



CONDUCTORLAB

2021 UPDATE

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Honeywell

CURRENT REGULATORY STATUS

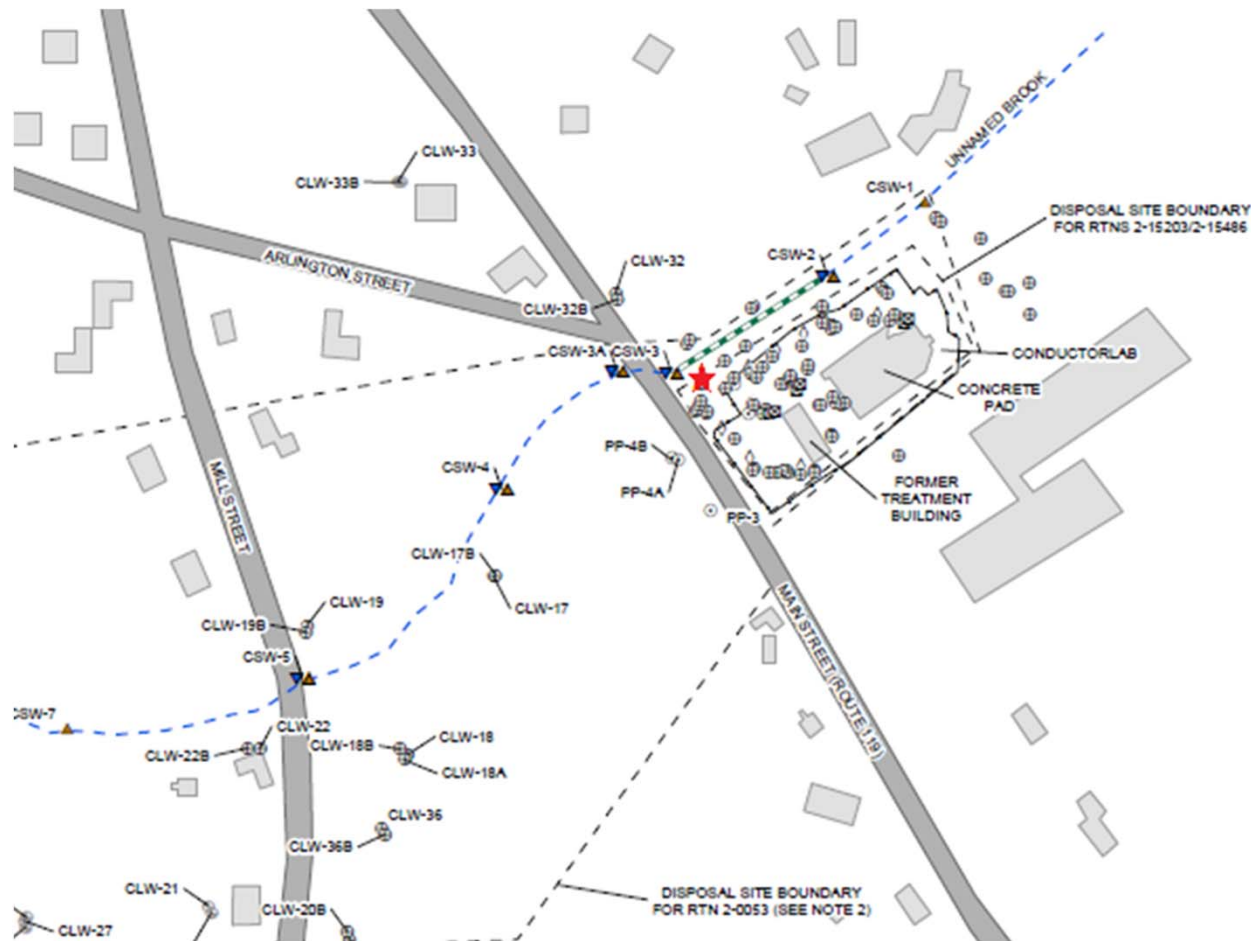
- Site managed under Massachusetts Contingency Plan (MCP) in coordination with Massachusetts Department of Environmental Protection (MassDEP)
- MassDEP approved a Phase IV Remedy Implementation Plan (Phase IV RIP) for addressing groundwater discharging to unnamed brook and surface water in brook, which was implemented in June 2020
- Groundwater and surface water monitoring data continue to be reported (last report: April 2021)
- Except for surface water in the unnamed brook, the Site has achieved a condition of No Significant Risk

2021 UPDATE

- Zero Valent Iron (ZVI) injection Conducted in June 2020
- Ecological Risk Characterization Preliminary Findings
- Human Health Risk Characterization Preliminary Findings
- Remaining Tasks to Achieve Permanent Solution

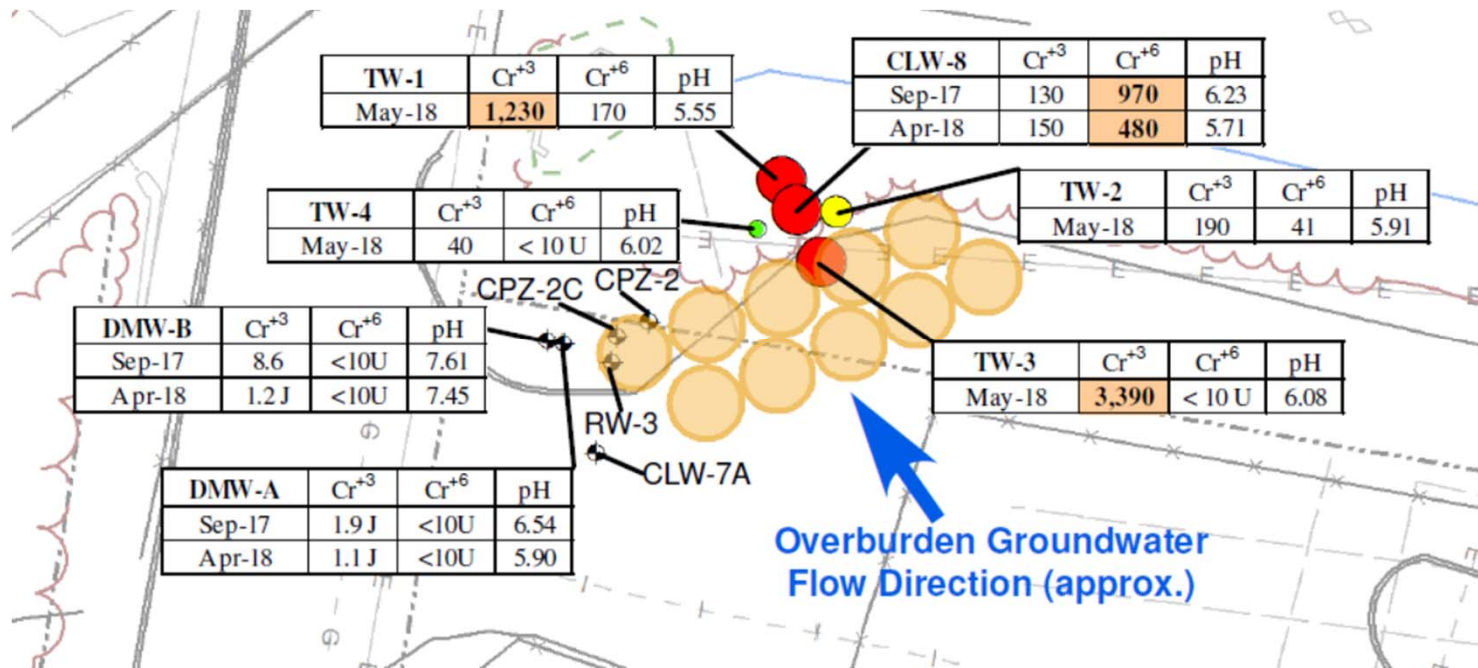
FOCUS OF 2020 REMEDIATION

- Address potential remaining risk in the area indicated by red star
- Attempt to reduce elevated concentrations of hexavalent chromium (Cr+6) in groundwater discharging to unnamed brook and surface water in brook at sampling locations CSW-3 and CSW-3A



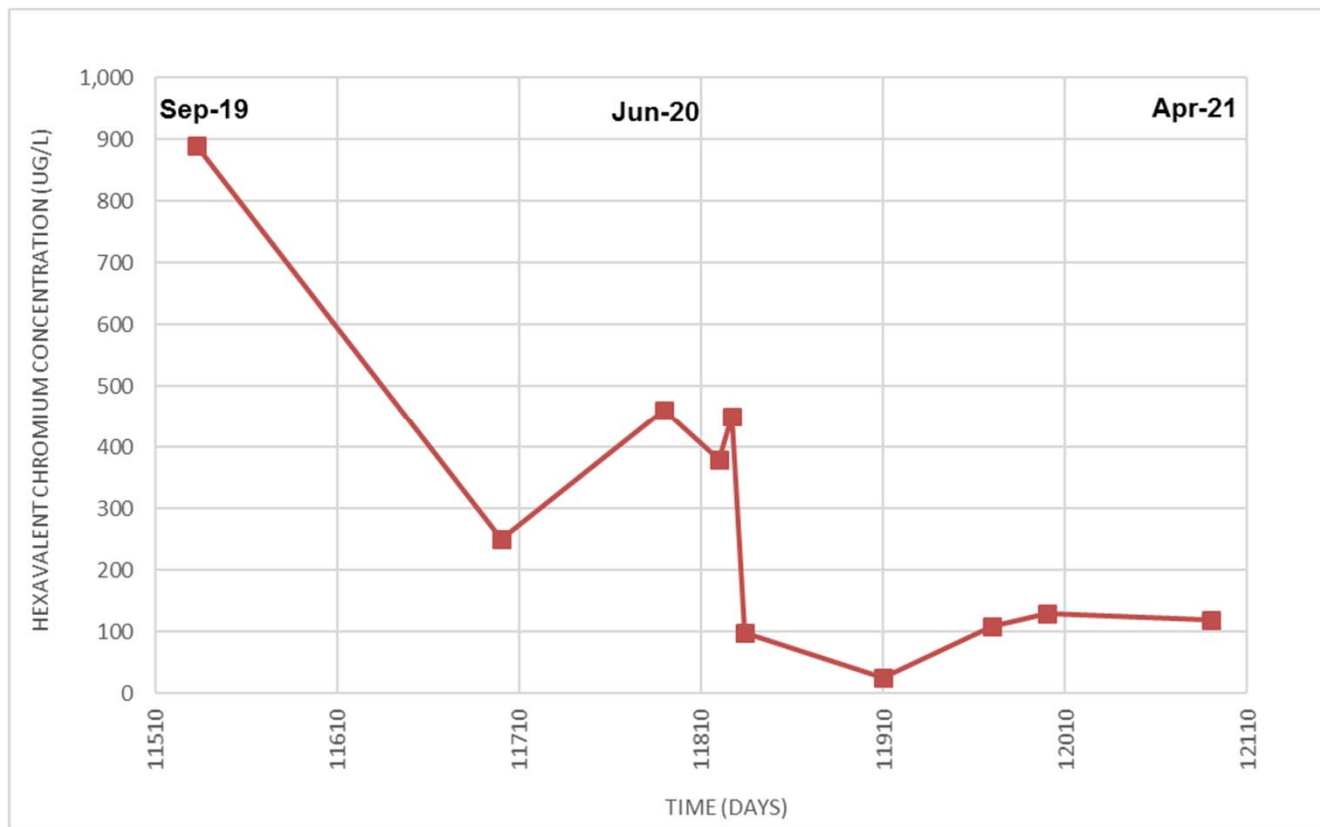
JUNE 2020 ZERO VALENT IRON (ZVI) INJECTION

- Elevated chromium concentrations present in groundwater (red circles)
- Approximately 2000 pounds of ZVI in total were injected (tan circles)
- Post-remediation monitoring of groundwater and surface water conducted in accordance with Phase IV RIP



ZERO VALENT IRON (ZVI) INJECTION (CONT'D)

- Post-injection monitoring indicated that ZVI achieved desired effect on groundwater quality
- Cr+6 concentrations in monitoring well CLW-8 have declined below GW-3 standard (300 ug/L) which applies to groundwater discharging to surface water



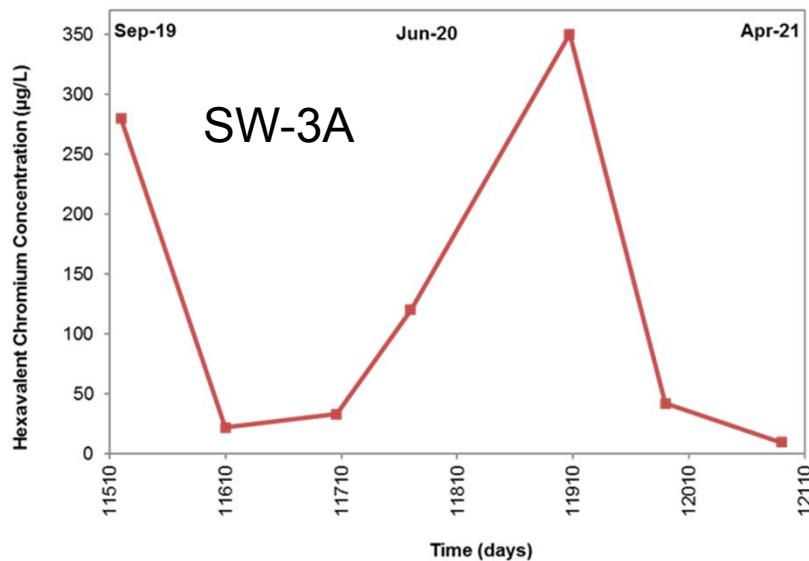
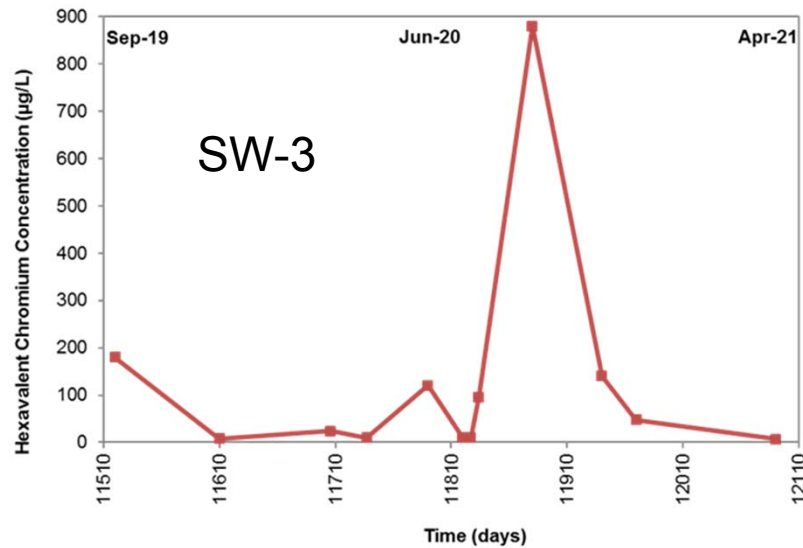
ECOLOGICAL RISK CHARACTERIZATION – SEDIMENTS

- Sediment concentrations are below MassDEP Stage I Freshwater Sediment Screening Criteria
- Stage II Environmental Risk Characterization for sediments and sediment toxicity testing not necessary
- No Significant Risk to the environment is concluded for sediments

ECOLOGICAL RISK CHARACTERIZATION – SURFACE WATER

- Cr+6 detected in surface water is above Ambient Water Quality Criterion (AWQC) of 11 ug/L
- Toxicity tests in surface water used to derive remediation goals
 - *Ceriodaphnia dubia* toxicity tests conducted in July 2018 (low flow)
 - Toxicity tests were conducted again in April 2019 (wet conditions)
 - Weight of evidence from toxicity tests indicates concentrations between 60 ug/L and 90 ug/L Cr+6 are protective of the aquatic community

ECOLOGICAL RISK CHARACTERIZATION – SURFACE WATER (CONT'D)



- SW-3 and SW-3A, downstream of ZVI injection area: Cr+6 concentration has averaged 103 ug/L from September 2019 to April 2021, approaching site-specific benchmark of 90 ug/L
- Average concentration is elevated by anomalously high concentrations measured in September 2020; however, since September 2020, CR+6 concentrations in surface water have declined

ECOLOGICAL RISK CHARACTERIZATION – SURFACE WATER (CONT'D)

- Cr+6 concentrations are elevated in dry periods when surface water flow in the unnamed brook provides less dilution of concentrations entering the brook in groundwater
- Based on concentration data, a condition of No Significant Risk has nearly been achieved for surface water because average concentrations are only slightly above 90 ug/L.
- Other lines of evidence support that No Significant Risk has been achieved.

ECOLOGICAL RISK CHARACTERIZATION – FIELD OBSERVATIONS

- Observations of aquatic life
 - Crayfish
 - Tadpoles
 - Stonefly and caddisfly larvae – all indicators of low pollution
- Unnamed stream and open basin have not been significantly affected by Site releases



HUMAN HEALTH RISK CHARACTERIZATION

- Preliminary work to conduct a Method 3 risk assessment for human health has been completed
- Media evaluated:
 - Soil, groundwater, sediment, surface water
- Receptors identified as being present on/off-property now or in the future:
 - On-property: Industrial/commercial workers, construction workers, trespassers
 - Off-property: construction workers and nearby residents
- Complete routes of exposure:
 - Soil direct contact exposure for on-property receptors, and exposure to dust for on-property industrial/commercial workers and construction workers
 - Groundwater direct contact and inhalation of volatile chemicals from excavation air for construction workers (on- and off-property)
 - Sediment and surface water direct contact for on-property trespasser and off-property resident

HUMAN HEALTH RISK ASSUMPTIONS

- No residential, active or passive recreational, school, daycare, hospital or nursing home use evaluated on-property (will be restricted by Activity and Use Limitation [AUL])
- No consumption of produce grown in soil on-property (Best Management Practices will be used for such activity or addressed in AUL)
- No soil exposure for off-property receptors
- No drinking water exposure scenario on-property or off-property (Grant of Environmental Restriction already in place)
- No vapor intrusion evaluation off-property (no complete pathways)
- No vapor intrusion evaluation on-property (no occupied buildings)
 - will identify groundwater concentrations above GW-2 standards (for future consideration in Permanent Solution Statement)

HUMAN HEALTH RISK CHARACTERIZATION - SOIL

- Detected concentrations of organic compounds and petroleum are below Method 1 Soil Standards – Industrial/Commercial and Construction
- Several metals have concentrations above Method 1 Soil Standards – Industrial/Commercial and Construction
- Arsenic is excluded from risk assessment due to background levels
- Cr+6 exposure point concentration will not exceed 63 mg/kg (cancer risk limit)
 - Surface soil average concentration is 6.6 mg/kg
 - Subsurface soil average concentration is 31 mg/kg
- Lead has a screening level of 800 mg/kg (lead model), S-2 standard = 600 mg/kg
 - Surface soil average concentration is 55 mg/kg
 - Subsurface soil average concentration is 35 mg/kg
- Soil Hot Spot Evaluation is being conducted per MCP

HUMAN HEALTH RISK CHARACTERIZATION – SUMMARY

- For human health risk, cancer risks and noncancer hazards will be calculated for each receptor and complete exposure pathway
- Summary human health risks will be compared to the risk limits of 1×10^{-5} for cancer risk and a Hazard Index of 1 for noncancer hazard
- Risk to safety (e.g., presence of physical hazards) is also evaluated
- For risk to public welfare, will compare soil and groundwater concentrations to Upper Concentration Limits
- It is expected that the above evaluations will demonstrate a condition of No Significant Risk to human health, safety and public welfare.

REMAINING TASKS FOR PERMANENT SOLUTION

- Data from groundwater and surface water samples collected (week of June 14, 2021) will determine if additional monitoring is required
- Concentration data, as well as other lines of evidence, will be used to demonstrate that a condition No Significant Risk to the environment has been achieved
- Findings from the ecological and human health risk characterization will be documented in the Permanent Solution Statement (PSS)
- An Activity and Use Limitation (AUL) will be implemented on the property, as a component of the PSS
- Submittal of the PSS is expected in late 2021 or early 2022

THANK
YOU

Honeywell