THE MEMPHIS DEPOT
TENNESSEE

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 642

ANNUAL OPERATION AND MAINTENANCE SUMMARY REPORT FOR YEAR 2001 GROUNDWATER INTERIM REMEDIAL ACTION REV. 1 DUNN FIELD

MEMPHIS DEFENSE DEPOT, TENNESSEE

PREPARED FOR

MOBILE DISTRICT COE

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BY

JACOBS FEDERAL PROGRAMS

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1.0 INTRODUCTION

This report summarizes the information contained in the monthly operation and maintenance reports, which are generated and submitted to the Memphis Depot and the regulating government agencies.

1.1 Site Description and Background

DDMT covers 642 acres in Shelby County, Tennessee The facility is approximately four miles southeast of the central business district and one mile northwest of Memphis International Airport. Operations began in 1942 with the mission to inventory and supply materials for the United States Army In 1964, its mission was expanded to serve as one of the principal distribution centers for a complete range of military commodities. Past activities at DDMT included a wide range of storage, distribution, and maintenance practices. DDMT has been closed since 1997 and is maintained by the Memphis Depot Caretaker Division, under the control of the Defense Depot, Susquehanna, Pennsylvania/Defense Logistics Agency (DLA). DDMT is currently undergoing Base Realignment and Closure (BRAC) activities.

Dunn Field, also called OU-1, consists of 68 acres of land located north of the main installation. The northwestern quadrant of Dunn Field was used as a landfill area. The southwestern and southeastern quadrants were used as a storage area for mineral stockpiles. The northeastern portion was used as a pistol range and later as a pesticide storage area. Until 1970, Army supplies, including hazardous and non-hazardous materials were burned or buried primarily in the northwest portion of Dunn Field. These materials potentially included oil and grease, paint, paint thinner, methyl bromide, pesticides, herbicides, and food supplies Disposal operations at Dunn Field have created a plume of contaminated groundwater, in the shallow fluvial aquifer, along the western and northern portion of Dunn Field. Groundwater monitoring performed during the 1989 and 1990 remedial investigation/feasibility study (RI/FS) identified concentrations of dissolved volatile organic compounds (VOCs) and heavy metals above regulatory limits Identified VOCs included, but were not limited to tetrachloroethene, trichloroethene, dichloroethene, carbon tetrachloride, chloroform and 1,1,2,2 – trichloroethane. The DDMT facility is classified as a Superfund Site under the Comprehensive Environmental Response, Compensation, and Liability Act of 1990 (CERCLA) Section 120 (Federal Facilities).

1.2 Groundwater Recovery System Description

As part of the Record of Decision (ROD) for interim remedial action at Dunn Field, seven groundwater extraction wells, one pre-cast concrete building, an underground conveyance system, a flow measurement and control system, and associated components were installed in 1997. Four additional recovery wells were installed and brought online in 2001. Equipment, process controls, operational requirements, recovery well sizes and depths, pumping rates, and construction drawings are defined in the Technical Specifications prepared by CH2M-Hill.

2.0 OPERATION AND MAINTENANCE SUMMARY

2.1 Recovery Wells

Four new wells were added to the system in 2001 and underwent startup procedures in March. Additionally, the remainder of the pump motors (with the exception of RW-3) were replaced with smaller units. A significant problem developed in March which was causing the pump motors to overload and burn out. After some investigation, it was determined that the overload circuits had been wired incorrectly during the upgrade and maintenance work. This problem was corrected in May, and the system experienced little downtime for the rest of 2001. Downtime and maintenance operations for individual recovery wells are discussed below:

RW-01

January – February – RW-01 was off-line until system restart in March.

March – RW-01 was started, but ran only 42% due to a faulty transducer. The unit was shut back down pending repair of the transducer.

April – May – Unit stayed off-line pending repair of transducer

June – RW-01 was restarted on June 8th and was 100% operational for the remainder of the month.

July – August – Transducer is experiencing "float" in readings, causing well to cycle. Beginning in Mid August well was run on manual mode, allowing 100% operation for the remainder of the year

RW-01A

January- February – System was off-line pending startup.

March – April – Well is operation, but experienced cycling on/off. Controller settings were adjusted and well become 100% operational at the end of April.

July – August – Well began cycling. Controller settings were adjusted and well became 100% operational in mid-August through the rest of the year.

RW-01B

January – February - System was off-line pending startup.

March – April - Well was experiencing cycling and was being run in manual mode. An adjustment was made to the controller and unit began running more consistently.

May – Well was tripping overload and would not run. Problem was evaluated.

June – Found that tripping problem at well was due to a nicked motor lead wire. Problem was repaired and well became 100% operational in the second week of June. The system remained 100% operational for the remainder of 2001

RW-02

January - February - Well was off-line pending system startup.

March - June - Well was started in March. It experienced cycling but was 75 to 82% operational. The controller settings were readjusted in June, at which time the well became 100% operational. The well remained 100% operational for the remainder of 2001.

RW-03:

January - RW-03 was mostly non-operational in January The system was shut down due to the upgrade and installation of the four new wells in December of 2000, and was restarted in late January.

February – March - The well was brought back on-line but experienced a malfunctioning actuator valve. The actuator was repaired and the well was 43% operational in March

March – May - Well experienced a pump motor failure at the end of March and was out of commission until early June.

June – Pump motor failure was traced to faulty wiring of the overloads. The problem was repaired and the pump motor replaced. The well became 100% operational in early June and remained at 100% for the remainder of 2001.

RW-04

January - February - Well was mostly off-line pending restart of system in March.

March – December - Well was brought back on-line and remained 100% operational for the remainder of 2001.

RW-05

January – Well was run briefly in January, then was shut down pending restart of the rest of the system.

February – Well was 100% operational.

March - April - After being shutdown for the well testing and startup of new wells, RW-5 would not restart. It was determined that the pump motor had burned out. The motor was replaced and immediately burned out again. The well was left shut down pending evaluation of the problem

May – The pump motor for RW-5 was replaced. An error in the overload circuit wiring was found to be the cause of the motor failures. This was corrected and the system became 100% operational for the remainder of 2001.

RW-06

January – February - Well was off-line pending re-start of the system in March.

March – December - Well was restarted and was 100% operational for the remainder of the year

RW-07

January – February - Well was off-line pending re-start of the system in March.

March - April - After being shutdown for the well testing and startup of new wells, RW-7 would not restart It was determined that the pump motor had burned out. The well was left shut down pending evaluation of the problem.

May – The pump motor for RW-7 was replaced. An error in the overload circuit wiring was found to be the cause of the motor failures. This was corrected and the system became 100% operational for the remainder of 2001.

RW-08

January – RW-08 was 85% operational and was only shut down briefly due to cold weather.

February – April - Well was restarted in April and was 100% operational during this time.

May - RW-08 was tripping out the overload circuits. The overload settings were raised slightly and the system became 100% operational for the remainder of the year.

RW-09

January – RW-9 was run at 85%, and was only briefly shut down due to cold weather.

The system was 100% operational for the remainder of 2001.

2.2 Telemetry System

Data from each of the recovery well is collected in a central processor in the pump control building and is accessible via a remote modem connection. The system was in-use and operating throughout the year.

3.0 SYSTEM PERFORMANCE

Monthly and cumulative extraction volumes for each well have been tabulated and are presented in Table 1. Graphical depictions of the recovery volumes have also been prepared and are presented as Figures 1 through 11.

For the period January through May, some technical problems resulted in decreased performance and some significant downtime For the period June through December, the system performed to expectations.

Approximately 24.2 million gallons of water were removed from the ground in the calendar year 2001, resulting in removal of approximately 21 4 pounds of TCE and 67 6 pounds of total volatile organic compounds.

Groundwater quality, as indicated by Total VOC and TCE concentrations in effluent (Figure 12), did not show significant change over the course of the year. Total VOC concentrations varied from a low of 297 ug/L in May to a high of 511 ug/L in December. TCE concentrations varied from a low of 89 ug/L in January to a high of 173 ug/L in December.

Beginning in 2001, Effluent samples were collected on a quarterly, rather than monthly, basis.

TABLES

TABLE 1

YEAR 2001
SUMMARY OF GROUNDWATER EXTRACTION VOLUMES

	RW-1 Extraction Volume (Gal)	RW-1A Extraction Volume (Gal)	RW-1B Extraction Volume (Gal)	RW-2 Extraction Volume (Gal)	RW-3 Extraction Volume (Gal)	RW-4 Extraction Volume (Gal)	RW-5 Extraction Volume (Gal)	RW-6 Extraction Volume (Gal)	RW-7 Extraction Volume (Gal)	RW-8 Extraction Volume (Gal)	RW-9 Extraction Volume (Gal)	Monthly Totals
JAN	0	0	0	0	462	0	53,067	0	0	551,829	540,872	1,146,230
FEB	0	0	0	0	0	0	225,792	0	0	600,768	580,608	1,407,168
MAR	18,719	98,422	87,271	71,751	57960	170640	0	407550	0	665120	642128	2,219,561
APR	0	112,104	20,196	69,876	0	118,512	0	328,320	0	643,680	622,368	1,915,056
MAY	0	146,928	0	68,733	0	106,119	29,932	306,296	55,440	550,956	624,876	1,889,280
JUN	20,820	157,824	49,440	67,758	96,288	77,616	131,904	300,528	181,152	636,624	615,168	2,335,122
JUL	16,200	165,576	62,928	89,856	87,264	63,648	138,384	326,592	147,312	664,992	624,240	2,386,992
AUG	22,320	136,224	55,584	84,528	62,496	37,296	138,384	322,848	125,568	660,672	633,024	2,278,944
SEP	21,600	125,280	51,840	78,624	41,472	7,776	133,920	295,488	112,320	639,360	604,800	2,112,480
OCT	22,320	122,544	51,264	82,656	35,712	4,464	138,384	294,336	120,672	662,976	624,960	2,160,288
NOV	13,248	108,000	47,520	78,624	34,560	13,680	133,920	284,256	116,640	643,680	612,576	2,086,704
DEC	34,128	111,600	49,104	82,656	47,232	20,160	138,384	299,088	134,496	665,136	642,960	2,224,944
Totals	169,355	1,284,502	475,147	775,062	463,446	619,911	1,262,071	3,165,302	993,600	7,585,793	7,368,580	24,162,769

FIGURES

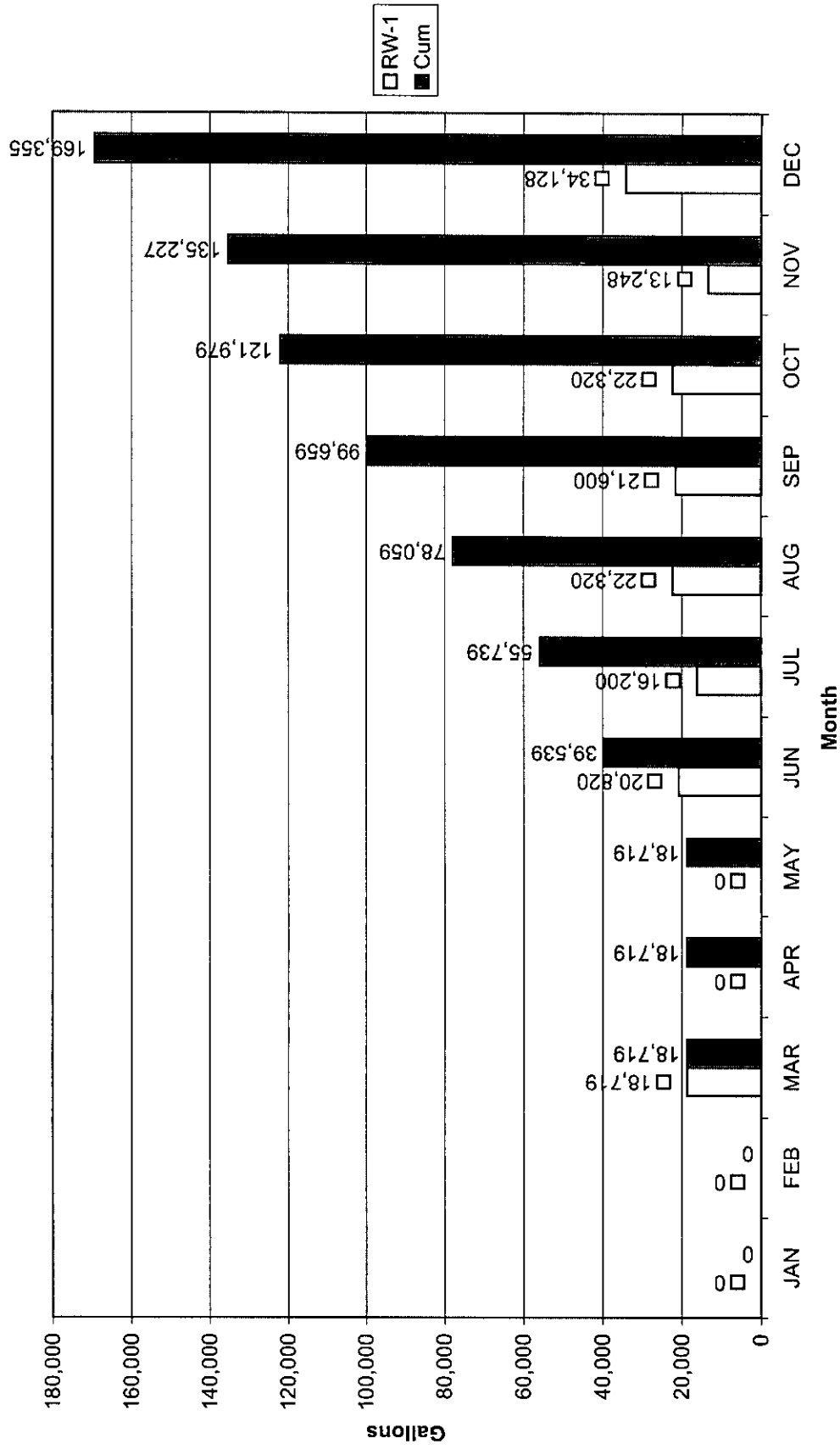


Figure 1
Year 2001 Monthly and Cumulative Groundwater Extraction Volume for Recovery Well RW-1 in Gallons

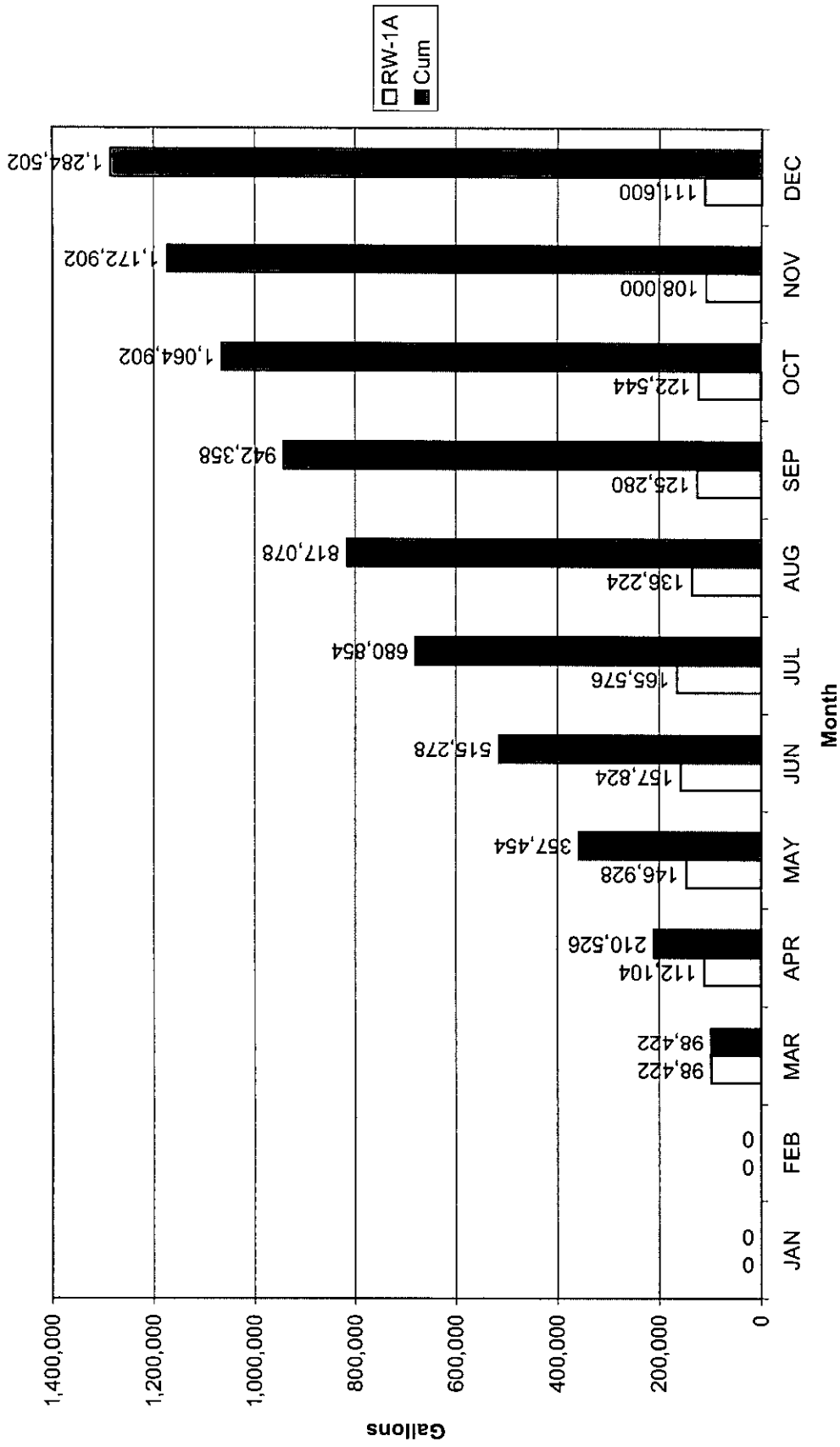


Figure 2
Year 2001 Monthly and Cumulative Groundwater Extraction Volume for Recovery Well RW-1A in Gallons

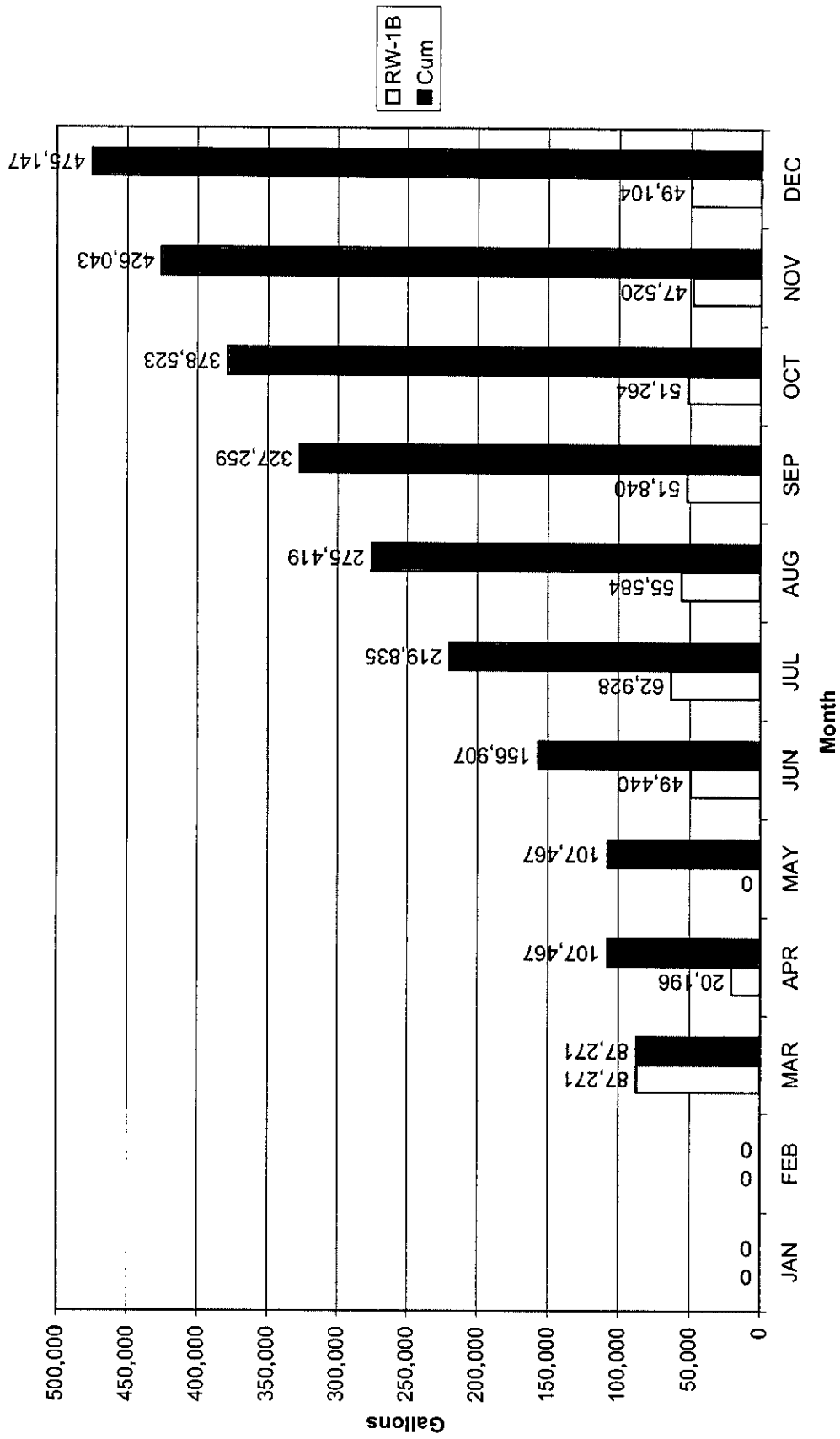


Figure 3
Year 2001 Monthly and Cumulative Groundwater Extraction Volume
for Recovery Well RW-1B in Gallons

Figure 4
Year 2001 Monthly and Cumulative Groundwater Extraction Volume for Recovery Well RW-2 in Gallons

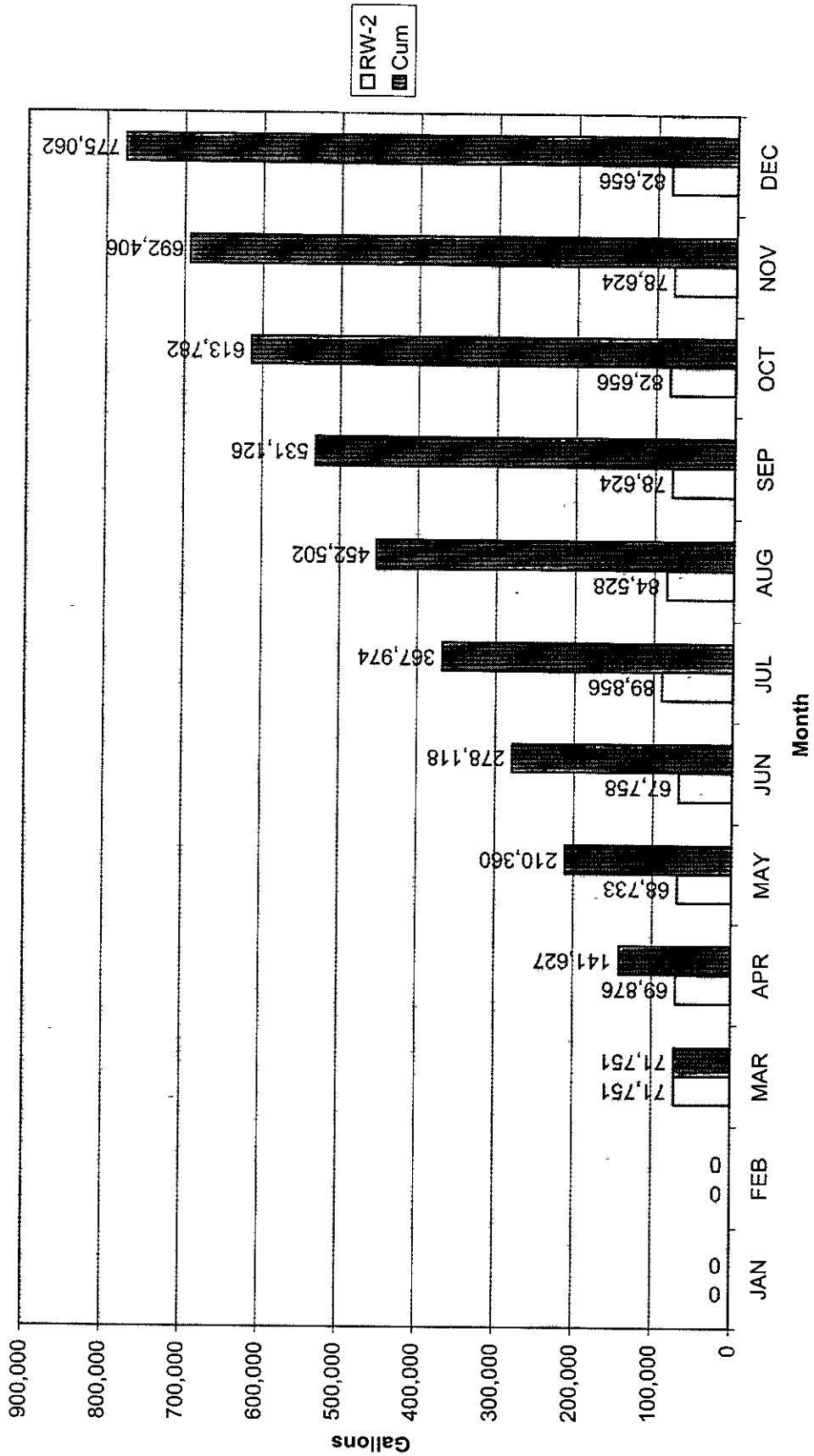


Figure 5
Year 2001 Monthly and Cumulative Groundwater Extraction Volume for Recovery Well RW-3 in Gallons

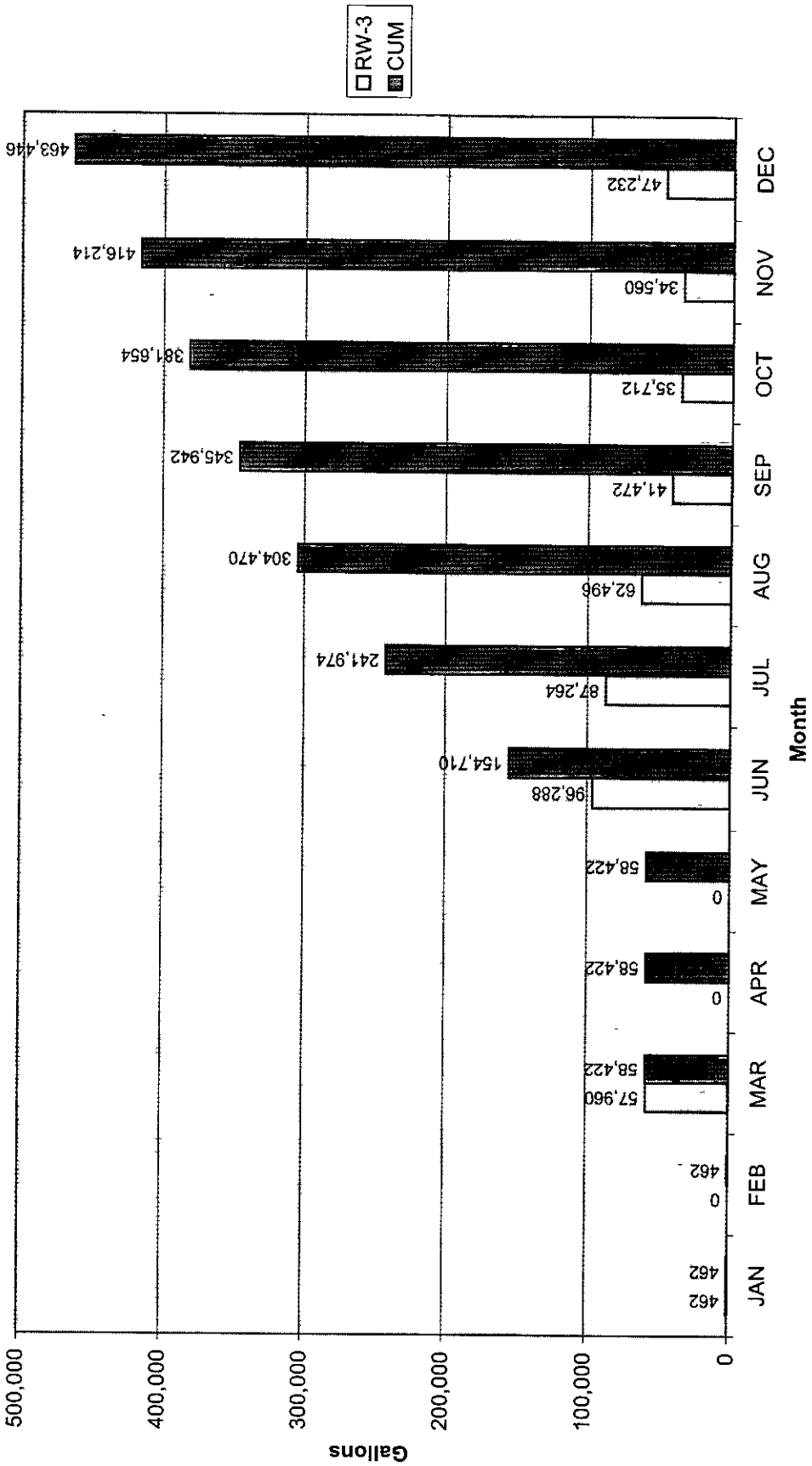


Figure 6
Year 2001 Monthly and Cumulative Groundwater Extraction Volume for Recovery Well RW-4 in Gallons

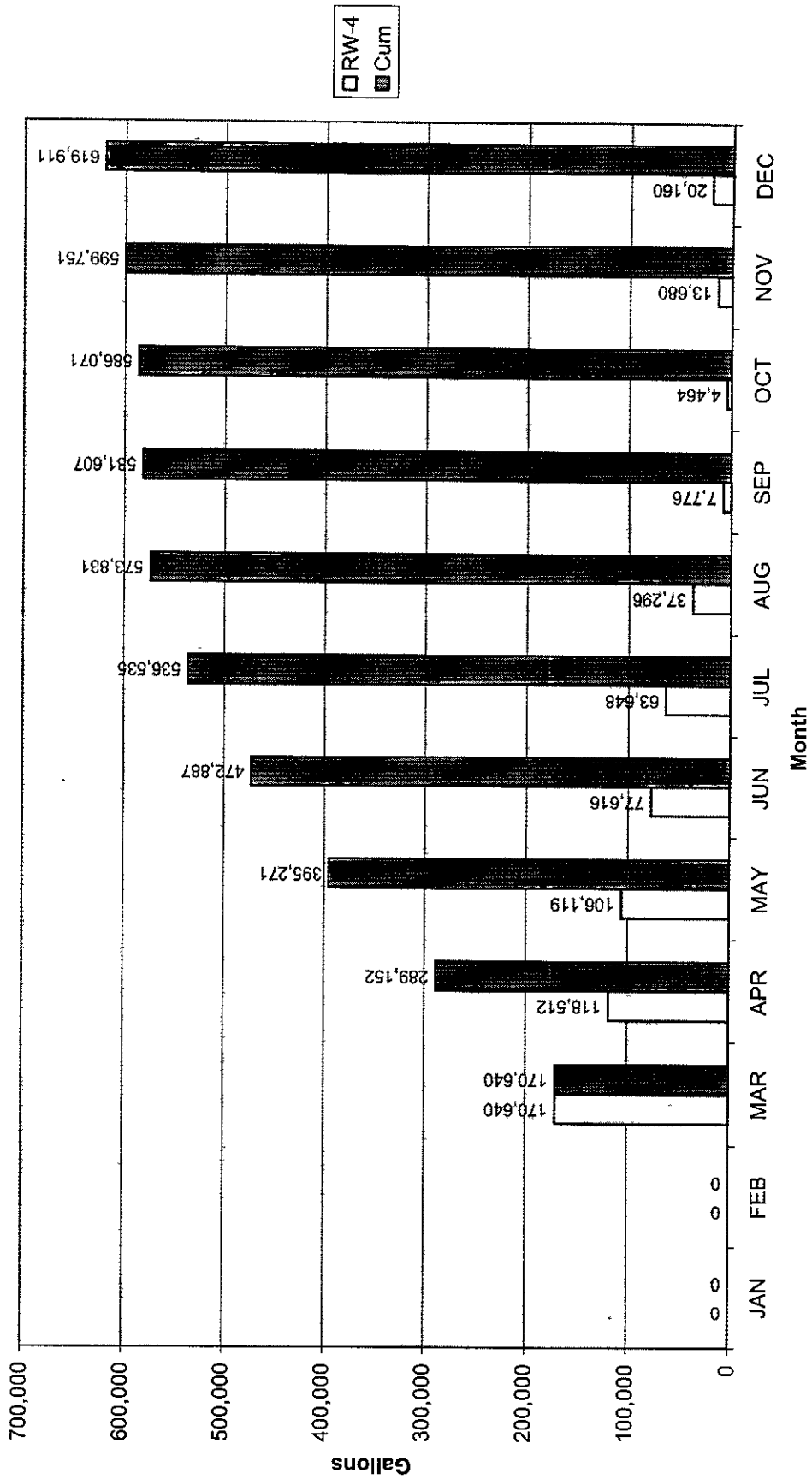


Figure 7
Year 2001 Monthly and Cumulative Groundwater Extraction Volume for Recovery well RW-5 in Gallons

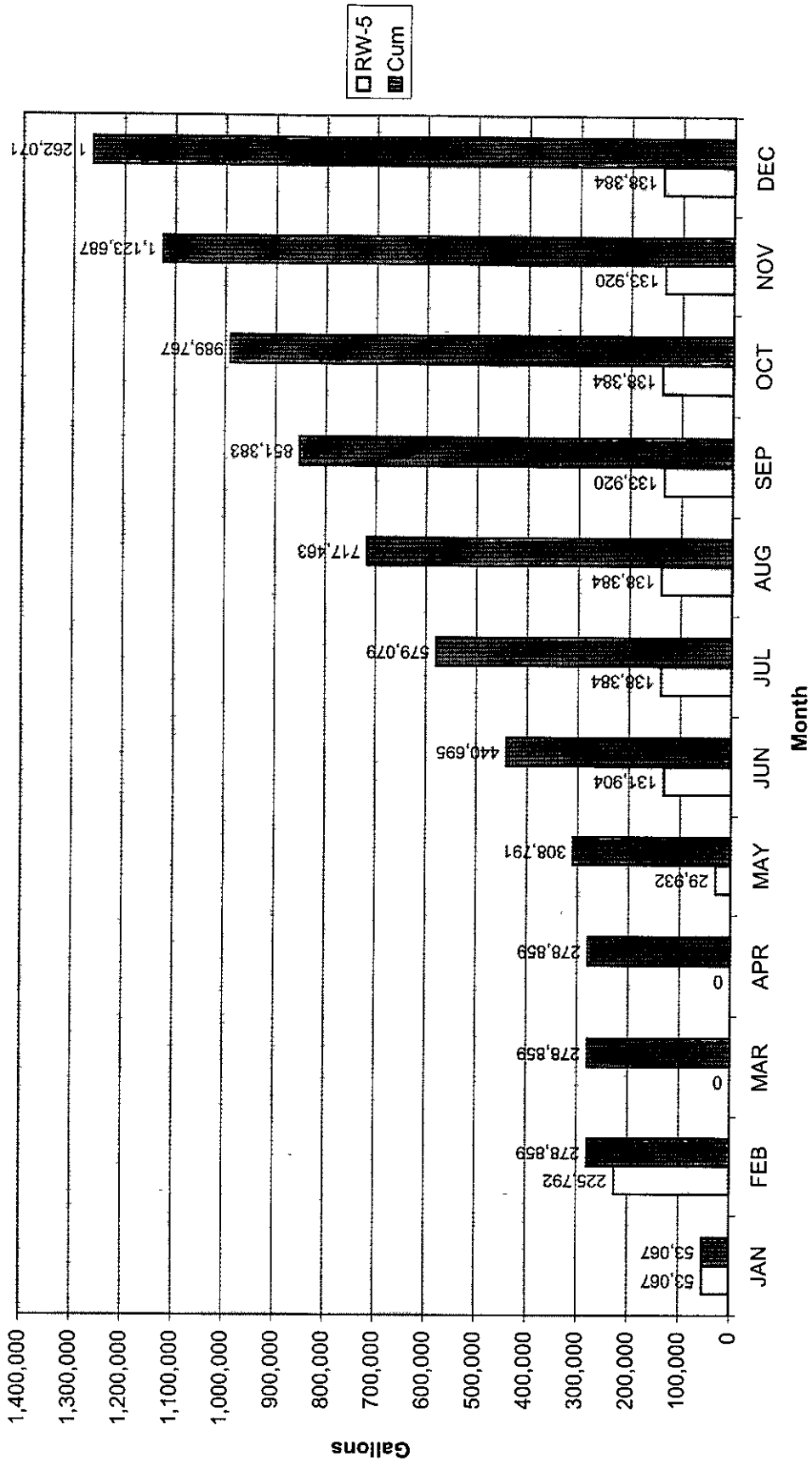


Figure 8
Year 2001 Monthly and Cumulative Groundwater Extraction Volume for Recovery Well RW-6 in Gallons

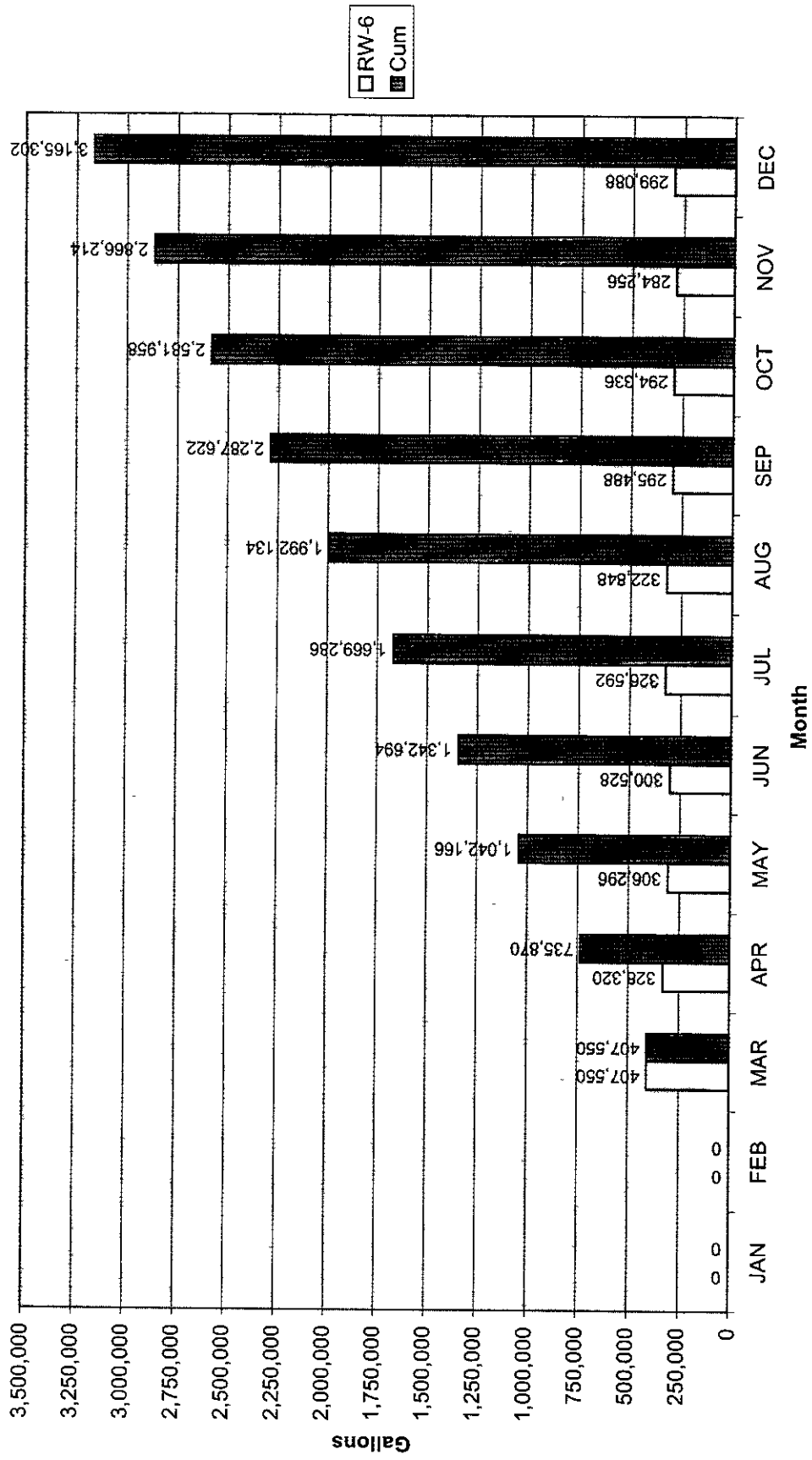


Figure 9
Year 2001 Monthly and Cumulative Groundwater Extraction Volume for Recovery Well RW-7 in Gallons

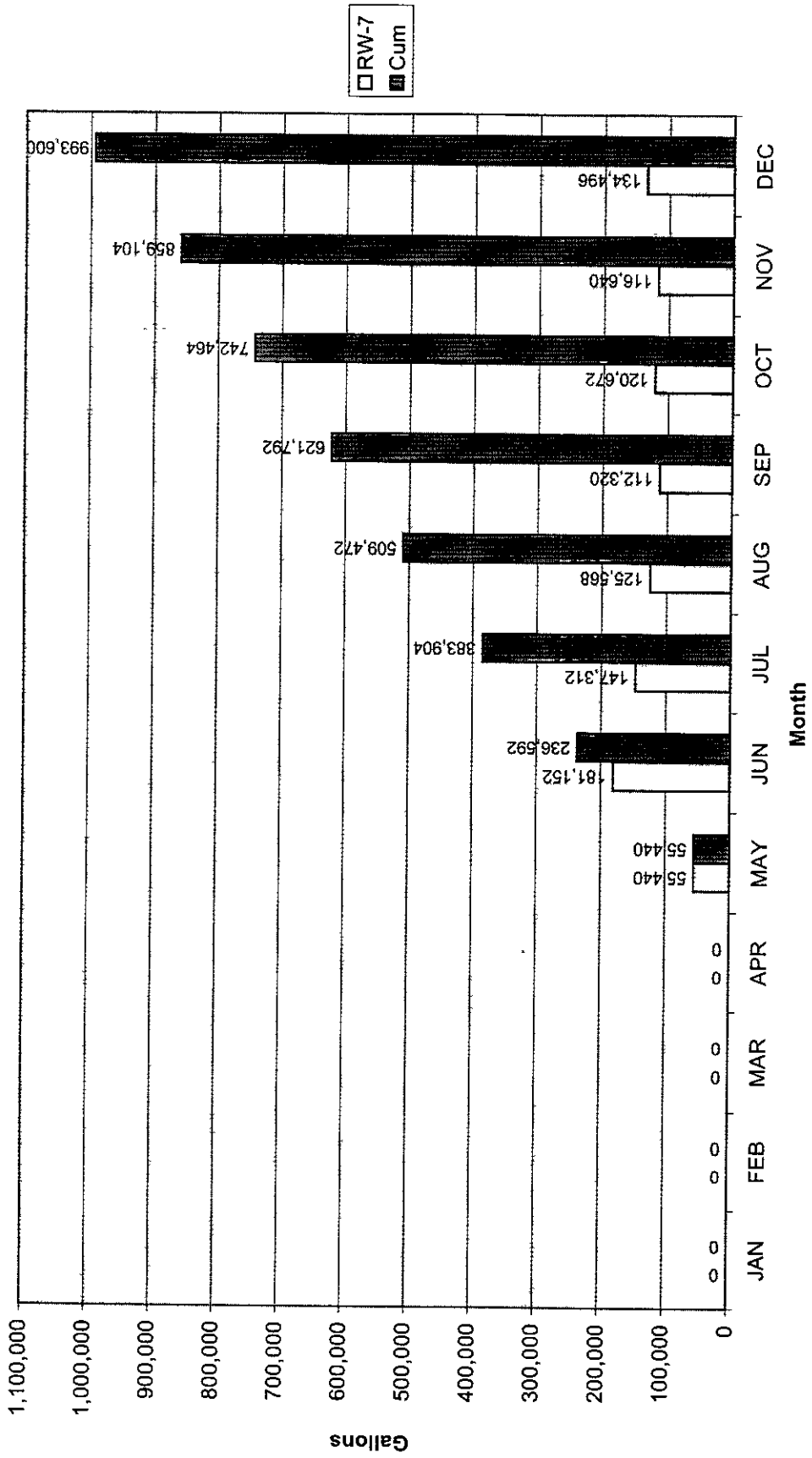


Figure 10
Year 2001 Monthly and Cumulative Groundwater Extraction Volume for Recovery Well RW-8 in Gallons

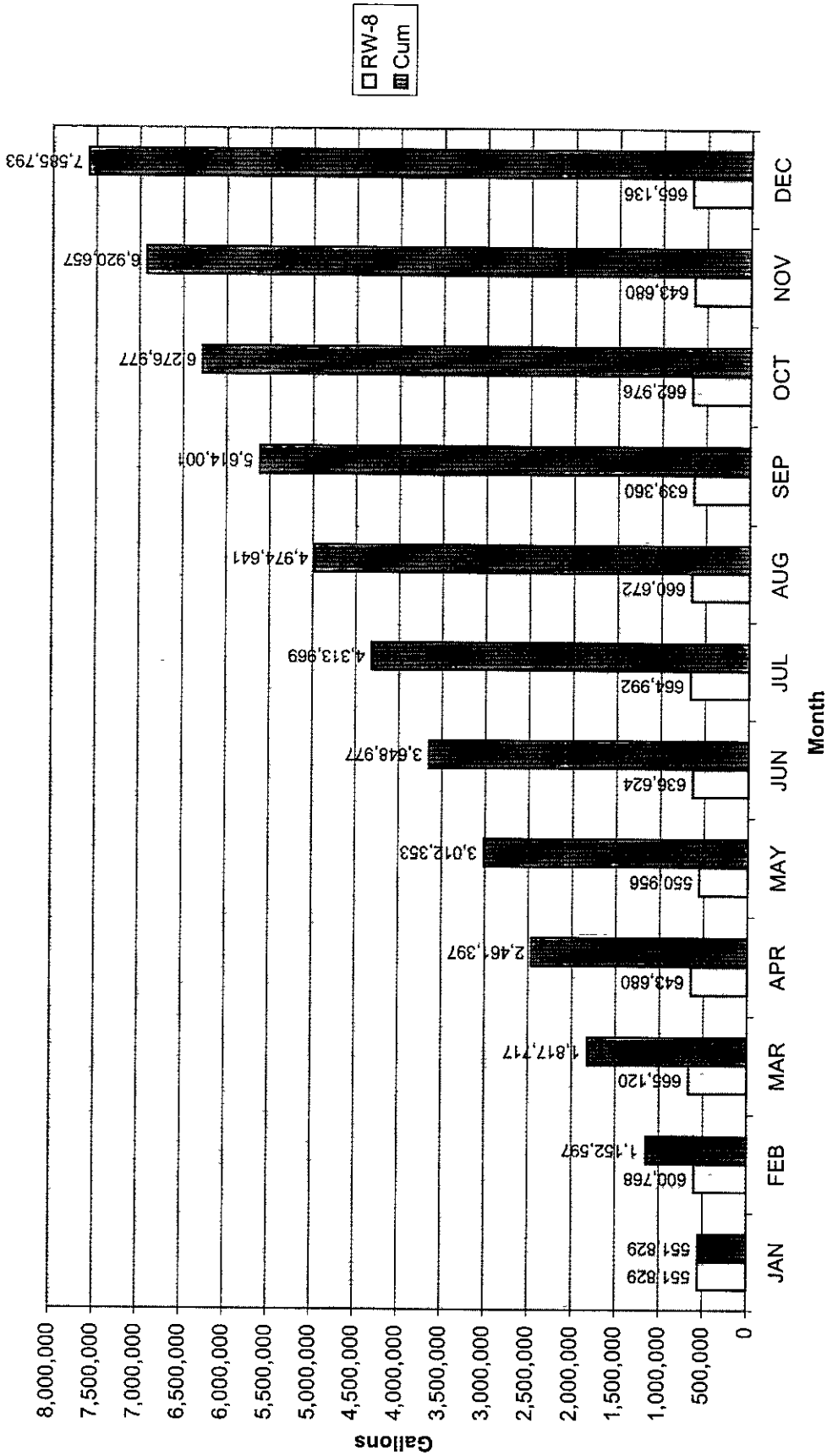


Figure 11
Year 2001 Monthly and Cumulative Groundwater Extraction Volume for Recovery Well RW-9 in Gallons

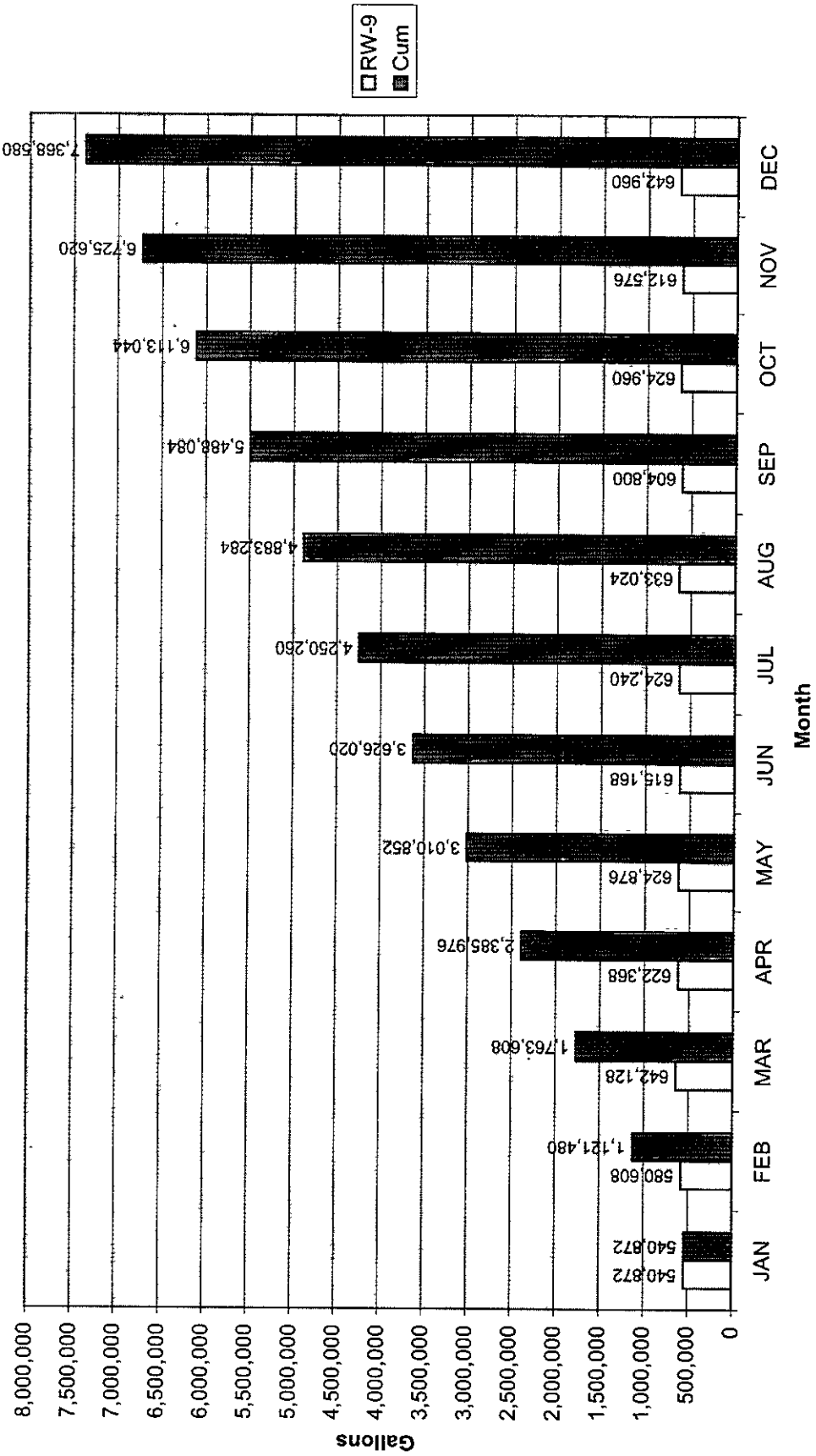
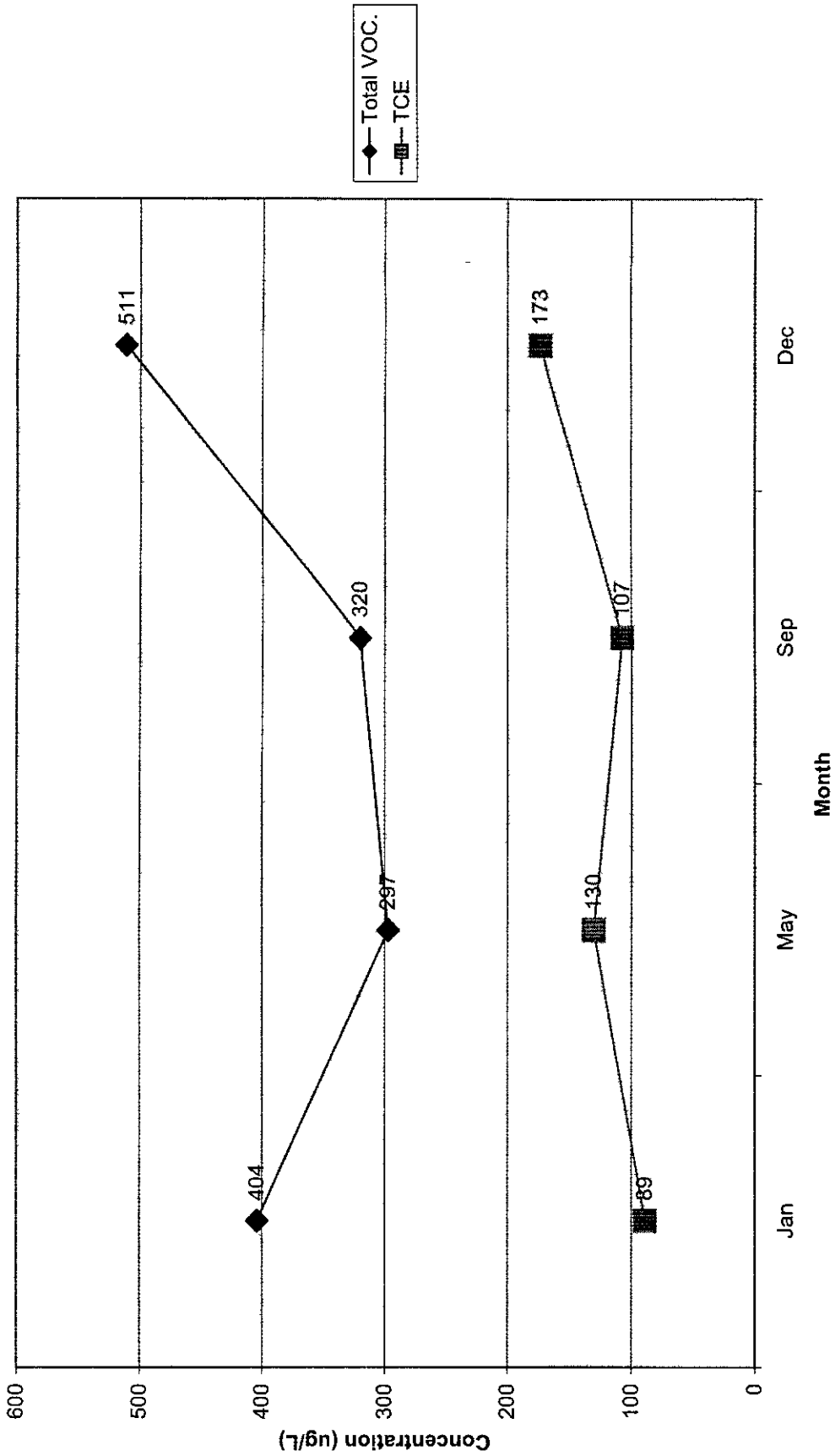


Figure 12
Year 2001 TCE and Total VOC Concentrations in Effluent



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