

Ref: SCTRWP03, 2001c

LEGEND

- ▲ Type 2 Project
- Edwards Aquifer Recharge Zone
- - - Salina Water Line

September 2004
Central Structures Only
 Todd Engineers
 Emeryville, California
Medina Wellfield

Figure 6
Potential Recharge Enhancement Projects

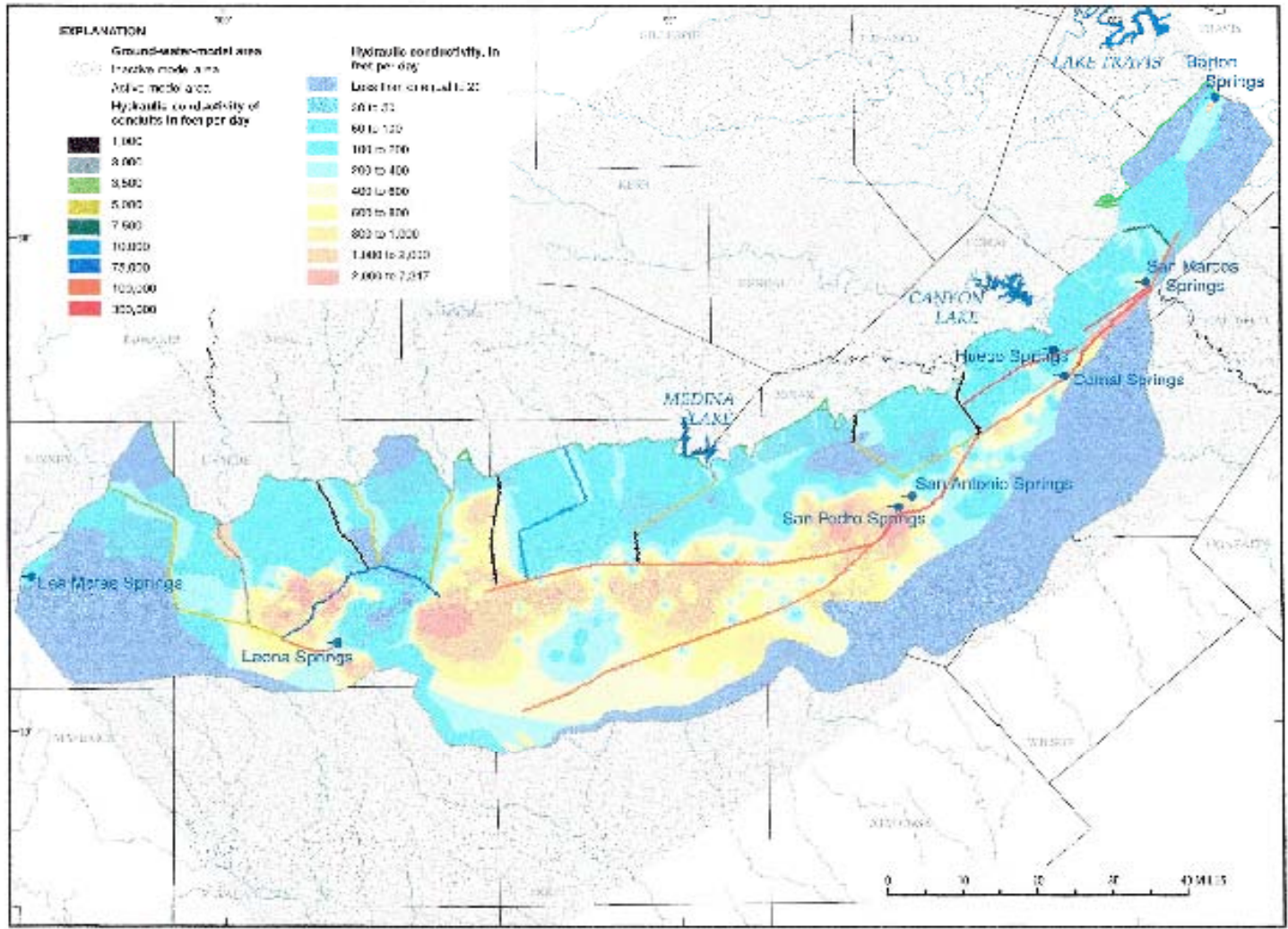
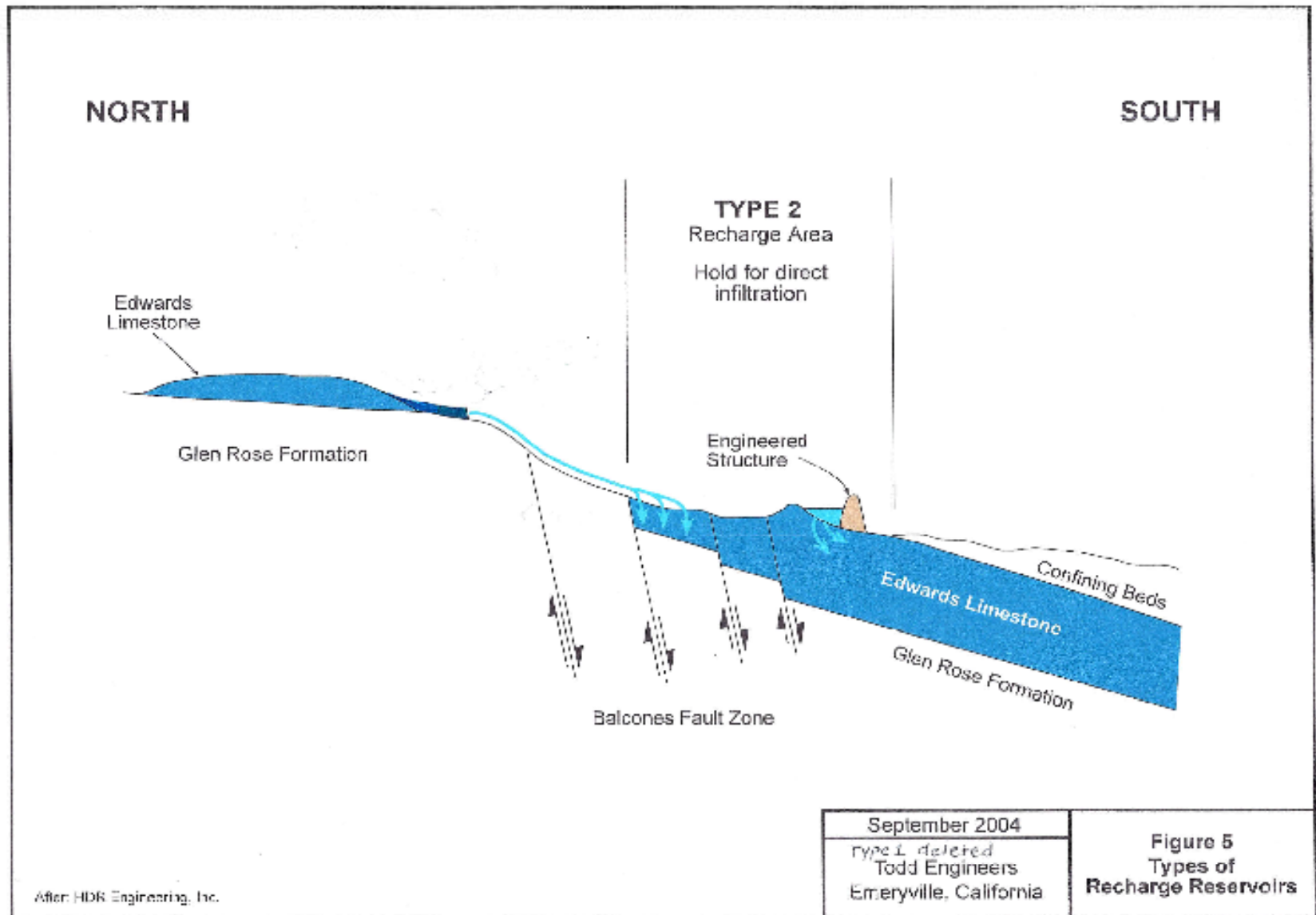
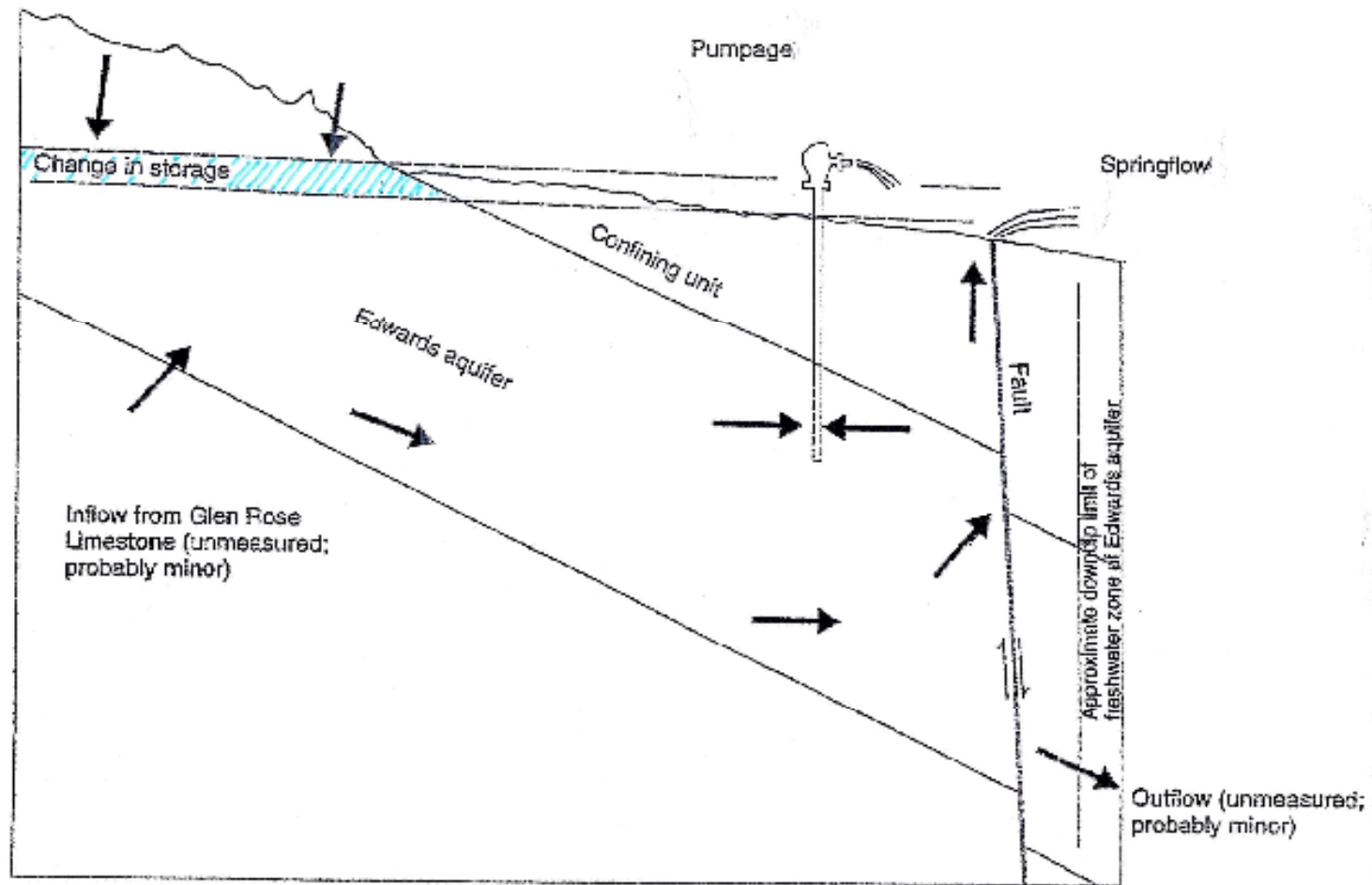


Figure 25. Simulated distribution of horizontal hydraulic conductivity for calibrated Edwards aquifer model, San Antonio region, Texas. USGS Report 2004-5277



Water-budget Components



After USGS, Report 95-4186



ROUGH ESTIMATE OF THE SIZE OF EDWARDS AQUIFER “VARIABLE STORAGE”

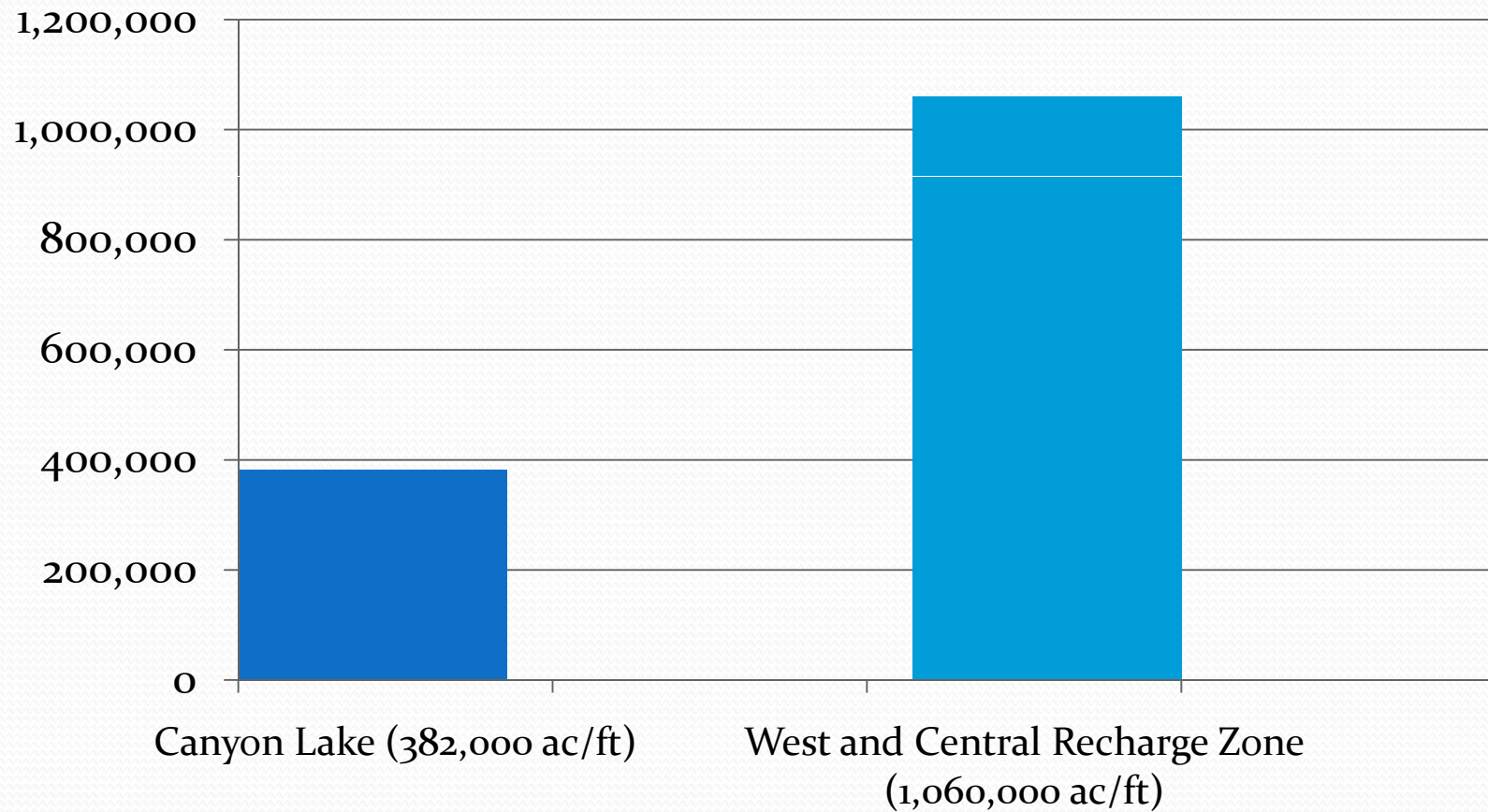
- **Approximately 35,000 af of Edwards Storage for every foot of change in J-17 level [USGS estimate]**
- **There has been 91’ of historic variation in J-17 level— 612 ‘—703’**
- **Variable storage portion of the western-central Edwards Aquifer estimated at roughly 1/3 of total variable storage**



Variable Storage

- **Result of (1) x (2) x (3) = approximately 1,060,000 af**
- **Of variable storage in the west-central part of the Edwards Aquifer subject to management.**
- **This is the equivalent of about 2.7 “Canyon Lakes”**

Storage Comparison





METHOD OF DELIVERING WATER TO SPRINGS

- **Slide 9 shows the amount of water needed each year at one site for each of five recharge sites**
- **to deliver a minimum of 40 cfs continuously at Comal Springs each month during drought of record**
- **using SB3 baseline for Edwards pumping where:**
 - **all permits are pumped to the maximum extent every year as allowed by SB3, and**
 - **critical period is applied as set forth in SB3**



Recharge Amounts to ensure 40 cfs at Comal Springs for 5 Edwards Recharge Sites

San Geronimo	117,000 af/y
Lower Verde	165,000 af/y
Cibolo	160,000 af/y
Lower Hondo	160,000 af/y
Seco	155,000 af/y



SOURCE WATERS

1. **Type 2, surface water diversions, 54,471 af/y (average)**
2. **Unused Regular EAA permits, up to 180,000 af/y**
3. **Sec. 1.14(h) EAA act, water pumped for springflow protection**
4. **Recharge credits sum of previous recharge, less waters discharged from the aquifer over time (largest source).**



RELIABILITY OF WATER SOURCES

- **The reliability of the recharge from these water sources is greatest for the groundwater sources (EAA unused regular permits, EAA Sec. 1.14(h) permits, and EAA recharge credits), and least for the surface water sources (surface water diversions to Type 2 recharge structures).**



Cost Estimates for R&R Basic System

- **Capital Costs:** well fields, pipelines, recharge structures pump station, obtaining permits for source waters.
- **Maintenance & Operations:** Energy and maintenance and operation of capital structures

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- **After analysis of the “Basic System” and the “Add-On Components”, the most efficient economic components can be combined to create the most cost effective method to meet flow requirements at both springs.**