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Overview

- About Pure Effect, Inc.
- Permitting
- Treatment Approach
- Manufacturing
- Case Studies
- Questions



Pure Effect, Incorporated

Pure Effect is an Environmental Company that Rents, Sells and Provides Services for Groundwater Treatment Equipment & Vapor Remediation Systems to the Construction, Industrial and Environmental Markets.

Pure Effect, Incorporated

- Over 50 years of combined Environmental Experience
- Two office locations
 - Corporate office - Fullerton, CA
 - Manufacturing – Downey, CA
 - San Diego, CA
 - Lodi, CA
- Service all of California
- Solution Based
- Sales/Rental/Lease to Own Programs
- SBE – Small Business Enterprise



Permitting



- NPDES Permitting
- Industrial Sewer Permitting
- Discharge to Land Permitting
- Re-injection
- PEI - Santa Ana Regional WQCB De Minimus and TTU Permits (various locations)
- DTSC TTU Permits
- SCAQMD Various Location Permit
- SWPPP

Permitting

- NPDES Permitting - \$11,877
 - Samples - \$2,800
 - Hydropunch
 - Auger drill
 - Excavation
 - Existing monitoring well
 - Labs - \$4,500 - \$5,500
 - San Diego Region (8-12 Weeks)
 - Treatment design (engineer stamp) included in permit
 - Los Angeles Region (6-8 Weeks)
 - Site inspection required prior to system operation
 - Santa Ana Region (4-6 Weeks)
 - PEI De Minimus and TTU Permits (various locations)
 - Encroachment Permits and City Requirements?
 - Monitoring and Reporting - \$3,000 / Month



Permitting

- Industrial Sewer Discharge Permit - \$1500
 - Samples - \$2,800
 - Hydropunch
 - Auger drill
 - Excavation
 - Existing monitoring well
 - Labs - \$2,500
 - Treatment Costs Typically Less
 - Monitoring and Reporting - \$3,000 / Month
 - Usage Fee – Approx. \$4 per 750 Gallons
 - 100 GPM = \$20,000 per Month
 - SCARF – Fee Based on Flow



Permitting – Why Do It?

➤ Penalties and Fines

- The **California Water Code** provides that any person who violates a waste discharge requirement or a provision of the California Water Code is subject to civil penalties of up to:
 - **\$5,000 per day, \$10,000 per day, or \$25,000 per day of violation**
- Or when the violation involves the discharge of pollutants, is subject to civil penalties of up to:
 - **\$10 per gallon per day or \$25 per gallon per day of violation; or some combination thereof,**
- A “serious violation” is also defined as a failure to file a discharge monitoring report.

Permitting

➤ Penalties and Fines Example



- \$10 per gallon per day or \$25 per gallon per day of violation; or some combination thereof...
- GC is pumping at 100 GPM for 20 days.
 - 2,880,000 gallons X \$10 / gal = \$28 MILLION fine
 - 2,880,000 gallons X \$25 / gal = \$72 MILLION fine
- Regional Board watch list!

Treatment Approach

- Understanding the water chemistry, flow rate and discharge limits in each Region
- Determine where the water will go
 - Storm drain, sewer, haul off site
- Designing the best treatment system
- Order of Removal
 - Oil & Grease
 - Solids/Turbidity
 - Dissolved
- ppb = one second in 32 years or
one sheet in a roll of toilet paper stretching from
New York to London



Treatment Approach

- Tanks (holding, settling, mixing)
 - Frac Tank – 21,000 gallons
 - Weir Tank – 18,000 gallons. Baffle system for heavy solids
 - Dewatering Tank – Liner
 - Detention
 - Slow down flow rate and velocity
 - Mixing
 - Allows for longer flocculent reaction and mixing
- Reuse
 - Dust control
 - Purple pipe
- Sized from 500 gallons to 500,000 gallons



Treatment Approach

- Flocculants & Chemical Pre-Treatment
 - Liquid or dry
 - Metals and solids removal
 - Causes solids to bind together
 - Encapsulates emulsified O&G
 - Works best with mixing / holding tanks
 - Construction industry approved
 - Low cost solutions for TSS & Turbidity removal



Treatment Approach

- Solids / Sediment Control
 - Sand Filter
 - 50 GPM to 10,000 GPM+
 - Removal of particles down to 75 – 100 micron in size with sand media
 - Savings with bag filter change outs and replacement filter costs
 - Automated backwash
 - Back wash sequence based on time or Delta-pressure, Backwash water filtered or sent to holding tank
 - Low voltage – wired to system panel
- Maintenance
 - Monitor backwash frequency and vessel pressure
 - Replace sand on long term projects



Treatment Approach

- Solids / Sediment Control

- Bag Filter / Cartridge Filter

- 75 micron to 1 micron, standard and high efficiency removal [equal to cartridge filtration]

- 4 bag vessel design, parallel flow

- Pressure gauge monitoring

- Multiple vessels in series

- 25 micron followed by 10 micron

- Micron bag size may change:

- Site conditions

- Influent turbidity

- Maintenance

- Replace bags when plugged

- Monitor pressure gauge

- Inexpensive replacement bags



Treatment Approach



- Enhanced Medias
 - Activated Carbon
 - Reduces VOC's, hydrocarbons, organics, some dissolved metals
 - Metal Removing Medias
 - Specific medias are designed for specific types of contaminants
 - No one “fix all” medias
 - Contact time
 - Larger volume of media beds equals better removal rates of dissolved contaminants

Treatment Approach

- Target Treatment contaminants for Construction Dewatering
 - TPH: C6 to C 24
 - Oil & Grease [free and emulsified]
 - Volatile Organic Compounds [including Vinyl Chloride, 1,4-Dioxane, MTBE, TBA,]
 - Semi-Volatile Organic Compounds
 - Pesticides, PCB's, Perchlorate,
 - Nitrates, Total Dissolved Solids,
 - Sulfides, Conventional; pH, Settleable Solids, Turbidity.







Construction Dewatering

- What happens when you do not properly dewater



Manufacturing

- Engineer, Design & Manufacture our own:
 - Pressure vessels
 - Holding tanks
 - Bag & Sand Filters
- Seismic Anchoring Systems
- Quality of internal lining
- Rapid and dependable delivery
- Design Flexibility with Custom Options



Pre-Bid Questions for Project Owner

- *“General Contractor responsible for groundwater.”*
- Are groundwater analytical reports available for this site and are they current within 12 months of permit application?
- Has a flow rate been determined for dewatering?
- Has a discharge permit been obtained for the project?
- Who will be the Owner of the permit?
- Where will the discharge water go?
 - Storm drain, Industrial sewer, Discharge to land, Hauled off site
 - Permit lead-time
- How much space will be available for the treatment system?
- What is the duration of the dewatering on the project?
 - Permit renewal, media change out
- Is there power available at the site for treatment system?
- CHANGE OF CONDITION!!!!

Case Study – 800 GPM

- Malibu Lagoon Restoration Project
- Discharge to the Pacific Ocean Surf Zone
- Discharge target contaminants Bacteria:
 - Total and Fecal Coliform, Enterococcus, Trace Heavy Metals: Copper, Total Suspended Solids, Turbidity, Acute Toxicity
- Achieved 100% compliance with project objectives, NPDES, Coastal Commission and City of Malibu permits

Case Study – 800 GPM

- 800 GPM system Malibu Lagoon Restoration



Case Study – 400 GPM

- Construction de-watering groundwater treatment system for the installation of a pump vault
- NPDES discharge permit to the Pacific Ocean Surf Zone
- Target contaminants
 - Trace Heavy Metals: Copper, Nickel, Zinc, Total Suspended Solids, Turbidity
- Achieved 100% compliance with project objectives and NPDES permit requirements

Case Study – 400 GPM

➤ 400 GPM Groundwater Treatment System



Case Study – 8,000 GPM

- Heavy Construction Dewatering Project in Orange County, CA
- SDRWQCB NPDES permit
- New bridge over major creek with an aquifer underneath the creek dewatered to 75 BGS, clay soils
- Target contaminants:
 - Total Suspended Solids, Settleable Solids, Turbidity, Iron, Manganese
- In full compliance with monthly discharge limits to outfall

Case Study – 8,000 GPM

- 8,000 GPM Heavy Construction Dewatering



Case Study – 600 GPM

- Kiewit Shea Desalination Plant
- SDRWQCB NPDES permit
- Construction of a new water treatment plant
- Target contaminants:
 - Total Suspended Solids, zinc, toxicity
- In full compliance with monthly discharge limits to the lagoon

Case Study – 600 GPM



Questions?



Thank you!

- www.pureeffect.com
- (866) 421-7873
- San Diego, CA
- Fullerton, CA
- Check us out on Facebook, Twitter, LinkedIn and Google

