



Community Environmental Forum



Zero-Valent Iron Groundwater Cleanup Study at Hunters Point Shipyard

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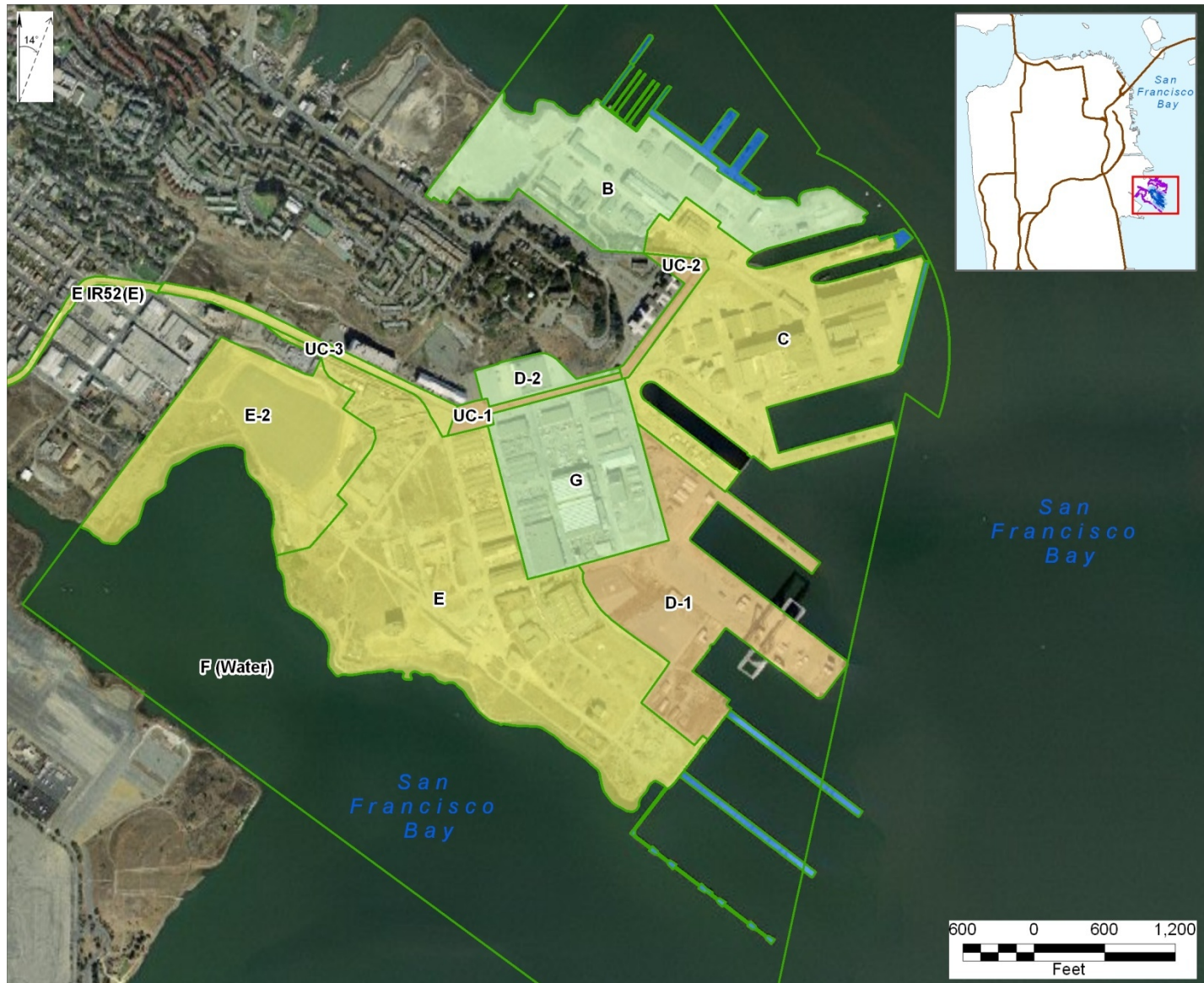
Groundwater Cleanup Study Overview



- **Phase I - Before Cleanup**
 - **Baseline Sampling**
 - **August 2008**
- **Phase II – Cleanup**
 - **Zero-Valent Iron (ZVI) Injections**
 - **November-December 2008**
- **Phase III – After Cleanup**
 - **Monitor the groundwater for effectiveness of the cleanup technology (ZVI)**
 - **Jan- Feb-March 2009**
- **Conclusion**



Facility Location



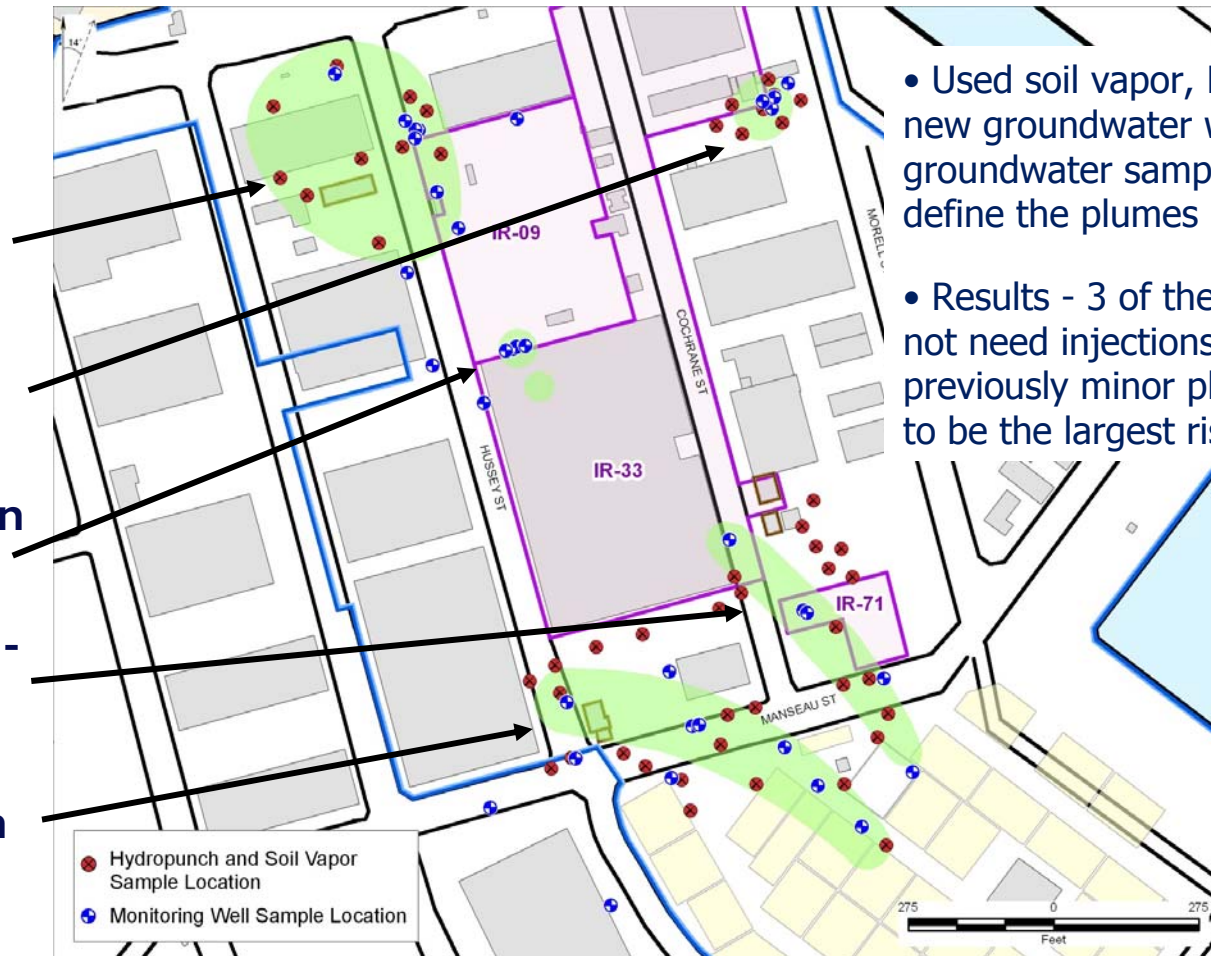


Phase I – Before Cleanup



Plumes:

- **Site 09 Northern** - TCE and Hexavalent Chromium (CrVI)
- **Site 33** - CrVI and Benzene
- **Site 09 Southern** - CrVI and Nickel
- **Site 71 Eastern** - PCE, TCE, and Chloroform
- **Site 71 Western** - Chloroform



- Used soil vapor, Hydropunch®, new groundwater wells and groundwater samples to better define the plumes
- Results - 3 of the 5 plumes did not need injections and a previously minor plume turned out to be the largest risk!



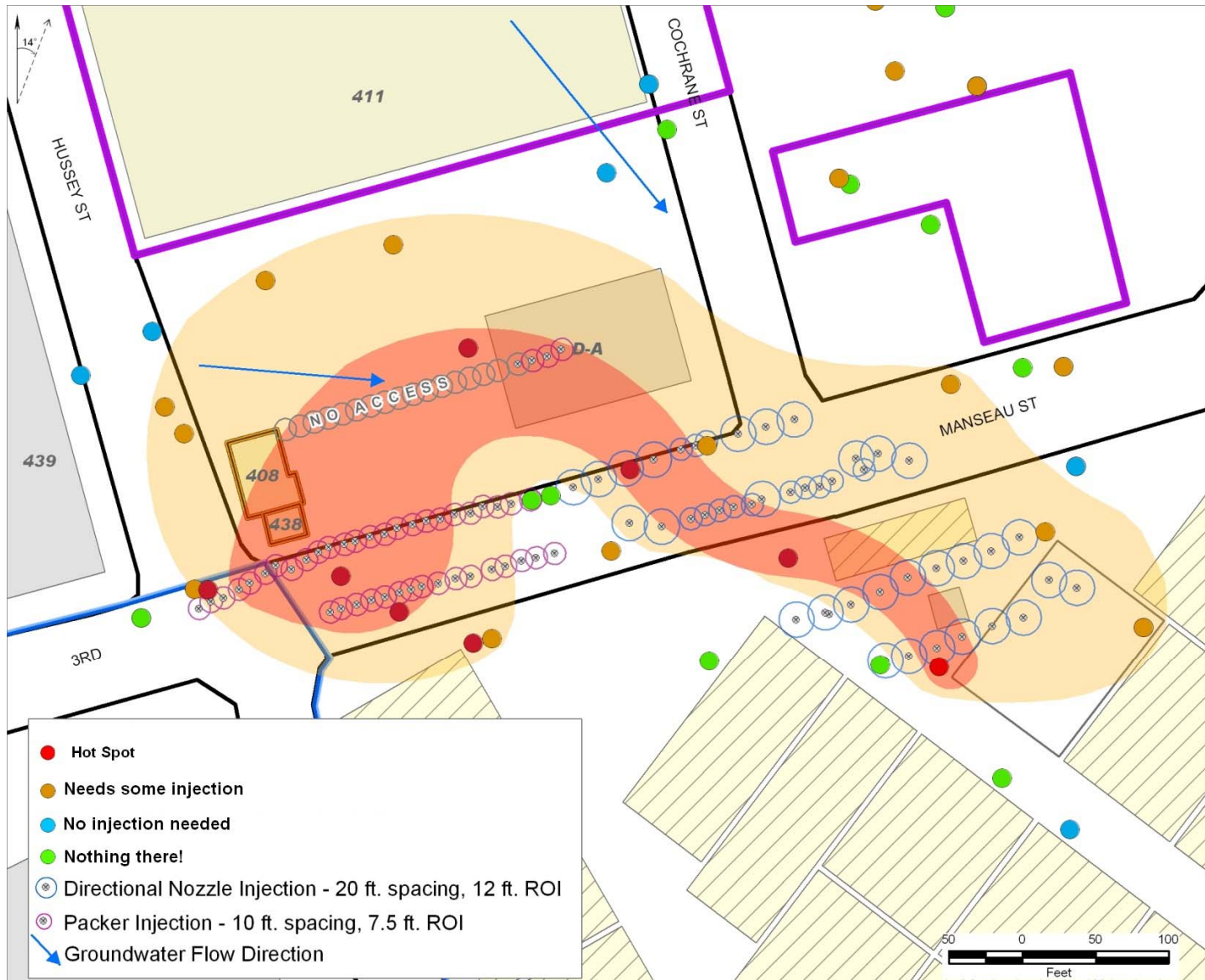
Additional Sampling



- Installed 48 new soil vapor (SV) monitoring wells
- Installed 40 new groundwater locations and collected samples
- Collected 43 groundwater samples from existing wells
- Collected 125 SV samples from existing and new SV wells

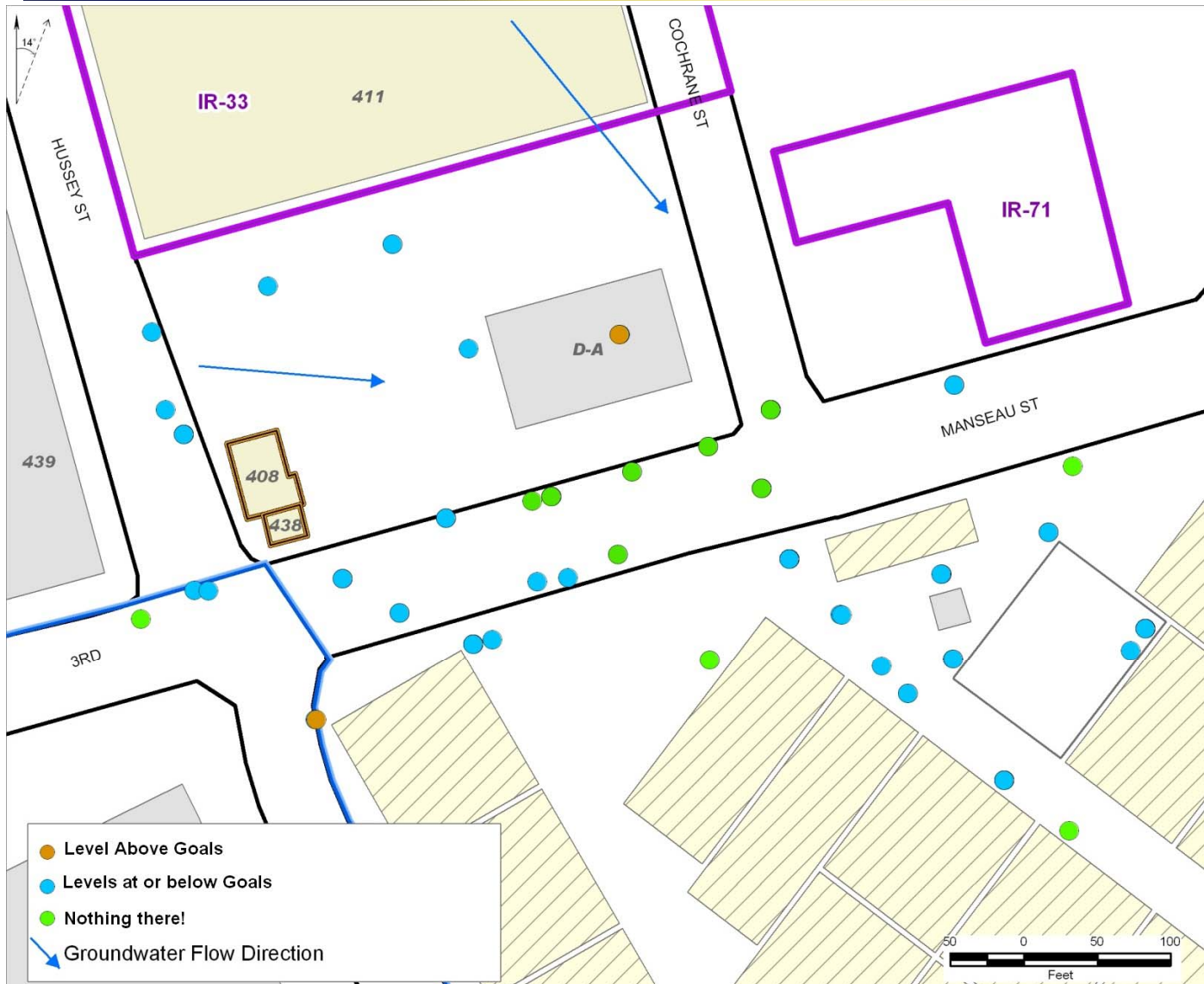


Phase I – Site 71 Before Cleanup Chloroform Plume - September 2008



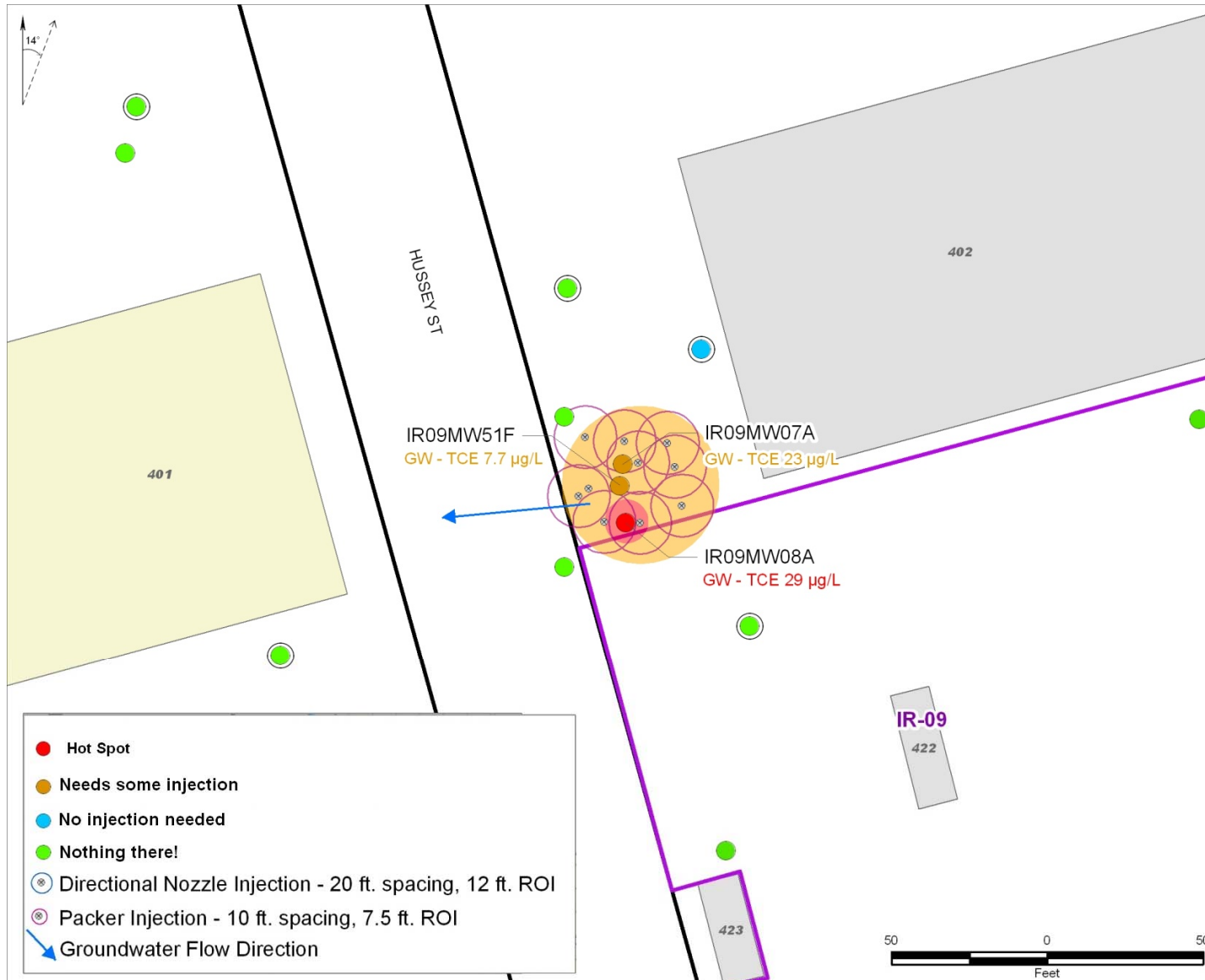


Phase III – Site 71 After Cleanup December 2008 - March 2009



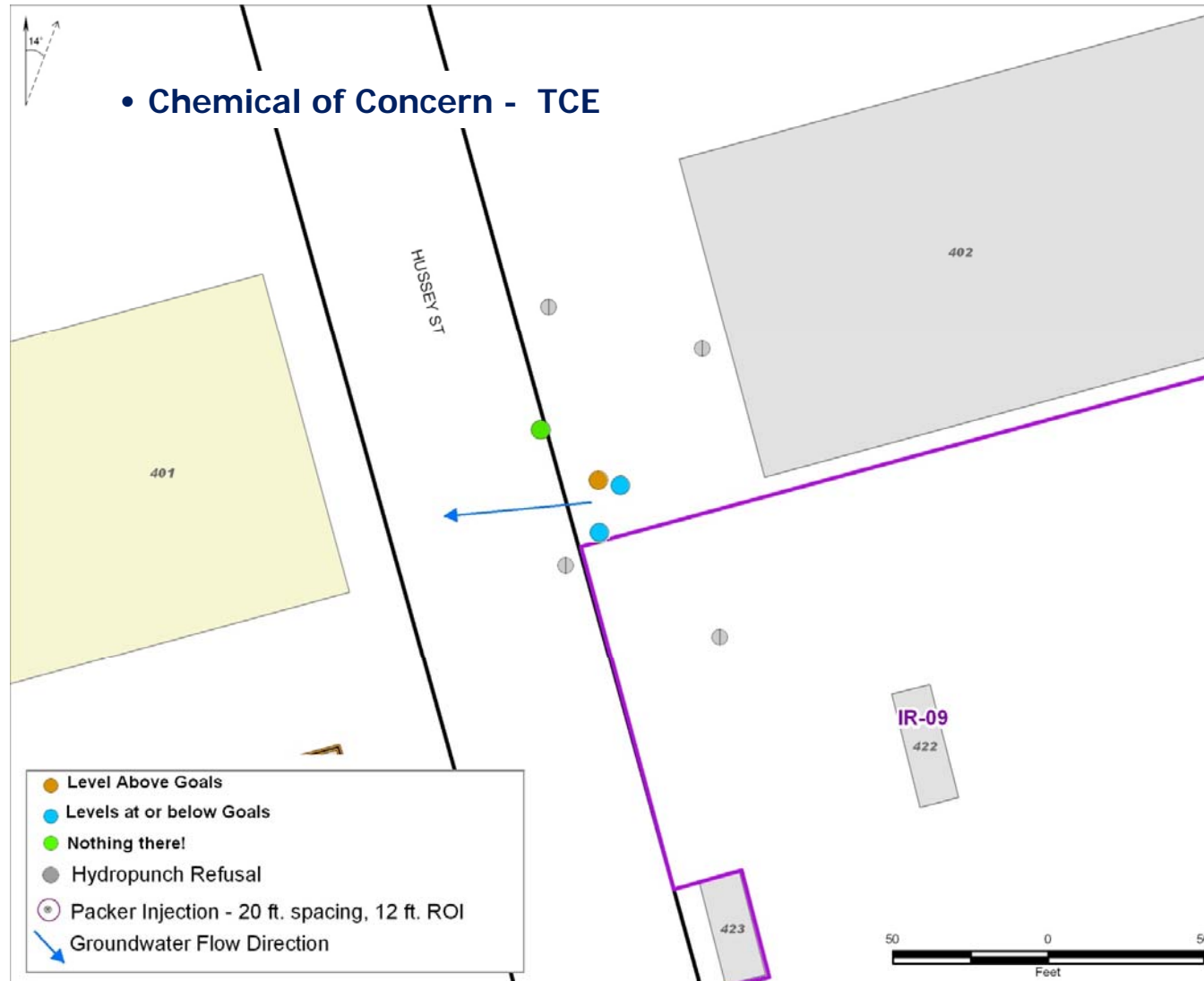


Phase I – Site 09 Before Cleanup TCE Plume - September 2008



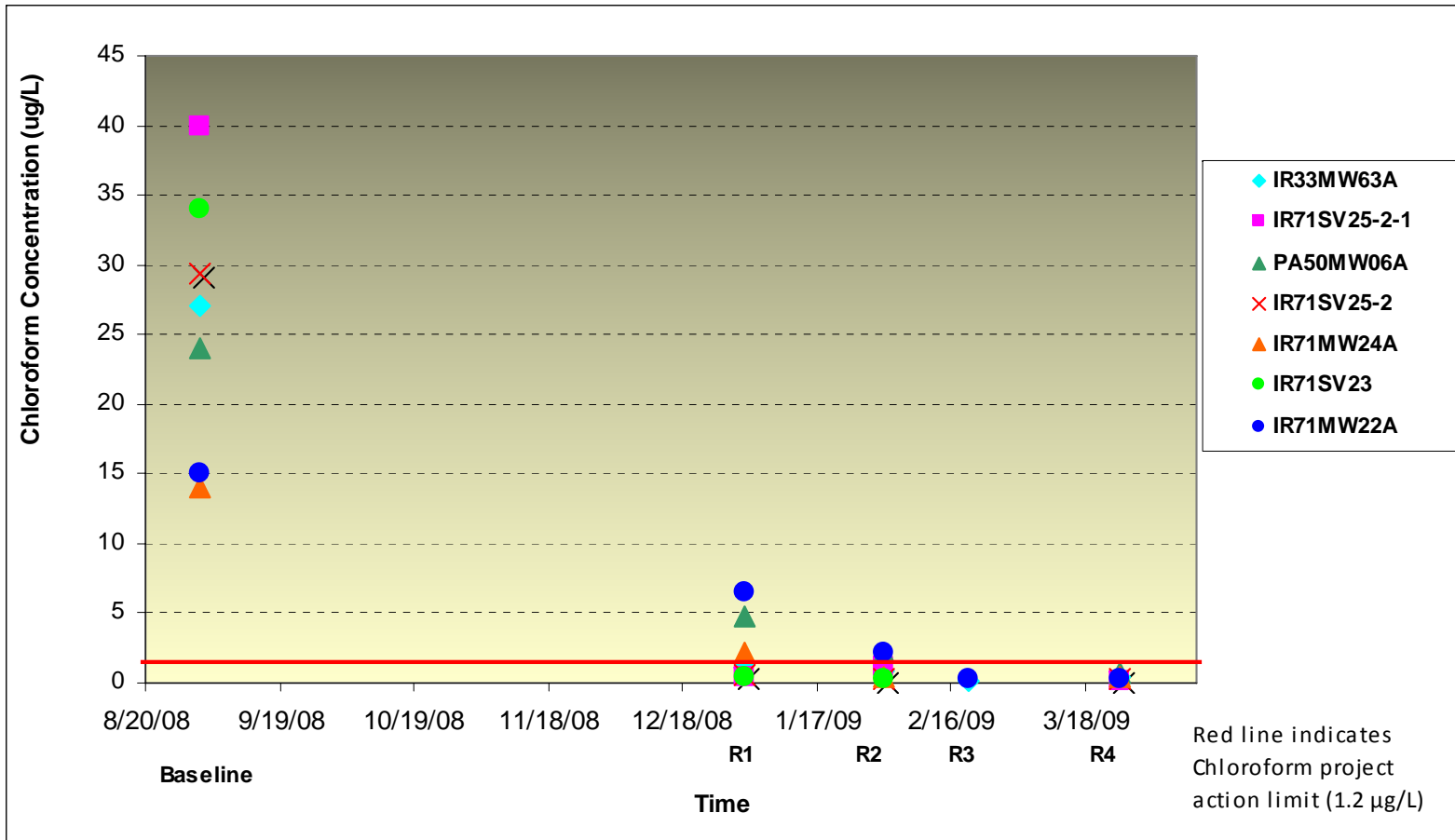


Phase III – Site 09 After Cleanup December 2008 - March 2009



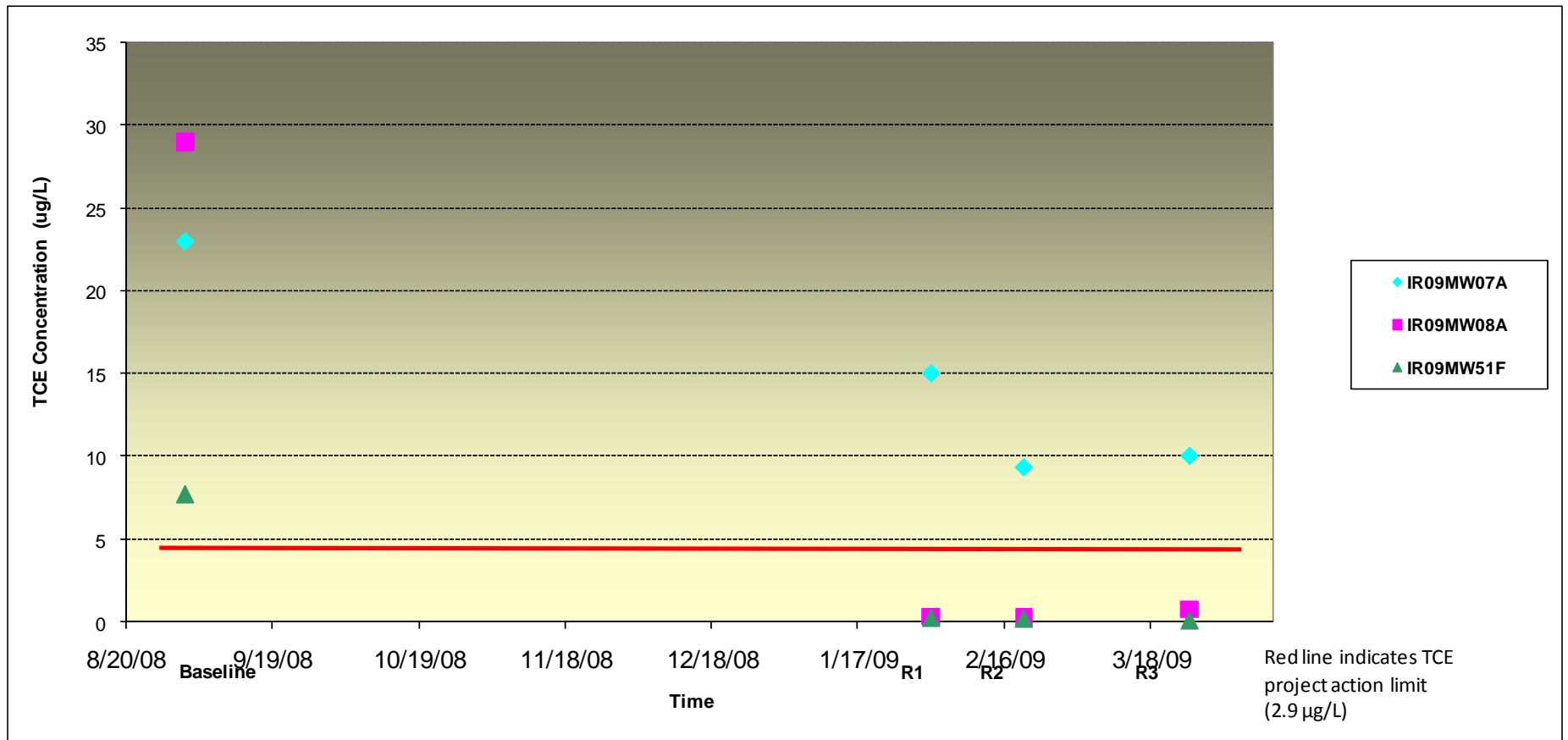


Chloroform Reduction in Groundwater – Site 71





TCE Reduction in Groundwater – Site 09





In Conclusion



- Site 09 – TCE reductions up to 99% in groundwater
- Site 71 – Chloroform reductions up to 100% in groundwater
- Draft Technical Report due May 21, 2009
- Final Technical Report due July 21, 2009