



## CONSULTING SERVICE REPORT

CUSTOMER: SERCO - NEW YORK UNIVERSITY, ABU DHABI	To: Mr. Ratheesh Muttath Operations Engineer	DATE: 05-10-2019
CUSTOMER ID: 3003	Copy: SERCO - NYUAD	LAST VISIT: 07-09-2019

### CLOSED LOOP SOLAR SYSTEM ANALYSIS

PARAMETER	CONTROL LIMITS	A1D1			
pH	9.0 - 10.5	10.24			
Conductivity, $\mu\text{S/cm}$	Max 3500	2764			
TDS, ppm	--	1796			
'P' Alkalinity, ppm as $\text{CaCO}_3$	--				
Total Hardness, ppm as $\text{CaCO}_3$	--				
Calcium Hardness, ppm as $\text{CaCO}_3$	--				
Chloride, ppm as $\text{Cl}^-$	--				
Iron, ppm as Fe	0 - 2.0	0.42			

#### Treatment Residuals

Nitrite, ppm	> 800	890			
CaH Balance					
Dipslide	<10 <sup>3</sup>	ND			
Phosphate/Phosphonate					
Free Residual Chlorine as Cl	--	--			
Cynauric Acid					

*All test results expressed in parts per million (ppm) as  $\text{CaCO}_3$  except pH and conductivity ( $\mu\text{mhos}$ ).*

#### COMMENTS:

#### ACTION:

The pH levels are satisfactory	⇒	No action recommended.
Dissolved iron levels are found within control limits.	⇒	No action recommended.
Corrosion Inhibitor levels found satisfactory	⇒	No action recommended.

#### INVENTORY LEVELS

#### DOSAGE SCHEDULE

Chemical	Quantity	Chemical	Present Dosage	Revised Dosage
Crystal 5547C			--	
Crystal 9040			--	
			--	

Service Engineer:	Murugaraaj	Client:	Mr. Ratheesh Muttath
Signature:	P.M.	Signature:	



## CONSULTING SERVICE REPORT

<b>CUSTOMER: SERCO - NEW YORK UNIVERSITY, ABU DHABI</b>	<b>To: Mr. Ratheesh Muttath Operations Engineer</b>	<b>DATE: 05-10-2019</b>
<b>CUSTOMER ID: 3003</b>	<b>Copy: SERCO - NYUAD</b>	<b>LAST VISIT: 07-09-2019</b>

### CLOSED LOOP SOLAR SYSTEM ANALYSIS

PARAMETER	CONTROL LIMITS	A2A3			
pH	9.0 - 10.5	10.34			
Conductivity, $\mu\text{s/cm}$	Max 3500	2710			
TDS, ppm	--	1761			
'P' Alkalinity, ppm as $\text{CaCO}_3$	--				
Total Hardness, ppm as $\text{CaCO}_3$	--				
Calcium Hardness, ppm as $\text{CaCO}_3$	--				
Chloride, ppm as $\text{Cl}^-$	--				
Iron, ppm as Fe	0 - 2.0	0.35			

#### Treatment Residuals

Nitrite, ppm	> 800	870			
CaH Balance					
Dipslide	<10 <sup>3</sup>	ND			
Phosphate/Phosphonate					
Free Residual Chlorine as Cl	--	--			
Cynauric Acid					

*All test results expressed in parts per million (ppm) as  $\text{CaCO}_3$  except pH and conductivity ( $\mu\text{mhos}$ ).*

#### COMMENTS:

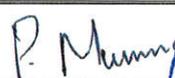
#### ACTION:

The pH and Conductivity/TDS are found satisfactory. $\Rightarrow$	No action recommended.
Dissolved iron levels are within control limits. $\Rightarrow$	No action recommended.
Corrosion Inhibitor levels satisfactory $\Rightarrow$	No action recommended.

#### INVENTORY LEVELS

#### DOSAGE SCHEDULE

Chemical	Quantity	Chemical	Present Dosage	Revised Dosage
Crystal 5547C			--	
Crystal 9040			--	
			--	

<b>Service Engineer:</b>	Murugaraaj	<b>Client:</b>	Mr. Ratheesh Muttath
<b>Signature:</b>		<b>Signature:</b>	



## CONSULTING SERVICE REPORT

<b>CUSTOMER: SERCO – NEW YORK UNIVERSITY, ABU DHABI</b>	<b>To: Mr. Ratheesh Muttath Operations Engineer</b>	<b>DATE: 05-10-2019</b>
<b>CUSTOMER ID: 3003</b>	<b>Copy: SERCO - NYUAD</b>	<b>LAST VISIT: 07-09-2019</b>

### CLOSED LOOP SOLAR SYSTEM ANALYSIS

PARAMETER	CONTROL LIMITS	A4A5			
pH	9.0 – 10.5	10.36			
Conductivity, $\mu\text{S}/\text{cm}$	Max 3500	2840			
TDS, ppm	--	1846			
'P' Alkalinity, ppm as $\text{CaCO}_3$	--				
Total Hardness, ppm as $\text{CaCO}_3$	--				
Calcium Hardness, ppm as $\text{CaCO}_3$	--				
Chloride, ppm as $\text{Cl}^-$	--				
Iron, ppm as Fe	0 – 2.0	0.16			

#### Treatment Residuals

Nitrite, ppm	➤ 800	1220			
CaH Balance					
Dipslide	<10 <sup>3</sup>	ND			
Phosphate/Phosphonate					
Free Residual Chlorine as Cl	--	--			
Cynauric Acid					

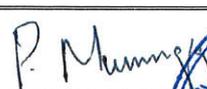
*All test results expressed in parts per million (ppm) as  $\text{CaCO}_3$  except pH and conductivity ( $\mu\text{mhos}$ ).*

COMMENTS:	ACTION:
The pH found are satisfactory ⇒	No action recommended.
Dissolved iron levels are found within control limits. ⇒	No action recommended.
Corrosion Inhibitor levels satisfactory ⇒	No action recommended.

INVENTORY LEVELS			DOSAGE SCHEDULE	
Chemical	Quantity	Chemical	Present Dosage	Revised Dosage
Crystal 5547C			--	
Crystal 9040			--	
			--	
<b>Service Engineer:</b>	<b>Murugaraaj</b>		<b>Client:</b>	<b>Mr. Ratheesh Muttath</b>
<b>Signature:</b>			<b>Signature:</b>	



## CONSULTING SERVICE REPORT

<b>CUSTOMER: SERCO - NEW YORK UNIVERSITY, ABU DHABI</b>		<b>To: Mr. Ratheesh Muttath Operations Engineer</b>		<b>DATE: 05-10-2019</b>	
<b>CUSTOMER ID: 3003</b>		<b>Copy: SERCO - NYUAD</b>		<b>LAST VISIT: 07-09-2019</b>	
<b>CLOSED LOOP SOLAR SYSTEM ANALYSIS</b>					
<b>PARAMETER</b>	<b>CONTROL LIMITS</b>	<b>C1B1</b>			
pH	9.0 - 10.5	10.43			
Conductivity, $\mu\text{s}/\text{cm}$	Max 3500	3280			
TDS, ppm	--	2132			
'P' Alkalinity, ppm as $\text{CaCO}_3$	--				
Total Hardness, ppm as $\text{CaCO}_3$	--				
Calcium Hardness, ppm as $\text{CaCO}_3$	--				
Chloride, ppm as $\text{Cl}^-$	--				
Iron, ppm as Fe	0 - 2.0	0.51			
<b>Treatment Residuals</b>					
Nitrite, ppm	$\gt$ 800	1320			
CaH Balance					
Dipslide	$<10^3$	ND			
Phosphate/Phosphonate					
Free Residual Chlorine as Cl	--	--			
<i>All test results expressed in parts per million (ppm) as <math>\text{CaCO}_3</math> except pH and conductivity (<math>\mu\text{mhos}</math>).</i>					
<b>COMMENTS:</b>			<b>ACTION:</b>		
The pH and Conductivity/TDS levels are satisfactory $\Rightarrow$			No action recommended.		
Dissolved iron levels are found within control limits. $\Rightarrow$			No action recommended.		
Corrosion Inhibitor levels found are satisfactory $\Rightarrow$			No action recommended.		
<b>INVENTORY LEVELS</b>			<b>DOSAGE SCHEDULE</b>		
<b>Chemical</b>	<b>Quantity</b>	<b>Chemical</b>	<b>Present Dosage</b>	<b>Revised Dosage</b>	
Crystal 5547C			--		
Crystal 9040			--		
			--		
<b>Service Engineer:</b>	<b>Murugaraaj</b>		<b>Client:</b>	<b>Mr. Ratheesh Muttath</b>	
<b>Signature:</b>			<b>Signature:</b>		

