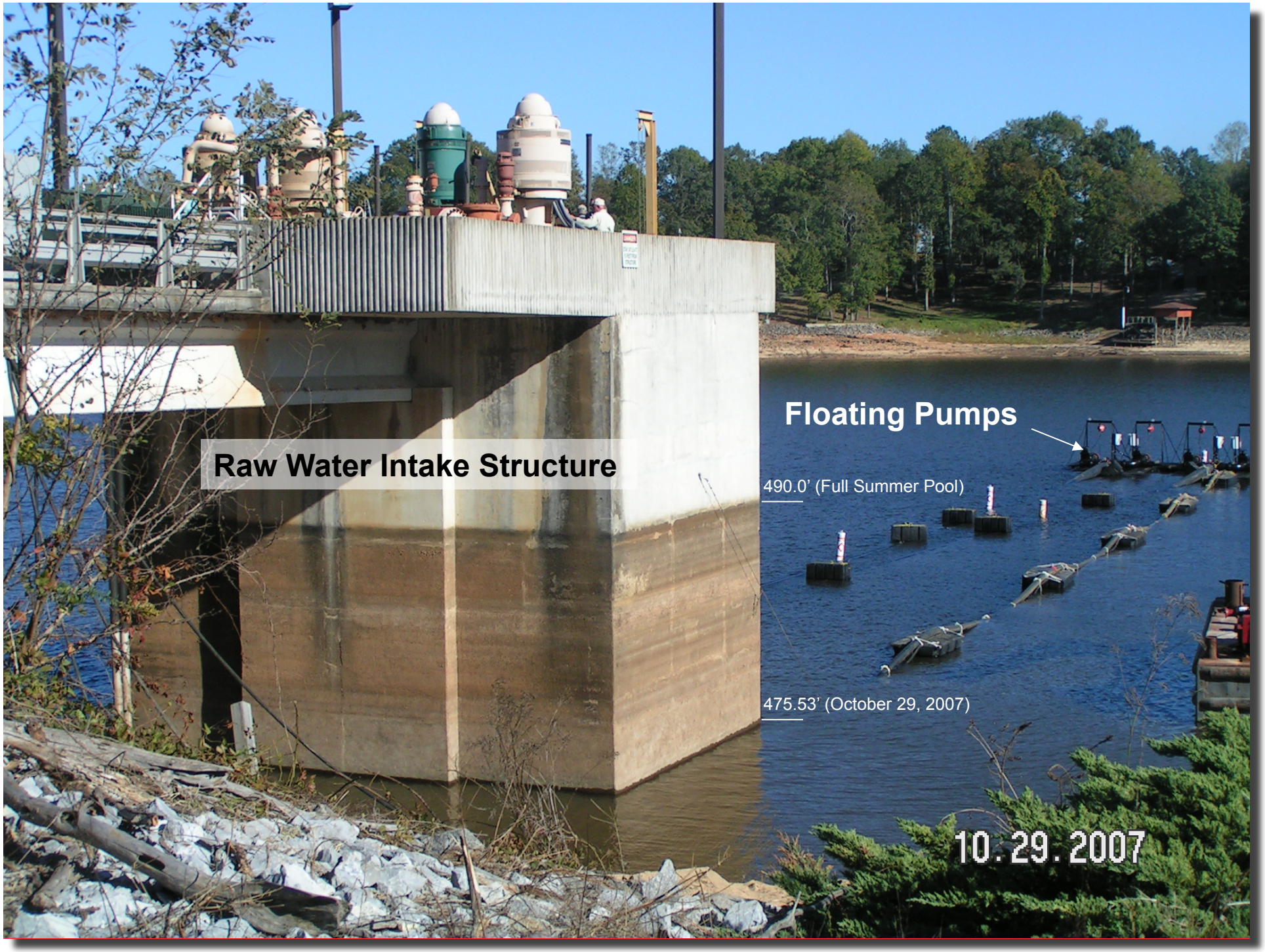

Jasper Water Works


Water Worries
How low will it go?
The Wetumpka Herald

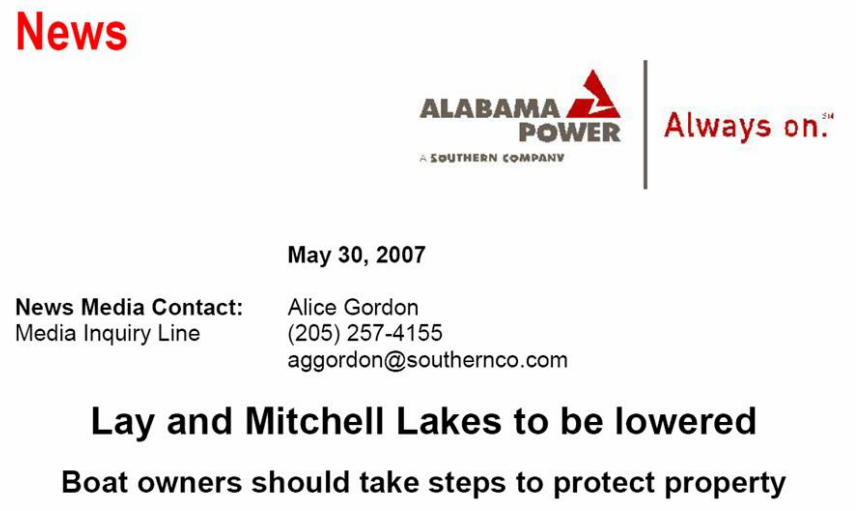
Water Intake Issues

- Town of Arley (15k)
  - Smith Lake
- Town of Wedowee (12k)
  - Harris Lake
- Central Elmore Water Authority (68k)
  - Martin Lake
- City of Alexander City (60k)
  - Martin Lake


Elevation 474.8
ALABAMA WING
SDIS
U.S. AIR FORCE AUXILIARY
11/28/2007 1:35:59 PM (-6.0 hrs) Dir=ENE Lat=N32 44' 24.00" Lon=W086 02' 24.00" Alt=2800ft MSL WGS 1984


Raw Water Intake Structure
Floating Pumps
490.0' (Full Summer Pool)
475.53' (October 29, 2007)
10.29.2007

Take-Aways



- **Must think outside the Norn**
- **Communication is key**
  - **Public notices common**
  - **Early discussions with municipal withdrawers**
  - **Affected agencies**
    - ADEM, ADCNR, USFWS, USACE, FERC
- **Hesitance is not an option**
  - **When relying on governmental organizations, there is no time to waste**
- **Need for a Drought Response Operating Plan**
  - **ADROP**

Solution for a drought stricken lawn – no irrigation required!

End