DATE SUBMITTED

08/12/19

SUBMITTED BY

Public Services

DATE ACTION REQUIRED

08/21/19

COUNCIL ACTION
PUBLIC HEARING REQUIRED
RESOLUTION
ORDINANCE I<sup>ST</sup> READING
ORDINANCE 2<sup>ND</sup> READING
CITY CLERK'S INITIALS



## IMPERIAL CITY COUNCIL AGENDA ITEM

SUBJECT:	DISCUSSIO	N/ACTION:							
Filter Media Bid	1. Permi	ission to seek bids for Filter I	Media Replacement						
			·						
DEPARTMENT IN	VOLVED: P	ublic Services - Water							
BACKGROUND/SUMMARY;									
The City had a filter surveillance done in the first quarter of April 2019. The report indicated that the media needed to be replaced. Staff has prepared a bid document and has budgeted for media replacement in the 2019/20 budget.									
Surveillance Report is attached.									
Budgeted Line Item -	- 50-510-5430								
FISCAL IMPAC	Т:	-		FINANCE					
\$0.00				INITIALS					
STAFF RECOMMEN	NDATION: App	rove to seek Bids.		DEPT. INITIALS					
MANAGER'S RECC	MMENDATION	N: n/a		CITY MANAGER's INITIALS	1				
MOTION:									
SECONDED: AYES: NAYES: ABSENT:		E E	APPROVED DISAPPROVI REFERRED 1		REJECTED () DEFERRED ()				

## CITY OF IMPERIAL

## FILTER SURVEILLANCE REPORT FOR

IMPERIAL WTP

PERFORMED & PREPARED

By:

ERS INDUSTRIAL SERVICES, INC.

April 25, 2019

City of Imperial 400 South B St. Imperial, CA 92251

ATTENTION: JACKIE LOPER

REFERENCE: FIELD SURVEILLANCE REPORT - IMPERIAL WTP

Mr. Loper:

On March 13, 2019 a crew from ERS Industrial Services, Inc. visited Imperial Water Treatment Plant located at 201 South B Street Imperial, CA 92251. The plant is owned and operated by the City of Imperial. The purpose of this visit was to perform filter surveillance on four (4) 270 sq. foot, dual media, gravity filters, operated at the plant.

This filter surveillance consists of a number of tests, measurements and observations which, when conducted in accordance with AWWA standards, can provide insight into conditions that exist within the filters. When performed periodically, these tests can provide additional information on long term changes in filter conditions as they develop.

The following report includes the field notes that document the observations, measurements and test results as well as copies of the results of the laboratory tests performed on the samples taken from each filter.

#### **GENERAL NOTES:**

The four (4) filters were observed to be uniform in their appearance and over all operational characteristics. The following items were either outside of the specifications provided, or were of particular note.

- I. Filter Two (2) media level was measured at 28 inches when the specifications call out 40 inches. Media Expansion was noted above 35 %
- 2. Filter Three (3) media level was measured at 30 inches when specifications call out 40 inches. Media Expansion was 30%
- 3. Sand tested above the .45 .50 Effective Size specifications in all four (4) filters.
- 4. Heavy algae growth noted on filter walls in all four (4) filters.

If you have any questions regarding this information, how it was obtained or how to interpret it, please feel free to contact me.

Sincerely,

Bradford Radonich II

# FILTER 1 ANALYSIS

## FILTER SURVEILLANCE

Filter Evaluation for:		City of I	mperial		Plant:	Imperial WTP		
Filter Type:	Gravity		Contact:	Rob	ert Emmett	Phone #	760-355-2155	
Filter Number:	1		nspector:	P	ndrew Mynatt	Date:	3/13/2019	
riches escribes grand and a series	eswayoras are es and	UNIVERSE CONTRACTOR	AND 1007 / 100 - 12 A 1 / Mail	Language William		ne de la companya de		
Filter Surface:	The state of the s	Pre Bac	A. MACHINET ENERGY	Artista news 2553	neavy fines throu	about files	No. of the second	
Titter Surface.	or depression		ayer or muc	a and r	leavy lines throu	gnout inter.	No mounas	
Acceptable								
				2 240				
Wall Condition:			nd algae or	n walls	. Smooth walls w	<i>i</i> ith no visat	ole cracks or	
Acceptable	signs of spalli	ng.						
, resoption:								
Mechanical System:	Troughs unifo	rm and lev	el. Air sco	ur syst	em was even acı	ross filter w	ith no dead	
	spots.							
Acceptable								
		Media	Measurem	ents				
Freeboard Measure	ments: (Inches	from lip to	top of medi	a)				
	1 2	3 4	5	6				
Α	76 76	76 76	76	76				
В	76 76	76 76	6 76	76				
С	76 76	76   76	76	76				
<u> </u>								
Media Depth:	(Inches from to	op of media	to gravel be	ed)				
	1 2	3 4	5	6				
А	41 41	41   40	0   40	40				
В	41 41	40   40		39			8	
C	41 41							
C	41 41	40   40	40	39				
	-							
Support Gravel:	(Footprint in ir	iches)						
	1 2	3 4	5	6				
A	117 117	117   110	6 116	116				
в	117 117	116   110	6 116	115				
С	117 117	116   110	6   116	115				

Media Core Samples:				
Yes		Specified (Inches)	) Measured (Inc	hes)
	GAC/Anthracite:	24	22	
	Sand:	12	12	
	High Density Sand:	4	4	
	Total Depth:	40	38	
	Media Interface:	< 2	<1	
		Backwash		
General Observation:	Even across filter. W surface.	ater was clear and	surface was clean with	heavy fines on the
Acceptable	Surface.			
Media Expansion:	10 in	26.32%		
	65 (TELESTALE)	Post Backwash		
Media Core Samples	ES-UC			
	Effective S	iize	Uniformity Coeff	icient
9	Specified	Actual	Specified	Actual
GAC/Anthracite:	.90 - 1.1	1.04	< 1.5	1.27
Sand:	4550	0.6	< 1.5	1.55
High Density Sand:	N/A	N/A	N/A	N/A
Other:	N/A	N/A	N/A	N/A
Sample Analysis Included	Yes			

# ERS INDUSTRIAL SERVICES, INC. Filter Media Analysis

Project: City of Imperial WTP (4 Gravity Filters, Single Cell) 2019

Sample No: IM-1A-Anthracite#0001

Location: Imperial

Material: Anthracite

**Date Sampled: 3/12/2019** 

Date Tested: 3/18/2019

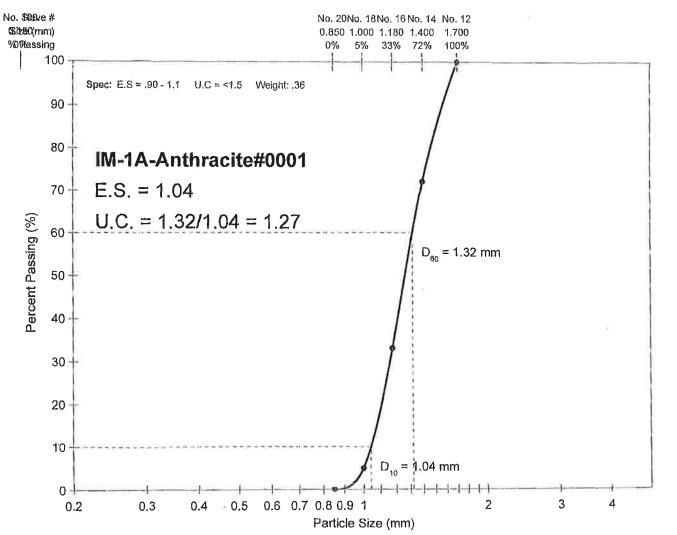
Sieve Set: A.S.T.M C136/CAL 202

Source: ERS Industrial Services, Inc.

Sampled By: HIRAM

Tested By: HIRAM

Date Calibrated: 3/16/2019



## Filter Media Analysis

Project: City of Imperial WTP (4 Gravity Filters, Single Cell) 2019

Sample No: IM-1S-Sand#0001

Location: Imperial

Material: Sand

Source: ERS Industrial Services, Inc.

**Date Sampled:** 3/12/2019

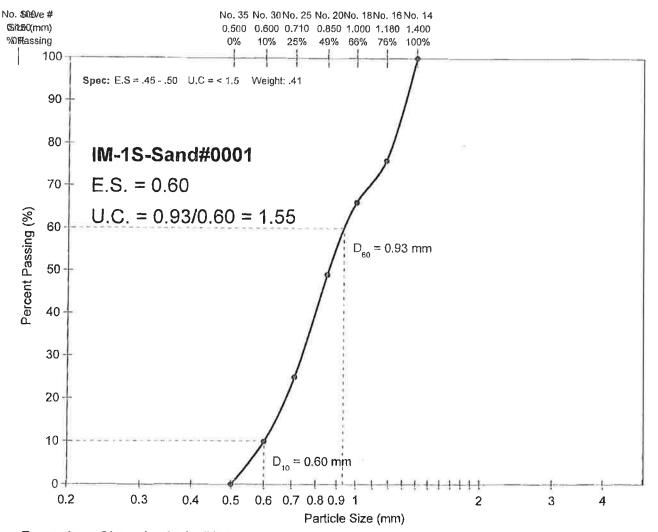
Sampled By: HIRAM

Date Tested: 3/19/2019

Tested By: HIRAM

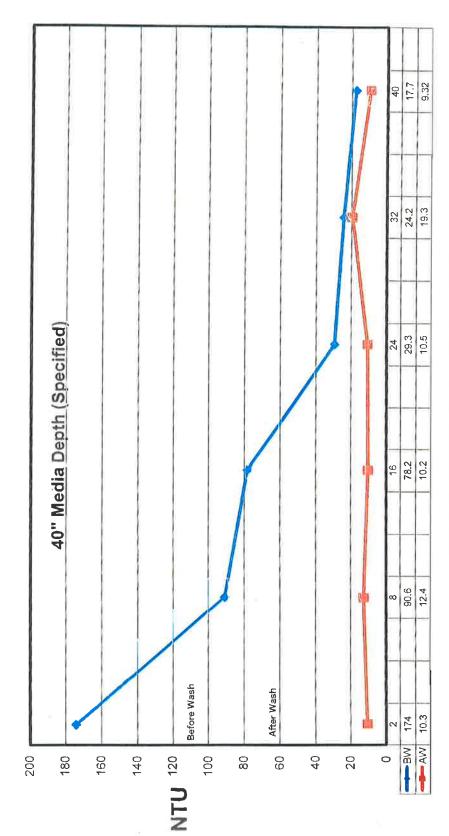
Sieve Set: A.S.T.M C136/CAL 202

Date Calibrated: 3/16/2019



Imperial Flock Retention Analysis

Filter: 1

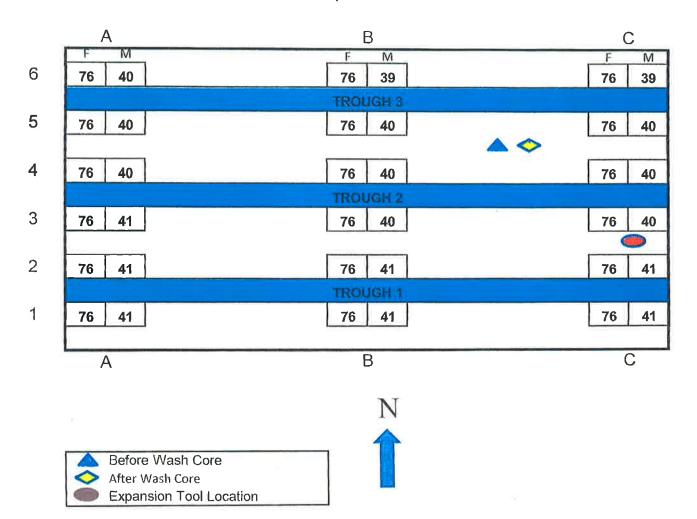


Inches Below Media Surface (As Specified)

Minutes (30 Second Intervals)

## FILTER LAYOUT

City of Imperial Imperial WTP 1



Ø В 6 116 115 U 114-115 116 116 116 GRAVEL PROFILE 7 City of Imperial Imperial WTP 1 115-116 Probe Location m 116 116 116 116-117 116 117 9 117 116 115 114 117 MEDIA DEPTH 117 117 K M C







## FILTER 2 ANALYSIS

## FILTER SURVEILLANCE

Filler Evaluation for.		City	Or mit	enai		Plant:	impena	al VV I P
Filter Type:	Gra	avity	С	ontact:	Rob	ert Emmett	Phone #	760-355-2155
Filter Number:		2	lns	pector:		Andrew Mynatt	Date:	3/13/2019
	Manual State of State		and the second	ON BUSINESS	(Victoria)			CONTRACTOR VIOLENCE
Filter Surface:		Pro	Annual Control of the Control	the second second	THE PERSON NAMED IN	A PROPERTY OF STREET,	oda a de Eila a	
i illei Suriace.		ssions note	-	er or mu	ua ana	heavy fines throu	gnout fiiter.	No mounas
Acceptable	or doproc	000110 11010	, u.					
Wall Condition:	Thick buil	ld-up of m	ud and	algae d	on walls	s. Smooth walls w	ith no visab	le cracks or
	signs of s	palling.						
Acceptable								
						×		
Mechanical System:	Troughe	uniform an	d level	Air sc	Our eve	tem was even ac	occ filtor w	ith no dood
mechanical System.	spots.	uniionii an	u ievei,	AII 301	Jui sys	terri was everi aci	OSS HILL W	iiii iio dead
Acceptable	•							
			onio Si Ambres	PANAGUNAN	No. to the Land of the		Total and a second control	Commission of Commission
The second of th		N.	ledia M	easure	ments	<b>J</b> i.		
Freeboard Measure	ments: (In	ches from I	ip to top	of med	dia)			
	1	2 3	4	5	6			
Α	86   8	86   86	85	86	86			
В	86   8	35   86	86	86	86			
С	86 8	36   85	85	86	86			
0	L_90_1_9	,0   00						
Media Depth:	(Inches fro	m top of n	nedia to	gravel	bed)			
	1 :	2 3	4	5	6			
Α	30 3	30   29	29	29	30			
В	29 2	8 29	29	29	29			
С		9 29	29	29	29			
O <sub>1</sub>		.5   25		25	23			
Support Gravel:	(Footprint	in inches)						
	1 2	2 3	4	5	6			
А	116 11	16   115	114	115	116			
в	115 11		115	115	115			
c [	115 11	114	114	115	115			

Media Core Samples:	1	0 25 17 1	NA - 171	1 3
Yes		Specified (Inches)	Measured (In	iches)
	GAC/Anthracite:	24	12	
	Sand:	12	12	
	High Density Sand:	4	4	
	Total Depth:	40	28	
	Media Interface:	< 2"	< 1"	
The Control of the Stanton	<b>建设进程设施的</b> 设施。	Backwash		JEC7-19544
General Observation:		later was clear and s	surface was clean wit	h heavy fines on th
Acceptable	surface.			
Acceptable				
Media Expansion:	in	35.71%		The state of the s
Media Expansion:	in	35.71%	en e	·
Media Expansion:		35.71%		
Media Expansion:  Media Core Samples				
		Post Backwash ,	Uniformity Coe	
	ES-UC	Post Backwash ,		
	ES-UC  Effective S  Specified	Post Backwash	Uniformity Coe	fficient
Media Core Samples  GAC/Anthracite:	ES-UC  Effective S  Specified	Post Backwash Size Actual	Uniformity Coe Specified	efficient Actual
Media Core Samples  GAC/Anthracite:	ES-UC  Effective S  Specified  .90 - 1.1  .4550	Post Backwash Size Actual 1.12	Uniformity Coe Specified < 1.5	efficient Actual < 1.4
Media Core Samples  GAC/Anthracite: Sand:	ES-UC  Effective S  Specified  .90 - 1.1  .4550  N/A	Post Backwash  Size  Actual  1.12  0.59	Uniformity Coe Specified < 1.5 < 1.5	Actual < 1.4 < 1.46

βl

## Filter Media Analysis

Project: City of Imperial WTP (4 Gravity Filters, Single Cell) 2019

Sample No: IM-2A-Anthracite#0001

Location: Imperial

Material: Anthracite

Source: ERS Industrial Services, Inc.

**Date Sampled: 3/13/2019** 

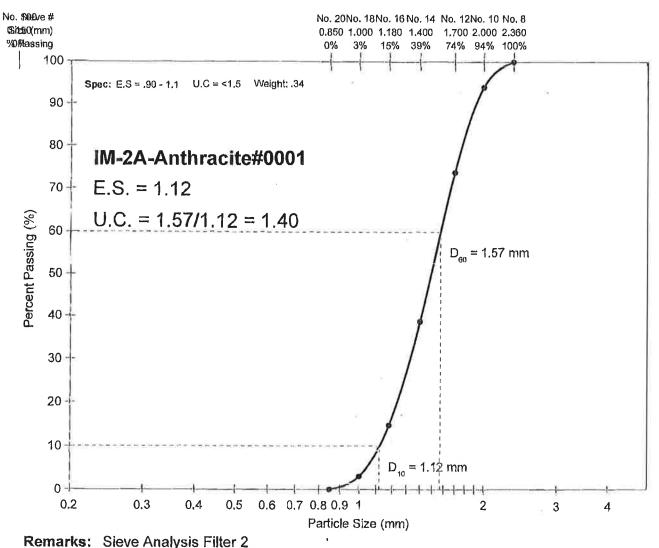
Sampled By: HIRAM

Date Tested: 3/18/2019

Tested By: HIRAM

Sieve Set: A.S.T.M C136/CAL 202

Date Calibrated: 3/16/2019



## Filter Media Analysis

Project: City of Imperial WTP (4 Gravity Filters, Single Cell) 2019

Sample No: IM-2S-Sand#0001

Location: Imperial

Material: Sand

**Date Sampled: 3/13/2019** 

Date Tested: 3/19/2019

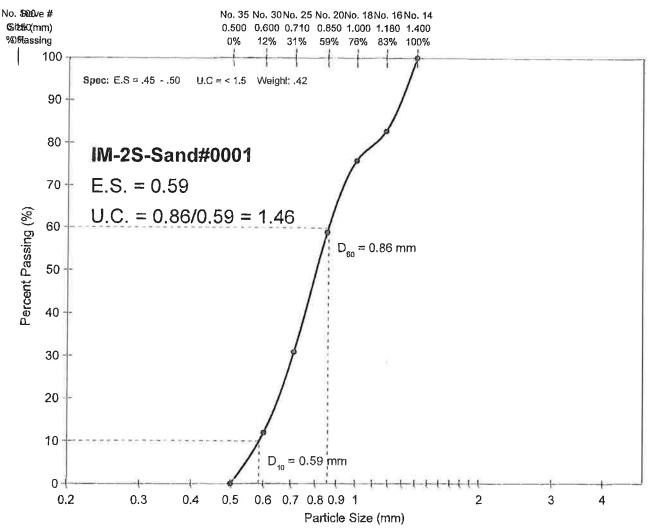
Sieve Set: A.S.T.M C136/CAL 202

Source: ERS Industrial Services, Inc.

Sampled By: HIRAM

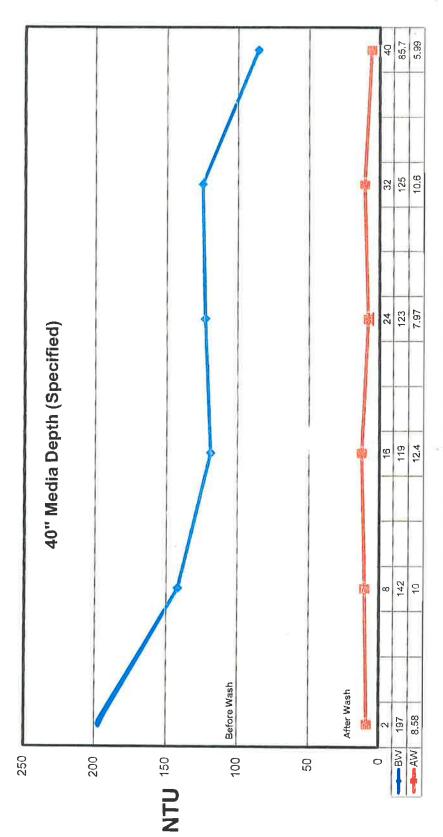
Tested By: HIRAM

Date Calibrated: 3/16/2019



Imperial Flock Retention Analysis

Filter: 2



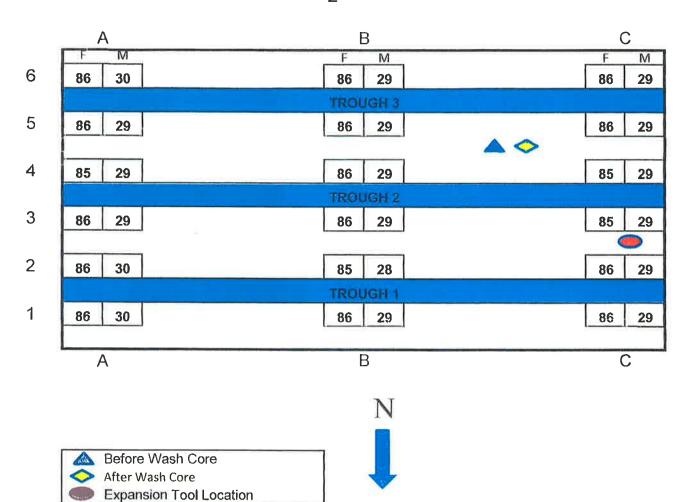
Inches Below Media Surface (As Specified)

0.386 0.386 VD. 0.36 0.36 5.5 0.614 0.614 5 4.5 3.06 4 6.04 6.04 3.5 IMPERIAL WTP Filter 2 w 4 13.9 2.5 13.9 24.5 24.5 7 37.2 37.2 1.5 44.1 44.1 62.4 0.5 62.4 Minutes, Turbidity NTU 40 20 20 9 20 30 10

Minutes (30 Second Intervals)

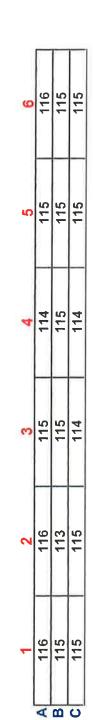
## FILTER LAYOUT

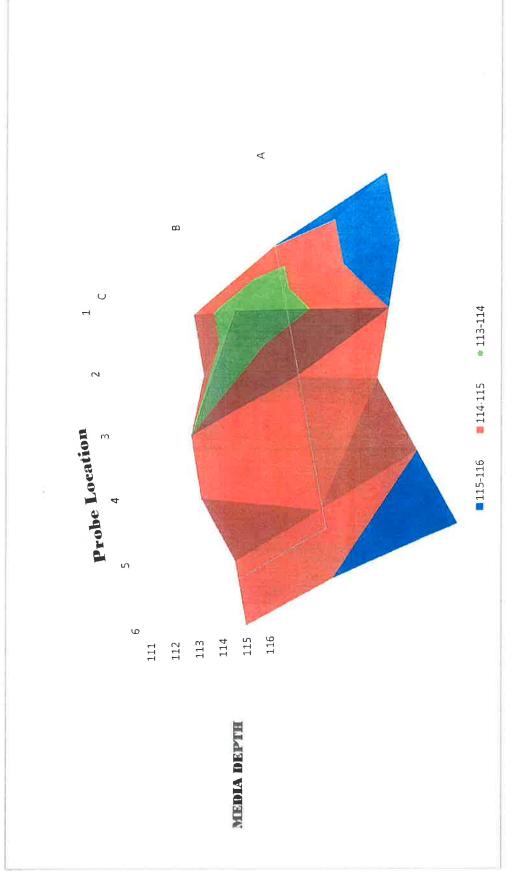
City of Imperial Imperial WTP 2

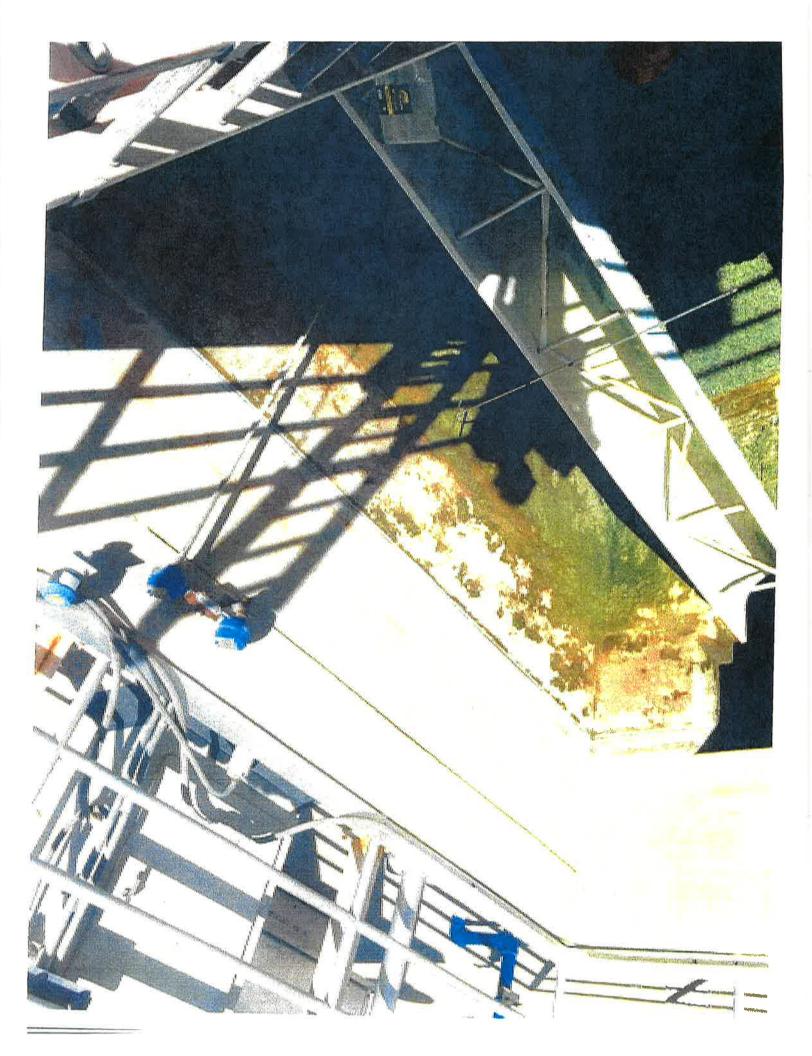


GRAVEL PROFILE

City of Imperial Imperial WTP 2















4 1

# FILTER 3 ANALYSIS

## FILTER SURVEILLANCE

Filter Evaluation for:	City of Imperial						Plant:	Imperial WTP	
Filter Type:	G	ravity		С	ontact:	Rob	ert Emmett	Phone #	760-355-2155
Filter Number:		3		Ins	pector:		Andrew Mynatt	Date:	3/13/2019
The second second second	Parties I have	1000	Pre	Backw	ash Ins	pectio	n	× 1-10	vajak ajlej b
Filter Surface:	Level su	ırface					heavy fines throu	ighout filter.	No mounds
	or depre	ession	s note	d.					
Acceptable									
Wall Condition:	Thick bu	uild-up	of mu	ıd and	algae d	n walls	s. Smooth walls v	vith no visab	le cracks or
	signs of	-			J				
Acceptab le	l								
Mechanical System:	Troughs	unifo	rm an	d level	Air sco	nur svs	tem was even ac	ross filter w	th no dead
	spots.	anno	, iii air	u 10 v 01.	7 (11 00)	our cyc	ioni wao ovon ao	1000 11101 111	arrio acaa
Acceptable									
			M	edia M	easurei	nents	i san	5 1 8 8 8	Thomas A we
Fuel and Manager		HHIMPIO	4 11 20 4 10 10 10	7 11 Vid. 1 1		1.83			H = (2 X/15 2 _ )
Freeboard Measure	ments: (II	ncnes 2	from II	p to top 4	of med 5	11a) 6			
А	82	82	82	82	82	82			
В		82	82	82	82	82			
С	82	82	83	82	82	82			
Media Depth:	(Inches fr	om to	op of m	edia to	gravel l	ped)			
	1	2	3	4	5	6			
Α	33	33	33	33	33	33			
В	33	33	33	33	33	33			
С		33	33	33	33	33			
O I	_ 55 _[	55	- 55						
_	_							3	
Support Gravel:	(Footprin	nt in ir	iches)						
	1	2	3	4	5	6			
А	115 1	115	115	115	115	115			
В	115	115	115	115	115	115			
c l	115 1	115	116	115	115	115			

Media Core Samples:					
Yes		Specified (Inches)		Measured (Inch	es)
	GAC/Anthracite:	24		13	
	Sand:	12		13	
	High Density Sand:	4		4	
	Total Depth:	40		30	
	Media Interface:	< 2	. ,	<1	
		Backwash			
General Observation:	Even across filter. W	Vater was clear and	surface	was clean with h	neavy fines on the
Acceptable	surface,				
Media Expansion:	9 in	30.00%	_		
			_		
		Post Backwash			
Media Core Samples	ES-UC				
	Effective S	Size	ι	Jniformity Coeffic	cient
	Specified	Actual	Spec	ified	Actual
GAC/Anthracite:	.90 - 1.1	1.13	< 1	1.5	< 1.4
Sand:	.4550	0.63	< 1		1.49
High Density Sand:	N/A	N/A	N/	A	N/A
Other:	N/A	N/A	N/	Α	N/A
Sample Analysis Included	Yes			•:	

## Filter Media Analysis

Project: City of Imperial WTP (4 Gravity Filters, Single Cell) 2019

Sample No: IM-3A-Anthracite#0001

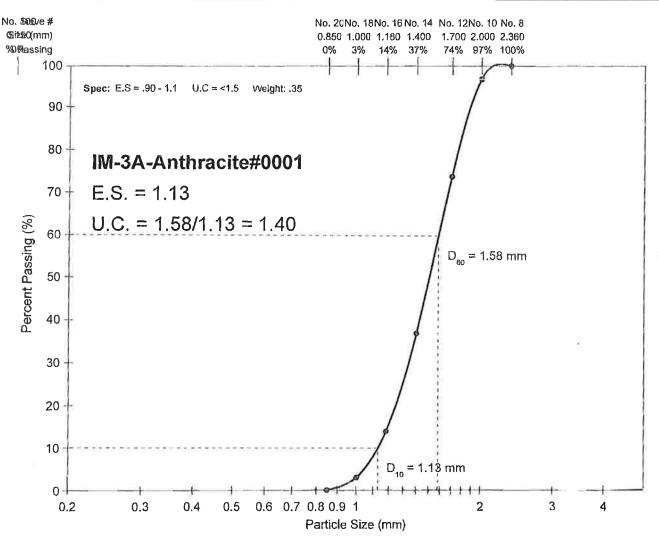
Location: Imperial

Material: Anthracite Source: ERS Industrial Services, Inc.

Date Sampled: 3/13/2019 Sampled By: HIRAM

Date Tested: 3/18/2019 Tested By: HIRAM

**Sieve Set:** A.S.T.M C136/CAL 202 **Date Calibrated:** 3/16/2010~9



## Filter Media Analysis

Project: City of Imperial WTP (4 Gravity Filters, Single Cell) 2019

Sample No: IM-3S-Sand#0001

Location: Imperial

Material: Sand

**Source:** ERS Industrial Services, Inc.

**Date Sampled: 3/13/2019** 

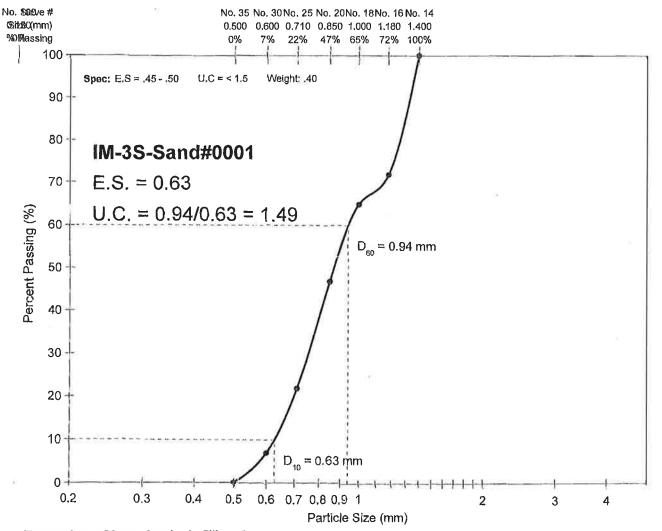
Sampled By: HIRAM

**Date Tested: 3/19/2019** 

Tested By: HIRAM

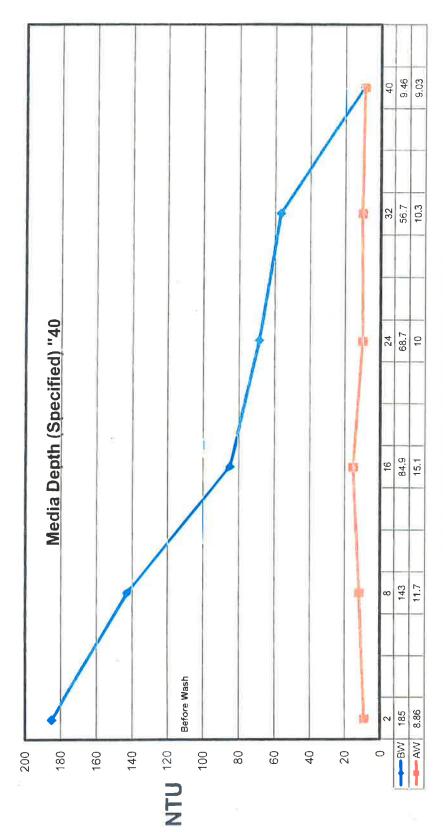
Sieve Set: A.S.T.M C136/CAL 202

Date Calibrated: 3/16/2019



Imperial Flock Retention Analysis

Filter: 3



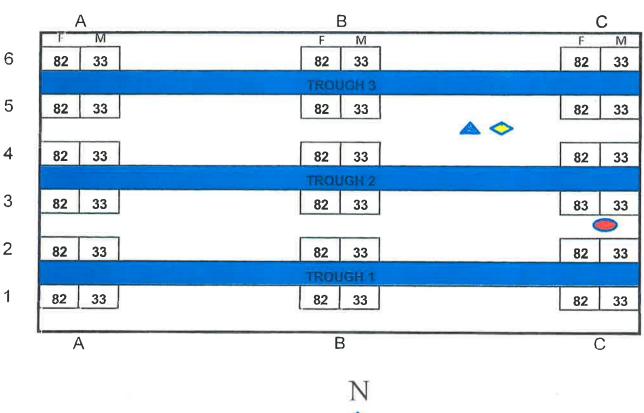
Inches Below Media Surface (As Specified)

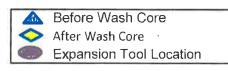
0.453 0.453 0 0.471 0.471 5.5 0.685 0.685 12.53 4.5 1.25 750 750 1.31 4. 2.39 2.39 3.5 IMPERIAL WTP Filter 3 6.14 m 8.32 8.32 2.5 17.9 17.9 30.2 1.5 43 43 43.8 43.8 0.5 Minutes Turbidity 45 40 κ ις 25 0 20 30 20 7, S NTO

Minutes (30 Second Intervals)

# **FILTER LAYOUT**

City of Imperial Imperial WTP 3

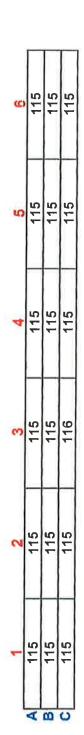


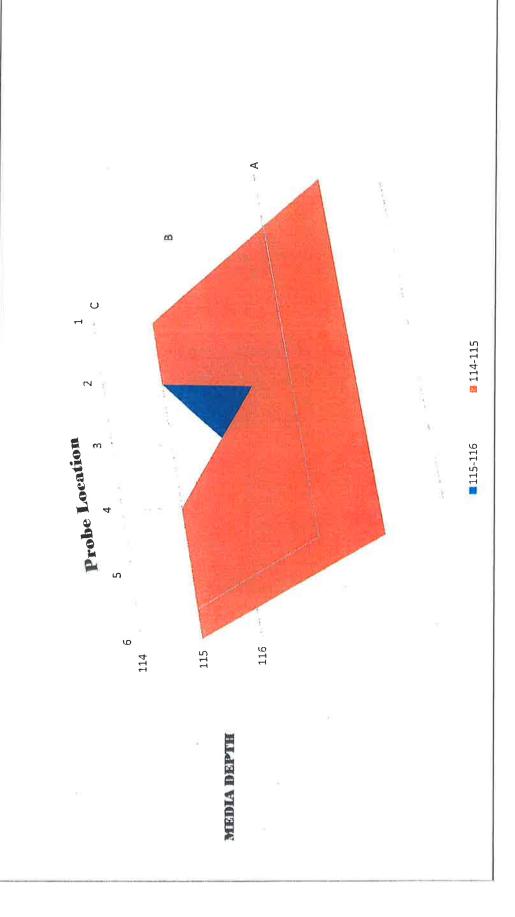




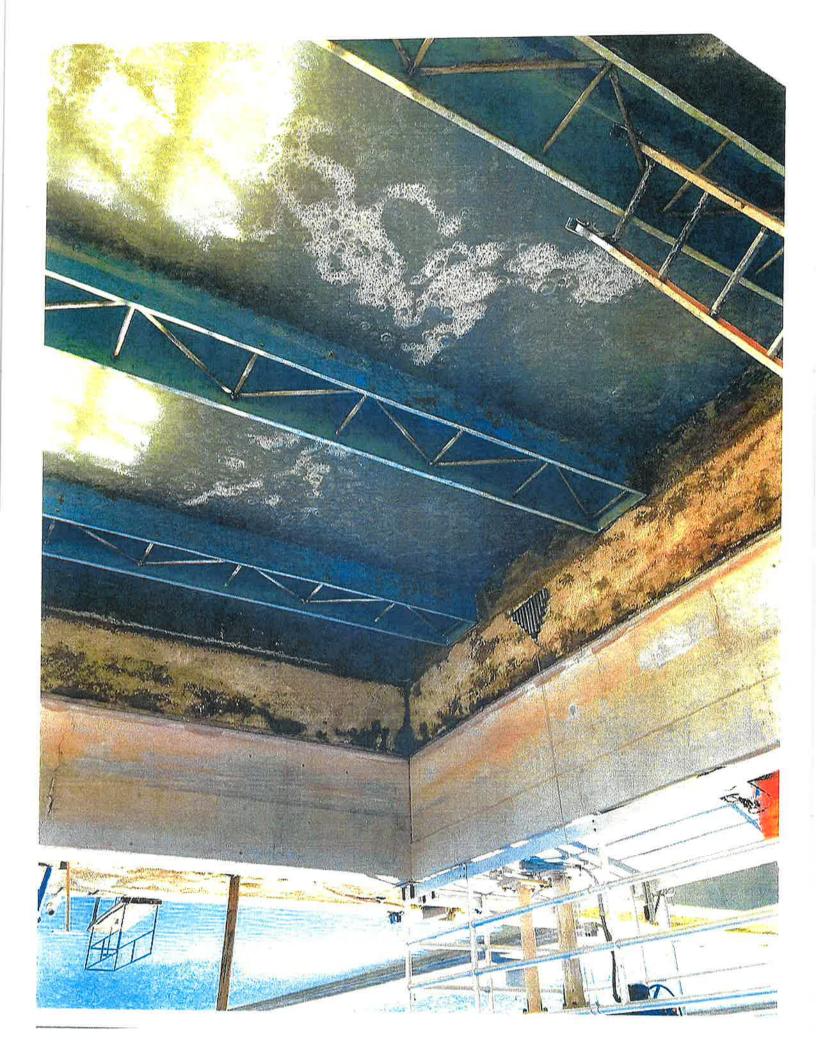
GRAVEL PROFILE

City of Imperial Imperial WTP 3



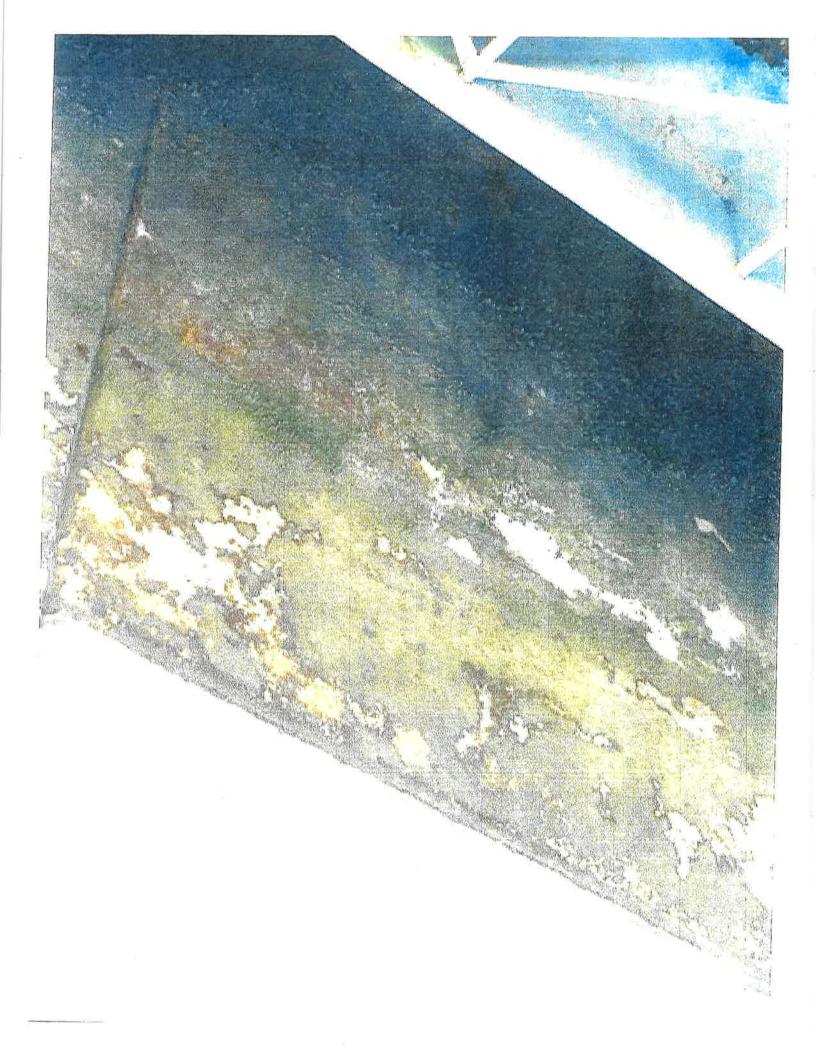












# FILTER 4 ANALYSIS

### FILTER SURVEILLANCE

Filter Evaluation for:	City of Imperial				Plant: Imperial WTP				
Filter Type:	on .	Gravit	y	С	ontact:	Rob	ert Emmett	Phone #	760-355-2155
Filter Number:		4		Ins	pector:		Andrew Mynatt	Date:	3/13/2019
	(Margareta A		Pro	Backy	ash ins	pertion	N. A. S.		
Filter Surface:	Level	surface	Carry Salary Carry	ALL COMPANY OF THE PARTY OF THE	STATE CAMPAGE CO	THE PARTY OF THE PARTY.	heavy fines throu	ahout filter.	No mounds
			ns note					.9	
Acceptable									
Wall Condition:	Thick	build-u	p of mi	ud and	algae o	n walls	s. Smooth walls v	vith no visal	ole cracks or
	signs (				.0				
Acceptable									
Mechanical System:	Troug	ns unif	orm an	d level	Air sco	our svs	tem was even ac	ross filter w	ith no dead
	spots.			u 1010,	7 000	Jan Oyo	tom was over as	rood inter w	in no acaa
Acce <del>ptable</del>									
		30 3	IV	ledia M	easurei	nents		100	
Freeboard Measure	ments:	(Inches	s from li	n to to	of mer	lia)			
	1	2	3	4	5	6			
А	76	76	77	77	77	78	Í		
В	77	76	77	77	77	78			
C	77	77	76	76	77	77			
C			1 /6	70		- / /			
Media Depth:	(Inches	from t	top of m	iedia to	gravel l	oed)			
	1	2	3	4	5	6			
Α	37	37	38	37	38	37			
В	37	38	38	37	37	36			
С	37	37	38	37	37	38			
	A CONTRACTOR OF THE CONTRACTOR								
Support Gravel:	(Footn	rint in i	nchee\						
ouppoir oragen			•		_	0			
. 1	1	2	3	4	5	6			
Α	113	113	115	114	115	115			
В	114	114	115	114	114	114			
C	114	114	114	113	114	115			

Media Core Samples:						
Yes		Specified (Inches)	Measured (Incl	ies)		
	GAC/Anthracite:	24	24			
	Sand:	12	12			
	High Density Sand:	4	2			
	Total Depth:	40	38			
	Media Interface:	< 2	< 2			
		Backwash				
General Observation:		later was clear and s	urface was clean with	heavy fines on the		
Acceptable	surface.					
Media Expansion:	9 in	23.68%				
	""					
	Was a second	Post Backwash				
Media Core Samples	ES-UC					
	Effective S	Size	Uniformity Coefficient			
	Specified	Actual	Specified	Actual		
GAC/Anthracite:	90 - 1.1	1.09	< 1.5	1.35		
Sand:	4550	0.63	< 1.5	1.65		
High Density Sand:	N/A	N/A	N/A	N/A		
Other:	N/A	N/A	N/A	N/A		
Sample Analysis Included	Yes					

#### ERS INDUSTRIAL SERVICES, INC.

#### Filter Media Analysis

Project: City of Imperial WTP (4 Gravity Filters, Single Cell) 2019

Sample No: IM-4A-Anthracite#0001

Location: Imperial

Material: Anthracite

**Date Sampled:** 3/13/2019

Date Tested: 3/18/2019

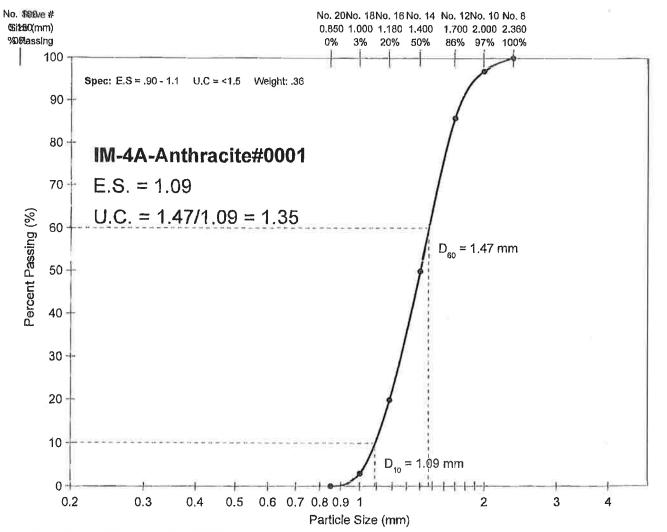
Sieve Set: A.S.T.M C136/CAL 202

Source: ERS Industrial Services, Inc.

Sampled By: HIRAM

Tested By: HIRAM

Date Calibrated: 3/16/2019



Remarks: Sieve analysis Filter 4

#### ERS INDUSTRIAL SERVICES, INC.

## Filter Media Analysis

Project: City of Imperial WTP (4 Gravity Filters, Single Cell) 2019

Sample No: IM-4S-Sand#0001

Location: Imperial

Material: Sand

**Date Sampled: 3/14/2019** 

Date Tested: 3/19/2019

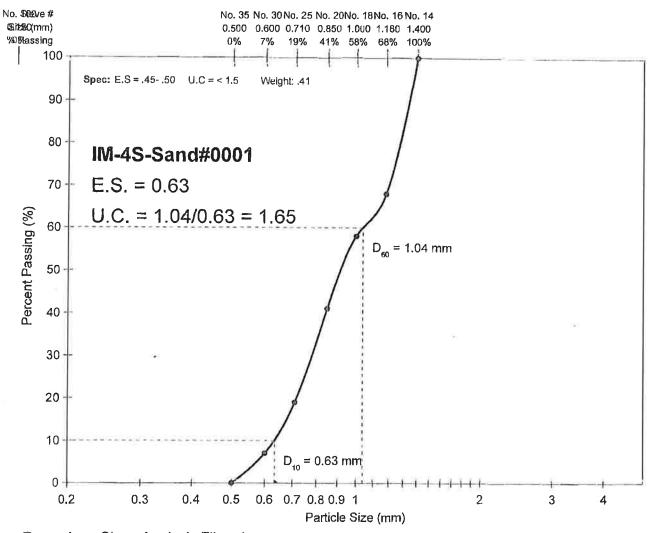
Sieve Set: A.S.T.M C136/CAL 202

Source: ERS Industrial Services, Inc.

Sampled By: HIRAM

Tested By: HIRAM

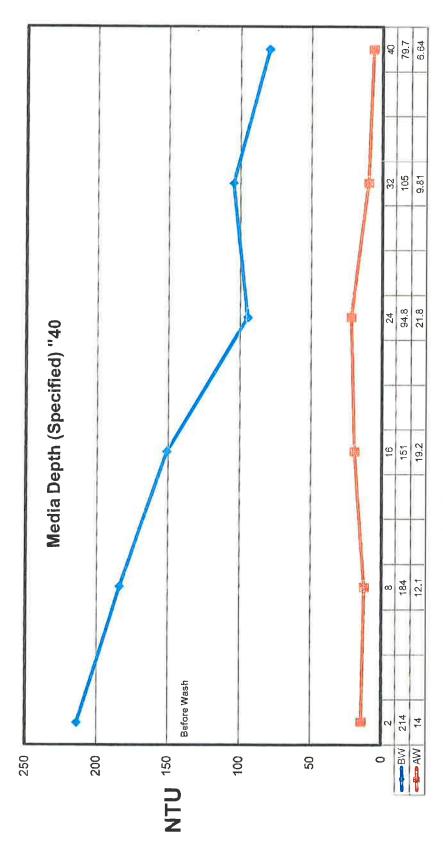
Date Calibrated: 3/16/2019



Remarks: Sieve Analysis Filter 4

Imperial Flock Retention Analysis

Filter: 4



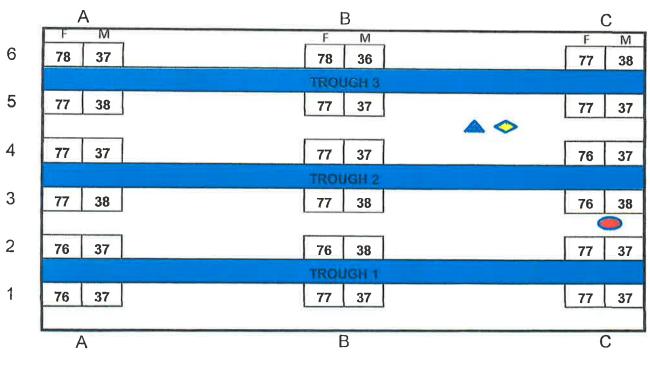
Inches Below Media Surface (As Specified)

0.931 0.931 3.74 5,5 3.45 3-41 6.9 6.9 4.5 8,37 8.37 10.21 10.21 3-5 IMPERIAL WTP Filter 4 18.8 18.8 37.5 2.5 41 56.8 1.5 88.4 88.4 97.1 0.5 Minutes 100 80 9 40 20 120 NTO

Minutes (30 Second Intervals)

# FILTER LAYOUT

City of Imperial Imperial WTP 4



After Wash Core

After Wash Core

Expansion Tool Location



GRAVEL PROFILE

City of Imperial Imperial WTP 4

