Agenda Item No. E-3

DATE SUBMITTED	08/12/19	COUNCIL ACTION	(X)
SUBMITTED BY	Public Services	PUBLIC HEARING REQUIRED	( )
DATE ACTION REQUIRED	08/21/19	RESOLUTION	( )
		ORDINANCE 1ST READING	( )
		ORDINANCE 2ND READING	( )
		CITY CLERK'S INITIALS	

IMPERIAL CITY COUNCIL
AGENDA ITEM

SUBJECT: Filter Media Bid

DISCUSSION/ACTION:

1. Permission to seek bids for Filter Media Replacement

DEPARTMENT INVOLVED: Public 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 IMPACT:

$0.00

FINANCE INITIALS

STAFF RECOMMENDATION: Approve to seek Bids.

DEPT. INITIALS

MANAGER'S RECOMMENDATION: n/a

CITY MANAGER's INITIALS

MOTION:

SECONDED:
AYES:
NAYES:
ABSENT:

APPROVED ( ) REJECTED ( )
DISAPPROVED ( ) DEFERRED ( )

REFERRED TO:

CITY OF IMPERIAL

FILTER SURVEILLANCE REPORT FOR

IMPERIAL WTP

PERFORMED & PREPARED

By:

ERS INDUSTRIAL SERVICES, INC.

ERS INDUSTRIAL SERVICES, INC.
2120 Warm Springs Ct. 510-770-0202 phone 510-490-3024 fax

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.

1. 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

ERS INDUSTRIAL SERVICES, INC.
2120 Warm Springs Ct. 510-770-0202 phone 510-490-3024 fax

FILTER SURVEILLANCE

Filter Evaluation for:	City of Imperial		**Plant:**	Imperial WTP	
Filter Type:	Gravity	**Contact:**	Robert Emmett	**Phone #**	760-355-2155
Filter Number:	1	**Inspector:**	Andrew Mynatt	**Date:**	3/13/2019

Pre Backwash Inspection

Filter Surface: Level surface with thin layer of mud and heavy fines throughout filter. No mounds or depressions noted.

Acceptable

Wall Condition: Thick build-up of mud and algae on walls. Smooth walls with no visable cracks or signs of spalling.

Acceptable

Mechanical System: Troughs uniform and level. Air scour system was even across filter with no dead spots.

Acceptable

Media Measurements

Freeboard Measurements: (Inches from lip to top of media)

	1	2	3	4	5	6
A	76	76	76	76	76	76
B	76	76	76	76	76	76
C	76	76	76	76	76	76

Media Depth: (Inches from top of media to gravel bed)

	1	2	3	4	5	6
A	41	41	41	40	40	40
B	41	41	40	40	40	39
C	41	41	40	40	40	39

Support Gravel: (Footprint in inches)

	1	2	3	4	5	6
A	117	117	117	116	116	116
B	117	117	116	116	116	115
C	117	117	116	116	116	115

Media Core Samples:

Yes

	Specified (Inches)	Measured (Inches)
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. Water was clear and surface was clean with heavy fines on the surface.

Acceptable

Media Expansion: 10 in 26.32%

Post Backwash

Media Core Samples **ES-UC**

	Effective Size		Uniformity Coefficient	
	Specified	Actual	Specified	Actual
GAC/Anthracite:	.90 - 1.1	1.04	< 1.5	1.27
Sand:	.45 - .50	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

Source: ERS Industrial Services, Inc.

Date Sampled: 3/12/2019

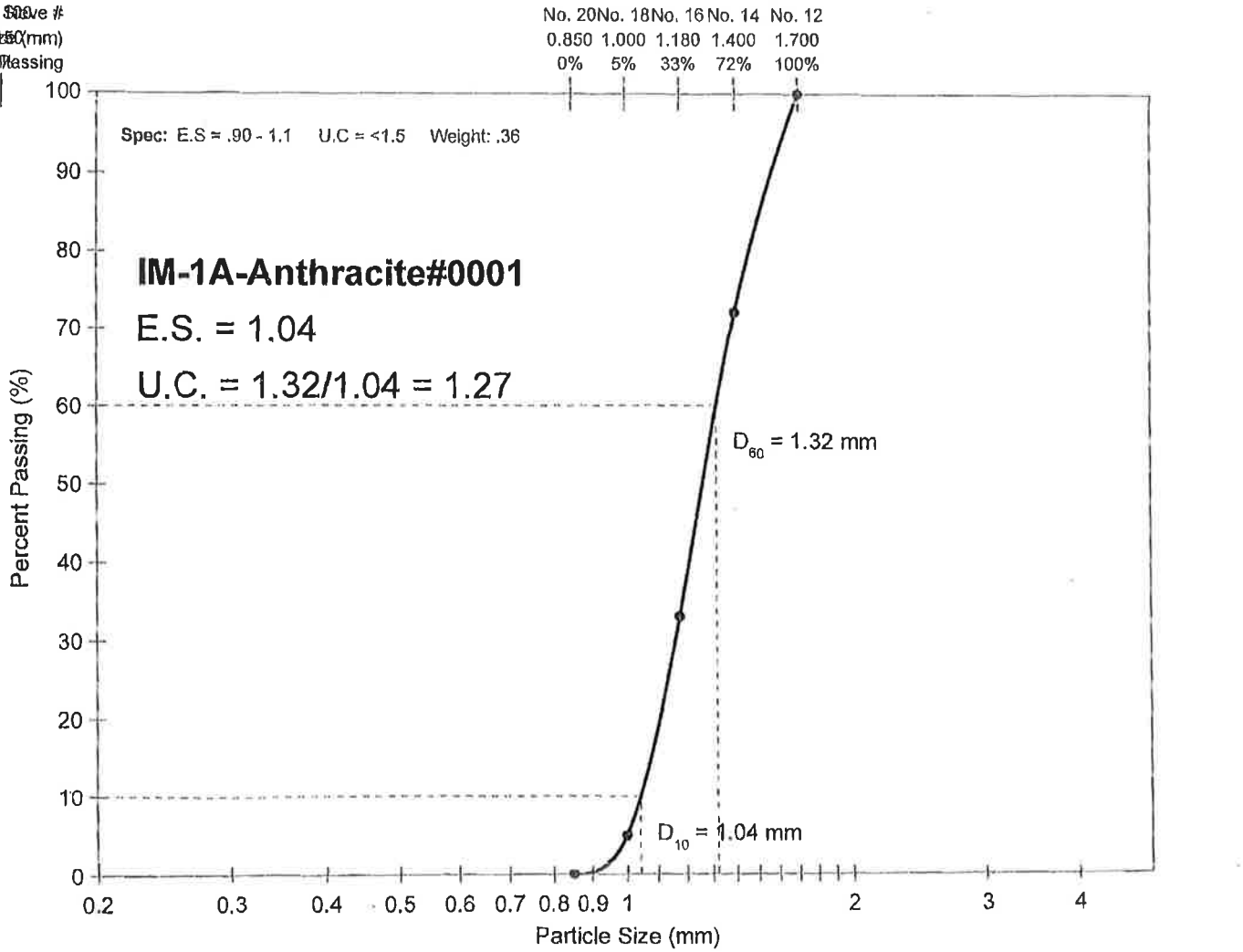
Sampled By: HIRAM

Date Tested: 3/18/2019

Tested By: HIRAM

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

Date Calibrated: 3/16/2019



Remarks: Sieve Analysis Filter 1

S.T.A.R.S.

ERS INDUSTRIAL SERVICES, INC.

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

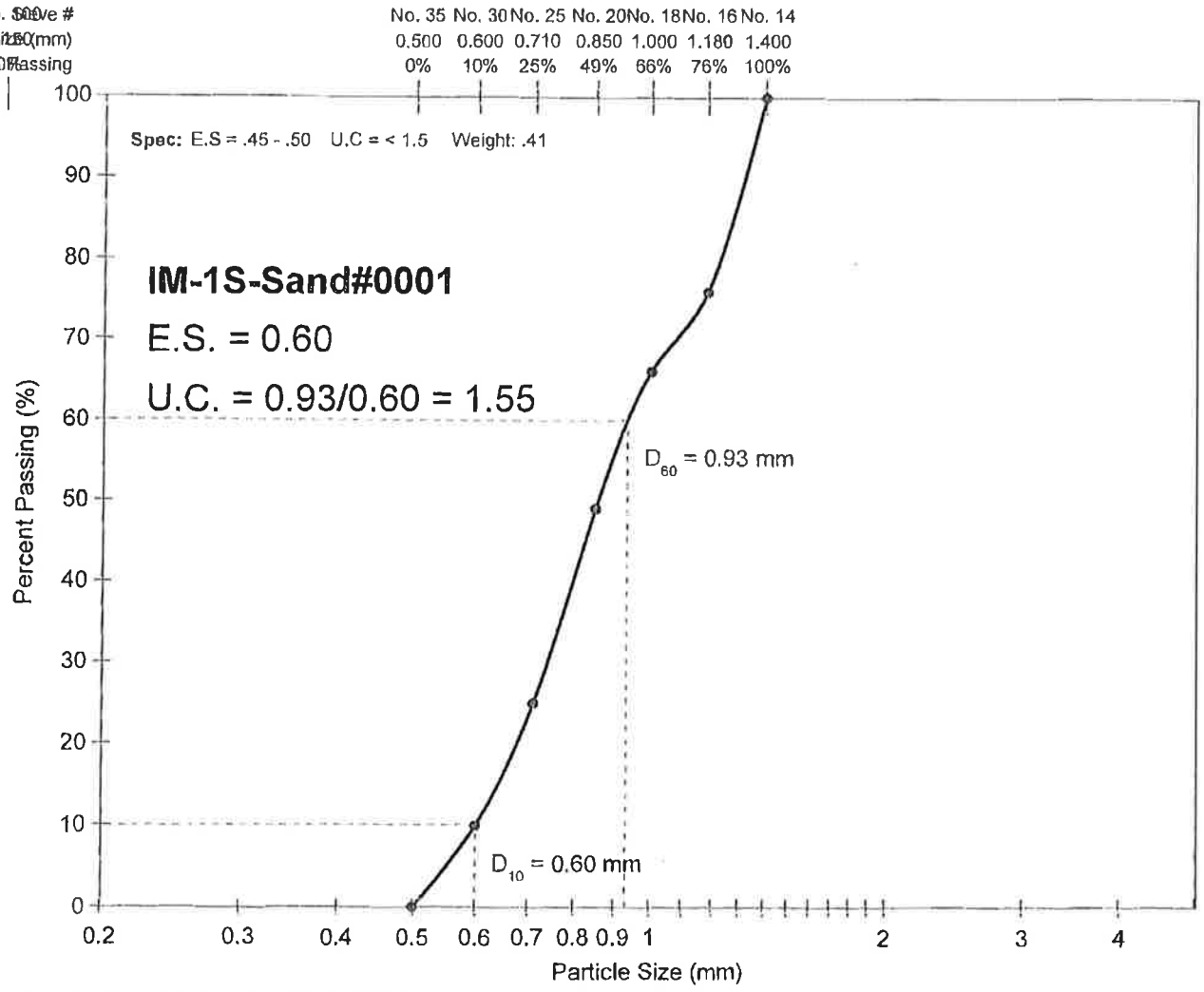
Sampled By: HIRAM

Date Tested: 3/19/2019

Tested By: HIRAM

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

Date Calibrated: 3/16/2019



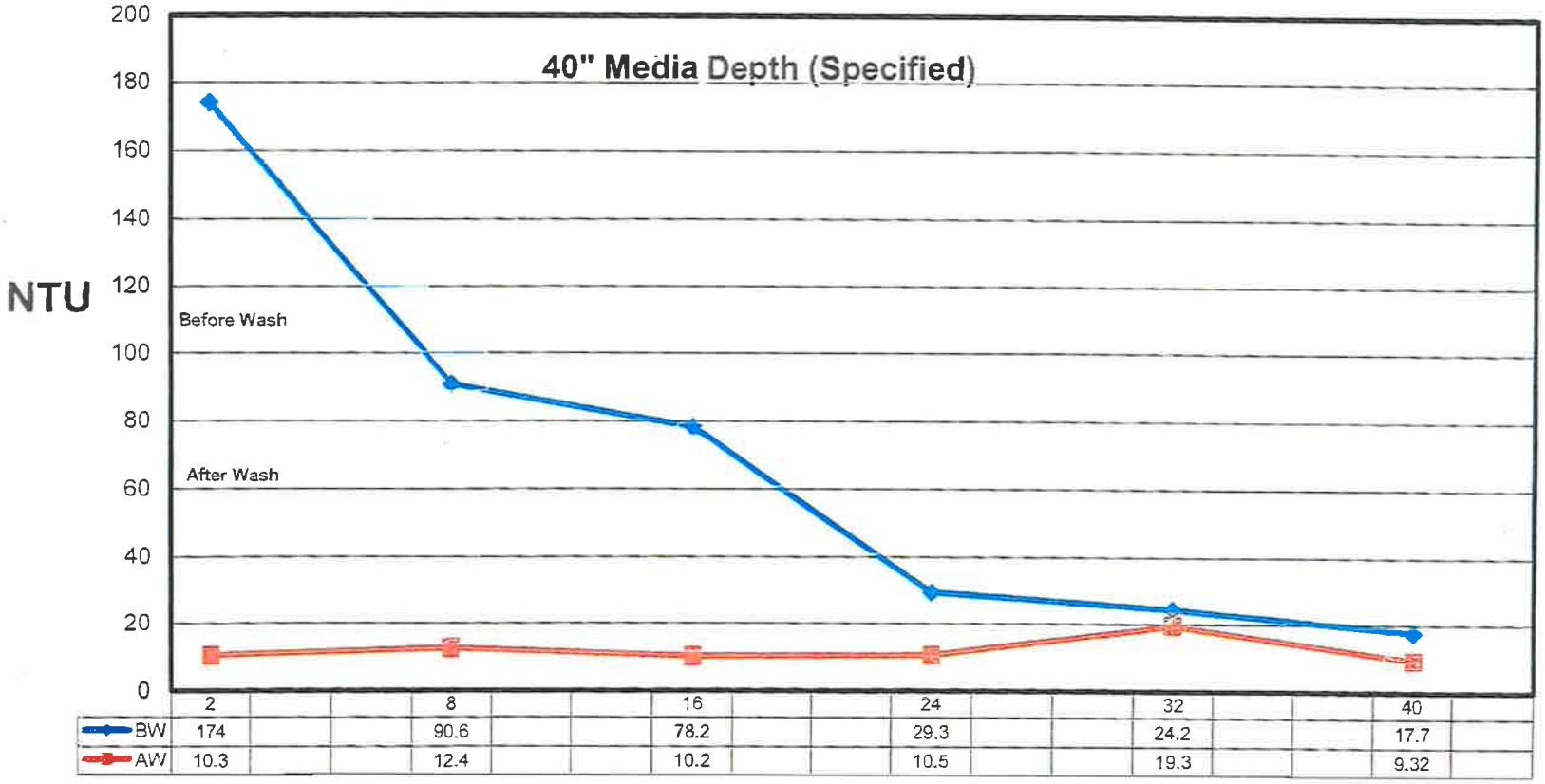
Remarks: Sieve Analysis Filter 1

S.T.A.R.S.

Imperial

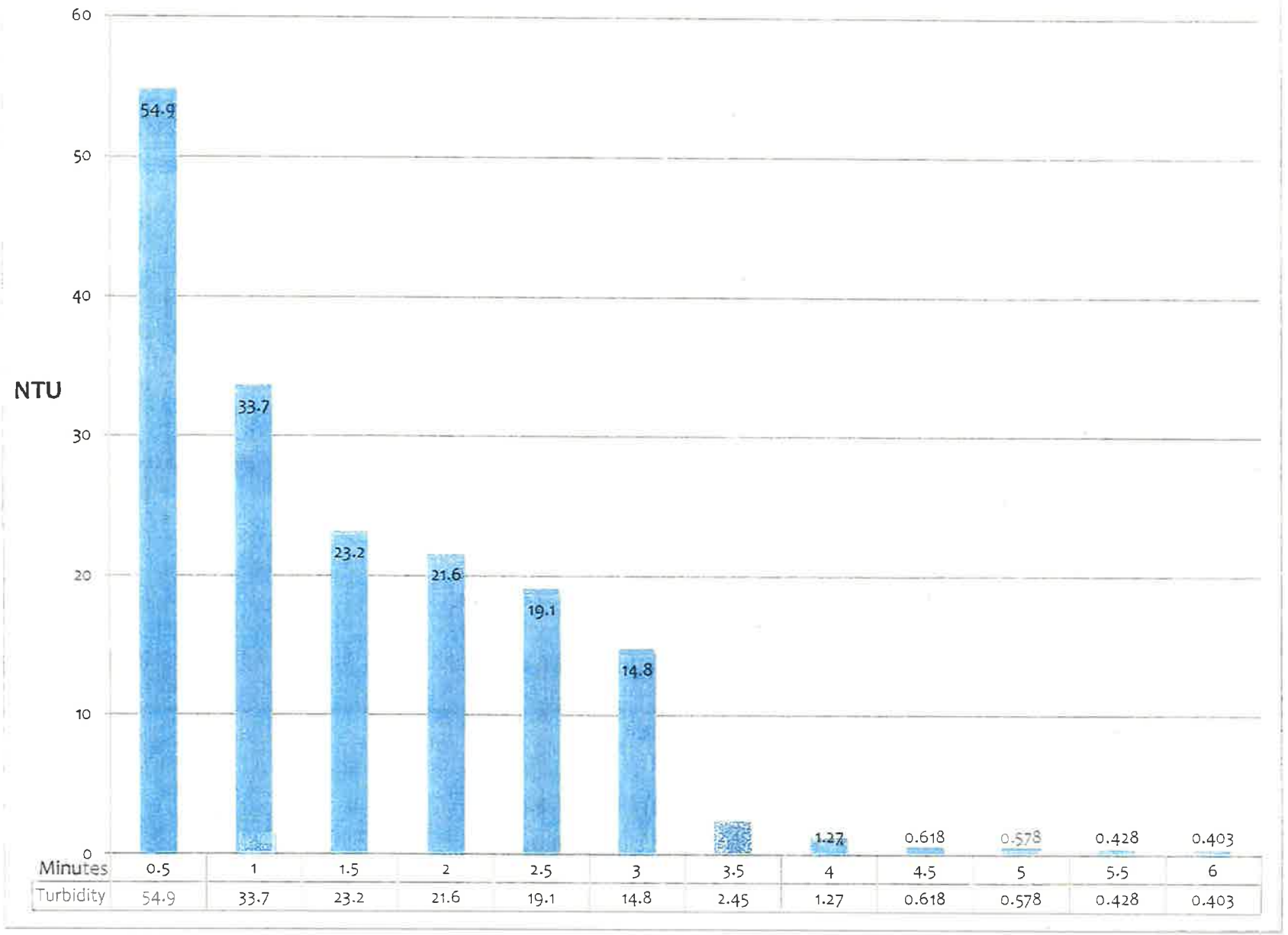
Flock Retention Analysis

Filter: 1



IMPERIAL WTP

Filter 1



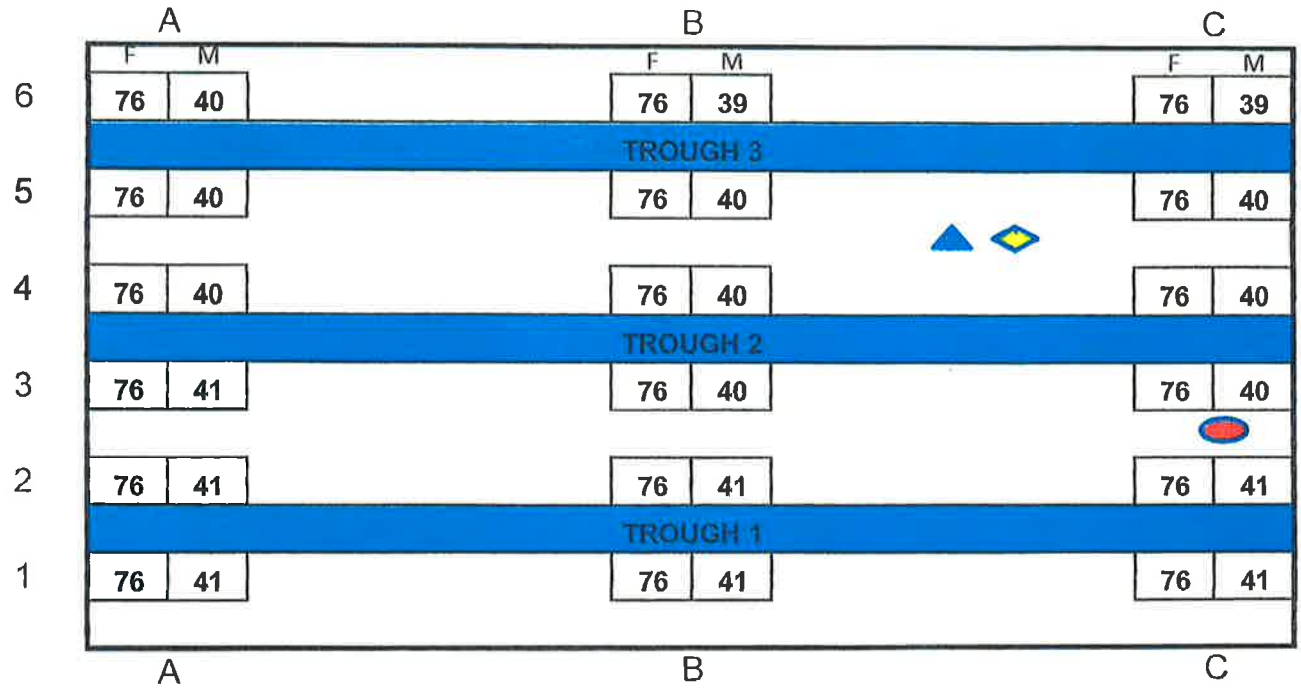
Minutes	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
Turbidity	54.9	33.7	23.2	21.6	19.1	14.8	2.45	1.27	0.618	0.578	0.428	0.403

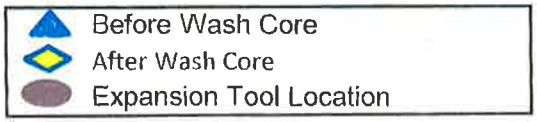
Minutes

(30 Second Intervals)

FILTER LAYOUT

City of Imperial
Imperial WTP
1

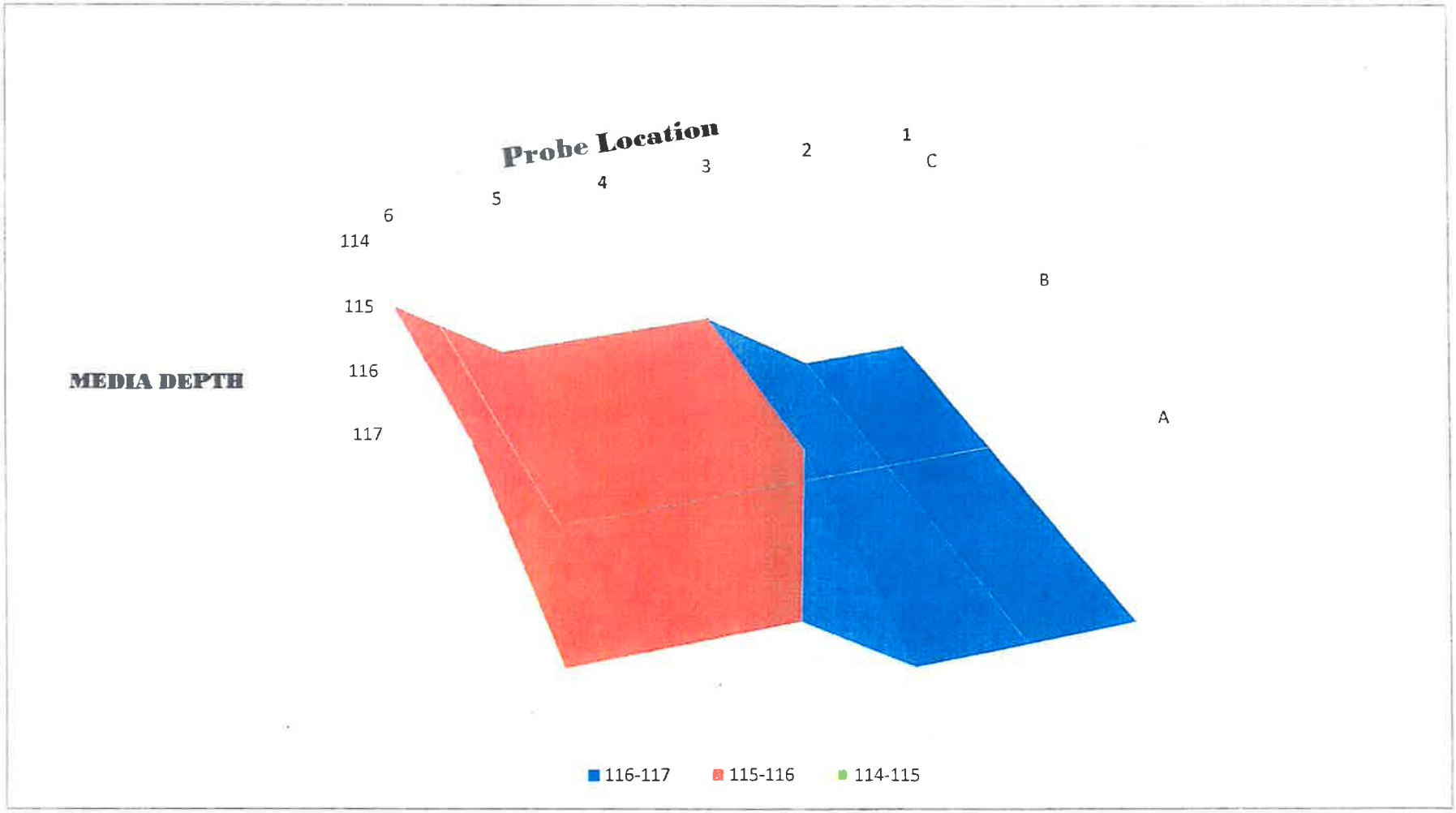




GRAVEL PROFILE

City of Imperial
Imperial WTP
1

	1	2	3	4	5	6
A	117	117	117	116	116	116
B	117	117	116	116	116	115
C	117	117	116	116	116	115



FILTER 2
ANALYSIS

ERS INDUSTRIAL SERVICES, INC.
2120 Warm Springs Ct. 510-770-0202 phone 510-490-3024 fax

FILTER SURVEILLANCE

Filter Evaluation for:	City of Imperial		**Plant:**	Imperial WTP	
Filter Type:	Gravity	**Contact:**	Robert Emmett	**Phone #**	760-355-2155
Filter Number:	2	**Inspector:**	Andrew Mynatt	**Date:**	3/13/2019

Pre-Backwash Inspection

Filter Surface: Level surface with thin layer of mud and heavy fines throughout filter. No mounds or depressions noted.

Acceptable

Wall Condition: Thick build-up of mud and algae on walls. Smooth walls with no visable cracks or signs of spalling.

Acceptable

Mechanical System: Troughs uniform and level. Air scour system was even across filter with no dead spots.

Acceptable

Media Measurements

Freeboard Measurements: (Inches from lip to top of media)

	1	2	3	4	5	6
A	86	86	86	85	86	86
B	86	85	86	86	86	86
C	86	86	85	85	86	86

Media Depth: (Inches from top of media to gravel bed)

	1	2	3	4	5	6
A	30	30	29	29	29	30
B	29	28	29	29	29	29
C	29	29	29	29	29	29

Support Gravel: (Footprint in inches)

	1	2	3	4	5	6
A	116	116	115	114	115	116
B	115	113	115	115	115	115
C	115	115	114	114	115	115

Media Core Samples:

Yes

	Specified (Inches)	Measured (Inches)
GAC/Anthracite:	24	12
Sand:	12	12
High Density Sand:	4	4
Total Depth:	40	28
Media Interface:	< 2"	< 1"

Backwash

General Observation: Even across filter. Water was clear and surface was clean with heavy fines on the surface.

Acceptable

Media Expansion: 10 in 35.71%

Post Backwash

Media Core Samples **ES-UC**

	Effective Size		Uniformity Coefficient	
	Specified	Actual	Specified	Actual
GAC/Anthracite:	.90 - 1.1	1.12	< 1.5	< 1.4
Sand:	.45 - .50	0.59	< 1.5	< 1.46
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-2A-Anthracite#0001

Location: Imperial

Material: Anthracite

Source: ERS Industrial Services, Inc.

Date Sampled: 3/13/2019

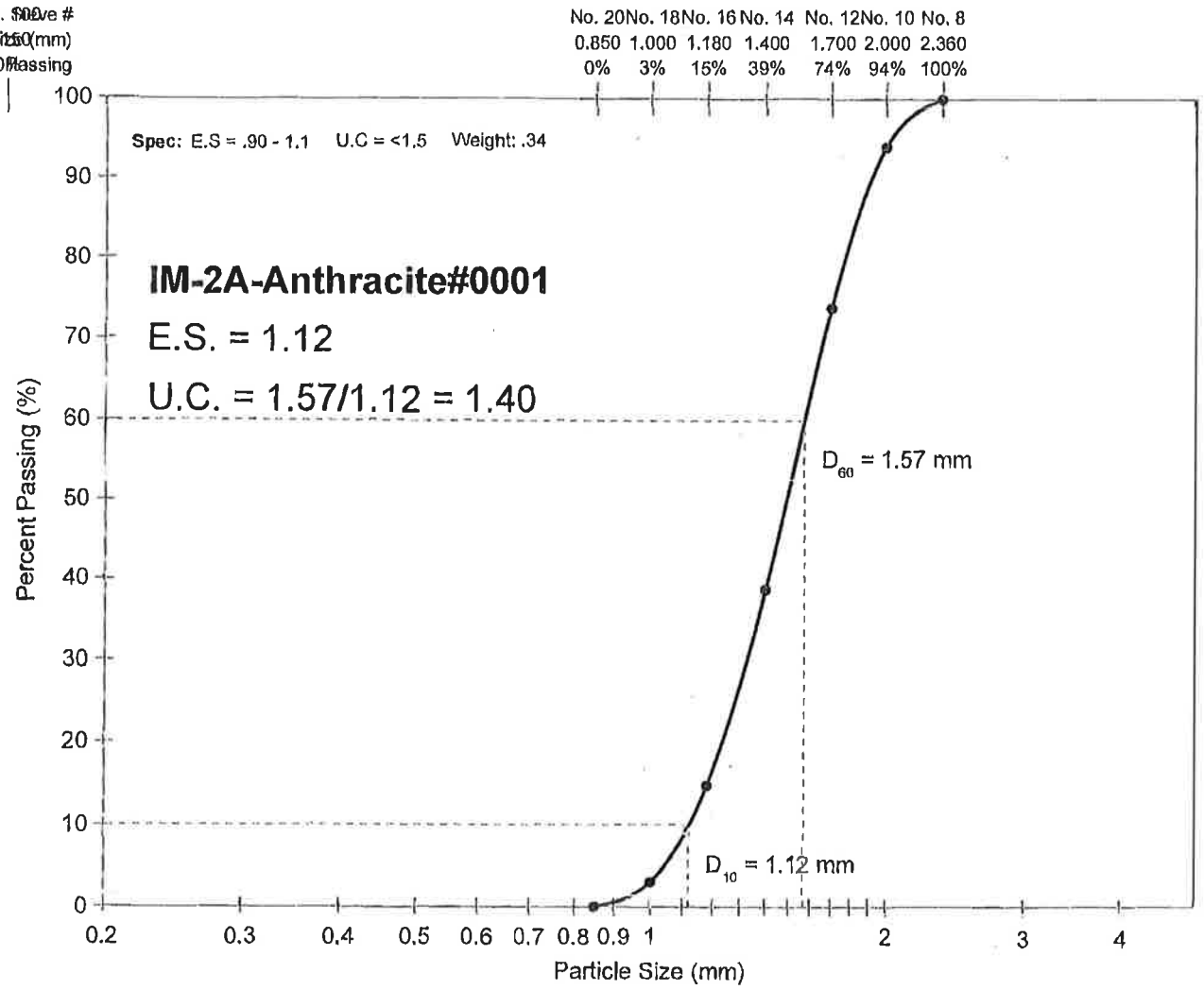
Sampled By: HIRAM

Date Tested: 3/18/2019

Tested By: HIRAM

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

Date Calibrated: 3/16/2019



Remarks: Sieve Analysis Filter 2

S.T.A.R.S.

ERS INDUSTRIAL SERVICES, INC.

Filter Media Analysis

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

Sample No: IM-2S-Sand#0001

Location: Imperial

Material: Sand

Source: ERS Industrial Services, Inc.

Date Sampled: 3/13/2019

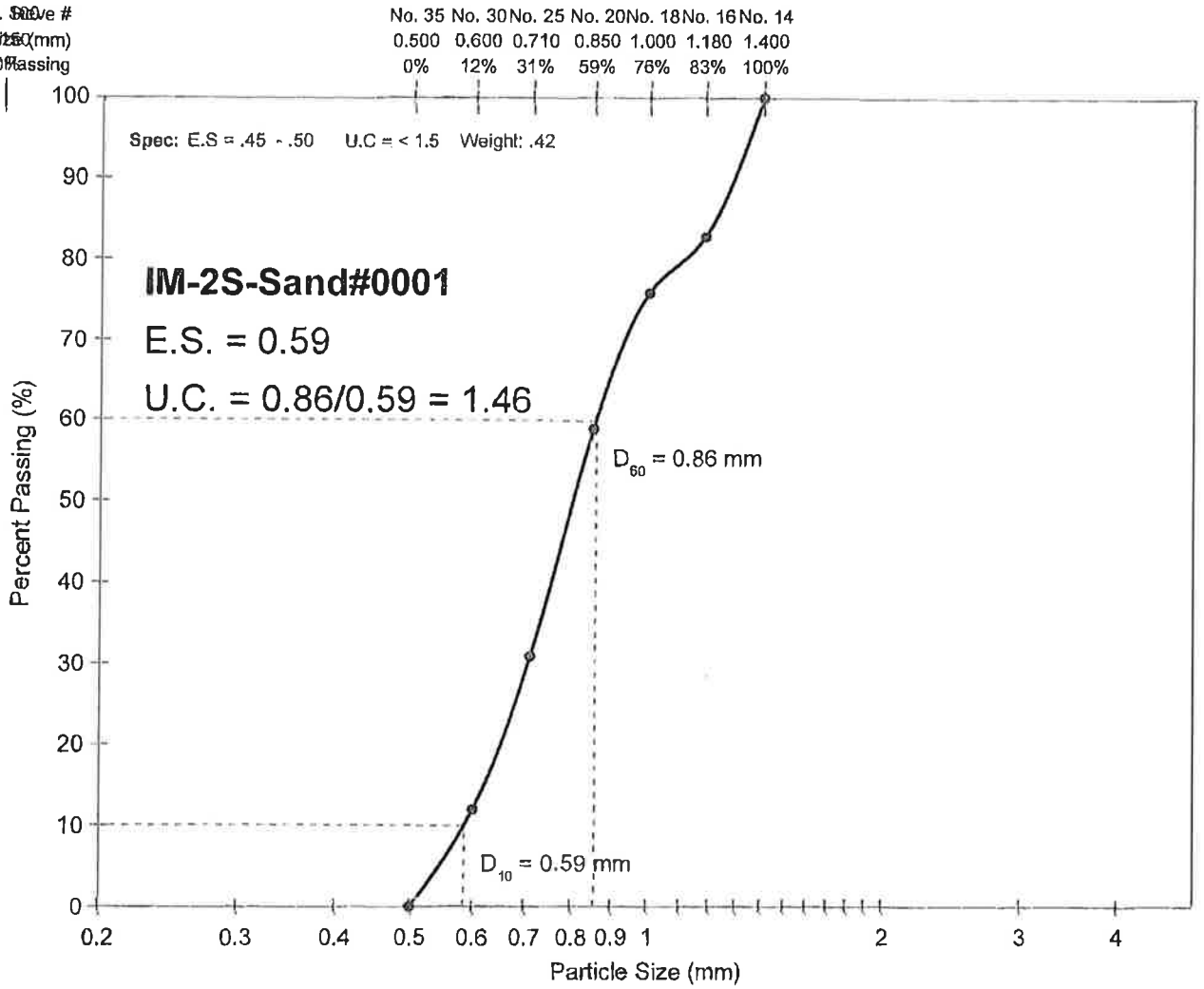
Sampled By: HIRAM

Date Tested: 3/19/2019

Tested By: HIRAM

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

Date Calibrated: 3/16/2019



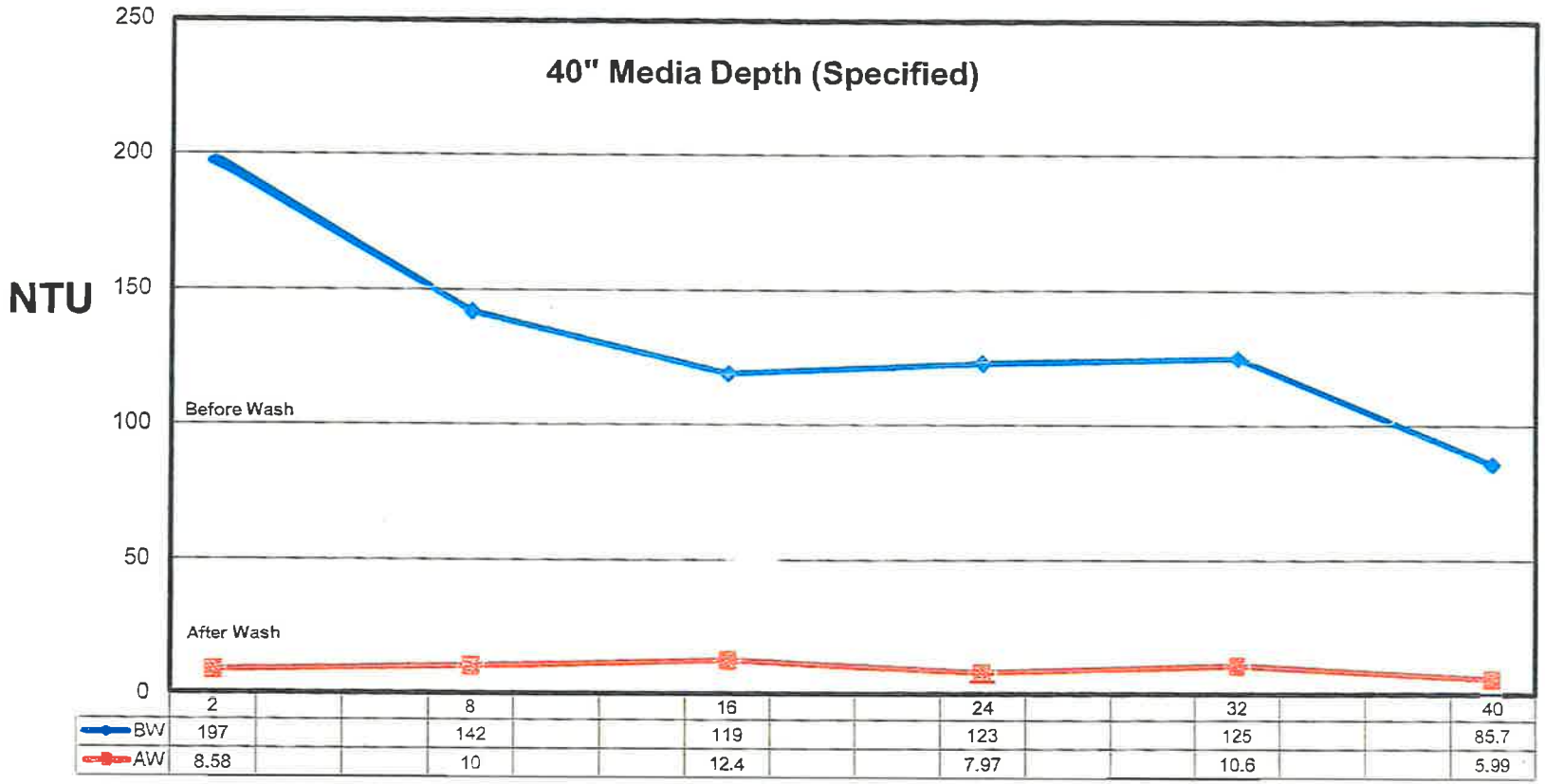
Remarks: Sieve Analysis Filter 2

S.T.A.R.S.

Imperial

Flock Retention Analysis

Filter: 2

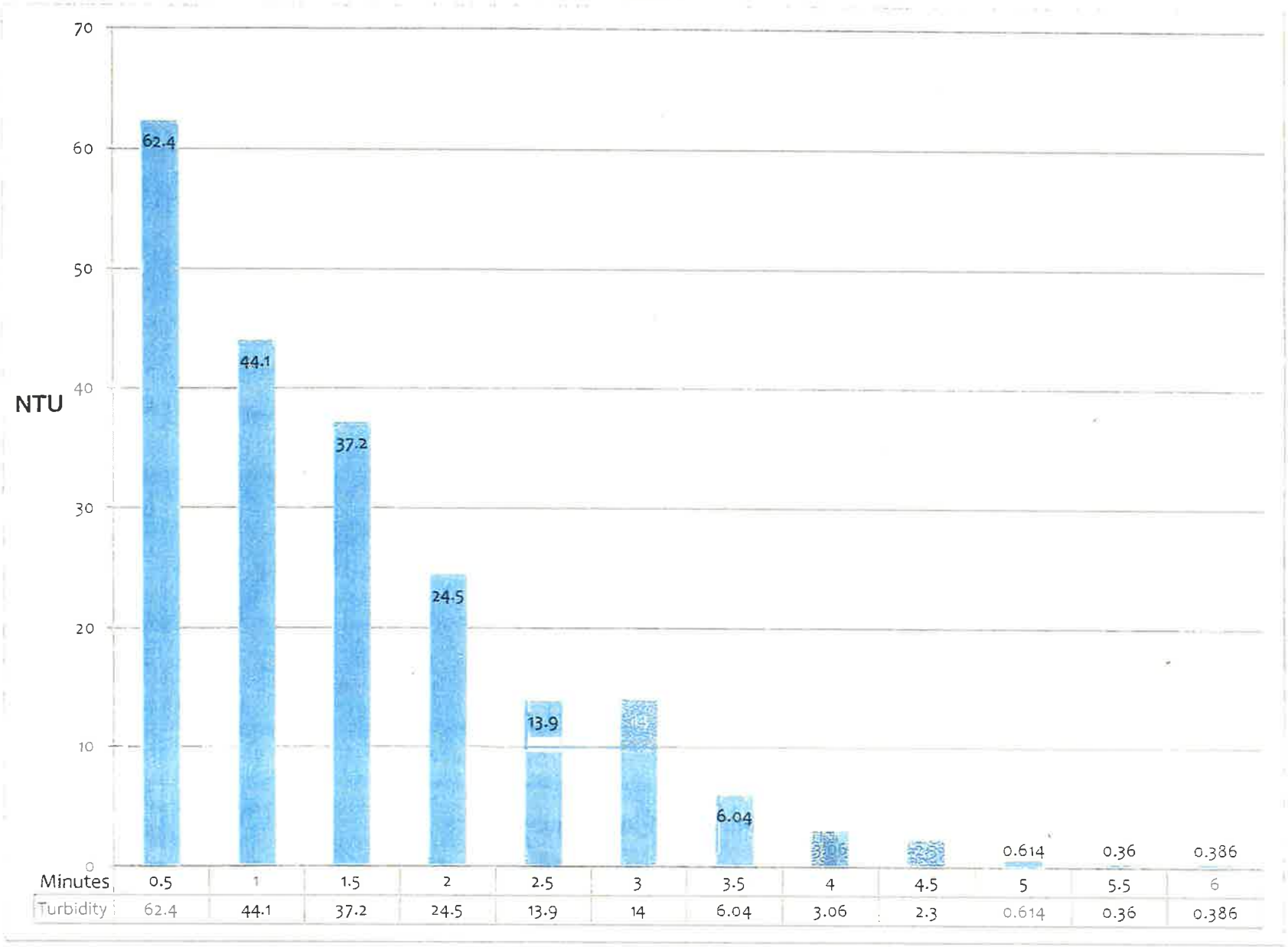


	2	8	16	24	32	40
BW	197	142	119	123	125	85.7
AW	8.58	10	12.4	7.97	10.6	5.99

Inches Below Media Surface (As Specified)

IMPERIAL WTP

Filter 2



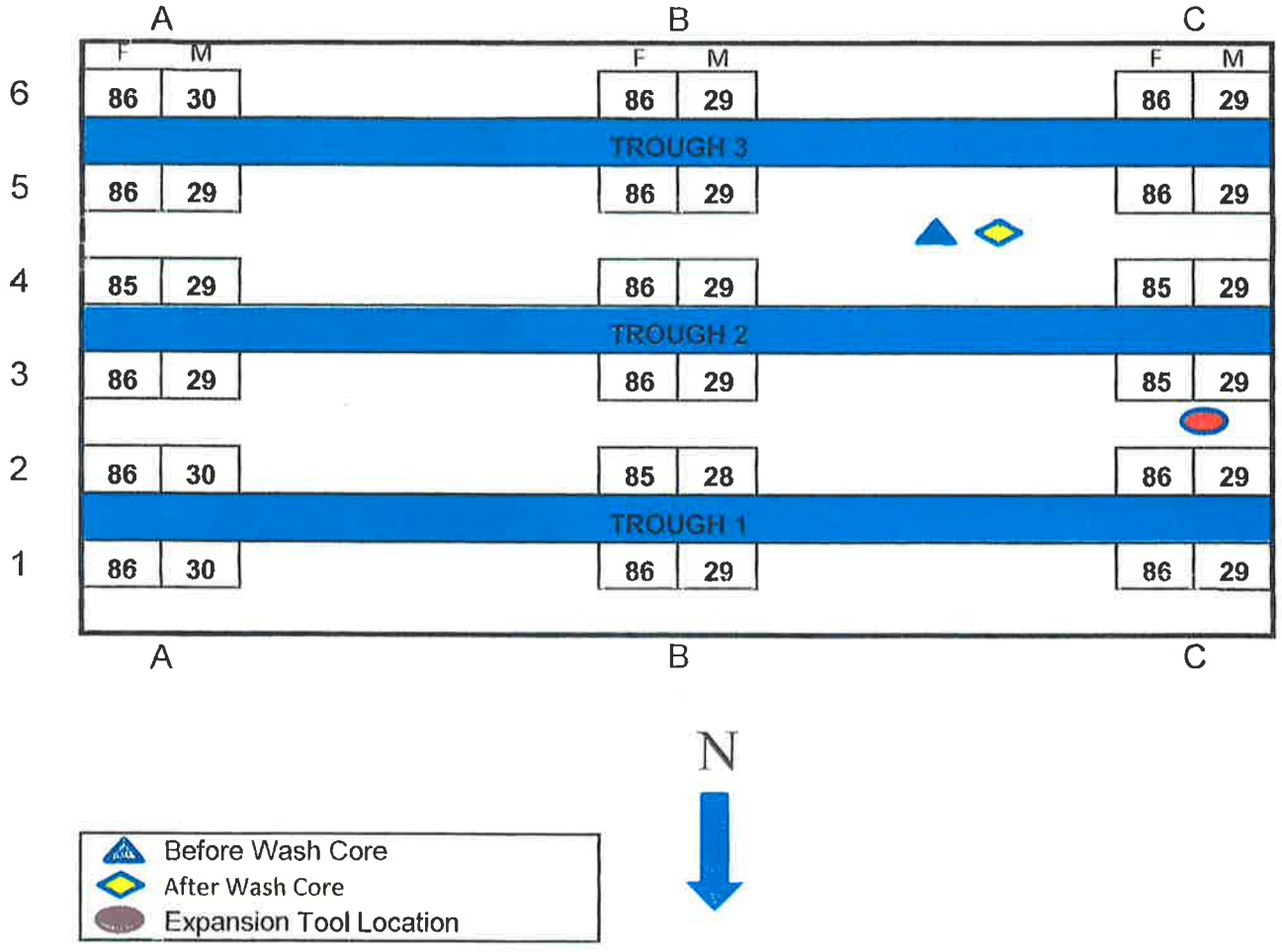
Minutes	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
Turbidity	62.4	44.1	37.2	24.5	13.9	14	6.04	3.06	2.3	0.614	0.36	0.386

Minutes

(30 Second Intervals)

FILTER LAYOUT

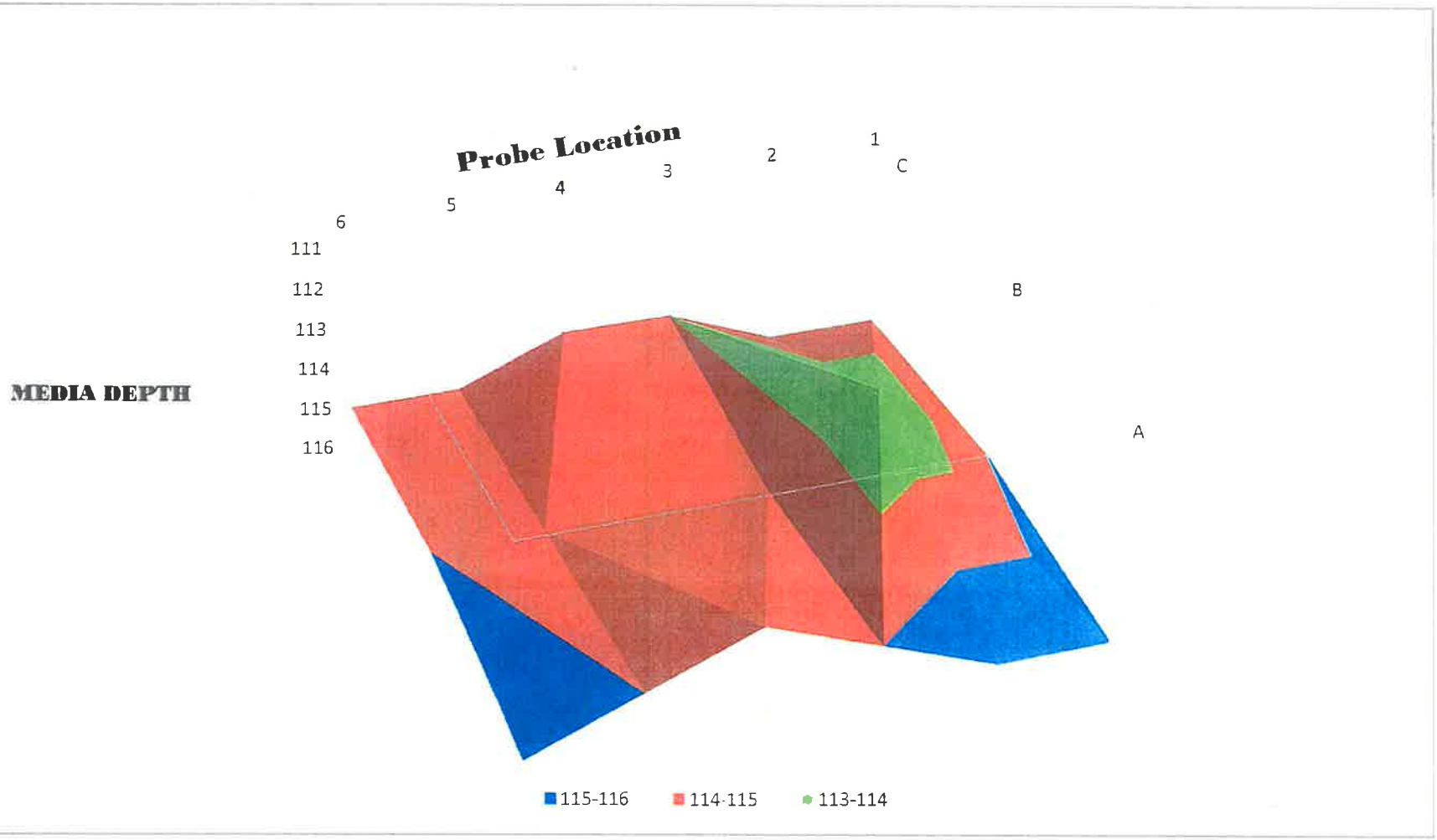
City of Imperial
Imperial WTP
2

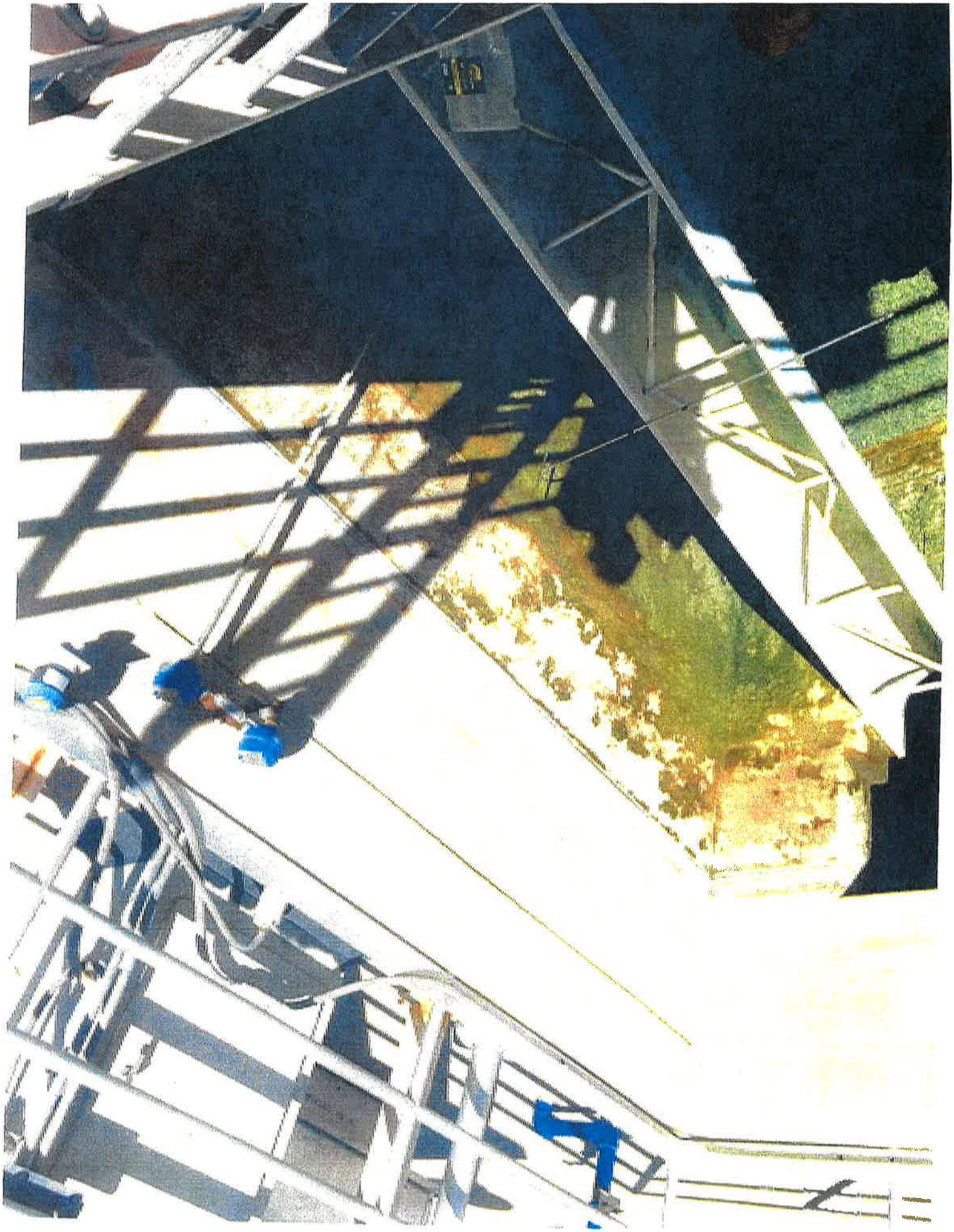


GRAVEL PROFILE

City of Imperial
Imperial WTP
2

	1	2	3	4	5	6
A	116	116	115	114	115	116
B	115	113	115	115	115	115
C	115	115	114	114	115	115





FILTER 3
ANALYSIS

ERS INDUSTRIAL SERVICES, INC.
2120 Warm Springs Ct. 510-770-0202 phone 510-490-3024 fax

FILTER SURVEILLANCE

Filter Evaluation for:	City of Imperial		**Plant:**	Imperial WTP	
Filter Type:	Gravity	**Contact:**	Robert Emmett	**Phone #**	760-355-2155
Filter Number:	3	**Inspector:**	Andrew Mynatt	**Date:**	3/13/2019

Pre Backwash Inspection

Filter Surface: Level surface with thin layer of mud and heavy fines throughout filter. No mounds or depressions noted.

Acceptable

Wall Condition: Thick build-up of mud and algae on walls. Smooth walls with no visable cracks or signs of spalling.

Acceptable

Mechanical System: Troughs uniform and level. Air scour system was even across filter with no dead spots.

Acceptable

Media Measurements

Freeboard Measurements: (Inches from lip to top of media)

	1	2	3	4	5	6
A	82	82	82	82	82	82
B	82	82	82	82	82	82
C	82	82	83	82	82	82

Media Depth: (Inches from top of media to gravel bed)

	1	2	3	4	5	6
A	33	33	33	33	33	33
B	33	33	33	33	33	33
C	33	33	33	33	33	33

Support Gravel: (Footprint in inches)

	1	2	3	4	5	6
A	115	115	115	115	115	115
B	115	115	115	115	115	115
C	115	115	116	115	115	115

Media Core Samples:

Yes

	Specified (Inches)	Measured (Inches)
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. Water was clear and surface was clean with heavy fines on the surface.

Acceptable

Media Expansion: 9 in 30.00%

Post Backwash

Media Core Samples ES-UC

	Effective Size		Uniformity Coefficient	
	Specified	Actual	Specified	Actual
GAC/Anthracite:	.90 - 1.1	1.13	< 1.5	< 1.4
Sand:	.45 - .50	0.63	< 1.5	1.49
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-3A-Anthracite#0001

Location: Imperial

Material: Anthracite

Source: ERS Industrial Services, Inc.

Date Sampled: 3/13/2019

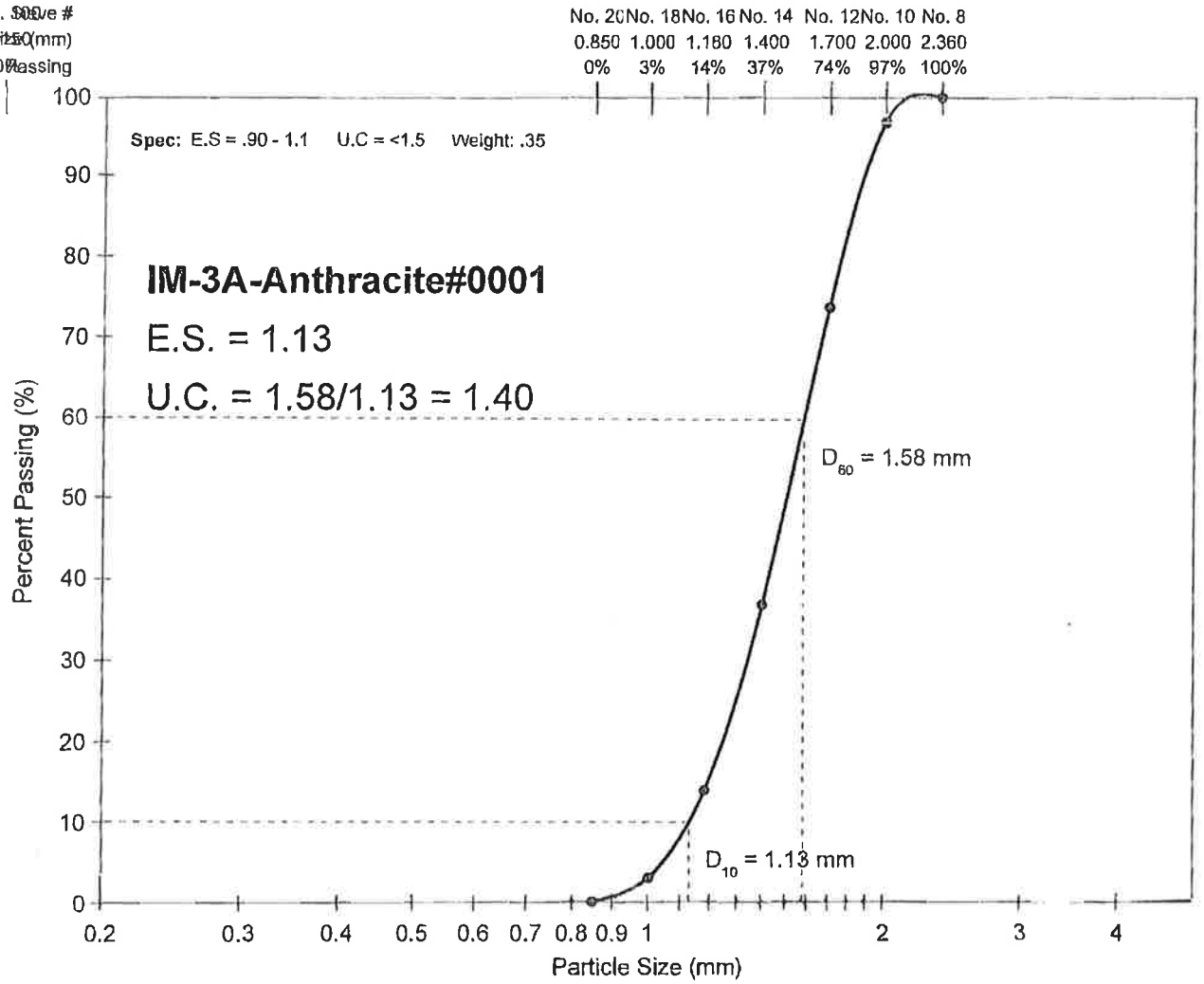
Sampled By: HIRAM

Date Tested: 3/18/2019

Tested By: HIRAM

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

Date Calibrated: 3/16/2010~9



Remarks: Sieve Analysis Filter 3

S.T.A.R.S.

ERS INDUSTRIAL SERVICES, INC.

Filter Media Analysis

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

Sample No: IM-3S-Sand#0001

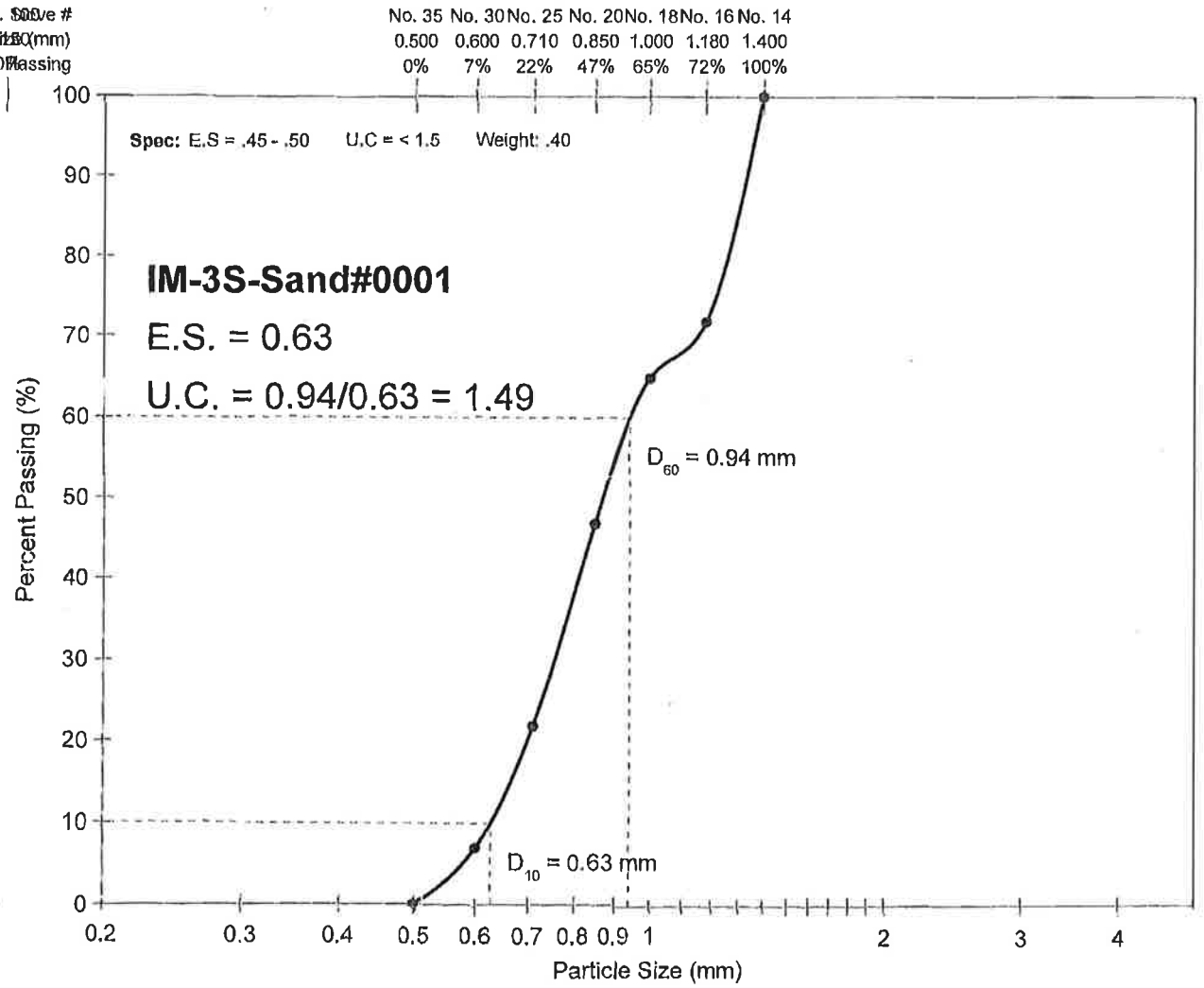
Location: Imperial

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



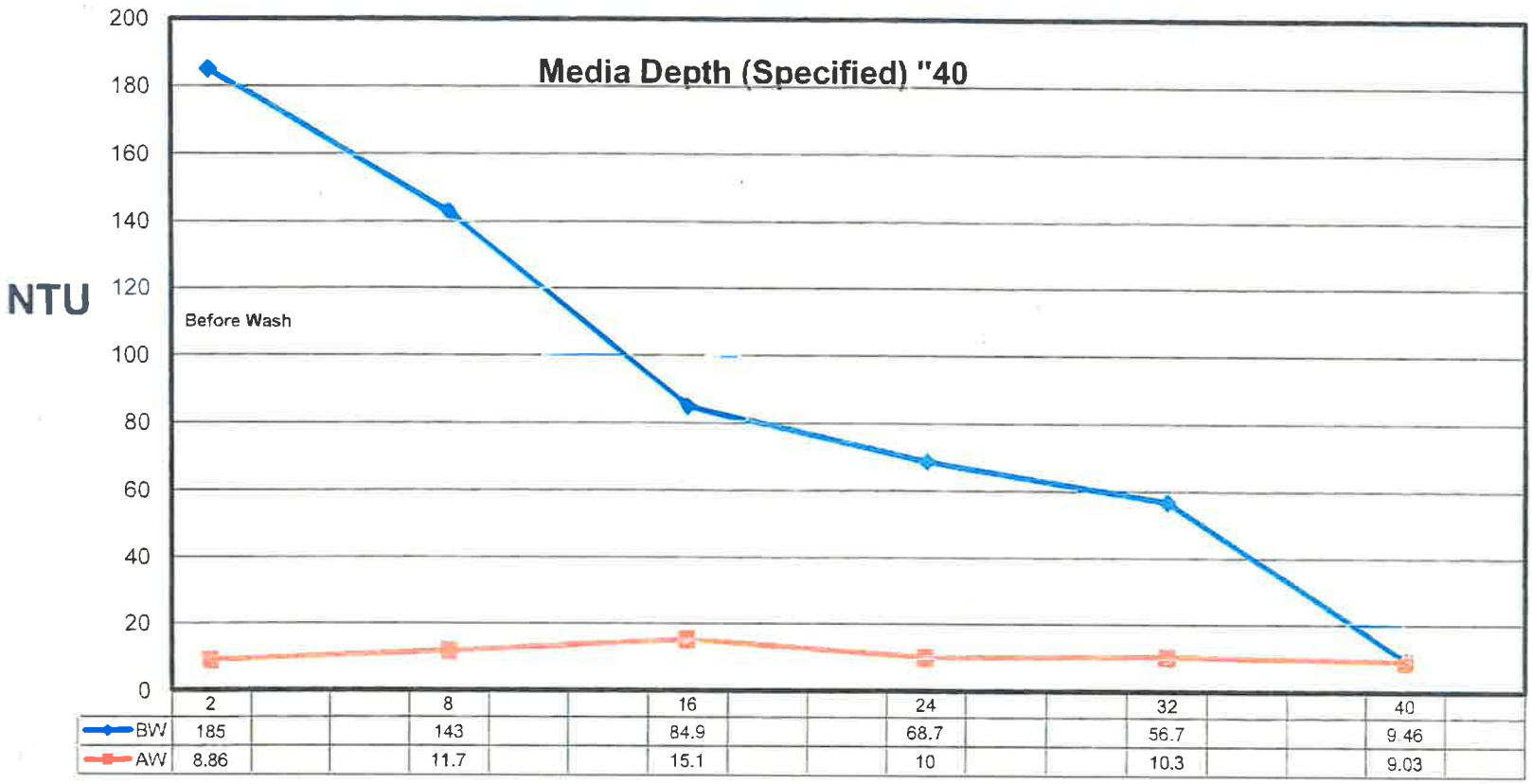
Remarks: Sieve Analysis Filter 3

S.T.A.R.S.

Imperial

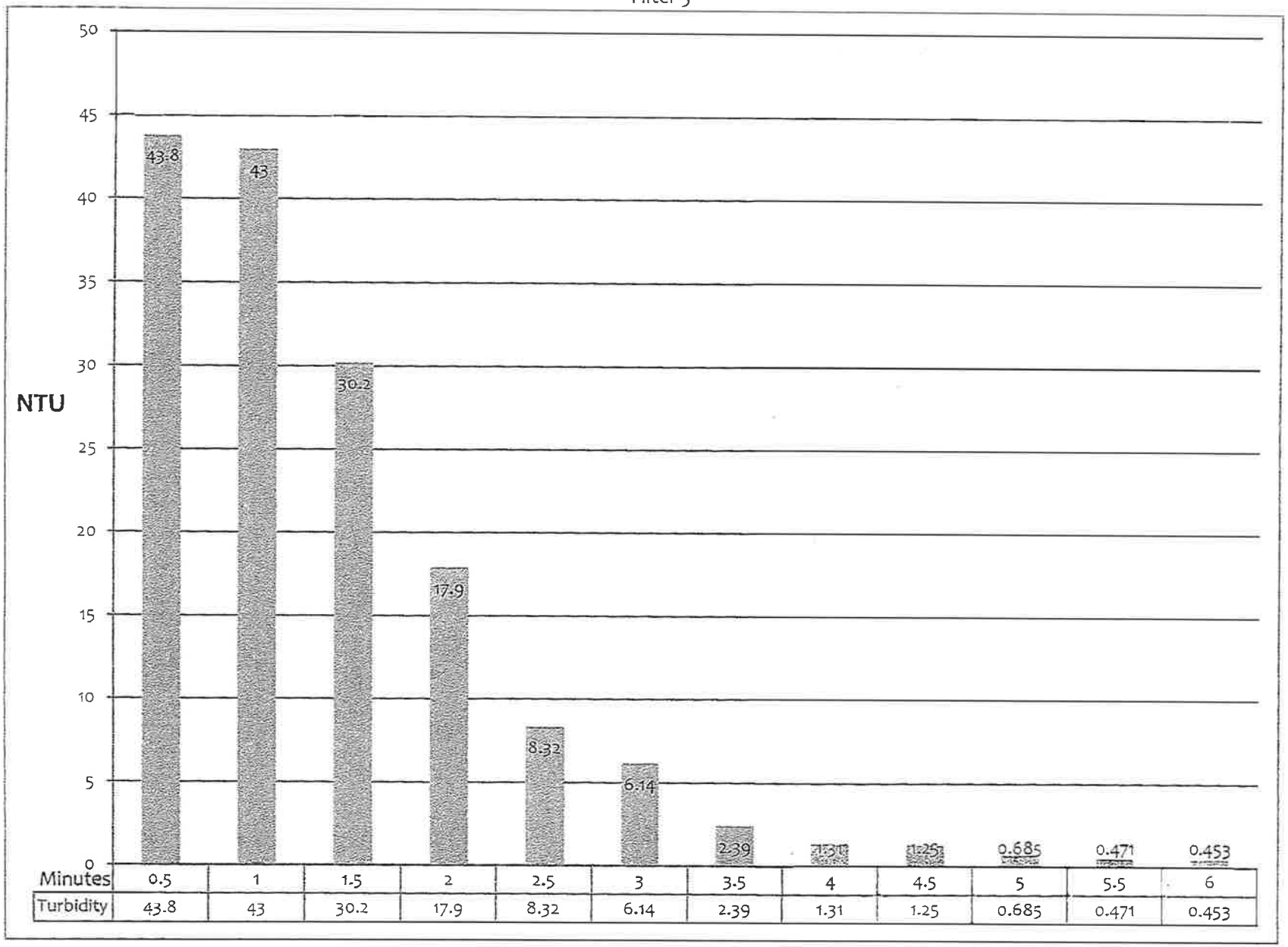
Flock Retention Analysis

Filter: 3



IMPERIAL WTP

Filter 3



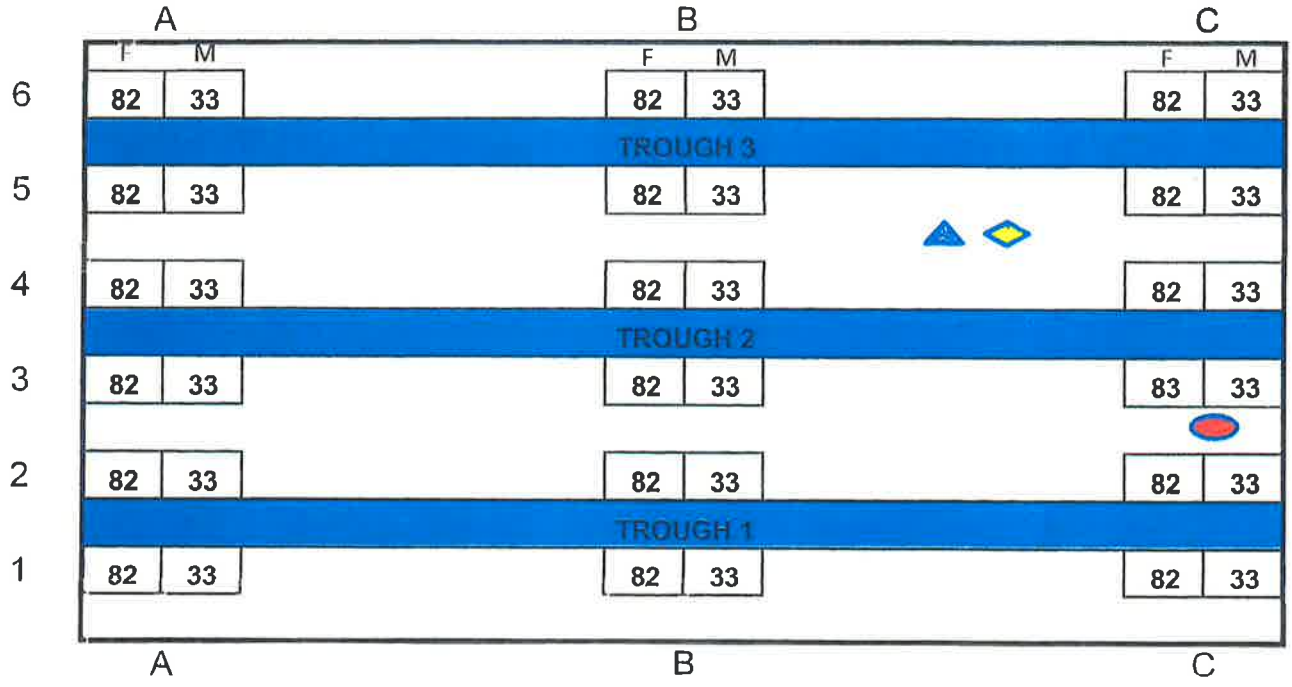
Minutes	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
Turbidity	43.8	43	30.2	17.9	8.32	6.14	2.39	1.31	1.25	0.685	0.471	0.453

Minutes

(30 Second Intervals)

FILTER LAYOUT

City of Imperial
Imperial WTP
3

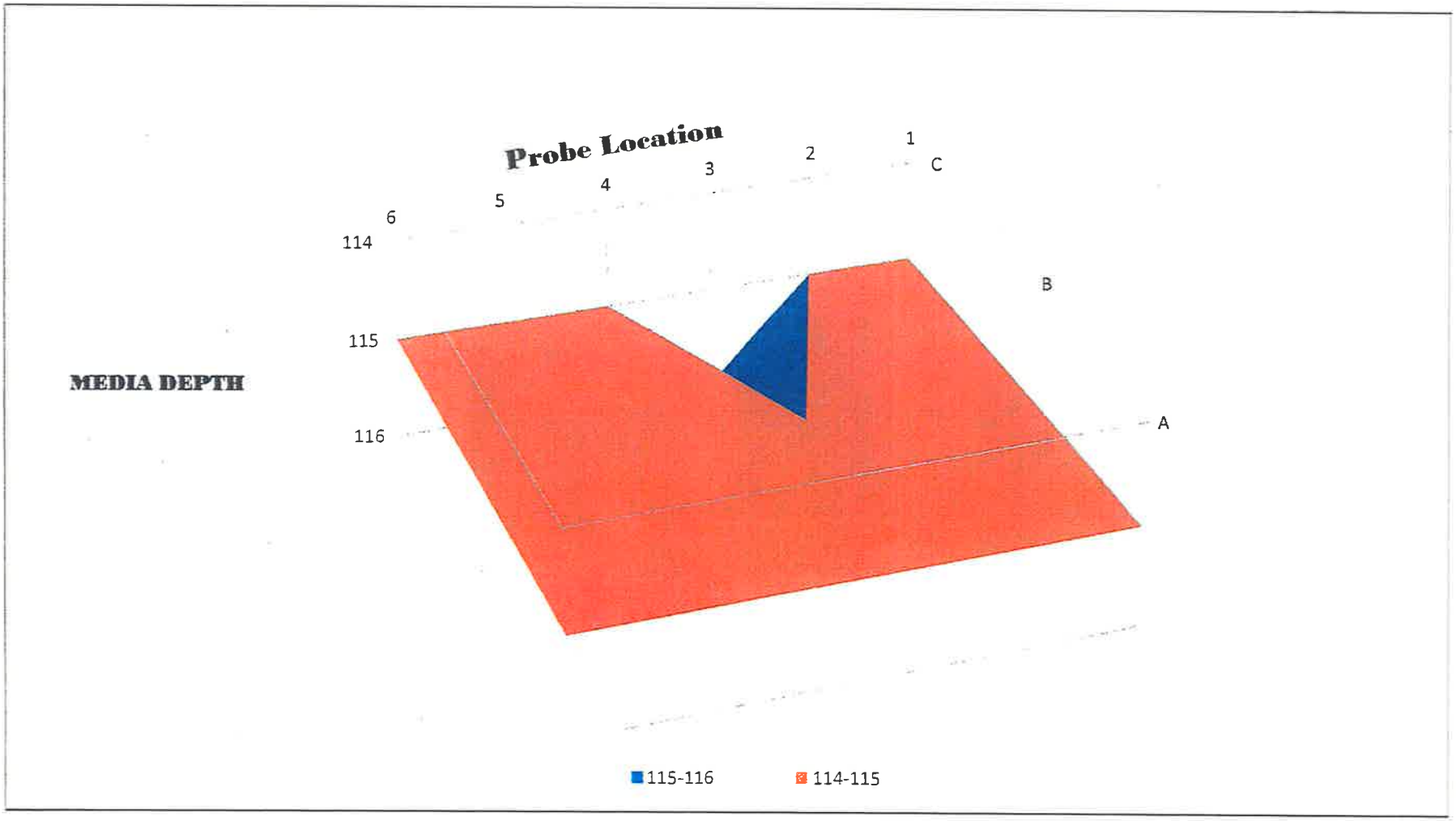


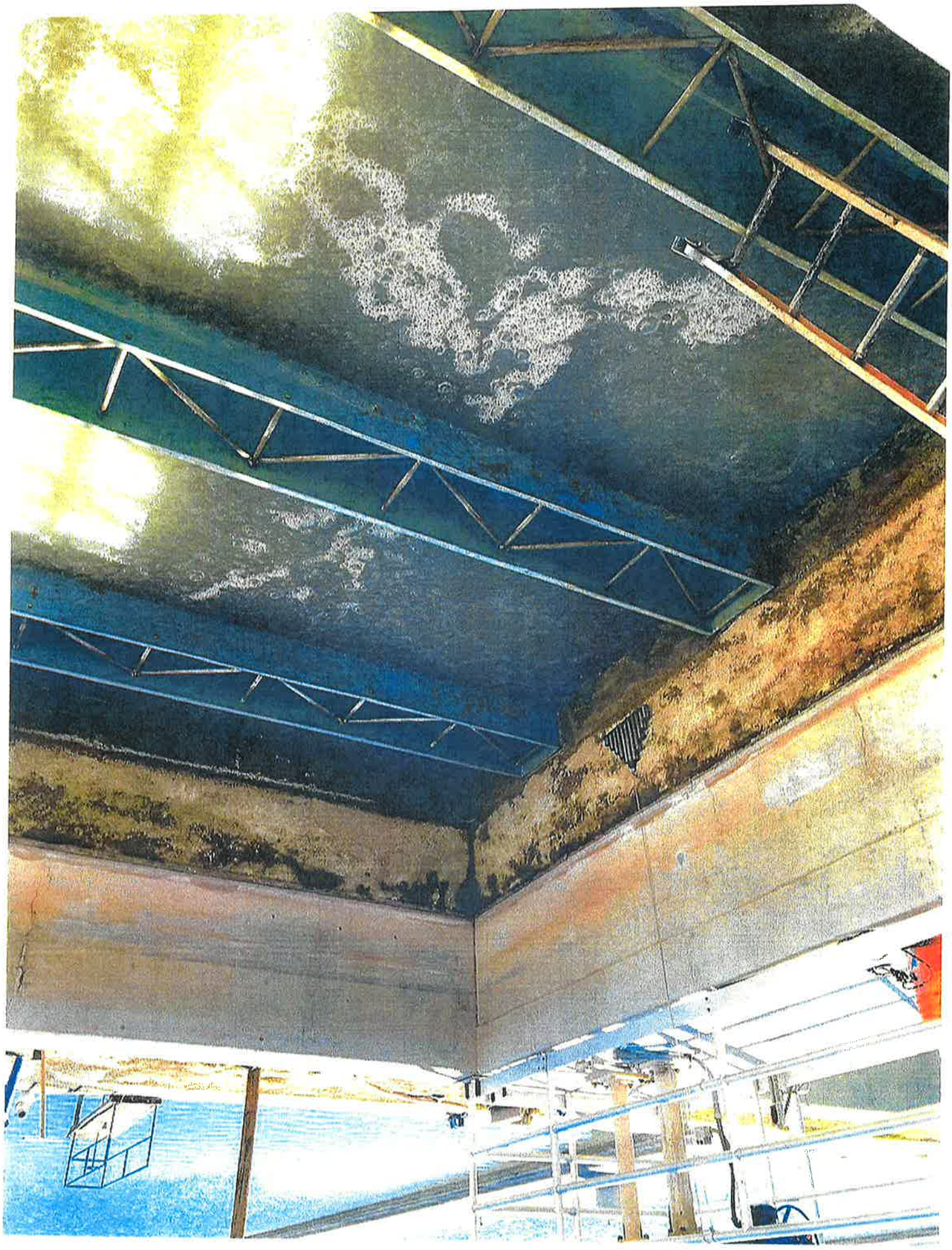
Before Wash Core
After Wash Core
Expansion Tool Location

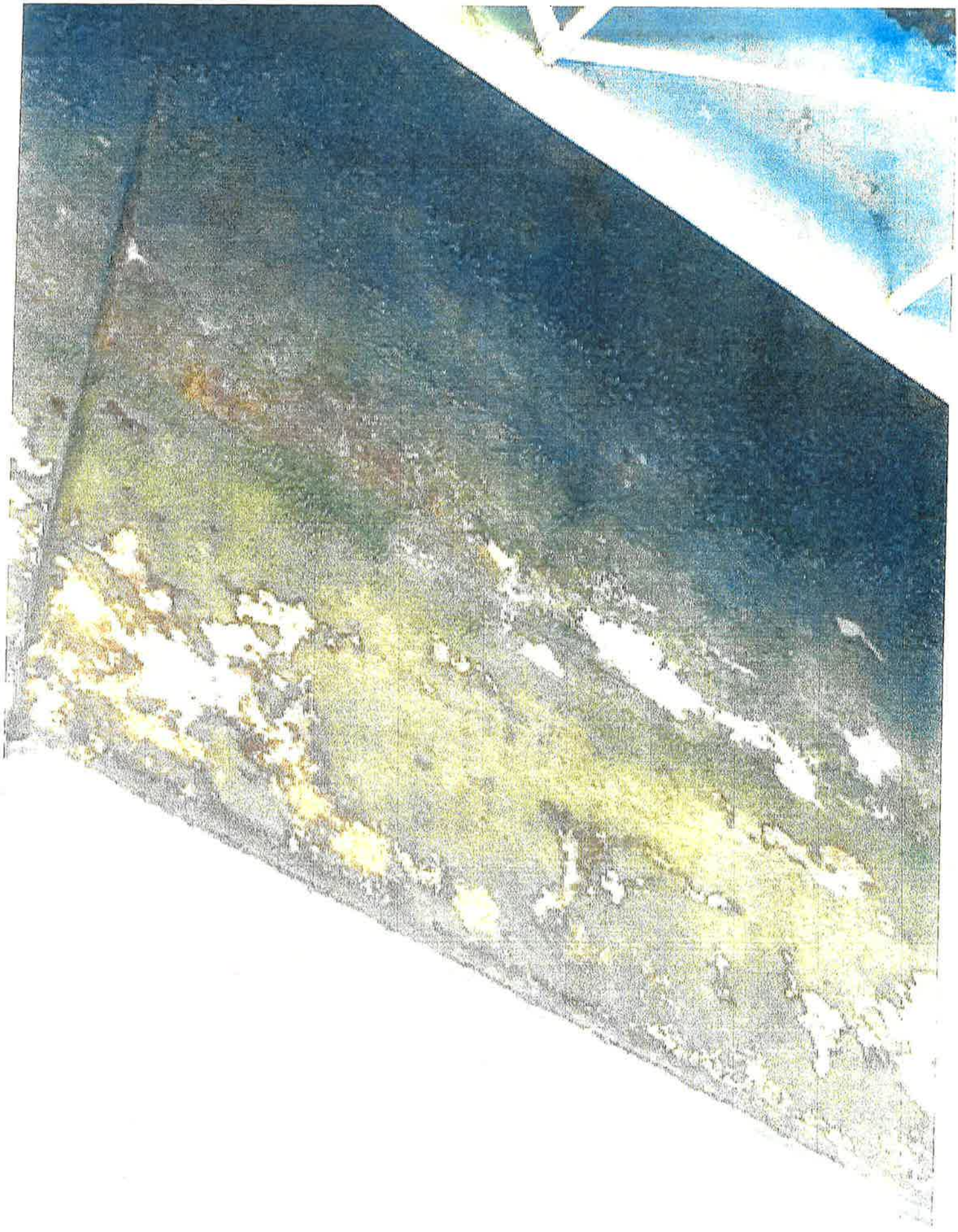
GRAVEL PROFILE

City of Imperial
Imperial WTP
3

	1	2	3	4	5	6
A	115	115	115	115	115	115
B	115	115	115	115	115	115
C	115	115	116	115	115	115







FILTER 4
ANALYSIS

ERS INDUSTRIAL SERVICES, INC.
2120 Warm Springs Ct. 510-770-0202 phone 510-490-3024 fax

FILTER SURVEILLANCE

Filter Evaluation for:	City of Imperial		**Plant:**	Imperial WTP	
Filter Type:	Gravity	**Contact:**	Robert Emmett	**Phone #**	760-355-2155
Filter Number:	4	**Inspector:**	Andrew Mynatt	**Date:**	3/13/2019

Pre Backwash Inspection

Filter Surface: Level surface with thin layer of mud and heavy fines throughout filter. No mounds or depressions noted.

Acceptable

Wall Condition: Thick build-up of mud and algae on walls. Smooth walls with no visable cracks or signs of spalling.

Acceptable

Mechanical System: Troughs uniform and level. Air scour system was even across filter with no dead spots.

Acceptable

Media Measurements

Freeboard Measurements: (Inches from lip to top of media)

	1	2	3	4	5	6
A	76	76	77	77	77	78
B	77	76	77	77	77	78
C	77	77	76	76	77	77

Media Depth: (Inches from top of media to gravel bed)

	1	2	3	4	5	6
A	37	37	38	37	38	37
B	37	38	38	37	37	36
C	37	37	38	37	37	38

Support Gravel: (Footprint in inches)

	1	2	3	4	5	6
A	113	113	115	114	115	115
B	114	114	115	114	114	114
C	114	114	114	113	114	115

Media Core Samples:

Yes

	Specified (Inches)	Measured (Inches)
GAC/Anthracite:	24	24
Sand:	12	12
High Density Sand:	4	2
Total Depth:	40	38
Media Interface:	< 2	< 2

Backwash

General Observation: Even across filter. Water was clear and surface was clean with heavy fines on the surface.

Acceptable

Media Expansion: 9 in 23.68%

Post Backwash

Media Core Samples **ES-UC**

	Effective Size		Uniformity Coefficient	
	Specified	Actual	Specified	Actual
GAC/Anthracite:	.90 - 1.1	1.09	< 1.5	1.35
Sand:	.45 - .50	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

Source: ERS Industrial Services, Inc.

Date Sampled: 3/13/2019

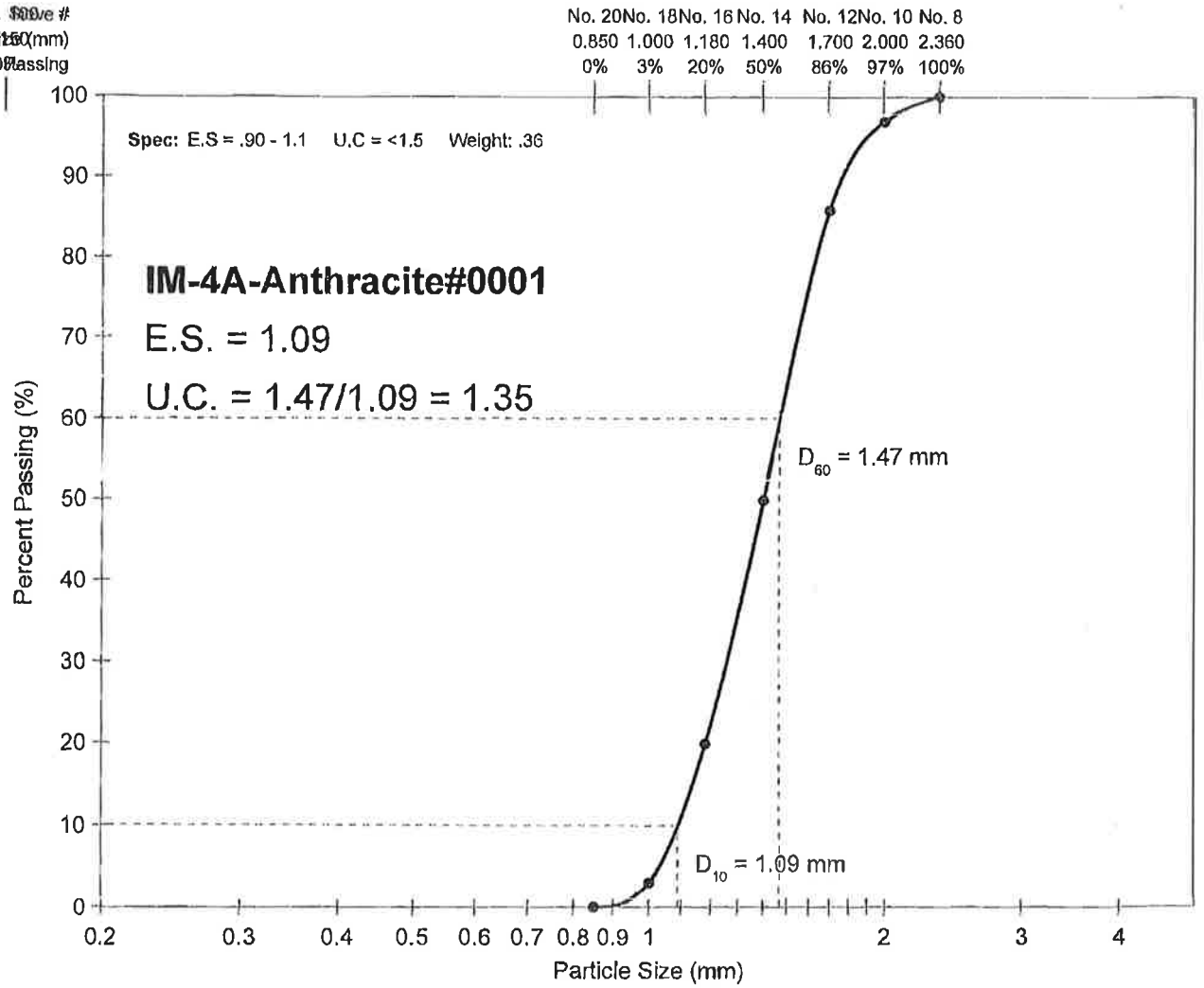
Sampled By: HIRAM

Date Tested: 3/18/2019

Tested By: HIRAM

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

Date Calibrated: 3/16/2019



Remarks: Sieve analysis Filter 4

S.T.A.R.S.

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

Source: ERS Industrial Services, Inc.

Date Sampled: 3/14/2019

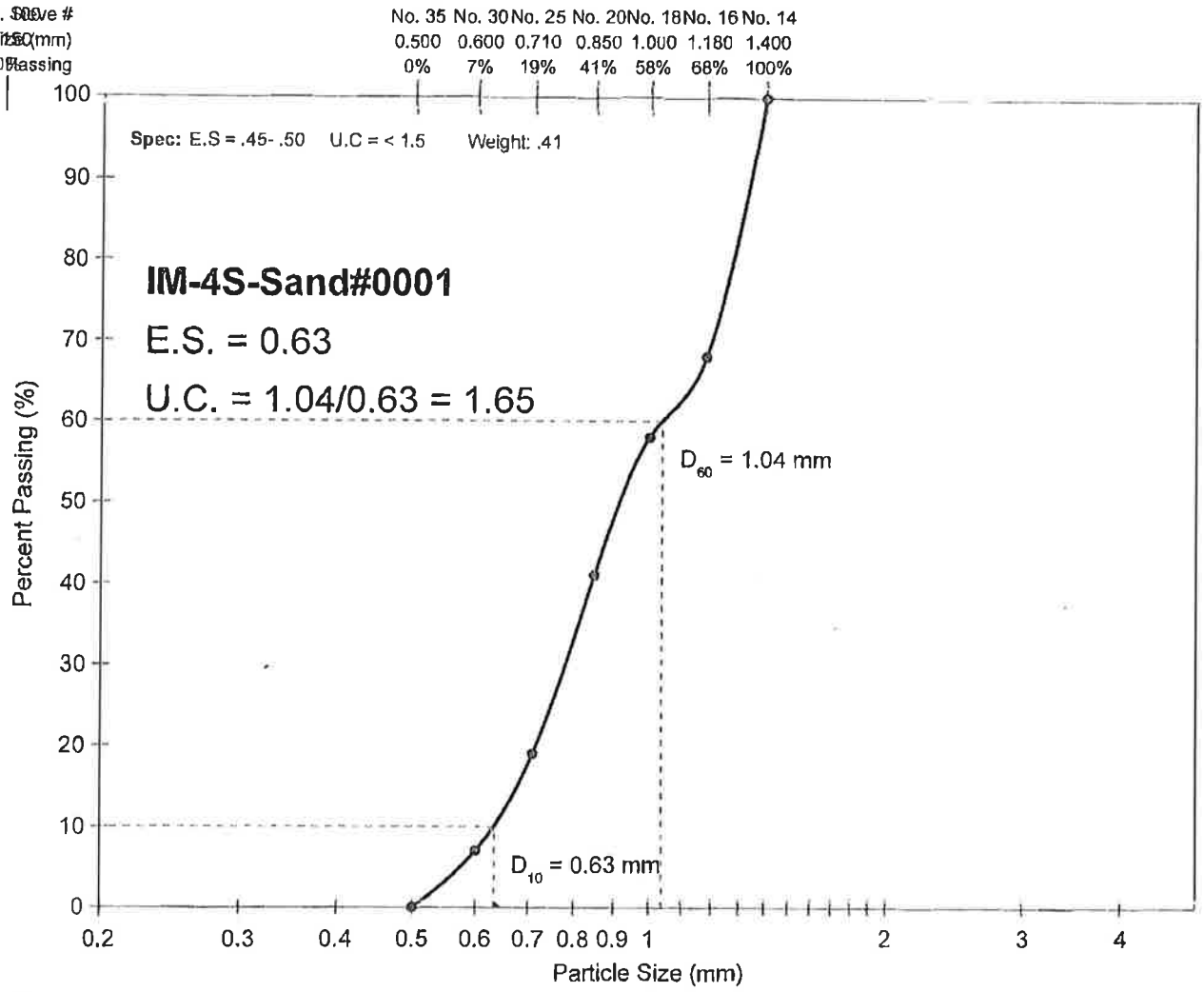
Sampled By: HIRAM

Date Tested: 3/19/2019

Tested By: HIRAM

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

Date Calibrated: 3/16/2019



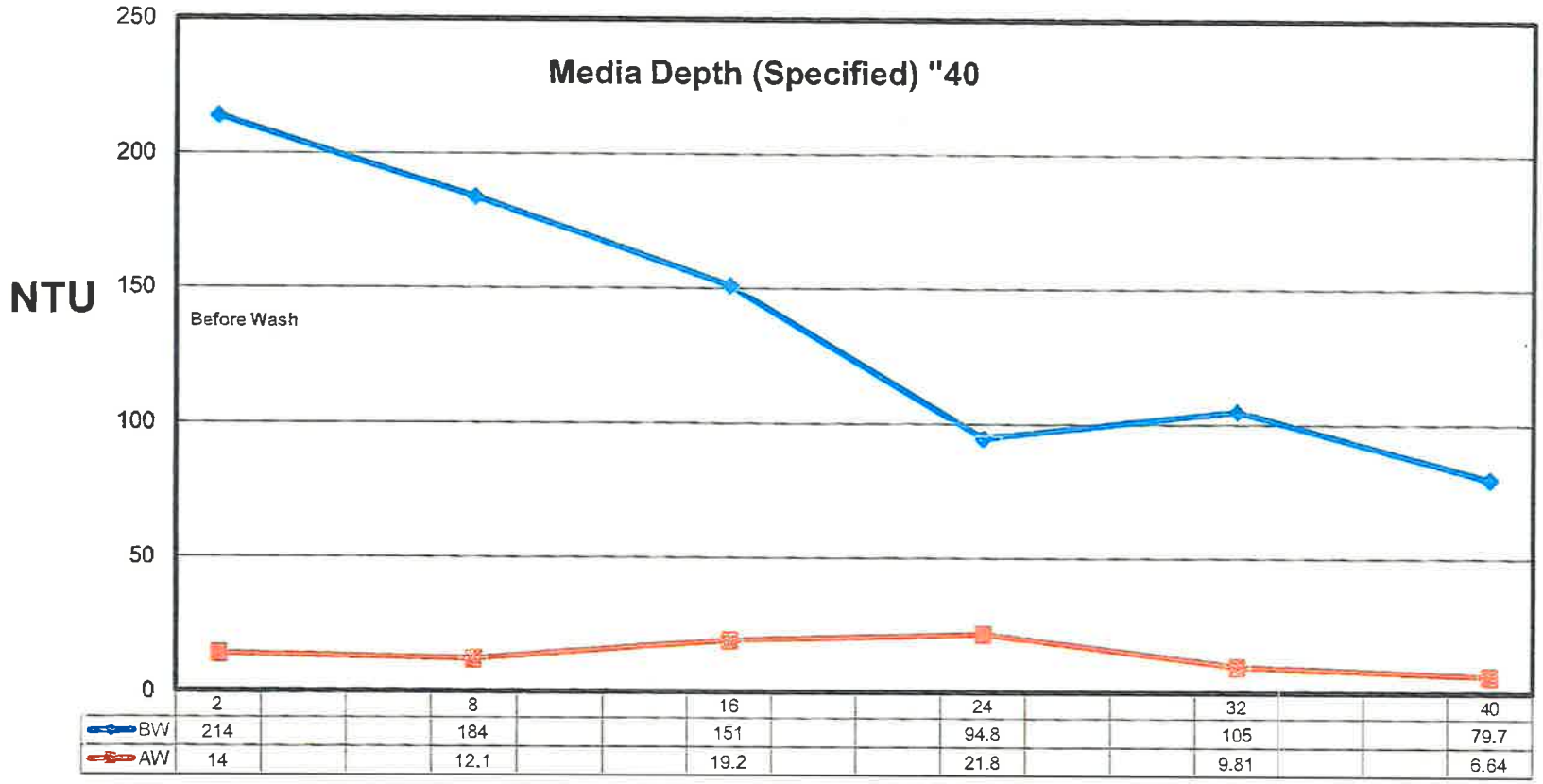
Remarks: Sieve Analysis Filter 4

S.T.A.R.S.

Imperial

Flock Retention Analysis

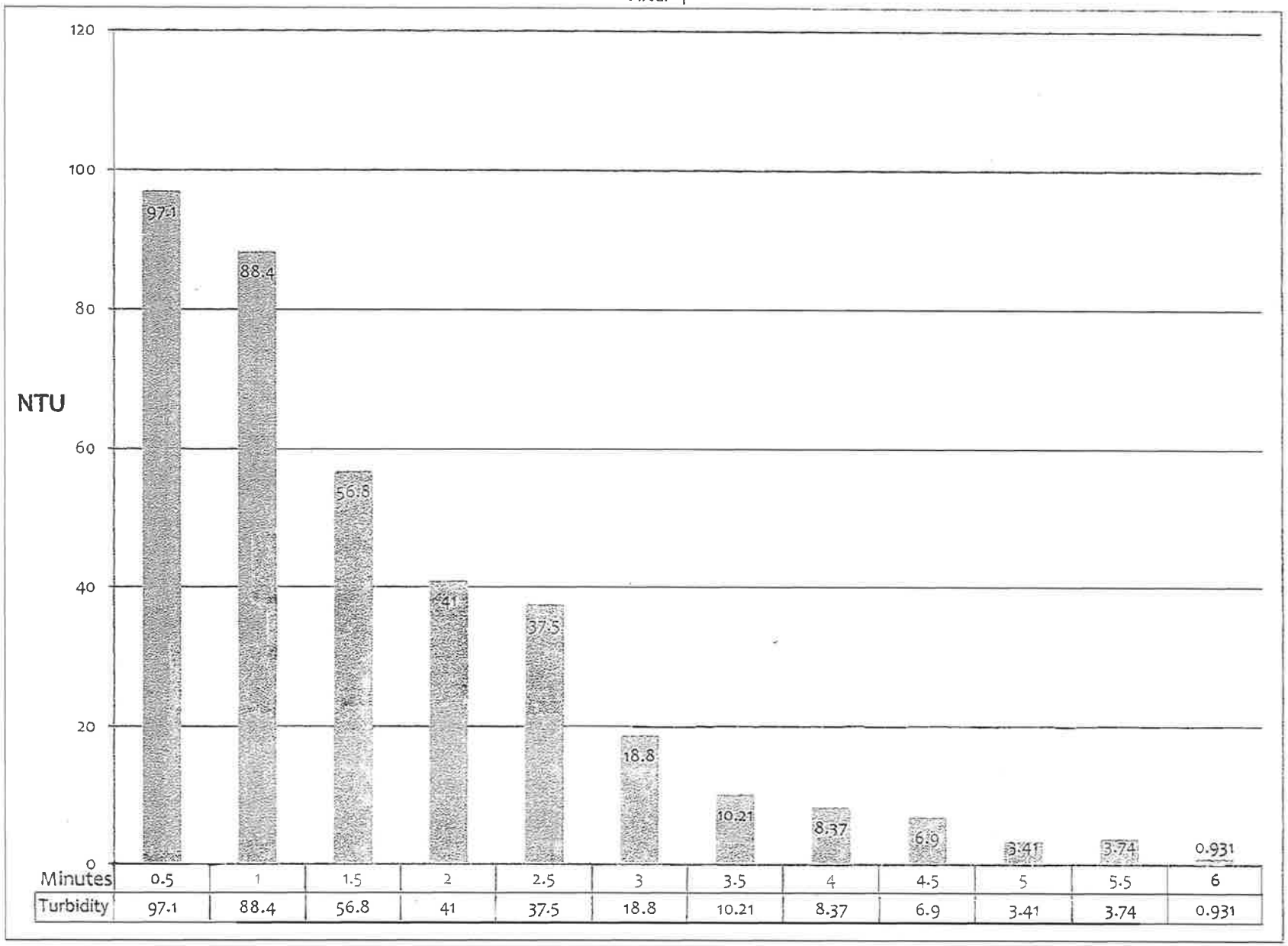
Filter: 4



	2	8	16	24	32	40
BW	214	184	151	94.8	105	79.7
AW	14	12.1	19.2	21.8	9.81	6.64

Inches Below Media Surface (As Specified)

IMPERIAL WTP
Filter 4

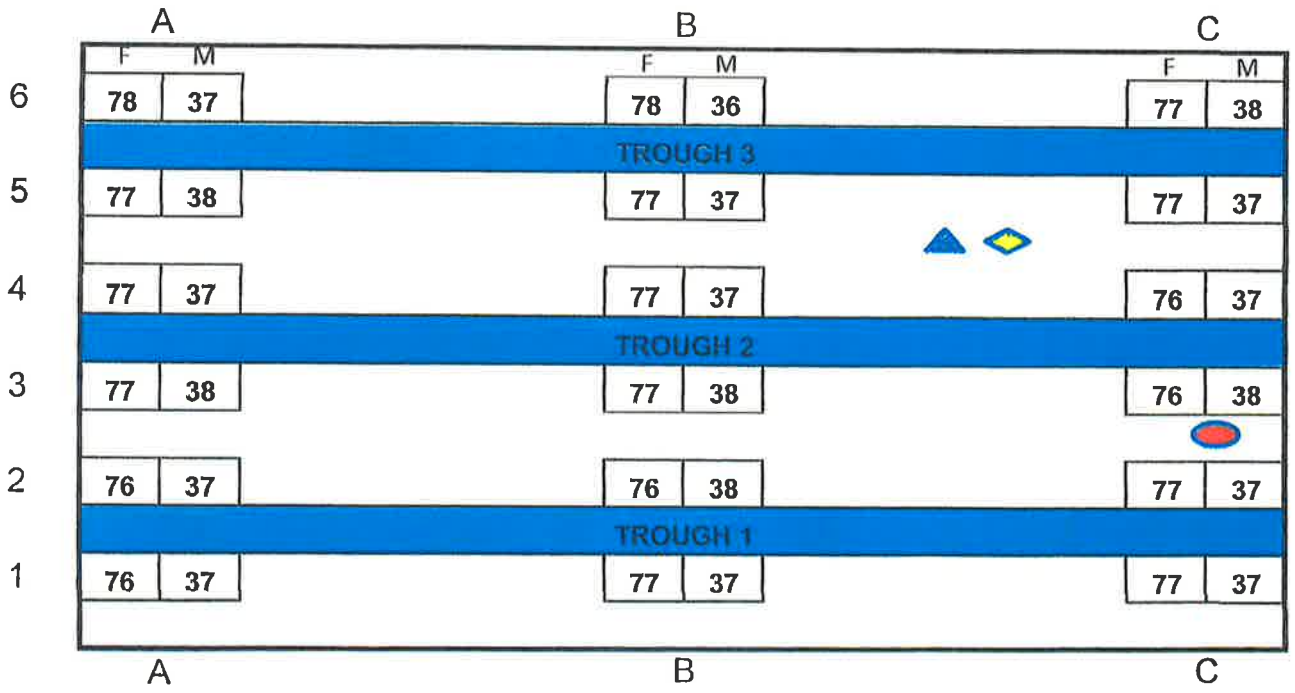


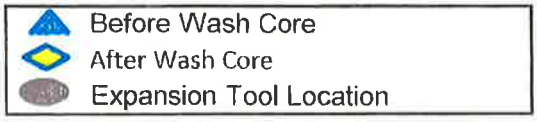
Minutes	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
Turbidity	97.1	88.4	56.8	41	37.5	18.8	10.21	8.37	6.9	3.41	3.74	0.931

Minutes
(30 Second Intervals)

FILTER LAYOUT

City of Imperial
Imperial WTP
4





GRAVEL PROFILE

City of Imperial
Imperial WTP
4

	1	2	3	4	5	6
A	113	113	115	114	115	115
B	114	114	115	114	114	114
C	114	114	114	113	114	115