



SPD AREA Phase IV Remedy Implementation Plan Modification

**Former Medfield State Hospital
February 17, 2021**

Project Team Members & Introductions



DIVISION OF
CAPITAL ASSET
MANAGEMENT &
MAINTENANCE

- Susan Ruch: Director of Environmental Services
- James Matz, LSP, PG: Environmental Project Manager
- Jason Kruckas: Senior Operations Manager



- Frank Ricciardi, PE, LSP: LSP of Record
- Daron Kurkjian, PE: Lead Remediation Engineer
- Rebecca Mauser-Hoye, PE: Project Manager

Agenda

Questions &
Answers at
the End of
the
Presentation



Objective



Background & Conceptual Site Model



What is Zero Valent Iron?



Phase IV Modified Approach



Monitoring & Restoration



Health & Safety



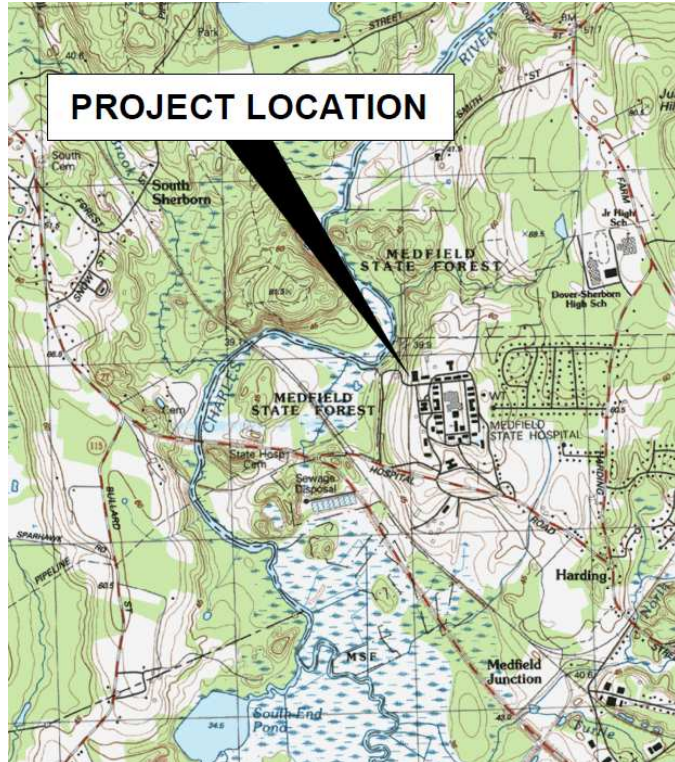
Town Comments & Questions



DIVISION OF
CAPITAL ASSET
MANAGEMENT &
MAINTENANCE

Weston & SampsonSM

Phase IV Objectives



MCP Cleanup & Closure of Laundry Parcel

Achieved Horizontal & Vertical Delineation

Public Safety During Construction

Going Above & Beyond

Exceeding MCP Requirements

Comprehensive & Robust Hybrid Approach

Background



SPD Area

- Refined Source Area
- Non-Detect PCE in Soil < Cleanup Standard of 10 mg/kg
- PCE in Groundwater > Cleanup Standard
- Seasonal Groundwater Sampling Nov 2009 – Feb 2021

Supplemental Delineation

-
- The site map displays the following features and data points:
- Monitoring Wells:**
 - SPD-MW-705 NS
 - SPD-MW-601 4.4
 - SPD-MW-501 420
 - SPD-MW-400d NS
 - SPD-MW-602 ND (<1.0)
 - SPD-MW-603 ND (<1.0)
 - SPD-MW-800 ND (<1.0)
 - CC-MW-105 NS
 - SPD-MW-804 ND (<1.0)
 - SPD-MW-700 ND (<1.0)
 - SPD-MW-500 9.7
 - SPD-MW-600 71
 - SPD-MW-401s 460
 - SPD-MW-401d 55
 - SPD-MW-32 190
 - SPD-MW-702 NS
 - SPD-IW-101 85
 - SPD-IW-104 77
 - SPD-MW-703 NS
 - SPD-IW-3 NS
 - SPD-IW-9 NS
 - SPD-IW-11 NS
 - SPD-IW-17 NS
 - SPD-MW-507 NS
 - SPD-IW-14 NS
 - SPD-IW-15 NS
 - SPD-IW-16 NS
 - SPD-IW-18 NS
 - SPD-IW-19 NS
 - SPD-IW-20 NS
 - SPD-IW-21 NS
 - SPD-IW-22 NS
 - SPD-IW-23 NS
 - SPD-IW-24 NS
 - SPD-IW-25 NS
 - SPD-IW-26 NS
 - SPD-IW-27 NS
 - SPD-IW-28 NS
 - SPD-IW-29 NS
 - SPD-IW-30 NS
 - SPD-IW-31 NS
 - SPD-IW-32 NS
 - SPD-IW-33 NS
 - SPD-IW-34 NS
 - SPD-IW-35 NS
 - SPD-IW-36 NS
 - SPD-IW-37 NS
 - SPD-IW-38 NS
 - SPD-IW-39 NS
 - SPD-IW-40 NS
 - SPD-IW-41 NS
 - SPD-IW-42 NS
 - SPD-IW-43 NS
 - SPD-IW-44 NS
 - SPD-IW-45 NS
 - SPD-IW-46 NS
 - SPD-IW-47 NS
 - SPD-IW-48 NS
 - SPD-IW-49 NS
 - SPD-IW-50 NS
 - SPD-IW-51 NS
 - SPD-IW-52 NS
 - SPD-IW-53 NS
 - SPD-IW-54 NS
 - SPD-IW-55 NS
 - SPD-IW-56 NS
 - SPD-IW-57 NS
 - SPD-IW-58 NS
 - SPD-IW-59 NS
 - SPD-IW-60 NS
 - SPD-IW-61 NS
 - SPD-IW-62 NS
 - SPD-IW-63 NS
 - SPD-IW-64 NS
 - SPD-IW-65 NS
 - SPD-IW-66 NS
 - SPD-IW-67 NS
 - SPD-IW-68 NS
 - SPD-IW-69 NS
 - SPD-IW-70 NS
 - SPD-IW-71 NS
 - SPD-IW-72 NS
 - SPD-IW-73 NS
 - SPD-IW-74 NS
 - SPD-IW-75 NS
 - SPD-IW-76 NS
 - SPD-IW-77 NS
 - SPD-IW-78 NS
 - SPD-IW-79 NS
 - SPD-IW-80 NS
 - SPD-IW-81 NS
 - SPD-IW-82 NS
 - SPD-IW-83 NS
 - SPD-IW-84 NS
 - SPD-IW-85 NS
 - SPD-IW-86 NS
 - SPD-IW-87 NS
 - SPD-IW-88 NS
 - SPD-IW-89 NS
 - SPD-IW-90 NS
 - SPD-IW-91 NS
 - SPD-IW-92 NS
 - SPD-IW-93 NS
 - SPD-IW-94 NS
 - SPD-IW-95 NS
 - SPD-IW-96 NS
 - SPD-IW-97 NS
 - SPD-IW-98 NS
 - SPD-IW-99 NS
 - SPD-IW-100 NS
 - SPD-IW-101 NS
 - SPD-IW-102 NS
 - SPD-IW-103 NS
 - SPD-IW-104 NS
 - SPD-IW-105 NS
 - SPD-IW-106 NS
 - SPD-IW-107 NS
 - SPD-IW-108 NS
 - SPD-IW-109 NS
 - SPD-IW-110 NS
 - SPD-IW-111 NS
 - SPD-IW-112 NS
 - SPD-IW-113 NS
 - SPD-IW-114 NS
 - SPD-IW-115 NS
 - SPD-IW-116 NS
 - SPD-IW-117 NS
 - SPD-IW-118 NS
 - SPD-IW-119 NS
 - SPD-IW-120 NS
 - SPD-IW-121 NS
 - SPD-IW-122 NS
 - SPD-IW-123 NS
 - SPD-IW-124 NS
 - SPD-IW-125 NS
 - SPD-IW-126 NS
 - SPD-IW-127 NS
 - SPD-IW-128 NS
 - SPD-IW-129 NS
 - SPD-IW-130 NS
 - SPD-IW-131 NS
 - SPD-IW-132 NS
 - SPD-IW-133 NS
 - SPD-IW-134 NS
 - SPD-IW-135 NS
 - SPD-IW-136 NS
 - SPD-IW-137 NS
 - SPD-IW-138 NS
 - SPD-IW-139 NS
 - SPD-IW-140 NS
 - SPD-IW-141 NS
 - SPD-IW-142 NS
 - SPD-IW-143 NS
 - SPD-IW-144 NS
 - SPD-IW-145 NS
 - SPD-IW-146 NS
 - SPD-IW-147 NS
 - SPD-IW-148 NS
 - SPD-IW-149 NS
 - SPD-IW-150 NS
 - SPD-IW-151 NS
 - SPD-IW-152 NS
 - SPD-IW-153 NS
 - SPD-IW-154 NS
 - SPD-IW-155 NS
 - SPD-IW-156 NS
 - SPD-IW-157 NS
 - SPD-IW-158 NS
 - SPD-IW-159 NS
 - SPD-IW-160 NS
 - SPD-IW-161 NS
 - SPD-IW-162 NS
 - SPD-IW-163 NS
 - SPD-IW-164 NS
 - SPD-IW-165 NS
 - SPD-IW-166 NS
 - SPD-IW-167 NS
 - SPD-IW-168 NS
 - SPD-IW-169 NS
 - SPD-IW-170 NS
 - SPD-IW-171 NS
 - SPD-IW-172 NS
 - SPD-IW-173 NS
 - SPD-IW-174 NS
 - SPD-IW-175 NS
 - SPD-IW-176 NS
 - SPD-IW-177 NS
 - SPD-IW-178 NS
 - SPD-IW-179 NS
 - SPD-IW-180 NS
 - SPD-IW-181 NS
 - SPD-IW-182 NS
 - SPD-IW-183 NS
 - SPD-IW-184 NS
 - SPD-IW-185 NS
 - SPD-IW-186 NS
 - SPD-IW-187 NS
 - SPD-IW-188 NS
 - SPD-IW-189 NS
 - SPD-IW-190 NS
 - SPD-IW-191 NS
 - SPD-IW-192 NS
 - SPD-IW-193 NS
 - SPD-IW-194 NS
 - SPD-IW-195 NS
 - SPD-IW-196 NS
 - SPD-IW-197 NS
 - SPD-IW-198 NS
 - SPD-IW-199 NS
 - SPD-IW-200 NS
 - SPD-IW-201 NS
 - SPD-IW-202 NS
 - SPD-IW-203 NS
 - SPD-IW-204 NS
 - SPD-IW-205 NS
 - SPD-IW-206 NS
 - SPD-IW-207 NS
 - SPD-IW-208 NS
 - SPD-IW-209 NS
 - SPD-IW-210 NS
 - SPD-IW-211 NS
 - SPD-IW-212 NS
 - SPD-IW-213 NS
 - SPD-IW-214 NS
 - SPD-IW-215 NS
 - SPD-IW-216 NS
 - SPD-IW-217 NS
 - SPD-IW-218 NS
 - SPD-IW-219 NS
 - SPD-IW-220 NS
 - SPD-IW-221 NS
 - SPD-IW-222 NS
 - SPD-IW-223 NS
 - SPD-IW-224 NS
 - SPD-IW-225 NS
 - SPD-IW-226 NS
 - SPD-IW-227 NS
 - SPD-IW-228 NS
 - SPD-IW-229 NS
 - SPD-IW-230 NS
 - SPD-IW-231 NS
 - SPD-IW-232 NS
 - SPD-IW-233 NS
 - SPD-IW-234 NS
 - SPD-IW-235 NS
 - SPD-IW-236 NS
 - SPD-IW-237 NS
 - SPD-IW-238 NS
 - SPD-IW-239 NS
 - SPD-IW-240 NS
 - SPD-IW-241 NS
 - SPD-IW-242 NS
 - SPD-IW-243 NS
 - SPD-IW-244 NS
 - SPD-IW-245 NS
 - SPD-IW-246 NS
 - SPD-IW-247 NS
 - SPD-IW-248 NS
 - SPD-IW-249 NS
 - SPD-IW-250 NS
 - SPD-IW-251 NS
 - SPD-IW-252 NS
 - SPD-IW-253 NS
 - SPD-IW-254 NS
 - SPD-IW-255 NS
 - SPD-IW-256 NS
 - SPD-IW-257 NS
 - SPD-IW-258 NS
 - SPD-IW-259 NS
 - SPD-IW-260 NS
 - SPD-IW-261 NS
 - SPD-IW-26

March 2020 Results with Supplemental Delineation Grid

What is ZVI?

Bench Scale Study

Ferox Zero Valent Iron (ZVI) reduced PCE concentrations in bench-scale study

99% Reduction in Total VOC Mass

Conservative Results – assuming treatment of highest PCE detection of 5 mg/kg

Demonstrated PCE reduction at bench-scale with long-lasting (months) reagent

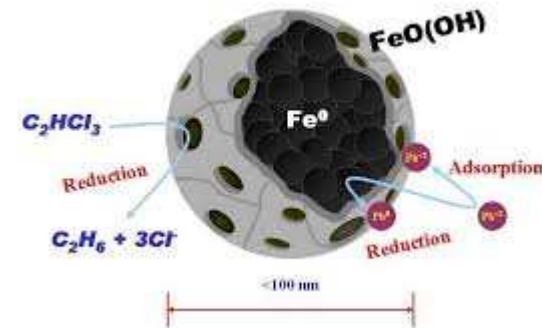
ZVI

ZVI (Fe^0)

Chemical Reducing Agent

Initiates an Abiotic Oxidation-Reduction Reaction

Breaks Down PCE

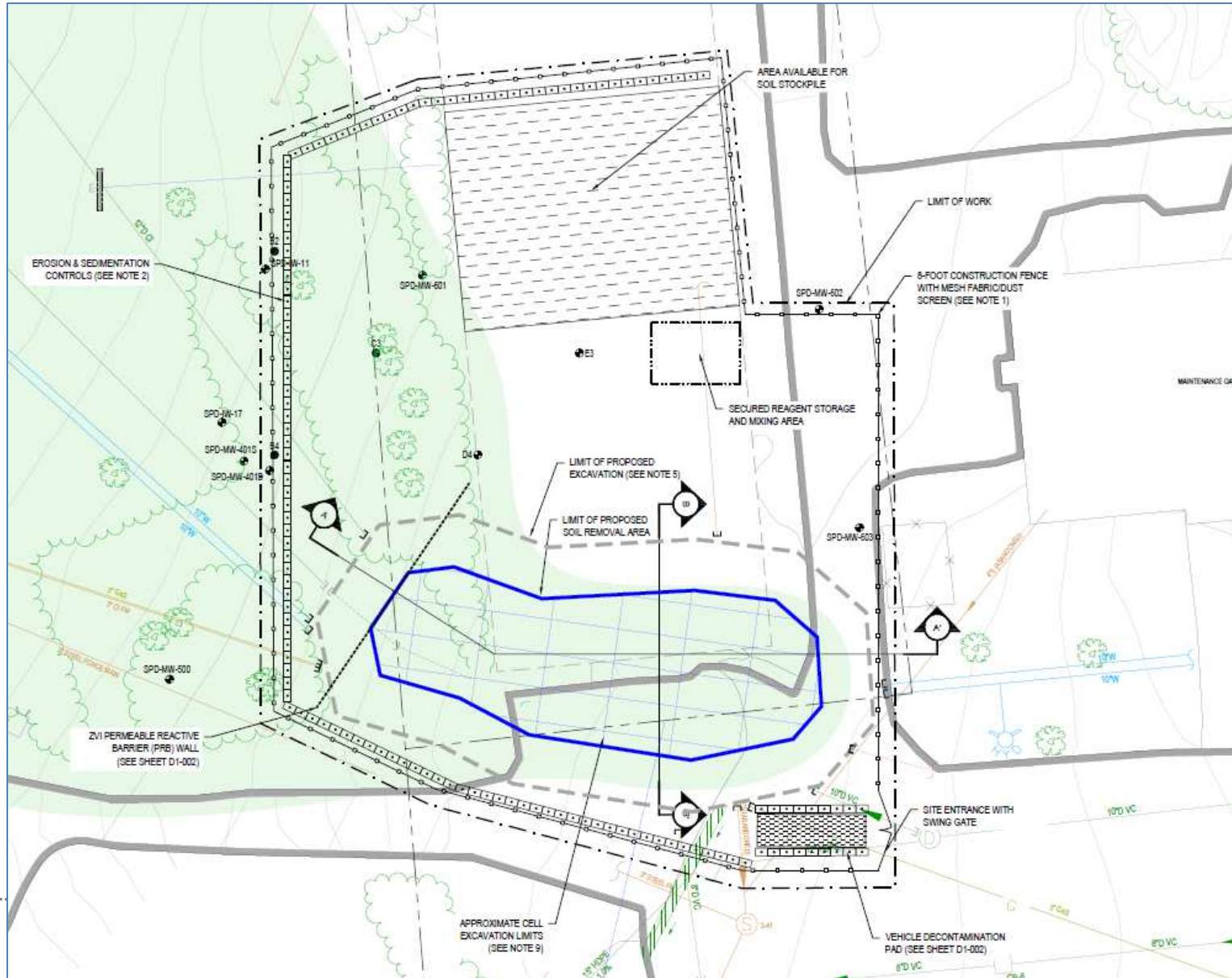


Site Preparation

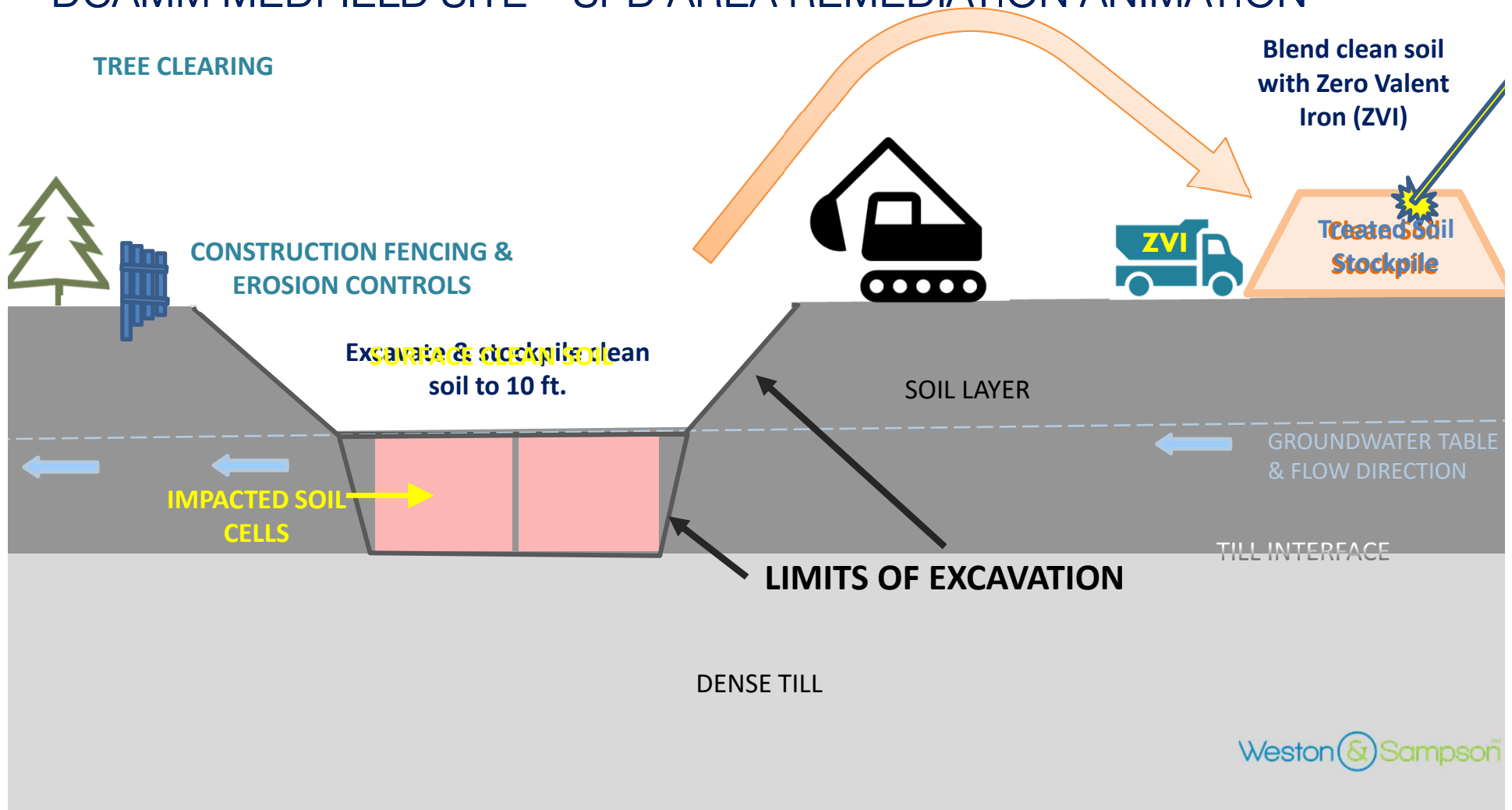
- Erosion Controls
- Work Conducted Outside of Wetland Resource Area/Buffer Zone
- Utility Investigation Prior to Construction (GPR)
- Utility Abandonment



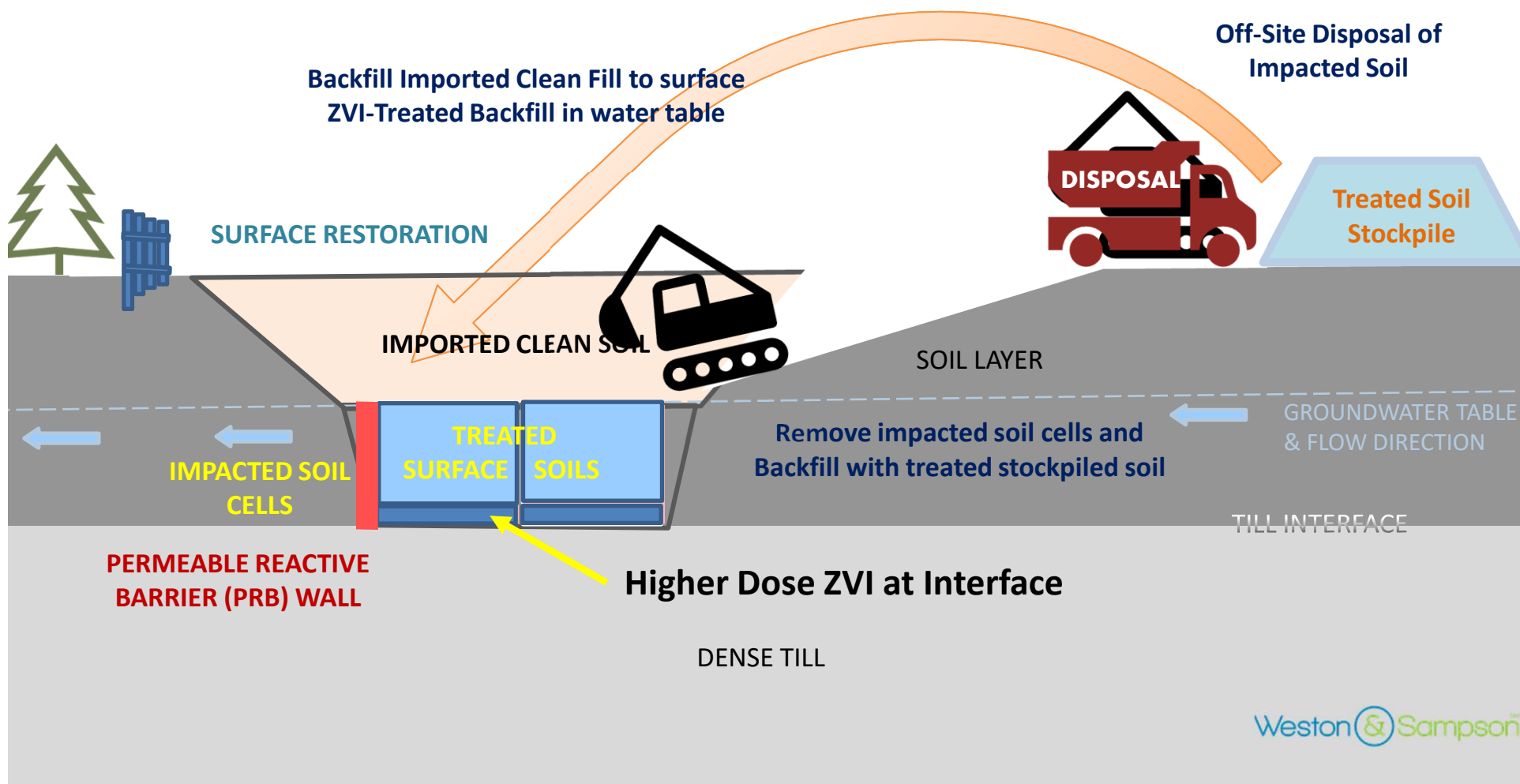
Source Area Treatment



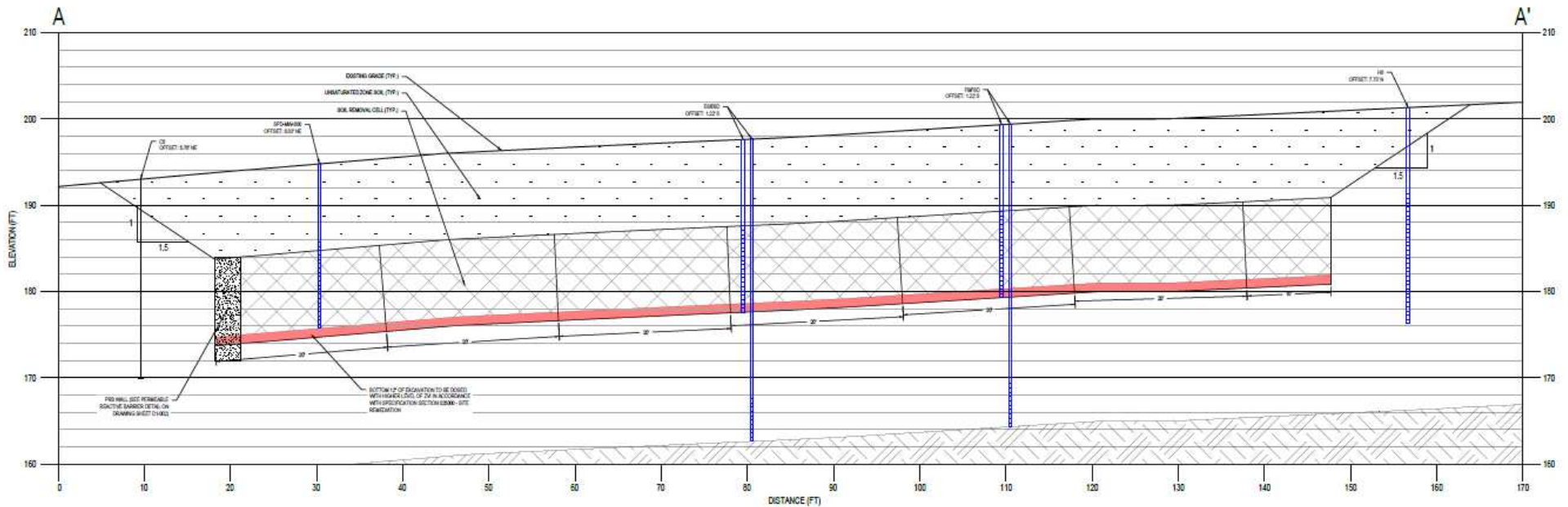
DCAMM MEDFIELD SITE – SPD AREA REMEDIATION ANIMATION



DCAMM MEDFIELD SITE – SPD AREA REMEDIATION ANIMATION











Section View

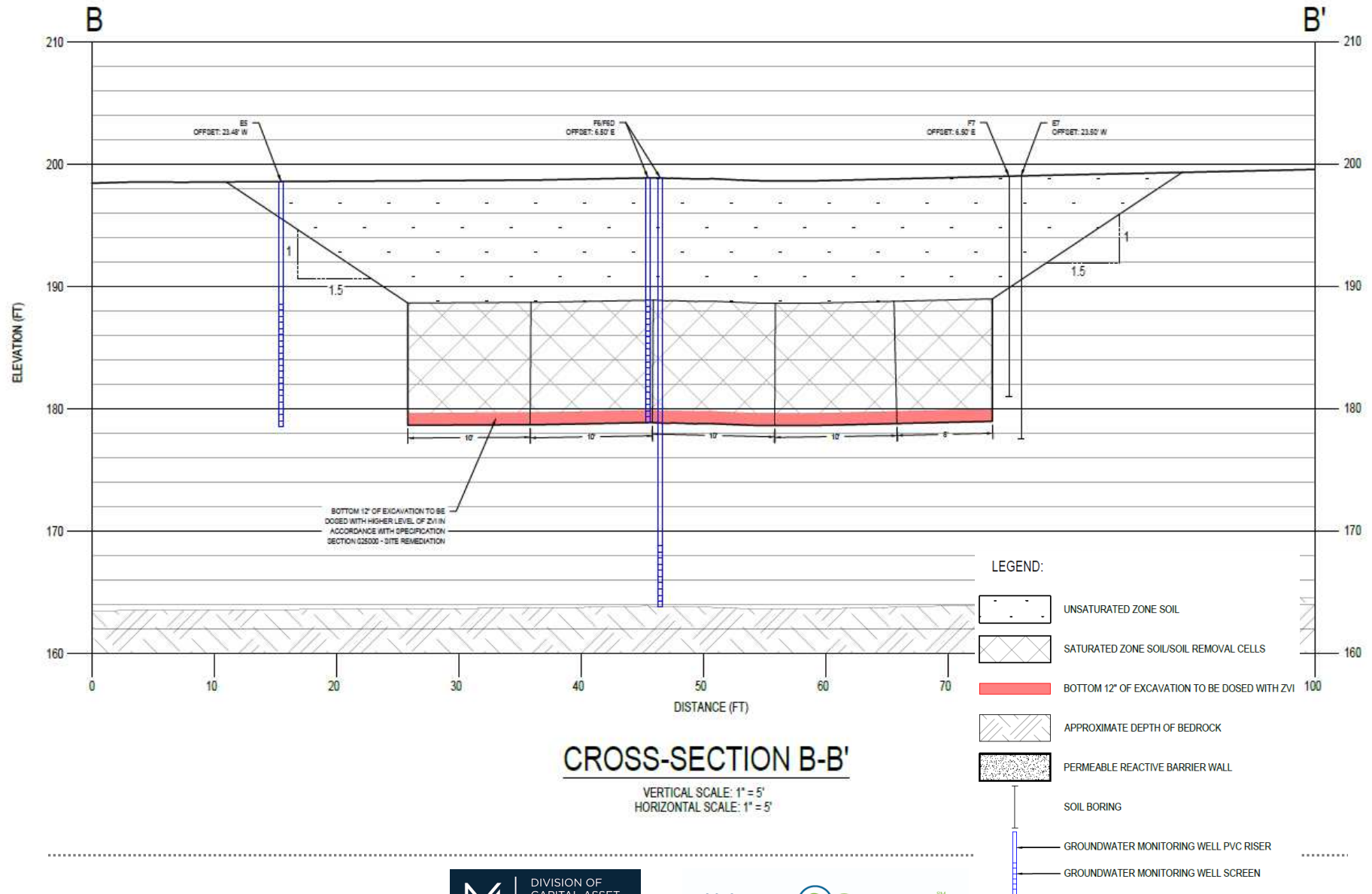


CROSS-SECTION A-A'
 VERTICAL SCALE: 1" = 5'
 HORIZONTAL SCALE: 1" = 5'

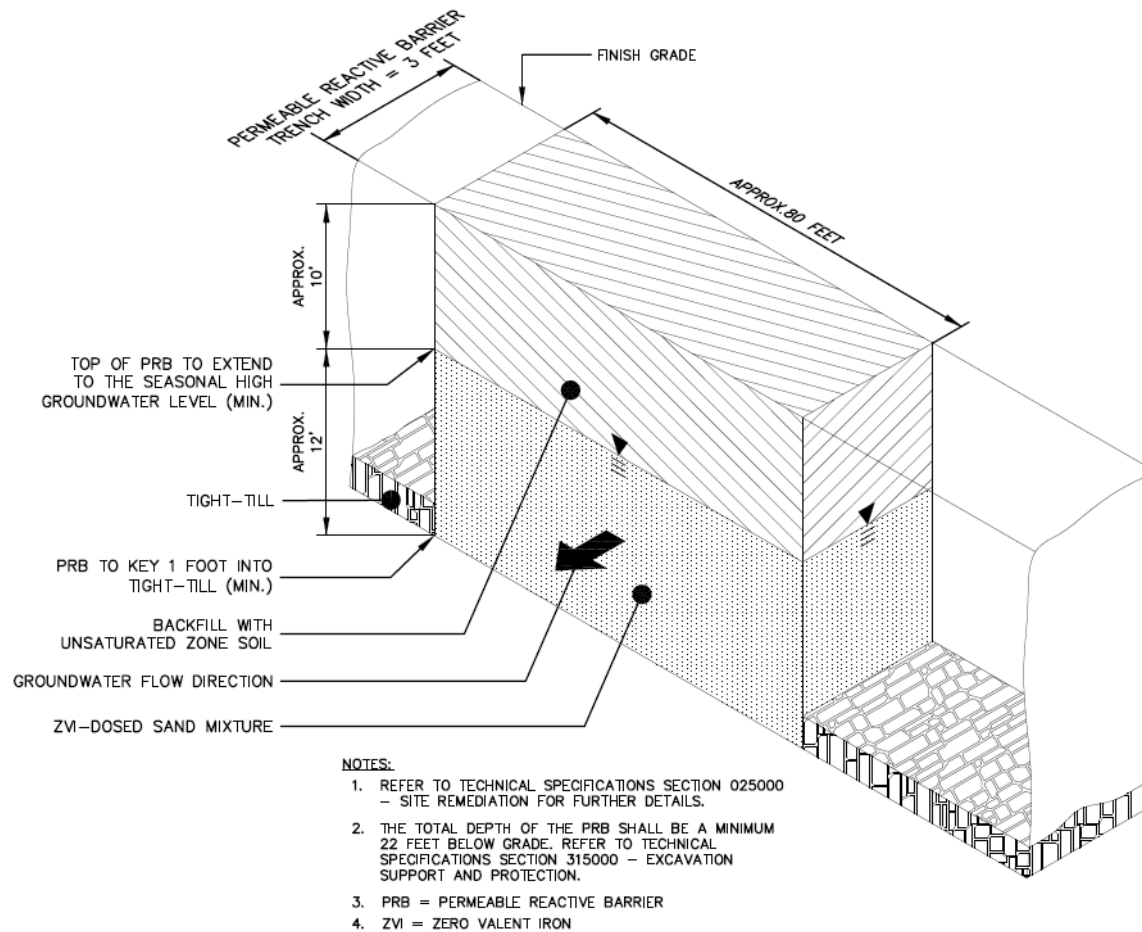
LEGEND:

-  UNSATURATED ZONE SOIL
-  SATURATED ZONE SOIL/SOIL REMOVAL CELLS
-  BOTTOM 12" OF EXCAVATION TO BE DOSED WITH ZVI
-  APPROXIMATE DEPTH OF BEDROCK
-  PERMEABLE REACTIVE BARRIER WALL
-  SOIL BORING
-  GROUNDWATER MONITORING WELL PVC RISER
-  GROUNDWATER MONITORING WELL SCREEN

Section View



Permeable Reactive Barrier



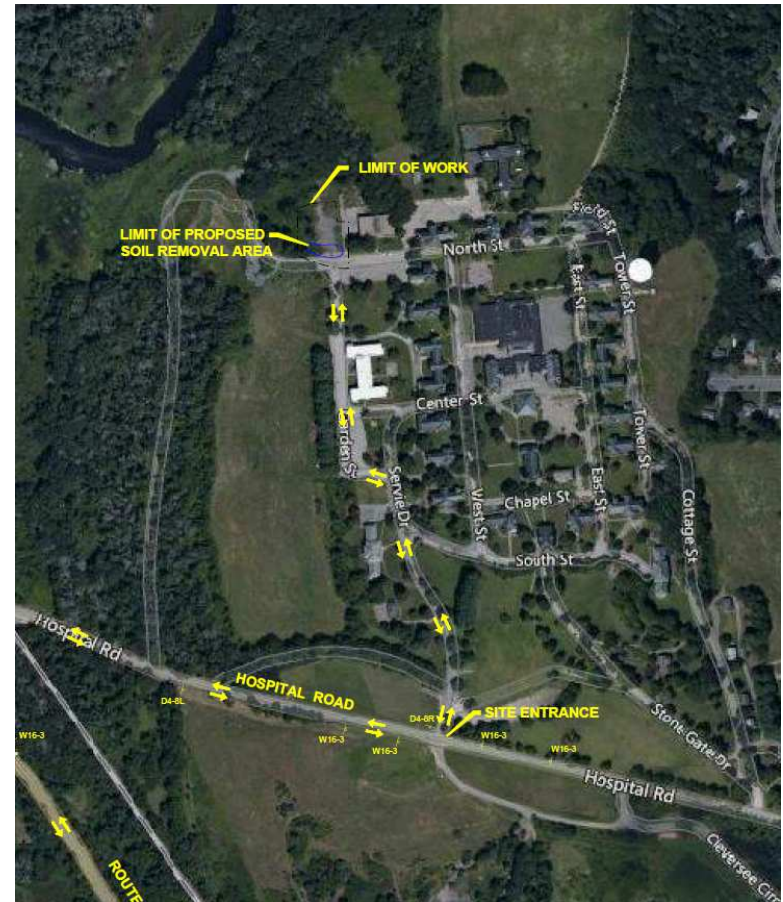
PERMEABLE REACTIVE BARRIER DETAIL
N.T.S.

Health & Safety

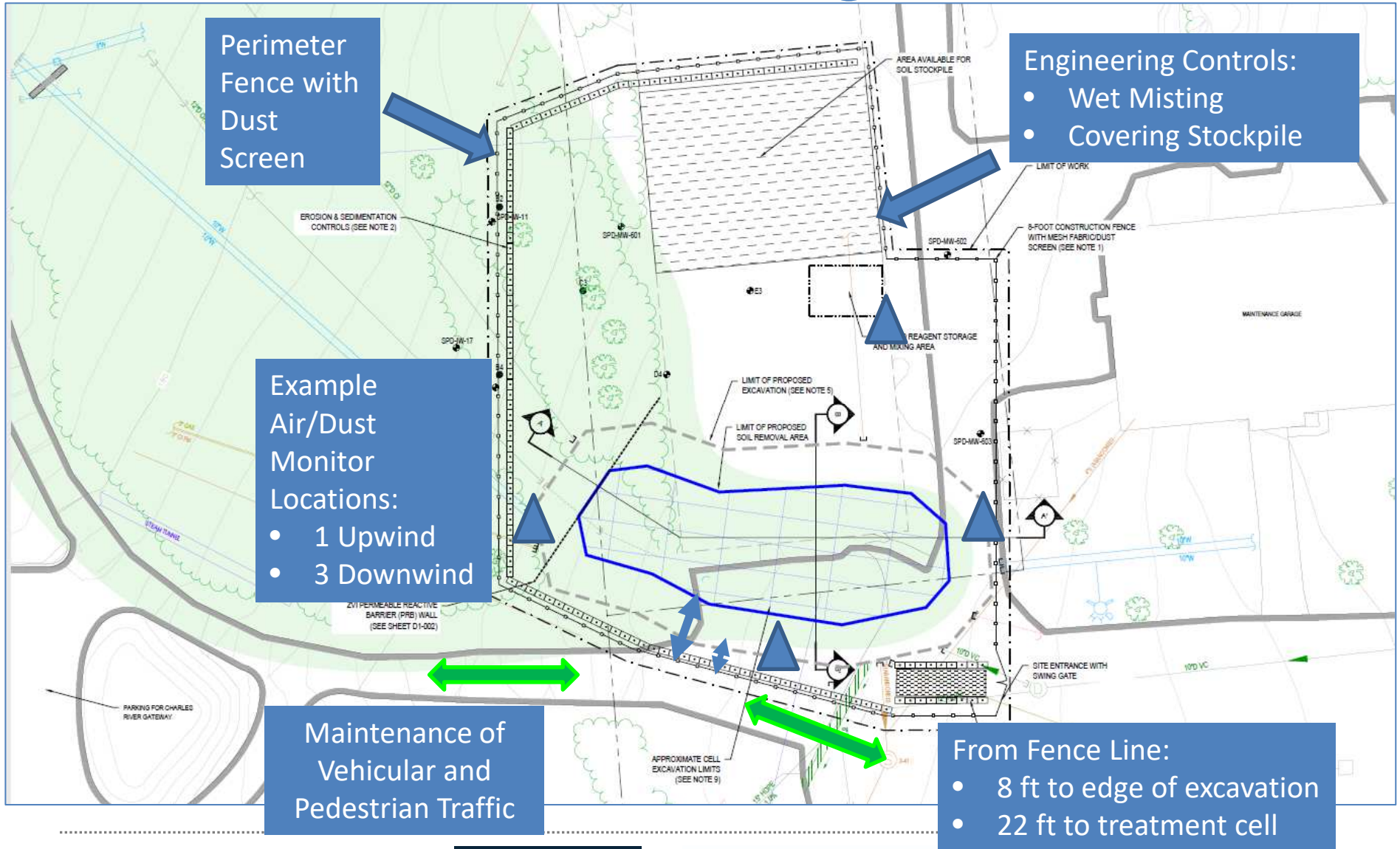
- Site Specific Health & Safety Plan
- Support of Excavation
- Truck Route for Traffic Control



- Signage
- Dust Screens & Controls
- Air/Dust Monitoring



Air/Dust Monitoring & Control

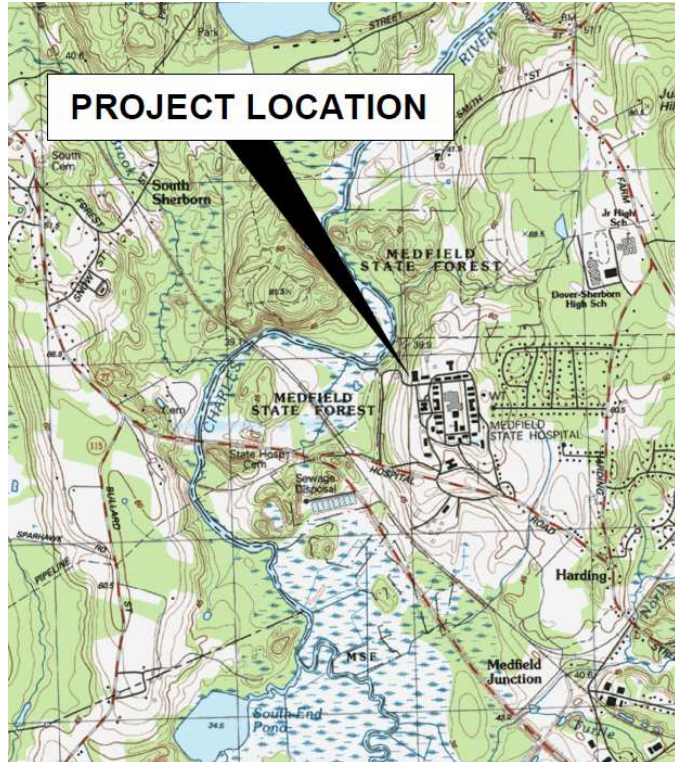


Restoration & Monitoring

- Construction Monitoring
 - pH, Conductivity, ORP, DO of Existing Wells
- Post Remedial Monitoring
 - Existing Quarterly GW Sampling
 - 4 consecutive rounds, but in no event, less than 2 years
 - New Monitoring Well Installation Expanding Network
- Site Restoration
 - Match Existing Conditions



Recap



MCP Cleanup & Closure of Laundry Parcel

Achieved Horizontal & Vertical Delineation

Public Safety During Construction

Going Above & Beyond

Exceeding MCP Requirements

Comprehensive & Robust Hybrid Approach

Town Comments

Shoring & Trench Boxing	<ul style="list-style-type: none">• Included in Design Documents, Contractor to provide Excavation Support Plan developed and stamped by Profession Engineer
TCLP VOC Soil Sampling for Disposal	<ul style="list-style-type: none">• Included in Design Documents: TCLP VOC Testing if 20x EPA Rule is Exceeded
Clean Fill Testing Requirements/Certifications	<ul style="list-style-type: none">• Included in Plans & Specs
10" Water Lines / Northern Access Easement	<ul style="list-style-type: none">• Current cut & cap moved upgradient to east of excavation. Lines still tied into the existing hydrant by the Maintenance Bldg to provide water to A-2.
Intent of Remediation	<ul style="list-style-type: none">• Close Out the Laundry Parcel• Source Area ZVI, Downgradient PRB, and MNA
PIP Requirements	<ul style="list-style-type: none">• Will adhere to MCP PIP Requirements
Groundwater Sampling	<ul style="list-style-type: none">• For 4 consecutive rounds, but in no event less than 2 years
Public Health & Safety	<ul style="list-style-type: none">• HASP, dust screens & controls, air/dust monitoring, signage, etc.

Public Comment

For additional information or to submit written questions/comments, please contact:

Mr. James Matz
DCAMM
One Ashburton Place
Boston, MA 02108
email: james.matz@mass.gov
cc: environmental.dcam@mass.gov
mauserr@wseinc.com



Public comments are due on or before March 9, 2021

Document Availability



Electronic Sharefile Link (and/or hard copy): Available Upon Request

Hard Copy: Medfield Library Repository
Electronic Copies: Town Offices (Town Admin. & BOH)

Hard Copy: MassDEP CERO (finalized reports following PIP Review)
8 New Bond Street, Worcester, MA



Questions?

Thank you