



In cooperation with the STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT OFFICE OF PUBLIC WORKS AND INTERMODAL PUBLIC WORKS AND WATER RESOURCES DIVISION



Louisiana Ground-Water Map No. 17: Generalized Potentiometric Surface of the Kentwood Aquifer System and the "1,500-foot" and "1,700-foot" Sands of the Baton Rouge Area in Southeastern Louisiana, March-April 2003



Errata Sheet

Louisiana Ground-Water Map No. 17: Generalized Potentiometric Surface of the Kentwood Aquifer System and the "1,500-foot" and "1,700-foot" Sands of the Baton Rouge Area in South-eastern Louisiana, March-April 2003

by Lawrence B. Prakken, 2004

Error: Figure 4 Y-axis caption reads "WATER LEVEL, IN FEET ABOVE (+) OR BELOW (-) LAND SURFACE".

Correction: "WATER LEVEL, IN FEET ABOVE OR BELOW NGVD 29".

U.S. DEPARTMENT OF THE INTERIOR U.S. GEOLOGICAL SURVEY

INTRODUCTION

The Kentwood aquifer system is a principal source of fresh ground water in St. Tammany Parish in southeastern Louisiana. The Kentwood aquifer system includes the Kentwood, Abita, Covington, and Slidell aquifers (Nyman and Fayard, 1978, table 2). The system is adjacent to and correlative to the "1,500-foot" and "1,700-foot" sands of the Baton Rouge area, which underlie East and West Baton Rouge, East and West Feliciana, Livingston, Pointe Coupee, and St. Helena Parishes (fig. 1). The Baton Rouge fault interrupts the aquifer system along a line that is approximately located between Baton Rouge and Slidell (fig. 2). South of the fault, many of the aquifers contain saltwater. In 2000, an estimated 43 Mgal/d of water was withdrawn from the Kentwood aquifer system and the "1,500-foot" and "1,700-foot" sands for various uses including public supply, industrial, agricultural, and rural domestic (table 1). Of that amount, approximately 32 Mgal/d (74 percent) was withdrawn for publicsupply use. About 25 Mgal/d (58 percent) of the 43 Mgal/d was withdrawn in East Baton Rouge Parish (B.P. Sargent, U.S. Geological Survey, written commun., 2004). Pumpage data for calendar year 2000 (B.P. Sargent, U.S. Geological Survey, written commun., 2004) are listed in table 1. Figure 3 shows the locations of waterwithdrawal centers where average daily withdrawals exceeded 0.5 Mgal/d during April 2003.

		Stratigraphic unit		Hydrogeologic units						
System				Aquifer system or confining unit		Aquifer or confining unit				
	Series					Baton Rouge area ¹		Eastern Florida Parishes: St. Tamman Tangipahoa, and Washington		
	Holocene	Mississippi River and other alluvial deposits		Near-surface aquifers or surficial confining unit		Mississippi River alluvial aquifer		Shallow sands		
nary		Unnamed Pleistocene		_	Chicot equivalent aquifer system or surficial	Shallow sands		Upland terrace aquifer		
Quaternary	Pleistocene					"400-foot" sand				
			deposits	ifer system ²	confining unit	Upland terrace aquifer	Dpland ter aquifer (000-foot, saud		– Upper Ponchatoula aquifer	
	Pliocene	Fleming Formation	Blounts Creek Member Blouts Screek		Evangeline equivalent aquifer system or surficial confining unit Unnamed confining unit	"800-foot" sand "1,000-foot" sand		Lower Ponchatoula aquifer		
						"1,200-foot" sand		Big Branch aquifer		
	?			mal aqu		"1,500-foot" sand		Kentwood aquifer system	Kentwood aquifer Abita aquifer	
	Miocene					"1,700-foot" sand		Kentv aqu syst	Covington aquifer Slidell aquifer	
×		g Fo	Castor Creek Member	n Hi	Unnamed confining unit		Unnamed	d confining unit		
Tertiary		Flemin	Williamson Creek Member Dough Hills Member Carnahan Bayou Member	Souther	Jasper equivalent aquifer system	"2,000-foot" sand		Tchefuncte aquifer		
						"2,400-foot" sand		- Hammond aquifer		
						"2,800-foot" sand Unnamed		Amite aquifer		
								Ramsay aquifer		
			Lena Member		Unnamed confining unit			d confining unit		
	Oligocene	Catahoula Formation			Catahoula equivalent aquifer system	Catal	noula aquifer		Franklinton aquifer	

²Buono, 1983.

Figure 1. Partial stratigraphic column of hydrogeologic units in southeastern Louisiana (modified from Nyman and Fayard, 1978, table 2; Stuart and others, 1994, fig. 5; Lovelace and Lovelace, 1995, fig. 1; Griffith, in press, fig. 3).

According to data from the Louisiana State Census Data Center (2003), some of the largest population increases in the State from 1990 to 2000 occurred in St. Tammany (+32.4 percent), Livingston (+30.2 percent), and Tangipahoa (+17.4 percent) Parishes. These population increases have been accompanied by increased withdrawals of ground water during the same period (Lovelace, 1991; Sargent, 2002): +40 percent in St. Tammany Parish, +63 percent in Livingston Parish, and +35 percent in Tangipahoa Parish.

Since the early 1900's, water withdrawals for public supply and industry in East Baton Rouge Parish have influenced ground-water levels in the "1,500-foot" and "1,700-foot" sands, and to a lesser extent, the correlative sands of the Kentwood aquifer system. This pumpage has affected water levels as far east as Tangipahoa Parish (Nyman and Fayard, 1978, p. 41). Water-level data indicate that water levels in the "1,500-foot" sand and deeper aquifers in southeastern Louisiana declined about 1 to 2 ft/yr during the period 1990 to 2000 (Tomaszewski, and others, 2002).

Additional information about ground-water flow and effects of increased withdrawals on water levels in the Kentwood aquifer system and the "1,500-foot" and "1,700-foot" sands of the Baton Rouge area is needed to assess ground-water-development potential and to protect the resource. To meet this need, the U.S. Geological Survey (USGS), in cooperation with the Louisiana Department of Transportation and Development, began a study in 2003 to determine water levels, flow direction, and water-level trends for the Kentwood aquifer system and the "1,500-foot" and "1,700-foot" sands of the Baton Rouge area. This report presents data and maps that illustrate the potentiometric surface during spring 2003 and water-withdrawal centers for these aquifers. Clay layers separating the aquifers or sand units in this report are not impermeable. The clays contain silty and sandy material which make the clays "leaky." In some areas, the clay layer separating aquifers or sand units is thin or missing. Because of this, a generalized potentiometric-surface map can be created. Water levels were not measured south of the Baton Rouge fault where aquifers are offset and hydrologically separated from equivalent units to the north of the fault (Griffith, in press). Graphs showing long-term water-level trends for selected wells in the study area are presented. Arrows on the potentiometric-surface map show generalized direction of ground-water flow and illustrate the effect of water withdrawal on water levels and flow direction in the study area.

The study area is located in southeastern Louisiana and includes all or parts of the following parishes: East Baton Rouge, East Feliciana, Livingston, Pointe Coupee, St. Helena, St. Tammany, Tangipahoa, Washington, West Baton Rouge, and West Feliciana (fig. 2). The study area is bounded approximately by the Louisiana-Mississippi state line to the east and north, the Baton Rouge fault to the south, and the western boundaries of Pointe Coupee and West Baton Rouge Parishes to the west. The Baton Rouge metropolitan area, the Covington-Mandeville area, and the Slidell area are the largest population centers which use water from the aquifers in the study area.

ACKNOWLEDGMENTS

The author gratefully acknowledges the assistance and cooperation of many public water suppliers and private well owners who allowed USGS personnel to measure water levels in their wells. Additionally, the author thanks Z. "Bo" Bolourchi, Chief, Public Works and Water Resources Division, Louisiana Department of Transportation and Development, for providing well information which was used for selection and documentation of wells for this study.

HYDROGEOLOGY

North of the study area, in southwestern Mississippi, deposits of the Kentwood aquifer system and the "1,500-foot" and "1,700-foot" sands of the Baton Rouge area are in contact with the Citronelle Formation and the alluvium of major rivers (Nyman and Fayard, 1978, p. 30). The Kentwood aquifer system is stratigraphically adjacent to the "1,500-foot" and "1,700-foot" sands of the Baton Rouge area. Clay layers located between the aquifers act to retard, but not prevent, the vertical flow of water between adjacent aquifers. The "1,500-foot" and "1,700-foot" sands were originally identified and named for their depth of occurrence in the Baton Rouge area, and have been shown to extend into Livingston and St. Helena Parishes. East of these parishes, the sands are recognized using Kentwood aquifer system terminology.

In southeastern Louisiana, the Kentwood aquifer system and "1,500-foot" and "1,700-foot" sands are confined aquifers which dip and thicken in a southerly direction toward the Gulf of Mexico. Precipitation is the principal source of recharge to the Kentwood aquifer system (Nyman and Fayard, 1978, p. 32) and "1,500-foot" and "1,700-foot" sands of the Baton Rouge area (Tomaszewski, 1996, p. 7, fig. 3). Additional recharge occurs throughout the aquifer system by vertical leakage from areas of higher hydraulic head to areas of lower hydraulic head. Figure 1 shows a partial stratigraphic column of hydrogeologic units in southeastern Louisiana.

The Kentwood aquifer is located in northern Tangipahoa and Washington Parishes. South of an east-west trending line running approximately from 2 mi north of Roseland, Louisiana, to 2 mi south of Franklinton, Louisiana, the Kentwood aquifer is separated by clay into an upper (Abita) and lower (Covington) aquifer (Nyman and Fayard, 1978, pl. 8). The Covington aquifer correlates with the "1,700-foot" sand of the Baton Rouge area, and the Abita aquifer correlates with the "1,500-foot" sand of the Baton Rouge area. In southern St. Tammany Parish, the Covington aquifer is itself separated into an upper and lower aquifer (Nyman and Fayard, 1978, p. 30). The uppe aquifer retains the name of the Covington aquifer, while the lower aquifer has been named the Slidell aquifer (fig. 1).

¹Computed from April 2003 data provided by major water users and/or 2000 water use data provided by minor users (B.P. Sargent, U.S. Geological Survey, written commun., 2004).

Louisiana Department of Transportation and Development - U.S. Geological Survey Water Resources Cooperative Program





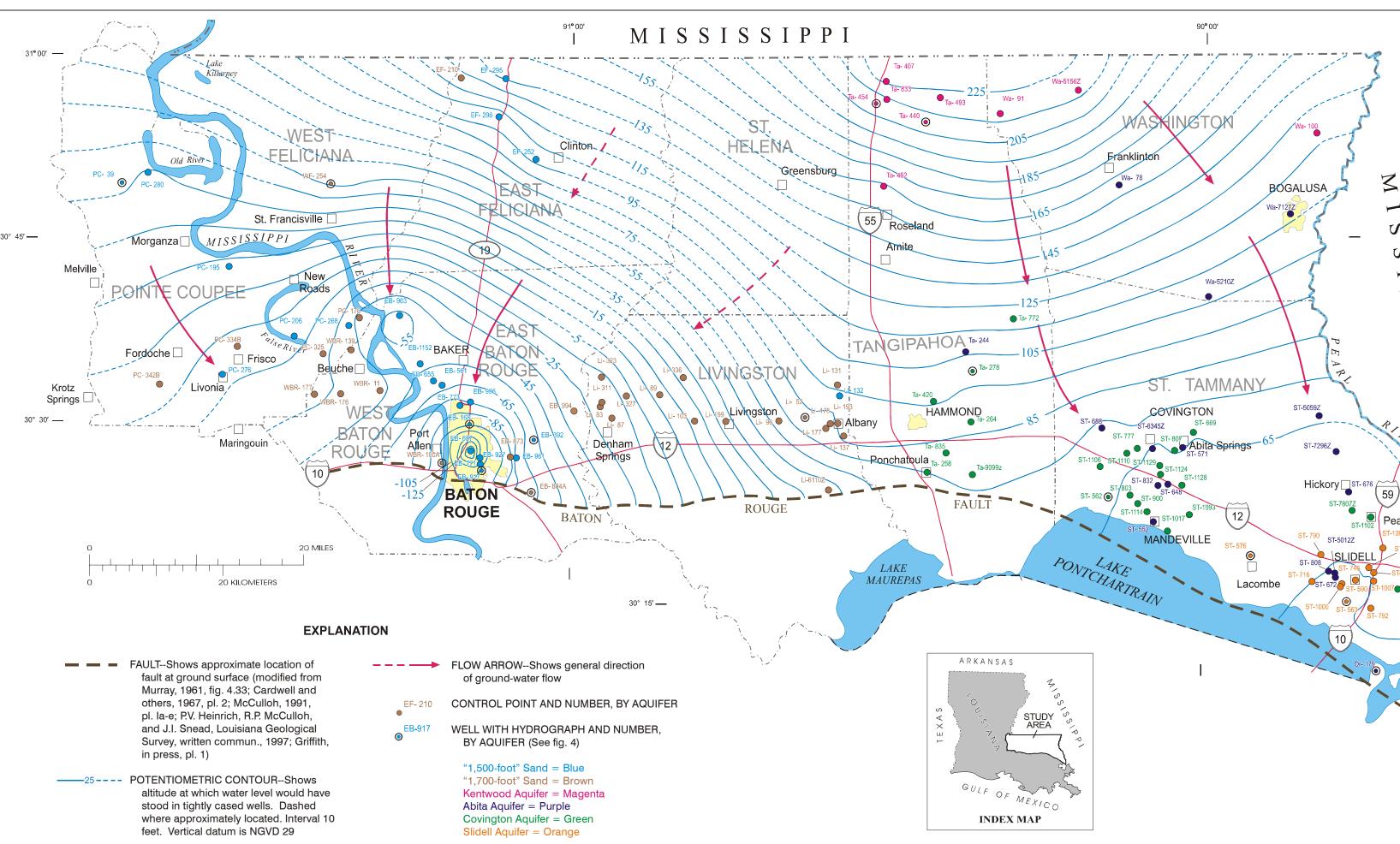
POTENTIOMETRIC SURFACE

A generalized potentiometric-surface map was constructed using water-level data from 116 wells screened in the Kentwood, Abita, Covington, and Slidell aquifers and the "1,500-foot" and "1,700-foot" sands of the Baton Rouge area. Contours were initially generated using commercially available software, then adjusted to account for the Baton Rouge fault. Contours were adjusted around withdrawal centers and smoothed. Most of the water levels in the Kentwood aquifer system in this report were measured in March-April 2003 using a calibrated pressure gage for flowing artesian conditions (the wells are naturally flowing at land surface). Steel or electrical measuring tapes marked with 0.01-ft gradations were used for wells where the water level was below land surface. Wells in which water levels were measured were not being pumped at the time of measurement. Water-level data are listed in table 2.

Ground water moves through the study area from areas of higher hydraulic head to areas of lower hydraulic head. The direction of ground-water flow is indicated on the potentiometric-surface map (fig. 2) by flow arrows, drawn perpendicular to the equipotential lines. The general direction of ground-water flow in the Kentwood aquifer system and "1,500-foot" and "1,700-foot" sands is from the upland areas in the northern part of the study area, where water levels are highest, to lowland areas in the south, where water levels are lowest. Water levels in northern Tangipahoa Parish and northwestern Washington Parish are the highest in the study area. These areas are closest to the recharge area in southern Mississippi, which is at a higher topographic elevation. Within the study area, water levels are lowest in East Baton Rouge Parish where water withdrawals have depressed the potentiometric surface.

A north-south trending flow pattern is present in eastern Tangipahoa Parish; water levels along the western edge of the parish are affected by water withdrawals from Livingston and East Baton Rouge Parishes, and water levels along the eastern edge of the parish are affected by withdrawals from the Covington-Mandeville and Slidell areas in St. Tammany Parish. In Washington, St. Tammany, and eastern Tangipahoa Parishes, ground-water flow is generally south-southeast toward withdrawal centers in southern St. Tammany Parish. Kentwood aquifer system withdrawal centers in St. Tammany Parish, shown in figure 3, include the Covington-Mandeville area where approximately 4.73 Mgal/d was withdrawn in April 2003, and the Slidell area where approximately 5.47 Mgal/d was withdrawn, also in April 2003. Values on the pumpage map represent summed withdrawal rates from wells located in the general vicinity (within 7 mi or less) of the data point. The highest water level measured, about 226 ft above NGVD 29, was in the Kentwood aquifer at well Ta-407, in northern Tangipahoa Parish.

The general direction of ground-water flow in the "1,500-foot" and "1,700-foot" sands is toward withdrawal centers in East Baton Rouge Parish where over 28 Mgal/d was withdrawn and from northwestern Livingston Parish where approximately 3.14 Mgal/d was withdrawn from these sands in April 2003. Water withdrawals in the Baton Rouge metropolitan area have created a cone of depression, causing water to flow radially into the area. The Baton Rouge fault acts as a leaky barrier, restricting ground-water flow from the south (Whiteman, 1979). The lowest water level measured, about 141 ft below NGVD 29, was in the "1,500-foot" sand at well EB-657 in East Baton Rouge Parish.



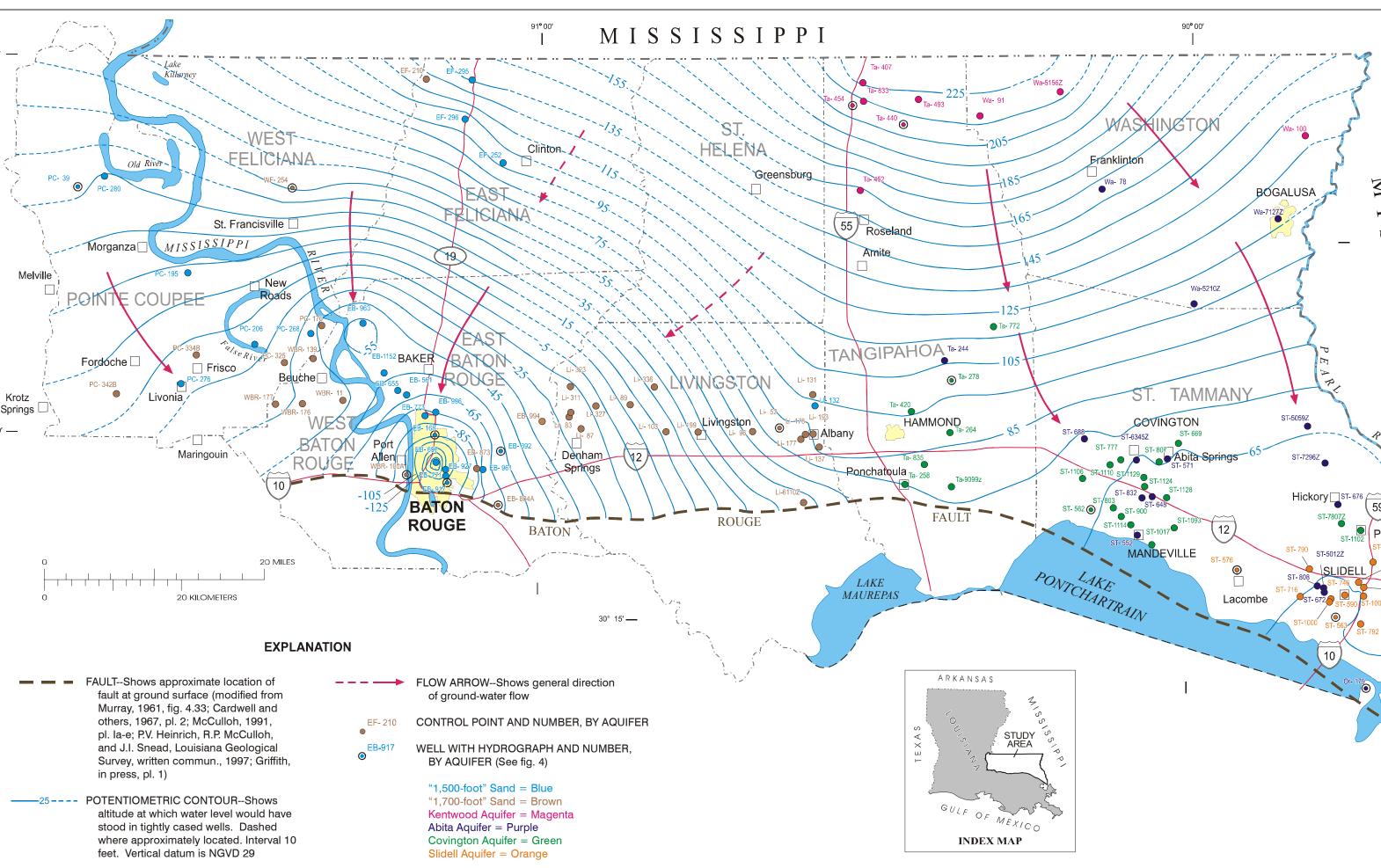


Figure 2. Generalized potentiometric surface of the Kentwood aquifer system and the "1,500-foot" and "1,700-foot" sands of the Baton Rouge area, southeastern Louisiana, March-April 2003.

Louisiana Ground-Water Map No. 17:

Generalized Potentiometric Surface of the Kentwood Aquifer System and the "1,500-foot" and "1,700-foot" Sands of the Baton Rouge Area in Southeastern Louisiana, March-April 2003

Prepared in cooperation with the LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT Office of Public Works and Intermodal **Public Works and Water Resources Division**

Prakken, L.B., 2004, Louisiana Ground-Water Map no. 17:

Generalized potentiometric surface of the Kentwood aquifer system and the "1,500-foot" and "1,700-foot" sands of the Baton Rouge area in southeastern Louisiana, March-April 2003

43.18

32.07

Table 1. Withdrawal rates, by parish and public supply, for the Kentwood aquifer system and the "1,500-foot" and "1,700-foot" sands of the Baton Rouge area, southeastern Louisiana, 2000.

					Bato	n Rouge area					
	_				Total pumpa	ge (million gallons	per day)				
		– Parish ¹		"1,500-foot" sand		"1,500-foot" and "1,700-foot" sands ²		"1,700-foot" sand		Total, Baton Rouge area	
			Parish	Public supply	Parish	Public supply	Parish	Public supply	Parish	Public supply	
	E	ast Baton Rouge	14.46	12.59	6.07	0	4.19	2.27	24.73	14.86	
	W	Vest Baton Rouge	2.87	2.83	0	0	.09	.04	2.96	2.87	
	E	ast Feliciana	.22	.21	0	0	0	0	.22	.21	
	W	Vest Feliciana	0	0	0	0	0	0	.01	0	
	L	ivingston	.01	0	0	0	3.09	2.84	3.10	2.84	
	Р	ointe Coupee	.21	.14	0	0	.20	.06	.41	.19	
	S	ubtotal ³	17.78	15.77	6.07	0	7.58	5.20	31.43	20.97	
				Kent	wood aquifer	system					
				Total pumpage	(million gallon	s per day)					
Parish	Abit	a aquifer	Covir	igton aquifer	Kentwo	od aquifer	Slidell	aquifer	Total, Kentw	ood aquifer syste	
	Parish	Public supply	Parish	Public supply	Parish	Public supply	Parish	Public supply	Parish	Public supply	
St. Tammany	.86	.76	2.50	2.43	.01	0	6.91	6.89	10.27	10.09	
Tangipahoa	.04	0	.33	.24	.97	.77	0	0	1.34	1.01	
Washington	0	0	.01	0	.13	0	0	0	.14	0	
Subtotal	.90	.76	2.84	2.67	1.11	.77	6.91	6.89	11.76	11.10	

Total: Kentwood aquifer system and "1,500-foot" and "1,700-foot" sands of the Baton Rouge area

¹No water was withdrawn in St. Helena Parish.

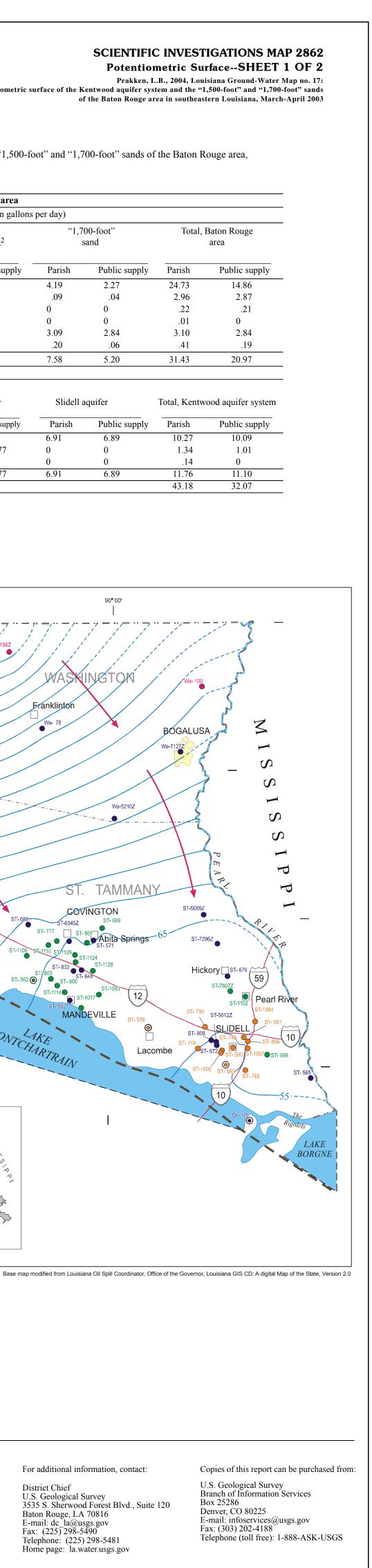
²Multiscreened wells. ³Totals are based on data prior to rounding.

By Lawrence B. Prakken 2004

District Chief U.S. Geological Survey 3535 S. Sherwood Forest Blvd., Suite 120 Baton Rouge, LA 70816 E-mail: dc_la@usgs.gov Fax: (225) 298-5490 Telephone: (225) 298-5481 Home page: la.water.usgs.gov

For additional information, contact:

U.S. Geological Survey Branch of Information Services Box 25286 Denver, CO 80225 E-mail: infoservices@usgs.gov Fax: (303) 202-4188



U.S. DEPARTMENT OF THE INTERIOR U.S. GEOLOGICAL SURVEY

 Table 2. Water-level data used to construct the potentiometric-surface map of
 the Kentwood aquifer system and the "1,500-foot" and "1,700-foot" sands of the Baton Rouge area, southeastern Louisiana, March-April 2003. [NGVD 29, National Geodetic Vertical Datum of 1929; aquifer code: 1 . "1.500-foot" sand of th

No. No. <th>Local well</th> <th>Aquifer</th> <th>Altitude of land surface (feet relative to NGVD 29)</th> <th>Depth of well (feet)</th> <th>Date</th> <th>Depth to water level (feet below</th> <th>Altitude of water level (feet relative</th>	Local well	Aquifer	Altitude of land surface (feet relative to NGVD 29)	Depth of well (feet)	Date	Depth to water level (feet below	Altitude of water level (feet relative
164 1.11990 9.50 1.4180 4.11.2000 1.81.72 -9.27.2 201 1.11990 9.50 1.341 4.13.2003 1.031.40 -8.15.4 561 1.11990 4.61 1.139 4.14.2003 1.51.12 -1.57.57 711 0.11990 4.61 1.395 4.14.2003 1.51.12 -1.57.57 711 0.11990 4.61 1.395 4.14.2003 1.51.2 -2.73.1 804 4.14.2003 1.51.2 -4.33.5 -4.13.003 1.63.7 -4.33.5 917 0.11990 7.0 1.23.1 4.14.2003 1.63.7 -4.33.5 917 0.11990 7.0 1.23.1 4.14.2003 1.63.7 -7.23.5 918 0.111990 7.0 1.23.1 4.14.2003 1.63.7 -7.23.5 919 0.111990 7.0 1.11990 7.0 7.11990 7.22.7 910 0.111990 7.0 1.11990 7.11990 <th7.11990< th=""> <th7.1990< th=""></th7.1990<></th7.11990<>	number	code	to NGVD 29)	well (feet)	measured	land surface) ¹	to NGVD 29)
Shi Dirane T, Si D, No 4.21.2003 Dirane 4.14.2003 Dirane A.14.2003 Dirane Str Dirane Dirane Dirane Dirane Dirane Dirane Dirane Str Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane Dirane <thdirane< th=""> Dirane Dirane</thdirane<>	EB-168					148.72	
845 1111600 90 1,341 4.16.2003 107.97 7.97.97 771 1111601 4.94 1,393 4.14.2003 15.14.2 -10.07.1 804A 1,278 4.14.2003 15.44.2 -10.07.1 804A 1,278 4.14.2003 15.64.7 -40.30 804A 1,2178 4.14.2005 15.67.4 -10.97.4 804 1,218 4.14.2005 15.67.4 -10.97.4 807 111680 40 1,371 4.14.2003 15.67.4 -10.97.4 807 111580 80 1,514 4.14.2003 11.97.4 -7.97.7 808 1,1541 4.14.2003 11.97.4 -7.97.7 11.97.9 -7.97.7 8111111 2,40 50.5 4.15.200 4.15.200 4.15.200 4.15.200 4.15.200 4.15.200 4.15.200 4.15.200 4.15.200 4.15.200 4.15.200 4.15.200 4.15.200 4.15.200 4.15.200 4.15.200 4.15.200 4.15.200	EB-392						
AS7 C111000 AS41 C14100 C14100 C14100 C14000 C14000 C14000 C111000 AS41 C1300 LA11 C14000 LA1100 C14000 C14000 C111000 AS00 LA81 A-14-000 LA23 -0.033 C111000 AS00 LA81 A-14-000 LA23 -0.034 C111000 AS00 LA81 A-14-000 LA33 -0.034 C111000 AS00 LA11 A-14-000 LA33 -0.0400 C011000 A<17.000	EB-561 EB-655						
772 Libble 4.7 Libble 1.4	EB-657	12115BR	59	1,618	4-14-2003	199.67	-140.67
804A 12117BR 4.6 1.950 4.11-2003 12.15 .983.5 917 121158BR 4.65 1.75 4.11-2003 15.25 .983.5 917 121158BR 30 1.511 4.41-2003 15.67 .983.7 961 121158BR 30 1.514 4.42-2003 12.00 .453.7 963 121158BR 30 1.514 4.12-2001 12.37 .953.7 1211 121158BR 200 505 4.12-2001 12.37 .953.7 1211 121158BR 200 555 4.01-2001 17.91 16.05 1211 12117BR 4.6 1.865 .14-12-2001 12.37 12.87.8 121 12117BR 4.2 1.73 .27.2003 7.61 .23.7.9 121 12117BR 4.2 1.74 .42.2001 .13.9 .14.9.9 121 12117BR 3.6 1.70 .27.2003 7.61 .85.60 12117BR <td>EB-771</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	EB-771						
372 121170R 9.0 1.84 4.142003 12.03 14.07.4 927 0.1150R 4.7 1.51 4.142003 18.6.7 4.017.4 963 0.1156R 4.0 1.541 4.142003 18.6.7 4.087.4 963 0.1156R 4.0 1.31 4.142003 12.5.7 4.25.20 970 0.1156R 4.0 1.31 4.142003 12.5.7 4.5.2.9 971 0.1156R 9.0 1.53 4.142003 12.5.2 1.5.2.9 9.5.2.9<	EB-804A						
927 111158 940 115158 900 1.514 4.14-2036 115.97 -66.30 946 1.11588 800 1.644 4.12-2036 12.32 -22.32 994 1.11588 200 1.213 4.11-2036 12.32 -22.32 111588 200 1.231 4.11-2036 12.37 -22.32 211588 200 556 4.41-2036 11.73 12.247 2115788 200 556 4.41-2036 11.73 12.247 2115788 200 556 4.41-2036 11.73 12.247 2111788 33 1.673 3.47-2036 7.30 8.23 2111788 43 1.760 3.47-2036 7.30 8.23 1211788 44 1.760 3.47-2036 7.43 9.89 1211788 43 1.767 3.47-2036 7.43 9.89 1211788 43 1.767 3.47-2238 7.45 7.55 <td< td=""><td>EB-873</td><td></td><td>50</td><td>1,884</td><td>4-14-2003</td><td>142.35</td><td>-92.35</td></td<>	EB-873		50	1,884	4-14-2003	142.35	-92.35
961 111150R 90 1.541 4.14-2003 118.77 -6.68.77 984 11170R 52 1.710 4.17-2003 12.20 2.72.53 984 11170R 223 1.718 4.17-2003 112.20 11.21 11171 11171 230 555 4.12-2003 112.21 11.35 232 11.1168R 240 556 4.12-2003 41.14 99.8.1 232 11.1171R 230 1.573 4.22-2003 41.14 99.1.20 121.1171R 450 1.673 3.27-2003 47.39 1.612 131 121.171R 450 1.709 3.400 3.400 3.400 131 121.171R 450 1.700 3.414 3.400 3.400 3.400 131 121.171R 450 1.700 3.420 4.1200 3.131 4.1203 131 121.171R 47 1.800 4.1200 3.131 4.1200 4.1200	EB-917						
%63 11158 %0 1.65 4-28-203 140.00 4-00.00 996 111718 23 1.710 4-17-203 72.5 72.74 111 21158 74 4-17-203 17.33 12.21 73.5 73.73 12.73 210 121178 220 55 4-12-203 121.16 98.4 235 121.16 236 4-12-203 17.13 127.3 12.37 220 121.17 23.2 1.47 3-7.2 10.0 12.0 24 1.74 4.14 1.30 4.02.200 4.74 1.16 21.17 12.17 <td< td=""><td>EB-927 EB-961</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	EB-927 EB-961						
9966 1.11168 900 1.231 41-12-003 12.2 7.14-12-003 12.2 7.14-12-003 12.2 7.14-12-003 12.2 7.14-12-003 12.2 7.14-12-003 12.2 7.14-12-003 12.2 7.14-12-003 12.2 7.14-12-003 12.2 7.14-12-003 12.2 7.14-12-003 12.2 7.14-12-003 12.2 7.14-12-003 12.3	EB-963			1,054			
1152 1211508 290 121278 253.72 253 1211508 240 550 44.152003 121.237 55.73 252 1211508 240 550 44.152003 173.01 100.999 22 1211708 53 1.673 3.527.003 76.10 25.10 7 1211708 53 1.673 3.527.003 76.10 25.10 7 1211708 58 1.781 3.527.003 74.14 10.10 64 121708 38 1.780 3.272.003 74.14 10.10 131 1211708 43 1.780 4.402.2003 -44.09 85.00 312 121708 40 1.900 -45.2003 -43.00 85.00 712 121708 40 1.900 -45.2003 -43.00 85.00 712 121708 40 1.900 -45.2003 -43.00 85.00 712 121708 40 1.900 -45.2003 -43.00 85.00 712 121708 40	EB-994						
100 121171R 230 130 44.152003 11.1518 240 255 121151R 240 250 121151R 240 121.22 211151R 140 1.85 4-01-203 170 22.37.33 25 121171R 32 1.73 3.27-203 6.8.39 1-0.2.39 7 121171R 32 1.78 3.27-203 6.8.39 1-0.2.9 60 121171R 32 1.78 4.02-203 3.4.0.0 8.8.00 7.7 12170R 45 1.70 3.1.9.2.003 4.8.0 8.8.00 7.7 12170R 45 1.70 3.2.2.033 4.7.00 8.2.0 7.7 12170R 46 1.00 3.2.2.003 4.4.5 8.8.00 7.7 12170R 47 1.50 3.2.2.003 4.4.5 8.8.00 7.10 12170R 47 1.50 3.3.0 4.5.2.2.0.0 4.4.5.3 7.10 12170R 47	EB-996 EB-1152						
956 11158R 310 450 4-01-2003 174.22 13.7.82 26 121171R 45 1.855 4-01-2003 170 18.2.0 7.1 121171R 45 1.873 3-27-2003 6.8.2.0 1-7.2.9 7.9 121171R 48 1.745 4-02-2003 3.4.0 16.7.0 8.0 121171R 48 1.745 4-02-2003 3.4.0 18.6.0 3.1 121171R 3.5 1.777 3-22-2003 -4.8.0 18.6.0 3.7 1.1178R 3.7 1.86 3-22-2013 -4.8.0 18.5.0 3.7 1.1178R 3.7 1.86 3-22-2013 -4.8.0 18.5.0 3.7 1.1178R 3.7 1.50 3-22-2013 8.4.5 -1.8.5 3.7 1.1178R 3.3 1.26 -22-2030 8.4.4 -1.8.5 3.7 1.1178R 3.3 1.26 -22-2030 8.4.4 -1.8.5 3.7 <t< td=""><td>EF-210</td><td></td><td></td><td>,</td><td></td><td></td><td></td></t<>	EF-210			,			
296 11151K 240 1357 147203 173.01 100.99 33 121171K 453 1.673 3.27203 68.12 9.174.93 97 121770K 458 1.600 3.27203 47.84 1.016 96 121770K 458 1.700 47.9203 4.12.90 9.90 103 121770K 458 1.700 4.19203 4.20 9.90 132 121770K 458 1.700 4.19203 4.20 9.80 313 121770K 450 1.700 3.25203 4.100 8.80 9.1 121770K 46 1.600 3.25203 4.100 8.43 314 1.510 1.500 1.510 1.511 1.511 121770K 46 1.600 3.25203 1.415 1.513 121770K 46 1.600 3.42203 1.415 1.513 121770K 40 1.600 3.42203 3.415 1.5	EF-252						
22 121179R 46 1.865 4.16.203 3.72.00 83.20 157 121179R 52 1.73 3.27.203 68.29 1.62 166 121179R 52 1.73 3.27.203 48.20 68.29 166 121179R 56 1.700 3.1.90 89.50 131 121179R 56 1.700 3.1.90.30 42.90 88.50 137 121179R 37 1.856 3.20.2033 48.50 88.50 137 121179R 40 1.900 3.25.2033 48.50 88.50 132 121179R 40 1.900 4.22.003 48.50 88.50 132 121179R 40 1.900 3.26.2033 48.50 85.50 131 180 4.12.2031 3.43 82.55 11.158 4.14.50 41.50 41.50 141179R 31 1.80 4.12.2030 44.55 3.55 12.50 12.77 11.158	EF-295 EF-296						
75 1211738 52 1.783 5.272.003 682.9 -162.9 76 1211738 38 1.745 4.402.2003 3.31.90 09.50 31 1211738 56 1.700 5.402.2003 42.80 77.90 321 1211738 55 1.770 5.270.003 44.80 88.60 377 1211738 37 1.836 5.320.2003 44.50 88.50 973 1211738 40 1.900 4.522.003 44.50 44.50 973 1211738 40 1.900 4.52.003 48.50 44.50 973 1211738 60 1.600 3.26.2003 88.43 -8.83 1410 1.938 3.26.2003 8.43 4.85 5.1102 5.1178 1.11518 4.14 4.60 4.12.2003 4.15.9 5.290 5.3 5.3 5.3 5.3 5.3 5.3 5.3 5.1178 1.1178 1.1178 1.1178 1.1178 1.1178 1.1178 1.1178 1.1178 1.1178 1.1178 1.1178 <td< td=""><td>_i-52</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	_i-52						
99 121179R 38 1,420 4-22-003 47.84 10.05 03 121179R 42 1,796 4-402-2003 24.60 77.99 31 121179R 42 1,796 4-402-2003 32.90 88.80 37 121179R 35 1,777 3-52-003 44.00 88.00 93 121179R 36 1,701 3-22-003 48.50 88.100 93 121179R 60 1,602 3-22-003 48.50 88.3 88.35 121179R 60 1,602 3-22-003 38.45 28.55 1107 121078R 10 1,918 3-22-003 38.45 28.55 1107 12078R 3 1,256 4-12-003 38.14 -8.55 1107 12078R 3 1,256 4-12-003 38.14 -8.55 1108 4 40 4-12-003 31.17 27.281 120 11158 34 97.17 </td <td>.i-83</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	.i-83						
66 1211738 38 1.745 4-402.2003 31.50 69.50 31 1211738 56 1.700 3-19.2003 42.90 89.50 312 1211738 37 1.816 3-20.2003 44.50 88.50 377 1211738 40 1.900 3-25.2003 44.50 88.50 373 1211738 40 1.900 4-42.2003 4.13.0 48.50 99 1211738 40 1.900 4-42.2003 4.85.0 84.50 323 1211738 60 1.600 3-26.2003 84.81 85.53 3102 1211738 1.91 1.938 3-26.2003 84.53 85.50 3102 1211738 31 1.80 4-17.2003 1.81 4.82.33 3102 1211738 31 1.80 4-17.2003 1.51 4.82.33 31151 1.918 4.417.2003 4.42.42.41 4.417.2003 4.42.42.41 4.417.2003 4.42.42.41	Li-87 Li-89						
31 121178R 56 1.700 5.1-92.003 -12.90 98.50 32 121178R 37 1.836 5.2-20.03 -14.50 88.50 37.7 121178R 40 1.900 -3.2-20.03 -45.00 88.50 97 121178R 40 1.900 -4.22.003 -1.30 41.30 23 121178R 60 1.600 -3.2-2.003 -8.53 -8.83 303 121178R 60 1.600 -3.2-2.003 -8.83 -8.83 1317 121178R 10 1.938 -3.2-2.003 -8.93 -8.53 1317 121178R 31 1.800 -4.1-2.003 -1.54 -3.84 1356 121158R 34 -9.99 -4.23.2003 34.64 -3.86 1361 1.178 4.17.2003 -4.17.2003 -3.56 -3.356 121158R 25 1.278 -4.17.2003 -4.63 -1.98 121158R 25 1.270	Li-96						
32 121158 44 1,300 4-42.2003 -39.60 88.50 37 1211788 35 1,777 3-25.2003 44.50 88.300 97 1211788 40 1900 3-25.2003 44.50 88.30 93 1211788 40 1900 442.2003 -13.9 41.40 1211788 60 1.600 3-26.2003 88.45 -8.83 34 1211788 67 1.540 3-26.2003 84.51 28.55 170 120.088 1.4 4.40 4.41-2003 -4.59 51.50 175 121.0788 33 1.256 4.13.2003 81.54 -4.83 176 121.0788 34 975 4.17.2003 7.66 -3.35 179 121.0788 30 1.252 4.47.2003 4.63 -19.63 374 121.0788 20 1.482 4.16.2003 -13.1 2.424 375 120.484 4.49.2003 <td>.i-103</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	.i-103						
37 211788 37 1.876 3.52.003 4.86.0 88.60 78 211788 40 1.900 3.52.003 4.85.0 88.50 99 211788 40 1.900 4.52.003 4.85.0 88.50 99 211788 60 1.600 3.52.003 4.85.0 88.50 303 211788 60 1.600 3.56.003 84.51 8.55 107 220.11788 10 1.918 3.52.003 4.15 5.50 175 220.11788 10 4.14.70.003 1.51 2.52 136 211.1588 41 4.040 4.41.70.003 3.53 2.82 136 211.1588 3.6 9.90 4.25.2003 3.16 3.56 131.158 3.6 9.90 4.45.2003 3.15 -2.84 3.85 131.1588 2.6 1.17.88 2.17.00 4.17.2003 4.19 -2.24 2.32 2.11.788 3.0 1.25 4.24.04 4.12.000 4.14.2 4.44 2.32	.i-131 .i-132						
78 121178R 40 1.900 3.25.2003 4.43.00 88.06 99 121178R 40 1.900 4.42.2003 1.30 41.50 32 121178R 60 1.600 3.26.2003 68.83 -8.83 323 121178R 60 1.600 3.26.2003 84.50 85.55 1702 121178R 10 1.938 3.26.2003 41.50 51.50 37 121158R 41 400 4.147.2003 81.54 -8.83 176 121178R 33 1.256 4.23.2003 81.54 -8.84 176 121158R 34 975 4.17.2003 7.55 -2.91 286 11158R 42 6.00 4.47.2003 4.65 -3.55 318 11177R 25 1.255 4.17.2003 4.55 4.46 325 12017R 20 1.482 4.17.2003 4.51.46 -4.75 325 12017R 21 1.255 4.17.201 4.45 -4.75 4.45 4.45 4.45	.i-137	12117BR	37	1,836	3-20-2003	-48.60	85.60
99 1211PBR 36 1,701 32-2003 -18.50 44.30 123 1211PBR 60 1.602 3.27-2003 78.84 -18.54 136 1211PBR 67 1.500 3.26-2003 88.83 28.55 136 1211PBR 67 1.500 3.26-2003 48.84 28.55 137 DAABIT 4 2.434 4.47-2003 4.45 28.55 179 DAABIT 4 2.434 4.47-2003 8.83 -48.54 150 1211FBR 31 1.256 4.432-2003 7.466 -38.66 120 1.1184 2.5 1.178 4.17-2003 4.463 -19.63 230 1.211FBR 2.0 1.482 4.11-2003 -4.43 -44.53 2348 1.211FBR 2.0 1.442 4.11-2003 -4.43 -44.53 2348 1.211FBR 2.0 1.441 -41.20.33 -46.20 -46.50 241 1.	Li-177			1,777			82.00
999 12117BR 400 1,900 4-42.2003 -1,30 41.30 12117BR 60 1,660 3-27.2003 38.43 -8.83 12117BR 10 1.938 3-26.2003 38.45 55.5 1102 12117BR 10 1.938 3-26.2003 -8.45 55.90 37 12117BR 41 440 4-42.003 1.31.7 2238 12115BR 31 860 4-45.2003 2.8.62 2.38 206 12115BR 31 860 4-43.2003 7.4.66 -3.8.66 27.6 12115BR 2.6 1.9.7 4.1.7.2003 7.3.5 4.4.4.9 208 12115BR 2.0 1.4.82 4.1.1.2003 2.9.1.7 -9.1.7 212117BR 2.0 1.4.82 4.1.1.2003 -9.1.7 -9.1.7 212117BR 2.0 1.4.82 4.1.1.2003 -9.1.6 -3.2.2.03 212117BR 2.0 1.4.82 4.1.1.2003 -9.1.6	.i-178 .i-193						
121 12117BR 60 1.660 3-26-203 8.83 -8.83 1102 12117BR 10 1.938 3-26-203 3.84 55 1102 12117BR 10 1.938 3-26-203 -84.90 55.90 39 12117BR 31 460 414-2005 31.17 27.83 12117BR 33 1.256 423-2003 81.54 -48.54 1206 121154R 34 975 417-2003 74.66 -38.66 276 121154R 25 1.178 417-2003 47.91 -22.91 280 121154R 20 1.482 411-2003 29.17 -9.17 334 12117BR 20 1.482 411-2003 -9.17 -9.17 3425 120ABT 10 1.66 4-3.2003 -4.12 5.65 120SUDI 12 2.414 -4.12.003 -9.17 -9.17 3425 120ABT 2 2.417 -4.17-2.03	.i-199		40	1,900	4-02-2003	-1.30	41.30
36 12117BR 67 1.540 3.26.2003 3.84.5 28.55 179 PAARIT 4 2.434 4.72.003 -41.50 51.50 175 12117BR 33 1.256 4.23.2003 81.54 -48.54 176 12117BR 33 1.256 4.23.2003 74.66 -38.66 176 12115BR 2.6 1.78 4.17.2003 74.66 -38.66 276 12115BR 2.2 1.78 4.16.2003 4.73 4.22.91 280 12115BR 2.0 1.482 4.16.2003 4.74.3 -19.63 2812 12117BR 2.0 1.482 4.11.2003 4.40.9 -4.43.2 2826 120K/GN 4 1.900 3.26.2003 -6.60.0 6.60.0 551 120ABIT 5 1.971 4.34.41.2003 -4.50.0 6.62.0 551 120ABIT 3.0 1.60.0 4.32.03 -5.6.0 6.62.0 551	.i-323			,		78.54	
1102 12117BR 10 1.938 3-20-203 -41.50 51.50 39 12115BR 41 440 4.14-2003 13.17 27.83 176 12117BR 31 880 4.15-2003 28.62 2.33 206 12115BR 34 975 4.17-2003 74.66 -33.66 208 12115BR 25 1.178 4.17-2003 74.66 -33.66 2102 12115BR 25 1.230 4.16-2003 24.49 22.91 21117BR 25 1.230 4.16-2003 24.49 22.91 2.416 225 1.20KBHT 10 1.666 4.40 4.417-2003 4.916 5.55 20ABHT 10 1.666 4.40 4.475 6.57 5.57 1.20KBHT 30 1.50 5.50 20SLDL 1.20KBHT 30 1.50 5.50 4.44 4.72.003 -3.00 61.00 500 20SLDL 1.77	Li-327 Li-336						
179 120ART 4 2434 4-17-203 -4.890 52.90 176 12117BR 33 1.256 4-23-203 81.54 -48.54 176 12117BR 34 975 4-17.203 32.86 2.38 206 12115BR 34 975 4-17.203 34.66 -38.66 276 12115BR 25 1.178 4-17.203 64.73 -22.91 280 12115BR 20 1.482 4-16.2003 44.63 -19.63 2812 12117BR 20 1.482 4-11.2003 44.20 -56.75 2826 120KCGN 4 1.900 -23.62.03 -64.75 56.55 120ABIT 5 1.971 4-17.203 -44.20 -54.20 55.50 576 120SUL1 7 2.344 4-17.2003 -45.20 65.20 576 120ABIT 25 1.302 -45.20 61.20 66.00 57.50 72120ABIT	Li-6110Z						
176 12117BR 33 1.286 44.32.2003 81.44 -44.85.4 206 12115BR 34 975 44.72.2003 33.90 -19.90 2076 12115BR 26 990 4232.2003 74.66 -38.66 277 12115BR 25 1.178 44.72.2003 47.70 -22.91 230 12117BR 25 1.230 44.16.2003 4.64.3 -19.63 334B 12117BR 20 1.482 44.12.003 4.66.70 66.66 552 120AUBIT 10 1.666 44.03.2003 -50.66 66.06 563 120ABIT 30 1.505 328.2003 -65.20 65.51 571 120ABIT 30 1.505 328.2003 -35.00 65.50 571 120ABIT 30 1.505 328.2003 -35.10 65.50 571 120ABIT 33 1.612 328.2003 -35.50 65.60 576 120KIT 25 1.302 4.417.2003 -40.00 62.00	Dr-179	120ABIT	4	2,434	4-17-2003	-48.90	
195 121150R 31 880 4-15-2003 28.62 2.38 268 121150R 36 990 4-23-2003 74.66 -38.66 276 121150R 22 1472003 47.91 -22.91 280 12158R 42 630 41.672003 45.56 -33.56 3340 12117BR 25 1.250 44.162003 50.60 66.00 552 120.08HT 100 1.606 40.372003 -64.75 68.75 563 1208.01 17 2.344 41.72003 -45.20 66.20 571 120.4BHT 30 1.505 3.28.2003 -36.20 66.20 576 1208.01 17 2.344 4.17.2003 -43.20 61.50 581 120.81D1 22 2.422 4.417.2003 -43.00 55.00 581 120.81D1 22 2.342 4.17.2003 -43.00 55.00 564 120.70K 33 </td <td>PC-39 PC-176</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	PC-39 PC-176						
206 121150R 34 975 4.17.2003 53.90 -1.990 208 121150R 25 1.178 4.17.2003 4791 -22.91 2180 121150R 42 630 4.16.2003 47.91 -22.91 2181 121170R 20 1.482 4.11.2003 26.16 -33.36 3234 121170R 20 1.482 4.11.2003 26.17 9.17 552 120.04BT 5 1.971 4.17.2003 -54.20 56.5 563 120.81T 5 1.971 4.17.2003 -44.20 56.20 576 120.81T 5 1.970 -32.82.003 -30.20 66.20 576 120.81T 1.3 1.956 4-12.203 -40.20 53.50 648 120.04BT 22 1.30 4-32.203 -33.00 66.00 672 120.04BT 25 1.30 4-32.203 -33.00 56.00 674 120.84DL	PC-176 PC-195			880			
276 1211588 25 1,178 4-17-2003 47-91 -2.291 230 1211788 30 1,252 4-17-2003 63.56 -33.56 3348 1211788 20 1,482 4-11-2003 44.63 -19.17 552 1200ABIT 10 1,606 4-03-2003 -64.75 68.75 563 1208LDL 10.24 2,411 4-17-2003 -54.20 66.20 571 1208BIT 5 1.971 4-17-2003 -36.20 66.20 576 1208LDL 6 2,400 4-17-2003 -45.20 51.20 581 1208LDL 6 2,400 4-17-2003 -40.00 66.00 672 120ABIT 13 1.956 4-01-2003 -45.20 51.50 716 1208LDL 12 2.284 4-02-2003 -43.00 55.00 766 1208LDL 12 2.284 4-17-2003 -38.00 50.00 777 <t< td=""><td>PC-206</td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	PC-206						
280 121158R 42 630 4-16-2003 17.51 24-49 335 121178R 25 1,250 4-16-2003 44.63 -19.63 334B 121178R 20 1,482 4-11-2003 29.17 9.17 552 120ABIT 10 1,606 4-03-2003 -66.05 66.05 563 120SLDL 10.24 2.41 4-17-2003 -44.50 66.150 576 120RHT 30 1,505 3.28-2003 -66.20 66.20 581 120SLDL 10.24 2.41 4-17-2003 -45.00 61.50 581 120SLDL 10.24 2.41 4-17-2003 -45.00 61.00 590 120SLDL 2 3.34 417-2003 -45.00 53.00 66.0 648 120ABIT 25 1,302 3-25.2003 -47.25 72.25 716 120SLDL 12 2.284 4-17.2003 -38.00 55.00	PC-268 PC-276						
334B 12117BR 25 1.250 4.46.2003 24.46.3 -19.63 342B 12117BR 20 1.482 4.11.2003 25.10 9.17 552 120ABIT 10 1.666 4.03.2003 -50.60 66.67 563 120SLDL 10.24 2.411 4.17.2003 -44.20 54.44 575 120ABIT 30 1.505 3.32.8003 -36.20 66.2 576 120SLDL 6 2.400 4.17.2003 -44.50 61.50 581 120SLDL 6 2.400 4.17.2003 -40.00 62.00 669 120CVCN 33 1.612 3.28.2003 -35.10 65.50 672 120ABIT 35 1.530 4.30 0.500 55.50 674 120SLDL 12 2.280 4.01.2003 -43.00 55.00 746 120SLDL 12 2.280 -41.72.03 -38.00 55.00 777 120C	PC-280						
342B 12117BR 20 1,482 4-11-2003 29.17 9-17 552 120KVGN 4 1,900 3-26-2003 -64.75 66.76 563 120KLDL 10.24 2,411 4-17-2003 -54.20 54.42 571 120KBIT 5 1.971 4.17.2003 -54.20 66.20 576 120SLDL 17 2.344 4.17.2003 -45.20 51.20 648 120ABIT 22 1.707 3-26.200 40.00 62.00 676 120KBIT 13 1.956 4.01.2003 4.00 55.00 676 120KBIT 12 2.284 4.402.2003 -43.00 55.00 716 120SLDL 12 2.284 4.17.203 -38.00 50.00 717 120CVCN 2.244 1.714 -3.25.200 -51.50 716 120SLDL 2 2.284 4.17.203 -38.00 50.00 717 120CVCN 2	PC-325						
552 120.KHT 10 1.606 4-05-2003 -50.60 60.69 5563 120.KUG 4 1.900 3-26-2003 -64.75 68.75 5563 120.KBHT 5 1.971 4-17-2003 -91.60 66.20 571 120.KBHT 30 1.505 3-28-2003 -46.20 66.20 571 120.KBHT 22 2.342 4-17-2003 -93.00 61.00 581 120.KDL 22 2.400 4-17-2003 -93.00 66.00 660 120.CVGN 33 1.612 3-28-2003 -40.00 62.00 676 120.KBHT 35 1.302 3-25-2003 -43.00 55.00 676 120.KBHT 15 1.302 3-25-2003 -44.04 58.40 58.40 676 120.KDL 12 2.284 1.743 3-42.50 72.55 70.0 744 17.40 7.44 17.40 7.44 57.40 74.4 <td< td=""><td>PC-334B</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	PC-334B						
562 120CVGN 4 1,900 3-26-2003 -44.75 68.75 563 120ABIT 5 1,971 4.17-2003 -44.20 54.44 571 120ABIT 3 1,505 3-28-2003 -36.20 66.20 571 120SLDL 17 2,344 4.17-2003 -45.20 51.00 66.20 648 120ABIT 22 2,342 4.17-2003 -45.20 51.00 66.00 650 120CVGN 33 1,612 3-28-2003 -40.00 62.00 657 120ABIT 13 1,956 4-0.2003 -40.50 53.50 676 120ABIT 25 1.30 3-28-2003 -41.72 72.72 72.72 72.72 72.72 72.72 72.72 72.72 72.72 72.72 73.72 72.72 72.72 73.72 72.72 73.73 74.41 73.42 3-22-2003 -51.50 74.34 779 120CVGN 15 1.73	С-342В T-552						
565 120ABIT 5 1,971 4-17-2003 -51,50 56,50 571 120ABIT 30 1,505 3-28-2003 -36,20 66,20 576 120SLDL 22 2,342 4-17-2003 -45,20 51,20 581 120SLDL 6 2,400 4-17-2003 -40,00 62,00 669 120CVGN 33 1,612 3-28-2003 -40,00 53,50 676 120ABIT 13 1,956 4-01-2003 -40,50 53,500 676 120ABIT 12 2,284 4-02-2003 -43,00 55,00 716 120SLDL 20 2,132 4-03-2003 -51,50 74,34 700 120SLDL 20 2,132 4-03-2003 -58,00 56,60 803 120CVGN 15 1,973 4-22-2003 -46,20 61,20 804 120SLDL 10 2,060 4-03-2003 -93,60 56,60 803 1	ST-562	120CVGN	4	1,900	3-26-2003	-64.75	68.75
571 120ABIT 30 1.505 3-28-2003 -36.20 66.20 576 120SLDL 2 2,342 4.17-2003 -44.50 61.50 581 120SLDL 6 2,400 4.17-2003 -45.20 51.20 648 120ABIT 22 1,707 3-26-2003 -40.00 62.00 672 120ABIT 13 1,956 4-01-2003 -42.50 57.60 675 120ABIT 15 1,302 3-25-2003 -43.00 55.00 716 120SLDL 12 2,284 4-02-2003 -43.00 56.00 777 120CVGN 22.84 1,713 3-25-2003 -58.40 58.40 790 120SLDL 20 2,132 4-03-2003 -38.40 58.40 7120CVGN 15 1,173 4-22-2003 -45.06 66.60 803 120CVGN 30 1,712 4-2-2003 -35.60 56.60 807 120CVGN	T-563						
576 120SLDL 17 2,334 4-17-2003 -44,50 61.50 581 120SLDL 6 2,400 4-17-2003 -45.20 51.20 648 120ABIT 22 1,707 3-26-2003 -40.00 62.20 659 120CVGN 33 1,612 3-28-2003 -40.00 62.20 672 120ABIT 13 1,956 4-01-2003 -40.50 53.50 676 120LABIT 12 2,284 4.40-2003 -41.30 55.00 746 120SLDL 12 2,284 4.02-2003 -51.50 74.34 790 120SLDL 20 2,132 4-03-2003 -58.00 56.60 803 120CVGN 15 1.973 4-22-2003 -36.60 65.60 804 120SLDL 6.6 2,314 4-03-2003 -39.60 56.60 804 120CVGN 13 1,904 4-03-2003 -47.40 57.40 808 120ABIT 10 2,060 4-03-2003 -47.40 56.60 <t< td=""><td>ST-505 ST-571</td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	ST-505 ST-571						
S90 120SLDL 6 2,400 4-17.203 4-5.20 51.20 648 120ABIT 22 1,707 3-26.2003 -40.00 62.00 659 120CVGN 33 1,612 3-28-2003 -33.00 66.00 672 120ABIT 13 1,956 4-01-2003 -40.50 53.50 688 120ABIT 12 2,280 4-17.2003 -43.00 55.00 746 120SLDL 12 2,280 4-03-2003 -50.00 56.60 803 120CVGN 12.8 1,743 3-25-2003 -51.50 74.34 790 120SLDL 2.0 2,132 4-03-2003 -38.40 66.00 803 120CVGN 15 1,973 4-22-2003 -56.60 65.60 803 120AUBIT 15 1,955 4-02-2003 -37.40 57.40 804 120AUBIT 10 1,060 4-03-2003 -47.40 57.40 808 <	ST-576			2,334			
648 120ABIT 22 1,707 3-26-2003 -40.00 62.00 669 120CVGN 33 1,612 3-28-2003 -33.00 66.00 675 120ABIT 13 1,956 4-01-2003 -40.50 53.50 676 120ABIT 25 1.302 3-25.2003 -47.25 72.25 716 120SLDL 12 2.284 4-02-2003 -43.00 55.00 776 120CVGN 2.2 8.4 -03.2003 -38.40 58.40 790 120SLDL 20 2.132 4-03.2003 -38.40 58.40 792 120SLDL 6.6 2.361 4-03.2003 -38.60 56.60 803 120CVGN 30 1.712 3-28.2003 -35.60 55.60 808 120CVGN 13 1.900 4-03.2003 -47.40 57.40 900 120CVGN 7 1.777 4.03.2003 -47.40 57.40 901 12	ST-581						
669 120CVGN 33 1,612 3-28-2003 -33.00 66.00 672 120ABIT 13 1,956 4-01-2003 -40.50 53.50 676 120ABIT 25 1,350 4-30-2003 -22.60 57.60 688 120ABIT 25 1,302 3-25-2003 -47.25 72.25 716 120SLDL 12 2,280 4-17-2003 -43.00 55.00 746 120SLDL 20 2,132 4-03-2003 -50.00 56.60 803 120CVGN 15 1,973 4-22-2003 -46.20 61.20 804 120SLDL 18 2,213 4-03-2003 -38.60 56.60 803 120ABIT 10 1,700 4-22-2003 -36.60 56.60 804 120XUCGN 10 2,060 4-03-2003 -47.40 57.40 800 120ABIT 10 1,700 4-22.2003 -36.60 66.60 801 <td< td=""><td>ST-648</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	ST-648						
676 120ABIT 35 1,530 4-30-2003 -22.60 57.60 688 120ABIT 25 1,302 3-25-2003 47.25 72.25 716 120SLDL 12 2,284 4-02-2003 44.300 55.00 746 120SLDL 12 2,284 1.733 3-25-2003 -51.50 74.34 790 120SLDL 6.6 2,361 4-03-2003 -50.00 56.60 803 120CVGN 15 1.973 4-22.2003 -36.60 56.60 804 120SLDL 18 2,213 4-03-2003 -39.60 54.60 812 120ABIT 15 1.976 4-22.2003 -36.60 56.60 808 120ABIT 10 2,060 4-03-2003 -47.40 57.40 900 120CVGN 13 1,900 4-03-2003 -47.40 57.40 900 120CVGN 22 1,910 4-02-2003 -35.10 6.100 <t< td=""><td>ST-669</td><td></td><td></td><td>1,612</td><td></td><td></td><td></td></t<>	ST-669			1,612			
688 120ABIT 25 1.302 3-25.2003 -47.25 72.25 716 120SLDL 12 2.284 4-02.2003 -43.00 55.00 746 120SLDL 20 2.280 4-17.2003 -38.40 58.40 790 120SLDL 20 2.132 4-03-2003 -38.40 58.40 803 120CVCN 15 1.973 4-22.2003 -46.20 61.20 804 120CVCN 30 1.712 3-28.2003 -35.60 56.60 807 120CVCN 30 1.712 3-28.2003 -36.60 56.60 808 120CVGN 10 2.060 4-03-2003 -47.40 57.40 900 120CVGN 13 1.900 4-03-2003 -47.40 57.40 9100 120SLDL 7 2.322 4-02-2003 -33.10 61.10 1001 120CVGN 7 1.977 4-03-2003 -49.40 56.40 1002 <td< td=""><td>ST-672 ST-676</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	ST-672 ST-676						
716 120SLDL 12 2.284 4-02.2003 -43.00 \$5.00 776 120CVCN 12 2.280 4-17-2003 -38.00 \$50.00 777 120CVCN 22.84 1,743 3-25-2003 -51.50 74.34 790 120SLDL 20 2,132 4-03-2003 -50.00 \$66.60 803 120CVCN 15 1,973 4-22-2003 -38.60 \$66.60 807 120CVGN 30 1,712 3-28-2003 -36.60 \$6.60 808 120CVGN 10 2,060 4-03-2003 -47.40 \$7.40 900 120CVGN 13 1,900 4-03-2003 -47.40 \$6.40 1007 120SLDL 7 2,322 4-02-2003 -47.40 \$6.40 1007 120SLDL 7 2,432 4-17.2003 -47.40 \$6.40 1007 120SLDL 7 2,432 4-17.2003 -49.20 \$6.40 107	ST-688						
777 120CVCN 22.84 1,743 3-25.2003 -51.50 74.34 790 1208LDL 20 2,132 4-03-2003 -38.40 58.40 792 1208LDL 6.6 2,361 4-03-2003 -38.60 56.60 803 120CVCN 15 1,973 4-22-2003 -36.60 56.60 808 120ABIT 15 1,955 4-02-2003 -36.60 56.60 808 120ABIT 20 1,760 4-22-2003 -47.40 57.40 900 120CVCN 13 1,900 4-03-2003 -47.40 56.40 900 120CVCN 13 1,900 4-03-2003 -47.40 56.40 1007 120SLDL 7 2,322 4-17-2003 -46.00 61.00 1017 120CVGN 7 1,977 4-03-2003 -49.40 56.40 1094 120SLDL 15 2,150 4-02-2003 -33.00 61.00 1102	ST-716	120SLDL	12	2,284			
790 120SLDL 20 2,132 4-03-2003 -38.40 58.40 792 120SLDL 6.6 2,361 4-03-2003 -50.00 56.60 803 120CVCN 15 1.973 4-22.203 -35.60 65.60 804 120SLDL 18 2,213 4-03-2003 -35.60 55.60 808 120ABIT 20 1,700 4-22-2003 -36.60 56.60 898 120CVGN 10 2,060 4-03-2003 -47.40 57.40 900 120CVGN 13 1,900 4-03-2003 -47.40 56.40 1007 120SLDL 7 2,322 4-02-2003 -47.30 54.30 1017 120CVGN 7 1,977 4-03-2003 -49.40 66.40 1031 120CVGN 22 1,910 4-22-2003 -35.10 57.10 104 120CVGN 21 1,820 4-22-2003 -39.60 66.60 1102 <t< td=""><td>ST-746</td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	ST-746						
792 120SLDL 6.6 2,361 4-03-2003 -50.00 56.60 803 120CVGN 15 1,973 4-22-2003 -46.20 61.20 804 120SLDL 18 2,213 4-03-2003 -38.60 56.60 807 120CVGN 30 1,712 3-28-2003 -35.60 65.60 808 120ABIT 15 1,955 4-02-2003 -36.60 56.60 898 120CVGN 10 2,060 4-03-2003 -47.40 57.40 900 120CVGN 13 1,900 4-03-2003 -47.30 54.30 1000 120SLDL 7 1,977 4-03-2003 -49.40 64.40 1017 120CVGN 22 1,910 +22-2003 -35.10 57.10 1009 120CVGN 21 1,920 4-22-2003 -49.40 68.40 1106 120CVGN 21 1,865 4-22-2003 -35.00 60.60 1128	ST-777 ST-790						
804 120SLDL 18 2,213 4-03-2003 -38.60 56.60 807 120CVGN 30 1,712 3-28-2003 -35.60 56.60 808 120ABIT 15 1,955 4-02-2003 -39.60 54.60 832 120ABIT 20 1,760 4-22-2003 -36.60 56.60 898 120CVGN 10 2,060 4-03-2003 -47.40 57.40 900 120CVGN 13 1,900 4-02-2003 -47.30 54.30 1000 120SLDL 5 2,432 4-17-2003 -46.00 61.00 1017 120CVGN 22 1,910 4-22-2003 -49.20 64.20 1102 120CVGN 28 1,785 4-02-2003 -33.00 61.00 1116 120CVGN 21 1,865 4-22-2003 -48.00 68.00 1114 120CVGN 21 1,865 4-22-2003 -55.00 60.60 1124	ST-792						
807 120CVGN 30 1,712 3-28-2003 -35.60 65.60 808 120ABIT 15 1,955 4-02-2003 -36.60 56.60 898 120CVGN 10 2,060 4-03-2003 -47.40 57.40 900 120CVGN 13 1,900 4-03-2003 -47.30 54.30 1000 120SLDL 7 2,322 4-17-2003 -49.40 66.40 1003 120CVGN 7 1,977 4-03-2003 -49.40 64.20 1093 120CVGN 22 1,910 4-22-2003 -33.00 61.00 1102 120CVGN 28 1,785 4-02-2003 -33.00 66.00 1110 120CVGN 21 1,920 4-22-2003 -49.50 75.60 11124 120CVGN 21 1,865 4-22-2003 -35.00 60.00 11124 120CVGN 25 1,930 4-22-2003 -35.00 60.60 1129	ST-803						
808 120ABIT 15 1,955 4-02-2003 -39,60 54,60 832 120ABIT 20 1,760 4-22-2003 -36,60 56,60 898 120CVGN 10 2,060 4-03-2003 -47,40 57,40 900 120CVGN 13 1,900 4-03-2003 -47,30 54,30 1007 120SLDL 7 2,322 4-02-2003 -49,40 56,40 1017 120CVGN 7 1,977 4-03-2003 -49,0 56,40 1093 120CVGN 22 1,910 4-22-2003 -49,20 64,20 1102 120CVGN 28 1,785 4-02-2003 -43,00 61,00 1104 120CVGN 21 1,920 4-22-2003 -49,50 70.50 1114 120ABIT 10 1,945 4-03-2003 -45,40 55,40 1124 120CVGN 21 1,865 4-22-2003 -39,60 60,60 1124	ST-804 ST-807						
898 120CVGN 10 2,060 4-03-2003 -47.40 57.40 900 120CVGN 13 1,900 4-03-2003 -43.10 56.10 1000 120SLDL 15 2,322 4-02-2003 -47.30 54.30 1007 120CVGN 7 1,977 4-03-2003 -49.40 56.40 1093 120CVGN 22 1,910 4-22-2003 -35.10 57.10 1094 120SLDL 15 2,150 4-03-2003 -49.20 64.20 1102 120CVGN 28 1,785 4-02-2003 -33.00 61.00 1106 120CVGN 21 1,820 4-22-2003 -45.0 55.40 1124 120CVGN 21 1,865 4-22-2003 -35.00 60.60 1128 120CVGN 30 1,810 3-28-2003 -24.40 54.40 5052Z 120ABIT 60 1,134 4-16-2003 -6.75 66.75 6345Z	ST-808	120ABIT	15	1,955	4-02-2003	-39.60	54.60
900 120CVGN 13 1,900 4-03-2003 -43.10 56.10 1000 120SLDL 7 2,322 4-02-2003 -47.30 54.30 1007 120SLDL 15 2,432 4-17-2003 -46.00 61.00 1003 120CVGN 22 1,910 4-22-2003 -49.40 56.40 1093 120CVGN 22 1,910 4-22-2003 -49.20 64.20 1102 120CVGN 28 1,785 4-02-2003 -49.50 70.50 1110 120CVGN 20 1,820 4-22-2003 -49.50 70.50 1110 120CVGN 21 1,865 4-22-2003 -49.50 70.50 1114 120ABIT 10 1,945 4-03-2003 -45.40 56.40 1124 120CVGN 21 1,865 4-22-2003 -35.00 60.00 1128 120CVGN 30 1,810 3-28-2003 -24.40 54.40 50592	ST-832						
1000 120SLDL 7 2,322 4-02-2003 -47.30 54.30 1007 120SLDL 15 2,432 4-17-2003 -46.00 61.00 1017 120CVGN 7 1,977 4-03-2003 -49.40 56.40 1093 120CVGN 22 1,910 4-22-2003 -35.10 57.10 1094 120SLDL 15 2,150 4-03-2003 -49.20 64.20 1106 120CVGN 28 1,785 4-02-2003 -33.00 66.00 1114 120ABIT 10 1,945 4-03-2003 -45.40 55.40 1124 120CVGN 21 1,865 4-22-2003 -35.00 60.00 1128 120CVGN 30 1,810 3-28-2003 -24.40 54.40 5012Z 120ABIT 60 1,134 4-16-2003 -6.75 66.75 6452 120ABIT 50 1,247 4-30-2003 -24.40 58.90 7296Z	ST-898 ST-900						
1017 120CVGN 7 1,977 4-03-2003 -49.40 56.40 1093 120CVGN 22 1,910 4-22-2003 -35.10 57.10 1094 120SLDL 15 2,150 4-03-2003 -49.20 64.20 1102 120CVGN 28 1,785 4-02-2003 -33.00 61.00 1106 120CVGN 21 1,920 4-22-2003 -49.50 70.50 1110 120CVGN 20 1,820 4-22-2003 -49.50 66.60 1124 120CVGN 21 1,865 4-22-2003 -35.00 60.00 1129 120CVGN 30 1,810 3-28-2003 -24.40 54.40 5059Z 120ABIT 60 1,134 4-16-2003 -6.75 66.75 6452 120ABIT 50 1,247 4-30-2003 -24.40 58.40 7807Z 120ABIT 50 1,247 4-30-2003 -24.50 66.75 664352 <td>T-1000</td> <td>120SLDL</td> <td>7</td> <td>2,322</td> <td>4-02-2003</td> <td>-47.30</td> <td>54.30</td>	T-1000	120SLDL	7	2,322	4-02-2003	-47.30	54.30
1093 120CVGN 22 1,910 4-22-2003 -35.10 57.10 1094 120SLDL 15 2,150 4-03-2003 -49.20 64.20 1102 120CVGN 28 1,785 4-02-2003 -33.00 61.00 1106 120CVGN 20 1,820 4-22-2003 -49.50 70.50 1110 120CVGN 20 1,820 4-22-2003 -45.40 55.40 1114 120ABHT 10 1,945 4-03-2003 -45.40 54.00 1128 120CVGN 25 1,930 4-22-2003 -35.00 60.00 1129 120CVGN 30 1,810 3-28-2003 -24.40 54.40 5059Z 120ABHT 60 1,134 4-16-2003 -6.75 66.75 6345Z 120ABHT 50 1,247 4-30-2003 -8.40 58.40 7296Z 120ABHT 98 1,300 3-21-2003 -8.30 106.20 244	ST-1007						
1094 120SLDL 15 2,150 4-03-2003 -49.20 64.20 1102 120CVGN 28 1,785 4-02-2003 -33.00 61.00 1106 120CVGN 21 1,920 4-22-2003 -49.50 70.50 1110 120CVGN 20 1,820 4-22-2003 -49.60 68.00 1114 120ABIT 10 1,945 4-03-2003 -45.40 55.40 1124 120CVGN 25 1,930 4-22-2003 -35.00 60.00 1129 120CVGN 30 1,810 3-28-2003 -24.40 54.40 5012Z 120ABIT 60 1,134 4-16-2003 -6.75 66.75 6345Z 120ABIT 50 1,247 4-30-2003 -8.40 58.40 7807Z 120CVGN 32 1,962 4-29-2003 -53.00 75.00 264 120CVGN 52 1,430 4-15-2003 -56.80 86.80 712	ST-1017 ST-1093						
1106 120CVGN 21 1,920 4-22-2003 -49.50 70.50 1110 120CVGN 20 1,820 4-22-2003 -48.00 68.00 1114 120CVGN 21 1,865 4-02-2003 -45.40 55.40 1124 120CVGN 21 1,865 4-22-2003 -39.60 60.60 1128 120CVGN 25 1.930 4-22-2003 -24.40 54.40 5012Z 120ABIT 13 1.932 4-01-2003 -38.80 51.80 5059Z 120ABIT 60 1,134 4-16-2003 -6.75 66.75 6345Z 120ABIT 50 1,247 4-30-2003 -8.40 58.40 7807Z 120ABIT 98 1,300 3-21-2003 -8.20 106.20 258 120CVGN 22 1,962 4-29-2003 -53.00 75.00 264 120CVGN 52 1,430 4-15-2003 -66.60 98.60 107 120KNTD 210 531 4-15-2003 -15.50 225.50 <tr< td=""><td>ST-1094</td><td>120SLDL</td><td>15</td><td>2,150</td><td>4-03-2003</td><td>-49.20</td><td>64.20</td></tr<>	ST-1094	120SLDL	15	2,150	4-03-2003	-49.20	64.20
1110 120CVGN 20 1,820 4-22-2003 -48.00 68.00 1114 120ABIT 10 1,945 4-03-2003 -45.40 55.40 1124 120CVGN 21 1,865 4-22-2003 -39.60 60.60 1128 120CVGN 25 1,930 4-22-2003 -35.00 60.00 1129 120CVGN 30 1,810 3-28-2003 -24.40 54.40 50512 120ABIT 60 1,134 4-16-2003 -6.75 66.75 6345Z 120ABIT 50 1,247 4-30-2003 -8.40 58.40 7807Z 120ABIT 98 1,300 3-21-2003 -8.20 106.20 254 120CVGN 30 1,728 3-21-2003 -56.80 86.80 278 120CVGN 52 1,430 4-15-2003 -15.50 225.50 440 120KNTD 210 531 4-15-2003 -15.50 225.50 440 120KNTD 220 603 4-15-2003 -15.50 225.50	ST-1102						
1114 120ABIT 10 1,945 4-03-2003 -45.40 55.40 1124 120CVGN 21 1,865 4-22-2003 -39.60 60.60 1128 120CVGN 25 1,930 4-22-2003 -35.00 60.00 1129 120CVGN 30 1,810 3-28-2003 -24.40 54.40 5012Z 120ABIT 13 1,932 4-01-2003 -6.75 66.75 6345Z 120ABIT 22 1,492 3-25-2003 -42.50 64.50 7296Z 120ABIT 50 1,247 4-30-2003 -8.40 58.40 7807Z 120CVGN 34 1,798 4-30-2003 -24.90 58.90 244 120ABIT 98 1,300 3-21-2003 -56.80 86.80 278 120CVGN 52 1,430 4-15-2003 -46.60 98.60 440 120KNTD 210 531 4-15-2003 -8.67 11.33 452	ST-1106 ST-1110						
1128 120CVGN 25 1,930 4-22-2003 -35.00 60.00 1129 120CVGN 30 1,810 3-28-2003 -24.40 54.40 5012Z 120ABIT 13 1,932 4-01-2003 -38.80 51.80 5059Z 120ABIT 60 1,134 4-16-2003 -6.75 66.75 6345Z 120ABIT 50 1,247 4-30-2003 -8.40 58.40 7296Z 120ABIT 98 1,300 3-21-2003 -8.20 106.20 258 120CVGN 34 1,728 3-21-2003 -56.80 86.80 278 120CVGN 30 1,728 3-21-2003 -56.80 86.80 278 120CVGN 52 1,430 4-15-2003 -46.60 98.60 407 120KNTD 210 531 4-15-2003 -46.50 96.50 440 120KNTD 220 603 4-15-2003 8.67 211.33 452 120KNTD 150 775 4-15-2003 75.51 212.49	T-1114	120ABIT	10	1,945	4-03-2003	-45.40	55.40
1129 120CVGN 30 1,810 3-28-2003 -24.40 54.40 5012Z 120ABIT 13 1,932 4-01-2003 -38.80 51.80 5059Z 120ABIT 60 1,134 4-16-2003 -6.75 66.75 6345Z 120ABIT 22 1,492 3-25-2003 -42.50 64.50 7296Z 120ABIT 50 1,247 4-30-2003 -8.40 58.40 7807Z 120CVGN 34 1,798 4-30-2003 -24.90 58.90 244 120ABIT 98 1,300 3-21-2003 -56.80 86.80 258 120CVGN 22 1,962 4-29-2003 -53.00 75.00 264 120CVGN 30 1,728 3-21-2003 -46.60 98.60 407 120KNTD 210 531 4-15-2003 -15.50 225.50 420 120CVGN 47 1,650 3-25-2003 -49.50 96.50 440 120KNTD 220 603 4-15-2003 13.50 163.50	T-1124						
5012Z 120ABIT 13 1,932 4-01-2003 -38.80 51.80 5059Z 120ABIT 60 1,134 4-16-2003 -6.75 66.75 6345Z 120ABIT 22 1,492 3-25-2003 -42.50 64.50 7296Z 120ABIT 50 1,247 4-30-2003 -8.40 58.40 7807Z 120CVGN 34 1,798 4-30-2003 -24.90 58.90 244 120ABIT 98 1,300 3-21-2003 -8.20 106.20 258 120CVGN 22 1,962 4-29-2003 -53.00 75.00 264 120CVGN 30 1,728 3-21-2003 -46.60 98.60 407 120KNTD 210 531 4-15-2003 -15.50 225.50 420 120KNTD 210 531 4-15-2003 8.67 211.33 452 120KNTD 150 775 4-15-2003 75.51 212.49 493 120KNTD 312 647 4-11-2003 90.87 221.13	T-1128 T-1129						
6345Z 120ABIT 22 1,492 3-25-2003 -42.50 64.50 7296Z 120ABIT 50 1,247 4-30-2003 -8.40 58.40 7807Z 120CVGN 34 1,798 4-30-2003 -24.90 58.90 244 120ABIT 98 1,300 3-21-2003 -8.20 106.20 258 120CVGN 22 1,962 4-29-2003 -53.00 75.00 264 120CVGN 52 1,430 4-15-2003 -46.60 98.60 407 120KNTD 210 531 4-15-2003 -45.50 225.50 420 120CVGN 47 1,650 3-25-2003 -49.50 96.50 440 120KNTD 220 603 4-15-2003 8.67 211.33 452 120KNTD 150 775 4-15-2003 75.51 212.49 493 120KNTD 312 647 4-11-2003 90.87 221.13 772 120CVGN 133 1,355 4-15-2003 13.20 119.80 <	ST-5012Z			1,932		-38.80	
7296Z120ABIT501,2474-30-2003-8.4058.407807Z120CVGN341,7984-30-2003-24.9058.90244120ABIT981,3003-21-2003-8.20106.20258120CVGN221,9624-29-2003-53.0075.00264120CVGN301,7283-21-2003-56.8086.80278120CVGN521,4304-15-2003-46.6098.60407120KNTD2105314-15-2003-15.50225.50420120CVGN471,6503-25-2003-49.5096.50440120KNTD2206034-15-20038.67211.33452120KNTD1507754-15-200375.51212.49493120KNTD3126474-11-200390.87221.13772120CVGN1331,3554-15-200313.20119.80833120KNTD2026304-10-2003-12.70214.70835120CVGN251,9054-16-2003-56.2081.200099Z120CVGN132,0304-29-2003-67.0080.00-78120ABIT1505854-23-2003-9.40159.40-91120KNTD1254004-24-2003-23.10219.18-100120KNTD1254004-24-2003-23.10219.10-5516Z120ABIT917524-25-2003 <td>T-5059Z</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	T-5059Z						
7807Z 120CVGN 34 1,798 4-30-2003 -24.90 58.90 244 120ABIT 98 1,300 3-21-2003 -8.20 106.20 258 120CVGN 22 1,962 4-29-2003 -53.00 75.00 264 120CVGN 30 1,728 3-21-2003 -56.80 86.80 278 120CVGN 52 1,430 4-15-2003 -46.60 98.60 407 120KNTD 210 531 4-15-2003 -46.60 98.60 440 120KNTD 210 531 4-15-2003 -49.50 96.50 440 120KNTD 220 603 4-15-2003 8.67 211.33 452 120KNTD 150 77.5 4-15-2003 75.51 212.49 493 120KNTD 312 647 4-11-2003 90.87 221.13 772 120CVGN 133 1,355 4-15-2003 -12.70 214.70 833 120KNTD 202 630 4-10-2003 -12.70 214.70	ST-6345Z ST-7296Z						
2244 120ABIT 98 1,300 3-21-2003 -8.20 106.20 258 120CVGN 22 1,962 4-29-2003 -53.00 75.00 264 120CVGN 30 1,728 3-21-2003 -56.80 86.80 278 120CVGN 52 1,430 4-15-2003 -46.60 98.60 407 120KNTD 210 531 4-15-2003 -15.50 225.50 420 120CVGN 47 1,650 3-25-2003 -49.50 96.50 440 120KNTD 220 603 4-15-2003 8.67 211.33 452 120KNTD 150 775 4-15-2003 75.51 212.49 493 120KNTD 312 647 4-11-2003 90.87 221.13 772 120CVGN 133 1,355 4-15-2003 -12.70 214.70 833 120KNTD 202 630 4-10-2003 -12.70 214.70 835 1	ST-7296Z ST-7807Z						
264120CVGN301,7283-21-2003-56.8086.80278120CVGN521,4304-15-2003-46.6098.60407120KNTD2105314-15-2003-46.6098.60407120KNTD2105314-15-2003-49.5096.50420120CVGN471,6503-25-2003-49.5096.50440120KNTD2206034-15-20038.67211.33452120KNTD1507754-15-2003-13.50163.50454120KNTD2887204-15-200375.51212.49493120KNTD3126474-11-200390.87221.13772120CVGN1331,3554-15-2003-12.70214.70833120KNTD2026304-10-2003-12.70214.70835120CVGN251,9054-16-2003-56.2081.209099Z120CVGN132,0304-29-2003-67.0080.00.78120ABIT1505854-23-2003-9.40159.40.91120KNTD1254004-24-2003-2.00127.00.5156Z120KNTD1967154-23-2003-23.10219.10.5210Z120ABIT917524-25-2003-16.30107.30.7127Z120ABIT905564-24-2003-27.00117.00.8-1112117BR271,4504-04-2003<	a-244		98	1,300			106.20
120CVGN 52 1,430 4-15-2003 -46.60 98.60 407 120KNTD 210 531 4-15-2003 -15.50 225.50 420 120CVGN 47 1,650 3-25-2003 -49.50 96.50 440 120KNTD 220 603 4-15-2003 8.67 211.33 452 120KNTD 150 775 4-15-2003 -13.50 163.50 454 120KNTD 288 720 4-15-2003 75.51 212.49 493 120KNTD 312 647 4-11-2003 90.87 221.13 772 120CVGN 133 1,355 4-15-2003 -12.70 214.70 833 120KNTD 202 630 4-10-2003 -12.70 214.70 835 120CVGN 13 2,030 4-29-2003 -67.00 80.00 78 120ABIT 150 585 4-23-2003 -9.40 159.40 991 120KNTD	°a-258 °a-264						
407120KNTD2105314-15-2003-15.50225.50420120CVGN471,6503-25-2003-49.5096.50440120KNTD2206034-15-20038.67211.33452120KNTD1507754-15-2003-13.50163.50454120KNTD2887204-15-200375.51212.49493120KNTD3126474-11-200390.87221.13772120CVGN1331,3554-15-200313.20119.80833120KNTD2026304-10-2003-12.70214.70835120CVGN251,9054-16-2003-56.2081.209099Z120CVGN132,0304-29-2003-67.0080.00.78120ABIT1505854-23-2003-9.40159.40.91120KNTD2406004-11-200320.62219.38.100120KNTD1254004-24-2003-2.00127.00.5156Z120KNTD1967154-23-2003-23.10219.10.5210Z120ABIT917524-25-2003-16.30107.30.7127Z120ABIT905564-24-2003-27.00117.00.8-1112117BR271,4504-04-200367.38-40.38.8-100A12117BR291,8884-15-2003120.41-91.41	a-264 `a-278						
440120KNTD2206034-15-20038.67211.33452120KNTD1507754-15-2003-13.50163.50454120KNTD2887204-15-200375.51212.49493120KNTD3126474-11-200390.87221.13772120CVGN1331,3554-15-200313.20119.80833120KNTD2026304-10-2003-12.70214.70835120CVGN251,9054-16-2003-56.2081.209099Z120CVGN132,0304-29-2003-67.0080.00.78120ABIT1505854-23-2003-9.40159.40.91120KNTD2406004-11-200320.62219.38.100120KNTD1254004-24-2003-2.00127.00.5156Z120KNTD1967154-23-2003-23.10219.10.5210Z120ABIT917524-25-2003-16.30107.30.7127Z120ABIT905564-24-2003-27.00117.00.8r-100A12117BR271,4504-04-200367.38-40.38.8r-100A12117BR291,8884-15-2003120.41-91.41	°a-407	120KNTD	210	531	4-15-2003	-15.50	225.50
452120KNTD1507754-15-2003-13.50163.50454120KNTD2887204-15-200375.51212.49493120KNTD3126474-11-200390.87221.13772120CVGN1331,3554-15-200313.20119.80833120KNTD2026304-10-2003-12.70214.70835120CVGN251,9054-16-2003-56.2081.209099Z120CVGN132,0304-29-2003-67.0080.00.78120ABIT1505854-23-2003-9.40159.40.91120KNTD2406004-11-200320.62219.38.100120KNTD1254004-24-2003-2.00127.00.5156Z120KNTD1967154-23-2003-23.10219.10.5210Z120ABIT917524-25-2003-16.30107.30.7127Z120ABIT905564-24-2003-27.00117.00.8R-1112117BR271,4504-04-200367.38-40.38.8R-100A12117BR291,8884-15-2003120.41-91.41	°a-420 °a-440						
454120KNTD2887204-15-200375.51212.49493120KNTD3126474-11-200390.87221.13772120CVGN1331,3554-15-200313.20119.80833120KNTD2026304-10-2003-12.70214.70835120CVGN251,9054-16-2003-56.2081.209099Z120CVGN132,0304-29-2003-67.0080.00.78120ABIT1505854-23-2003-9.40159.40.91120KNTD2406004-11-200320.62219.38.100120KNTD1254004-24-2003-2.00127.00.5156Z120KNTD1967154-23-2003-23.10219.10.5210Z120ABIT917524-25-2003-16.30107.30.7127Z120ABIT905564-24-2003-27.00117.00.8R-100A12117BR271,4504-04-200367.38-40.38.8R-100A12117BR291,8884-15-2003120.41-91.41	a-440 Ta-452						
772120CVGN1331,3554-15-200313.20119.80833120KNTD2026304-10-2003-12.70214.70835120CVGN251,9054-16-2003-56.2081.209099Z120CVGN132,0304-29-2003-67.0080.00.78120ABIT1505854-23-2003-9.40159.40.91120KNTD2406004-11-200320.62219.38.100120KNTD1254004-24-2003-2.00127.00.5156Z120KNTD1967154-23-2003-23.10219.10.5210Z120ABIT917524-25-2003-16.30107.30.7127Z120ABIT905564-24-2003-27.00117.00.8R-100A12117BR271,4504-04-200367.38-40.38.8R-100A12117BR291,8884-15-2003120.41-91.41	°a-454	120KNTD	288	720	4-15-2003	75.51	212.49
833120KNTD2026304-10-2003-12.70214.70835120CVGN251,9054-16-2003-56.2081.209099Z120CVGN132,0304-29-2003-67.0080.0078120ABIT1505854-23-2003-9.40159.4091120KNTD2406004-11-200320.62219.38100120KNTD1254004-24-2003-2.00127.005516Z120KNTD1967154-23-2003-23.10219.1055210Z120ABIT917524-25-2003-16.30107.307127Z120ABIT905564-24-2003-27.00117.00IR-1112117BR271,4504-04-200367.38-40.38IR-100A12117BR291,8884-15-2003120.41-91.41	a-493						
835 120CVGN 25 1,905 4-16-2003 -56.20 81.20 9099Z 120CVGN 13 2,030 4-29-2003 -67.00 80.00 78 120ABIT 150 585 4-23-2003 -9.40 159.40 91 120KNTD 240 600 4-11-2003 20.62 219.38 100 120KNTD 125 400 4-24-2003 -2.00 127.00 55156Z 120KNTD 196 715 4-23-2003 -23.10 219.10 -55210Z 120ABIT 91 752 4-25-2003 -16.30 107.30 -7127Z 120ABIT 90 556 4-24-2003 -27.00 117.00 IR-11 12117BR 27 1,450 4-04-2003 67.38 -40.38 IR-100A 12117BR 29 1,888 4-15-2003 120.41 -91.41	Ta-772 Ta-833						
20099Z120CVGN132,0304-29-2003-67.0080.00.78120ABIT1505854-23-2003-9.40159.40.91120KNTD2406004-11-200320.62219.38.100120KNTD1254004-24-2003-2.00127.00.5156Z120KNTD1967154-23-2003-23.10219.10.5210Z120ABIT917524-25-2003-16.30107.30.7127Z120ABIT905564-24-2003-27.00117.00.R-1112117BR271,4504-04-200367.38-40.38.R-100A12117BR291,8884-15-2003120.41-91.41	a-835	120CVGN	25	1,905		-56.20	
91 120KNTD 240 600 4-11-2003 20.62 219.38 -100 120KNTD 125 400 4-24-2003 -2.00 127.00 -5156Z 120KNTD 196 715 4-23-2003 -23.10 219.10 -5210Z 120ABIT 91 752 4-25-2003 -16.30 107.30 -7127Z 120ABIT 90 556 4-24-2003 -27.00 117.00 R-11 12117BR 27 1,450 4-04-2003 67.38 -40.38 R-100A 12117BR 29 1,888 4-15-2003 120.41 -91.41	a-9099Z	120CVGN	13	2,030	4-29-2003	-67.00	80.00
100120KNTD1254004-24-2003-2.00127.0055156Z120KNTD1967154-23-2003-23.10219.1055210Z120ABIT917524-25-2003-16.30107.307127Z120ABIT905564-24-2003-27.00117.00R-1112117BR271,4504-04-200367.38-40.38R-100A12117BR291,8884-15-2003120.41-91.41	Va-78 Va-91						
5:5156Z120KNTD1967154-23-2003-23.10219.10:5210Z120ABIT917524-25-2003-16.30107.30:7127Z120ABIT905564-24-2003-27.00117.00:R-1112117BR271,4504-04-200367.38-40.38:R-100A12117BR291,8884-15-2003120.41-91.41	Wa-91 Wa-100						
55210Z 120ABIT 91 752 4-25-2003 -16.30 107.30 .7127Z 120ABIT 90 556 4-24-2003 -27.00 117.00 .R-11 12117BR 27 1,450 4-04-2003 67.38 -40.38 .R-100A 12117BR 29 1,888 4-15-2003 120.41 -91.41	Va-100 Va-5156Z					-23.10	
R-1112117BR271,4504-04-200367.38-40.38R-100A12117BR291,8884-15-2003120.41-91.41	Va-5210Z	120ABIT	91	752	4-25-2003	-16.30	107.30
R-100A 12117BR 29 1,888 4-15-2003 120.41 -91.41	Va-7127Z VBR-11						
	VBR-11 VBR-100A						
	VBR-139	12117BR	29	1,375	4-15-2003	71.72	-42.72
	WBR-176 WBR-177						

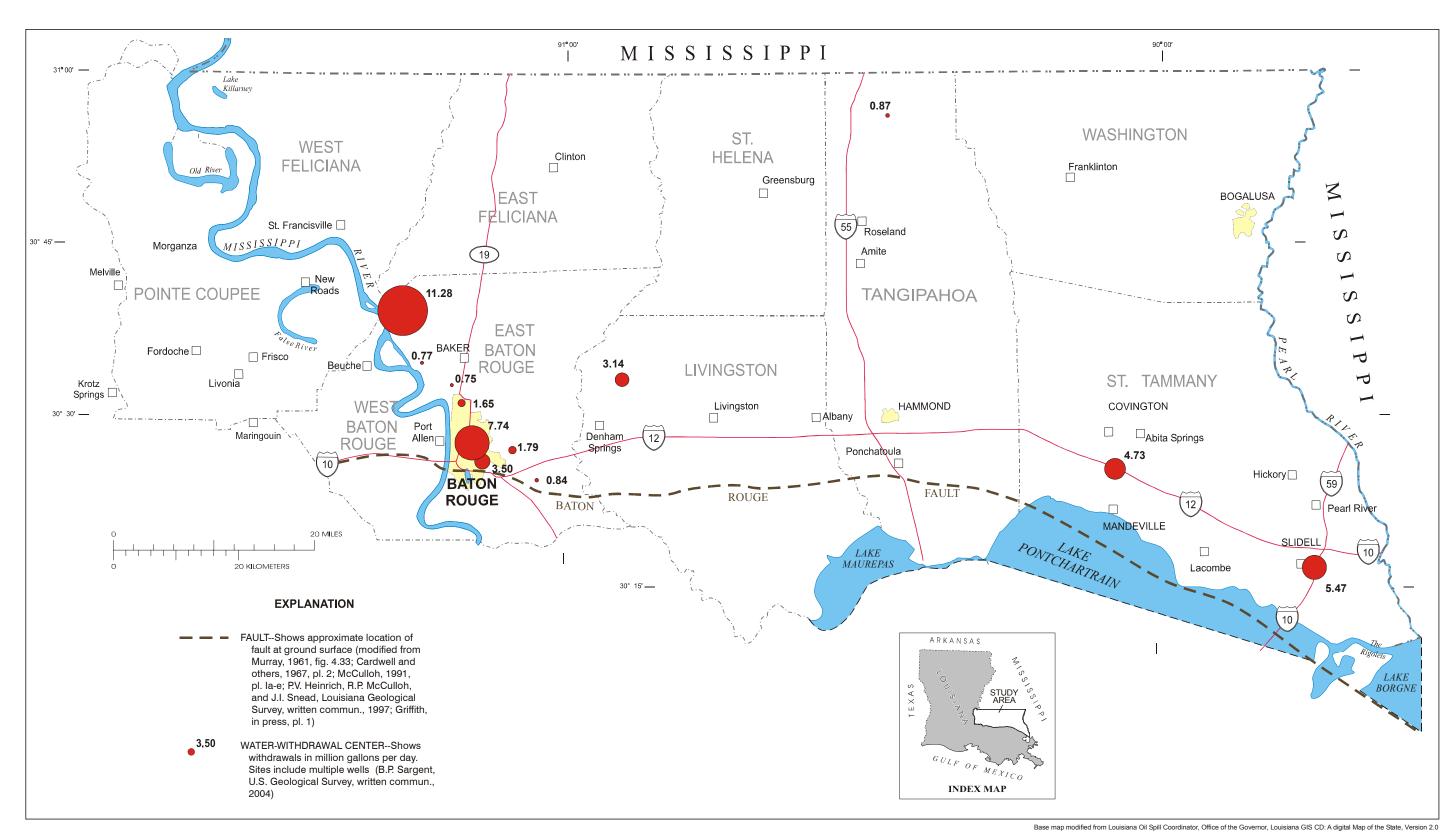


Figure 3. Water-withdrawal centers where average daily withdrawals exceeded 0.5 million gallons per day from the Kentwood aquifer system and the "1,500-foot" and "1,700-foot" sands of the Baton Rouge area, southeastern Louisiana, April 2003.

WATER-LEVEL TRENDS

Long-term water-level declines have occurred within the study area in response to water withdrawals. Hydrographs illustrating water-level trends are shown in figure 4. Average rates of water-level change were computed over the period 1993 to 2003 using ordinary least squares linear regression. The largest rate of decline occurred in East Baton Rouge Parish, where large amounts of water were withdrawn for public-supply and industrial needs. Hydrographs for wells EB-168, EB-392, and EB-917 (fig. 4A) in the "1,500-foot" sand and EB-804A and WBR-100A (fig. 4B) in the "1,700-foot" sand illustrate the declining water levels in the Baton Rouge metropolitan area (fig. 4). From 1993 to 2003, water levels declined 2.9 ft/yr at well EB-392 and 2.3 ft/yr at well WBR-100A.

In southern St. Tammany Parish, water levels declined at a rate of 1.3 ft/yr from 1993 to 2003, as represented by the hydrographs for wells ST-563 in Slidell and ST-576 in the Lacombe area. The water level in northern Orleans Parish, at well Or-179, south of Slidell, declined at a more modest rate of 0.7 ft/yr from 1993 to 2003 (fig. 4C).

Water levels declined at well Ta-278 (northeast of Hammond) at a rate of 1.4 ft/yr from 1993 to 2003 and at well ST-562 (northwest of Mandeville) at a rate of 0.7 ft/yr from 1990 to 2003. The water level near Albany at well Li-52 also declined at a rate of 1.4 ft/yr from 1993 to 2003 (fig. 4D).

Nearest the northern outcrop area and away from the influence of major withdrawal centers to the south, water-level declines were less, and water levels were more likely to fluctuate in response to precipitation than to withdrawals. Hydrographs for wells Ta-440 and Ta-454 (fig. 4E), located in northern Tangipahoa Parish, and well WF-254 (north of St. Francisville) indicate minor declines, probably due to the recent drought during 1998-2001 (Bohr, 2003), and subsequent recovery. Water levels in well PC-39, in northwestern Pointe Coupee Parish, did not change substantially over the period April 1993 to April 2003 (fig. 4F).

SELECTED REFERENCES

Buono, Anthony, 1983, The Southern Hills regional aquifer system of southeastern Louisiana and southwestern Mississippi: U.S. Geological Survey Water-Resources Investigations Report 83-4189, 38 p.

Bohr, G.S., 2003, Recent drought in the Southern Region: Southern Regional Climate Center, accessed December 23, 2003, at URL http://www.srcc.lsu.edu/monitor/drought.html

- Cardwell, G.T., Forbes, M.J., Jr., and Gaydos, M.W., 1967, Water resources of the Lake Pontchartrain area, Louisiana: Department of Conservation, Louisiana Geological Survey, and Louisiana Department of Public Works Water Resources Bulletin no. 12, 105 p.
- Case, H.L., III, 1979, Ground-water resources of Washington Parish, Louisiana: Louisiana Department of Transportation and Development, Office of Public Works Water Resources Technical Report no. 18, 33 p.

Compton, R.R., 1985, Geology in the field: New York, John Wiley and Sons, 398 p.

- Dial, D.C., 1968, Water-level trends in southeastern Louisiana: Department of Conservation, Louisiana and Louisiana Department of Public Works Water Resources Pamphlet no. 22, 11 p.
- Griffith, J.M., in press, Hydrogeologic framework of southeastern Louisiana: Louisiana Department of Development Water Resources Technical Report no. 72, 21 p.
- Griffith, J.M., and Lovelace, J.K., 2003, Louisiana ground-water map no. 16: Potentiometric surface of sand of the Baton Rouge area, Louisiana, spring 2001: U.S. Geological Survey Water-Resources In Report 03-4021, 2 sheets.

Louisiana State Census Data Center, 2003, Census 2000, accessed October 15, 2003, at www.state.la.us/census/2000/2000countychange.htm

Lovelace, J.K., 1991, Water use in Louisiana, 1990: Louisiana Department of Transportation and Dev Resources Special Report no. 6, 131 p.

Louisiana Ground-Water Map No. 17:

Generalized Potentiometric Surface of the Kentwood Aquifer System and the "1,500-foot" and "1,700-foot" Sands of the Baton Rouge Area in Southeastern Louisiana, March-April 2003

¹A negative depth below land surface indicates water levels above land surface.

793

4-15-2003

109.46

45.54

WF-254

12117BR

155

Prepared in cooperation with the

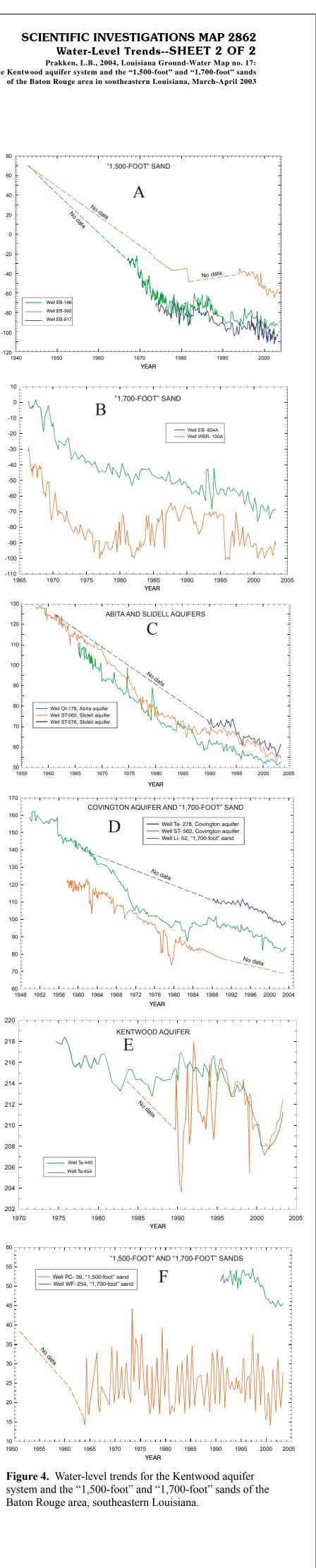
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT Office of Public Works and Intermodal

Generalized potentiometric surface of the Kentwood aquifer system and the "1,500-foot" and "1,700-foot" sands

- Lovelace, J.K., and Lovelace, W.M., 1995, Hydrogeologic unit nomenclature and computer codes for aquifers and confining units in Louisiana: Louisiana Department of Transportation and Development Water Resources Special Report no. 9, 12 p.
- Martin, Angel, Jr., and Whiteman, C.D., Jr., 1985, Map showing generalized potentiometric surface of the Evangeline and equivalent aquifers in Louisiana, 1980: U.S. Geological Survey Water-Resources Investigations Report 84-4359, 1 sheet.
- McCulloh, R.P., 1991, Surface faults in East Baton Rouge Parish: Baton Rouge, La., Louisiana Geological Survey Open-File series 91-02, 25 p.
- Murray, G.E., 1961, Geology of the Atlantic and Gulf Coastal Province of North America: New York, Harper Brothers, 692 p.
- Nyman, D.J., and Fayard, L.D., 1978, Ground-water resources of Tangipahoa and St. Tammany Parishes, southeastern Louisiana: Louisiana Department of Transportation and Development, Office of Public Works Water Resources Technical Report no. 15, 76 p.
- Sargent, B. Pierre, 2002, Water use in Louisiana, 2000: Louisiana Department of Transportation and Development Water Resources Special Report no. 15, 133 p.
- Stuart, C.G., Knochenmus, Darwin, and McGee, B.D., 1994, Guide to Louisiana's ground-water resources: U.S. Geological Survey Water-Resources Investigations Report 94-4085, 55 p.
- Tomaszewski, D.J., 1988, Ground-water hydrology of Livingston, St. Helena, and parts of Ascension and Tangipahoa Parishes, southeastern Louisiana: Louisiana Department of Transportation and Development Water Resources Technical Report no. 43, 54 p.
- Tomaszewski, D.J., 1996, Distribution and movement of saltwater in aquifers in the Baton Rouge area, Louisiana, 1990-92: Louisiana Department of Transportation and Development Water Resources Technical Report no. 59, 44 p.
- Tomaszewski, D.J., Lovelace, J.K., and Ensminger, P.A., 2002, Water withdrawals and trends in ground-water levels and stream discharge in Louisiana: Louisiana Department of Transportation and Development Water Resources Technical Report no. 68, 30 p.
- Walters, D.J., 1992, Louisiana ground-water map no. 5: Potentiometric surface, 1990, and water-level changes, 1974-90, of the Evangeline equivalent/southeast Louisiana aquifer system: U.S. Geological Survey Water-Resources Investigations Report 92-4112, 2 sheets.
- Whiteman, C.D., Jr., 1979, Saltwater encroachment in the "600-foot" and "1,500-foot" sands of the Baton Rouge area, Louisiana, 1966-78, including a discussion of saltwater in other sands: Louisiana Department of Transportation and Development, Office of Public Works Water Resources Technical Report no. 19, 49 p.

a Geological Survey,	CONVERSION FACTORS AND DATUMS						
of Transportation and	Multiply	By	To obtain				
	foot (ft)	0.3048	meter (m)				
e of the "1,500-foot"	foot per year (ft/yr)	0.3048	meter per year (m/yr)				
Investigations	mile (mi)	1.609	kilometer (km)				
	million gallons per day (Mgal/d)	3,785	cubic meter per day (m^3/d)				
evelopment Water	Vertical coordinate information in this report is referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29)a geodetic datum derived from a general adjustment of the first-order level nets of both the United States						
evelopment water	and Canada.	referenced to the North	h American Detum of 1027				
	Horizontal coordinate information in this report is referenced to the North American Datum of 1927.						

By Lawrence B. Prakken 2004



N N

WAJ BEL