

INVESTIGATIONS INTO SCUM FORMATION AND MANAGEMENT

Presented In

WISA –Biennial Conference & Exhibition

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ICC DURBAN

Presented By

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FACTS ABOUT THE SCUM

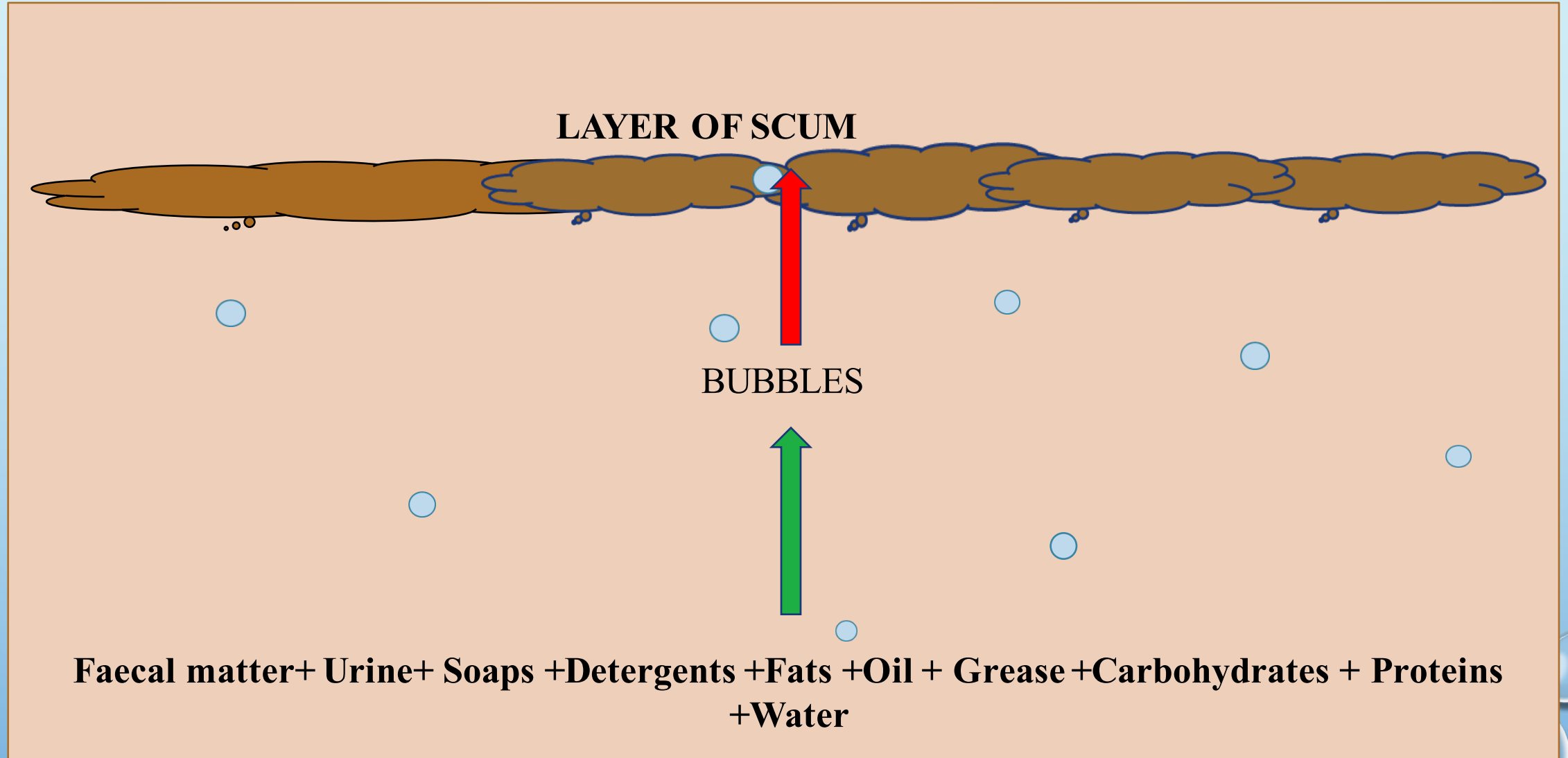
- **THE EXISTENCE TO THIS PROBLEM WAS INDICATED IN THE YEAR 1940 BY W.S MAHLIE, WHEN HE PUBLISHED RESEARCH PAPER ON “OIL AND GREASE IN SEWAGE”.**
- **IN THE UNITED STATES 48% LINE BLOCKAGES FOR WHICH FAT, OIL AND GREASE (FOG) DEPOSITS IN SEWER SYSTEM IS RESPONSIBLE (US EPA, 2004).**
- **THE FOG/SCUM OF 15 TONNES SPOTTED BY THAMES WATER IN KINGSTON, LONDON, WHICH HAS BLOCKED 95% OF THE SEWER PIPE OF 2.5 METER OF DIAMETER (THE GUARDIAN, 2015).**
- **THE STUDY ON SEWER BLOCKAGES IN AUSTRALIA, ONE WATER UTILITY COMPANY REPORTED THAT FOG WAS THE PRIMARY CAUSE OF THE 21% OF ALL BLOCKAGES (MARLOW ET AL. 2011).**
- **SCUM FORMATION IS REPORTED FROM THE HILLCREST AREA, DURBAN (SOUTH AFRICA) EXPERIENCING BLOCKAGES IN SEWER SYSTEM FROM FAT, OIL AND GREASE (FOG).THE RESULTS POINTS A NUMBER OF FOOD ESTABLISHMENTS RESPONSIBLE FOR FAT, OIL AND GREASE (FOG) ACCUMULATION (MAHLOBO , 2008).**

WHAT IS SCUM?

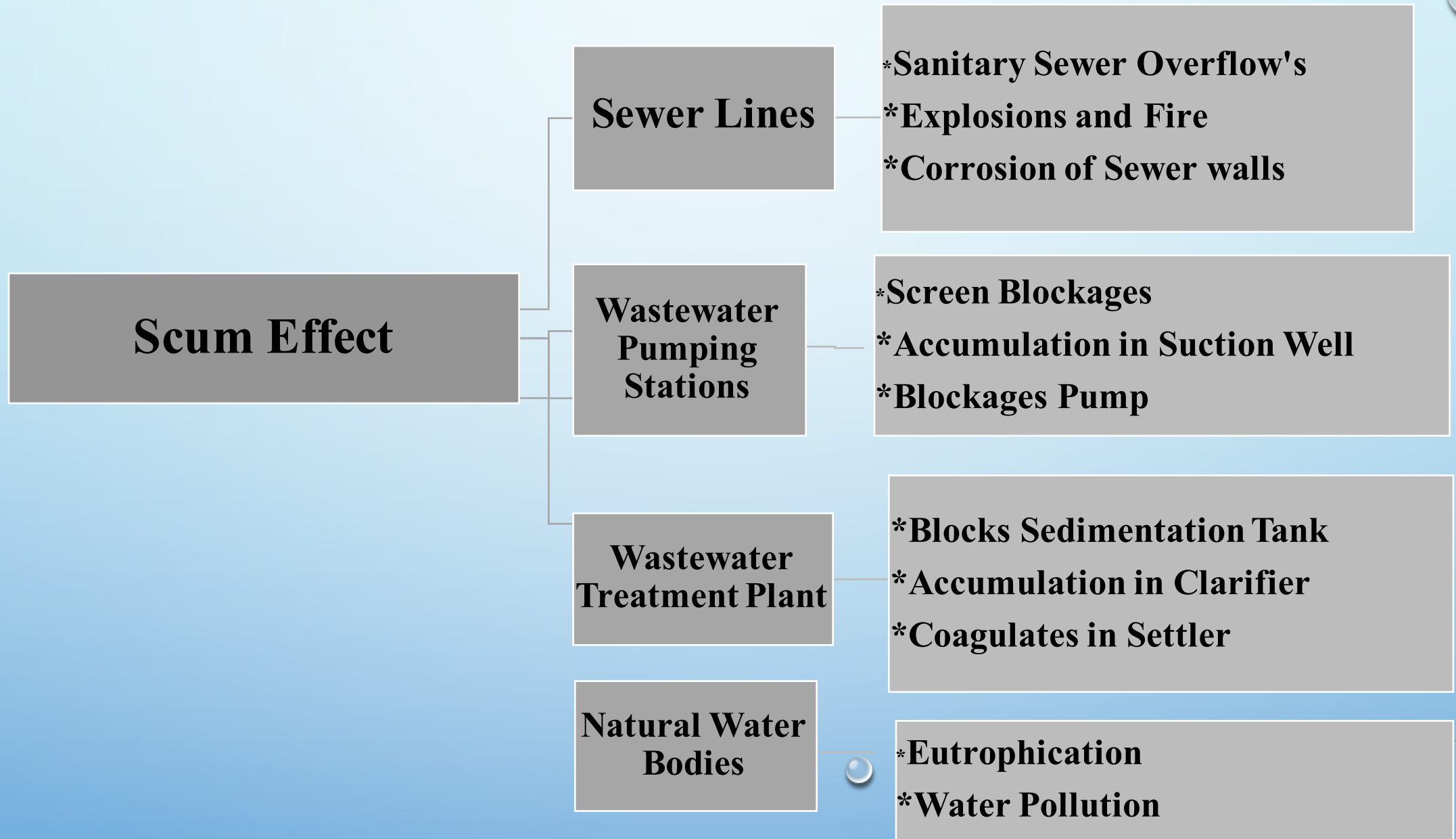
A MASS OF SEWAGE SOLIDS, BUOYED UP BY ENTRAINED GAS, GREASE OR THE OTHER SUBSTANCE WHICH FLOATS AT THE SURFACE OF WASTEWATER IS SCUM.



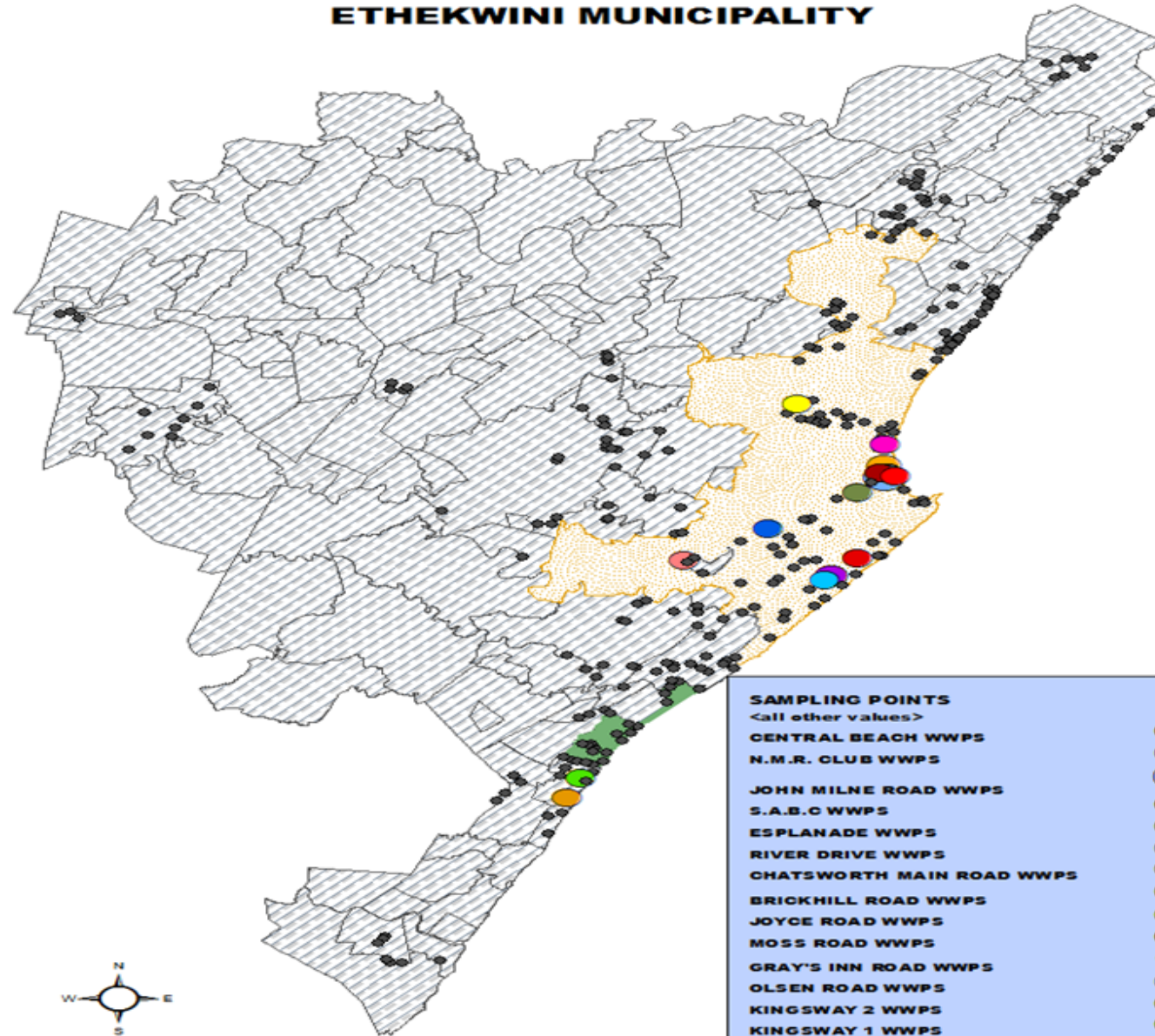
HOW SCUM IS FORMED?



HOW IT EFFECT'S OUR WASTEWATER INSTALLATIONS?

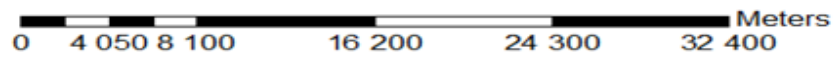
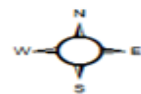


SAMPLING POINTS ON 14 PUMP STATIONS OF ETHEKWINI MUNICIPALITY

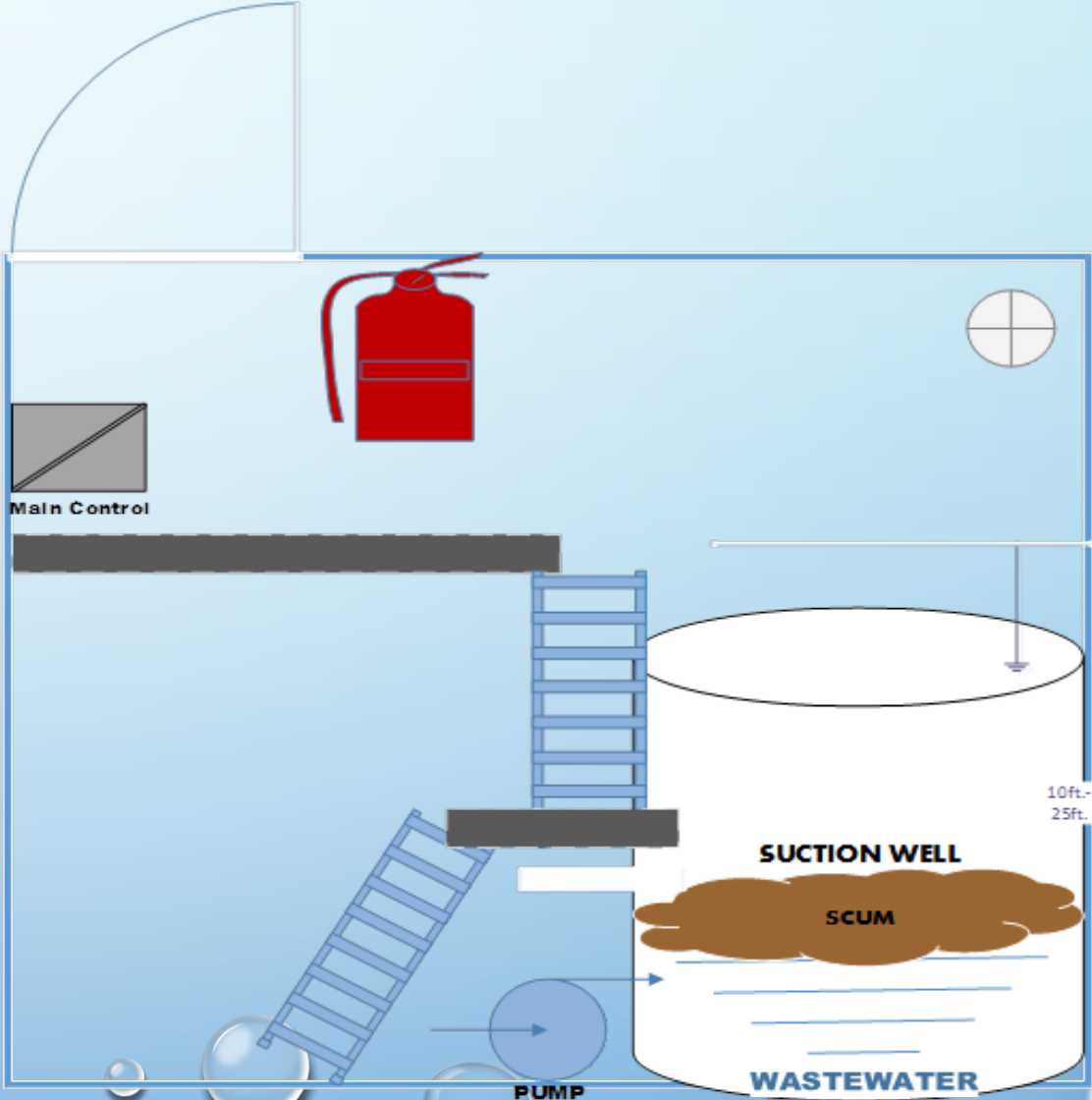


SAMPLING POINTS

- <all other values> (black dot)
- CENTRAL BEACH WWPS (red dot)
- N.M.R. CLUB WWPS (pink dot)
- JOHN MILNE ROAD WWPS (light blue dot)
- S.A.B.C WWPS (dark red dot)
- ESPLANADE WWPS (green dot)
- RIVER DRIVE WWPS (blue dot)
- CHATSWORTH MAIN ROAD WWPS (orange dot)
- BRICKHILL ROAD WWPS (yellow dot)
- JOYCE ROAD WWPS (red dot)
- MOSS ROAD WWPS (purple dot)
- GRAY'S INN ROAD WWPS (cyan dot)
- OLSEN ROAD WWPS (orange dot)
- KINGSWAY 2 WWPS (yellow dot)
- KINGSWAY 1 WWPS (green dot)
- <all other values> (black dot)
- Durban (black dot)
- Amazintoti (black dot)



HOW WE SAMPLED SCUM ?



| Pump station Name | Sampling Months in 2015 and 2016 | | Name | Area | Locality |
|----------------------|-------------------------------------|------------------|-------|-------------|--|
| | Sep.-Oct. 2015 | February 2016 | | | |
| Central Beach | 28/09/15 | 08/02/16 | PS-1 | North Coast | Hotels And Food Establishments(FES) |
| NMR | 28/09/15 | 08/02/16 | PS-2 | CBD | Restaurants, Lodge |
| John Milne | 28/09/15 | 08/02/16 | PS-3 | CBD | Auto Service, Offices |
| SABC | 28/09/15 | 08/02/16 | PS-4 | CBD | Restaurants , Shops And Offices |
| Esplanade | 29/09/15 | 08/02/16 | PS-5 | Victoria | Meat Shops And Restaurants |
| River Drive | 29/09/15 | 12/02/16 | PS-6 | Umbilo | School, Residences ,Food Establishments |
| Chatsworth | 29/09/15 | 12/02/16 | PS-7 | Chatsworth | Communities Residences ,Restaurants |
| Brickhill | 29/09/15 | 08/02/16 | PS-8 | North Beach | High School And Food Establishments |
| Joyce Road | 07/10/15 | 15/02/16 | PS-9 | Newlands | Food Establishment And Residences. |
| Moss Road | 07/10/15 | 15/02/16 | PS-10 | Bluff | Residential Area |
| Gray's Inn | 07/10/15 | 15/02/16 | PS-11 | Bluff | Slaughter House ,Informal Settlement |
| Olsen Road | 07/10/15 | 15/02/16 | PS-12 | Bluff | Slaughter House |
| Kingsway-1 | 01/10/15 | 16/02/16 | PS-13 | Amanzimtoti | Middle Class Residences |
| Kingsway-2 | 01/10/15 | 16/02/16 | PS-14 | Amanzimtoti | Middle Class Residences |

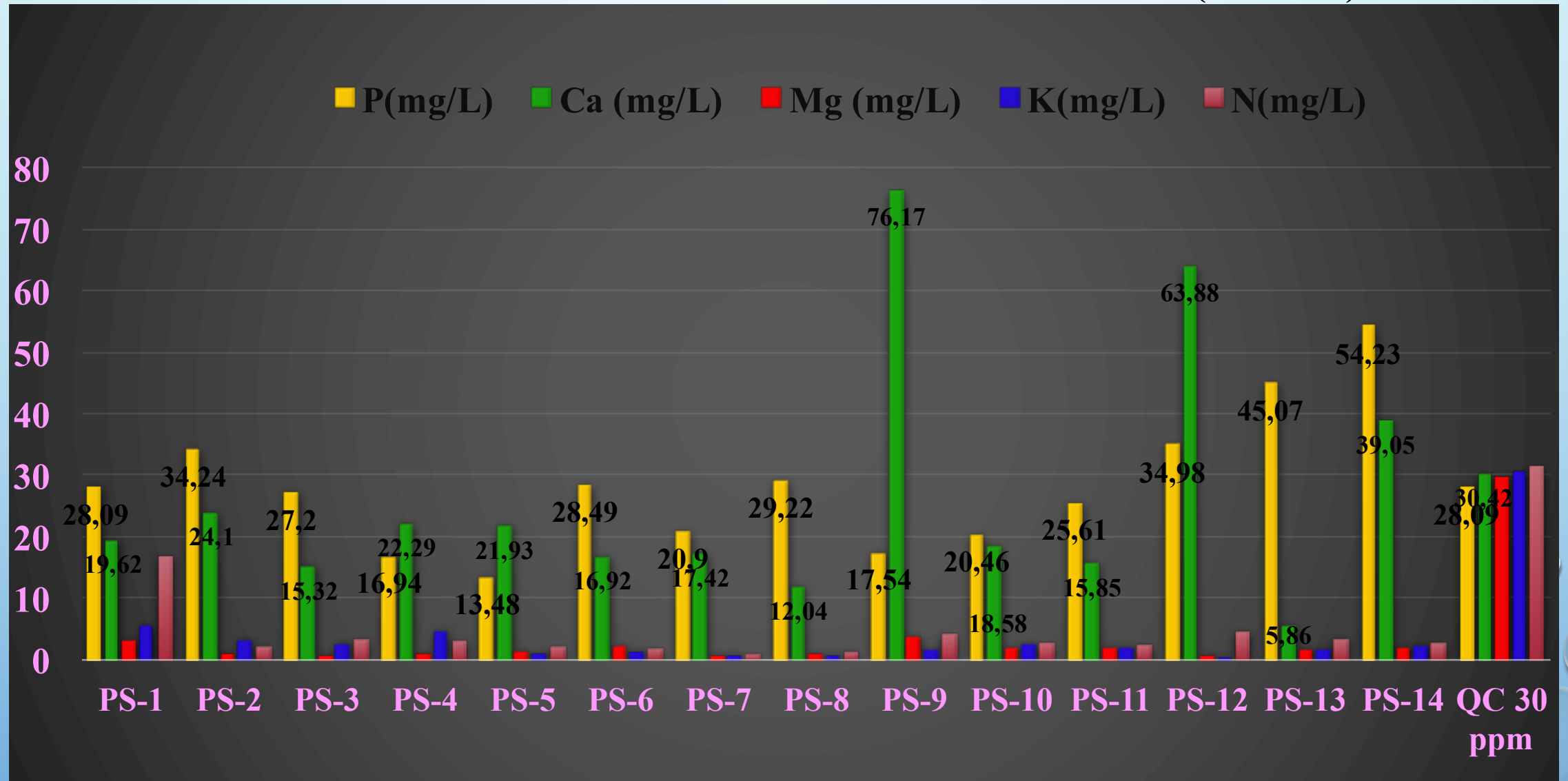
WHAT LABORATORY EXPERIMENTS WE FOLLOWED?

- THE SAMPLES AFTER SAMPLING PLACED IN OUR LABORATORY COLD ROOM AT 4°C.
- WE FOLLOWED LABORATORY STANDARD OPERATING PROCEDURES FOR ANALYSIS OF THE SCUM SAMPLES.

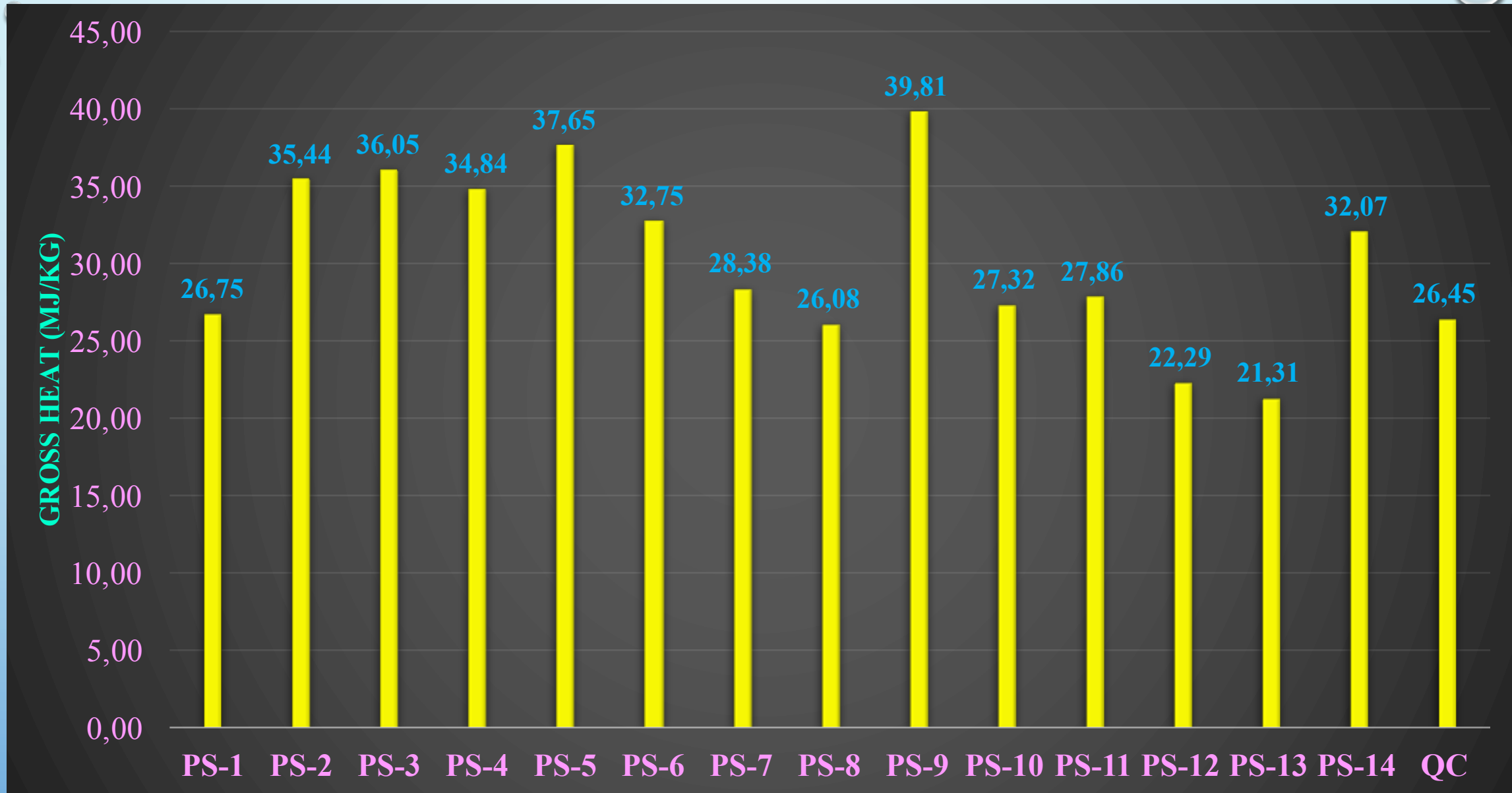


METAL ANALYSIS OF THE SCUM SAMPLES

MICROWAVE PLASMA ATOMIC EMISSION SPECTROMETER (MP-AES)



CALORIFIC VALUE OF THE SCUM



MANAGEMENT OF THE SCUM

FOUR WAYS TO MANAGE SCUM

- **DISPOSAL POLICY FOR SCUM**
- **AWARENESS IN SOCIETY**
- **GREASE TRAP FOR RESTAURANTS**
- **RENEWABLE ENERGY RESOURCE**

ACKNOWLEDGEMENT

- **ETHEKWINI WATER AND SANITATION FOR FUNDING PROJECT**
- **S. MERCER , C.TROIS AND C.A BUCKLEY FOR GUIDENCE AND SUPPORT**
- **EWS STAFF FOR SAMPLING**
- **LABORATORY – MRS. MERLEIN REDDY AND THABISO**
- **MY FRIENDS AND HUSBAND DR.VIRANJAY MOHAN SRIVASTAVA**