

What's That Smell?

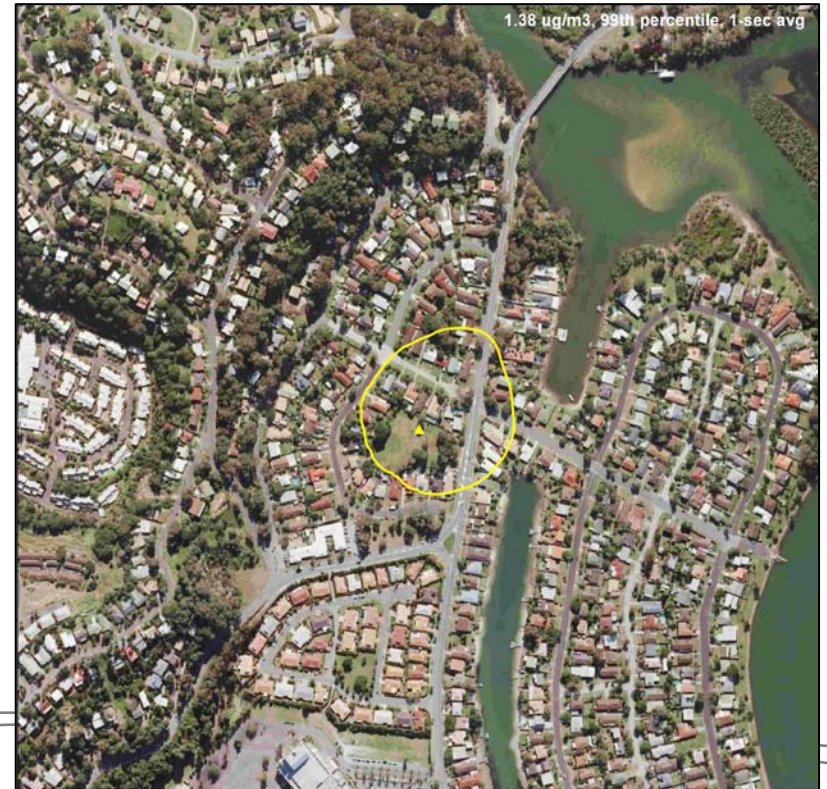
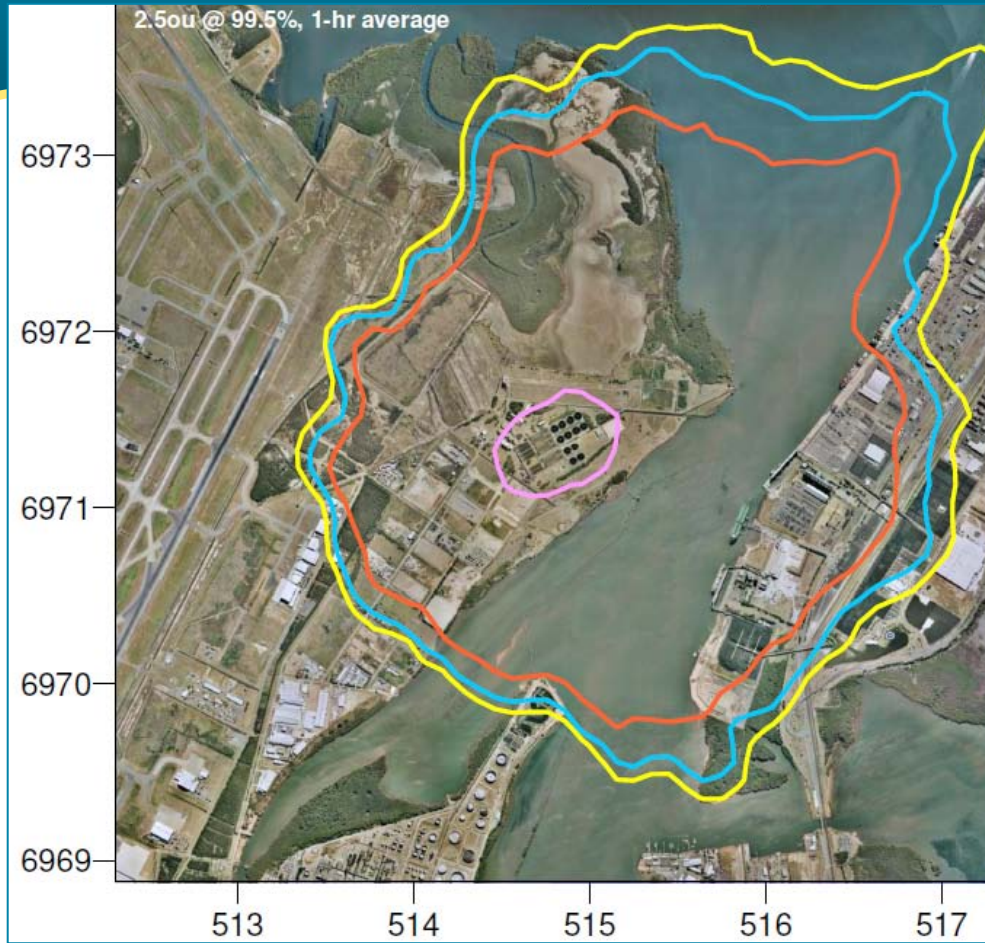
How sewer odours lead to pipe breaks
in networks and what you can do to stop
them



Who we are

- MWH is a global leader in odour assessment and control
- MWH wrote the book about odours for the Water Directorate
 - “Odour Management Guidelines for Sewerage Facilities”

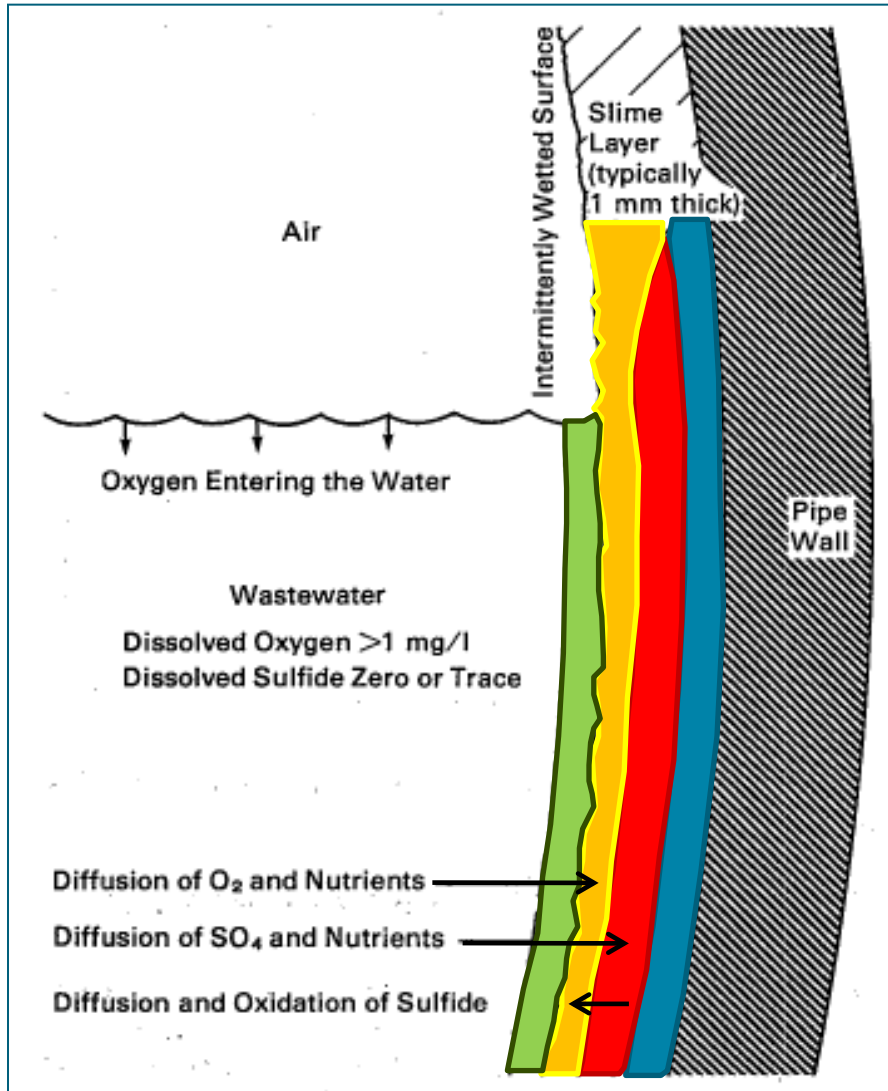
The Problem



The Problem

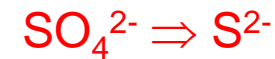


How are odours generated?



Inert Layer

Anaerobic Layer

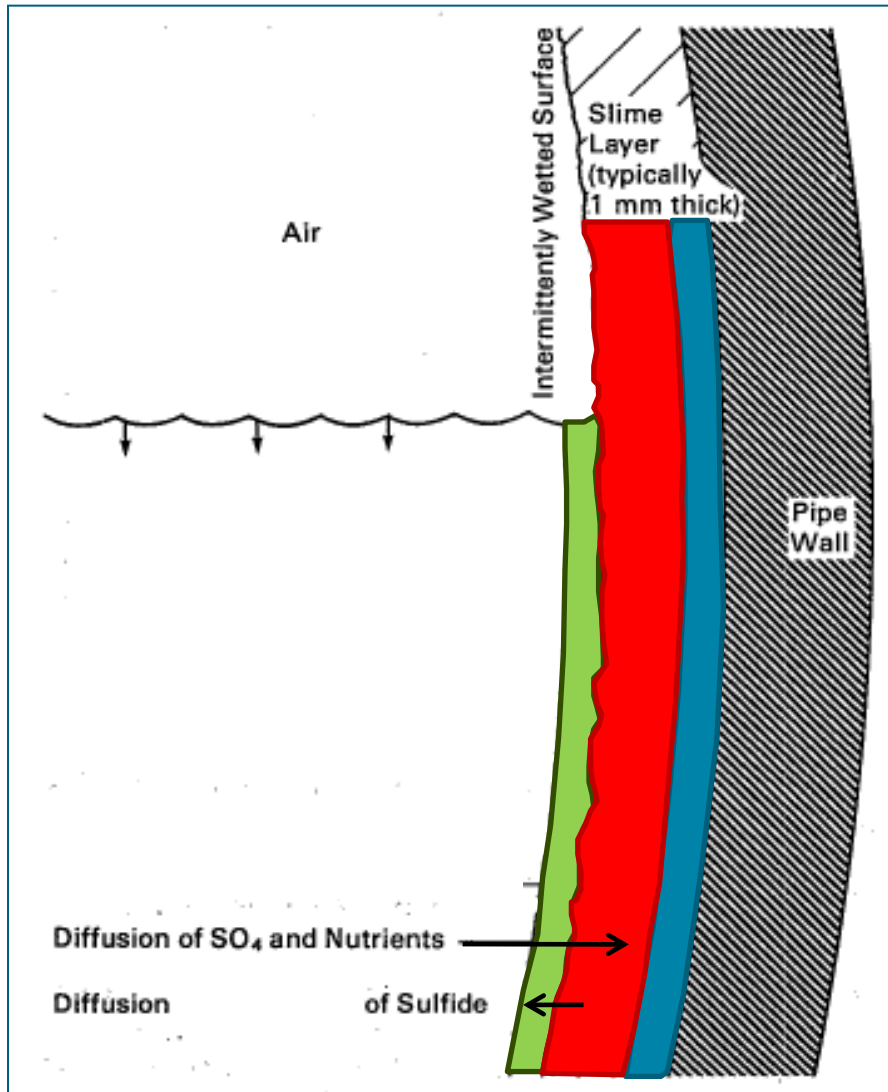


Aerobic Layer



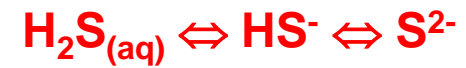
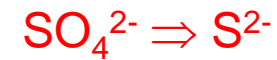
Laminar Layer

How are odours generated?



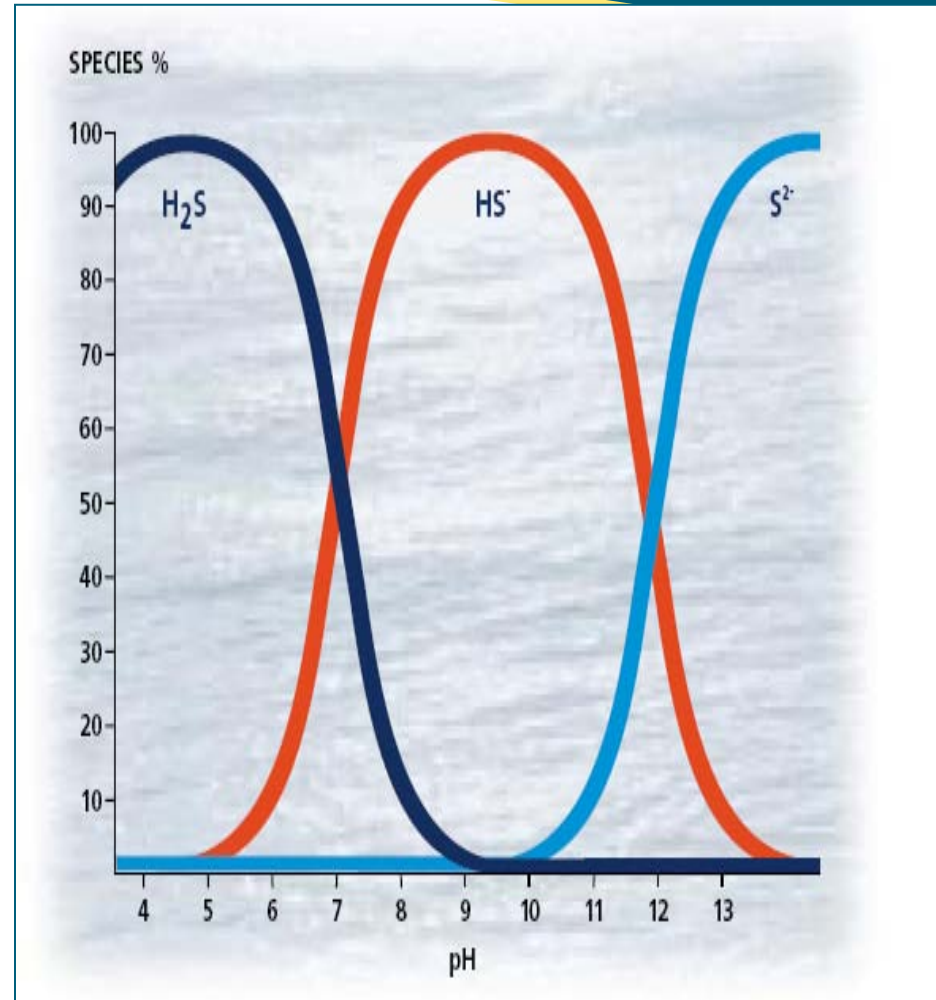
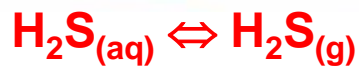
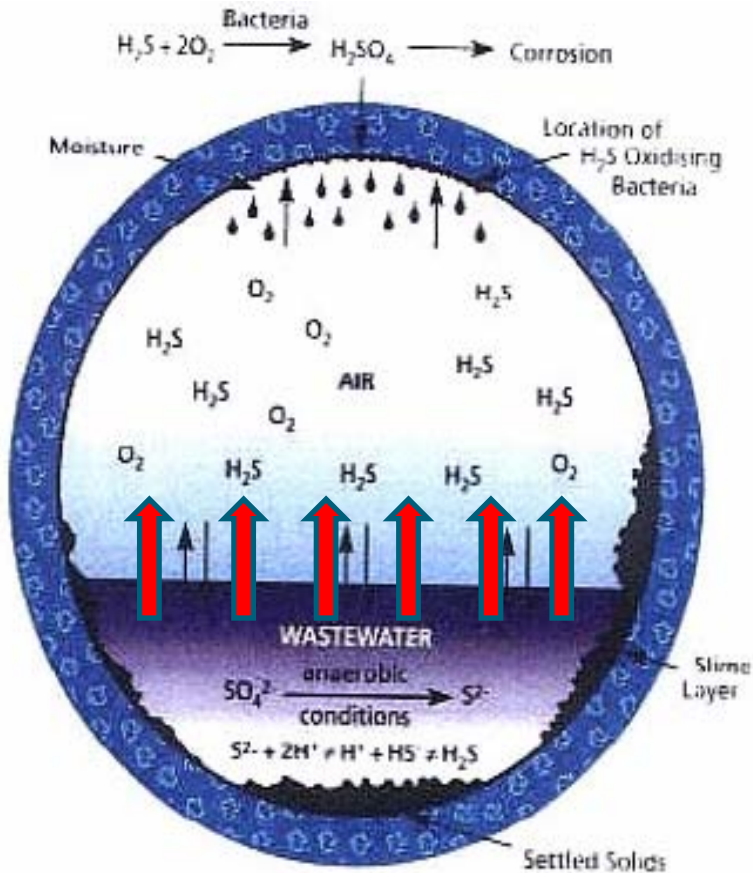
Inert Layer

Anaerobic Layer



Laminar Layer

How does corrosion occur?



So what can you do about it?

Preventative

- Design your networks correctly to prevent septicity
- Air tight and non-corrosive materials
- Good analysis of alternatives

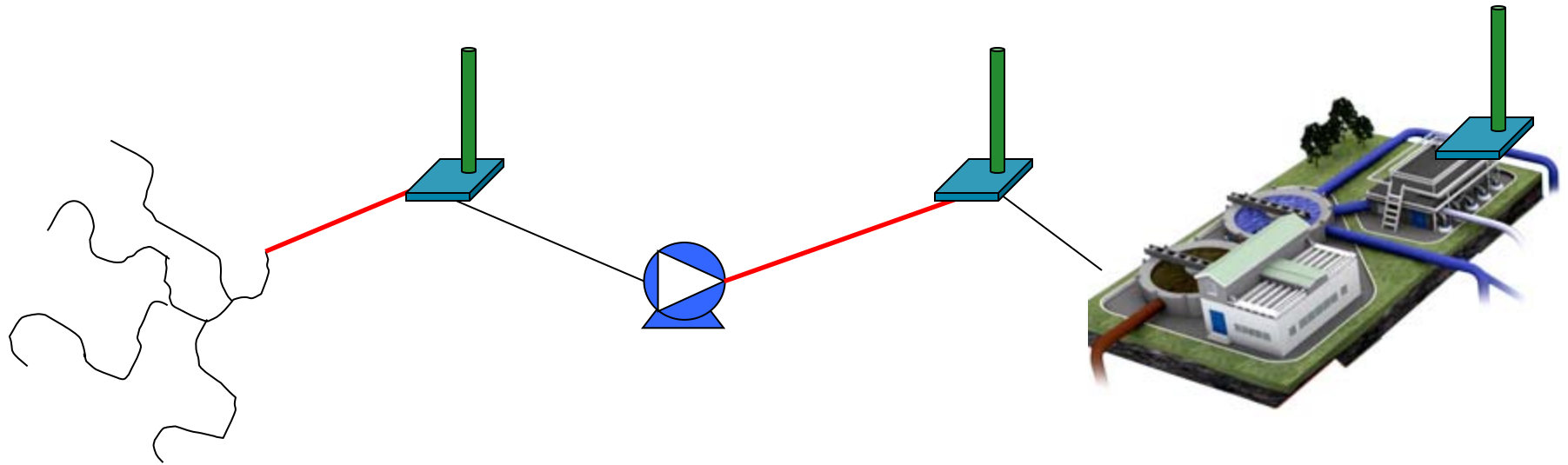
Treatment

- Chemical dosing
- Odour extraction and treatment

Analytical Tools

- Traditional
 - Transfer mains only
 - Long build time
- Next Gen
 - Entire networks
 - Different hydraulic and physical conditions
 - Based on hydraulic models

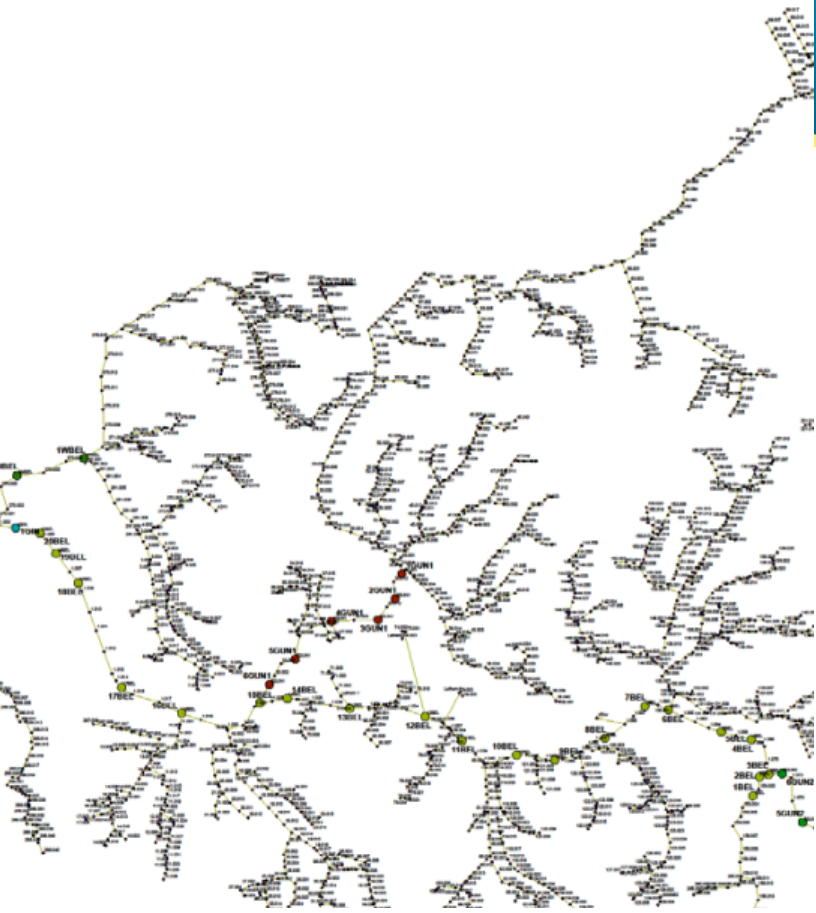
Traditional Method



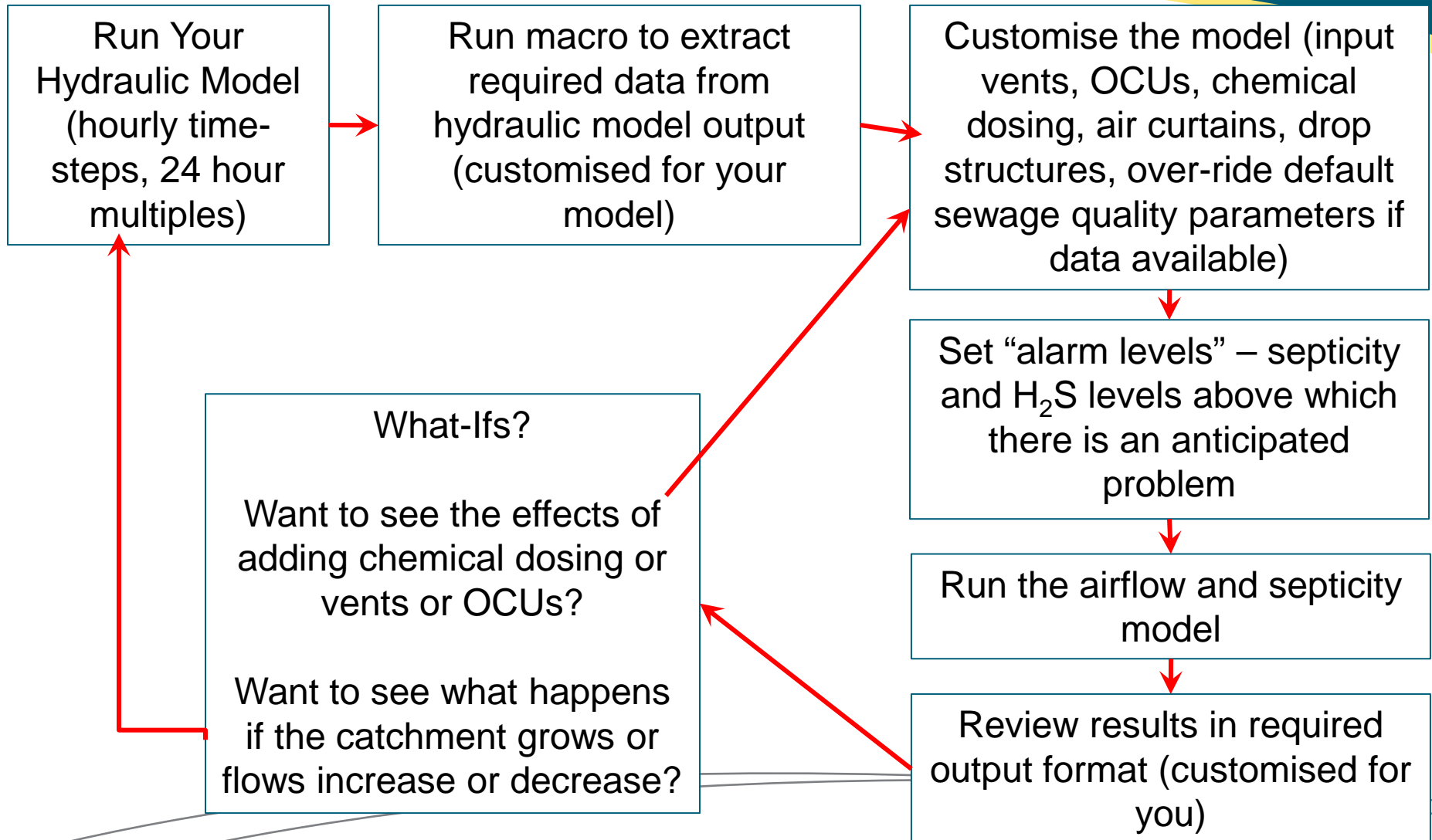
Network

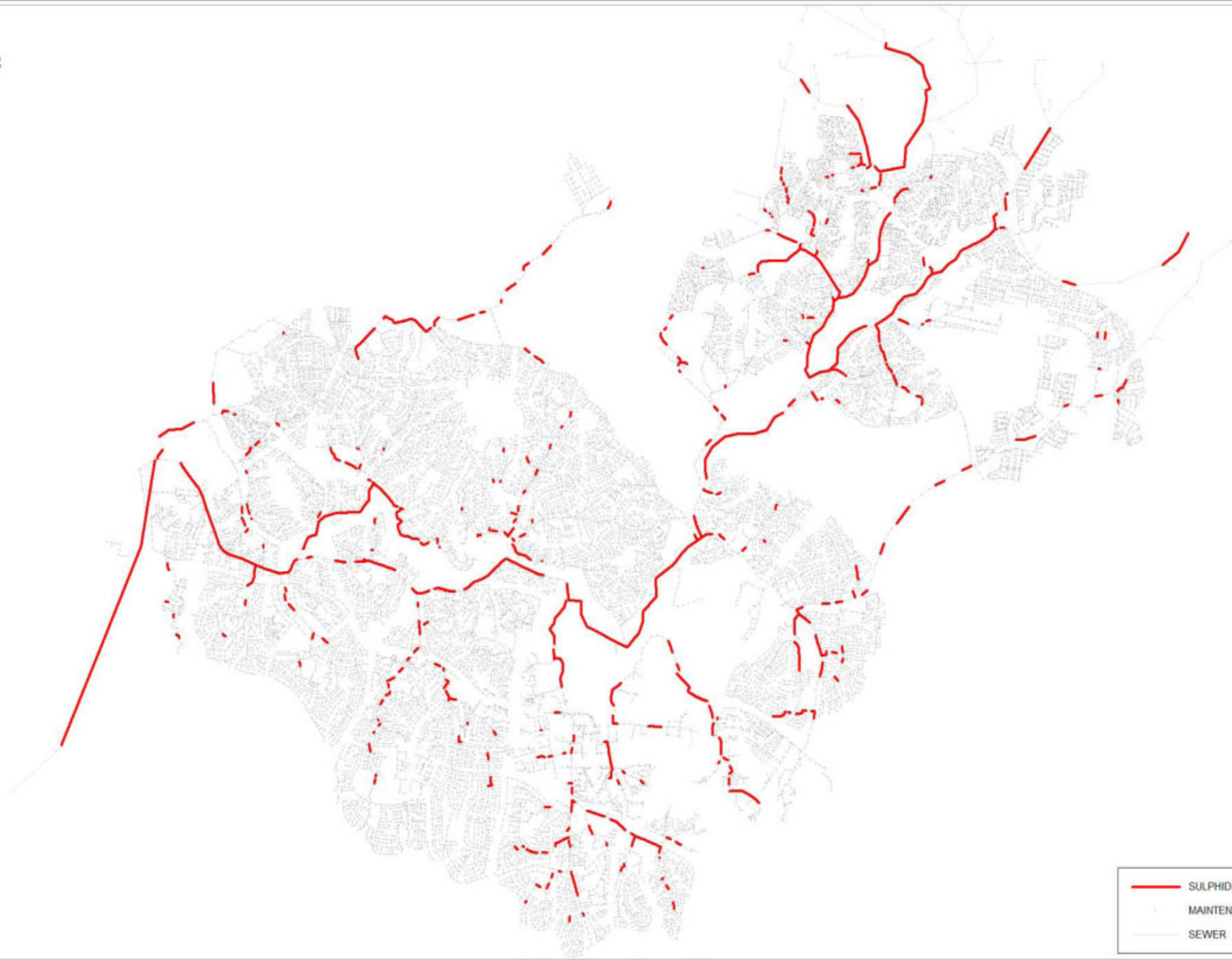
Pumping
Station

Treatment
Plant



How does it work?





LEGEND

-  SULPHIDE CONCENTRATION
-  MAINTENANCE HOLES
-  SEWER

EXAMPLE NETWORK

PROJECT NO.	NETWORK	DATE	SCALE
PROJECTION & DATUM	DRAWN BY	REVIEWED BY	NTS
MGA ZONE 56 (GDA 94)	OBS	OBS	
WORKSPACE PATHNAME			

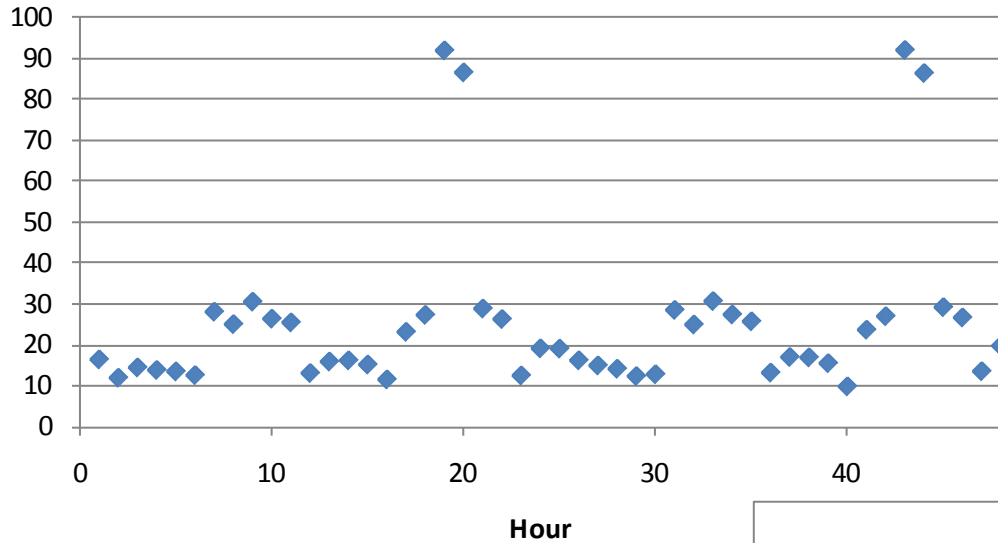
SULPHIDE VALUES



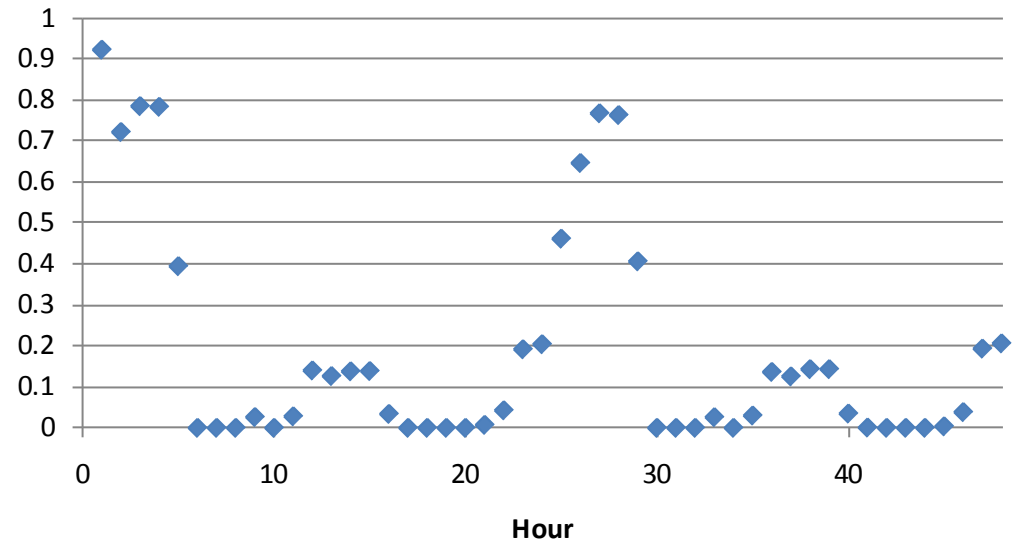
Level 2, 39-41 Chandos Street,
St Leonards, NSW. 2065.
Australia



Vent outputs



◆ Airflow through Vent (m³/h)



◆ H₂S (ppm)

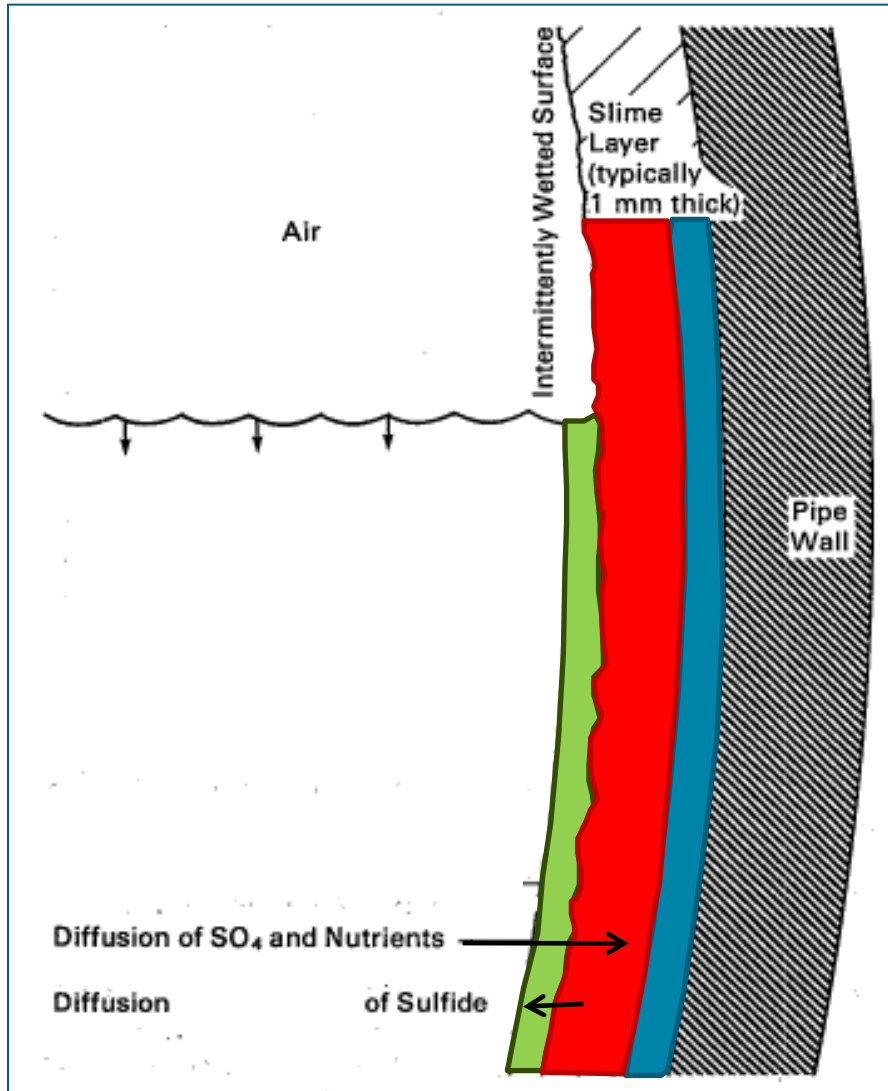
Calibration



Treatment Methods

- Liquid Phase (Odour and Corrosion)
 - Preventatives (Nitrate dosing)
 - Precipitators (Iron Salts)
 - pH Shifters (Magnesium Hydroxide)
- Gas Phase (Odour Only)
 - Biological
 - Chemical
 - Physiochemical

Chemical Dosing - Preventatives

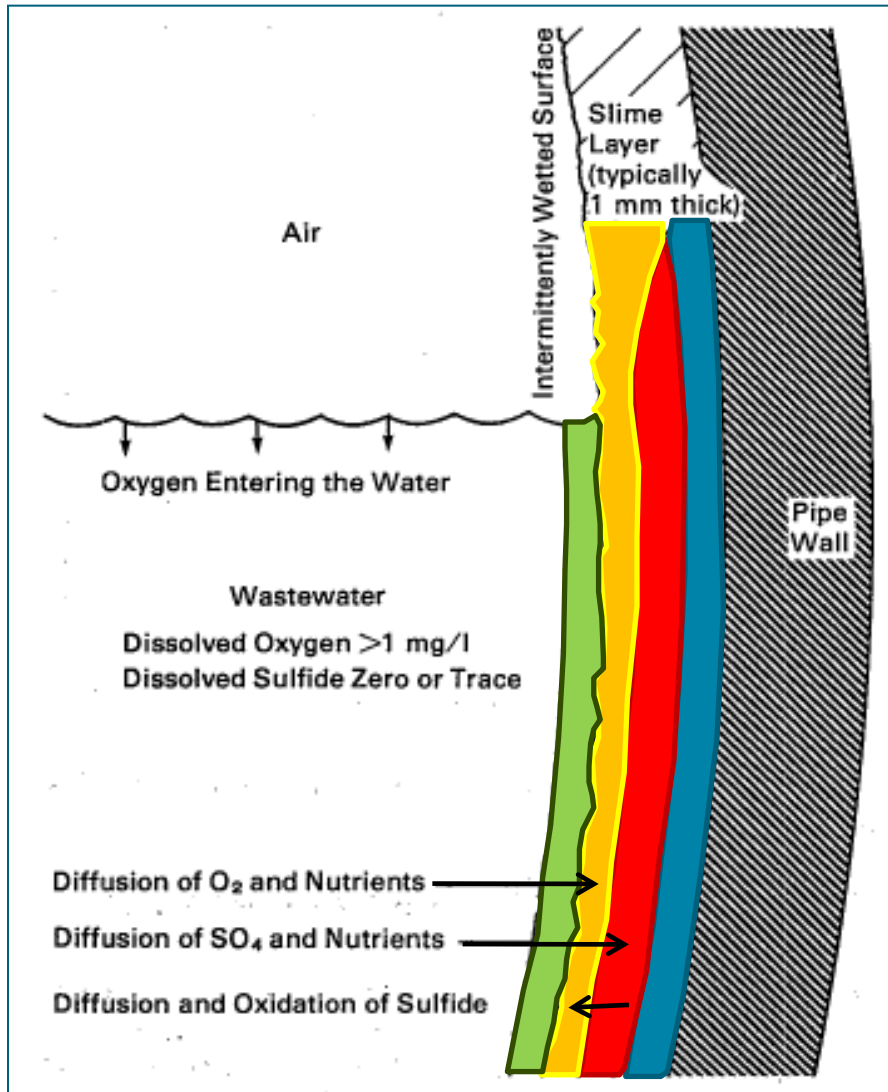


Inert Layer

Anaerobic Layer

Laminar Layer

Chemical Dosing - Preventatives



Inert Layer

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Aerobic Layer

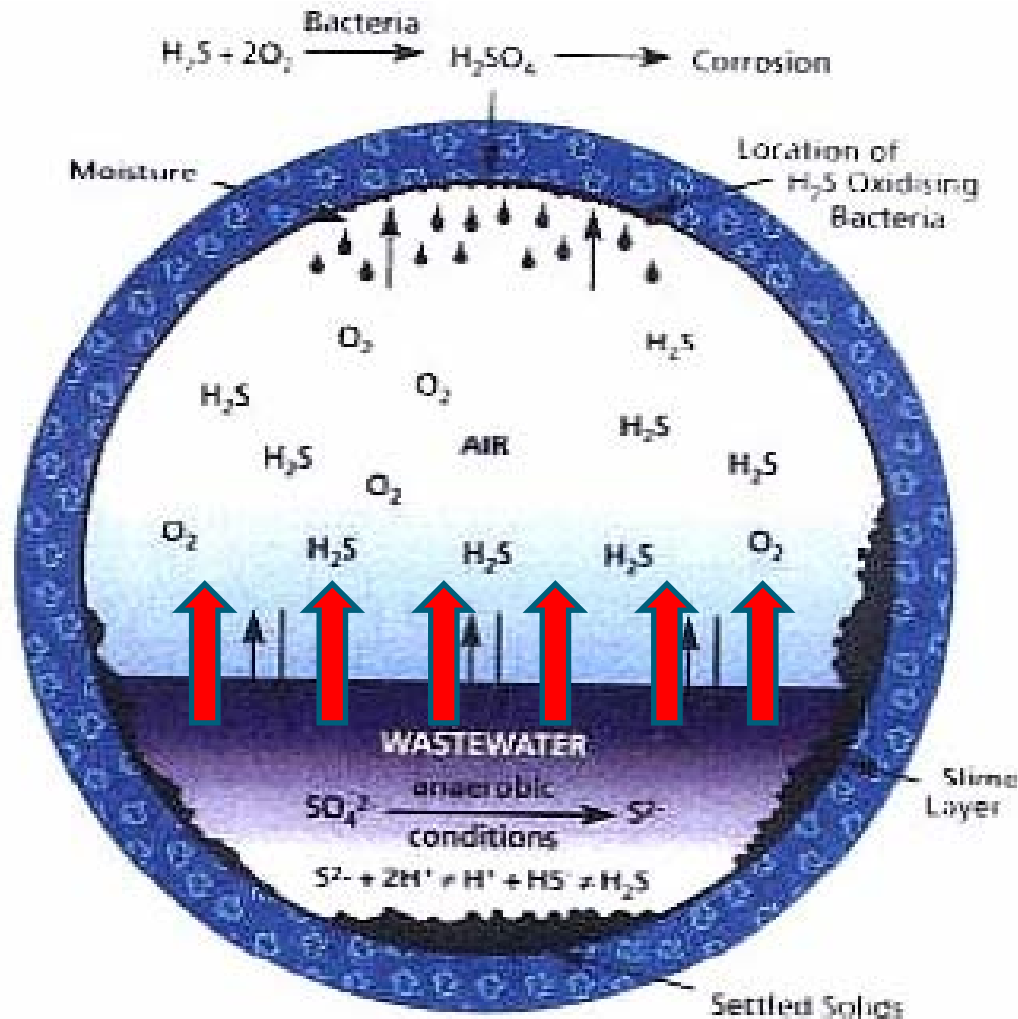
Laminar Layer

Examples:

Calcium Nitrate

Oxygen injection

Chemical Dosing - Precipitator

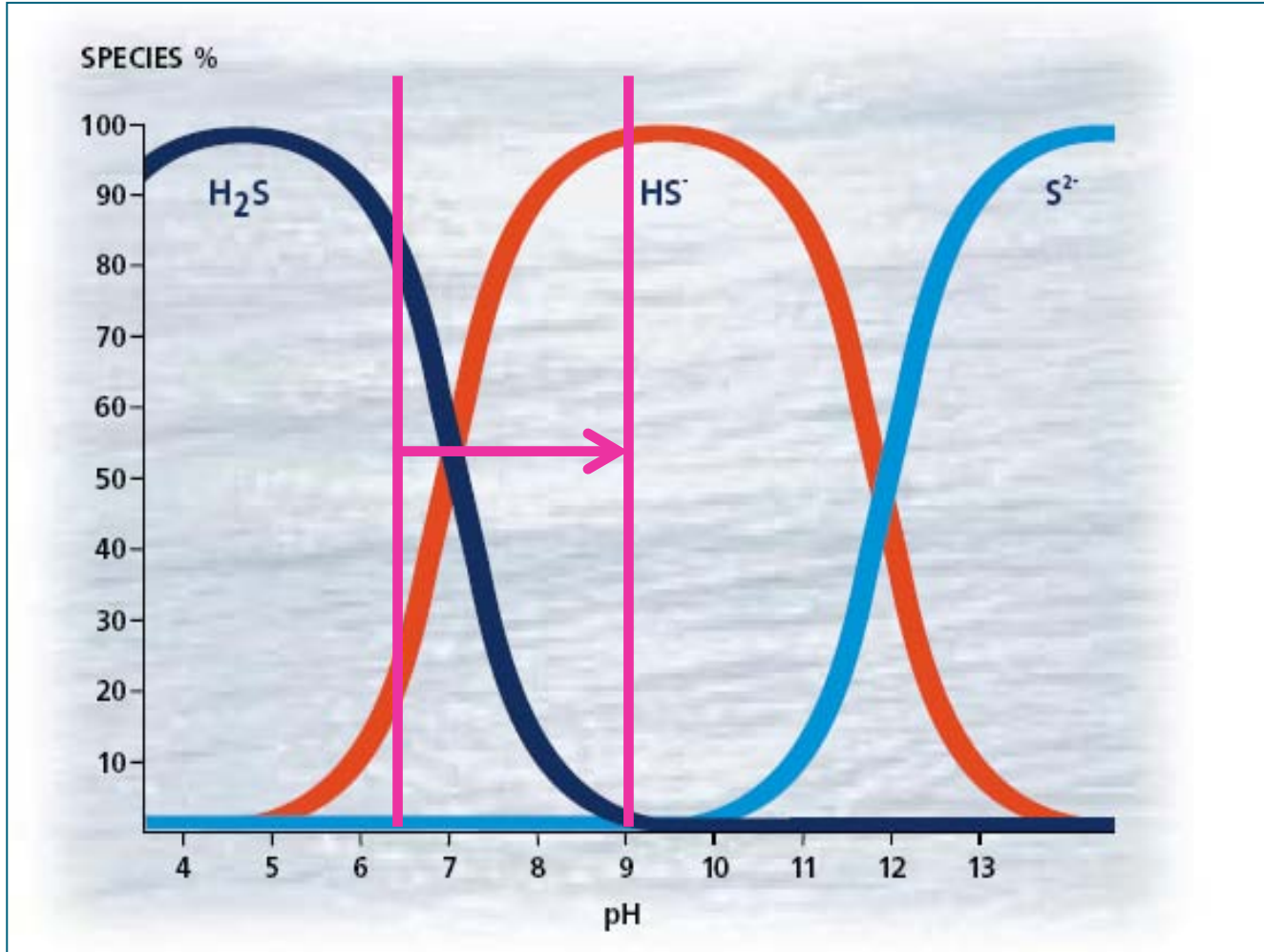


Examples:

Ferric Sulphate

Ferrous Chloride

Chemical Dosing – pH Shifter



Examples:

Magnesium
Hydroxide

Soda Ash

Chemical Dosing



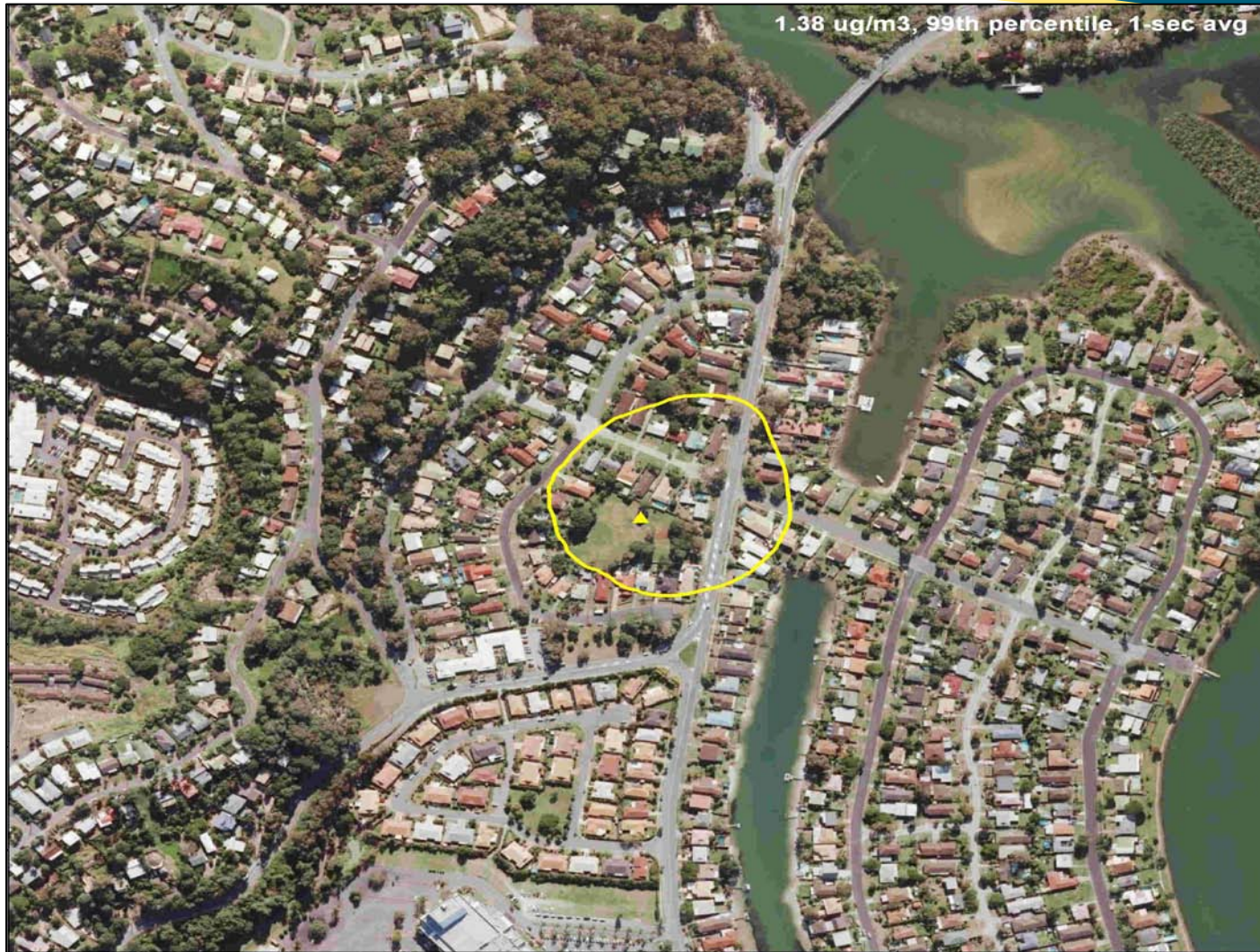
Odour extraction and treatment



Is it worth it?



Dispersion modelling



Top 5 Odour & Corrosion Causes

- Turbulence (at the wrong times)
- Excessive peaking factors in rising mains
- Saline infiltration
- Pressure sewer networks
- Blocking up vents

Thank you

Questions?