

Air Force Civil Engineer Center

Integrity-Service-Excellence



Operable Unit Update

**Mark Loucks and Carol MacKenzie
AFCEC/CZOM Hill Section
7 June 2016**

Contamination Plumes extending into Riverdale City



Riverdale City

OU6

Hill AFB

OU4

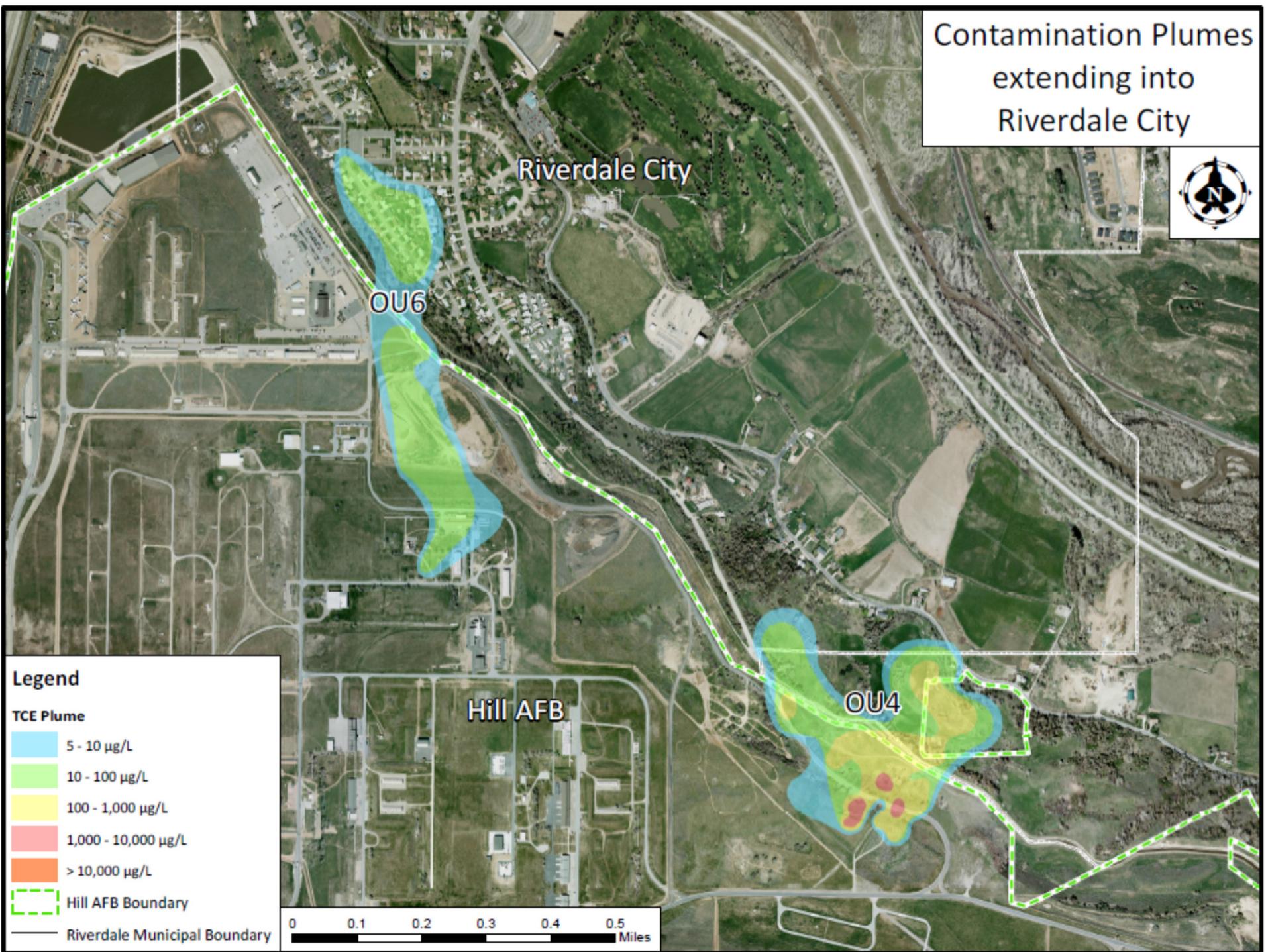
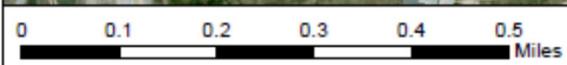
Legend

TCE Plume

- 5 - 10 $\mu\text{g/L}$
- 10 - 100 $\mu\text{g/L}$
- 100 - 1,000 $\mu\text{g/L}$
- 1,000 - 10,000 $\mu\text{g/L}$
- > 10,000 $\mu\text{g/L}$

Hill AFB Boundary

Riverdale Municipal Boundary





2016 Indoor Air Sampling Results

60 homes in affected area
91 homes sampled since 2003

Historically:

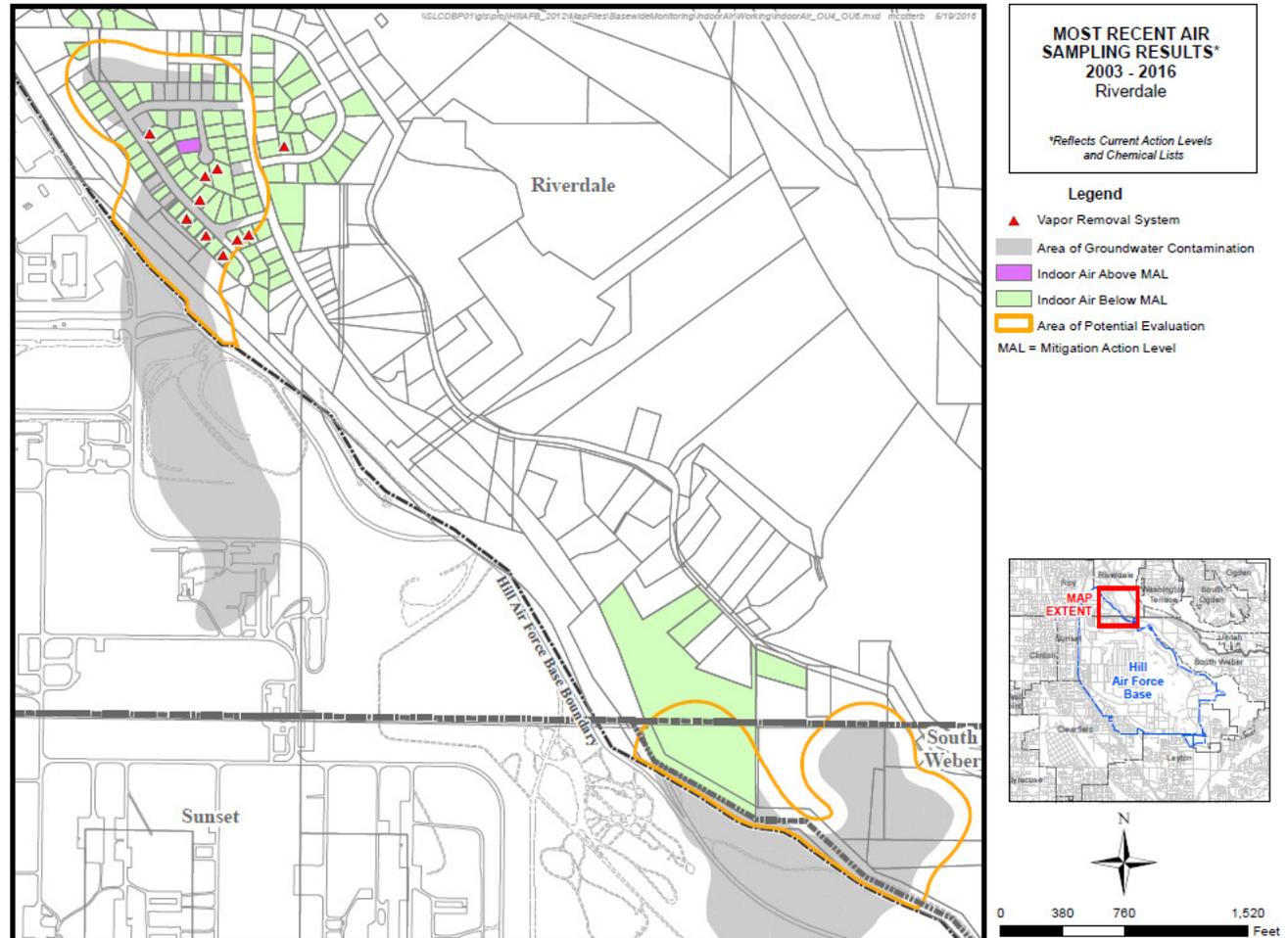
- ❑ 16 Homes detected above action level
- ❑ 75 Homes detected below action level or non detect

In 2016:

- ❑ 29 homes contacted in 2016
- ❑ 16 homes sampled in 2016

Results:

- ❑ 0 homes detected above action level
- ❑ 16 homes detected below action level or non detect
- ❑ 10 homes currently have vapor removal systems
 - ❑ Sites with a red triangle on a green lot means that systems are working





Operable Unit 4

Why Are We Revising The Operable Unit 4 Proposed Plan?



Five Year Review Findings

“Five Year Review” - a comprehensive review to determine if remedies are still working and protective of human health

5 Yr Review Findings	Air Force response action
1) Increasing groundwater concentrations in an area east of Landfill 1, may indicate an unknown source in that area	
2) Groundwater contaminant concentrations are increasing within Landfill 1. Is the cap working like it should?	
3) Increasing groundwater concentrations down gradient of Landfill 2, may indicate an unknown source in that area	

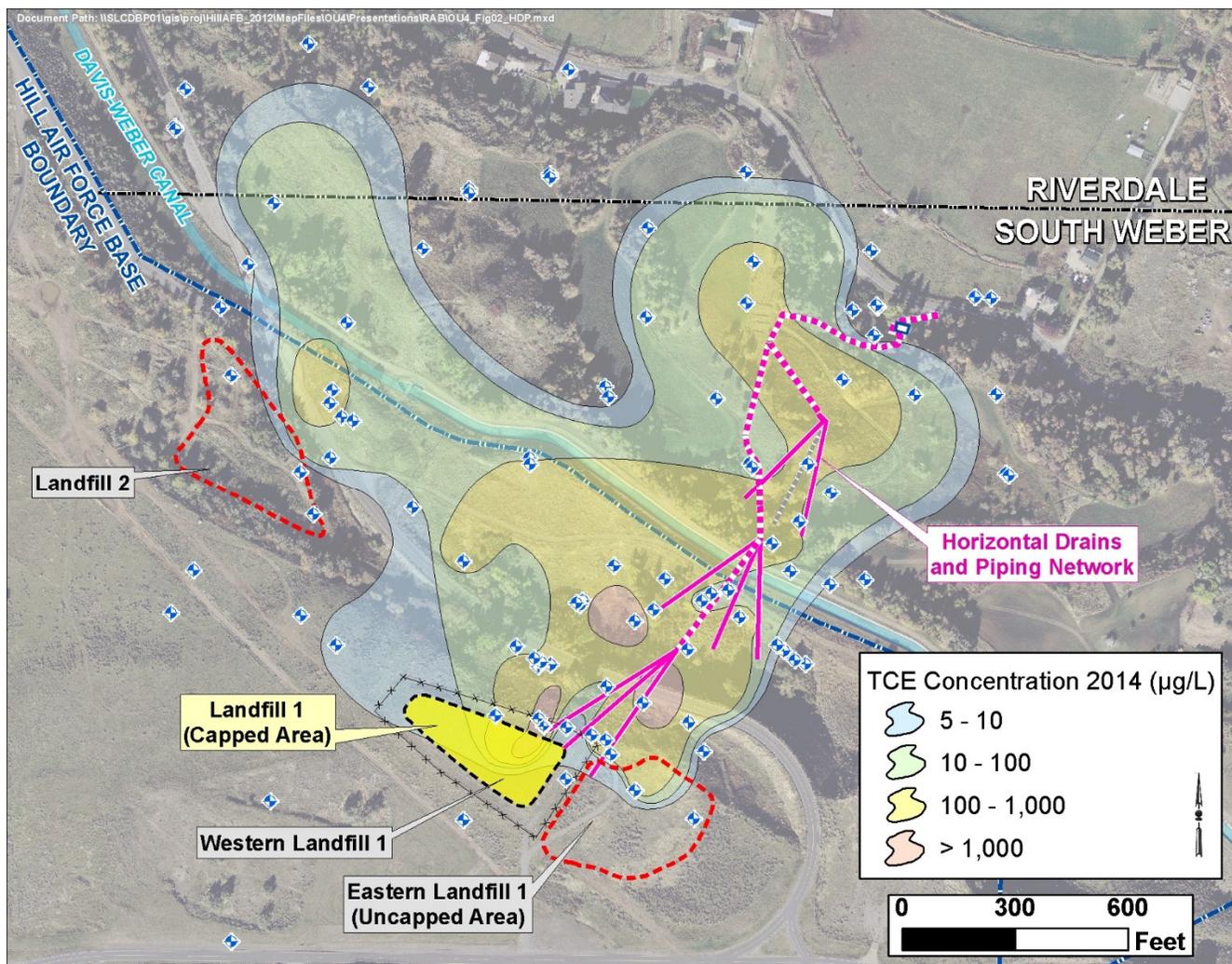


We Had Findings So What's Next?

- **Collected data from 2013 to 2015**
- **Revised Proposed Plan and public meeting – Aug 2015**
- **Collected more data to finalize design – Oct 2015**
- **Unanticipated results from Oct data collection**
- **Told us our proposed remedies may not be effective**
 - **Means that we needed to redo our Proposed Plan**
 - **New public meeting 22 June 16 (went in the city newsletter)**
 - **Riverdale Community Center**
 - **Public comment period last for 30 days**



OU 4 Existing Remedy (1994)

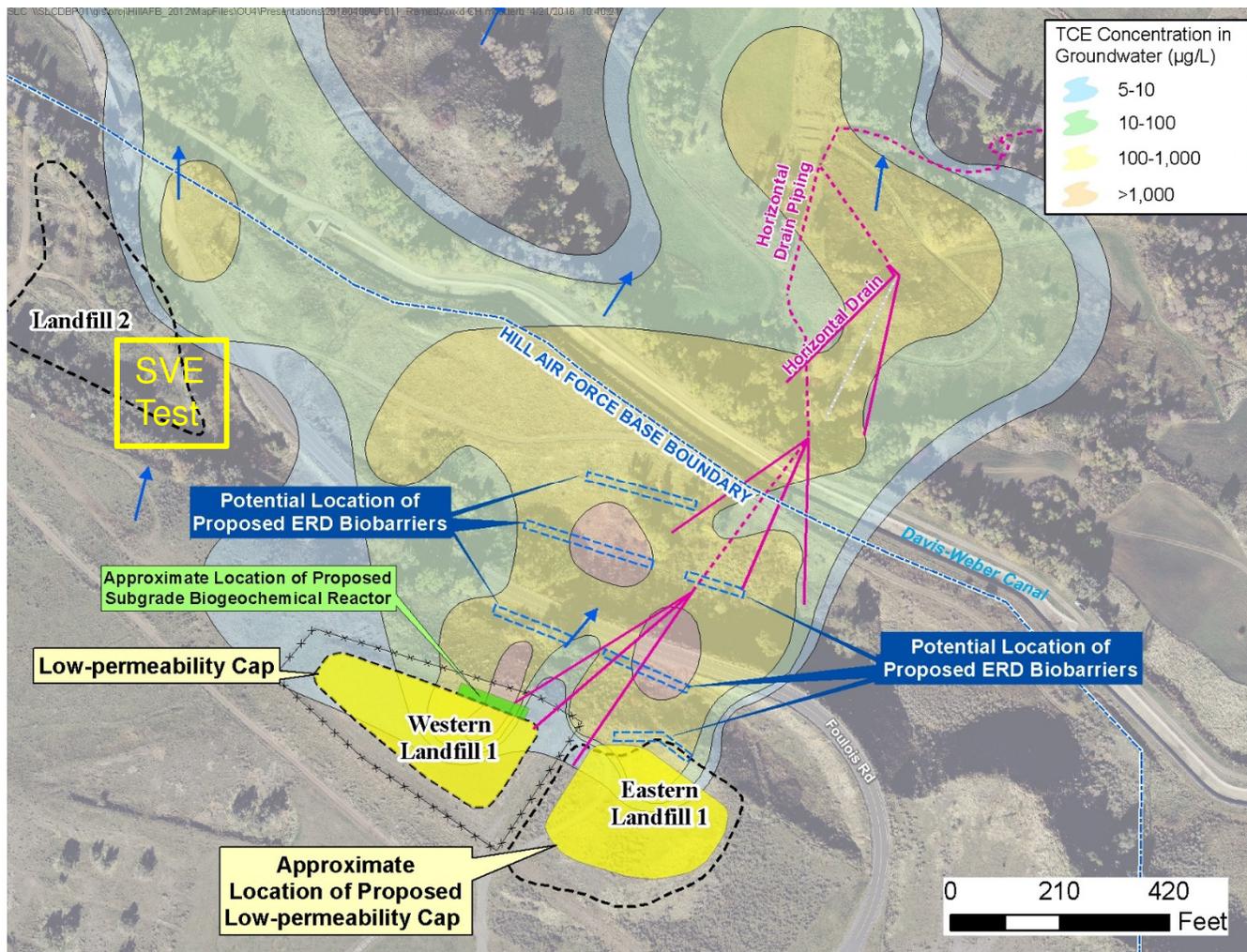


Existing Remedy

- Low-permeability cap** installed at Landfill 1 – to limit water infiltration and movement of contaminants from beneath landfill cap
- Horizontal Drain Network** - a passive groundwater collection system to remove contaminated groundwater and discharge it to sanitary sewer
- Groundwater monitoring** - to ensure cleanup goals were being met
- Institutional controls** – to limit any potential exposure



OU 4 Revised Proposed Expanded Remedy



- Bioreactor downgradient of Landfill 1 cap** – no excavation, series of column bioreactors
- Low-permeability cap on Eastern Landfill 1**
- Enhanced Reductive Dechlorination (ERD) “biobarriers”** (Food grade oils/lactate and if need bacteria injected into the ground in the core of plume and downgradient of new landfill cap.
- Soil Vapor Extraction (SVE) Test (Treatability Study)** – Landfill 2 only



How have we addressed Five Year Review Findings

5 Yr Review Findings	How the Finding was Addressed
1) Increasing groundwater concentrations in an area east of Landfill 1, may indicate an unknown source in that area	Install low permeability cap over area and line of wells for ERD injections when needed
2) Groundwater contaminant concentrations are increasing within Landfill 1. Is the cap working like it should?	Cap is working but other sources are in the groundwater. Installation of “Bioreactor” downgradient of Landfill 1 and “Biobarriers” in high concentration portions of groundwater plume
3) Groundwater concentrations were increasing down gradient of Landfill 2 potentially indicating an unknown source area	Test the feasibility of soil vapor extraction (SVE) in area and if successful continue remediation. If concentrations continue to rise evaluate other cleanup alternatives



So what is important to know for Riverdale

- OU4 does not have a big impact on Riverdale**

- Public Comment Meeting – Riverdale Community Center**
 - **22 June from 7 - 8 p.m.**

- Record of Decision Amendment – Summer 2016**

- Implementation of Proposed Remedy – Summer/Fall 2016**
 - Construction will be all within the base boundary**
 - No truck traffic in Riverdale or South Weber**
 - Dust control measures will be followed**



Questions?



Air Sampling Program

- ❑ **Sample indoor air for chemicals found in groundwater**

- ❑ **Action levels are established for each chemical with EPA and UDEQ approval**

- ❑ **Why we changed sampling methods (absorption tube vs. Summa Canisters)**
 - ❑ **Sampling interval - 24 hrs to 26 days**
 - ❑ **Longer sampling interval better represents exposure one could have in the home**
 - ❑ **Equivalent results - well received - smaller and less invasive**



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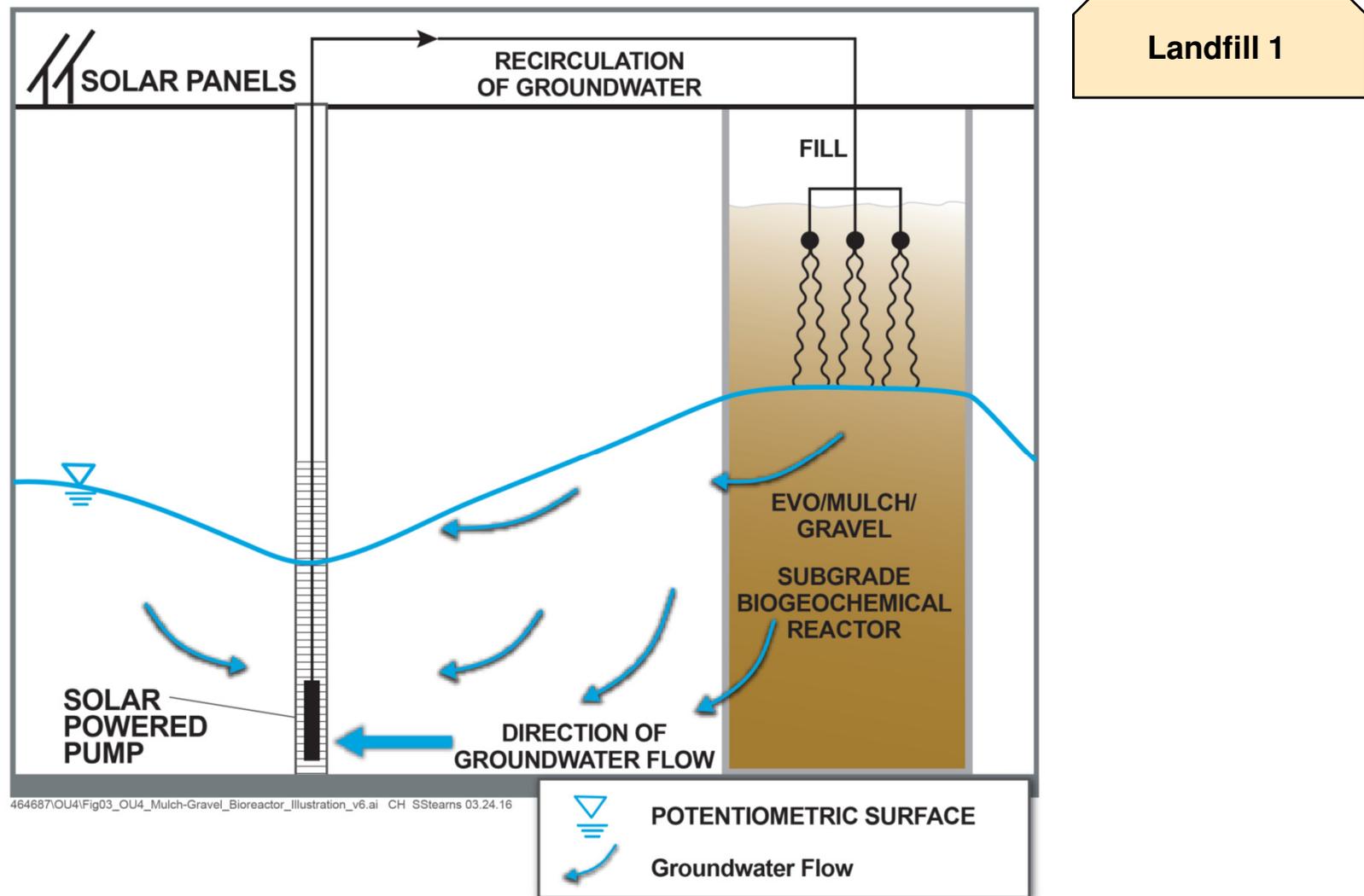
DWH2

Probably should have a bullet explaining the change from 24-hour samples to a 26-day sample. We have pictures of the instruments, but no explanation of what they are or why we're showing them.

David W Harris, 6/6/2016



OU 4 Proposed Expanded Remedy - Bioreactor





OU 4 Proposed Expanded Remedy - ERD Biobarriers

