How Should Florida’s Water Supply be Managed in Response to Growth?
The Askew Institute is an Affiliate of the John Scott Dailey Florida Institute of Government

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Water is the single most important issue facing Florida today because water is life. Without an adequate supply of water our state will not be able to continue to grow and flourish.

I think we learned more about the specifics of water management in the last few days than any of us have before. We understand from Paul Reiter that this is not just a Florida issue; it is a global issue that faces every nation in the world. We learned from Len Shabman, Christine Klein and others that states have approached the problem differently with more or less success. We must learn from these examples and do what is best for Florida.

We need people who are willing to look down the road. The 1972 Environmental Land and Water Management Act brought diverse groups together to develop the first water and land planning in Florida and created our regional approach to water which has been quite successful. Our laws now need to be updated to take advantage of new information, new technologies and the conservation of our water supply.

The year’s Askew Institute will make more specific recommendations than we have done in the past and that is good. Edward Everett Hale, chaplain of the US Senate, once said, “I am only one; but still I am one. I cannot do everything, but still I can do something; I will not refuse to do something I can do.” That is an important lesson for each and every one of us. If each one of us does one thing to conserve or use water more wisely that will be an excellent start, and I hope our recommendations will reflect that.

Florida Water Day is April 26. We should use this as a time to bring groups together to talk about our water crisis and to inform the public. It is time to stop discussing whether or not Florida has a water crisis; I think it is a continuing crisis that must be addressed now if we are to have the water we need in the future. There is no greater challenge facing Florida.

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Water is life. Loren Eiseley said in *The Immense Journey*, “If there is magic on this planet, it is magic in water. This is our home. And it’s a home we can’t reproduce, we have to understand, and we have to live in. For many reasons, that observation can lead to pessimism. For me it is reason for optimism, but only if we deal with the world we are facing. The world’s population is now 6 billion people and we’re already running up against serious water issues because water resources are fixed and finite. We live off a little less than 1 percent of the water on the planet. A number of the readily available resources have already been used. So we either learn to use that small percentage better or we learn to tap into the bigger percentage that we don’t use which is essentially salt water or a combination of salt and fresh water.

That challenge plays out in three ways: (1) coping with growing water demands; (2) addressing widespread water pollution (seen and unseen); and (3) closing the gap on access to water. Most water is tied up in agriculture. We’re feeding ourselves as the global population grows through a more inefficient use of water but a more efficient production of food through irrigation. In the first half of the last century, irrigated land doubled and from 1950-1980, it doubled again. Since 1980, irrigation usage has increased at a slower rate. Basically, we have a significant amount of water going to agriculture. And in some sense this is a miracle. We are able to produce a lot of food by irrigating land and by building the conveyance mechanisms needed to do that. This is good news from an agricultural point of view but from a water resource, supply, and availability point of view, it’s a dismal picture.

The key question for rich and poor countries alike is how do we do more with less? In the developing countries, the dual imperatives of using less water and polluting less water come out of a series of interests — underlaying growth and resource constraints. Of course, environmental awareness causes the harnessing of this problem. If we put those two imperatives together with technologies, we are currently in the midst of a pretty big paradigm shift. In the old paradigm, water management is divided strictly between agriculture, urban, and industrial uses; water is used only once; we use water very inefficiently and pollute water because it’s abundant and a great way of transmitting things that we want to get rid of — municipal waste or agricultural waste. Moreover, in the old paradigm, we treat the environment as an unequal partner. We think of the environment as a constraint as opposed to treating the environment as an equal partner. We think of the environment as a constraint as opposed to treating the environment as an equal partner.

We need to think differently and be innovative so as to meet emergent and traditional challenges and operate in a truly sustainable manner. The dimensions of innovation include: the management and policy framework, planning and regulation, technical components, and social and education components. Perhaps the best example of a management framework that could be applied to the U.S. is France. In 1968, France created six basin agencies. Each basin agency has a taxing authority with revenues collected on the pollution side and revenues collected on the water supply side. These agencies collectively deal with 20,000 municipalities. The interests of those municipalities get brokered through the basin agencies entirely by consensus — quality management standards, water treatment facility needs, drinking water plant needs, and distribution system needs. In the process these agencies make locally-based investment decisions. An example of water management on a broader scale is the European Union. The European Union established the EU Water Framework Directive with the goal of achieving the highest quality standard for all water in the EU by 2027. It is a political environment unless you agree that you have a problem. Once that’s been accomplished to a sufficient degree, there is a need for a programmatic and multinational framework for basin authorities, quality standards, and required action. Finally, there should be true integration of water with financial and expenditure authority and effective partnerships with local governments. I think this is where France has the best system in the world.

How do you go about making changes? In Europe you can do this easier than in the U.S., because you can take top-down measures. And top-down measures only work if there is a shared respect for an authority -- a belief in regulations and regulation which isn’t universal and, in fact, is not so true here. In a bottom-up environment, you have to figure out something else to get people on the same page. I think it’s the notion of shared values and commitments. The cities of Tallahassee and Orlando have come to their own conclusions about their problems and to create political consensus and make it stick. But it’s hard and that’s what needs to be done in the U.S.

What are the technical approaches to doing more with less? These include removal of pollution, applying conservation and how we use water, the use of innovative so as to meet emergent and traditional challenges and operate in a truly sustainable manner.
I chose the theme of "distilling Florida's water story" because separating what's real from what's rhetoric is one of the trickiest aspects in the public debate over water supply — actually in any public debate today. It will come as no surprise to you that the field of journalism is in a crisis of identity and credibility. Part of our crisis is self-inflicted, of course. But part of it has to do with the incredible amount of information available to the public on any issue — and the speed at which it becomes available. When I began my career just 20 years ago, journalists were still what Walter Lippman termed "gatekeepers," the go-between the public and the government and other sources. Today, with the Internet and the bloggers and the incredible growth and power of the public relations industry, there are huge amounts of information everywhere — usually more than we can digest.

So the journalist's role as gatekeeper is over. On the issue of water, you can go online and read the water management district's water story, the text of every water bill pending in the Legislature, and the SEC documents of every publicly-traded water company. My role, and that of my journalist peers, is evolving into what the media analyst Tom Rosenstiel calls "authenticator." That is, we are watching and reading the reports and the blogs and the press releases and the government-paid-authenticator. Part of our crisis is self-inflicted. That is, we are watching and reading the reports and the blogs and the press releases and the government-paid-authenticator. Part of our crisis is self-inflicted.

So my distilled version is this: Florida's water story is a crisis at present. Many just don't realize it.

On the Tampa Bay Water Wars and Diane Raines Ward's Water Wars: Drought, Flood, Folly and the Politics of Thirst has a chapter on the Everglades. Back to the conventional wisdom, no matter how you calculate per-capita consumption in the United States, California comes out on top. Florida's ranking moves around depending on how you calculate consumption. In 2000, Florida's total freshwater withdrawals were 8.2 billion gallons a day. The measure of water consumption considered by the U.S. Geological Survey to be the most accurate is to divide total water withdrawals for public supply by population. That measure doesn't include agriculture, power and other industrial withdrawals. Per capita use in Florida was 174 gallons per day in 2000, based on the USGS measurement — slightly below the national per capita average for 2000 of 180 gallons a day. The bad news is that per-capita use has been declining in the United States since 1980 due to water conservation, per-capita use in Florida increased slightly for the 2000 cycle because the drought that year greatly increased lawn irrigation.

So my distilled version is this: Florida's water story is not an issue in Florida.

Conventional Wisdom No. 3 — "Privateization of water is not an issue in Florida.

In fact, the North American market is considered by private water companies to be the "fastest growing" of the global water market, partly because water use is so high here. Let's consider the pros and cons of private water. On the global scene, a major criticism of private companies is that they're coming with huge promises and then reneged on them later after landing a contract. In the case of Atlanta, citizens felt that United Water was less accountable and less responsive than the city government. And that's saying a lot because citizen dissatisfaction was the reason for the privatization in the first place. In the older case of Desal, Nassau and St. Johns counties and United Water, rate increases led to a lawsuit by the Jacksonville Electric Authority which has now reduced rates by some 25%. As for the advantages, U.S. water systems will require investments of $250 billion over the next 30 years. Moreover, according findings from a new AEI Brookings Institution report, customers do not appear to pay more, on average, for water and private-owned systems comply with health/safety regulations about as well as government-owned systems. So my distilled version is this: water privatization is a key issue in the United States, including Florida.

Conventional Wisdom No. 5 — "Floridians in 2005 do not face a statewide water crisis at present." Charlotte County gets water from DeSoto County. Sarasota County gets water from wells in Manatee County. In coastal Walton, Okaloosa and Santa Rosa counties in the Panhandle, water levels have dropped as much as 50 feet below sea level. Near Orlando, groundwater levels have dropped 25 feet in places. On the east coast, Titusville has notified the St. Johns River Water Management District that it will run out of water five years from now, in 2010. So the psychology of a crisis, of course, is that it's a crisis when it's happening to you. For example, Arnold and Beverly Larsen of Spring Hill, faced with a large sink hole in their yard, probably think we have a crisis on our hands. For the rest of us, it may require another drought. But consider just how many Floridians are dealing with crises right now.

To conclude, I think it's worth mentioning the media attention in 1972, when Governor Askew brought together stakeholders from throughout Florida, when he declared a crisis and oversaw the speed at which it becomes available. It will come as no surprise to you that the field of journalism is in a crisis of identity and credibility. Part of our crisis is self-inflicted, of course. But part of it has to do with the incredible amount of information available to the public on any issue — and the speed at which it becomes available. When I began my career just 20 years ago, journalists were still what Walter Lippman termed "gatekeepers," the go-between the public and the government and other sources. Today, with the Internet and the bloggers and the incredible growth and power of the public relations industry, there are huge amounts of information everywhere — usually more than we can digest.

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Complexity, Confusion, and Complacency
In Water Supply Management
By Dr. Sanford Berg, The University of Florida

There are at least two views of history that, in my opinion, are often confused. First is the history of science. According to that theory, particular groups are deliberately manipulating public attitudes to gain private advantage. The groups are very powerful and difficult to pin down. In fact, the inability to obtain tangible evidence regarding the conspiracy is “evidence” of the conspiracy’s effectiveness. Crisis is often the result of such forces. We hear charges by environmentalists that business interests are blocking or stalling their initiatives and countercharges from businesses along the same lines. I think the conspiracy theory is alive and well.

Second is the confusion theory. According to that theory, technological, economic, political and social forces are very complicated; now and then an issue, like water, gets tossed up onto our radar screens. Because such issues are very complex, we struggle to understand the nature and scope of the problems. If we delay, crises often ensue.

Let’s examine how different fields of study might approach these two views of history. I think the world is very complicated. I believe that special interests articulate their views and are able to influence laws and their implementation. People working with water issues fall into a number of categories. Different views of history are facing an issue, but often that value is non-monetary or difficult to quantify. Wetlands and estuaries contribute to the health of the planet: in Florida, rules on water levels and flows attempt to incorporate impacts on biodiversity and sustainability. Questions raised by another presenter

questions raised by another presenter was: “If we use water permitting to control growth or does water flow uphill toward money and people?” From a market economics perspective, we’d say water is going to those with financial and political clout: meeting demands. The planners certainly have a role in making this happen because they understand the law; they understand historical experience in other areas; and they bring a very deep appreciation of the topological and geographical elements that many other fields don’t bring to the table.

• Lawyers bring us another set of perspectives. For example, rules and regulations attempt to provide significant attention to procedural fairness. That’s an important contribution to this process. If the different parties don’t perceive that there is transparency and opportunities for participation, water policy won’t be developed through a legitimate system; the laws will either be changed or they will be disbelieved in a variety of ways.

• Engineers focus on issues of power and legitimacy and cohesion and the roles of different groups. Issues include centralized vs. decentralized decision-making: top-down vs. bottom-up approaches to resource allocation. Consensus is critical because ultimately in a democratic system, there needs to be widespread consensus on outcomes if the system is to avoid instability.

• Ecologists understand the importance of efficiency in sending people price signals and providing them with incentives to conserve. From this perspective, water is a commodity with values in alternative uses, including future consumption and environmental restoration. However, economists may be blinded by the beauty of markets and importance of incentives, thus giving excessive attention to those issues.

• Planners deal with land use, population growth projections, zoning issues, and certainly curtailment. One of the problems raised by another presenter was: “I do not use water permitting to control growth or does water flow uphill toward money and people?” From a market economics perspective, we’d say water is going to those with financial and political clout: meeting demands. The planners certainly have a role in making this happen because they understand the law; they understand historical experience in other areas; and they bring a very deep appreciation of the topological and geographical elements that many other fields don’t bring to the table.

• Economists provide perspectives on ecosystem sustainability. Water has economic value, but often that value is non-monetary or difficult to quantify. Wetlands and estuaries contribute to the health of the planet: in Florida, rules on water levels and flows attempt to incorporate impacts on biodiversity and sustainability. Questions raised by another presenter were: “What does the burden of proof lie with developers or with environmentalists? What is more problematic—erring on the side of environmental protection or erring on the side of development?”

• Environmentalists argue that decisions we are making. We’ve done the research and development and we know that we need to do more fine-tuning. In a not so static world, it’s a dynamic world; studies suggest that we are on the right path, we can feel good about that, and we have a deep personal commitment to fulfill those obligations. Arguably, markets or quasi-markets increase the likelihood of a self-corrective system and the lack of sharing information often lead to conflict. People who subscribe to the belief that we’re in danger, the knowledge base of science and engineering seems complex. To those people, the personal values could be characterized as being in cognitive dissonance. What is said doesn’t always reflect votes or personal actions.

The second response might be that we are facing an impending crisis. I think the Chamber of Commerce task force took that position; their view was that we’re making progress, we need more collaboration, but we are seeing cooperation among agencies.

There is coherence in the scientific information, but let’s focus on the role of money into research and development. Let’s establish a data institute. To promote collaboration, let’s have a water supply authority for the whole state that we could look at those issues. I think the Chamber of Commerce and Council of 100 reports suggest there is no crisis but a concern that while we may be on the right path, we’re not sure and some changes might be needed. I didn’t read in either report about people making hard choices or about price increases. Instead of these and other reports, almost by definition, don’t want to offend anyone. So people come out in favor of “sustainable development” that leads to “good outcomes” and is in the “public interest”. Inoffensive and relatively meaningless.

The third response might be complacency. I like complacency. Complacency suggests that there is no crisis but a concern that we are making good progress. We're making progress and we need more collaboration.

Where is Florida today? Is there consensus regarding the best policy for water supply management? Is there clarity regarding science? Is there commitment of all stakeholders to the current process and to the current objectives? Of course, if the current objectives are vague, we can agree with them. According to Len Shabom, one of the speakers, when it comes down to making hard choices, questions must be asked about whether your objectives are the same as my objectives. Is your understanding of science the same as my understanding of science? Ultimately, it comes down to citizen contentment with the outcome.

We can characterize different views of history? There are at least three possible responses to that question. The first response might be that we are

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Water Supply Conflict and Government Response: The Challenge for Florida

By Dr. Leonard Shabman, Resident Scholar, Resources for the Future

Dr. Leonard Shabman, Resident Scholar, Resources for the Future, expounded on Water Supply Conflict and Government Response: the Challenge for Florida. His presentation provided observations on: (1) how we might think about water abundance and scarcity; (2) the sources of water conflict; and (3) water policy and planning.

**Water Abundance and Scarcity:**
Florida might be considered a wet desert with great annual and intra-annual variability of rainfall. However — and this might be a controversial observation — even in the face of the greatest imagined growth in this state, the total quantity of water withdrawn for consumptive use, now and in the future, (considering environmental flows) is tiny in relation to the amount of water in the state of Florida. Water planning and policy address the conditions for drought but exactly what is meant by conditions being “too dry” is somewhat unclear — at least in the context of aquatic systems. In terms of human consumption, the term “too dry” must be understood in the context of costs: dead laws, dead crops, reduced tourism, and storage during water-abundant times for distribution during times of drought. Investments in conservation could prolong the period for water storage. We also need to think about water abundance in terms of place. For example, is all the water Florida available in Miami? Water is time and place specific; water planning and policy involve social decisions about when it is too dry, in what places, and who gets to decide what, if anything, should be done about it. We can and do, throughout our history, choose to transfer water in time, that’s what we have storage for. We can and do transfer water in space, across the landscape. We can and do transfer water for some uses and have less for others, either on a temporary or permanent basis. Water planning and policy involve choosing to leave water less when occasional dry periods arise. Increasingly, we can and do choose to use competitive use approaches like desalination and water reuse. In short, water abundance (or scarcity) should be viewed as a social problem and a choice problem.

**Conflict Sources:**
There are four categories of water conflicts: value, interest, cognitive, and authority. Authority conflict results from the post-1970s diffusion of power that was created by the form and number of environmental laws that were passed in that period. Since then, traditional federal, state, and local agency responsibilities for planning water supply capacity investments have competed in determining who decides how much water is needed, who should get it, and how it would be transferred. Value conflict is over the desirable goals of public action and is somewhat ideological in nature. An example is opposition to desalination plants because they would “allow people to move into areas they shouldn’t be in.” It is simply a value as to where people “ought” to be living. Very often, water conflicts are caught up in that kind of discussion. They can only be resolved by someone making an authoritarian or democratic choice and saying it will or will not be this way. As an empirical matter, water supply cannot be an effective control on growth. Water will move to where people are. The water supply planning and decision choices are reactions to larger actions and democratic drivers. In the case of Florida, the question is “How not whether and not can — Florida provide water in the dry years. Florida will and can, but at what cost and with what strategies?

**Interest Conflict:**
Interest conflict arises when promised water allocations have a different effect on various consumer groups and those affected groups can block, or voice their opposition to or support for, a proposed decision. Perhaps the best recognized example of interest conflict arises when a water transfer is proposed from rural to urban regions or water-rich to water-poor regions. The reasons for the conflict are often related to the perceived value of water in a given area; from the perspective of the group trying to get the water, the water is considered to be in surplus supply for the number of users or types of uses. The “so-called” water-rich regions want to keep their water because it is considered a guaranteed future of prosperity. To lose any water is to lose that prospect. Not much water is involved in these interest conflicts. Moreover, it doesn’t make any difference to development because water moves to people and not the other way around unless one is talking about dryers. Resolution of the conflict is a question of water allocation, funding, and compensation. What is really at issue is not the water itself but the compensation payments for the water. The actual transfer of water is a function of space and time. It will happen; the question is under what terms and at what level of detail.

**Cognitive Conflict:**
Cognitive conflict occurs when people start fighting over the data, the models, and the analysis provided by water experts and used by people making their value and interest arguments. There has been a rapid need to develop “required”, “environmental state or condition. It is a term that stifles legitimate public debate about desired and attainable environmental conditions. Planning has to be about more than engineers were viewed as water experts. However, as multiple disciplines have been involved in advancing the field, the number of experts has grown and so too have the differences among experts even within disciplines and within areas. A highly diffused decision-making system and a highly diffused system of expertise provide the context for water planning today, leaving water “experts” to resolve these conflicts of value and interest.

**Florida’s Water Policy and Planning Process:**
Florida’s commitment to the state’s water planning process calls for the state to ensure availability of adequate water supply for all competing water uses deemed reasonable and beneficial and to maintain the functions of natural systems. But who defines “reasonable and beneficial?” Agricultural users withdraw most of the water in this state and that’s not an unusual situation around the nation. Is agricultural use “reasonable and beneficial?” If we decide the water is better used for environmental or urban purposes than for agriculture, we are making a judgment on relative costs and values and ought to acknowledge that fact. In determining the “adequacy” of water supply, what measure is used and at what cost? When applied to water supply issues, questions of “adequacy,” like questions of “reasonable and beneficial” use, are not technical; however, such questions can be informed by technical analysis. Plans and planning are useful in addressing those questions in a knowledgeable manner.

Reconciliation of cognitive conflicts is a task for analysts. It’s more likely that we can easily reach an agreement on technical issues than on value or interest-dominated issues, but the separation is not often clear. Water allocation decisions may instead be one of values or interest. Planners and plans need to avoid terms like “water use competitive technology like desalination, water reuse and water reuse competitive technology like desalination, water reuse and water reuse, etc. In short, water abundance (or scarcity) should be viewed as a social and economic constraint, “the mega-trends.”

To recognize the larger context beyond our individual or group perspective, we need to think about water planning and policy involves social decision making and of water conflict resolution.

**Water Allocation Decisions:**
Water allocation decisions are made every day. They are implicit and they are the product of mega-development trends that are not in the domain of water planning. “Save the Everglades” is not just a set of water policies, it’s about more. Fifty years from now, there will be an Everglades Park and it might be bigger, it might have less cattails, it might have fewer cattails, but it will still be there. We will make thousands of choices everyday that will define this outcome and we will make management decisions that react to those choices. We need to deal with the day-to-day tasks of management and policy issues in ways that recognize trade-offs. Furthermore, we need to recognize the larger context beyond our control—the mega-trends.
ECONOMICS OF URBAN WATER SYSTEMS – DOES THE EXISTING PARADIGM WORK?

BY DR. ROGER NOLL, MORRIS M. DOYLE CENTENNIAL PROFESSOR IN PUBLIC POLICY, STANFORD UNIVERSITY

Roger Noll, Morris M. Doyle Centennial Professor in Public Policy, Stanford University, shared his observations on the Economics of Urban Water Systems – Does the Existing Paradigm Work?

THE NEW PARADIGM: What does it mean to say that we need a new paradigm? The meaning here is that the traditional methods — the institutions, organizations and ways of doing business for managing water for Florida, and indeed, for many eastern states — have become too inefficient, too iniquitous and too inflexible to cope with the growth in water uses. Tinkering won’t work, the system that Florida has designed to cope with the water problem during the 19th century and first half of the 20th century is fundamentally incapable of dealing with that problem in the first half of the 21st century. More recent institutions like water management districts still seem to have a technocratic approach to water allocation. A new model must be based on a greater integration of water supply across regions and across uses, implying the need for some centralized mechanism that does not currently exist at the state or even multi-state level while making far greater use of market allocation and economic incentives to balance supply and demand.

The role of economics and economic thinking in constructing Florida water policy has historically been minimal and that is not irrational. Economics is not concerned with extraordinarily cheap water that can be supplied for all reasonable uses at extraordinarily low prices. Economics is concerned with the use of scarce resources among competing users, that have valuable things to do with that resource. It is difficult to make the transition from a world in which the abundant sources of water can be used for everything to a world in which people have to think of water the way that they think of other economic commodities, where there is scarcity and there is tradeoff.

What is meant by a new paradigm is really an old concept. It is the concept of regional specialization and free trade, applied to commodities like oranges and corn. Water, particularly groundwater, has features of a common property resource, which is capable of being “over-fished.” So there has to be a regulatory infrastructure to manage it — to protect the Everglades and to prevent groundwater depletion. How do we impose restrictions and rules on what is otherwise a market process for allocating scarce resource so that we protect those things that aren't adequately represented in that market process? The long term goal is to make water allocation efficient and here we may learn from experiences with western water allocation and the practice of interruptible water use. For example, an alfalfa farmer in the Mohabi Desert might have a deal with Los Angeles to sell water to the city during drought years but keep the water to grow alfalfa during water-abundant years. The price of alfalfa to feed animals is roughly equivalent of $12 per acre foot. By contrast, the urban price of water in California, is $286 per acre foot. The marginal use for urban consumers and industry of water has an extraordinarily high implicit price, compared to growing alfalfa in the desert. That is why in drought years, the water is shipped to Los Angeles rather than staying in the Mohabi Desert to grow alfalfa.

The Problem with Old Water Allocation Systems: Until the middle of the 20th century, there was a basic abundance of water supply. Because of that abundance it was fairly easy to respond to localized water shortages. Water supply systems simply engaged in adequate long-term capacity decisions. Planning was needed to build an infrastructure that was sufficient in terms of water storage and water delivery that could get through droughts in areas where one might expect localized short-ages. That was a fairly easy problem and, actually, economics had very little of a role there. The job of government was to coordinate the abundance of a resource and not to make tough decisions about big winners or big losers from the allocation of this resource. Government is not well-suited to making administrative or bureaucratic decisions that cause targeted harm and provide targeted benefits of great magnitude because it is really difficult for the ordinary citizen to tell the difference between hard choices and corruption. For instance, catastrophic loss of political office can occur when someone makes a decision that an industry or location will be a big winner and another industry or location will be a big loser, without receiving compensa-
tion from the winner. Water permitting systems require that such allocation decisions be made. The market system has two advantages over systems that make targeted allocations: (1) decentralization — it is really difficult to assign blame; (2) financial transfers — the winners compensate the losers.

The Future—Transferable Water Rights: Owens Valley in California has two counties — Inyo and Mono County. “County” in the west means “state” in the east. Inyo County only has 20,000 people in it, but it’s larger than Connecticut. Mono County is a little smaller with 10,000 people although it is certainly larger than Rhode Island. Florida and Alge has most of the water rights from Inyo and Mono counties through the Owens River Project, but didn’t get all the rights. There was one nice little community consisting of six farms in a little place called Benton, California, which is in Mono County. These farms were growing tomatoes to sell in the towns in Owens Valley: Mammoth and Bishop and Old Pine. The city of Los Angeles, during a drought period, approached the tomato farmers in Benton, all six of them, and proposed the following deal: We will buy 75% of your water, we will pay to plant orchards to replace the tomatoes, because the water use for orchards is much less than the water use for tomatoes, so your capital expense going into the orchard business will be totally paid for by the city of Los Angeles. From the 75% of water that we buy, we will give 25% of it to Mono County, to accommodate the growth in the city in Mammoth Lakes which is the largest ski resort in the United States. In addition, we will give 25% to Inyo County for the small towns along there for some of the farms, so we’ll pay all of this money for the water shipped to Los Angeles. The farms are better off, the people who live in Mono and Inyo Counties are better off and the people who live in Los Angeles are better off.

The water transaction had to be approved through a waiver by the state water board and the board rejected it on the grounds that these are “inalienable rights”. What in the world were these guys thinking? In Martin County, which is the county on the north side of the Golden Gate Bridge, there was insufficient water for residential use but there was water to grow tomatoes in the desert. This series of wildly inefficient allocations created a firestorm and caused the California Legislature to pass a new bill that allowed water transfers of both a sale and a lease variety — the lease variety known as interruptible use. This is the new paradigm, and what is going to happen in Florida sometime in the next 20 years is totally predict-able. There will be a state-wide water allocation mechanism based on economics. The reason is that there is no way to avoid it.

Florida’s Choices: The argument that we shouldn’t let population and economics interfere with the optimal allocation of water suggests that democracy does not matter, and the market evaluations implicit from exchanges do not matter. We should throw out relative values of use, throw out democracy, and use some other set of criteria to allocate water and that is just nonsense. Even if one believes it is true, even if one believes that the highest and best use of water is for human beings and it ought to be all taken away from human beings and given to something else; that is not the society we live in. Manatees don’t vote. What we have to do is create enough water for the manatees in a mechanism that does not cause pain for the people who live in Miami-Dade County and in Tampa Bay. We have to accommo-date the humans with intensity of demand and the fact that they vote, or else the manatees will not survive. The most effective and efficient mechanism for accommodating them is a regulated market system. In one or more droughts from now on, the system will collapse, and the only question is: will we respond in a fairly easy painless way or will we really shoot ourselves in the foot first — that is the choice. In fact, in many states in the west, the decision was “let’s shoot ourselves in the foot first.” The outcome involved real hardship and pain and caused some state legislators and governors to lose office. Incumbent politicians in Florida are advised not to take that path.
Everglades restoration efforts. One water use. Water reservations have competition among the various districts for "reservations" for water that may be area. Florida’s statutes also authorize environmental resource permits. The statutory definition of "minimum water resources or ecology of the area. The third criterion requires the proposed use to be in the "public interest." The term "reasonable" in future years or will be given preference over any future uses. The priority system makes it very difficult to be flexible and respond to changing conditions and changing social values. Eastern states, including Florida, historically subscribed to the common law riparian doctrine where the right to use water is tied to the ownership of lands that border along a natural water course, a lake or a stream. The advantage of the riparian system is that it is very flexible. The disadvantage is a lack of certainty about the riparian legacy and culture is still evident in court cases and certain aspects of it continue to influence the resolution of water questions.

Florida’s water management districts have the authority to promulgate rules that have the force of law. The districts also have the authority to levy ad valorem property taxes on land owners within their jurisdictions. They also may issue consumptive use permits and environmental resource permits. The Department of Environmental Protection has general supervisory authority over the water management districts. In practice, the DEP has delegated most of the day-to-day functions to the water management districts. Indeed, and this is pretty unusual, Florida’s statutes actually command the DEP to delegate authority to the water management districts to the greatest extent practicable. Florida’s water law, by design, is very much a bottom-up kind of system with all the advantages and disadvantages that such a system may entail.

CONSUMPTIVE USE PERMITTING LEGISLATION:
The Water Resources Act authorizes, but does not require, Florida’s water management districts to impose conditions on the proposed consumptive use of water. Only the South Florida Water Management District has implemented this system aggressively, regulating water withdrawals that are less than 100,000 gallons per day; the other districts focus primarily on the larger withdrawals above 100,000 gallons per day. So there is ample legal authority for much more aggressive permitting requirements if districts decide to do that at some point in the future. By law, the districts, however, must recognize certain exemptions from permitting; primarily, they may not require permits for individual consumption of water for domestic purposes. Both surface and groundwater withdrawals are subject to the permitting requirement. A criterion for permit approval is that the proposed use of the water must be "reasonable" and "beneficial," which merges aspects of western common law (beneficial) and eastern common law (reasonable). These terms provide quite a bit of flexibility but they also are understood to have qualitative and quantitative dimensions. Another criterion for approval—the proposed use will not interfere with existing legal uses—provides that a presently existing legal use will be grandfathered in and be given preference over any future uses. The third criterion requires the proposed use to be in the "public interest." The term "public interest" is a discretionary, subjective term, the interpretation of which will, no doubt, change over time.

Permits are generally valid for up to 20 years, although in practice they are rarely issued for that length of time; they are generally valid for up to 50 years for municipalities, public works, public service corporations, and governmental bodies. Priority also comes into play with permit renewal applications because they are given preference by statute over applications for new consumptive use permits. Moreover, there are water use classification systems. The districts and the DEP must develop classification systems so that, in times of water shortage, usage is cut back, generally proportionally, in accordance with particular classes of use. And finally, permits can be revoked for two or more years of non-use or for other factors, such as violating the terms and conditions of the permit.

ENVIRONMENTAL PROTECTION LEGISLATION:
Florida law provides environmental protection through statutes governing minimum flows and levels. The statutory definition of "minimum flow" refers to the limit at which further withdrawals of surface water would significantly harm the water resources or ecology of the area. The statutory definition of "minimum water level" refers to the limit at which further withdrawals of groundwater would significantly harm the water resources of the area. Florida’s statutes also authorize "reservations" for water that may be removed legally from available future water use. Water reservations have been particularly controversial and mired in litigation in the face of the Everglades restoration efforts. One piece of litigation concerning this $8 million judgment was recently resolved.

"ADMINISTRATIVE FRAMEWORK GOVERNING WATER"

BY DR. CHRISTINE KLEIN, PROFESSOR, LEVIN SCHOOL OF LAW, UNIVERSITY OF FLORIDA

Dr. Christine Klein, Professor, Levin School of Law, University of Florida, provided an overview of Florida’s: (1) administrative framework governing water; (2) consumptive use permitting legislation; (3) environmental protection legislation; (4) water transport authority and limitations; and (5) coordination of water planning and land use planning.

ADMINISTRATIVE FRAMEWORK:
Although there may be plenty of water in absolute terms, there’s a geographic and temporal mismatch of supply and demand. Simply stated, water is not where we want it, when we want it, and in the quantities that we want it. People tend to settle, play, and use water in all sorts of places without regard to natural distribution patterns. So water suffers from a special kind of scarcity. In order to deal with that scarcity, the Florida Legislature enacted the Water Resources Act of 1972, codified as Chapter 373 in the Florida statutes. Florida’s water legislation is widely regarded as one of the most comprehensive, thoughtful statutory systems in the east. Florida statutes, unlike those of many states, provide for the regulation of both surface water and groundwater.

The important basis for the administrative framework of Florida water law is the water management district. Florida’s five independent water management districts are divided along surface water boundaries — surface basins — and this is actually a very progressive idea. However, there are a few wrinkles. For example, the surface water boundaries are an imperfect match with groundwater basins. In Florida, about 93 percent of the population is dependent upon groundwater supplies for drinking water. Groundwater regulation has typically lagged behind surface water regulation in Florida and throughout the country. Water management district lines also do not correspond to political lines, most importantly county lines. This mismatch may set the stage for competition among the various districts for groundwater resources. Under the common law, western states have followed some variation of the prior appropriation doctrine in developing their water laws. Through this priority system, water rights generally take on the value of private property. In order to take back a water right from someone, even for environmental needs, one might resort to a 5th Amendment takings claim and compensation might have to be paid for that water right. Florida’s statutory water law system has an element of priority embedded in it. The priority system is good in terms of certainty—everyone knows the rules of the game and that is important for long-term infrastructure investments. The drawback is that the priority system makes it very difficult to be flexible and respond to changing conditions and changing social values.

The Florida Department of Environmental Protection (DEP) has delegated most of the day-to-day functions to the water management districts. The DEP might have to be paid for the water that is tied to the ownership of lands that border along a natural water course, a lake or a stream. The advantage of the riparian system is that it is very flexible. The disadvantage is a lack of certainty about whether a withdrawal will be considered "reasonable" in future years or will be subject to law suits. Florida’s Chapter 373 effectively replaces the common law riparian doctrine in Florida. However, the riparian legacy and culture is still evident in court cases and certain aspects of it continue to influence the resolution of water questions.

Florida’s water management districts have the authority to promulgate rules that have the force of law. The districts also have the authority to levy ad valorem property taxes on land owners within their jurisdictions. They also may issue consumptive use permits and environmental resource permits. The term “public interest” is a discretionary, subjective term, the interpretation of which will, no doubt, change over time.

Permits are generally valid for up to 20 years, although in practice they are rarely issued for that length of time; they are generally valid for up to 50 years for municipalities, public works, public service corporations, and governmental bodies. Priority also comes into play with permit renewal applications because they are given preference by statute over applications for new consumptive use permits. Moreover, there are water use classification systems. The districts and the DEP must develop classification systems so that, in times of water shortage, usage is cut back, generally proportionally, in accordance with particular classes of use. And finally, permits can be revoked for two or more years of non-use or for other factors, such as violating the terms and conditions of the permit.

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continued on page 28
RECOMMENDATIONS OF ASKEW

General Observations by Discussion Group Participants:

1. Whether or not Florida has a water crisis today can be debated, but it is clear that the state faces a major crisis in the future unless it adopts new policies and makes additional investments in our water systems.

2. Population growth continues to be significant and will put added pressure on an already overburdened water allocation system. Florida’s population is expected to increase by over 41 percent from 2000 to 2020 and the projected demand for water during that time period is projected to grow from 7.7 billion gallons per day to 9.1 billion gallons per day.

3. The public has a limited understanding of Florida’s water management problems. We take water for granted, because it is relatively inexpensive and it always seems to be there.

4. Policymakers are generally hesitant to address long-term, complicated issues such as water. Citizens face many challenging issues, including education, health policy, community services and public safety. Longer-term issues, such as water, tend to appear on the policy radar screen only in times of crisis.

5. There is no one, easy solution to Florida’s water problems. These public policy problems will have to be addressed at many different levels. Science-based public policy requires the development of baselines, measures of human impacts on water ecosystems, and political consensus regarding policy objectives.

6. Floridians must realize that the long-term economic viability of the state rests on good water management and conservation. Businesses will not invest in Florida and tourists will not visit if appropriate water investments are delayed or water supply is erratic due to poor resource management. Floridians must become good water stewards to ensure the future economic viability of the state.

I. Public education:

Each group decided that the need to educate Floridians and policymakers on the state’s water situation was of paramount importance. Water management is a complicated issue: conservation will require people to change long-established habits. For this reason, all of the discussion groups spent time deciding what information needed to be developed and disseminated by whom. Included in the recommendations are the following:

- A survey should be conducted to determine what consumers know about water issues so that a more effective public information campaign can be developed.
- A state water data clearinghouse should be established at a state university in Florida to provide a uniform source of information and to avoid duplicating data gathering efforts.
- Water Day should be celebrated and used to provide Floridians with information on water management. The water management districts and the Florida Department of Environmental Protection should conduct this information campaign.
- Water bills should include consumers’ usage history and how their use compares to others.

II. Policy:

Policy recommendations ranged from the general to the specific. Each group stated that one of the major obstacles in addressing Florida’s water crisis was the lack of adequate public policy measures. Several groups also noted that, despite the need for better policy development in Florida, our state has done better than many others in trying to balance new water resource development and water conservation.

- Florida must develop better mechanisms for consensus building about water. This includes more collaboration among stakeholders and using mediation before litigation.
- We provide the same minimum protection to all natural systems as has been given to the Everglades, by reserving a sufficient supply of water before allowing permitting. We cannot afford to lose more precious natural systems to poor water management.
- Water bills should include consumers’ usage history and how their use compares to others.

III. Governance:

In the area of governance, it was widely felt that there was the need to better coordinate decision making among the stakeholders, to enhance accountability for water in comprehensive plans, and to keep this issue in the minds of policy makers.

- Coordination must be enhanced among policy makers and the public and not relegated to the back burner. Current technical forums tend to encourage the status quo.
- Florida must develop better mechanisms for consensus building about water. This includes more collaboration among stakeholders and using mediation before litigation.
- We need more accountability for water infrastructure in our comprehensive plans. Waiting until local governments want to rezone an area is too late.

IV. Technology:

Participants concluded that new technologies will make water conservation and purification easier and, in some cases, less expensive in the future. However, they also agreed that Florida cannot afford to wait for advances in these technologies.

- It is important that Florida increase research and funding for new technologies, especially membrane research, to improve desalination and purification efforts. Water purification should be established as a state and national priority.

RECOMMENDATIONS OF ASKEW PARTICIPANTS FROM THE 2005 MEETING

- “We need incentives for Xeroscaping and exotic removal.”
- “If we’re withdrawing more water than we’re getting, we have a crisis.”
- “We have to realize that desalinization takes an enormous amount of energy.”
- “We need more accountability for water infrastructure in our comprehensive plans.”
- “We need more incentives for everyone, but political consensus on workable solutions is going to be difficult to reach.”

- “Surface storage is something we have to look at.”
- “Desalinization can be done. I cannot envision not doing this. Saudi Arabia gets much of its water from desalinization.”
- “We have to stimulate citizens to discuss and plan for our future.”
- “We need to reexamine our acquisition, either through public or private means, is essential for the creation of designated water conservation areas.”
- “We need to stimulate citizens to discuss and plan for our future.”

- “We need more accountability for water infrastructure in our comprehensive plans.”
- “We have to realize that desalinization takes an enormous amount of energy.”
- “We need more incentives for everyone, but political consensus on workable solutions is going to be difficult to reach.”
- “This issue is important to everyone, but political consensus on workable solutions is going to be difficult to reach.”
Addressing the water supply issue in Florida requires consideration of a number of intertwined questions. How has water resource and supply planning evolved to respond to projected increasing demand? With respect to meeting growing demand, what measures have Floridians taken to curb consumption or expand water supply? How have water resource and supply planning efforts addressed environmental considerations, such as the preservation of wetlands, springs, and the Everglades, for which Florida is famed? From an economic perspective, is Florida’s water priced efficiently to capture all the costs that underpin long-term water supply sustainability? Is Florida even on the right trajectory toward achieving such sustainability? The following overview addresses these questions.

**Background**

Approximately 90 percent of Florida’s drinking water comes from groundwater and the other 10 percent from surface water. The looming problem is that groundwater withdrawals are projected to outstrip demand in some regions of the state unless creative solutions are found. Florida’s population in 2008 was almost 16 million, but it is expected to increase by over 41 percent to 22.6 million in 2020. At the same time, demand for potable water is expected to increase from 7.7 billion gallons per day in 2000 to an estimated 9.1 billion gallons per day in 2020.

Rainfall in Florida averages 54-55 inches annually. Only Louisiana has a higher average rainfall than Florida. But rainfall is highly variable from year to year, ranging from 30-80 inches annually. Moreover, over 70 percent of annual rainfall is lost to evaporation and only 30 percent finds its way to bodies of water or aquifers. The water then flows to the sea, along the way sustaining important natural areas such as the springs, the Everglades, crystalline streams and winding rivers that are of great importance to the maintenance of biodiversity and to recreational opportunities for residents and tourists alike.

The distribution of rainfall and social demands on water are also highly variable throughout the state. Not surprisingly, the south, southwest regions, and central regions of the state have experienced the greatest population increases relative to groundwater supply. So the pressure on planners to come up with alternative supply sources and measures – reclaimed water, water from storage and recovery, desalinated water —has been stronger in those regions than in the northeast and the Panhandle.

**Florida’s Water Supply Planners/Providers**

The entities responsible for water resource development and regional water supply planning at large spatial scales are Florida’s five Water Management Districts: Northwest Florida WMD, St. Johns River WMD, Suwanee River WMD, Southwest Florida WMD, and South Florida WMD. Each district may levy property taxes and also receives local, state and federal funding. Legislation enacted in 1997 requires the WMDs, as part of the planning process, to develop regional water supply plans that project water needs for a 20 year period and identify where traditional water sources are not likely to be adequate to meet those needs. These plans must include a list of water source options that will meet projected needs and also take into consideration natural ecosystems. Legislation enacted in 2004 authorizes the WMDs to promulgate rules that identify preferred water supply sources as a means of improving long-term water use efficiency.

At the municipal level, Florida’s 146 water supply and irrigation utilities are responsible for actually supplying the water (although funding assistance for that purpose may come from WMDs). Florida law provides that the planning, design, construction, operation and maintenance of public and private facilities for water collection, treatment, and distribution for sale, resale, and end use is predominantly the responsibility of those utilities.

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1. Water remains essential for life. According to the United Nations, 1.1 billion people throughout the world have no access to safe drinking water. In the United States, this is certainly not the case. However, water conflicts have pitted Colorado, Arizona, and other western states against each other, particularly in periods of drought, and Florida is no exception. These conflicts not only occur between states, but also within them. We need only think of the recent recommendation in a 2003 report by the Florida Council of 100 calling for a feasibility analysis of a new statewide water distribution system. The recommendation proposed “developing a system that enables water distribution from water-rich to water-poor areas seems to make good environmental and economic sense.”

2. Although Florida is renowned for its wetlands, its enormous population growth in the last half of the 20th century has caused widespread degradation to thousands of square miles of these wetlands. Floridians in 2005 may not be facing a statewide water crisis at present but they are certainly facing enormous challenges. They cannot afford to be complacent.
The Development of Regional Impact (DRI) Process

Land use planning is another important dimension of water resource and supply planning. Enacted in 1972, the Environmental Land and Water Management Act established the DRI program that preceded the comprehensive plan requirements referenced above. The DRI program has several environmental and planning objectives, including "ensuring a water management system that will reverse the deterioration of water quality and provide optimum utilization of our limited water resources." Any development that is determined to have a substantial impact upon the health, safety, or welfare of citizens in more than one county is subject to the DRI process. State, regional, and local agencies must review those projects defined as DRIs for projected impacts on regional facilities and resources. The review process must determine how regional impacts will be mitigated. Developers must obtain a local government development order to define mitigation conditions and submit to administrative review at the DRI level. Regional approaches have a substantial impact upon the health, safety, or welfare of citizens in more than one county in the DRI process. State, regional, and local agencies must review those projects defined as DRIs for projected impacts on regional facilities and resources. The review process must determine how regional impacts will be mitigated. Developers must obtain a local government development order to define mitigation conditions and submit to administrative review at the DRI level. Regional approaches have a substantial impact upon the health, safety, or welfare of citizens in more than one county. The DRI program has several environmental and planning objectives, including "ensuring a water management system that will reverse the deterioration of water quality and provide optimum utilization of our limited water resources." Any development that is determined to have a substantial impact upon the health, safety, or welfare of citizens in more than one county is subject to the DRI process. State, regional, and local agencies must review those projects defined as DRIs for projected impacts on regional facilities and resources. The review process must determine how regional impacts will be mitigated. Developers must obtain a local government development order to define mitigation conditions and submit to administrative review at the DRI level. Regional approaches have a substantial impact upon the health, safety, or welfare of citizens in more than one county.

Environmental Considerations

Underlying much of Florida’s water planning policies is the assumption that population growth is generally good for economic development and that the influx of new residents to our state is inevitable. Yet now growth exacerbates water problems and that poor development planning and uncoordinated practices have had adverse effects on our environment and water resources. One need only consider the example of the reengineered patterns of water flow in the Everglades and its environs to realize the impact that massive damage to a fragile ecosystem will be extremely costly to reverse, assuming it can even be reversed at all.

Florida’s policymakers have also come to appreciate the importance of environmental considerations in water management planning and implementation. In part, their understanding has been influenced by recreational activities and tourism dollars associated with Florida’s lakes, rivers and springs. Florida’s soaring population growth has helped to spur. According to an economic impact study (2003) conducted for the Florida Department of Environmental Protection, tourism spending at four state parks with springs (Akretracuse, Wakulla, Homosassa, and Blue Springs) provided an estimated $68.5 million in 2002 to surrounding local economies.

Incentives

Incentives are powerful tools that can encourage rational behavior. They can be designed to encourage the adoption of appropriate behavior, to reduce the costs of rational behavior, or to reduce the costs of inappropriate behavior. Incentives can be designed in a variety of ways, including tax incentives, subsidies, grants, or other forms of financial assistance. Incentives can be designed to encourage conservation by rewarding individuals or organizations that adopt conservation practices. They can also be designed to encourage the development of new technologies or the adoption of existing technologies to improve water use efficiency. Additionally, incentives can be used to encourage the development of new water sources, such as desalination facilities or recycled water systems.

Tourism Spending

Tourism spending in Florida has been estimated to be $92.2 billion in 2012, up from $81.4 billion in 2008. The tourism industry employs more than 1.4 million people in Florida, generating $72.9 billion in wages and salaries. In addition, the tourism industry contributes $39.3 billion in taxes to the state and local governments. Tourism spending in Florida has been estimated to be $92.2 billion in 2012, up from $81.4 billion in 2008. The tourism industry employs more than 1.4 million people in Florida, generating $72.9 billion in wages and salaries. In addition, the tourism industry contributes $39.3 billion in taxes to the state and local governments.

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systems. These systems involve farm production water that originates from a surface or groundwater source. That water is used to irrigate crops; tailwater from that irrigation is then captured and stored for future use, particularly during the dry season when there is peak demand.

3. Benchmarking. Establishment and implementation of benchmarking and performance standards can go a long way toward monitoring management objectives affecting water conservation, water quality, and water supply efficiency. An example of benchmarking for Florida’s WMDs is the most recent Florida Water Plan Annual Progress Report (October 2004), which compares the measurable performance of the WMDs in meeting several objectives related to water supply, flood protection, water quality, and natural system protection.

4. Science-based Policy. Investments in research are needed to identify both the biological and chemical contaminants that could threaten water supplies and the methods of removing those contaminants without adversely affecting health and the environment. Further scientific research will be needed to improve policies governing wetlands management, the treatment of drinking water supplies, the use of water in agriculture, the maintenance and preservation of aquatic habitats and species diversity, wastewater treatment and reuse, and flood and drought management. Addressing these topics should take account of broad patterns of water availability and flow at regional and state scales.

5. Heightening Public Awareness. The public’s eyes often glaze over when water issues come to the fore. It’s always easier to raise public awareness about threats to specific water bodies, as supporters of the Everglades restoration projects and the Florida Springs Task Force initiatives have discovered. People respond best, for example, to concrete examples and understand connections between the adverse impacts of reduced water flow at Blue Spring in Volusia County and fewer manatees visiting the spring each winter.

Conclusion

The collision course between the supply of and demand for water resources in Florida can only be averted through scientifically-supported, outcomes-based strategies that provide incentives for innovation and coordination, as well as penalties for substandard performance. Conservation measures are certainly one component of the overall strategy and properly targeted conservation rate structures, as we discussed, can encourage Floridians to reduce water consumption. There is no shortage of legislation governing water and land use planning and oversight in Florida, nor is there a paucity of tasks to consider policies for improving that planning and oversight. The challenge facing Florida’s policymakers is to implement the best of these proposals and enforce those laws on the books that will ensure the rational and effective water policy. The short-term crisis has been abated, but the next one is only around the corner. There is no excuse for Florida not being ready.

Acknowledgement: The author appreciates the comments and suggestions of Dr. David Collum, Dr. Lynne Levy, Dr. Sanford Berg, Dr. Joseph Delfino, and Dr. Robert Holt, all from the University of Florida, on an earlier version of this essay.

Endnotes

1. Florida Council of 100, Florida Water Conservation Initiative (2002), which culminated in long-term recommendations for improving water conservation; the Conserve Florida Work Plan, which seeks to improve evaluations of water conservation programs and practices and foster information sharing; and implementation of 2004 House Bill 293, which requires the Department of Environmental Protection to submit a written report on the progress of the water conservation program, including any statutory changes and funding requests necessary for program continuation. A few years ago, Florida was the epicenter for drought. The state is now experiencing rain. With the implementation of conservation measures, Floridians should be better positioned to deal with future droughts.

2. Mr. Seibert observed that the water conversation is better now than in past years. It is more result-oriented, regional, interdisciplinary, and collegial. Years ago, there were urban versus rural interests and everybody versus water management districts; only 12 people understood water issues. The conversation has expanded.

3. Dr. deHaven-Smith continued that Florida’s water issues are not difficult from a technical perspective; we have large quantities of water although we may need to share it. The reason water supply problems cannot be resolved is mostly due to a lack of trust. People feel that those in power have a hidden agenda and therefore are less willing to compromise the table. What Floridians need is leadership that will encourage public buy-in and support. Florida is currently headed toward a concurrency crisis. Legislation is now under consideration to condition local government approval of development on identified water sources and a funding stream. However, if there is no state funding for this measure, Floridians could face the same situation they faced in the mid-1980s when there was a concurrency requirement for road development but no funding. This situation had the unintended consequence of road developers shopping in rural areas for development sites; the long-term outcome was urban sprawl. It could also spawn knee-jerk public reactions. One strategy for addressing water supply problems is for the state to cordon off certain areas and decide not to develop them. Ultimately, if we want to move forward on water issues, we will need to restore trust in government.

4. Mr. Swihart explained the overall framework and oversight responsibilities of the entities that manage Florida's water supply. He provided data on the withdrawal of Florida's fresh water compared to that of other states, noting that Florida withdraws less fresh water per day than 13 other states. Agriculture accounts for the largest water consumer and half of the water is withdrawn within the jurisdiction of the South Florida Water Management District. Water supply and resource development funding is projected to be $12.2 billion over the next 20 years; $7.1 billion is projected for alternative water supply development during that period.

The Water Management Planning Roundtable was moderated by Dr. Joseph Delfino, University of Florida. Panelists included: Dr. Lance deHaven-Smith, Director, Reubin O’D Askew School of Public Administration, Florida State University; Mr. Tom Swihart, Administrator, Office of Water Policy, Division of Resource Management, Florida Department of Environmental Protection; and Mr. Steve Seibert, Attorney, Seibert Law Firm.

Dr. Delfino outlined the challenges facing Florida’s water supply: population growth and urban expansion, annual and seasonally variable drought cycles, dependence on groundwater for potable supply, real or perceived conflicts among and within regions for water allocation, water contamination, and the Everglades Restoration Initiative. An additional challenge is the ongoing transformation of farmland to development because ensuring adequate food supply in future years is also important. Dr. Delfino reviewed several state initiatives promoting conservation. The costs associated with conservation are not very expensive. Water issues can be resolved, but the challenge is getting water to where it is needed. Hydrological and logistical issues will make cost issues more acute.

The implementation of existing laws and regulations along with average or above average precipitation should ensure future water supplies. However, if implementation of water laws and rules slows or fails if extended periods of drought prevail, or both, sustainable water supplies will be at risk. The overriding question facing Floridians is: will we be able to come together and solve our water supply problems?

Dr. deHaven-Smith explained the overall framework and oversight responsibilities of the entities that manage Florida’s water supply. He provided data on the withdrawal of Florida’s fresh water compared to that of other states, noting that Florida withdraws less fresh water per day than 13 other states. Agriculture accounts for the largest water consumer and half of the water is withdrawn within the jurisdiction of the South Florida Water Management District. Water supply and resource development funding is projected to be $12.2 billion over the next 20 years; $7.1 billion is projected for alternative water supply development during that period.

The average per capita use of water is less in Florida than in the U.S.; however, certain counties, such as Seminole, Okecola, and Dade, exceed the Florida average. Conservation is one approach for reducing per capita water use. Several measures that have promoted water conservation include: the Florida Water Conservation Initiative (2002), which culminated in long-term recommendations for improving water conservation; the Conserve Florida Work Plan, which seeks to improve evaluations of water conservation programs and practices and foster information sharing; and implementation of 2004 House Bill 293, which requires the Department of Environmental Protection to submit a written report on the progress of the water conservation program, including any statutory changes and funding requests necessary for program continuation. A few years ago, Florida was the epicenter for drought. The state is now experiencing rain. With the implementation of conservation measures, Floridians should be better positioned to deal with future droughts.

Mr. Seibert observed that the water conversation is better now than in past years. It is more result-oriented, regional, interdisciplinary, and collegial. Years ago, there were urban versus rural interests and everybody versus water management districts; only 12 people understood water issues. The conversation has expanded since those days. Now, the Governor and the Legislature are talking about water. Agricultural and public supply users are at the...
The Environmental Constraints for Water Supply Planning Roundtable was moderated by Dr. Richard Hamann, University of Florida. Panelists included: Ms. Victoria Tschinkel, Director, The Nature Conservancy – Florida; Mr. Harold Wilkening, Director, Water Supply Planning and Water Use Regulation, St. Johns River Water Management District; and David Richardson, Director, Wastewater and Water, Gainesville Regional Utilities.

Dr. Hamann provided a brief overview of the legislative requirements in the Florida Water Resources Act (Chapter 373) pertaining to consumptive use permitting, the definition of “reasonable-beneficial” use as a criterion for withdrawals, and statutory safeguards against adverse environmental impacts, including public input standards, minimum levels and flows, and reservations. The permitting system has an opportunity every few years to evaluate if a particular consumptive use has an adverse impact on water resources. The permitting system, however, is not designed to look at cumulative impacts. So there are minimum flows and levels and reservations. There is only one reservation to date in the St. Johns River Water Management District (SJRWMD), but there will be more in South Florida due to a special process for designating water reservations in the Comprehensive Everglades Restoration Plan. The President and Governor Agreement of 2002 prohibits consumptive use of water from projects in the Plan until such time as water reservations are foreseen. In 2005, the population served by this WMD is projected to grow from 3.5 million to 6 million. This population projection has focused SJRWMD’s planning efforts on water supply issues for the next 20 years. Public water supply use is projected to increase by 77 percent during that time period, while agricultural use is expected to decrease by 11 percent due to conversion of land to non-agricultural use and greater irrigation efficiency. The objective of the WMD’s planning efforts is to ensure that the cumulative impact of additional withdrawals does not change the hydrology of Florida’s water bodies, such as lakes and springs. Saltwater intrusion and groundwater quality is also an important constraint both on the environment and on other existing water users. Mr. Wilkening explained the regional water supply planning process to optimize water supply within those constraints, noting that the WMD looks at the aggregate proposed uses on a regional basis over a 25 year period. The WMD needs to make its best projection based on each user’s or utility’s proposed, spatially-based plans. A big change in the 2000 plan was the determination that the projected water demand for the next 20 years will not be met exclusively through new wellfield development. Because of the limited supply of fresh groundwater in East Central Florida to meet projected demand, the SJRWMD 2000 Plan determined a need of 100-200 mgd of additional water from alternative water sources by 2020. The SJRWMD 2004 interim plan identifies 14 projects for alternative water supplies, the costs and data and potential users. The interest is to come up with enough alternative water options to meet demand in 2020.

Regional efforts are underway to expand water supply plans through the use of alternative sources. For example, the Taylor Creek Reservoir Expansion Project involves the planning efforts and several utilities to expand 10 mgd of water supply to 50 or 60 mgd or more. Other regional approaches include Tampa Bay and the Water Authority of Volusia. The technical issues are not difficult.

The real issues are in implementation, particularly through water conservation. Alternative water supplies can be made more affordable if they supplement fresh water supplies. Conservation measures can therefore play a role in lowering the percentage of more expensive, alternative sources in the water supply mix; this blending of fresh and alternative sources with their associated costs can ultimately be reflected in more affordable water prices to consumers. Regionalization and collective effort might give us the most water at the least cost but historically it has been difficult to achieve. To date, utilities have worked together to increase water supply incrementally but more can be done. Finally, there is considerable uncertainty about when Florida will run out of water. Florida will run out of fresh water but if there are alternative water sources, utilities will be better positioned to respond.

Ms. Richardson explained that water supply development in Alachua County, served by Gainesville Regional Utilities (GRU), is constrained by potential impacts on wetland water, potential impacts on surface water, and, to a far lesser extent, potential impacts on springs. Water supply withdrawals and environmental constraints for water supply planning.
The Askew Institute

Tampa Bay is a nonprofit government agency created by the counties of Pasco, Pinellas and Hillsborough to coordinate the cities of Tampa, St. Petersburg and New Port Richey under legislation that allows local governments to join together to develop public supply sources such as water. We serve about 2.3 million residents who use about 245 million gallons of water a day.

Prior to 1998 when Tampa Bay Water was formed, our former agency, the West Coast Regional Water Supply Authority, was constantly bickering with the Southwest Municipal Water District and our own member governments. There was no new water available and we were all competing to spend as much of our ratepayer dollars as we could to develop alternative supplies. We have developed 91 million gallons a day of alternative supply sources and that has allowed us to go from a permitted level of 192 million gallons to 121 million gallons. By 2008 we will be permitted at 90 million gallons a day and we plan to give up over half the permitted capacity of our previous supply sources.

The goal for these initiatives was to restore the entire Tampa Bay Water region being formed and the new supply sources coming on-line, we were essentially mining the aquifer, and there were resulting environmental problems. We were not sure that this was not to say that we were not going to develop alternative supply sources that were not going to be environmentally sustainable. So our board has set new goals for which we are measuring environmental and permitting requirements. But we also have to recognize that just because water has risen significantly and that there is only so much that the general public is going to be able to bear. Minimizing rate impact is also an important priority.

The SWFWMD's water management planning efforts respond to population growth and environmental constraints.

Paradigm Shift:

The key to alternative supply development, conservation, and water resource development is incentive-based funding from the WMD.

Tampa Bay Water Wars—Regional Partnership:

The first case study is about the northern Tampa Bay area where the water wars originated. Pumping of wellfields in the area caused aquifer levels to drop significantly in the 1960s and 1970s. The West Coast Regional Supply Authority, the first water supply authority in the region, agreed to cut the pumping of wellfields in the area by close to half. However, the aquifer levels came back up, they never came back up to their previous level. The key to alternative supply development, conservation, and water resource development is incentive-based funding from the WMD.

Southern Water Use Caution Area:

The Southern Water Use Caution Area (SWUCA) includes all of DeSoto, Hardee, Manatee, and Sarasota counties and parts of Charlotte, Highlands, Highlands, and Polk counties. The SWFWMD is trying to manage water in this region in a comprehensive manner. The total level of ground water use in the region has not changed.
Water management is a complex issue and one the public does not understand well. The Orlando Sentinel is trying to educate the public on water for a number of years, and we recently completed a year-long in-depth series on this subject. There is an increasingly greater need for more water issue facing our state today.

The key to building better public policy on water is to develop a consensus on the extent of the water crisis, why we have a water crisis, and who is responsible. Right now everyone blames everyone else. There also is a disconnect between our current problems and the length of time it will take to resolve them. If we do not make better plans today, we will have fewer options in the future. For example, water managers need to be working with local government to identify sustainable water sources for new developments and a revenue stream to pay for it. However, the fact that we are unwilling to raise taxes complicates resolving the water crisis since it is obvious that providing adequate water for Florida's future will require additional resources. Lower systems, delamination and other means of increasing the water supply, even educating the public about water conservation, are not enough.

The region faces problems with saltwater intrusion. The region is looking for ways to restore the natural flow in the river system. The basic concept of this augmentation is to use resources available in our region. It is important to look to local sources first. For Tampa Bay Water we have found that the least through is gone, the underground environment—and not simply let the water flow uphill toward money and let dollars and shallow voting power dominate.

The ongoing challenge is to find what has been called "the missing link" between water planning and land use planning. Currently, land use and water use planners are legally required to engage in some degree of consultation, and there are some very interesting bills before the Florida legislature to improve coordination efforts. This will not doubt be an ongoing struggle as population grows and water supply remains constant.

As a major spring has dried up in the upper part of that river. Spring management with the SWFWMD is to provide enough groundwater to restore that river's flow. Projected additional water needed in the SWUCA area by 2025 is over 200 mgd. The federal government helped us with $54 million to build the regional reservoir and the SWFWMD provided $183 million of that program. Without that money it would have been much, much more difficult for the local government officials who have to look at the rate impact and be able to sell that to their constituents. The cost of water for the city of St. Petersburg prior to 1998 was about $3.00 per thousand gallons. The cost of water today in the Tampa Bay area is $2.06 per thousand gallons. That equates to about $30-35 dollars on an annual water bill, but it is a huge increase for the local governments to be able to support. The outside funding has kept that from being even higher.

Planning for the future is difficult because we have already developed many of the water supplies available in our region. It is important to look to local sources first. For Tampa Bay Water we have found that the "the low through is gone, the underground environment—and not simply let the water flow uphill toward money and let dollars and shallow voting power dominate.

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high through is tapped and the only thing that is left is the ugly through.” The ugly through does require some assistance. We have two concepts that we are working on in depth. I am going to talk about the downstream augmentation of a couple of river supplies. The three keys to success that we have implemented to date are all coming out in this project as well.

The basic concept of this augmentation plan is to use one gallon of reclaimed water downstream and take a gallon of surface water upstream. In that way we are protecting the environment by keeping the same quantity of freshwater in that stream system. The reclaimed water is produced by the SWFWMD and it is of a very high quality. We want to pipe the reclaimed water to the stream location where we have existing intakes. The water will not be piped upstream, because we looked at that project back in the 1990’s and it was not acceptable to the community. Our local community did not feel comfortable with indirect potable reuse where you clean and drink the reclaimed water. To go from that idea. Instead of drinking it, we put it downstream and drink the surface supply. People will accept that and it meets the same goal of maintaining the flow in the river system.

This project is extremely expensive to do, however. It will cost about $90- $120 million for the required infrastructure. The water management district is funding 50% of the cost of the project and the federal government has appropriated $1 billion for the project for the next year. We are working with the state as well. The planning coordination aspect is where it originated in the SWFWMD’s regional water supply plan. Regional cooperation includes not just the involved institutions, but also the larger project where the reclaimed water would use the same pipeline to go further north. We would take it for augmentation, and the city of Tampa, Pasco County and Hillsborough County would use it for irrigation projects.

We are working together and sharing the infrastructure, so we can reduce the costs of those pipelines and we are able to afford what would be a really expensive project if it was built for each party individually. In that way, regional cooperation is, again, essential. Using cooperation, coordination and outside funding we believe that we have found the solution to meeting the long-term water needs of the Tampa Bay area.
conjecture use of water; water reuse which is the future, and desalination, which is also part of the future but is currently expensive and uses a lot of energy. All these approaches involve the cascading use of water. As the value of water and nutrients rises, reuse and desalination become more likely. Membranes are going to change this planet because they make it possible to use water from the ocean and turn poor quality water into good quality water. On the other end, waste water plants turn waste into high quality water—that's the reuse side. Drinking water membrane plants are becoming increasingly cost effective.

Water doesn't determine our standard of living. We can pay higher prices for water and ensure that our standard of living does not suffer. In fact one of the insights that I think economics has to offer is that the discussion of trade-offs—the opportunity costs associated with the value of that water to other parties who might be willing to pay for it is really where the action is. I wanted to deal with poverty and affordability. I wanted to address the elements of the water problem that are reversible and move us toward something that is already being handled really well?

I think there are some observations for which there might be agreement. Florida’s leaders and citizens do seek a sustainable supply of clean water. The current strategy is to avoid competition for that water by the traditional command and control. We basically have a planned economy in water. I am concerned that the right hand doesn’t know what the left hand is doing. We are cutting a regional water suppliers forum called “Water for Fish and People.” And we drafted state legislation that dealt with some of their issues that are still not through the Legislature.

So what did we learn from all this? Balancing priorities is tough—not one big news there. One big source of news that is the science is very uncertain and if you’re not careful, you’ll have the fish biologists running your utility. The politics of the environment are nasty and, of course, you’re always working backward across physical and technical boundaries and working with decentralized jurisdictional structures.

I am no expert on Florida but I humbly say this is a major policy issue in Florida. Florida is a state that has experienced considerable growth and will keep growing. I was told because Florida had all those hurricanes and there was rain, nobody is worried about water anymore. And it was stunning to hear that but that was a predictable result. With populations of every 10-150 years. And the Romans were thinking about 1,000 years. We have to get our horizon lengthened here and we have to be thinking about how we can operate sustainably. Reduce water use by an amount equal to increased population growth. At least that would keep you even. Think about how you can get your water resource stabilized so that it is harmonious with the environment and people. There are two main polices that are powerful and need to be a building block for what to do. Second, there are many technical options. In Puget Sound, we redid our permit and we reduced the conditions that the discharge and pricing by 35 percent without sacrificing our basic lifestyle through more efficient use and that was before conservation and pricing by 35 percent through some basic life style through more efficient use and that was before any economic or ecological improvements. Water demand has come down from 540,000 acre feet a year to 320,000 acre feet a year. We could also elect to invest in private water companies without receiving those tax benefits.

In addition to these two axioms of getting others to pay or voluntarily paying—aversing government—there is a third axiom. The states are lower than in other developed countries.
The Reubin O'D. Askew Institute will focus on “Child Welfare Issues in Florida and the Nation” at its 2006 meeting in partnership with the Institute for Child and Adolescent Research and Evaluation and Child Health Policy, University of Florida.

The meeting will open on Thursday at noon on March 30th with an opening address from our keynote speaker, and it will end on Friday March 31st with an open-ended discussion of recommendations for the future. In between, you will shape the direction of the meeting through wide-ranging discussions in small discussion groups. The resulting recommendations will reflect your conversations with the discussion leaders and with other participants.

Registration materials will be available in the fall of 2005. Please visit the Askew website at www.clas.ufl.edu/askew for more information. The meeting is limited to the first 200 registrants. We look forward to seeing you in 2006.

Past reports of the statewide and regional Askew Meetings are available. You can request them by simply filling out the form that follows:

2006 – How Should Florida’s Water Supply Be Managed in Response to Growth?
2004 – The Role of Philanthropic Organizations in Florida’s Civil Society
2003 – The Health Care Crisis: Seeking Solutions for Florida and the Nation
2002 – Democracy and the Economy in Florida at a Time of National Crisis
2002 – Civic Education Workshop
2001 – The Children of Florida
2001 – North Florida’s Regional Future (Marion County)
2000 – The Graying of Florida
2000 – The Graying of Ocala and the Need for a Stronger Community
1999 – A View of the 21st Century: Demographic Developments and Their Implications for Florida’s Future
1998 – Florida and the Global Economy
1995 – Building Community in Florida

I am interested in attending the 2006 Meeting. Please send me _____ copies of the ______ report.

Name ____________________________________________________________
Address __________________________________________________________
City, State, Zip_____________________________________________________

Mail to: The Reubin O’D. Askew Institute, University of Florida, P.O. Box 117320, Gainesville, Florida 32611