

DRAFT PRELIMINARY REPORT
Stakeholder Comments and Staff Recommendations

**Strategies for Preserving Desired Future Conditions in the
Northern Subdivision of Groundwater Management Area 10
(Barton Springs Segment of the Edwards Aquifer)**

Table of Contents

1.0	Introduction	3
2.0	Purpose and Scope.....	3
3.0	Regulatory Authority and Constraints	5
4.0	Summary of Proposed Strategies	6
4.1	Market-Based Strategies	6
4.2	Regulatory/Permitting-Based Strategies.....	6
5.0	Summary of Stakeholder Inputs	8
5.1	Inputs on Market-Based Strategies.....	8
5.2	Inputs on Regulatory/Permitting-Based Strategies	10
5.3	Education/Outreach.....	11
5.4	Alternative Water Supplies/Recharge Enhancement	11
5.5	General.....	12
6.0	Staff Recommendations for Initial Emphasis	13
6.1	Regulatory/Permitting Strategies	13
6.2	Market-Based Strategies	14
6.3	Other Recommendations.....	16
6.4	Summary of Staff Recommendations:.....	16
	Appendix A – Meeting Notes.....	1
	Attachment A-1.....	11
	Attachment A-2.....	12
	Appendix B - Written Comments	1

1.0 Introduction

With the recent completion of the first round of groundwater planning, GMA 10, with the District as the primary voting member representing the northern subdivision of GMA 10, has established a Desired Future Condition (DFC) for the Barton Springs segment of the Edwards Aquifer that comprises a monthly-average minimum of 6.5 cfs of springflow during a recurrence of the Drought of Record (DOR). Using this DFC, the Texas Water Development Board (TWDB) has derived the volume of total annual pumpage that is consistent with preserving this DFC, which is now referred to as Modeled Available Groundwater, or MAG. Assuming the accepted 1:1 pumpage to springflow relationship¹ under such drought conditions and the lowest recorded monthly volume of discharge (springflow and pumping) of 11.7 cfs, the TWDB established a MAG of 5.2 cfs of pumping - the difference between the DFC (6.5 cfs) and the DOR total discharge rate (11.7 cfs). This includes estimated exempt well pumpage.

The chosen DFC was intended to strike a balance between the ecological needs of the springs and its endangered species, the protection of historical permitted pumpage of District permittees, and the practical, legal, and regulatory constraints of further reducing pumpage during an extreme drought. However, the current aggregated volume of permitted pumpage authorized during an extreme drought (i.e., after all established regulatory curtailments have been imposed) falls short of ensuring that this minimum DFC can be preserved. The total authorized extreme drought pumping volume, referred to as the Extreme Drought Withdrawal Limitation (EDWL), is equal to approximately 6.7 cfs of pumpage. Applying the 1:1 pumping-to-springflow relationship, this rate of pumping would leave only 5.0 cfs of springflow during a recurrence of the DOR, which is 1.5 cfs less than the established DFC of 6.5 cfs (figure 1).

2.0 Purpose and Scope

The 1.5 cfs shortfall described above is what the District is calling “the gap.” It is incumbent upon GMA 10 and the District to remove that gap. The corollary to that requirement is that the District Rules, and to the extent required its Management Plan, must be amended to produce additional Edwards supply during extreme drought and/or further reductions in demand during extreme drought.

There is of course an institutional solution: the DFC and its corresponding MAG could be revised such that the gap disappears. This would require our (and the US Fish and Wildlife Service’s) accepting a plan that allows the minimum spring flow at Barton Springs to decrease to 5.0 cfs, roughly half of its recorded minimum flow. However, the best science available indicates that there is already a non-zero risk of endangered species extirpation even with the current DFC, although that risk is currently judged acceptably low. That would not likely be the judgment now with a spring flow DFC of 5.0 cfs, as the low dissolved oxygen levels at that spring flow would more likely jeopardize not just individual members but recovery of the salamander population. Even so-called engineered solutions that might be able to be employed in an emergency, such as air-sparging in

¹ Established by the District’s Sustainable Yield Study (2004)

wells near the spring outlets to de-couple the dissolved oxygen content of the water and amount of spring discharge, would not meet legal requirements of the US Fish and Wildlife Service (US FWS for endangered species protection “in the wild.” And of course those solutions would also not protect existing water supply wells in the western part of the District during extreme drought, which was another consideration of equal importance in setting the DFC where it now is.

The primary purpose then of our current initiative is to ascertain the availability, acceptability, and likely effectiveness of a set of changes that the District can employ that increases supply, decreases demand, and removes the gap under our existing authorities, including the explicit and reasonably implicit authorities under our current Management Plan. A secondary purpose is to elucidate what changes in those authorities might be needed to deploy other specific measures that are identified as effective, either in concert with or in lieu of some of the initial set of measures. The Board of the District has asked a Stakeholders Advisory Committee (SAC) to assist the District in accomplishing those purposes. It is also important to note that the proposed strategies focus on pumping reductions and not other, supply-side strategies. And in addition to supply-side enhancement strategies, continued education and outreach efforts are important components in Emergency Response Period (ERP) management and also deserve due consideration in helping achieve the DFC.

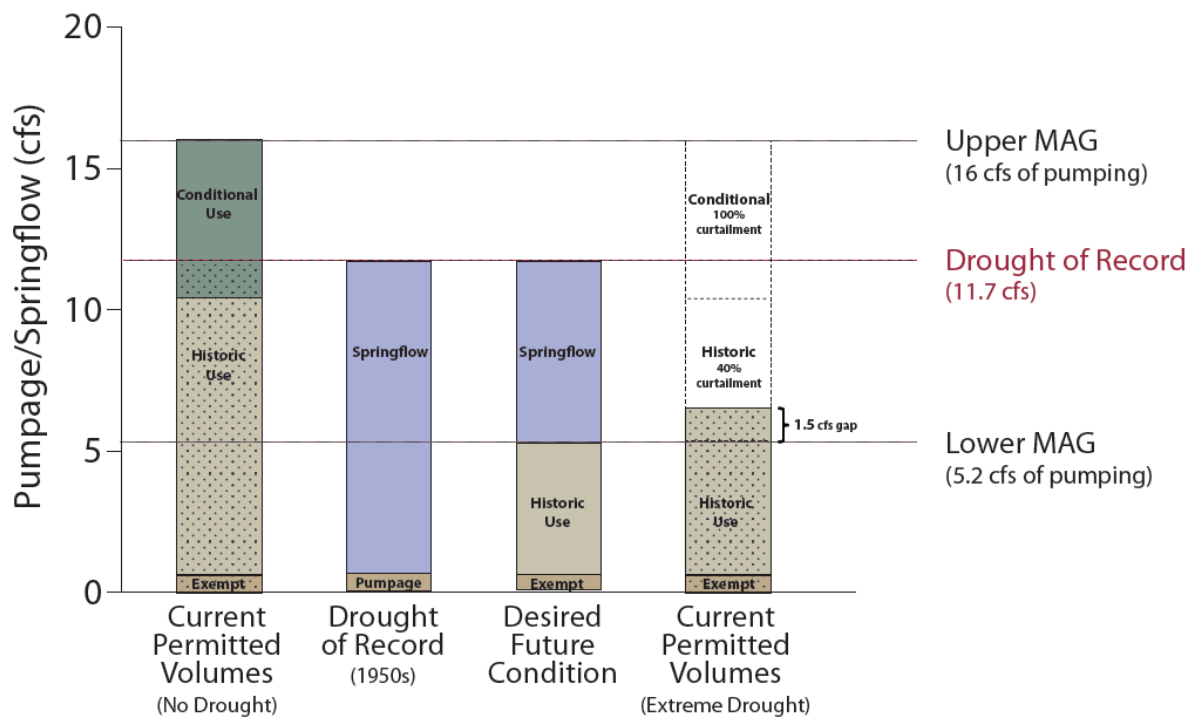


Figure 1 – Current Permitted Volumes: “No Drought” column shows total authorized pumpage limit during non-drought conditions (16 cfs – the upper MAG) with distribution of historical permitted, conditional permitted, and exempt well pumpage. “Extreme Drought” column shows the total authorized pumpage after 100% and 40% curtailment of Conditional and Historical permitted pumpage respectively. “Drought of Record” column shows the volume of total discharge (springflow and pumping) during the Drought of Record in the 1950s when the lowest springflow rate was recorded (11.7 cfs). “Desired Future Condition” column shows the volume of springflow expected during a recurrence of the DOR (5.0 cfs) with the current EDWL pumping (6.7 cfs) factored in. The figure illustrates 1.5 cfs gap between what is currently achievable under existing rules (5.0 cfs) versus the established DFC (6.5 cfs).

3.0 Regulatory Authority and Constraints

The District is one of 98 confirmed groundwater conservation districts (GCDs) in Texas and must operate within the statutory authorities specifically provided by Texas Water Code Chapter 36 (Chapter 36) for all GCDs, as modified by provisions of its own enabling legislation, which is now codified as Special District Local Laws Code Chapter 8802. The District specifies more precisely what it is planning to do under these authorities over a 10-year period in a District Management Plan, which by statute also becomes an authorizing document and therefore a constraint on what we can do. We cannot assume authority to do something that is not at least notionally authorized under Chapter 36, our enabling legislation, and the prevailing Management Plan.

Among other things, some constraints that are relevant to developing an approach to removing the gap here include:

1. It must be a reasonable application of what is allowed in our Management Plan, as discussed.
2. It cannot operate outside of its duly established Rules & Bylaws; i.e. if it isn't in the Rules, we cannot do it.
3. It cannot enforce compliance with its Rules outside of the cognizant District Court, e.g., it is not provided with the authority to levy administrative fines.
4. It cannot discriminate among and against various types of groundwater use.
5. It cannot limit the production of wells that meet the exempt criteria.
6. It cannot be based on a fee to the District that exceeds \$0.17 per thousand gallons of firm-yield groundwater production without a statute amendment.
7. It cannot use *ad valorem* taxation to underwrite the plan, unless the water fee system becomes illegal.
8. It cannot incorporate subdivision regulations or other explicit land use requirements.
9. It can only be applied within the specific jurisdictional area of the District.
10. It cannot have provisions that tie the hands of future Board members, except as provided under other applicable state and federal laws.
11. It arguably cannot make a market in Edwards groundwater as a commodity, at least under our current Management Plan.
12. It must demonstrate with reasonable certainty under foreseeable conditions that it will achieve all applicable DFCs.

4.0 Summary of Proposed Strategies

The following section provides a summary of the strategies proposed in a white paper titled *Strategies for Preserving Desired Future Conditions in the Northern Subdivision of Groundwater Management Area 10 (the Barton Springs Segment of the Edwards Aquifer)*. The strategies are organized as either Market-based or Regulatory/Permitting strategies and include a brief description of each for reference. As noted in the white paper, this set of strategies focuses on demand reduction; however, other types of strategies may be important to assuring the gap is closed.

4.1 Market-Based Strategies

Market-based strategies generally involve using markets that allow for voluntary transactions between willing buyers and sellers for the purpose of facilitating the redistribution or reduction of permitted pumpage.

Cap and Trade: This strategy would involve the creation of a market to allow trade of permits within the confines of the existing cap on historical freshwater Edwards Aquifer pumpage (the lower MAG). A market in the District would achieve permit pumpage reductions by deducting a percentage of the permitted pumpage involved in each transaction to be dedicated to the Conservation General Permit and the Ecological Flow Reserve.

Expand Temporary Transfer Permit (TTP) Program: The current TTP program allows for a one-time transfer of a limited volume of permitted pumpage between historical public water supply (PWS) permittees and historical non-PWS permittees. This strategy would involve an expansion of the existing TTP program by relaxing some of the current restrictions to increase participation.

Cap and Retire: This strategy would be very similar to cap and trade but would only involve transactions that result in retirement of permitted pumpage. Transactions could involve compensation for permanent retirement of all-conditions permitted pumpage or for an increase in mandatory curtailments during extreme drought.

Advance Conservation Commitments: This strategy would involve reimbursement of all or a portion of water use fees to permittees that agree in advance to voluntarily reduce permitted pumpage beyond mandatory requirements.

4.2 Regulatory/Permitting-Based Strategies

Regulatory strategies involve using the conventional regulatory approaches to groundwater management that are available to the District under its enabling legislation and Chapter 36. That is, permitting of nonexempt wells and the imposition of production limits with an emphasis on further production limits or curtailments imposed during drought conditions.

“Right-Sizing” Production Permits: This strategy involves adjustments to permitted pumpage such that the permitted volumes are commensurate with reasonable demand based on an established efficiency standard. The permit adjustments could either be permanent with adjusted volumes dedicated to the General Conservation Permit or temporary with adjusted volumes held by the permittee in reservation permits.

Proportional Adjustment: This strategy would involve an across-the-board reduction of all historical freshwater Edwards permits by the proportion necessary to comply with the MAG (5.2) and preserve the DFC (6.5 cfs). The estimated reduction needed based on current permitted pumpage would be approximately 25%, which equates to a maximum of 7.6 cfs of uncurtailed historic freshwater Edwards permitted pumpage (Table 1).

Table 1. Minimum Proportional Adjustment of Un-curtailed Pumpage to Meet DFC				
Hist. Pumpage	Hist. ERP Pumpage	EDWL*	Spring flow	Notes
10.07	6.04	6.64	5.06	Current Authority
7.60	4.56	5.16	6.54	Max historic pumpage at 40% curtailment
9.10	4.55	5.15	6.55	Max historic pumpage at 50% curtailment
Min. % of Permit Reduction:				25%
Min. % of Permit Reduction: (at 50% max curtailment)				10%

* Includes Historic ERP permitted pumpage plus exempt and nonexempt domestic well pumpage

Mandatory ERP Curtailments: This strategy would involve an increase in mandatory curtailment levels for all historical freshwater Edwards permits from the current maximum of 40% to 50% during extreme drought. This increase would enable the preservation of 6.1 cfs of minimum springflow. To preserve the DFC using this strategy alone would require extreme drought curtailments of 54% (Table 2). To preserve the DFC using both proportional adjustment and the proposed increase in ERP curtailment would require reducing un-curtailed historical pumpage by 10% to 9.1 cfs (Table 1).

Table 2. Minimum ERP Curtailment to Meet DFC by Drought Curtailment Alone				
Alt. Hist. Curtailment	Hist. ERP Pumpage*	EDWL*	Spring flow	Notes
40%	6.0	6.6	5.1	Current Authority
50%	5.0	5.6	6.1	Minimum springflow at 50% curtailment
54%	4.6	5.2	6.5	Minimum curtailment for DFC

* Includes Historic ERP permitted pumpage plus exempt and nonexempt domestic well pumpage

5.0 Summary of Stakeholder Inputs

Stakeholder input was provided through both oral discussions at the initial SAC meeting (Appendix A) and in written form during the comment period following the meeting (Appendix B). The following section is a compilation of all the inputs received and is organized by the type of strategy as described in the white paper (i.e. Regulatory/Permitting or Market-Based) as well as other categories. Additional categories were also included for general input and comments related to education/outreach and to alternative supply development strategies. All comments are paraphrased with similar comments consolidated for summary purposes.

5.1 Inputs on Market-Based Strategies

Cap and Trade:

- A cap and trade program warrants consideration but should be considered with caution. If a market doesn't work as intended, it can be difficult to roll back, especially once historical permits become commodities and take on monetary value. Need to fully identify actual/potential unintended consequences and collateral damage before implementation.
- A cap and trade program could be permitted but only on a pilot-scale basis before full-scale adoption.
- Permit trading could be allowed but only for a fixed amount of time. Once the desired pumpage reductions resulting from the aquifer commission on each transaction has been reached, the market can be discontinued.
- A cap and trade program should be designed to achieve the management goal as simply as possible and preferably, without skimming a percentage of each transaction.
- A market system would be most effective if designed where the District could facilitate transactions by bringing potential buyers and sellers together.
- A market system could benefit the aquifer in circumstances where permittees are struggling to meet the drought curtailments. If the goal is to hit overall reductions, a market incentivizes those that are meeting the curtailments and monetizes it for the permittees that are not.

Expanded TTP Program:

The TTPs and other market-based solutions presented by the District have promise, and may be effective in conjunction with curtailment, but these programs should be undertaken on a cautious basis, and may be most effective if designed for specific transactions.

Cap and Retire:

- Permanent retirement of Edwards pumping rights is the most assured way to close the gap and at the same time improve aquifer conditions for everyone else all of the time.
- Only way a market is going to work is by developing new supplies that can be used to replace Edwards Aquifer's pumpage. No one is going to give up their groundwater rights without some

replacement supply in hand. If demand is located along the I-35 growth corridor, there is a need for replacement supply *and* additional water for future needs.

- A permit retirement program would have to focus on the larger users that have already invested in and have access to other more costly alternative water supplies and will undoubtedly need to make additional investments, both to replace the portion of their Edwards rights that are no longer firm and to increase overall supply to accommodate growth. We need to look at transactions that would equalize the cost with Edwards water.
- A permit retirement program will be contingent on establishing the appropriate market price. Permits' prices would be commensurate with the cost of replacement supplies.
- Most water utilities, even those with surplus supplies, will be reluctant to sell their permitted rights, even temporarily, because any surplus may be needed at some point for emergencies.
- Transactions may be a last resort option that should be available to permittees in case of emergencies.
- The City of Austin (COA) may be best situated to be a potential purchaser of water rights based on the availability of alternative surface water supplies, proximity to the Districts larger permittees, and the mutual motivation to preserve springflows.
- The District is encouraged to work with the COA, as the most likely buyer, to seek approval from City leadership to explore opportunities for permit retirement.

Water Use Fees/Rates:

Although it was not specifically discussed in the white paper, setting the appropriate price signal with water use fees to permittees as well as rate structures for water utility customers is a market-based strategy that deserves attention.

This strategy would involve an effort to increase the District's statutory cap on water use fees through legislation. It would also involve encouraging (or compelling through new rules and enforcement) permittees to adopt the appropriate conservation-oriented rate structures. The appropriate rate structures that are set with inclining block rates with steep increases in the upper tiers are proven strategies for compelling conservation while also leveling revenues. The following is a summary of the comments received on this strategy.

- Water is currently undervalued. We are going to have to change the mindset of people (customers) who have become accustomed to cheap water, especially groundwater. People currently pay more for their cell phone or cable television than they do for water.
- District water use fees are too cheap. Water use fees need to be raised to incentivize conservation.

5.2 Inputs on Regulatory/Permitting-Based Strategies

Mandatory ERP Curtailments:

- Further curtailments alone would not likely close the gap but would be more effective if coupled with market-based strategies. Similarly, a market-based approach would not likely be possible without a regulatory driver.
- The potential for deeper curtailments in addition to the threat of federal intervention triggered by the Endangered Species Act (ESA) issues would cause permittees to reconsider the perceived worth of Edwards permits by decreasing the firmness or reliability of Edwards groundwater as a water supply. This may be enough to also encourage seeking alternative sources.
- Consider requiring deeper curtailments of conditional permits earlier to prevent or delay the onset of drought-triggering aquifer conditions.
- Phase in deeper drought curtailments for historical permits in accordance with a set schedule. This would allow time for permittees to plan accordingly by improving infrastructure to reduce line loss, implementing conservation ordinances and other measures, or by securing alternative water supplies if needed to meet the increased curtailment requirements.
- Consider phasing in deeper curtailment requirements with a differing schedule based on permit type. That is, allow for shorter compliance period for permit types with greater demand elasticity such as PWS systems.
- The District has historically had success utilizing drought stage curtailments to protect the springflow. Drought curtailments would be preferable to permanent retirement.

Permit Reductions by Right Sizing (Permanent):

- Hold technical assistance meetings with your largest tier of permitted pumpers to discuss system water demand relative to Board-approved efficiency standards and guidelines. Also discuss the viability of reducing dependence on groundwater, strategies and commitments, and the appropriate permit adjustments on a case-by-case basis.
- Set efficiency standard with consideration for minimum volumes needed to protect human health, safety, and welfare.
- Efficiency standards, particularly per capita demand metrics for PWS systems, should not be used for permit adjustments due to privacy issues that could arise.
- Historical permits should only be permanently reduced if the permitted pumpage exceeds build-out of current service area.
- Historical permittees that have invested in alternative water supplies should not be subject to adjustments since they will likely use those sources preferentially.
- If historical permits must be reduced then that should only take place when a proven outside source is available and a contract for supply signed to replace the reduction.

Proportional Adjustment:

There was only one comment provided in support of this strategy. The commenter's opinion was that it was a necessary measure that needed to be implemented to meet the immediate goal.

5.3 Education/Outreach

- We should not fail to consider an educational strategy in addition to regulatory and market-based strategy. We need to educate people on how to use water more efficiently
- The District should target efforts at educating and engaging with exempt well owners to encourage all-conditions water conservation and reduced pumping during drought. Efforts could include:
 - Setting up exempt well owners group for education and information sharing
 - Providing focused education to convey that aquifer is shared resource and that they are also affected by drought and pumpage by others.
 - Offering well sampling and water level monitoring.
 - Soliciting volunteer metering to collect exempt well use data.
- Encourage and assist permittees in developing conservation programs aimed at reducing outdoor water demand. Programs could include grass replacement incentives, information on turf grass and landscaping alternatives, and mulching.

5.4 Alternative Water Supplies/Recharge Enhancement

- A large potential source of relief for Edwards pumpage is the utilization of treated reuse water for irrigation, industrial processes, cooling towers, etc. While this may be a less than desirable use over the recharge zone, there are large areas outside the recharge zone that could utilize this resource with no impact to the Edwards.
- Rainwater collection could be substituted for some portion of outdoor water use, and such equipment does not need to be as expensive as rainwater for drinking purposes. Assistance in installing rainwater collection for outdoor use would be welcomed by some exempt users.
- Build a reservoir above the recharge zone on Onion Creek to supply recharge during times of drought.
- Allow gray water reuse. Similar to rainwater harvesting, gray water reuse can help supplement outdoor water demand that might otherwise be satisfied with groundwater.
- Strongly encourage (perhaps incentivize) drilling Trinity Aquifer wells for new and replacement exempt wells.
- In conjunction with curtailment of withdrawals, there may be parties such as the COA, the Lower Colorado River Authority (LCRA), and others that could work with the District and PWS systems to provide water service that would relieve the need for groundwater use during extreme drought and allow the permittees to meet the curtailment requirements.

5.5 General

- The District should implement an adaptive management approach where multiple complementary strategies may be implemented simultaneously and periodically evaluated.
- Any new regulations involving additional requirements or restrictions should be applied equitably rather than preferentially treating one use type over another.
- Successful implementation of management and education/outreach strategies in addition to the overall behavior change that comes with successive extreme droughts may have the effect of hardening demand. Once demand has hardened, water savings from conservation will likely go towards accommodating new growth and not to the aquifer or the springs.

6.0 Staff Recommendations for Initial Emphasis

Staff has considered the feedback and inputs provided by the SAC in both the discussions and in the written comments. On the basis of the provided input and internal discussions, the staff suggests a multi-layered approach to be implemented in phases that would include both regulatory and market-based strategies for reducing authorized and actual pumpage, as well as continued education and outreach efforts to encourage greater water use efficiency and awareness. The cumulative effects of implementation of all of these strategies in concert should be an effective reduction in demand that at least conceptually will close the 1.5 cfs gap between our EDWL and the applicable MAG.

The District will also continue an equivalent effort in fostering alternative water supplies from small residential-scale supplies (e.g. rainwater harvesting, gray water reuse) up to larger scale projects to provide water supplies that could supplement or substitute for Edwards Aquifer dependence (e.g. Saline Edwards desalination, Trinity Aquifer development, and Aquifer Storage and Recovery projects).

The following recommendations, however, are focused on measures to reduce demand and authorized pumpage and are organized by market-based and regulatory/permitting strategies. Additionally, the recommendations are being suggested for implementation in two phases. Phase I will include all measures that have the most potential, would be the simplest to implement, and that are possible under the District's current Management Plan. Phase II will include measures that involve more complexity, would require the most effort, or would best be implemented after more explicit inclusion in the management objectives of the District's Management Plan. Phasing will also allow for adaptive management where the District can monitor and evaluate the efficacy of Phase I measures and then further evaluate the need for any additional Phase II measures.

6.1 Regulatory/Permitting Strategies

Mandatory ERP Curtailments:

There was considerable support for additional regulatory measures to: 1) provide the driver for other strategies, and 2) emphasize the reduced reliability of Edwards' supplies, particularly in the face of a DOR or worse. Assuming compliance with this deepest stage, curtailed pumpage of existing historic permitted pumpage will be sufficient to maintain 6.1 cfs of springflow during a recurrence of the DOR.

Recommendation: Staff recommends a rule change in Phase I to include 50% mandatory curtailment during ERP with the following considerations:

- The new curtailment requirement would not be effective for a period of three (3) years after date of the rule adoption. This delayed implementation will allow permittees to make the necessary preparations to comply with a deeper curtailment.

- **Enforcement Protocol:** In response to the difficulty of meeting such an aggressive curtailment requirement, where compliance might be complicated by hardened demand and reduce monthly targets during winter months, the District recommends possible adjustments to the drought compliance protocol. Enforcement in the ERP would be assessed monthly, using a 90-120 day rolling look back period as a means of assessing ongoing longer term compliance. This would also have the effect of assessing seasonal compliance such as in the colder months when water use is typically composed of only indoor essential demand. Consideration could be given to using a longer-term averaging period for the other drought stages as well.
- **User Drought Contingency Plans (UDCPs):** All UDCPs and target volume charts will have to be updated. New plans will have to include measures to achieve compliance with deeper curtailment, namely reducing all water use to essential use only.

Permit Reductions by Right Sizing:

The stakeholders had mixed opinions about permit right sizing with differences related to who should be subject to reductions, what standard should be used, and whether it should be implemented at all. While adjustments using an efficiency standard, even if phased in, would certainly compel efficiency improvements, it has notable downsides. Implementation would be administratively complex and potentially burdensome. It could also negatively prejudice certain permittees and be received as heavy-handed. While right sizing with reservation permits on a more temporary basis may be a more palatable version, any reduction achieved would likely be only temporary and may not be relied upon to demonstrate DFC compliance.

Recommendation: Staff does not recommend right sizing (either permanent or temporary) in Phase I. Right sizing could be reconsidered in Phase II but only if and as needed once all other Phase II measures are implemented.

Proportional Adjustment:

Proportional adjustments or across-the-board reductions of uncurtailed pumpage were only marginally supported by the SAC. The majority of the SAC seemed to prefer incentivizing permit retirement through market mechanisms or requiring deeper curtailments during droughts rather than a regulatory mandate for permanent reductions. As an alternative to permanent reductions, the District could make the necessary adjustments and convert the adjusted volumes into conditionally permitted pumpage that may be available only during non-drought conditions.

Recommendation: Staff does not recommend this strategy in Phase I. Proportional adjustment could be considered in Phase II as a more equitable alternative to right sizing but only if needed.

6.2 Market-Based Strategies

Cap and Trade:

There was limited support for a full scale tradable permits program. The cons identified by the District were generally related to the lack of factors that would be suitable for an active market but

also the general reticence to break District precedent by severing the permits from the land. This call for caution was shared by several of the stakeholders. There was a suggestion that a market be allowed to open up for a finite time period. Such a program with the proper parameters, aquifer commission on all transactions, and defined time to allow for trading could be effective, but not assuredly so.

Recommendation: Staff does not recommend this strategy in Phase I. A market may be considered but only on a temporary basis if needed in Phase II.

Expanded TTPs:

The current TTP program was aimed specifically at providing an option for non-PWS permittees to secure additional pumping rights from PWS permittees when extreme pumping curtailments were triggered during an ERP. District rules have since been revised such that those greater curtailments are not likely to have much effect; therefore, the TTP now provides limited utility. Because of the limited utility coupled with the associated regulatory complexity, the current TTP program is virtually ineffective. And similar to cap and trade, the likelihood that transactions would provide any reduction in authorized or actual pumpage is low even with expanded parameters.

Recommendation: Staff does not recommend this strategy. Further, staff recommends that the current TTP program be abolished.

Cap and Retire:

There was considerable support for providing a mechanism to allow for the purchase of permitted pumpage (either pumpage under all conditions or only in extreme drought) for the purpose of retirement. This strategy is already possible under the existing rules. That is, a permittee can voluntarily relinquish their permit or request that their permitted amount be reduced. However, such a program is currently not formally recognized by the District.

Recommendation: Staff recommends a rule change in Phase I to recognize amendment requests for reduced permitted pumpage volumes or complete retirement. Further, staff recommends that the Board direct staff to identify prospective buyers and sellers with factors (location and water supply portfolio) that would be amenable to transactions and facilitate those transactions.

Water Use Fees/Rates:

There was general agreement among the stakeholders that groundwater is undervalued relative to other sources and that this price discrepancy generally creates the perverse incentive to utilize groundwater preferentially. This further complicates any initiative that may involve conversion of groundwater dependent systems to other sources.

Recommendation: Staff recommends continued efforts to support legislation that would raise the current historical water use fee cap (\$0.17/1,000 gallons) to a price more commensurate with other raw water supplies. Additionally, staff recommends a concerted effort to encourage or

compel the District's PWS permittees to adopt conservation-oriented rate structures with meaningful rate blocks that would encourage conservation.

6.3 Other Recommendations

The General Conservation Permit:

The General Conservation Permit was created by design to serve as a holding vessel for retired pumpage. As it is, all retired pumpage will permanently reside in the general permit and be unavailable for re-permitting. The District has consistently maintained that the aquifer is a high quality and valuable water supply that could and should be utilized in favorable conditions. The District's conditional permitting program reflects this logic by requiring complete pumpage curtailment during extreme drought. In accordance with this logic and as an incentive to historical-use water suppliers to commit to additional drought-time curtailment/retirement, any retired historical permitted pumpage that previously offered firm-yield pumpage, even during extreme drought, could be made available for permitting as Class C conditional pumpage. The re-permitted pumpage would be added to that amount otherwise available in the Class C allotment and would only be available when not in a district-declared drought stage.

Recommendation: Staff recommends a rule change in Phase I to allow retired historic permitted pumpage residing in the Conservation General Permit to be re-permitted as Class C conditional pumpage.

6.4 Summary of Staff Recommendations:

Phase I - Includes all measures that have the most potential, would be the simplest to implement, and that are now believed possible under the District's current Management Plan. These measures include:

- Include 50% curtailment requirements in the next rule change to be implemented 3 years after the new rule effective date.
- Include cap and retire provisions in the next rule change that outline the procedure for recognizing transactions that result in the retirement of historical permitted pumpage.
- With Board direction, perform an analysis of permitted systems relative to surface water supplies (namely the COA) to identify the potential for emergency interconnections and cap and retire approaches.
- With Board direction, work with the potential buyers in a cap and retire program (namely the COA) to assess opportunities and obstacles to retiring permits.
- Include provisions in the next rule change that allow for retired historical permitted (un-curtailed) pumpage to be re-permitted as Class C conditional pumpage, and the Class C conditional allotment be increased commensurately.
- Continue effort to support legislation that would raise the current non-agricultural historical water use fee cap (\$0.17/1,000 gallons) to a price more commensurate with other raw water supplies (or at least the maximum fee rates that other new GCDs now have stipulated in their enabling legislation.)

- With Board direction, provide guidance on, and encourage the District’s PWS permittees to adopt conservation-oriented rate structures with meaningful rate blocks that would encourage conservation.
- Abolish the current TTP program.
- With Board direction, define and make additional revisions to the Management Plan that would be required to implement the Phase II measures below.

Phase II – Includes measures that involve the most complexity, would required the most effort, or would best be implemented after more explicit inclusion in the management objectives and strategies of the District’s Management Plan. The following measures will only be considered as needed after considering reductions accomplished in Phase I:

- Consider implementing proportional adjustments to all historical permits by only the additional amount necessary to comply with the MAG. Adjusted volumes could be converted to conditional permitted pumpage that may be available during non-drought times only.
- Consider allowing permit trading with an “aquifer commission” taken from every transaction for an announced and finite period of time to impose a deadline (or alternatively to be held open until the MAG is reached.)
- Consider right sizing based on established per capita efficiency standards where all permits will be evaluated to compare actual (and possible projected) demand to permitted volumes and adjusted accordingly.
- Reinforce current District rules that require that District PWS systems to adopt a conservation-oriented rate structure and use enforcement authority to compel new rate structures. (This also implies either voluntary or legislatively-compelled support by TCEQ.)

Appendix A – Meeting Notes

Meeting Notes of the Initial Meeting of the BSEACD Stakeholders Advisory Committee Tuesday, January 24th, 2012 at 6:30 PM at the La Quinta Inn and Suites in Austin

The purposes of the initial meeting of the Stakeholders Advisory Committee (SAC) were: 1) to provide basic information and context for the District’s aquifer management programs as they relate to the Desired Future Condition (DFC) established for the Barton Springs segment of the Edwards Aquifer during extreme-drought conditions, and 2) to identify and discuss various strategies to remedy the projected shortfall (“the gap”) between the maximum amount of pumpage that will preserve the DFC (the Modeled Available Groundwater, or MAG), and the District’s most curtailed volume of allowable pumpage authorized during extreme drought, the Extreme Drought Withdrawal Limitation (EDWL).

District staff gave the SAC a presentation that provided background information describing the shortfall and that described the basic regulatory framework and authority of the District at present (see Attachments A and B.) The following comments, questions, and responses provided by SAC members, the public, and BSEACD staff and Directors reflect the dialogue that followed and preserves the general flow of the discussion, with only slight editing for facilitating comprehension. Certain comments and answers are annotated with highlighted Staff Notes where clarification or amplification is needed.

Q: (Public) Does the District have certain restrictions regarding the use of treated effluent over the aquifer?

A: (BSEACD) There are no BSEACD regulations at the current time. It has been proposed by one of our industrial permittees but there were questions associated with use of effluent over the recharge zone. We had to address if a reduction in pumpage would be a net benefit given the potential risk of water quality impacts. A more extensive scientific analysis would be required to assess impacts of effluent use over the recharge zone under the proposed re-use specifications, and presently that analysis has not been done.

Staff Note: This comment is specifically related to the use over the recharge zone. The District strongly encourages effluent reuse where recharge positional is limited.

Q: (Public) How many wells are metered? How quickly can the District respond based on actual pumpage vs. estimated pumpage?

A: (BSEACD) 230 out of 1100 known wells are nonexempt and are metered, which accounts for approximately 95% of total pumpage. The District requires monthly metering reports, monthly drought curtailments, and monthly drought assessments from all nonexempt wells.

Staff Note: The estimate of unmetered exempt use generally reflects the estimate of the number of exempt wells in use. In 2010, the District provided a GIS-based report to the Texas Water Development Board

estimating approximately 0.44 cfs of pumpage from approximately 995 unmetered exempt wells. This accounts for approximately 3.65% of total uncurtailed pumpage and 8.5% of the MAG.

Q: (SAC) Do we know what the bottom is, in regards to what drought reductions the permittees can handle?

A: (BSEACD) 60% of use in our area is estimated to be for outdoor use, leaving 40% for essential demand related to public health, welfare, and safety. We structure our drought targets for public water supply systems (PWS) to follow the typical monthly distribution of demand. In other words, permittees are permitted to withdraw more in the summer and less in the winter. Typically, the allowable withdrawals are down to essential demand in winter. On an annual average basis, PWS could conceivably get down to 50%, maybe more; in any given month, especially during the summer, that may be difficult to achieve regularly.

Staff Note: The estimate of the ratio of indoor to outdoor use is based on a study by the American Water Works Association (AWWA) that estimated a mean total per capita daily water use of 172 gpcd with 69.3 coming from indoor use. Not all District permits are for public water supply systems that exhibit this type of seasonal use.

Q: (SAC) Can you condition permits on the PWS' drought contingency plans, and can you see if the UDCP matches up with the Districts own regulatory cutbacks?

A: (BSEACD) TCEQ requires a contingency plan; the District requires one as well. The District also has per connection water use goals specified in our template drought contingency plan. We find that this can be difficult to enforce because the PWS don't have a lot of enforcement options available to them. Overall, we find that most permittees have been able to hit their target. We haven't been in Exceptional Stage which would require 40% curtailment, but for the months that we've been in Alarm (Stage II) and Critical (Stage III) drought, in aggregate they have been hitting the overall target every month.

Staff Note: District Rule 3-7.5.D. requires that all PWS permittees with both District and TCEQ drought contingency plans ensure that both plans are aligned and internally consistent. The comment about enforcement options was specific to Investor Owned Utilities (IOUs) which are limited to either 1) installing flow restrictors or 2) disconnecting service for a short period of time in response to drought plan violations.

(BSEACD) Our permits have user drought contingency plans (UDCPs), so essentially it's a contract requirement between the permittee and the District, and they have to comply with that in order to get their annual permit renewed.

(BSEACD) They are actually given a pumpage amount for every month. We look at actual pumpage vs. pumpage target to make a compliance assessment every month for each permittee. We move through an enforcement process and assess a fine for those that are over-pumped.

Staff Note: Monthly pumpage allocations during drought are derived by calculating a volume as a percentage of the annual authorized volume (e.g. 6.5% in February, and 12% in August) and subtracting the required curtailment percentage of the baseline volume (e.g. 20% in Stage II Alarm and 30% in Stage III

Critical). The District assesses compliance on a monthly basis by comparing the reported monthly pumpage to the monthly pumpage limit for the given month and drought stage.

Q: (SAC) Can there be a market-based approach that only occurs during drought, that would allow PWS that are better at conserving and therefore have excess water to sell to other PWS to create an incentive to conserve?

A: (BSEACD) Under the cap and retire program, an entity could pay a permittee to retire their permit which suggests that it's permanent. Another option is if a PWS believes they could always achieve deeper curtailments than the minimum required, an entity could pay them in advance to help incentivize those reductions.

Staff Note: In addition to permanent retirement during all conditions, cap and retire would allow a permittee to retire some amount of authorized drought-time pumpage. The permittee would agree to deeper curtailments than required and that would become part of its UDCP; the pumpage saved by the deeper curtailments could be retired.

A: (BSEACD) Temporary transfer permits (TTP) tend to do that as well. That is where you have an entity with a higher permitted volume that needs less and can contractually transfer to an entity that has less and needs more, but we don't want to just move pumping around the aquifer. That's why we have the so-called aquifer tax of 25%. The transaction needs to benefit the aquifer.

Staff Note: Under the current rules, a TTP is only allowed for transfer of permitted pumpage from Historical PWS permittees to non-PWS Permittees. The TTP is also only a one-time permit that only authorizes a limited amount of transfer during extreme drought. A recent rule change relaxing the drought curtailments for non-PWS systems will also limit the utility of a TTP program in its present form.

Q: (SAC) Market-based transfers... what is the benefit to the aquifer? Aren't you only increasing the total amount of water that is pumped?

A: (BSEACD) There is the "aquifer tax"... but that's only a percentage of the transfer.

Staff Note: There is a presumption that absent some contractual and/or regulatory constraint, all Edwards groundwater that is allowed to be withdrawn will eventually be withdrawn during a prolonged drought. However, it has been considered desirable to offer a mechanism whereby, say, some municipality with groundwater that it doesn't absolutely require might want to ensure that some local employer is able to maintain the number of jobs during extreme drought, rather than reducing production and employment.

Q: (Facilitator) Are there any [permitted] entities that are not using their Edwards water?

A: (BSEACD) There are not many. The problem is, Edwards water is the cheapest and is of very high quality. There is not going to be a lot of situations where a permittee will want to permanently relinquish their Edwards water, unless they receive some sort of compensation. It's a high value, high quality resource. Most permittees recognize that. If it is unused, it's likely temporary.

SAC Comment: A market-based approach could benefit the aquifer in circumstances where permittees are struggling to meet the drought curtailments. If the goal is to hit overall reductions, a market-based

approach incentivizes those that are meeting the curtailments and monetizes it for the permittees that are struggling to keep up... that may help both.

SAC Comment: It helps entities, but not sure if it helps with overall pumpage reductions from the aquifer.

SAC Comment: A regulatory curtailment target coupled with the market-based strategy could help entities reach the desired target; help distribute the burden.

SAC Comment: Even if they [PWS] have great conservation strategies in place and have excess water, they would never transfer or sell their permitted rights for any amount of time, because you never know when an emergency would arise and that water will be needed.

SAC Comment: Spot sell/transfer, for emergencies, for short term.

SAC Comment: Need to discuss market-based disincentives from the District

SAC Comment: Need to discuss continued population growth of area, particularly the I-35 corridor and the growing water demand associated with this growth. This situation creates potential for market-based demand, especially for large pumpers in the I-35 corridor. Specifically, need to look at transactions that would equalize cost with Edwards water. What is the replacement cost for new supply and who is going to pay for it? Permanent retirement is the only reliable strategy for reduction during critical drought. Don't really know what happens in regards of meeting curtailment during extreme drought.

SAC Comment: A solely regulatory approach might not be enough. There is always the issue of entities taking legal action to get some relief. However, I also don't think a market-based approach would work without a regulatory incentive. The threat of additional curtailment means that the water source is even more unreliable. That's going to prompt utilities to ask... what is the value of Edwards water? Federal regulation regarding the endangered species act will also convey an unknown liability or uncertainty; all of which could create regulatory drivers that get people asking... what is the true value of Edwards water?

Q: (Public) Do we have a groundwater bank, storage system?

A: (BSEACD) ASR [Aquifer Storage and Recovery] is an option. It would allow some continued permitting of pumpage during good [non drought] times for the purpose of storing Edwards water for use during the bad [prolonged drought] times.

Q: (Public) Can you tie a market-based approach into the ASR for the emergency period?

A: (BSEACD) We do have a block of permitted pumpage; under the all conditions cap, 2 cfs of permitted pumpage is reserved for ASR projects.

Staff Note: Current District rules allow continued permitting of the remainder of the pumpage under the all-conditions MAG. However, the remaining pumpage may only be permitted on an interruptible basis under either a Class C or D Conditions production permit. In accordance with District Rule 3-1.24.F, two cfs of the four cfs of available pumpage under the MAG is reserved for Class D permits which are only available for ASR projects where stored water is to be used to supplement or substitute Freshwater Edwards supplies during drought (See Attachment A).

Q: (Public) Can you make that block bigger?

A: (BSEACD) Perhaps.

Staff Note: The volume available to Class D permits is currently fixed by Rule. While the all-conditions MAG is fixed, the distribution of available pumpage between Class C and D permits, or possibly the conditions under which the Class D volume could be increased, the MAG notwithstanding, could be modified by the Board through a rule change.

A: (BSEACD) The all-conditions cap (16 cfs) was implemented after a scientific analysis. Our Board decided that any higher water use would accelerate the onset of drought conditions to an unacceptable degree. It's a governor on the frequency in which you would go into district-declared drought.

Q: (Facilitator) Could an entity, affected by curtailments during drought, bank water during times of plenty and use this bank during a drought?

A: (BSEACD) That's one of the requirements of the Class D for an ASR project... if it's dedicated to an ASR project, that water could be later recovered. A permit would only be issued under that block if it reduces demand on the Edwards from some other entity. It could be marketed to another permittee if they agreed to also reduce drought time pumpage under their own permit.

Staff Note: This response refers to the rules for Class D permits that require that stored water only be used to supplement or substitute Freshwater Edwards supplies.

Q: (SAC) Is there an ability to determine those properties or entities that are in the vicinity of another source of water?

For example: Entity 1 is on Edwards wells, within the I-35 Corridor, and there is a City of Austin water line in close proximity. Entity 2 is not within the vicinity of a municipal water supply and wants an Edwards permitted well. Can Entity 2 give Entity 1 money to tap into the municipal line, if Entity 2 gets the Edwards water right, or 75% of the water right?

A: (BSEACD) This is limited by the current AWU [Austin Water Utilities] policy. In order to use their water supply, that area has to be annexed to the City of Austin.

Staff Note: This scenario is not currently allowable under the District's existing rules because permits are not transferable. This would only be possible under a cap and Trade market-based strategy as described in the white paper.

SAC Comment: Worst pumpers are on I-35. Lack of water and regulations over recharge are going to help limit development.

Staff Note: We interpret the comment to mean, "largest permittees," not worst pumpers.

Q: (SAC) [Under] Cap and trade – Con – "unprecedented for the District:" why is that a con? Is it possible for it to be a temporary policy until the District fills in the gap?

A: (BSEACD) This is similar to transferable permits. We have not embraced a market, because there is not very much room for a deal. We don't have the large number of agriculture permits. Once they become transferable, they have value and become a commodity, become some things that are coveted are more difficult to regulate or curtail/relinquish. Research examples at EAA; prices have escalated. It can't be undone. Have to be careful once you make that step.

Staff Note: To clarify, the District has not yet embraced the idea of water markets partly because of the limited opportunity for market activity. The District has relatively few permittees and is a relatively homogenous market with the predominant use type being PWS. In a water market, there is little incentive for market transactions where there is little opportunity to make a trade from lower value uses (e.g. agriculture) to high value uses (e.g. PWS). Additionally, creating a water market also allows permits to become commodities which can compromise future drought management efforts; particularly future management efforts that may entail further curtailment of permitted pumpage.

SAC Comment: If getting 25% of transfer, stop it once District hits goal.

SAC Comment: Most of the demand is PWS, municipal, some industrial. Only way a market is going to work is by introducing new water into the system that you can replace pumpage with. No one is going to give up their groundwater rights without some replacement supply. If on I-35, there is a need for replacement supply *and* additional water for future needs.

Q: (Facilitator) Incentives?

SAC Comment: Regulatory program can drive the market. If there is the prospect of further curtailment of historic rights, that further diminishes the value of historic rights. If you don't resolve the endangered species habitat issue, there is always the threat of federal government coming in and regulating pumpage, which creates uncertainty. Everyone should be willing to have a conversation about replacement supply.

BSEACD Comment: A problem is that it is leveraged the wrong way. Price of groundwater is much less than the resource value of that water.

Staff Note: The annual water use fee for Historical Edwards permits is \$0.17/1,000 gallon of authorized pumpage. For comparison, the LCRA raw wholesale water rate is \$0.46/1,000 whereas typical rates for treated and delivered retail water supply range from \$2.00 to \$4.00/1,000 gallons (not including base rates or surcharges).

SAC Comment: Once we convert cheap groundwater to other more expensive sources, it creates an incentive to use it or lose it.

Q: (SAC) How does that work with Kyle and Buda... when they have a blended supply...do they use groundwater first and then surface water in reserve?

A: (SAC) It's based on infrastructure. We secured last of the GBRA water [last of available capacity from GBRA I-35 pipeline]. O&M [operation and maintenance], plant, [water] line, don't pay [off] if we don't use them. Barton [Springs Aquifer] water...we sell at retail for \$3.10 per 1,000 with a \$0.05 per 1,000 profit. If we transfer to GBRA we are losing money. Problem is: when applies an actual curtailment on the historical permit? If you are already in drought contingency state of mind and I was told tomorrow to take 10% extra

off, my customers are already feeling it, I can compel them. If you take 20% off the top with nothing wrong, that's a hard sell. If you are in the mode of conservation... it's easier. The City of Kyle is always looking for additional supply. We run demand predictions on quarterly basis. It takes a lot of capital expenditure to start alternative supply project. One municipality, one city, or even a couple small cities can't do it alone. It will take a consortium to put that kind of money down. Tough economy is making that hard to do.

Staff Comment: The above comments were made in response to the prospect of proportional adjustment as a potential strategy. Proportional adjustment would require equal curtailment of all permittees and could either be a reduction of total permitted (un-curtailed) pumpage or additional curtailments in the deepest stage of drought (Emergency Response Period (ERP)). If proportional adjustment were the sole strategy for closing the 1.5 cfs gap, either all permits will have to be reduced off the top by 20% or extreme drought pumpage will have to be curtailed by 55% (current maximum curtailment is 40% during ERP, See Attachment B).

Q: (SAC) Even with GBRA, it's cheaper to run off Edwards water?

A: (SAC) Yes, by two orders of magnitude. Less expensive Edwards water helps keep system cost down.

Public Comment: As part of EAA, EARIP, conservation program, have you considered a grant funded EQUIP that would provide funding for conservation? How about working with SAWS? Have them come in to smaller community municipalities and demonstrate their knowledge and conservation methods. For example, low flow toilets. If you participate in grant-funded conservation efforts, half of water savings would go into a trust.

Q: (Public) 2/3rds used for lawns, what about a lawn replacement program?

A: (BSEACD) During critical stage, UDCP mandates no outside automated lawn watering. This helps to get to current curtailments. We still have a gap.

(BSEACD) Demand is pretty firm at this 40% point, so still have the gap.

Staff Note: The gap is derived from the difference between the MAG and authorized pumpage during extreme drought. Currently, authorized pumpage during an ERP is curtailed 40%. This leaves little room for reductions of non-essential water use like lawn irrigation.

Q: (SAC) Is there any benefit in going with a market-based strategy initially, then if savings don't occur, then move to mandatory curtailments? Could markets achieve reductions in more pain-free way? If the reductions didn't happen, come down with hammer and regulate. Is that practical for the District?

A: (SAC) The two are going to work hand-in-hand. For example, there is a similar situation in Montgomery County [outside] Houston. They are going to cut back all groundwater users by 2017; equalize rate across the county for those who cannot get on surface, paying much higher for groundwater, used to subsidize the surface water to get people off groundwater. The effort is coordinated with surface water entity; they are sharing cost. Subsidence districts have pushed people off groundwater.

Q: (SAC) Does the notion of 2017- has it affected current use?

A: (SAC) 90% have signed up for surface [water]. If an entity opts out, they have to come up with alternative supply.

A: (SAC) Lone Star [GCD], Chapter 36 [Texas Water Code], should have same regulatory authority [as the District.]

Q: (SAC) Historical permits, are they renewed annually? Can that volume be adjusted?

A: (BSEACD) Senior vs Junior rights permit.

Q: (SAC) How do you evaluate how to renew a volume?

A: (BSEACD) It's fairly automatic, after looking at [whether there are any] compliance issues. [The District] used to annually perform an under-pumpage analysis upon renewal, which allowed for adjustments. However, we got away from that, after historical permits were capped because adjustments were permanent.

Staff Note: Annual permits are normally renewed each fiscal year provided that: 1) terms and conditions are unchanged, 2) there are no resolved compliance or enforcement issues, and 3) annual water use and other fees are paid.

BSEACD Comment: Plus if there were previously people that were over-permitted and under-pumping, they have now grown into their permits. Right-sizing a permit would be [better accomplished by attempting] to set an efficiency standard... it could be imposed after so many years down the road, do what you need to do to comply.

BSEACD Comment: It's possible to take surplus permitted pumpage and put it into reservation permit; the water would be available should they grow into it and it could also be marketable. It's possible someone may want to purchase the permitted pumpage held in a reservation permit.

Staff Note: Right-sizing with reservation permits is not an option under the existing rules. The above comment was made for the purpose of discussing the possible implementation of "right-sizing" as one of the potential strategies.

Director Comment: We should not fail to consider an educational strategy in addition to regulatory and market-based strategy. It's hard to quantify. We need to educate people on how to use water more efficiently. It may take time to see results. I can see that people are making progress (e.g. rainwater harvesting, eradicate St. Augustine).

SAC Comment: Successive drought is hardening demand. Lot of that demand is not going to come back. Not going to put St. Augustine grass back in. After successive droughts, there might not be room to reduce, because demand is hardening. Demand hardening with conservation or drought. Adding connections due to population growth will soak it up, it won't go back to aquifer.

BSEACD Comment: May even make situation more difficult. It will increase efficiency such that there will not be much to reduce. The systems get so efficient, that they don't have room to cut back.

SAC Comment: 4 or 5 years if conservation is effective, where is your fluctuation now, new connections each year, 1,000 people per year. Still need new sources of water.

SAC Comment: New homes are more water efficient.

SAC Comment: New homeowners want a green yard.

Q: (SAC) Is outdoor watering completely banned?

A: (SAC) No, we have GBRA water. Irrigation systems are a big problem.

Q: (SAC) What kind of water restriction? Once every 5 days?

A: (BSEACD) As long as they meet their [monthly pumpage] target, we don't have a say. We would not be prohibiting outdoor watering [under those circumstances.]

Staff Note: District rules do not require specific measures to be implemented during District-declared drought *per se*. Rather, the District focuses on assessing whether the monthly pumpage targets were met. That said, the District's template UDCCPs do identify measures to be employed by a permittee in drought and aggressively limit lawn watering. The template provisions assume that the Edwards is the sole source of supply and that such aggressive lawn water limitations are necessary to meet monthly pumping limits. Permittees with alternative water supplies have the option of implementing less aggressive restrictions on their end-users so long as they comply with the monthly pumping limits.

A: (SAC) Basically we lock in a pumpage target for 24 hr period and once that source hits its target, that system locally locks down and is supplemented by other sources. If you had to control it bit by bit, you are guaranteed you would go over every time. Don't always know where the water is going.

SAC Comment: Obvious conclusion is to try a lot of these, evaluate after you implement. Set new goal. No one thing.

BSEACD Comment: Some are mutually exclusive, but some are not. We can try more than one.

SAC Comment: As for water replacement, we are going to have to get people to pay more for water, especially groundwater. We now pay less for water than cable, education. Need to change mind set.

SAC Comment: One resource that's available locally, but not being used is effluent reuse. We are looking into effluent reuse for park areas. One manufacturer has approached Buda about using effluent for cooling towers.

SAC Comment: We are all in this together. As an industrial permittee in the market, we felt we were being targeted and asked to find water somewhere else. As we can see it's not a cheap alternative. Want to be part of the solution. We do provide jobs, have been there a long time.

Public Comment: I propose proportional across-the-board reduction. No easy solution. It would be different than EAA's attempt...it would immediately meet goal.

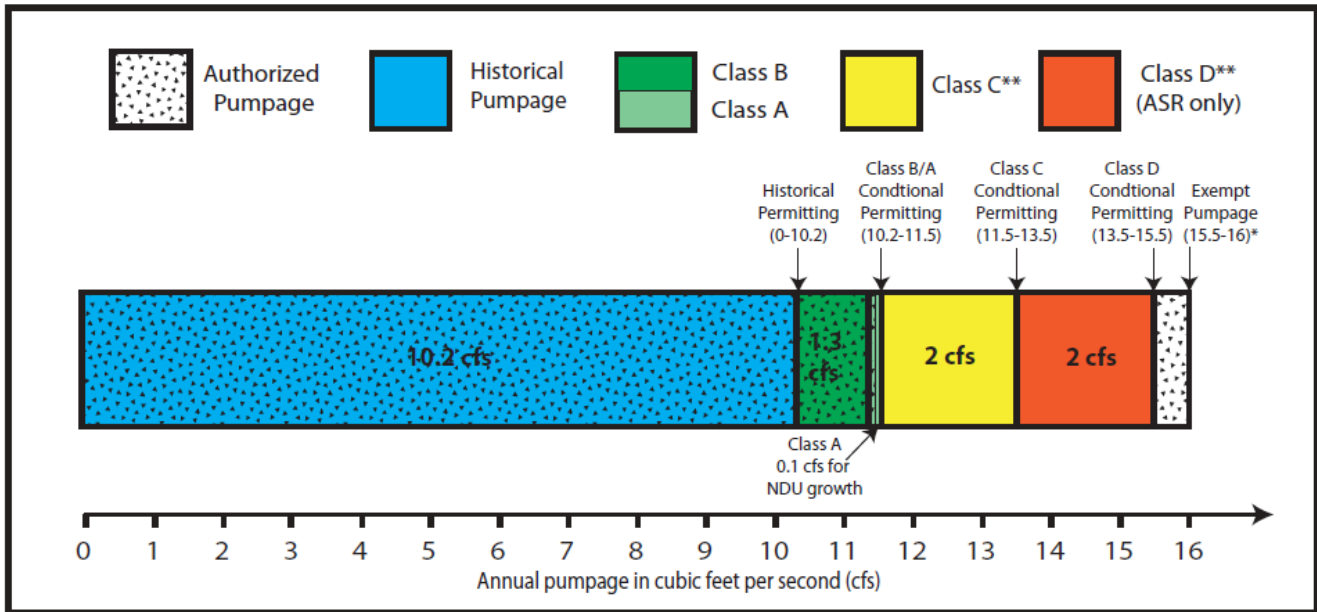
BSEACD Comment: The mantra of the Board and the District has been, when aquifer conditions are good, the Edwards is a great quality resource and should be utilized. When we take it off the top, it means reductions even during good times.

BSEACD Comment: It's more practical to say, during the ERP, 55% curtailment across the board.... However, we still may not meet compliance with spring flow target. This could put us into jeopardy with the feds.

Add another stage – 40% to 50% or whatever.

Attachment A-1

Permit Allocation within All-Conditions MAG (16 cfs)



Allocated Pumpage by Permit Type in cubic feet per second (cfs)

	Historical	Class A	Class B	Class C**	Class D**	Totals
Allocation	10.2	0.2	1.1	2.0	2.0	15.5*
Permitted	10.2	0.1	1.1	0.0	0.0	11.4
Available	0.0	0.1	0.0	2.0	2.0	4.1

* MAG = allowable pumpage to preserve DFC (16 cfs) minus exempt pumpage (0.5 cfs)

** Proposed new conditional permit classes

Attachment A-2

Drought Stages with Pumpage Curtailment Requirements

By Aquifer, Management Zone, and Permit Type

Aquifer		Edwards Aquifer						Trinity Aquifer			
Management Zone		Eastern/Western Freshwater						Saline	Middle	Lower	Outcrop
Permit Type		Historical		Conditional				Hist.	Hist.	Hist.	Hist.
		PWS	IRG/IND	Class A	Class B	Class C	Class D				
Drought Stages	No Drought	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Alarm	20%	20%	20%	50%	100%	100%	20%	20%	20%	20%
	Critical	30%	30%	30%	75%	100%	100%	30%	30%	30%	30%
	Exceptional	40%	40%	50% ²	100%	100%	100%	N/A	N/A	N/A	N/A
	ERP	40%	85% ¹	>50% ³	100%	100%	100%	N/A	N/A	N/A	N/A

¹ Non-PWS curtailment maximum (effective after 9-17-13)

² Only applicable to NDUs and existing unpermitted nonexempts after A to B reclassification triggered by Exceptional Stage declaration.

³ Curtailment > 50% subject to Board discretion

Appendix B - Written Comments

From: Thomas Weber (Travis County)

Sent: Monday, January 30, 2012 2:00 PM:

You may have thought about this but the list of your permittees and the amount of water they use leads me to an idea. Target technical assistance meetings with your largest water consumers (top 25). Discuss usage, their particular usage relative to benchmarks, the viability of reducing dependence on EA water, strategies and commitments, and then permit changes that curtail usage. Under this idea, your Board would pre-approve the “metes and bounds” of alternatives that they would allow on a case-specific basis. That way, when you come back to the Board with a proposal, it would be consistent with district policy. Individual negotiations might avoid a situation where the market drives up value of the water.

From: Peter Sprouse (Zara Environmental)

Sent: Tuesday, January 31, 2012 6:14 PM

One area where there may be opportunities for reducing water use during extreme drought is amongst exempt users. While the amount used by these well owners is deemed to be small (~0.5 cfs springflow, but we don't really know), that amount is not shown to shrink during the various drought stages on the District's graphs. Therefore it becomes proportionately more significant as flow approaches zero. In seeking to recover 1.5 cfs during extreme drought, a notable reduction in exempt withdrawal could be a significant component of that. Since these wells are exempt from District regulation I expect that they have not put a large amount of effort into specifically addressing them. But as an exempt well owner myself, some things come to mind that could be done. Even though exempt well owners are represented by District board members along with the rest of the populace, they are actually a unique constituency with different rights.

1. Have an outreach program targeted specifically at exempt users. While it is probably not likely that these wells will be regulated anytime soon, or that their owners would be in favor of regulation, that doesn't mean that they wouldn't be receptive to voluntary conservation measures designed for or by them.
2. One component of this could be the formation of an exempt well owners group. This could focus the issues relating to these wells from both the users' and the District's perspectives. Whether there would be enough participation from well owners remains to be seen, but it would be in the District's interest to encourage it.
3. The District should consider a communications program specifically aimed at exempt well owners during extreme drought, which is exactly when having them on board will count the most. If a strategy is developed ahead of time on how best to mobilize conservation actions among that group, it will be more effective.
4. As stated at our meeting, the lion's share of aquifer water use is for summer outdoor use. When the hot summer comes, well owners with no pumping restrictions can use water as they please. A variety of proactive assistance programs could help these property owners reduce watering needs in summer.

5. Grass replacement is one such potential program. An extreme drought event that kills off a lawn is actually an opportune time to offer assistance in re-seeding with Buffalo grass. Buffalo grass seed is rather expensive, and seed at reduced cost along with engagement on how to convert would be well received.

6. Rainwater collection could be substituted for some portion of outdoor water use, and such equipment does not need to be as expensive as rainwater for drinking purposes. Assistance in installing rainwater collection for outdoor use would be welcomed by some exempt users.

7. I suspect that many exempt users are on small acreage tracts like myself, where St. Augustine lawns are not the norm. No one is trying to grow St. Augustine across 5 acres, a bigger priority is trying to keep trees alive. This past summer many trees died, and these trees are a big reason we live out here. In lieu of watering, the best thing that can be done for trees is mulching, which retains moisture and reduces soil temperature. I actually drive around the suburbs with my truck and trailer to collect leaf bags and spread them under my trees, but few are that extreme. However the City of Austin does collect this material for re-use as mulch, and they let people come get it from time to time. If available mulch was channeled to a program where it could be delivered by dump truck to exempt well owners to mulch trees, this could reduce water use. Even the availability of such a program could result in water conservation by well owners who may not be thinking about such practices, even if they did not get mulch delivered.

I hope some of these comments are useful.

From: Robert Mace [mailto:Robert.Mace@twdb.texas.gov]

Sent: Friday, February 03, 2012 5:09 PM

Some thoughts:

- the white paper you and John put together is excellent: thorough and well thought out. The only things that could be added would probably be too radical (I swear I've heard Slade speak about plans at one point to build a reservoir above the recharge zone on Onion Creek to supply recharge during times of drought. It's a thought but highly unlikely to happen).

- If you decide to pursue market solutions, they need to be simpler and, my opinion, be designed to achieve the management goal without skimming the permits. Concern was expressed about how the aquifer benefits with the skim, but the aquifer benefits by successfully reaching the management goal.

- I've seen a program (in Oregon) where a water management strategy paid for by a district that resulted in savings that were split between the district and the users.

- Although I yapped at the meeting a bit about market approaches, they scare me from the standpoint of not fully understanding how they work. As someone mentioned (John?): they'll [be] hard to roll back if they don't work.

- Looking at the different strategies and listening to the discussion, across-the-board cuts (presumably instituted slowly) struck me as the best option. However, as someone noted, demand hardening could be an unwanted side effect.

As you know, these are my thoughts and not the agency's.

And finally, I applaud you and the district for having this stakeholder process and having permit holders at the table. Good policy and darn good way of doing business.

From: Mike Personett (City of Austin)

Sent: Friday, February 03, 2012 9:40 AM

No doubt this would be a very difficult strategy to implement but I nonetheless think it has enough merit from a City of Austin perspective to warrant discussion. And to me that perspective is to "solve" this water supply management issue as a complement to the nearly \$160 million (and counting potentially) the City has invested in water quality protection lands, not to mention the ongoing costs of managing those lands, the costs of managing the habitat and species at Barton Springs, and the amount we contribute to your district's annual operating budget. In the scheme of things the cost may not be that great relative to our other investments and ongoing costs. And I believe permanent retirement of Edwards pumping rights is the most assured way to close the gap and at the same time improve aquifer conditions for everyone else all of the time.

For a water rights retirement program to work it would have to focus on the larger users along the IH-35 corridor that have already invested in and have access to much more costly alternative water supplies and will undoubtedly need to make additional investments, both to replace the portion of their Edwards rights that are no longer firm and to increase overall supply to accommodate growth. I would argue that that over time the portion of their water supply portfolio that is Edwards will become increasingly less important and will make up an ever smaller portion of their utility cost structure. They will be seeing their water rates increase dramatically with or without their Edwards supply. Furthermore, with only 60% reliability, the value of their rights has already been diminished and could be diminished further if additional regulatory reductions are required.

The key I think to any of the targeted users giving up Edwards rights is to keep them essentially "whole" from a cost perspective. To that end I think the way to determine a market price would be with solid engineering and cost analysis of replacement water supply. The work being done by the Hays Caldwell PUA might be a starting point. After the SAC meeting I spoke further with Jason Biemer and he seemed to understand the logic and expressed interest in further discussions. If I get any kind of positive signal about this from City Hall it might be worthwhile to have one-on-one meetings with the targeted users to get a better sense of what might be possible.

From: John Mikels (GEOS Consulting)

Sent: Saturday, February 04, 2012 10:19 PM

Some comments.....some support & build on ones by Peter Sprouse...

1. A critical point in outreach is to clearly convey to the exempt users that their straws tap into the same glass as those of the non- exempt/permitted users. So, even though they are unregulated, they can/ will pay the same "penalties" as the non-exempt users, for drought and/ or non-conservative use.

2. Peter's idea of an exempt well owners "stakeholder" group might have some mutual benefits. Although the exemptees (actual word?) are largely unregulated, maybe their being listened to, and educated, might result in some INTRA GROUP pressures to conserve. Wishful thinking?

3. Some other potential incentives to offer to exempt users:

- Water quality testing (mutual benefit?). Would need to be selective to control lab costs.
- Water level monitoring. I know District already has a "fairly good" MW network.

Probably a few gaps to fill in. Would need to explain mutual benefit to exempt volunteers.

- Voluntary metering. Yeah, I know - potential mine-field! Bit if a few could be convinced of mutual benefit, probably worth it. Could be used as tool both to enlighten people about individual pumpage and fine-tune District's exempt pumpage estimates.

- If they have ready access to, but are not tied into a PWS, how can they be incentivized to make the PWS connection and get off their well? Obviously some ????, but how much and what is the bait?

4. Gray-water use? I realize this can involve some \$\$\$ and home plumbing re-do. I've no idea how widely it is practiced. Something to look into, particularly if some \$\$\$\$ incentives can be laid out.

5. For future new/replacement exempt wells, located over "usable" (not saline & not far-western shallow-end-of-pool) Edwards, tapping into Trinity, rather than Edwards, should be **STRONGLY** encouraged. Point to convey - drought curtailments probably less onerous for Trinity wells, than for Edwards wells. Also, Edwards wells, particularly to west, more likely to go dry sooner than Edwards wells (NO guarantees!).

6. District should make offer to those considering new exempt well, to give advice on completion depths (legal liabilities?). I don't know how reliable driller's advice is. As part of advice, recommend drill somewhat (30-50ft?) deeper than "usual". I've long made this recommendation to clients. Far cheaper ("insurance") to drill a bit deeper now, than have to deepen, or drill new well, when the old one goes dry. My experience is most people are ignorant on this issue and don't want to spend anymore than necessary to get what they need NOW. Drillers probably don't advise them on the long-term issues.....anticipating a "deepen or re-drill my well NOW" call in the future.

7. I understand the limitations on the District's regulating exempt wells. My question - What is the potential impact on exempt well owners if Spring flow drops, and stays, much below the panic value (6.5CFS?)? Could/would some other entity (State, USFWS, ????) step in and force regulation of/cutbacks by exempt wells? (a mob w/ torches & pitchforks scenario!)

8. District water is cheap - too cheap. Probably time to raise rates (legislative action required?) as incentive for non-exempt wells, and their end-users, to conserve more.

I think that the options currently being considered for non-exempts (Cap & Trade, Expansion of Temporary Transfer Permits, etc.) all warrant further consideration, but cautiously. Need to fully identify actual/potential unintended consequences & collateral damage. Can some actions be done as "pilot programs" and further evaluated before full-scale adoption (or dropped)?

OK - enough of my random thoughts & idle speculations. Hope there are a few usable morsels in here.

From: Laura Raun (Laura Raun Public Relations)
Sent: Wednesday, February 08, 2012 9:44 AM

I agree with Robert that any new regulations need to be simple and clearly communicated to permittees and the public at large. The target audiences need to understand the rules for them to be effective.

Thanks again for an excellent stakeholder process.

From: David Yohe (Monarch Utilities)
Sent: Wednesday, February 08, 2012 9:50 AM

Here are a few points from our perspective:

1. The District has used conservation stages to protect the spring flow in the past. Why is this different? Why the push to permanently remove rights versus stage reduction?
 2. To protect human life and welfare should we not set a bottom line Gallons per Day per Person before any reduction is made to historic permits?
 3. Some water purveyors are legally required to maintain a supply of greater than 15% than is presently needed. The Texas Commission on Environmental Quality requires this in 30 TAC Chapter 291.
 4. Historic permits should only be reduced if the amount held by the water purveyor exceeds build out of current service area. State rules require that we provide service in our areas.
 5. Systems that have a proven track record of seeking and establishing outside water sources should not have their historic permits reduced. Since they will use those outside sources the waters covered in those historic permits have some protection and may not be fully used.
 6. Finally, the hard reality is growth will continue. While growth brings challenges it also brings jobs and increased revenues in the form of taxes and rates. It would appear that conservation initiatives and volunteer and/or mandatory xeriscaping would be of greater good than inhibiting growth. After all it is a mind set on the use of water we need to change.
-

From: Stanley Fees (City of Buda)
Sent: Wednesday, February 08, 2012 11:37 AM

I am not in favor of the proposal for the permanent retirement of Edwards pumping rights. The City of Buda, as well as a number of other entities, have been and are being good stewards in pursuing additional and alternative sources of water to meet our water supply needs.

I agree groundwater cannot be depended upon as a sole source of potable water for large water users and I also agree the BSEACD needs to monitor and maintain minimum flows to Barton Springs. While this is not an easy task to accomplish, in my opinion the District has done a very good job at maintaining this balance between groundwater use for the public and maintaining flow at Barton Springs.

The I-35 corridor will continue to grow in the foreseeable future. The key is how to continue to provide service and maintain the ecology of the area. As I mentioned at the meeting, a large potential source of relief for the Edwards pumpage is the utilization of Treated Reuse water for irrigation, industrial processes, cooling towers, etc. While this may be a less than desirable use over

the recharge zone, there are large areas outside the recharge zone that could utilize this resource with no impact to the Edwards.

I am not in favor of setting a bottom-line gallons per day per person due to privacy issues this could potentially bring up.

I do think more water conservation education avenues should be addressed.

From: Sarah Faust (SBCA/SOS)

Sent: Sunday, February 26, 2012 11:34 AM

Please accept these comments on behalf of local environmental interests, Save Our Springs Alliance and the Save Barton Creek Association. We apologize for the delay in submitting these comments but request that they be considered in the staff report. We appreciate very much the organization of the stakeholder meeting and solicitation of input by the District on this critical issue of Barton Springs flow in extreme drought. We felt that the meeting was quite productive, well attended, and successful in that it brought together a wide variety of interested parties and experts. We encourage the District to continue the dialogue that has been created among the stakeholders, possibly with additional group meetings following the creation of the staff report.

In the District's endeavor to update and adopt rules that are designed to achieve the adopted desired future conditions (DFCs), there are many options available, as demonstrated by the wide variety of strategies presented in the white paper. As was discussed at the meeting, however, the actual effect of many of the strategies in achieving the springflow needed in drought is not known. In order to have the greatest certainty that the DFCs will in fact be achieved, we recommend adjusting the withdrawal levels authorized by District permits. There are likely various approaches which can be investigated in order to make these adjustments. One approach is to first look at the drought reductions placed on conditional permittees, in the initial drought stages and determine whether instituting these cutbacks at an earlier phase would provide any delay or benefit to the onset of Exceptional and Emergency Drought. It is likely that the historic permits will still have to be further curtailed, and this could be done in a schedule established to allow the permittees a known date for compliance, in which they could work to acquire the alternative supply they may need. The District could also look at phasing these withdrawal curtailments of historic permits by directing the initial curtailments to PWS permittees that have the highest per capita use. These are the PWS' that could likely make water use reductions through water conservation education, mandatory water conservation programs, and modifying their water rate structures. Where the large PWS systems are owned by municipalities, modification of subdivision regulations and plumbing codes to facilitate water conservation may be necessary.

In conjunction with curtailment of withdrawals, there may be parties, such as the City of Austin, the LCRA, and others that could work with the District and PWS systems to provide water service that would relieve the need for groundwater use during exceptional drought and allow the permittees to meet the curtailment schedule. The City of Austin and others may additionally be interested in acquiring and retiring permitted withdrawal rights, and we encourage the District to work with the City of Austin as they seek to identify these opportunities, as the District has the most information about the permittees and their needs.

The temporary transfer permits, and other market based solutions presented by the District have promise, and may be effective in conjunction with curtailment, but these programs should be undertaken on a cautious basis, and may be most effective if designed for specific transactions. Any

success with these programs may require the District, or other parties, to actively identify and facilitate negotiations among permittees that could match up to make these programs effective.

While we are very much encouraged by the District's moves to bridge the gap between permitted and projected pumping and the adopted DFC, we continue to believe that the adopted DFC is insufficient to protect the Barton Springs salamander and the Barton Springs ecosystems during drought conditions. We also respectfully submit that the District should be thinking about, and taking action to address, drought conditions worse than the drought of record. With these considerations in mind, we strongly encourage the District to explore pumping reduction strategies that would achieve reductions beyond those needed to bridge the gap between allotted pumping and the currently adopted drought DFC.