Al-Hassa Irrigation and Drainage Uses Hach WIMS to Monitor Key Water Quality Data

Food and Agriculture Organization of the United Nations

Al-Hassa Irrigation and Drainage Authority (HIDA) is responsible for providing irrigation water to and regulating drainage from the Al-Hassa Oasis. The Al-Hassa Oasis, comprised of 16,000 hectares of land, is located within the eastern province of the Kingdom of Saudi Arabia and supports approximately 23,000 farms.

HIDA utilizes water from a variety of sources, including wells, and treated wastewater. HIDA has recently transitioned to using treated wastewater since water in the Oasis is an extremely valuable resource. The treated wastewater must be checked for compliance with standards established to protect health of humans and livestock and to protect the farms. HIDA uses real time water quality data from Hach online instruments (Electrical Conductivity, pH, Cl2, Turbidity) along with tests performed by the HIDA lab to determine compliance.

Objectives

The irrigation of farmlands requires water that is of high quality to assure the health and wellness of the people and animals that interact with and consume the farm products. To meet its requirements, HIDA was taking grab samples every hour and analyzing the results to assure quality. This meant that personnel had to be onsite every day for 24 hours.

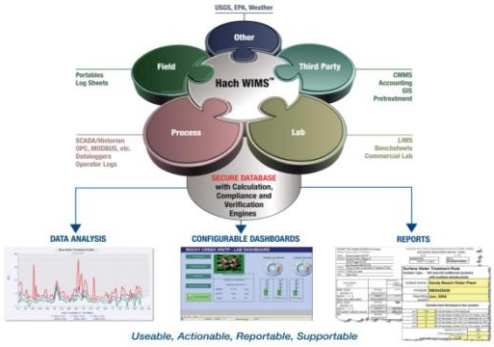
HIDA evaluated systems to better allow them to gain efficiencies and to better align their process with required water quality standards. Their objectives:

- Monitor key water quality data online to save travel and onsite time
- Receive automatically scheduled reports
- Increase data accuracy by automating data capture
- Quickly respond to water quality issues
- Effectively troubleshoot system upsets and compliance issues
- Proactively assure the highest water quality possible

Solution

HIDA installed Hach's sc1000 online analyzers at each site to automatically capture data and monitor water quality. This allowed HIDA to reduce the number of grab samples that needed to be taken and reduced the onsite personnel time. To combine and manage the data from the multiple sites, HIDA chose the Hach WIMS data management solution which, together with the sc1000's, provided the tools

they needed to achieve their goals and objectives. The entire system puts the data at their fingertips with easy, centralized access for monitoring and analysis.



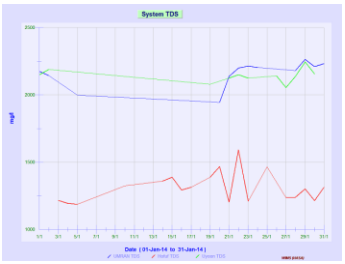
- See system status at a glance via a dashboard allowing quick, accurate decisions on received Water Quality.
- Online data can be combined with Lab data to provide a complete picture of the system.
- Accurate data is securely stored in a MS SQL Database improving data quality.
- Easily compare datasets from different parameters and sites over weeks, months and years. Allows HIDA to have a better understanding of the system to plan for upsets and process optimization.

The sc1000's connected with UDG 1000 software were placed at each site and Hach WIMS was implemented at HIDA's main laboratory

- Online water quality data (Electrical Conductivity, pH, CI2, Turbidity) is gathered from the online instruments at Hofuf, Umran, and Uyoon sites.
- Laboratory test results are entered with specially designed data entry forms.
- Summary and exception reports were setup to facilitate easy data sharing
- 2 years of laboratory results were imported into the database to be used for historical analysis
- Onsite installation and training by Hach personnel to assure optimal operations
- The dashboard shows the current status at a glance

Implementation Results

HIDA actively monitors the online data and turns off the irrigation pumps to avoid distributing water that is below the requirements. They feel a higher level of confidence that the water provided for irrigation is of the highest quality possible.



Data is combined from the online instrumentation and the lab to provide a more complete analysis. Reports track results and dashboards allow fast response to quality issues.

Hofuf S.TP

(Average)			الحد المسموح به (Limits)	نوع التحليل	
Difference	2014	2013			
149	1,375	1,226	500 - 2500 mg/L	E.C	الملوحة
0.60	8.11	7.51	6 - 8.4	pH	درجة الكلن
-0.26	1.18	1.43	> 0.2 mg/l	R.C	الكلورين المتبقي
0.29	3.29	3.00	< 5	Turbidity	العكارة
0.65	8.45	7.80	> 4 mg/l	DO	الأكسجين الذائب
-0.11	0.29	0.40	< 5 mg/l	NH3-N	الأمونيا
0.39	4.60	4.21	<10 mg/l	TSS	مجموع المواد العالقة
5.03	20.71	15.68	<10 mg/l	BOD	متطلب الأكسجين الكيموحيوي
14.08	47.33	33.25	< 40 mg/l	COD	متطلب الأكسجين الحيوي
0.00	0.00	0.00	< 1/1 liter	IHE	بويضات الديدان المعوية
0.0	2.2	2.2	2.2 Set/100 ml	FC	بكتيريا القولون

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