

BOARD OF COUNTY COMMISSIONERS
HILLSBOROUGH COUNTY, FLORIDA

AGENDA ITEM COVER SHEET

CONSENT

REGULAR

MEETING DATE: **October 10, 2000**

SUBJECT: **Alternative Water Sources for Cone Ranch**

OFFICE: Community Services
DEPT: Water Resource Team

CONTACT PERSON: Gary W. Kuhl.

RECOMMENDATION:

1. **Direct the Hillsborough County Water Resource Team to review and develop the alternative projects to the Cone Ranch wellfield with Tampa Bay Water; an update on the progress of this review will be provided to the Board of County Commissioners in the next 90 days.**
2. **Continue pursuing the goals of removing the Cone Ranch wellfield from the list of future potable water supply projects.**

BACKGROUND:

The Board of County Commissioners directed the Hillsborough County Water Resource Team to investigate alternative sources of potable water to replace the development of the Cone Ranch wellfield. The alternative sources identified, including very preliminary potential yields, are:

1. An additional desalination plant at Anclote (10 to 25 MGD)
2. Additional Brackish groundwater desalination (2 to 5 MGD)
3. Expansion of the proposed Surface Water Treatment Plant (2 to 3 MGD)
4. Crystals International, Inc. cooling water (3.4 MGD)
5. Withdraw from one or more sinkholes such as Morris Bridge Sink (3 to 8 MGD)
6. Use of agricultural and phosphate mining wells via "permitted use changes" (3 to 8 MGD)
7. Interconnect with other utility systems such as Manatee County (3 to 8 MGD)
8. Use of natural springs (3 to 4 MGD)
9. Medard Park Reservoir (1 to 2 MGD)
10. Reclaimed Water exchanges, for example, cooling or wash water (1 to 3 MGD)
11. Indirect Potable Reuse (TWRRP)
12. Lake Tarpon (1 MGD)
13. Channel "A" (1 MGD)
14. Combination of the above alternatives

Financial Impact Statement and Index/Sub-object Code: No financial impact.

SIGN-OFF APPROVALS

	DATE
DIRECTOR <i>[Signature]</i>	<u>10-3-2000</u>
MGMT & BUDGET <i>[Signature]</i>	<u>N/A GK</u>
CONTRACTS <i>[Signature]</i>	<u>N/A GK</u>
LEGAL <i>[Signature]</i>	<u>10-3-00</u>
ACA <i>[Signature]</i>	<u>10/3/00</u>

Affected parties notified
 Not required

Advertised
 Not Required

Date: _____
Paper: _____
CIT Project? yes no

Attachments -- Report on Potential Water Supply Alternatives for Cone Ranch

None

Backup on file in County Administrator's Office

OCA STAFF ONLY -

BOARD ACTION: Approved Disapproved Continued/Deferred Until _____

OTHER/SPECIAL INSTRUCTIONS: _____

Original Documents forwarded to Chief Deputy Clerk BY: _____

POTENTIAL WATER SUPPLY ALTERNATIVES FOR CONE RANCH
(Progress Report Number 1)
(Hillsborough County Water Resource Team –September 2000)

Summary Of Rationale For Not Developing Cone Ranch As A Potable Water Source

Cone Ranch is part of the Hillsborough River watershed. The Cone Ranch area was envisioned as a potential source for Hillsborough County's (and the region's) future water supply. Several significant events have since occurred or are occurring within the Hillsborough River watershed which make the ranch potentially less attractive as a major water supply source than it was 15 years ago.

Up until 1989, impacts to wetlands and lakes resulting from withdrawals of water were only required to be considered on lands not owned or controlled by the WUP (Water Use Permit) applicant/user. Given the large size of the ranch, significant quantities of water were originally envisioned to be possibly developed under the then existing rules. Rule revisions in 1989 required impacts to all natural resource features be considered, regardless of whether such impacts were expected off-site or on-site. The large number of wetland and riverine systems on the ranch make it more difficult to locate wells so as not to result in adverse impacts under the new rules.

At the time the Cone Ranch Wellfield was first envisioned, the watershed already contained within it substantial quantities of permitted withdrawals. The City of Tampa withdrew roughly 50 mgd from the river in the mid-1980s. The City also had the Morris Bridge Wellfield located within the watershed, permitted at 15.5 mgd annual average (actual withdrawals in the mid-1980s were roughly 10 mgd). The City also had a permit to withdraw water from Sulphur Springs. The West Coast Regional Water Supply Authority (WCRWSA) had a permit to withdraw 20 mgd annual average from the Tampa Bypass Canal. WCRWSA was withdrawing about 30 mgd annual average from the Cypress Creek Wellfield, and had recently begun production at the Cross Bar Ranch Wellfield (located just outside the boundaries of the Hillsborough River watershed). Dade City was withdrawing roughly 2 mgd in the mid-1980s, City of Zephyrhills about 1 mgd, City of Temple Terrace about 3 mgd, and Plant City about 4 mgd.

Since the mid-1980's, significant additional quantities of groundwater and surface water are being withdrawn from within the watershed. Most notable among these increases are: the Cypress Bridge Wellfield, averaging roughly 8 mgd, and the City of Tampa's withdrawals from the river, now up to roughly 60 mgd.

There will soon be even more withdrawals from within the watershed, when the new WUP for TBW from the river/canal (up to 195 mgd maximum, with an estimated long-term annual yield of 34 mgd) becomes operational. None of the smaller cities within the watershed have decreased their production since the mid-1980s, there is a new application in to the SWFWMD to increase the withdrawals from Crystal Springs and there is a new application to develop a wellfield on the Two Rivers Ranch. These increases have and will continue to be only partially offset by the required reductions in the wellfield pumpages, improved use of reclaimed water by folks such as CF Industries, etc. All permitted uses combined represent a significant portion of the flows within the Hillsborough River watershed. Given these factors, it may no longer be a simple matter to develop additional significant quantities of water from Cone Ranch without affecting one or more legal existing users or the environment. This matter will almost certainly engender significant future debates between differing interests. However, for purposes of the following evaluation, it has been assumed that alternative supplies to Cone Ranch should for the most part be obtained from outside the Hillsborough River watershed.

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Second Desalination Plant

The Tampa Bay Water (TBW) Board has indicated that a second desalination facility should be seriously considered (June 2000). That Board went further to indicate that alternative sources such as desalination should be prioritized over the development of the ranch as a wellfield. TBW staff was directed to actively pursue the second desalination alternative. From a technical standpoint, the previously considered site near the mouth of the Anclote River remains a likely location for a major desalination plant. That location was rated as environmentally acceptable during the competition for the first desal plant. As a result of the competition for the first desal plant; much work has already been done investigating this site. This option remains an attractive alternative to Cone Ranch.

Additional Brackish Desalination

TBW's Master Water Plan calls for the development of brackish groundwater desalination from within Pinellas County. A major question is "How much can be safely withdrawn from that area without causing unacceptable adverse impacts and without impacting legal existing uses?" TBW's initial planning numbers for yield may or may not prove to be conservative. In the event actual yields prove to be greater than the estimates currently being made by TBW, any extra quantities which could be taken should be counted as "replacement" water to Cone Ranch. Until actual testing is completed, more cannot be said as to what safe yield from the peninsula might actually prove to be.

Expansion Of The Proposed Surface Water Treatment Plant

The TBW Board recently (July 2000) voted to change the treatment capacity of the proposed new TBW surface water treatment plant from 60 mgd to 66 mgd. The new estimates from TBW indicate this expansion will result in a long-term average increase in potable water by 2 mgd without a reservoir, and by 3 mgd with a reservoir. TBW indicates this can be accomplished under the conditions contained within the current WUPs for the Hillsborough River/Tampa Bypass Canal and the Alafia River. To the extent these new calculations prove to be accurate, the added water over and above the 60 mgd should be counted as an offset to the Cone Ranch planning number.

Use Of The Water From Crystals International, Inc.

As many of the BOCC already know, Crystals International, Inc. currently is permitted to withdraw an average of 3.4 mgd of fresh groundwater for use in their manufacturing process. The use of this high quality water is for cooling. The warmed water is used once and discharged to surface water. The quality of the used water remains high. There is no obvious "down side" to utilizing this discharged groundwater for potable purposes. The company is reportedly willing to work with the County and TBW to effectuate this. The major impediment to immediate implementation is the cost of running a pipeline to bring this water to the closest County treatment facility. There are several possible ways to overcome this cost impediment. The County could decide to pay for a portion of the pipeline costs. The Water Team could investigate a possible "transfer" of water, wherein the water from the Crystals operation is sent to a nearby user, while the nearby user in turn allows water it may be using at another location in closer proximity to the County's treatment plant to go to the County (thus minimizing pipeline costs).

Development of Water from Existing Sinkholes

The recent period of unusually dry weather prompted at least one local utility, Tampa Bay Water (TBW) and the Southwest Florida Water Management District (SWFWMD) to withdraw water from an existing sinkhole (Morris Bridge Sink). The County may want to further evaluate the feasibility of utilizing water

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from one or several existing sinkholes. Any such withdrawal(s) would need to pay close attention to legal existing users in the area. Water quality may also be an issue to be addressed.

Partial Change Of Use Designations

Currently, there are a significant number of groundwater Water Use Permit (WUP) holders in southern Hillsborough County who have large permits on many hundreds of acres of land. These include agricultural operations and phosphate-owned lands.

All agricultural operations must meet SWFWMD-based irrigation efficiencies. Actual water use is determined by several variables, including type(s) of irrigation practice(s), crop type(s), acreage planted, planting date(s), and harvest dates. By modifying one, or a group of these variables, in a given year, some water may be made available for use. For example, by moving up the planting date for spring tomatoes from March 15 to January 15, actual irrigation water demands can be reduced. There are risks to the agricultural operation in such a move, as the risk of a killing freeze is much greater with the earlier planting date. Many of these large agricultural operations are located in southern Hillsborough County and adjacent Manatee County.

Phosphate lands constitute many thousands of acres in Hillsborough and adjacent Polk and Manatee counties. The phosphate companies have already instituted a number of water saving measures, and now use only a small fraction of the water they used only 10 years ago. The large acreage involved could mean that some water resource development on these lands is possible.

The BOCC may want to consider approaching some of these operations. There are various ways in which transfers of use of water might be effectuated. Cooperative agreements between the County/TBW and the agricultural organization could be developed to assist that organization in modifying one or more variables in an attempt to make some water available for potable purposes. The County/TBW could open discussion with the phosphate companies pertaining to the long-term plans for the use(s) of water within the large acreage(s) owned and/or controlled by these companies.

Over the years, the County's ELAPP has purchased acreage which had WUPs associated with them. The practice to this time has been to retire most, if not all of these quantities. To the best of our knowledge, Hillsborough is the only county, which voluntarily retires large quantities of permitted water. The BOCC may want to consider modifying this practice, at least temporarily, so that any WUP quantity associated with a future ELAPP purchase be considered by the BOCC for a potential offset to the Cone Ranch quantities. This would NOT involve changing the evaluation criteria for purchases by ELAPP. This idea would merely transfer existing permitted quantities associated with the land being purchased.

Interconnection with Other Public Utility Systems

To the immediate south of Hillsborough County is Manatee County. Manatee currently provides bulk supplies of water to other municipalities, including Sarasota County. Manatee County could be approached to solicit their interest in expanding its wholesale supply.

Offshore/Onshore Springs

While the major springs within Hillsborough County are already being tapped for some type of use, several springs exist within Pinellas County, and immediately offshore of the northern Pinellas/ Pasco Coastline. These have not yet been developed for potable purposes. These include Wall Spring, Crystal Beach Spring, and Tarpon Spring and Health Spring. For onshore springs, flow and quality of water would be two major considerations with regard to feasibility for development for potable purposes. For near-shore

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springs, added complexities would include amount, placement and safeguarding of offshore pipelines, and evaluation of ecological impacts from removal of at least some of the spring flow. For near-shore springs, distance to a treatment facility would be a major cost component.

Medard Park Reservoir

This water body is actually a tributary to the Alafia River. This reservoir has been evaluated in the past as a possible future source. However, given that it is part of the Alafia River system, and given that there is soon to be withdrawals directly from the Alafia River, withdrawing additional water from the Medard Park Reservoir may not be an efficient means of obtaining water.

Reclaimed Water Exchanges

TBW has repeatedly considered the exchange of reclaimed water for potable quality groundwater (the latter to be supplied by current WUP holders). TBW has no reclaimed water of its own. Any exchanges to be made would need to utilize a member government's reclaimed water. Thus, in the event the County considers supplying reclaimed water to TBW for such exchange purposes, the County should give serious consideration to linking such exchanges to the Cone Ranch offsets.

The City of Tampa currently discharges roughly 60 mgd of highly treated wastewater into the channel adjacent to their treatment plant. The City has plans to reuse only a small fraction of that water. The County may want to consider paying some of the costs associated with transporting some of that treated effluent to a part of the County where potable demands could be directly offset, or for an exchange similar to the one described above. Such ideas would likely be complex to implement, requiring cooperative effort from multiple parties. An ASR system of wells may need to be considered as part of this concept. The question of the effect of that effluent on the salinity regime of the upper bay also would need to be considered. The large amount of water being discharged does indicate at least a potential for a relatively significant offset to potable water demands.

Indirect Potable Reuse

A great deal of work has been done on the possible indirect potable reuse of water from the Howard F. Curren AWWTP over the past 16 years. Historically, Hillsborough County has always supported this alternative. The TBW Board deleted this option from the Master Water Plan, so it would be necessary to have the TBW Board revisit this project, if it were to be considered as a replacement for Cone Ranch.

Lake Tarpon

Many years ago, there reportedly was a potable water withdrawal from Lake Tarpon. Given the fact that TBW is now moving into surface water supplies as well as groundwater supplies, it may be possible to re-implement a surface water withdrawal from that lake. It may also be possible to develop a series of small, shallow-cased wells located immediately adjacent to the eastern shore of the lake (with the latter concept, withdrawal rates would need to be low per well, to prevent intrusion of saltwater). Yields from such a system would be relatively small.

Channel "A"

Channel "A" is a drainage canal located in northwest Hillsborough County. The canal is situated such that some water might be able to be withdrawn from it and sent to the County's new treatment plant to the north. It might also be possible to develop a series of shallow-cased wells on the north bank of the canal,

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with low per well rates of withdrawal to prevent salt-water intrusion. Yields from such a system would be relatively small. If the reclaimed water ASR project being tested by the County proves successful at this site, the use of this localized area for potable purposes may be foreclosed.

Two Hypothetical Options, Combining One Or More Of The Above Described Scenarios

Option 1: Southern Intertie. The distance from the County's potable system at Sun City Center to the Manatee County line is not far. From the terminus of the County's present distribution system to the county boundary is approximately seven miles along the I-75 corridor. Along the way are holders of large WUPs, mostly agricultural. Once in Manatee County there is a county utility that may be interested in expanding its wholesale customer base, and large WUP holder(s) who have expressed interest in providing water under a partial transfer scenario similar to the one described above. It is likely feasible that a water transmission line could be developed to interconnect the Hillsborough County/TBW system with the Manatee County system, and have a set of private water wholesale suppliers providing water into that interconnect. This option has the potential to provide amounts of water in excess of the planning number being proposed by TBW for the Cone Ranch and Dispersed Well Project. Treatment plant location(s), types of treatment required, wholesale terms and duration, and possible deed restrictions to ensure long-term supplies would all need to be considered. From Sun City Center north exist other potential wholesalers of water under the partial transfer concept. To the extent that ELAPP may be purchasing lands with WUPs in this area, that water might also be considered to be placed within this "system".

Option 2: Multiple Smaller Projects Combined. Many of the ideas described earlier in this Progress Report would likely yield relatively small amounts of water (< 5 mgd) on an individual project basis. If several of these projects were implemented, the total combined available quantities could equal or exceed the 12 mgd currently envisioned by TBW for the Cone Ranch plus Dispersed Wellfield Project.

The Team stresses that this is a Progress Report, and does NOT constitute a recommendation for any project or group of projects. The Team is continuing to investigate these ideas, and remains open to other ideas as well.

Ideas Removed From Initial List Pursuant To Input From The BOCC

An Option Within The Hillsborough River Watershed

The owners of Two Rivers Ranch, Inc. have recently applied to the SWFWMD for a WUP to develop and supply water for potable purposes from within that ranch's boundaries. This ranch is located to the west of Cone Ranch. Most of the ranch is within Hillsborough County, but some is within Pasco County. This application is reportedly for a quantity of water greater than the 12 mgd being sought by TBW from the Cone Ranch and Dispersed Wellfield Project. This project has been removed from consideration based upon the BOCC's position in opposition to any new groundwater wellfields in that area.

SWFWMD's Report on a Possible Location for a Desalination Plant in Manatee County

SWFWMD has evaluated a possible desalination site at Port Manatee. This option has been deleted pursuant to input from the BOCC.

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Potential Water Supply Alternatives to Replace the Cone Ranch Wellfield

Submitted by: Hillsborough County Water Resource Team—September 2000

Situation:

Cone Ranch encompasses a portion of the Hillsborough River watershed and has been considered as a potential source of potable water for the region since the mid-1980's. Several significant events have occurred making the Ranch much less attractive as a major water supply source:

1. Water Use Permit rule revisions now require all natural resource features to be protected whether on a wellfield site or off-site. Prior to 1989, only off-site features were protected.
2. Currently permitted quantities of water withdrawal in the Hillsborough River watershed already stress the natural water system (City of Tampa Reservoir, Tampa Bypass Canal, Morris Bridge Wellfield, Cypress Creek Wellfield, Cypress Bridge Wellfield and several other city withdrawals in the area).

Because of the concerns outlined in "2." above, the alternative sources identified in this summary are located mainly outside the Hillsborough River watershed.

Summary of Alternatives and "Pro's" and "Con's":

1. **Additional Desalination Plant:** Located at either the Anclote River or Port Manatee, this option could provide an additional 10 to 25 MGD.

PRO'S:

- Could produce large quantities of water with brine discharge in or near the Gulf of Mexico

CON'S:

- Concept has not yet been implemented at Appollo Beach
- High cost of construction

2. **Brackish Groundwater Desalination:** Probable location in Pinellas County utilizing a dispersed approach, i.e. a number of wells spread out over a fairly large area. Probable yield is 2 to 5 MGD.

PRO'S:

- May have minimal impact

CON'S:

- Could have unacceptable impacts at saltwater interface

3. **Expansion of the Hillsborough Surface Water Treatment Plant:** This plant may be

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capable of increasing production by 2 to 3 MGD

PRO'S:

- Minimal cost

CON'S:

- Care needs to be taken to insure there is no significant additional stress on local rivers or Tampa Bay

4. **Crystals International, Inc. cooling water:** Substitution of reclaimed water for high quality groundwater now used as cooling water may produce 3.4 MGD of potable water.

PRO'S:

- Should be a fairly simple contractual matter

CON'S:

- Pipeline costs may be considerable

5. **Withdraw from one or more sinkholes such as Morris Bridge Sinkhole:** Already utilized during recent drought periods, the Morris Bridge Sinkhole may produce from 3 to 5 MGD.

PRO'S:

- Relatively straight-forward to implement

CON'S:

- Possible impact on surrounding shallow wells

6. **Use of agricultural and phosphate mining wells via "permitted use changes":** Excess permitted existing users may be willing to contract for a change in water use to provide potable water for regional use. This could provide 3 to 4 MGD.

PRO'S:

- Minimal cost for water "development"

CON'S:

- Pipeline costs could be high
- May test the "water marketing" concept

7. **Interconnect with other utility systems such as Manatee County:** Recent changes in contractual arrangements between Sarasota and Manatee County may have "freed up" 3 to 5 MGD.

PRO'S:

- Low cost of water "development"

CON'S:

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- May be only a short term solution as Manatee County's demands will surely increase

8. **Two Rivers Ranch:** Another large agricultural parcel which could produce 6 to 8 MGD.

PRO'S:

- Substantial water quantities under review

CON'S:

- Similar issues to the Cone Ranch—lies within the Hillsborough River watershed
- Overlays two counties

9. **Use of natural springs:** Many natural springs lie along the coastal areas and in the Gulf of Mexico. These might be tapped for 3 to 4 MGD.

PRO'S:

- Captures natural flow usually emptying into the Gulf

CON'S:

- Estuary permitting issues
- Pipeline costs may be high

10. **Medard Park Reservoir:** Use of the existing reservoir may yield 1 to 2 MGD.

PRO'S:

- Reservoir already in place—minimal permitting

CON'S:

- Pipeline costs may be high
- Relatively low yield for probable cost

11. **Reclaimed Water exchanges such as cooling or wash water:** Expand the idea that may work with Crystals International, Inc. to produce another 1 to 3 MGD.

PRO'S:

- Relatively low cost of development

CON'S:

- May have high pipeline costs

12. **Lake Tarpon:** Possible 1MGD for probable extensive permitting issues

PRO'S:

- Near urban use center

CON'S:

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- Permitting studies will be extensive
- Small yield for major effort

13. **Channel "A":** Improvements in stormwater runoff quality and sewage treatment in place of septic tanks may yield 1 MGD of potable water.

PRO'S:

- Water quality improvements are needed regardless of potential potable water development

CON'S:

- Small yield for major effort

14. **Combination of above alternatives:** A combination of the above alternatives is probably the best approach to "find" replacement water for the 12 MGD planned withdrawal from Cone Ranch.

A more detailed summary of each alternative and background information, as prepared by Dr. Scott Emery, can be found in Attachment "A".

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