

CYANAMID STATUS BOARD 2012 – ROD ELEMENTS FOLLOW-UP

Process Steps (Typical)

- Eng. Design
- Eng. Test/ Pilot Test
- EPA Approval
- National Remedy
- Construction Period
- Completion & Operational

Description	Status
<p>1. Temp. Modular GWTP for IMP. 1, 2</p> <p>2a. Blocking-Benzene/VOC Seepage Into River (From Imp. 1, 2)</p> <p>2b. Benzene Level in River Held to Below 0.5 PPB</p>	<p>Fully Designed, App., Comp. by 2012</p> <ul style="list-style-type: none"> ● Isolation Wall ● Collection Trench Pumped to Temp. GWTP. ● Completed by 2012 ● Achieved Since 2012
<p>2. IMP. 3, 4, & 5: Remediation by solidification/stabilization (S/S) and covered by hardened soil-cap.</p> <p>(IMP. 3, 4, & 5 are behind main berm, where GW pumping exists.)</p>	<ul style="list-style-type: none"> ● Geophysical Analysis Complete ● LAB Testing of S/S materials (2015/2016) Mostly Complete ● Pilot Test – Not yet ready

<p>4a. Imp. 13, 17, & 24 (Lower Flood Plain) Top 2 feet remediation</p>	<ul style="list-style-type: none"> ● Ecological Risk Assessment (ERA) for birds & small animal protection (Completed in 2015)
<p>4b. IMP. 13, 17, & 24 – Mass Volume of waste (Below top 2 feet)</p>	<ul style="list-style-type: none"> ● Approach uncertain. CRISIS pushing for robust remediation and removal.

<p>5a. Permanent GWTP (For site-wide Groundwater)</p>	<ul style="list-style-type: none"> ● Lab Scale Testing Complete ● Design Well Along 2017/2018 Implementation
<p>5b. With Reinjection of GW into Bedrock Layer</p>	<ul style="list-style-type: none"> ● Testing of extraction & Reinjection complete -2015/16 ● Design underway

Footnotes:

1. IMP. 1 & 2 is the worst contaminated on the site with toxic tars containing benzene/VOC's & metals. Close to Raritan River (500 feet) seeping benzene/VOC's; that are blocked & collected.
2. In question throughout: Ability to scale-up processes tested at Lab & Pilot levels.
3. Cleaning of site-wide soils is mainly an issue of controlling air emissions.
4. A full site-wide isolation wall is part of the plan (timing uncertain).

IMP 1 & 2 Milestones

2018-2020	<ul style="list-style-type: none"> • Scale-up Remediation System & Facility • Design, Construct, Build & Operate
2017/18	<ul style="list-style-type: none"> • Public Meeting & Comments • EPA's Record of Decision (ROD)
2017	EPA National Remedy Review Board's Review
Q4/16	EPA Approval & Draft FFS Report (Focused Feasibility Study)
2015	<ul style="list-style-type: none"> • Engineering Studies Following Pilot Test of 2014 • Further Lab Study of Remediation Plan
2014	Pilot Test at IMP. 2 – Completed June, 2014 <ul style="list-style-type: none"> • VOC Thermal Drive-Off (85 degrees F.) & Capture • Solidification ("Cement") Stabilization Tests (S/S)
2013	VOC Drive-Off & S/S Plan and LAB Studies.
2010-2012	IMP. 1 & 2 - Put into separate FFS Study Plan [Not included in 2012 ROD Site Wide Decision]
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1998/1999	Thermal Decomposition & Bioremediation Plan Pilot Test Failed on Air Emissions, Plan was terminated