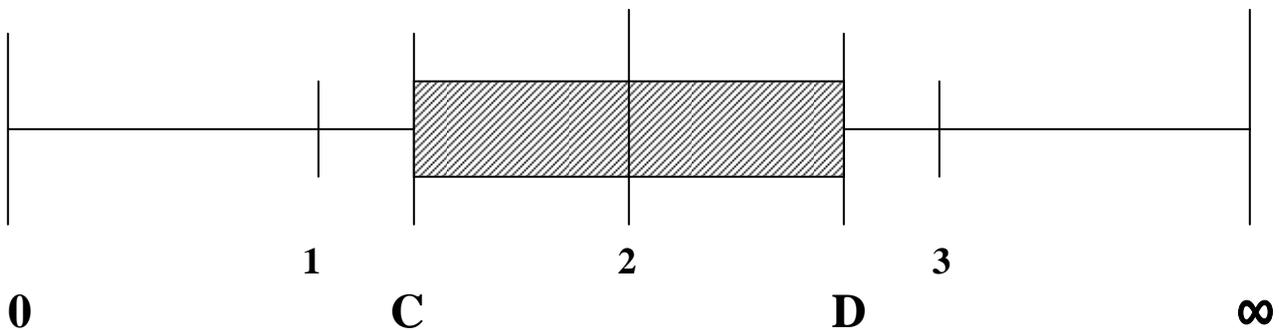


Proposed Outline of Flint River Basin Water Development and Conservation Plan

For consideration by Stakeholder Advisory Committee
Prepared by Technical Advisory Committee February 2-3, 2005
February 18, 2005

PART I: TECHNICAL AND LEGAL BACKGROUND

- I. Explanation and justification for the Flint Basin plan
 - a. History of basin planning, role of ACF Compact and negotiations
 - b. EPD and permittee actions of late 1990's - Moratorium and backlog
 - i. Background (explanation of the rationale and legal basis for agricultural permit moratorium)
 - ii. Applications received prior to freeze
 1. pace of submissions monthly (change after April 1998 and June 1999)
 2. analysis by county
 3. analysis by watershed (potential irrigatable land)
 4. analysis by source
 - iii. Special permitting process used in 2000 (and its relationship to FRDPA)
 - c. Economic (and conservation & development) and ecologic sustainability
- II. Decision line: Permitting versus resource limits



KEY:

0 = Pre-development

C = Maximum allowable conservation: Economic use of resource is entering optimal phase, perhaps because of farm and business synergies; risks of low flows or competition are beginning, probably noticeable in drought years or in selected locations in the basin; ecological impacts may begin to be noticed;

D = Maximum allowable development: Ecological impacts become intolerable (illegal); no further gains in economics from water development (declines in regional revenues would occur from low flows in streams or low water tables, businesses and other economic interests would avoid the region); competition among users becomes intolerable (illegal under right of reasonable use); or flows could not meet federally imposed state-line or other limits.

∞ = Complete development, no water or land available



Shaded area represents acceptable working range of conditions in which conservation and development are reasonably balanced. Economically and ecologically, permitting cannot create a situation outside of this area.

1 = Potential existing situation where more permitting can occur; practical level of conservation not yet reached

2 = Potential existing [optimal] situation where conservation and development are balanced

3 = Potential existing situation where permitting has exceeded resource limits

- a. Legal and other constraints affecting max possible development (withdrawals)
 - i. Endangered species act – flows adequate to protect selected species
 - ii. TMDL – flows adequate to allow assimilation of wastes
 - iii. Clean water act – flows adequate to meet quality standards (e.g. DO)
 - iv. Reasonable use documents (equitable apportionment, state cannot deny you reasonable use, upstream neighbor cannot deny your use)
 - v. Threats of legal action by impacted homeowners, neighboring farmers, and businesses when groundwater tables are lowered.
 - vi. Primacy of federal vs state statutes
- b. Factors driving or limiting the maximum possible conservation
 - i. Successful farming communities require a critical mass of farmers, suppliers, buying points, labor, and services.
 - ii. Competition among producers (in-state and out-of-state) for shares in commodity and specialty markets.
 - iii. Trend toward vegetable and green industry production that requires more water per acre.
 - iv. Need to reduce economic risks for farmers, bankers, and suppliers.
 - v. Intent of permit enabling legislation encouraging development and use of our water resources.
 - vi. Permitting “required” by state statutes
 - vii. Grandfathered permits have no flow shutoff

III. State of the basin’s natural resources

- a. Flint Basin hydrology
 - i. Climatology
 - 1. Normal rainfall
 - a. Meteorological monitoring in the basin
 - 2. Drought year rainfall
 - 3. Long term cycles & trends in rainfall
 - 4. Seasonal ET & ranges of ET
 - ii. Sub-basins, watersheds, sub-watersheds & their rivers & streams
 - 1. Watersheds (collectors for runoff, surface and interflow)
 - a. Nesting of basins
 - 2. Normal stream flows
 - a. Stream gages & monitoring frequencies
 - b. Annual hydrographs

3. Drought induced low flows
 - a. Low flow descriptors (how do we know when the stream is in trouble) 7Q10, 30% mean monthly, 1-day low
4. Trends in the hydrographs pre- vs post- irrigation in long term gage sites.
5. Impacts of ponds on stream flow
- iii. Groundwater system
 1. Aquifers under the Flint River basin
 2. Locations of recharge and discharge areas
 - a. Role of Flint River Basin recharge area in supporting the Floridan aquifer in areas outside of the basin
 3. Normal water table (or heads)
 - a. Monitoring well network and monitoring frequencies
 4. Water table declines during drought
 - a. Cone of depression vs overall declines in water table
 - b. Impacts of drought level water tables on ag, drinking water and household wells (one reason for setting limits)
 - c. Dewatering confined aquifers
- iv. Groundwater and surface water interaction
 1. Gaining vs sinking streams and their distribution in space and time
 2. Water table effects on wetlands
- b. Ecology
 - i. Distribution of fish, mussels, and other aquatic-based species
 1. historical
 2. present
 - ii. Description of stream habitats
 1. Special habitats of certain species (mussels, stripe bass)
 2. Minimum flow needs for specific species, ranges in flow needed annually multiyear (part of the limitation of withdrawal amounts and critical periods will depend upon it)
- c. Current offstream water use
 - i. M&I users
 1. Ground water withdrawals
 2. Surface water withdrawals
 3. Return flows (GW to SW transfers)
 4. "Unpermitted" but regulated drinking water withdrawals
 - ii. Ag (AWP, Irr survey)
 1. Basin by basin irrigated areas (by source)
 2. Seasonal water use (monthly use wet vs dry years) and maybe by crops
 3. Permitted capacity vs actual use
 - a. Permit gpm vs measured gpm
 - b. Permit potential (24X365) vs actual days use/yr
 4. Permitted vs unpermitted users
 5. Gaps in knowledge on water use by farmers.
 6. Consumptive use and return flows
 - iii. Cooling for electric power generators
 - iv. Private commercial and homeowner unregulated withdrawals

- d. Other flow needs
 - i. In-stream uses
 - ii. Hydropower
 - iii. TMDL waste assimilation
 - iv. Possible state-line flow

- IV. State of the basin's economy & demographics
 - a. Demographics (refer to Georgia County Guide)
 - b. Ag industry
 - i. Pre-irrigation
 - ii. Post-irrigation
 - iii. Current value of irrigation (using water resources for ag production)
 - iv. Property value w/ & w/o irrigation (permits or hardware)
 - v. Monetary contribution of ag (% of basin's economy)
 - vi. Trends in ag productivity and cropping systems (e.g. toward higher value crops) and the impacts that would have on water demand.
 - vii. Forestry production on farms and in the basin
 - c. Industries
 - i. Value of major industries in the basin
 - ii. Value of water in industries, trends in their water use
 - iii. Preserving water resources for future industrial growth
 - d. Recreation & tourism in the basin
 - i. Hunting and fishing
 - ii. Value of water in place

- V. Regulatory controls currently in place
 - a. Permitting statutes and rules
 - i. M& I
 - ii. Power plants
 - iii. Agriculture
 - iv. Community drinking water systems
 - v. Private wells
 - b. Georgia code (affecting ag permitting process and Flint Basin Planning)
 - i. Groundwater Use Act of 1972 [O.C.G.A. 12-5-90 to 12-5-107]
 - ii. Water Quality Control Act [O.C.G.A. 12-5-20 to 12-5-31]
 - iii. Flint River Drought Protection Act [O.C.G.A. 12-5-540 to 12-5-550]
 - iv. Water well Standards Act of 1985 [O.C.G.A. 12-5-120 to 12-5-138]
 - v. Georgia Safe Drinking Water Act of 1977 [O.C.G.A. 12-5-170 to 12-5-193]
 - vi. Georgia Scenic Rivers Act of 1969 [O.C.G.A. 12-5-350 to 12-5-354]
 - vii. Georgia Safe Dams Act of 1978 [O.C.G.A. 12-5-370 to 12-5-385]
 - viii. Georgia Water Supply Act [O.C..A. 12-5-470 to 12-5-482]
 - ix. Others?
 - x. Statutory authority for FRB plan
 - c. Georgia rules affecting water withdrawal permitting and planning
 - i. Ground Water Use [DNR 391-3-2]
 - ii. Rules and Regulation for Water Quality Control [DNR 391-3-6]
 - iii. Lower FRB Drought Protection Act [DNR 391-3-28]
 - iv. Rules for Safe Drinking Water [DNR 391-3-5]

- v. Rules for Dam Safety [DNR 391-38]
- VI. The Models
 - a. Groundwater (transient flow)
 - i. Description
 - 1. Stream-aquifer flux
 - 2. Difference between transient and steady-state
 - 3. Input parameters
 - ii. Limitations, sensitivities
 - iii. Uncertainties
 - b. Surface water
 - i. Description
 - 1. Limitations, sensitivities
 - 2. Uncertainties
 - 3. Tie in with GW model
 - ii. Model runs
 - 1. current conditions (with current withdrawals)
 - 2. scenarios with additional (or fewer) withdrawals
 - 3. Evaluation of flows against standards
 - a. 7Q10; 30% maf; lower quartile lowest flows; DO
 - iii. Scales of output and recommendation
 - 1. By basin
 - 2. By stream reach
 - 3. By area
 - 4. By aquifers & depths
 - 5. .When will model results be available and will they be available for all watersheds or reaches
 - c. Ecological models (e.g. dissolved oxygen)
 - d. Economic models for region

PART II: REGULATORY ACTIONS

- I. Recommendations for EPD action
 - a. Evaluation of whether additional water is available (for ag and M& I)
 - i. Do models physically show area/watershed/reaches with available water (flow above targeted threshold levels) and aquifer areas with available withdrawal capacity?
 - ii. Will withdrawing that available water from stream reaches impact downstream uses (or state-line)?
 - iii. Will using that available water further impact existing uses and ecology (during critical periods)?
 - iv. Can water be moved in time (large individual or community off-stream storage) to prevent critical low flows?
 - v. Will MODELS serve as sole source for these evaluations? Could allow a hold-harm approach where allow withdrawal but withdraw it if find that you are causing a harm.
 - b. IF Water IS available, then when, where, how much: Establishing a procedures for resumption of the agricultural permitting process
 - i. Allocating among applicants
 - ii. Addressing the backlog
 1. How should EPD weed out pending (and new) applications.
 - a. Speculative applications, duplicates, no longer needed by applicant
 2. Should newest permits be issued to those who have already begun irrigating (drilled illegally after moratorium, drilled between 1991 and 1999 but never sought permit, drilled in grandfathered period) or should newest permits be issued to those waiting patiently?
 3. Should permits be required and/or issued for all pond withdrawals. If not should ponds be categorized by their impact on flowing streams, and permits already issued for similar pond withdrawals cancelled?
 4. Categories on unpermitted users
 - a. Long-term users with no permits
 - b. Refuseniks: won't cooperate with any regulations
 - c. Recent scofflaws: drilled after moratorium
 - d. People who just don't know about moratorium
 5. Categories of permitted users
 - a. Legitimate and continuous
 - b. Intermittent
 - c. No longer use (and never will) e.g. row crops to pavement
 - d. Haven't used significantly e.g. used once in 1988
 - e. Duplicates
 - f. Never been used
 - iii. Addressing the historically erroneous permits (that are limiting access to legitimate permits)
 1. How should "unused" EPD permits be reviewed to determine if some can be retired to free up water for new permits.
 - a. Duplicate permits

- b. Never installed or permits
- c. No longer a potential for ag use
- d. EPD cannot locate owner or recipient of the permit
- c. What should EPD do if NO water is available for permits?
 - i. Continue hold (i.e. local moratorium, FRB Plan extended)
 - ii. Alternate sources (e.g. convert surface water permits to groundwater, and who pays for that?)
 - iii. Reduced permit quantities and/or roll back of grandfathered permits
 - iv. Use/modify FRDPA to allow interruptible sw permits in critical watersheds
 - v. Require new permits to have conservation practices as a condition

II. Conservation

- a. Evaluation of existing conservation practices
 - i. BMP's, conservation tillage, etc
 - ii. NRCS/GSWCC irrigation audits
 - iii. retro-fitting of systems, replacement of travelers w/ pivots
 - iv. EQIP programs
 - v. TNC/TGC programs
- b. Implementing practices that release surplus water at critical times
- c. Expansion of existing NRCS/GSWCC programs
- d. Riparian corridor preservation
- e. Reconsideration of aquifer storage and recovery (ASR)
- f. Funding for current and future conservation programs

III. Suggestions for Regulatory Reform

- a. Changes to permitting statutes and rules
- b. Modification of FRDPA
- c. Future role of SAC, creation of water management district
- d. Integration of FRB Plan into Statewide Plan

IV. Mileposts for Plan evaluation

- A. % habitat recovery; (bass weight, mussel counts, etc.)
- B. % irrigation conservation, or # systems fitted
- C. % low flows exceeded
- D. # superfluous permits retired
- E. number of new permits issued
- F. economic markers