



# Making Sense, And Use, of Your SCADA Historical Data

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# Making Sense, And Use, of Your SCADA Historical Data



- **113 Remote Sites (Wells, Boosters, PRVs)**
- **3 Greensand Systems**
- **1 - 20 MGD Sand Filter Water Treatment Plant**
- **1 - 6 MGD Membrane Water Treatment Plant**
- **13,000+ Database Points**

## ○ What is Important to Sample/Archive?

- ~ 3500 Sample Points
- ~ 2 million Samples a Day

## ○ What Rate to Sample?

- 2 mins. PSI, GPM, CL2, Pump Run, Communication Status
- 20 mins. Reservoir Level
- 1 Hr. Totalizers, Well Water Level, Setpoint Value

## ○ Exception Base or Time Base?

## ○ Hardware & Software

- GE Proficy iHistorian
- Windows 2008 Server
- MS SQL Server 2008 Database
- HP Proliant Server
  - 1.3 TB Disk Storage
  - 24 GB Memory
- 27 MB Redundant Radio WAN Between Treatment Plants



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## ○ GUI Interface Configuration

Proficy Historian Administrator on [IDBOSSCADA01]

Proficy™ Historian System Statistics

Main Tags Collectors Archives Messages Help

Receive Rate 2,715 (Events/Min)

Archive Compression	4%	Free Space	48 (MB)
Write Cache Hit	100%	Consumption Rate	17.8 (MB/Day)
Failed Writes	61 (Events)	Est. Days to Full	2.7 (Days)
Messages Since Startup	257,238 (Messages)	Active Tags	3,519 (Tags)
Alerts Since Startup	3,682 (Alerts)	Licensed Tags	5,000 (Tags)
Calculations	(Enabled)	Active Users	2 (Users)
Server to Server	(Enabled)	Licensed Users	6 (Users)
Alarms Since Startup	0 (Alarms)	Alarm Rate	0 (Alarms/Min)

**Collectors**

Collector	Status	Computer	Report Rate	Overruns	Compression	Out Of Order	Redundan
COLUMBIA_Calculation	Unknown	Columbia	0	0.0%	%	0	
COLUMBIA_File	Unknown	COLUMBIA	0	0.0%	%	0	
COLUMBIA_iFIX	Unknown	Columbia	0	0.0%	%	0	
CWTP10_iFIX	Running	CWTP10	40	0.0%	0.0%	0	
IDBOSSCADA01_Calculation	Unknown	IDBOSSCADA01	0	0.0%	%	0	

**Alerts**  Show Alerts

Timestamp	Topic	Message
5-1-2013 2:24:22 PM	Services	DataArchiver(DataArchiver) Interface CWTP10_iFIX status is running (5-1-2013 2:24:22.156 PM)
5-1-2013 2:24:19 PM	Services	CWTP10_iFIX Collector - Startup
5-1-2013 2:24:19 PM	Services	DataArchiver(DataArchiver) Interface CWTP10_iFIX status is unknown (5-1-2013 2:24:18.968 PM)
5-1-2013 2:20:19 PM	Services	CWTP10_iFIX Collector - Shutdown
5-1-2013 12:12:24 PM	Services	DataArchiver(DataArchiver) Interface CWTP10_iFIX status is running (5-1-2013 12:12:24.406 PM)
5-1-2013 12:12:21 PM	Services	DataArchiver(DataArchiver) Interface CWTP10_iFIX status is unknown (5-1-2013 12:12:21.156 PM)
5-1-2013 12:12:21 PM	Services	CWTP10_iFIX Collector - Startup

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## ○ Sample Point Configuration

The screenshot displays the Proficy Historian Administrator interface. The title bar reads "Proficy Historian Administrator on [IDBOSSCADA01]". The main window has a menu bar with "Main", "Tags", "Collectors", "Archives", "Messages", and "Help". Below the menu bar is a search bar labeled "Search Historian Tag Database" and three buttons: "Copy Tag", "Add Tag Manually", and "Add Tags From Collector".

The left pane shows a list of tags under the heading "Tags [3,414]". The selected tag is "SCDMSTR.16TH\_ST\_AI1\_PSI.F\_CV". The right pane shows the configuration for this tag, with the "Collection" tab selected. The configuration includes:

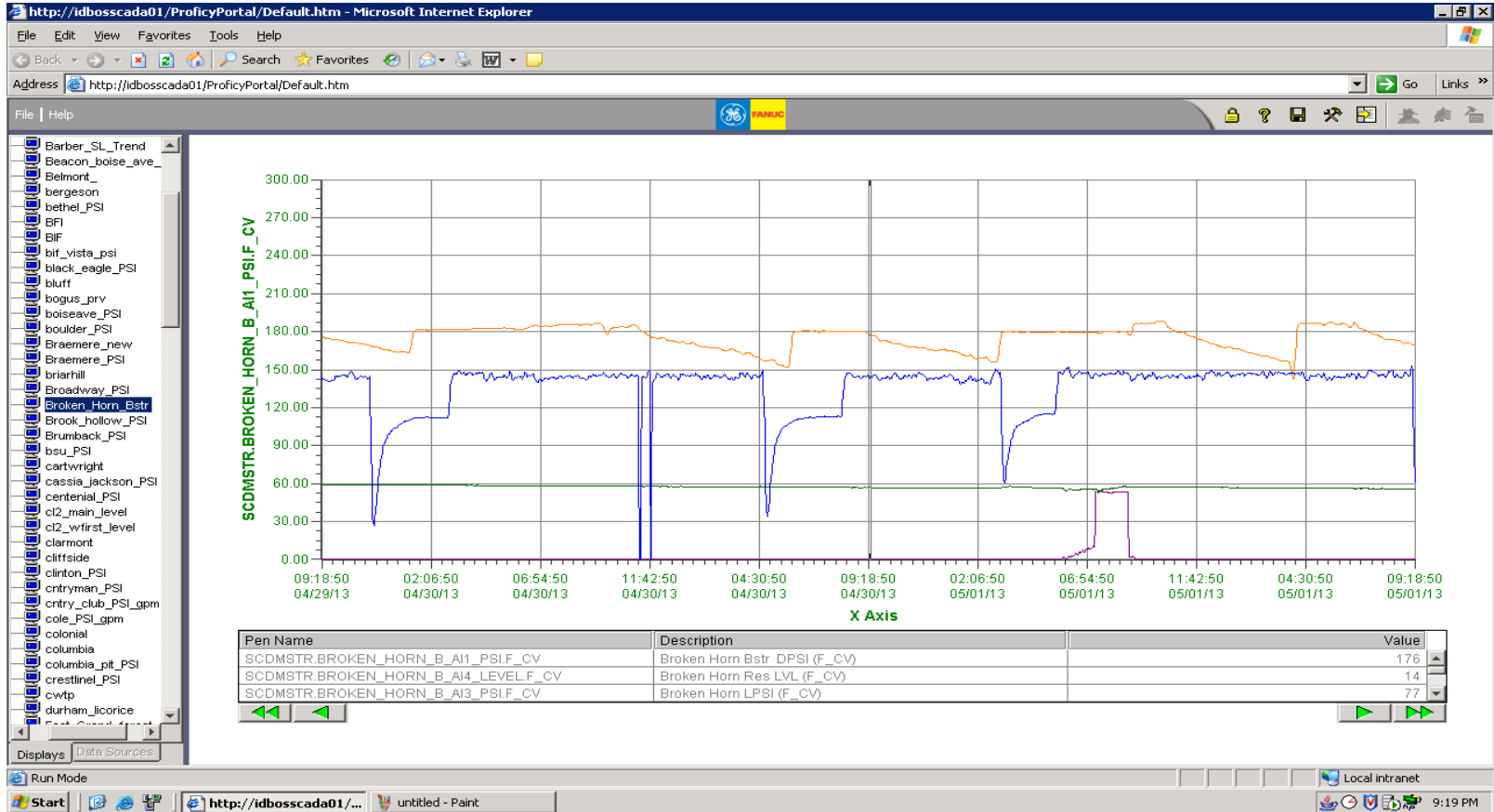
- Data Source:**
  - Collector: VSCADA1\_10\_iFIX
  - Source Address: SCDMSTR.16TH\_ST\_AI1\_PSI.F\_CV
  - Data Type: Single Float
  - Data Length: (empty)
- Collection Options:**
  - Collection:  Enabled  Disabled
  - Collection Type: Polled
  - Collection Interval: 2 Minutes
  - Collection Offset: 0 Seconds
  - Time Resolution: Seconds

Buttons for "Update" and "Delete" are located at the bottom right of the configuration pane.

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## Trending Package



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## ○ Raw Historian Data

DataBucket : Table						
TimeStamp	Tagname	Value	Quality	Description	Engine	
4-8-2013 12:02:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1905.567	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:04:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1729.035	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:06:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1812.673	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:08:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1707.159	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:10:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1710.99	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:12:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1796.324	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:14:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1655.983	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:16:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1686.922	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:18:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1772.672	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:20:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1770.275	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:22:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1705.152	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:24:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1796.538	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:26:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1687.712	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:28:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1764.572	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:30:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1705.315	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:32:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1762.912	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:34:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1690.631	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:36:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1673.905	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:38:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1783	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:40:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1595.443	Good	Treated Water Total Flow GPM (F_CV)		
4-8-2013 12:42:00 AM	COLUMBIA.TW_TOTAL_GPM.F_CV	1668.596	Good	Treated Water Total Flow GPM (F_CV)		

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## Supplemental Data

dbo\_accumTags : Table

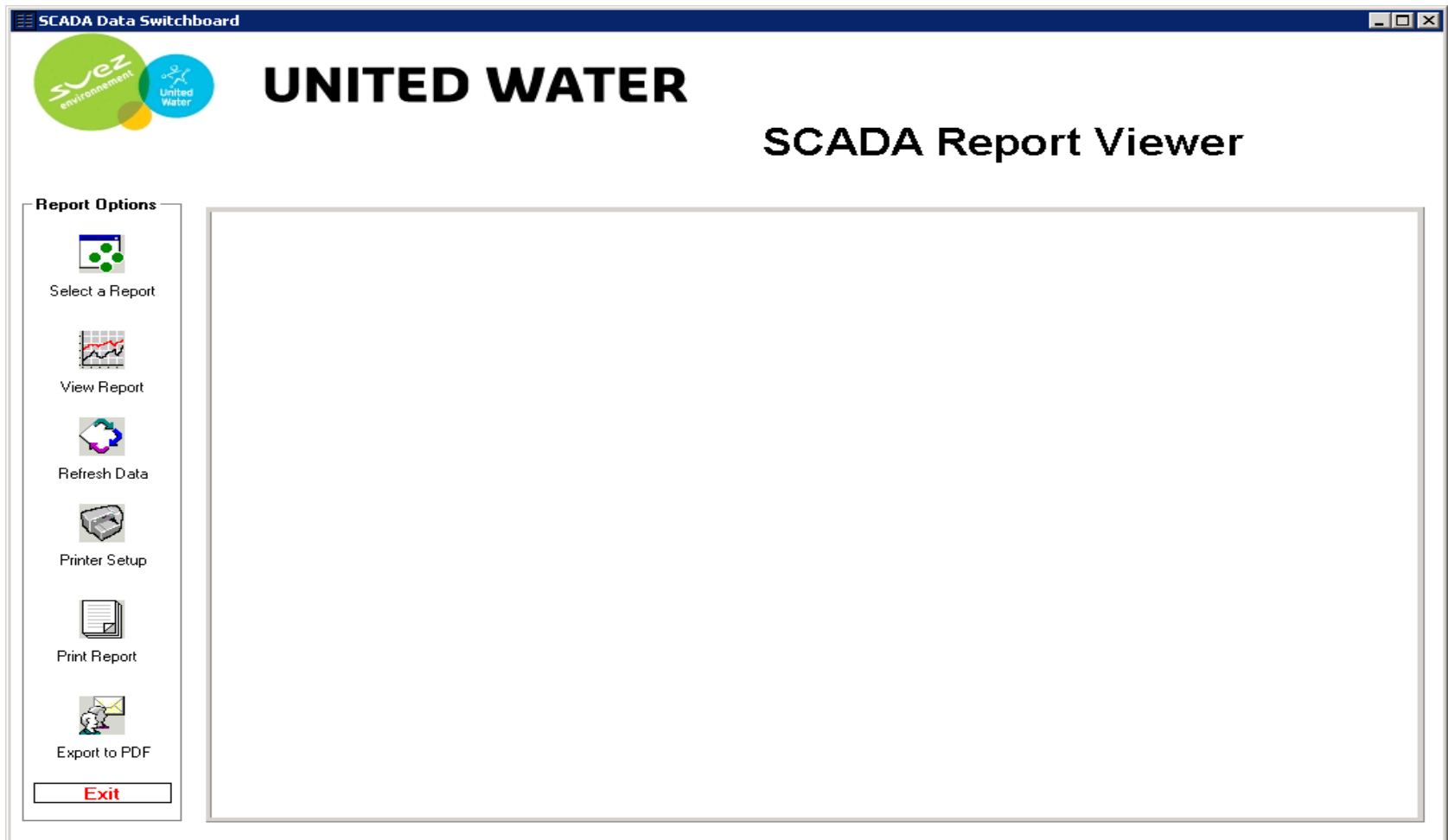
rateTagName	siteName	siteNameNew	accumDescription	facilityType	ServiceLevel	ToServiceLevel	FromService
SCDMSTR.34TH_ST_PIT_A12_GPM.F_CV	34TH_ST_PIT	34TH ST	34 street pit accum.	INTERTIE	WEST MAIN	WEST MAIN	EAST MAIN
SCDMSTR.AERONICA_A15_GPM.F_CV	AERONICA	AERONICA	byrd well accum 1	WELL	GOWEN		
SCDMSTR.AERONICA_A16_GPM.F_CV	AERONICA	AERONICA	aeronica accumulator 2		GOWEN		
SCDMSTR.AMITY_A15_GPM.F_CV	AMITY	AMITY	amity accum	WELL	GOWEN		
SCDMSTR.ARCTIC_A16_GPM.F_CV	ARCTIC	ARCTIC	arctic well accumulator 1	WELL	WEST 1ST		
SCDMSTR.ARCTIC_A15_GPM.F_CV	ARCTIC	ARCTIC	fairw pit arctic accumulator 2	INTERTIE	WEST 1ST	EAST MAIN	WEST 1ST
SCDMSTR.BALI_HAI_A120_GPM.F_CV	BALI_HAI	BALI HAI	bali hai accumulator 1	WELL	WEST 1ST		
SCDMSTR.BARBER_RES_C1_RATE.F_CV	BARBER_RES	BARBER	barber res from columbia sl	INTERTIE	BARBER	BARBER	COLUMBIA
SCDMSTR.BARBER_RES_A16_GPM.F_CV	BARBER_RES	BARBER	barber res barber meter flow		BARBER		
SCDMSTR.BARBER_RES_C3_RATE.F_CV	BARBER_RES	BARBER	barber res - to columbia sl	INTERTIE	BARBER	COLUMBIA	BARBER
SCDMSTR.BEACON_A13_GPM.F_CV	BEACON	BEACON	beacon accumulator 1	WELL	EAST MAIN		
SCDMSTR.BERGESON_A14_GPM.F_CV	BERGESON	BERGESON	Bergeson ASR Accum	ASR	BARBER		
SCDMSTR.BERGESON_A13_GPM.F_CV	BERGESON	BERGESON	bergeson accumulator 1	WELL	BARBER		
SCDMSTR.BETHEL_A15_GPM.F_CV	BETHEL	BETHEL	bethel accumulator	WELL	WEST 1ST		
SCDMSTR.BIF_A13_GPM.F_CV	BIF	BIF	bif accumulator 1	WELL	GOWEN		
SCDMSTR.BLACK_EAGLE_A13_GPM.F_CV	BLACK EAGLE	BLACK EAGLE	2nd Bench to S County	INTERTIE	2ND BENCH	S COUNTY	2ND BENCH
SCDMSTR.BLUFFS_A15_GPM.F_CV	BLUFFS	BLUFFS	bluffs accumulator 1		WEST MAIN		
SCDMSTR.BOGUS_PRIV_A14_GPM.F_CV	BOGUS PRIV	BOGUS PRIV	Bogus PRIV accumulator	INTERTIE	WEST MAIN	EAST MAIN	WEST MAIN
SCDMSTR.BOISE_AVE_B_A15_GPM.F_CV	BOISE_AVE_B	BOISE AVE	boise ave bstr accum 1	INTERTIE	EAST MAIN	EAST MAIN	BARBER
SCDMSTR.BOULDER_R10_A15_GPM.F_CV	BOULDER R10	BOULDER	accumulator 1		EAST MAIN		

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## ○ Report Generator



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## Summarized Consumption Report

Service Level	MG	To Level	From Level	Reservoir Change	Consumption	Max Consumption	Min Consumption	Avg. GPM
<b>SYSTEM</b>	<b>26.040</b>			<b>-2.06</b>	<b>26.780</b>	<b>25428 1:45 pm</b>	<b>9286 1:30 am</b>	<b>18083</b>
2ND BENCH	0.929	0.562	0.050	0.000	1.174	1,272 11:00 am	-127 7:30 am	933
BARBER	1.203	1.538	0.000	0.138	2.603	2,789 7:45 am	530 2:00 am	1776
COLUMBIA	4.977	0.000	1.536	-0.230	3.672	1,960 8:15 pm	-887 6:00 am	1003
EAST 1ST	1.857	0.917	2.897	-0.097	-0.027	730 12:45 am	-1,548 10:00 am	-64
WEST 1ST	5.926	2.069	0.000	-0.502	7.987	7,999 4:15 pm	270 1:30 am	4586
EAST MAIN	5.667	0.001	-5.266	-0.744	11.679	7,428 11:00 am	510 1:15 am	3464
WEST MAIN	1.627	Subreport:t	0.000	-0.324	-3.485	4,566 12:45 pm	783 12:30 am	2528
GOWEN	2.460	1.085	2.460	0.013	0.694	3,560 1:00 pm	1,263 4:45 am	2228
S COUNTY	1.396	1.032	0.261	-0.314	2.481	2,424 4:15 pm	585 1:30 am	1631

Service Level	Produced MG	Avg GPM	Run Hours	Max GPM	Min GPM	ASR MG	Net MG
<b>2ND BENCH</b>							
<b>COLE WELL</b>							
Well 1	0.000		0.0	1 1:01 am	0 1:03 am	0.00	
ASR				187 11:13 pm	183 10:49 am	0.26	
<b>COUNTRY CLUB</b>							
Well 1	0.000		0.0			0.00	
<b>HILLCREST</b>							
Well 1	0.929	646	24.0			0.00	

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## Three Day Runtime Report

100% | 1 / 2

Preview

Service Level	Site		Previous Day 1	Previous Day 2	Previous Day 3
<b>2ND BENCH</b>					
	COUNTRY CLUB	Well 1	24.0	4.1	17.2
	HILLCREST	Well 1	24.0	24.0	24.0
	KIRKWOOD	Well 1	24.0	24.0	24.0
	OVERLAND	Well 1	17.8	18.4	24.0
<b>BARBER</b>					
	BROADWAY	Well 1	24.0	19.6	19.6
	CENTRAL PARK	Well 1	0.3	0.1	0.0
	LOGGER	Well 1	24.0	15.2	19.0
<b>COLUMBIA</b>					
	PIONEER	Well 1	17.2	15.4	11.1
	PLEASANT VALLEY	Well 1	24.0	24.0	24.0
	TEN MILE	Well 1	4.0	0.0	0.0
<b>EAST 1ST</b>					
	CASSIA	Well 1	7.7	9.9	22.2
	TAGGART	Well 1	24.0	22.2	24.0
	TAGGART	Well 2	24.0	24.0	24.0
	VISTA	Well 1	24.0	24.0	24.0
<b>EAST MAIN</b>					
	CLIFFSIDE	Well 1	24.0	19.3	2.7

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## System Parameters Report

100% | 1 / 12

Preview

<i>Service Level</i>			
Facility	Max Value	Min Value	Avg Value
<b>2ND BENCH</b>			
<b>BLACK EAGLE</b>			
PSI	98 11:37 am	87 6:31 pm	94
LPSI	70 1:51 am	55 6:07 am	62
black eagle GPM	40 6:43 pm	0 1:00 am	10
<b>COLE PIT</b>			
LPSI	84 3:27 pm	71 6:09 pm	80
<b>COLE PRV</b>			
cole vault LPSI	674 11:49 am	0 4:37 pm	-1
cole vault HPSI	99 1:47 pm	87 4:15 pm	94
<b>COLE WELL</b>			
Cole PSI	0 1:00 am	0 1:00 am	0
Cole P	87 1:05 am	78 5:21 pm	84
Cole Well ASR	187 11:13 pm	184 10:49 am	185
Cole Well GPM	1 1:01 am	0 1:03 am	0
<b>COLONIAL</b>			
colonial HPSI	108 1:03 am	99 7:45 pm	105
colonial LPSI	63 2:31 am	0 1:27 pm	57
colonial gpm	770 1:57 pm	0 1:39 am	71
<b>COUNTRY CLUB</b>			
Well 1	0 1:00 am	0 1:00 am	0
Country Club Well Dpsi	67 3:13 am	57 9:51 am	64
Country Club Well SHD	95 1:00 am	95 1:00 pm	95
<b>HILLCREST</b>			
Hillcrest Pdis	65 8:01 pm	62 10:33 am	62

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## Report Editing

Production Information System

**PRODUCTION INFORMATION SYSTEM**

iHistorian Database

\*Specify start date [01/01/13] \*Specify end date [04/30/13]

Previous Month Last 7 Days Yesterday

**Forms**

Edit Production Data\* Specify a production site [ ]

Specify a date [05/02/13] Update Service Levels

**Reports**

- Preview Service Level Summary\* Print
- Preview Production Detailed Summary\* Print
- Preview Production Summary (List)\* Print Excel
- Preview Production Summary (Block)\* Print Exit

Edit Production Data

**Edit Production Data**

iHistorian Database

Close Form Print Form

Modify Run Hours First  ASR Edit

Date	Production Site	MGD	GPM	Run Hours	ASR MGD	Edit Status
1/1/2001	16TH ST Well 1	0.000	0	0.0	0.000	
1/1/2001	27TH ST Well 1	0.000	0	0.0	0.000	
1/1/2001	AERONICA Byrd Well 1	0.000	0	0.0	0.000	
1/1/2001	AMITY Well 1	1.166	810	24.0	0.000	
1/1/2001	ARCTIC Well 1	0.000	0	0.0	0.000	
1/1/2001	BALI HAI Well 1	0.000	0	0.0	0.000	
1/1/2001	BEACON Well 1	0.000	0	0.0	0.000	
1/1/2001	BERGESON Well 1	0.000	0	0.0	0.000	
1/1/2001	BETHEL Well 1	0.000	0	0.0	0.000	
1/1/2001	BIF Well 1	0.000	0	0.0	0.000	
1/1/2001	BROADWAY Well 1	1.275	886	24.0	0.000	
1/1/2001	BROOK HOLLOW Well 1	0.000	0	0.0	0.000	
1/1/2001	CARRIAGE HILLS Well 1	0.000	0	0.0	0.000	
1/1/2001	CARTWRIGHT Wellox	0.000	0	0.0	0.000	
1/1/2001	CASSIA Well 1	0.000	0	0.0	0.000	
1/1/2001	CASSIA Well 2	0.000	0	0.0	0.000	
1/1/2001	CENTENNIAL Well 1	0.000	0	0.0	0.000	
1/1/2001	CENTRAL PARK Well 1	0.000	0	0.0	0.000	
1/1/2001	CHAMBERLAIN Well 1	0.000	0	0.0	0.000	
1/1/2001	CHAMBERLAIN Well 2	0.000	0	0.0	0.000	
1/1/2001	CLIFFSIDE Well 1	0.000	0	0.0	0.000	
1/1/2001	CLINTON Well 1	0.000	0	0.0	0.000	
1/1/2001	COUNTRY CLUB Well 1	0.000	0	0.0	0.000	
1/1/2001	COLE WELL Well 1	0.000	0	0.0	0.000	EDIT
1/1/2001	COUNTRY SQUARE Well 1	0.000	0	0.0	0.000	
1/1/2001	COUNTRYMAN Well 2	0.268	697	6.4	0.000	EDIT
1/1/2001	COVENTRY Well 1 Pump 1	0.000	0	0.0	0.000	
1/1/2001	COVENTRY Well 1 Pump 2	0.000	0	0.0	0.000	
1/1/2001	EDGEVIEW Well 1	0.000	0	0.0	0.000	
1/1/2001	FISK Well 1	0.000	0	0.0	0.000	
1/1/2001	FIVEMILE 12 Well 1	0.000	0	0.0	0.000	
1/1/2001	FLOATING FEATHER Well 1	0.810	1435	9.4	0.000	

# Questions?