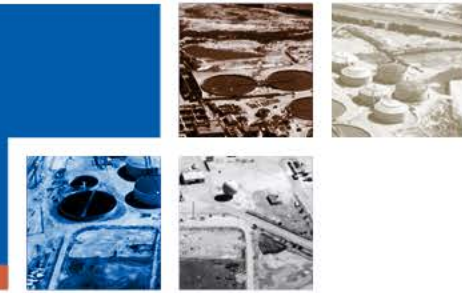
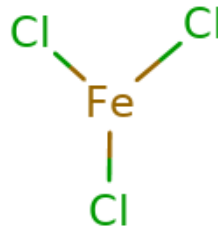


Iron Based Chemicals in Wastewater Treatment



Ferric Chloride



- Coagulant of choice for WWT applications due to its high efficiency and effectiveness in clarifying and reducing suspended solids
- Reacts with sulfates to prevent the formation hydrogen sulfide odors

Cost

- \$600-750 per dry ton (\$25-31 per 1,000 gal)
x 7,077 dry tons = \$4.2-5.3M



Alternatives – None as effective, some create additional sludge

- Aluminum Sulfate, Aluminum Chloride and Sodium Aluminate
- Ferrous Chloride, Ferric/Ferrous Sulfate



Ferric Chloride Commercial Considerations



- Ferric is a specialty chemical with a limited number of suppliers
- In the past there have been industry consolidations (single supplier) and price spikes.
- Vendors require a significant supply chain/infrastructure to make/purchase and transport the product.
- The District has adopted a policy to support multiple vendors to maintain competition in the market. This is the basis for recommending two contracts to supply the same chemical.



Regional Odor Control



● 36 Caustic Slug Dosed Manholes

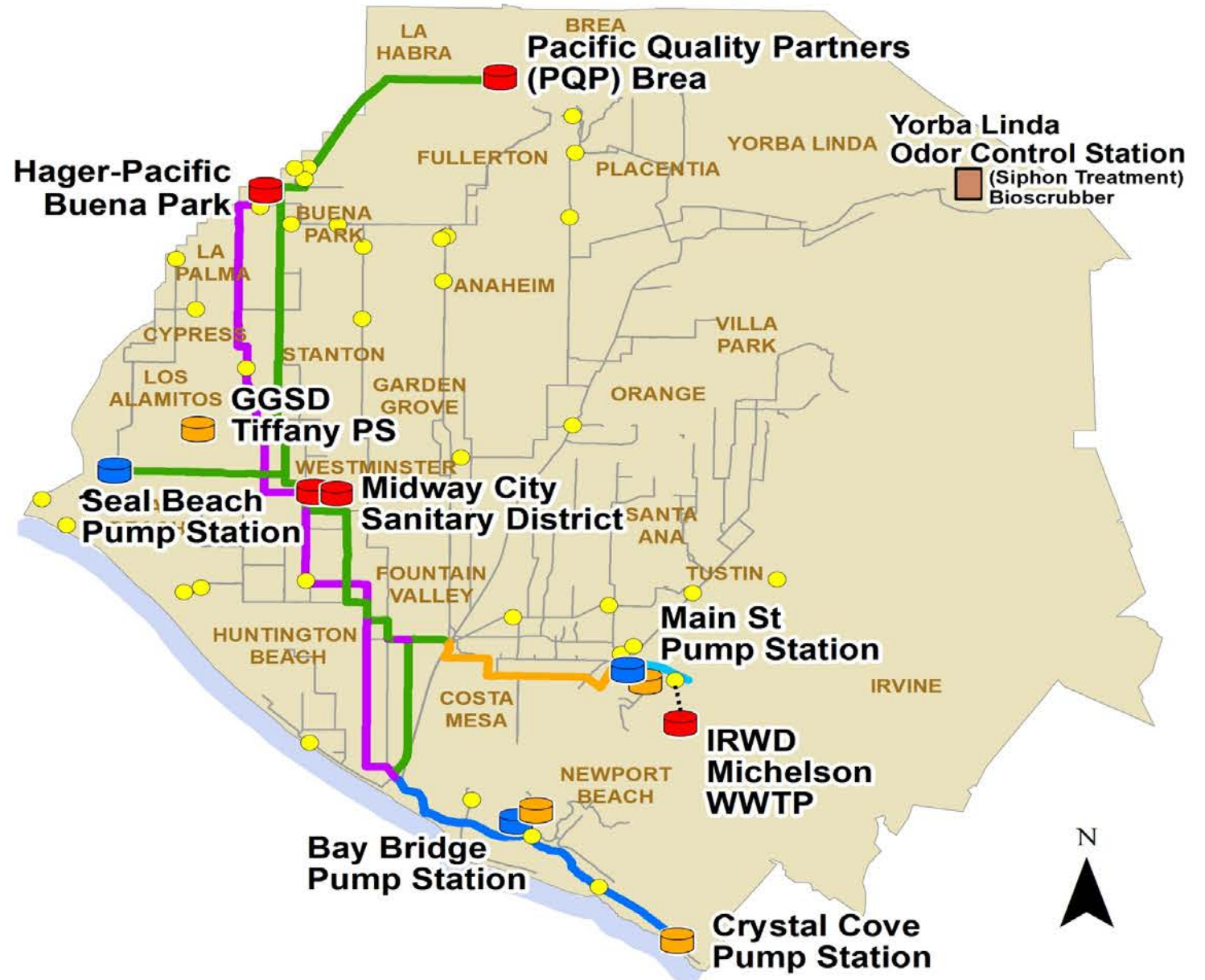
9 Chemical Dosing Stations

Chemical Tanks:

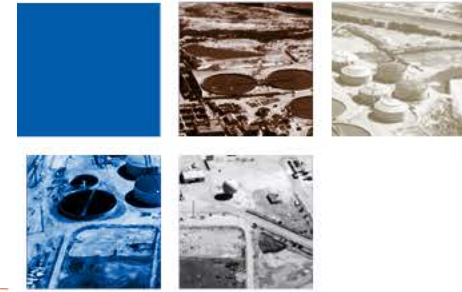
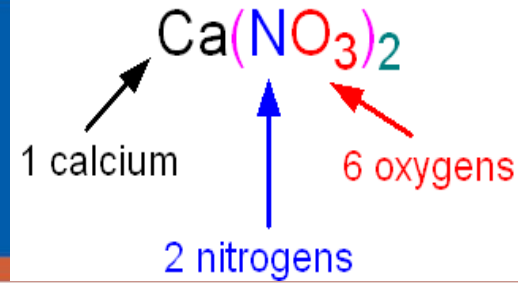
- Ferrous Chloride (6)
- Calcium Nitrate (4)
- Magnesium Hydroxide (3)

Continuously-Dosed Sewer Segments:

- Sunflower
- Baker-Main (Airbase)
- Knott Interceptor
- Miller-Holder
- Newport
- Non-Dosed OCSD Sewer



Collection Liquid-Phase



- Ferrous chloride – oxidize and/or precipitate dissolved sulfide.
- Sodium hydroxide – deactivating/inhibiting the slime layer.
- Calcium nitrate – prevent the formation of sulfides
- Magnesium hydroxide – adjustment of pH, suppress odors



Recommendation



- Staff recommend the continued use of ferric chloride and ferrous chloride for odor control and enhanced settling of sludge.
- Staff recommend the award of two agreements for ferric chloride purchase to support market competition and resilient supply.
- Staff recommend the approval of ferrous chloride contingency increases due to changes in market conditions.

