Removal of Arsenic from WW Using a Proprietary Adsorptive Media/International Project Logistics

Lee Josselyn, PE, Sr. Project Manager
Ghana Calling……

- Eti sen? (How are you?)
  - Hello?

- Oh, hello – This is Ghana – We need your help.
  - Oh Sure?!
Yes – We need designs for:

- Two water treatment plants
- Arsenic Treatment w/ NXT
- 30% and 100% Submittals
- Operational this year (~ 8 months)
- Start Immediately
- Mah krow (good-bye)

[https://www.tripsavvy.com/saying-goodbye-in-africa-14/3970](https://www.tripsavvy.com/saying-goodbye-in-africa-14/3970)
- Ivory Coast
- Gold Coast
- Adopt U.S.
- ~90% CO’s area
- ~600% CO’s pop.
Existing Infrastructure including Water Treatment

New Plant Area

Obotan
Esaase

New Plant Area

Infrastructure?
Timeline

- June Start
- 6 Weeks for 30%
- Long Lead Procurement
- 2 Weeks for 100% (Mechanical)
- Construction
- Commissioning
The Knot - MOU

Well Defined - Agreement

- Scope
  - DWG List
  - Inclusions/Exclusions
  - Definitions
- Milestones
- Payment Schedule
NXT–N2 Technology

- Mixed-Metal oxy-hydroxide adsorptive granular media
  - Lanthanum and Iron
- Adsorbant
- High Surface Area
- Arsenic Specific (almost)
- Wide pH range (~3~11)
- Stable Solid (TCLP)
- Ghana EPA Approved!
NXT – Forms

Forms

- NXT – 2  Coarse media for static columns
- NXT – N2  Fine media for dynamic systems
- NXT - CF  Liquid reagent
NXT–N2 Process Details

N2 Surface Area
~ 250m²/g

Adsorption Rate
~ 50g Ar/kg
NXT-N2

Residence Time
15-45 minutes

pH Adj. / Coagulant / Oxidant

Make-Up
Mixing
Settling
Obotan - PFD

- 3 Reaction Tanks = 45 min
- Bypass-ability
- Batch v. Continuous
Obotan – Process GA

- **Gravity Flow**
- **Outdoor**
Esaase - Layout

- Influent Pond
- Effluent Pond

- Septic
- Fire
- Potable
- Power
- 3 Reaction Tanks = 45 min
- Bypass-ability
- Batch v. Continuous
Esaase - GA

- Chemical Make-up
- Outdoor
- Gravity Flow
Ghana

Third World but Industrial

$1 = 5$ Cedi

Culture
Ethics - Code of Conduct

✓ Anti-Corruption
✓ Conflict of Interest
✓ Integrity
✓ Speak – Up

What – If??
Communication

Discuss

WhatsApp

skype™

Data

Dropbox

EMAIL

text

6 hrs
Communicate?

Right?
• Question
• Answer

Do We Agreed?
Lessons Learned

- Understanding Culture
- Clear Scope
- Communicate
- Trust
- Answer the Phone
Questions?

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