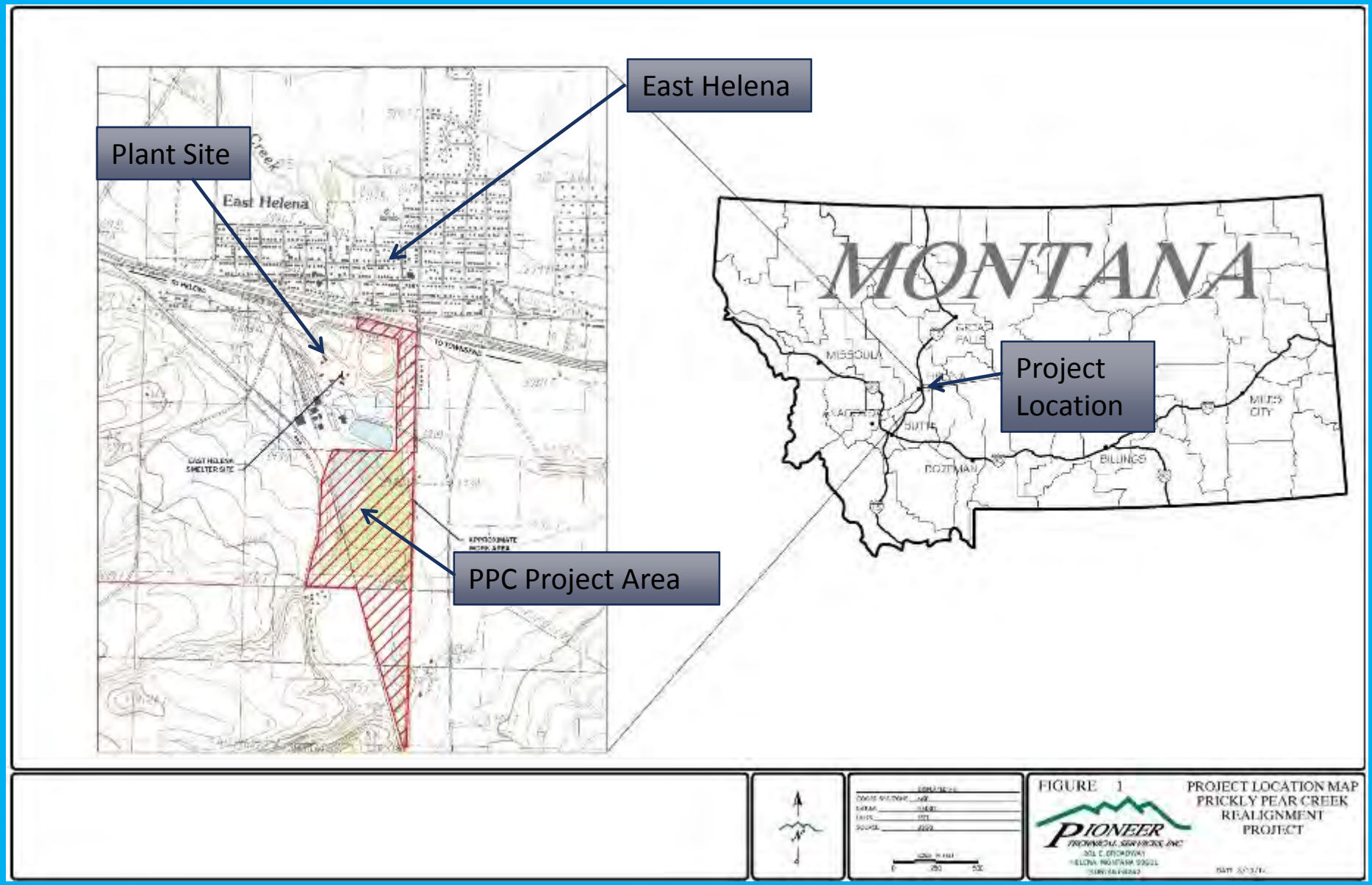
Montana Environmental Trust Group
Trustee of the Montana Environmental Custodial Trust

EAST HELENA SMELTER SITE
MINE DESIGN, OPERATIONS & CLOSURE CONFERENCE
MAY 4, 2016

AGENDA

- Introductions
  - Betsy Burns – EPA Project Manager
  - Mark Rhodes – Hydrometrics – Construction Manager for METG
  - Joel Gerhart – Pioneer – PPC Design Engineer
- RCRA Corrective Action Corrective Measures Study Overview
- Interim Measures Implementation Presentation
  - Evapotranspirative Cover System
  - South Plant Hydraulic Control/Prickly Pear Creek Reconstruction


East Helena
Plant Site
East Helena
MONTANA
Project Location
PPC Project Area
MISSOULA
BUTTE
BOZEMAN
BILLINGS
MILES CITY
FIGURE 1
PROJECT LOCATION MAP
PRICKLY PEAR CREEK
REALIGNMENT
PROJECT
PIONEER

CORRECTIVE MEASURES STUDY OVERVIEW

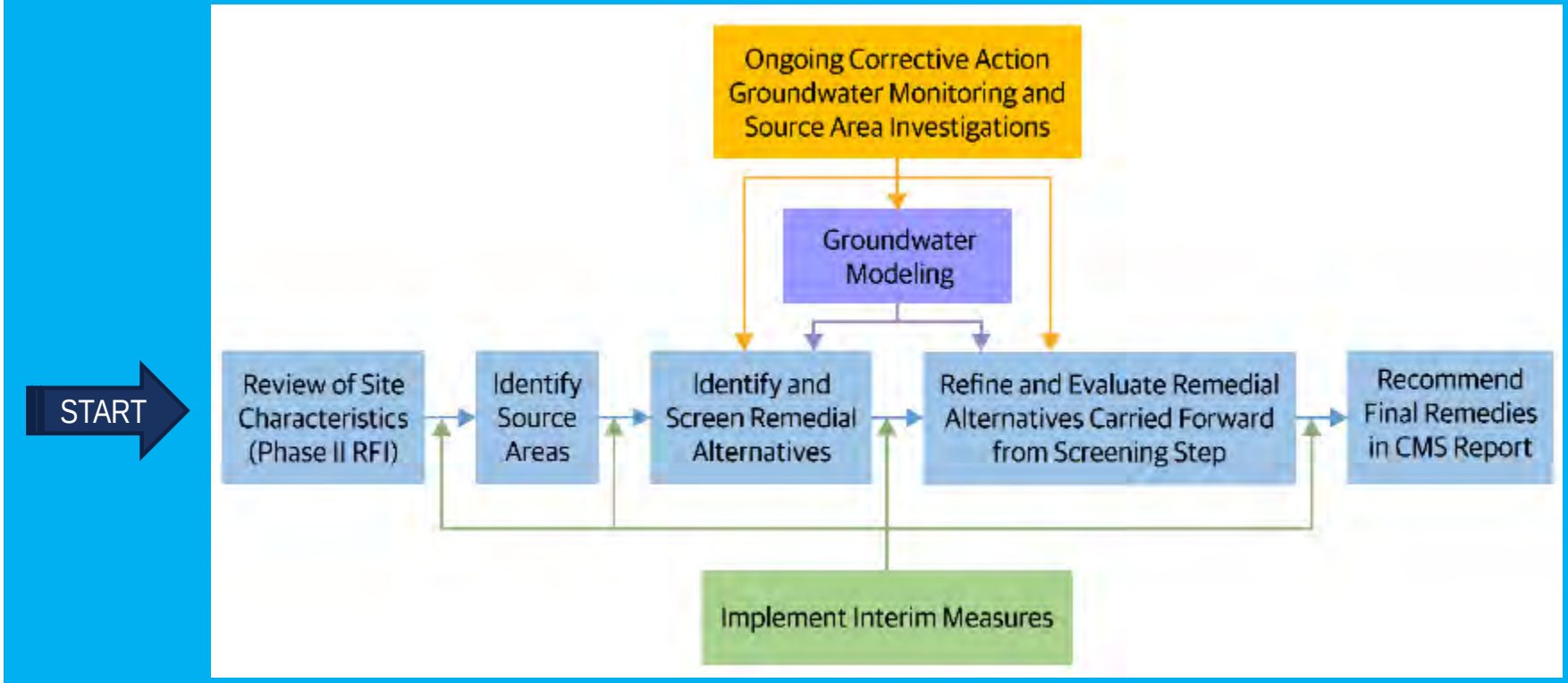
CMS Purpose –

Investigate and evaluate potential alternative remedies to protect human health and the environment from the release or potential release of hazardous waste/constituents

CMS Goals –

- Meet requirements of Asarco Consent Decree and applicable regulatory & USEPA guidance
- Analyze potential actions with consideration of known risks to actual or potential receptors
- Include potential actions that will create the greatest net environmental benefit and which are compatible with expected future use.

CORRECTIVE MEASURES STUDY PROCESS

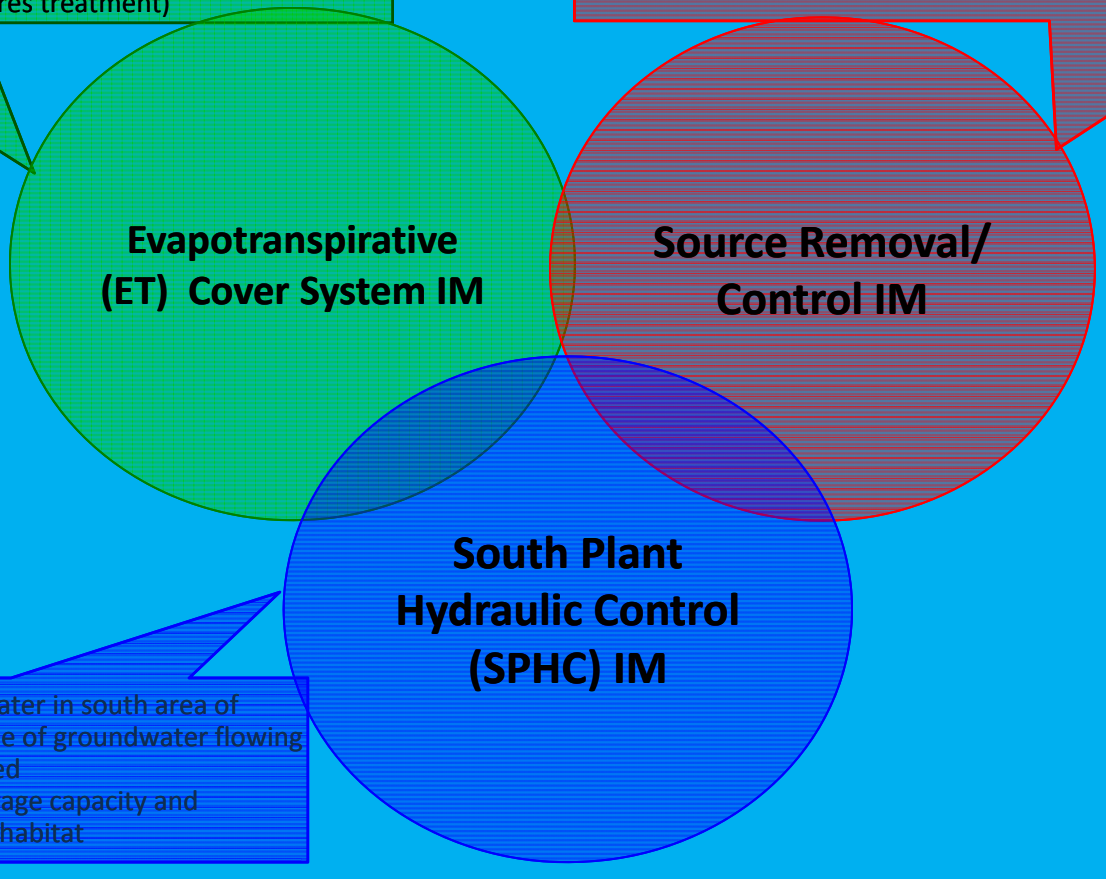



Highway 12/East Helena
End of PPC Construction
Prickly Pear Creek
Plant Site
Smelter Dam
Lower Lake
Tito Park
Upper Lake
South Plant Area

THREE INTERIM MEASURES

- ✓ Reduce infiltration (from precipitation) leaching contaminants from soil to groundwater
- ✓ Eliminate exposure to contaminated soils
- ✓ Prevent stormwater contact with contaminated soil (that then requires treatment)

- ✓ Excavate/consolidate contaminated soils under ET Cover
- ✓ Support wetland habitat and increase flood storage capacity
- ✓ If feasible, reduce volume of soils that are a source of contaminant loading to groundwater



- ✓ Lower elevation of groundwater in south area of smelter to reduce the volume of groundwater flowing through heavily contaminated
- ✓ Provide additional flood storage capacity and establish beneficial wetland habitat

INTERIM MEASURES PURPOSE AND OBJECTIVES

- IMs reduce migration of contaminants in groundwater from the former Smelter site to protect public health and the environment via
  - Hydraulic Control – inhibit migration
  - Source Removal – prevent transport to surface water bodies and mass loading to groundwater
  - Protective Cover – reduce infiltration, prevent direct contact (human and ecological) with contaminated media, reduce costs, clean and restore surface water runoff
- IM phases implemented in 2015 and 2016
  - PPC Realignment materials managed within ICS 2 and Central Corridor
  - Remove existing unused structures (HDS Plant to remain through 2016)
  - Interim and Final ET Cover construction
  - Acid Plant removal
- IMs incorporated into final remedy (Corrective Measures Study [CMS] Implementation)

IM - WORK COMPLETED TO-DATE

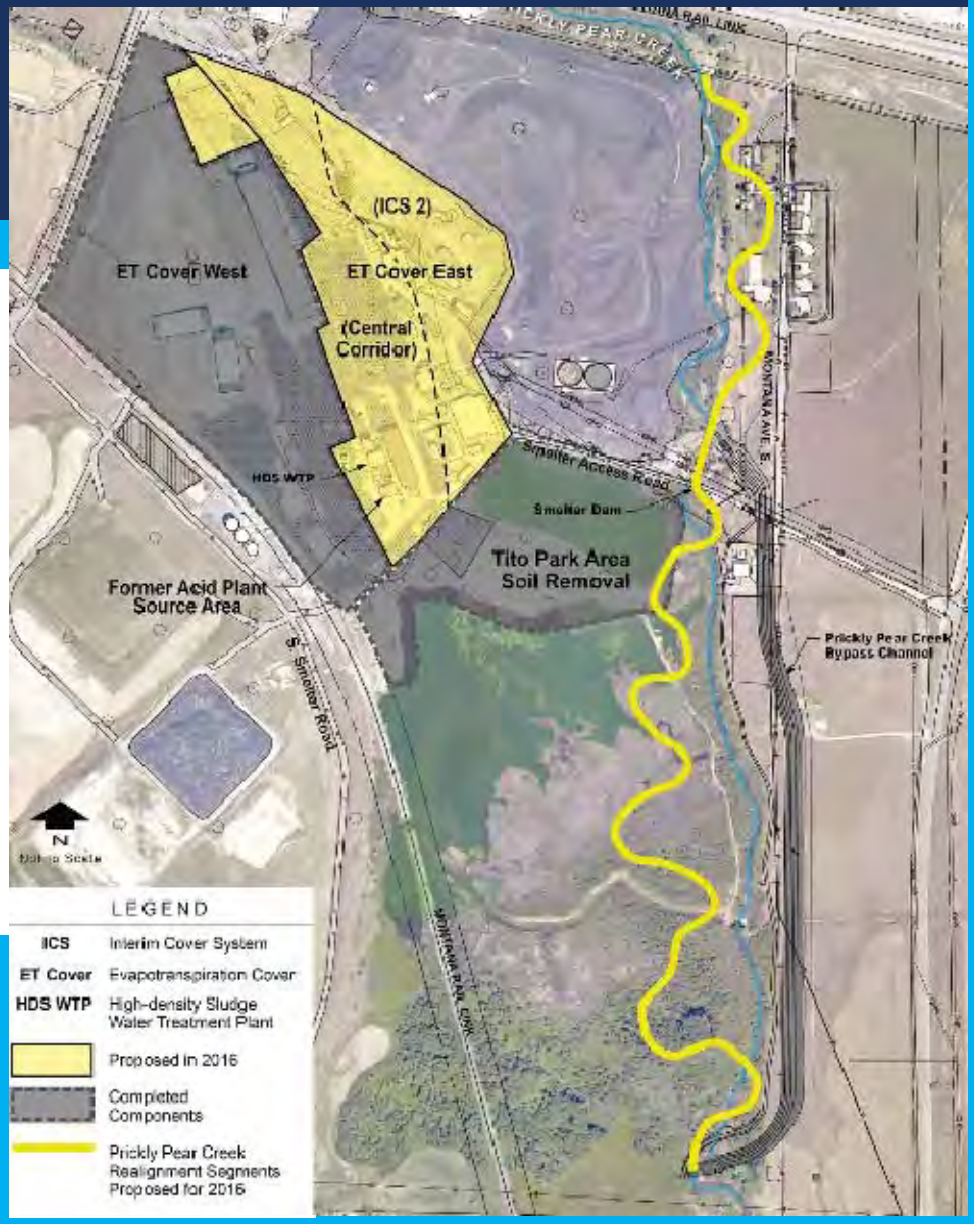
ET Cover System	SPHC IM	Source Removal/Control
IM 2012 Construction		
	Air Liquide Demolition	
	Upper Lake Dewatering	
IM 2013 Construction		
Demolition Phase 1	East Bench Utility Relocations	
Demolition Phase 2	PPC Temporary Bypass	
IM 2014 Construction		
Interim Cover System 1	Lower Lake Removal	TPA Soil Removal
		Final Closure of CAMU 2
IM 2015 Construction		
ET West Completed	PPC Realignment - N & S Reaches Excavated; Channels Partly Completed	
Interim Cover System 2		
Portion of Central Corridor Filled		

IM – WORK PLANNED FOR 2016

ET Cover System	SPHC IM	Source Removal/Control
IM 2016 Construction Planned		
Continue Demolition	Complete N and S Channel Reaches of PPC Realignment	Former Acid Plant Source Removal
Complete ET East (Includes Central Corridor)	Remove Smelter Dam; Complete Middle Reach of PPC Realignment	Additional Speiss Material Removal
	Establish PPC Wetlands	
	Restore flow to PPC	

PROPOSED FINAL SITE LAYOUT

- ET Cover West - Completed 2015
- ET Cover East in 2016 over:
  - ICS 2
  - Central Corridor
- PPC Realignment
  - S and N thirds – Completed 2015
  - Middle portion - 2016
  - Wetlands mitigation - 2016
- Source Removal IM
  - TPA removal completed 2014
  - Additional Speiss removal - 2016
  - Acid Plant Source Removal - 2016



INTERIM MEASURES CONSTRUCTION UPDATE

PHASE I DEMOLITION

CONTRACTOR: CH2M
SUBCONTRACTOR: ENVIROCON
BEGIN DATE: 4/15/13
COMPLETED: 7/31/13

BEFORE

AFTER

PHASE I DEMOLITION

CONTRACTOR: CH2M
SUBCONTRACTOR: ENVIROCON
BEGIN DATE: 4/15/13
COMPLETED: 7/31/13

SMELTER DAM
BRIDGE REPLACEMENT

PHASE II DEMOLITION

CONTRACTOR: CH2M
SUBCONTRACTOR: ENVIROCON
BEGIN DATE: 7/15/13
COMPLETED: 11/30/13

DSB DEMOLITION

PHASE II DEMOLITION

CONTRACTOR: CH2M
SUBCONTRACTOR: ENVIROCON
BEGIN DATE: 7/15/13
COMPLETED: 11/30/13

COAL MILL AND SODIUM BUILDING DEMOLITION

PPC BYPASS

CONTRACTOR: CH2M
SUBCONTRACTOR: HELENA SAND & GRAVEL
BEGIN DATE: 7/1/13
COMPLETED: 12/20/13

TPA/ICS 1

CONTRACTOR: CH2M
SUBCONTRACTOR: HELENA SAND & GRAVEL
BEGIN DATE: 5/28/14
COMPLETED: 12/14/14

TPA/ICS 1

CONTRACTOR: CH2M
SUBCONTRACTOR: HELENA SAND & GRAVEL
BEGIN DATE: 5/28/14
COMPLETED: 12/14/14

ICS2, ET COVER SYSTEM, PHASE 3 DEMOLITION

CONTRACTOR: CH2M
SUBCONTRACTOR: ENVIROCON
BEGIN DATE: 6/16/15
ANTICIPATED COMPLETION: 11/30/16

ICS2, ET COVER SYSTEM, PHASE 3 DEMOLITION

CONTRACTOR: CH2M
SUBCONTRACTOR: ENVIROCON
BEGIN DATE: 6/16/15
ANTICIPATED COMPLETION: 11/30/16

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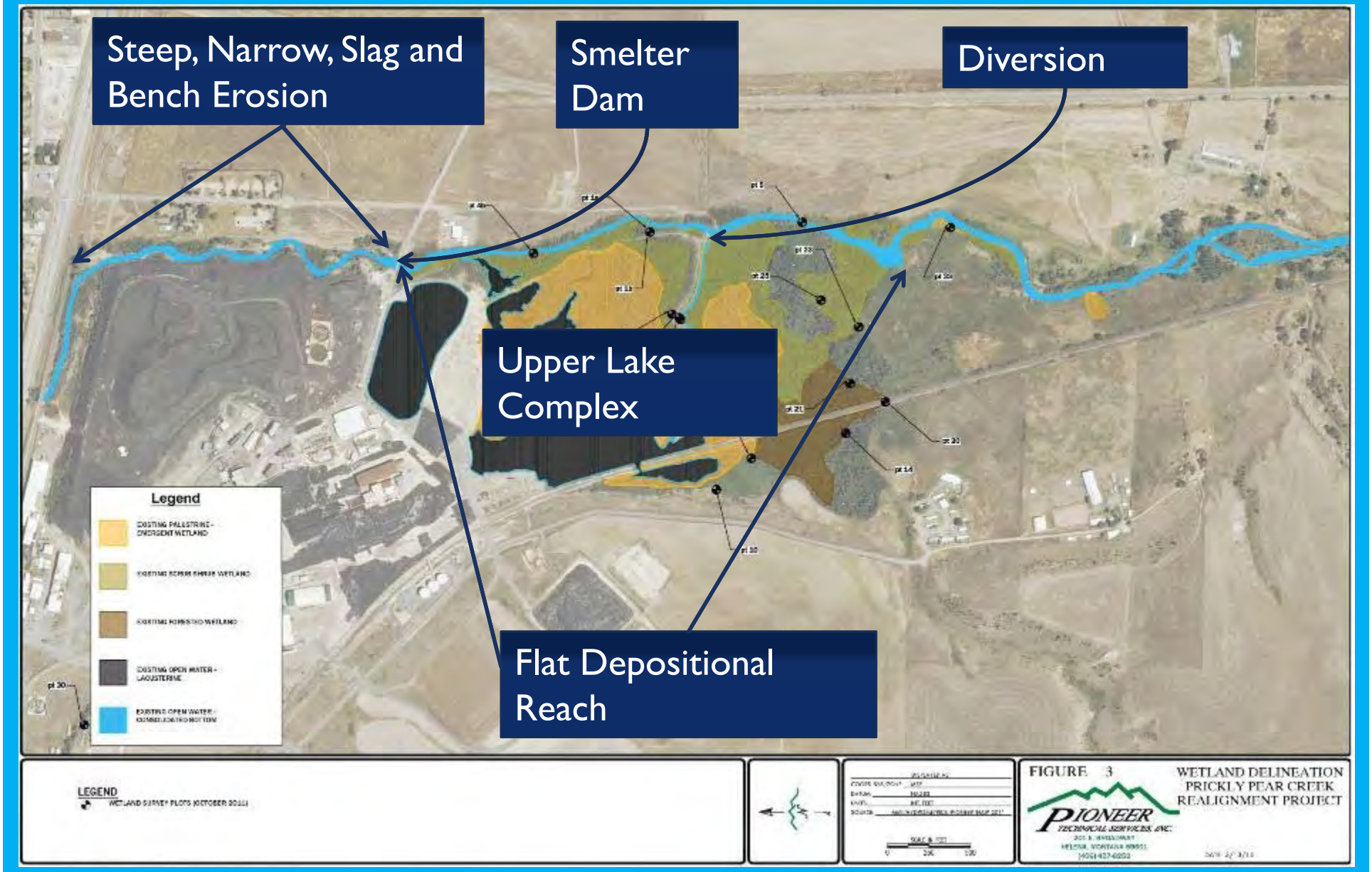
SPHC PPC REALIGNMENT COMPONENTS

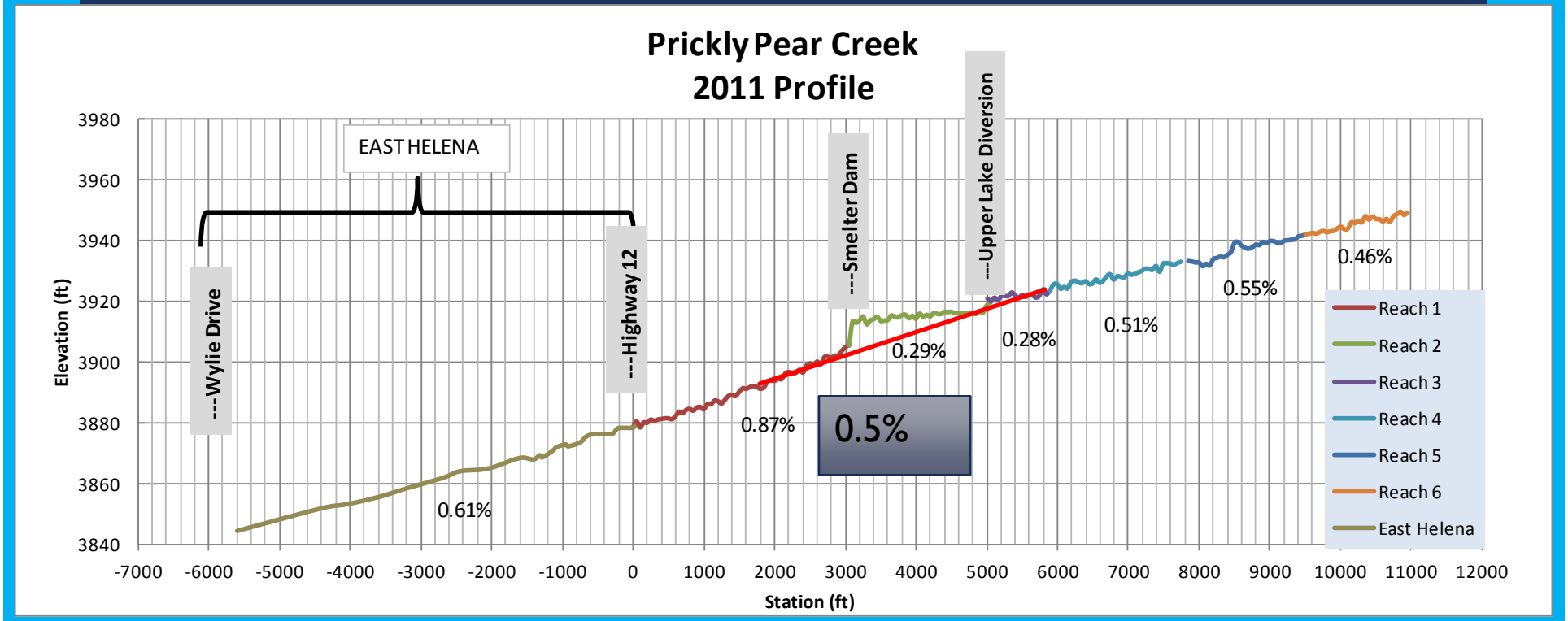
- Primary Components
  - Construct PPC Temporary Bypass (done)
  - Remove Smelter Dam (done)
  - Remove Upper Lake Diversion and Breach Dike (done)
  - Reconstruct Tito Park/Lower Lake Areas (in progress)
  - Construct PPC Realignment (in progress)

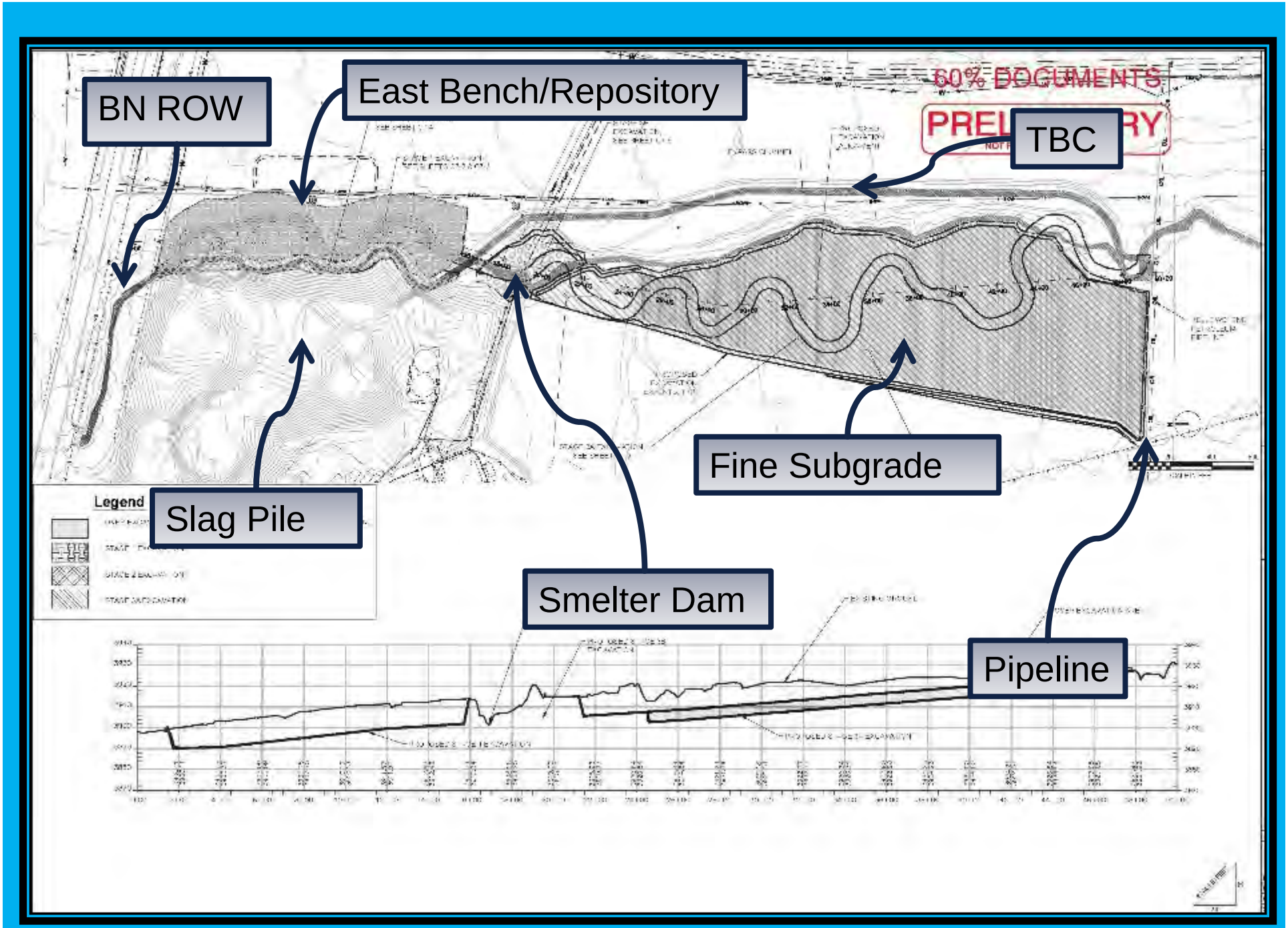
KEY DESIGN OBJECTIVES

- Groundwater elevations as low as possible to meet gradients and water interface with wetland areas.
- Create a sustainable creek
  - Develop stable flow conditions and gradients;
  - Designing for low and high flows,
  - Adequate storage capacity and
  - Natural processes
- Design a stable stream channel and floodplain that meets all applicable permitting requirements
- Afford materials for use in other construction actions (such as ET Cover)


Steep, Narrow, Slag and Bench Erosion
Smelter Dam
Diversion
Upper Lake Complex
Flat Depositional Reach
Legend
LEGEND
FIGURE 3
WETLAND DELINEATION
PRICKLY PEAR CREEK
REALIGNMENT PROJECT
PIONEER

CHANNEL SLOPE




BN ROW
East Bench/Repository
TBC
Slag Pile
Fine Subgrade
Smelter Dam
Pipeline
60% DOCUMENTS
Legend

PPC REALIGNMENT

CONTRACTOR: PIONEER TECHNICAL SERVICES
SUBCONTRACTOR: HELENA SAND AND GRAVEL
BEGIN DATE: 6/10/15
ANTICIPATED COMPLETION: 11/30/16

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GROUNDWATER UPDATE

- CURRENT GROUNDWATER CONDITIONS/TRENDS
- 2014/2015 SOURCE AREA INVESTIGATIONS
- GROUNDWATER MODELING UPDATE

RECENT ACTIVITIES AFFECTING GROUNDWATER CONDITIONS

Wilson Ditch Abandoned (Fall 2011)

ICS-1 Construction (2014)
ET Cap (2015)

Plant Site Demolition (2012-2015)

Upper Lake Dewatering (November 2011)

Prickly Pear Creek Channel Construction (2015)

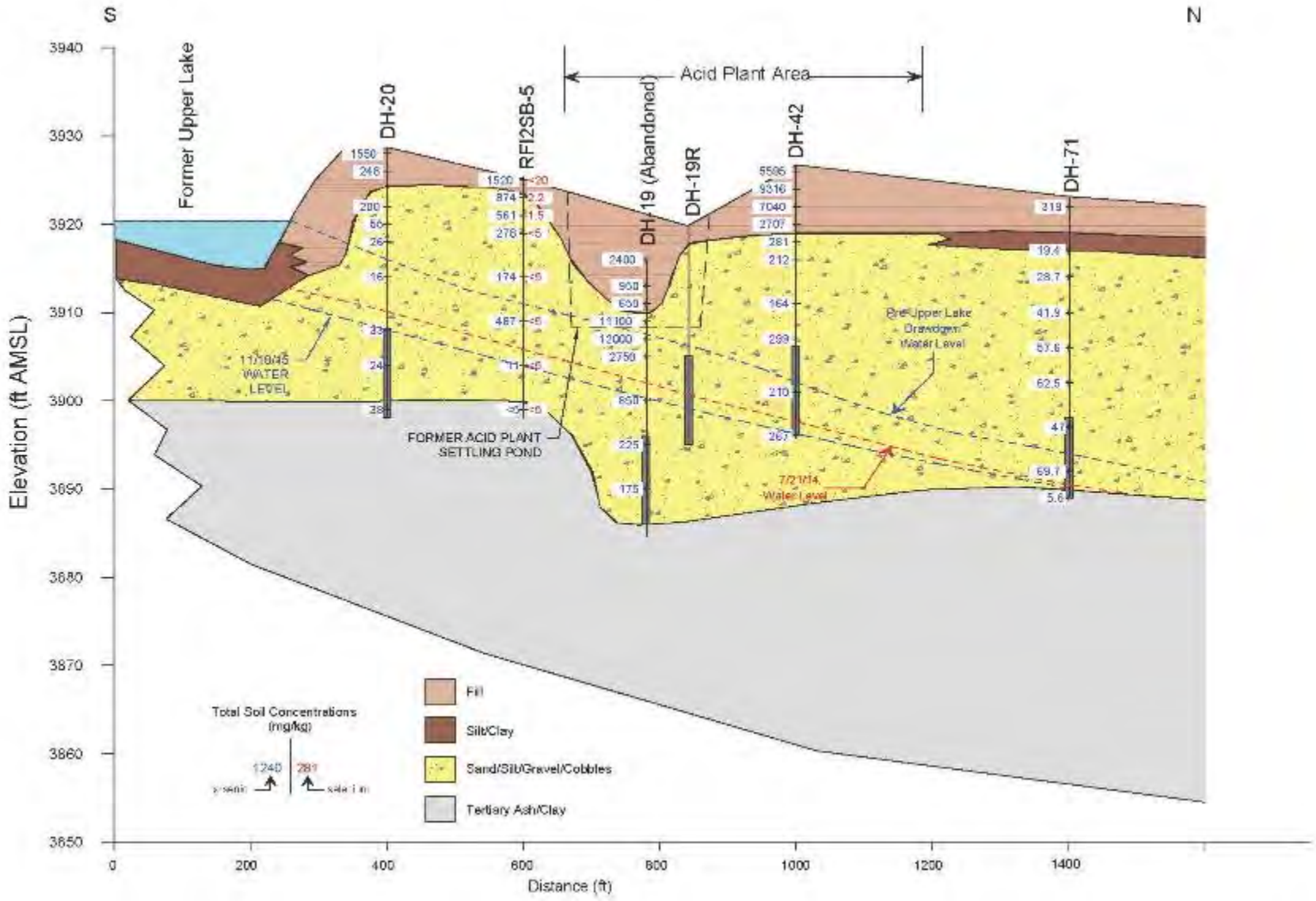
ICS-2 Construction (2015)

Tito Park Area Removal (2014)

Upper Lake Marsh Dewatering/ PPC Realignment (2015-2016)

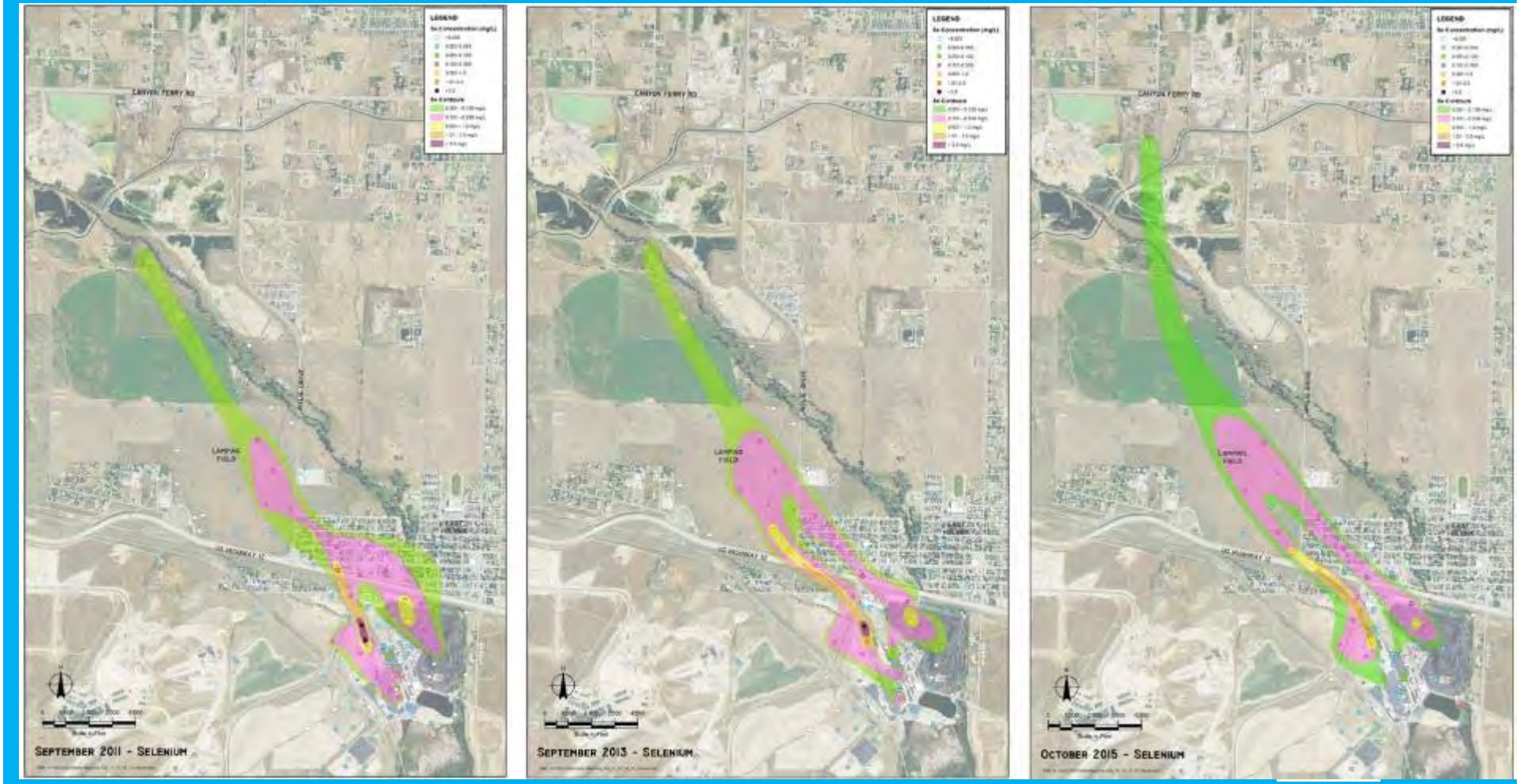
PPC Bypass (October 2013)

ACID PLANT AREA GROUNDWATER LEVELS RELATIVE TO SOIL CONTAMINATION



PS35

SELENIUM CONCENTRATION PLUMES



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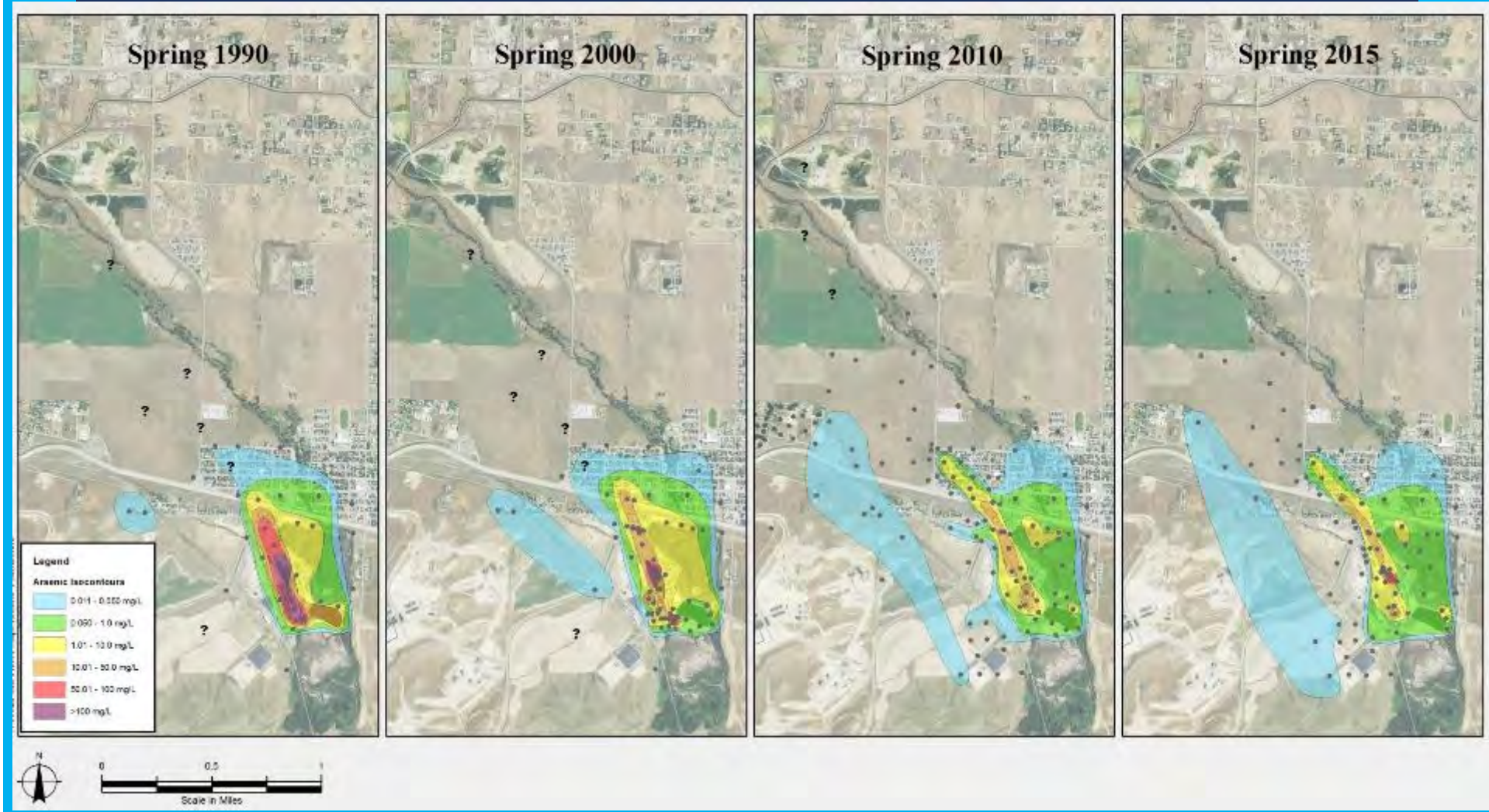
PS35 is there an update to this?
Park, Stephanie/MGM, 1/25/2016

PS34

ARSENIC CONCENTRATION PLUMES



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PS34 Is there an update to this?
Park, Stephanie/MGM, 1/25/2016

SUMMARY OF GROUNDWATER CONDITIONS

- Groundwater and surface water monitoring conducted seasonally to document current hydrologic conditions and trends, monitor residential well water quality, and support project planning and remedial design.
- Groundwater levels on site have declined from 1 to 2 feet in east (beneath slag pile), to up to 10 feet on west Plant Site.
- Contaminant concentrations in primary sources areas, West Se Source Area and North Plant Arsenic Source Area, have decreased by more than 75% in some areas. Close correlation with GW levels indicates reductions due at least in part to SPHC IM.
- Some decreases in contaminant concentrations evident immediately downgradient of site, but more time required before significant downgradient reductions realized.
- Future monitoring to focus on GW remedy effectiveness to determine what additional actions may be necessary.