100-D/H Proposed Plan

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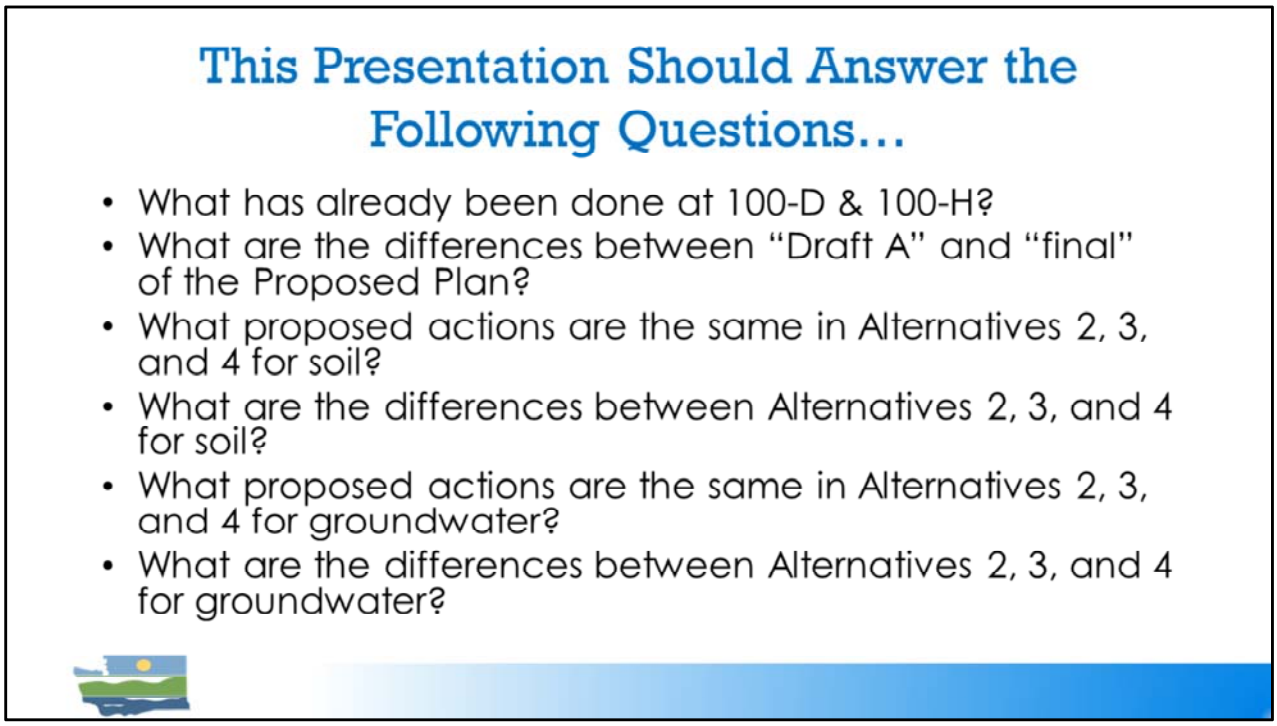
HAB RAP Presentation 8/9/16



This presentation includes more information than just an overview of the Proposed Plan. At the December 2015 committee meeting RAP members requested more information on what has already been completed or decided at D/H. The RAP also requested specific differences between Draft A and the final of the Proposed Plan.

Ecology has also chosen to arrange the information so it is clear

- what remedy components are included in each of Alternatives 2, 3, and 4, and
- what the differences are between each of the Alternatives.

Due to this arrangement, numbers of wells or waste sites do not exactly match the alternative descriptions in the Proposed Plan. Please refer to the Proposed Plan for more complete descriptions of each alternative.

Slide 2

MD(1 I would suggest a shorter title. "common questions" or "Topics to be covered" just something less wordy.
McFadden, Daina (ECY), 8/1/2016

What Has Already Been Done at D/H? Buildings & Soil…

- Reactors cocooned & unused buildings/facilities demolished
- Most waste sites have been remediated
- 100-OL-1 Operable Unit under Remedial Investigation for former orchard lands

Reactors were assessed in a NEPA 1992 Environmental Impact Statement. Reactor cocooning and facility demolition was performed under two CERCLA Action Memoranda: 1998 CERCLA Action Memo for 105-F, 105-DR, and Ancillary Facilities & 2000 CERCLA Action Memo for 105-D, 105-H and Ancillary Facilities. A few facilities remain in use such as a water storage facility and an electrical substation.

Waste sites have been included in 3 separate interim action Records of Decision (RODs):

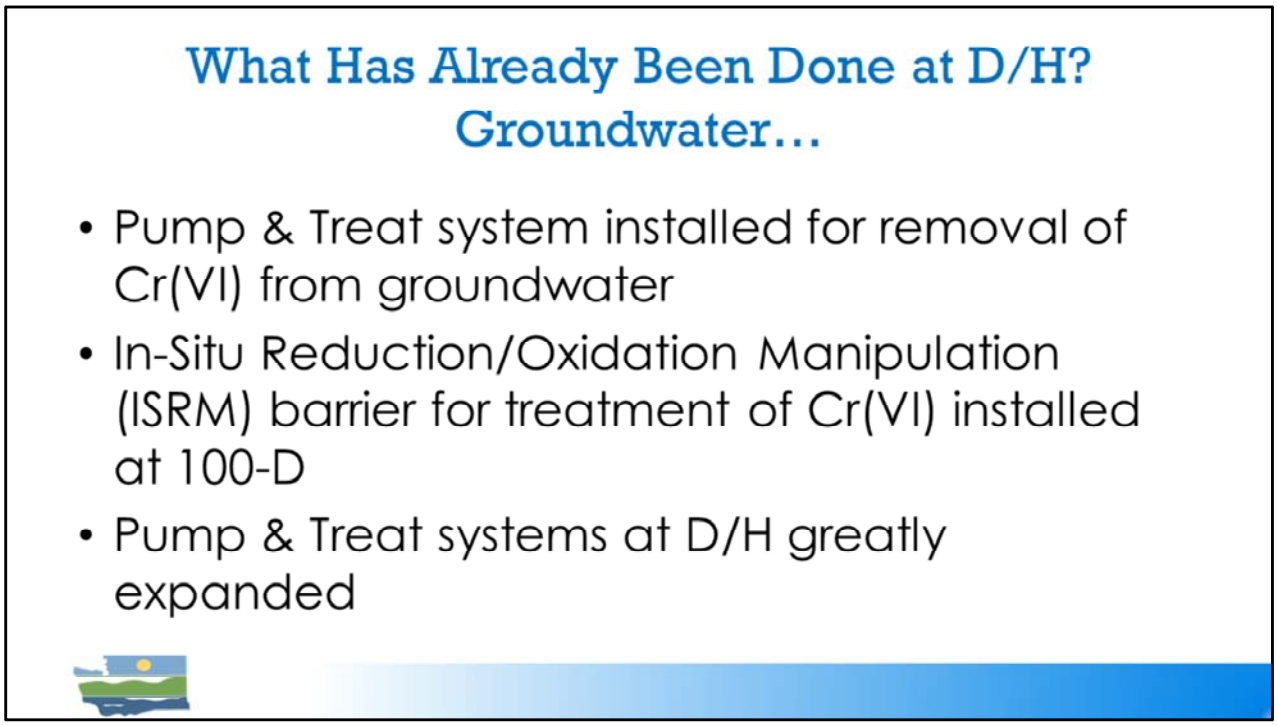
- The 1995 “Liquid Effluent Disposal Facility” ROD, which was amended in 1997;
- The 2000 “Burial Grounds” ROD, which had an Explanation of Significant Difference (ESD) issued in 2007;
- The 1999 “Remaining Sites” ROD, which had ESDs issued in 2000, 2004, and 2009.

Under the “Remaining Sites” ROD hexavalent chromium contaminated soil at 100-D-100 and 100-D-104 was excavated from the surface to the groundwater. An extra 10 feet of aquifer soils were also removed at 100-D-100. Since removing these Cr(VI) contaminated soils there has been significantly lower concentrations of Cr(VI) in nearby wells. These actions will greatly reduce the time the pump and treat systems have to operate in 100-D.

105-H Reactor and 100-D Aerial

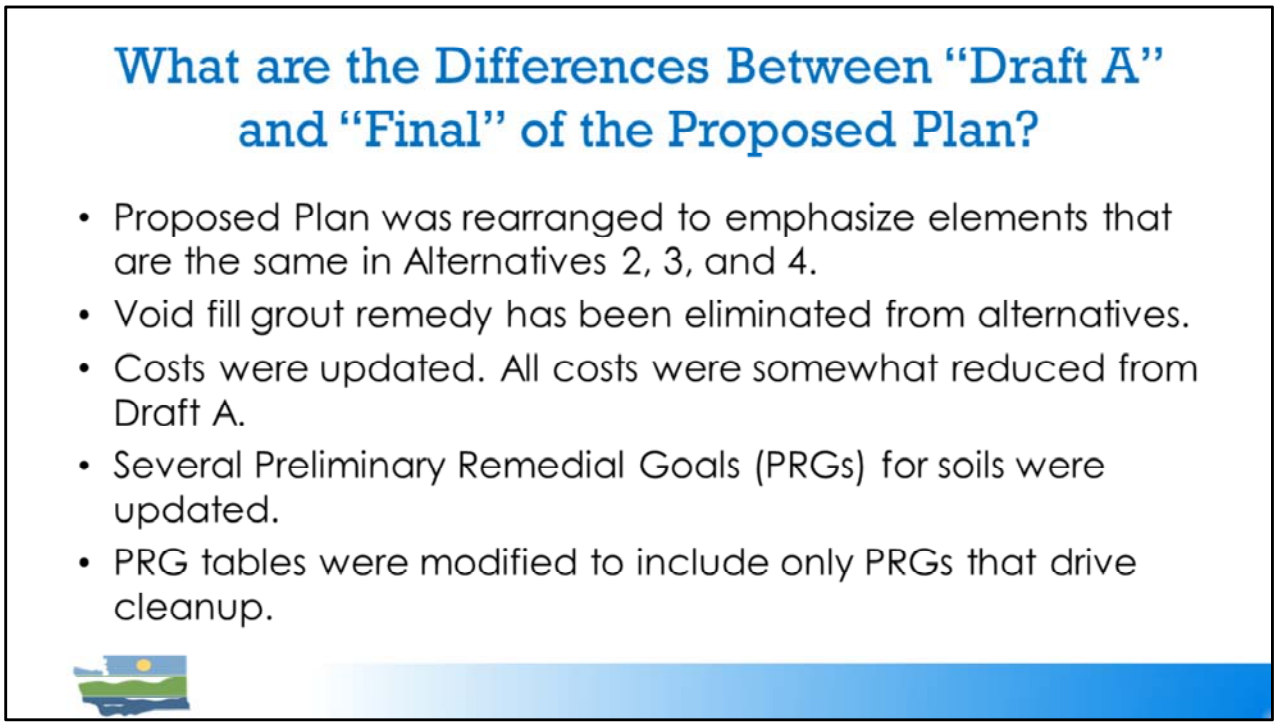
About 180 waste sites had interim remedial actions completed early enough (late 2012) to have a quantitative evaluation included in the Remedial Investigation/Feasibility Study Report (RI/FS). Most waste sites have now had interim remedial actions completed (fewer than five remain for interim action). While these interim sites weren't evaluated in the RI/FS, they will be evaluated post-ROD. A partial evaluation indicates that of the waste sites proposed for removal, treatment, and disposal (RTD) 98 out of 101 can be closed without further action. The partial evaluation indicates that 3 waste sites have radiological concentrations that will decay to below residential levels within 10 years.

The 100-OL-1 Operable Unit focuses on pre-Hanford orchard locations across the river corridor. Many of these orchard locations exist in the 100-D and 100-H areas. Some 100-OL-1 units overlapped with known waste sites. These waste sites had RTD applied under the interim action RODs until they met interim remedial action objectives for all contaminants deeper than 3 feet and for all contaminants except lead or arsenic in the top 3 feet of soil. The remaining lead and arsenic is being investigated under the 100-OL-1 remedial investigation, which is currently underway.



Pump & Treat (P&T) systems for Cr(VI) at D & H were authorized under a 1996 ROD for groundwater interim actions. The Pump & Treat system capacities were increased and new wells were installed under the 2009 Explanation of Significant Difference (ESD).

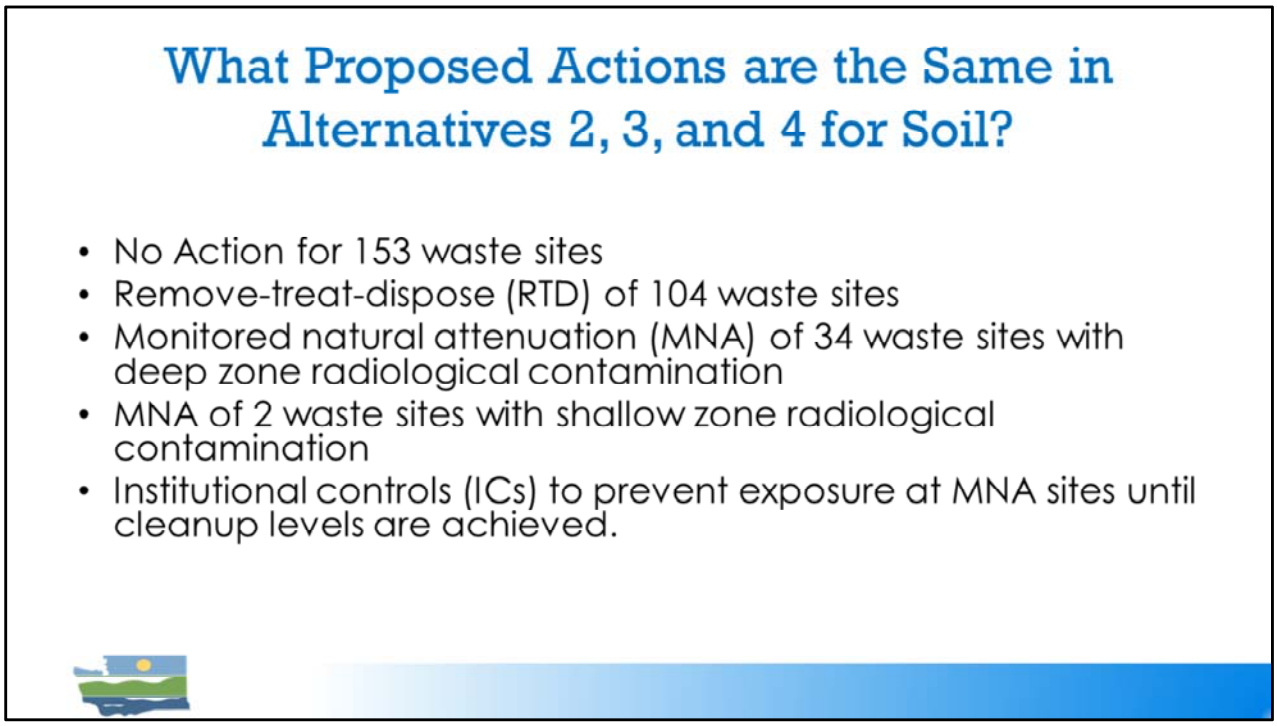
ISRM barrier for Cr(VI) was installed at 100-D. ISRM was authorized under a 1999 ROD Amendment (amending the 1996 groundwater ROD) and updated under a 2003 ESD. ISRM is only partially functional now and 2009 ESD authorized expanding the P&T system instead of maintaining the ISRM barrier.



100-H-36 underground flume remedy has changed from void fill grouting to No Action.

Preliminary Remedial Goals (PRGs) tables now focus on pertinent PRGs.

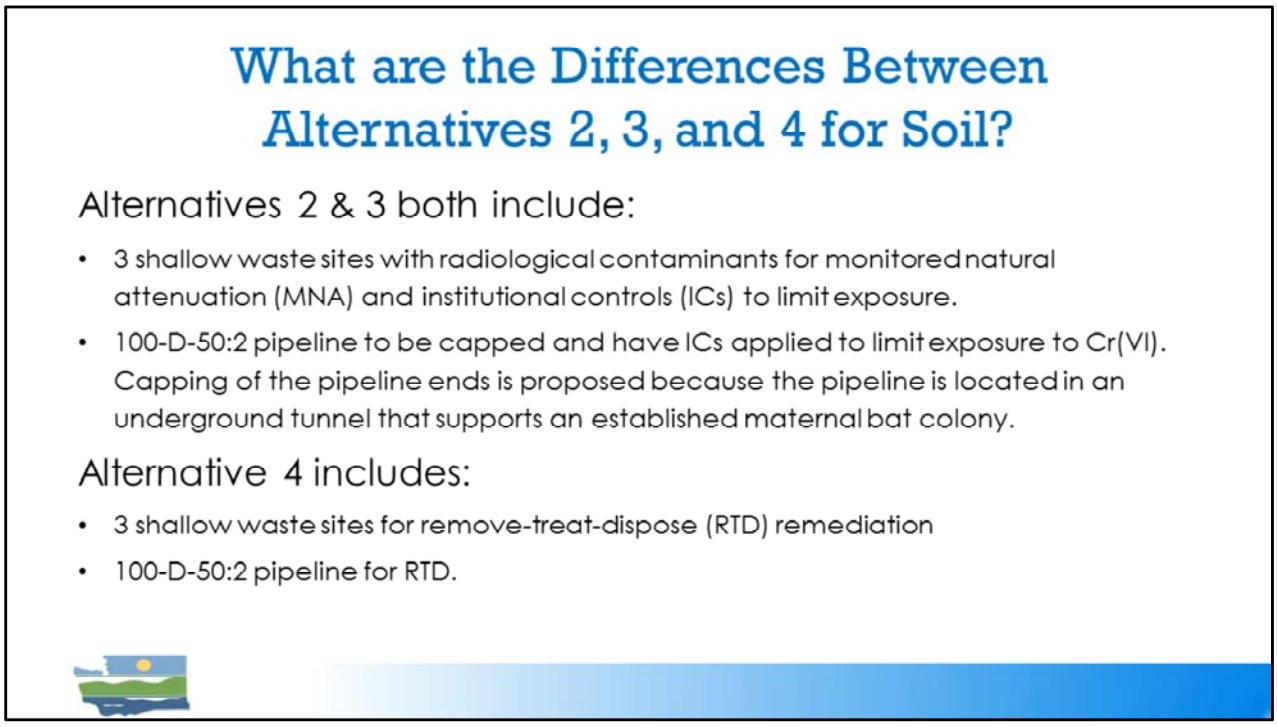
- The most restrictive value between soil to protect groundwater and soil to protect surface water is listed.
- PRGs based on a no-irrigation scenario were removed.
- PRGs for protection of ecological receptors were removed. The RI/FS concluded that once human health cleanup levels are achieved, residual contamination would not adversely impact populations and communities of ecological receptors.



RTD of 104 waste sites
Almost all of these have been remediated under interim action. They were completed too late to be fully evaluated in the RI/FS. Each waste site will have an evaluation post-ROD under the remedial action work plan. A current partial evaluation indicates that all but 3 sites can be closed without further action. These 3 waste sites have radiological concentrations that will decay to below residential levels within 10 years (118-D-2:1 and 100-H-54 in the shallow zone and 118-D3:1 in the deep zone).

Monitored natural attenuation (MNA) of 34 waste sites with radiological contamination in the deep zone of soil (greater than 15 feet below ground surface). ICs to prevent exposure would be applied until cleanup levels are achieved.

MNA of 2 waste sites with radiological contamination in the shallow zone of soil (less than 15 feet below ground surface). Both waste sites (116-H-5 and 118-H-1:1) will achieve clean up levels through radioactive decay by the end of calendar year 2016.



Alternative 3 remains the Preferred Alternative.

Alternatives 2 & 3 include:

- MNA & ICs for shallow waste sites 116-DR-9, 100-D-25, and 116-D-8. These waste sites will achieve clean up levels through radioactive decay in the year 2038. When added to the 2 shallow waste sites proposed for MNA in all alternatives, this is a total of 5 shallow waste sites proposed for MNA/ICs in Alternatives 2 and 3.

Alternative 4 includes:

- Alternative 4 includes RTD for a total of 108 waste sites including the 3 shallow rad waste sites (116-DR-9, 100-D-25, and 116-D-8) and for 100-D-50:2 pipeline.

What Proposed Actions are the Same in Alternatives 2, 3, and 4 for Groundwater?

- Continuing operation of the current pump-and-treat network.
- Groundwater monitoring until remedy completion.
- MNA of Strontium-90 and nitrates with ICs to limit exposure.
- Installing new wells throughout D and H. These include new monitoring wells and new extraction and injection wells to support the existing pump & treat system.

Strontium-90 in 2015

- In 100-D there were 2 wells above the Drinking Water Standard (DWS) of 8 pCi/L. Highest value was 32.7 pCi/L.
- In 100-H the highest value was 28 pCi/L.
- Total plume size in 2015 was reported as 0.02 km^2 (about 5 acres) throughout D and H.
- In 2015, for the first time strontium-90 was not detected above the DWS in any aquifer tube in the 100-HR-3 Operable Unit. The pump and treat system for Cr(VI) is preventing Strontium-90 from entering the Columbia River.
- Strontium-90 has a radioactive half-life of approximately 29 years.

Nitrate in 2015

- In 100-D nitrate was found above the DWS of 45 mg/L in only one well. Highest value was 45.2 mg/L.
- In 100-H nitrate was not found above the DWS in 2015.
- Total plume size in 2015 was reported as 0.0 km^2 throughout D and H.
- Nitrate is expected to meet DWS throughout D & H years before pump and treat system shut down in Alternatives 2, 3, and 4.

The cost estimate for the Feasibility Study included installing about 34 new wells in Alternatives 2, 3, and 4 that support the existing P&T systems over time. This includes optimizing the systems due to changing conditions.

What are the Differences Between Alternatives 2, 3, and 4 for Groundwater?

- Alternative 2 includes adding biological treatment of Cr(VI).
- Alternative 3 includes roughly doubling the capacity of the P&T for Cr(VI).
- Alternative 4 includes maintaining the existing P&T systems. The operational time is longer than in Alternatives 2 or 3.

Alternative 2

- Includes installation of about 9 new wells to support biological treatment.
- 25 years for Cr(VI) and total chromium to achieve groundwater cleanup levels.
- 13 years for nitrate to achieve cleanup levels.
- 56 years for strontium-90 to achieve cleanup levels.

Alternative 3 – Preferred Alternative

- Includes installation of 60 new wells and doubling the capacity of the P&T system.
- 12 years for Cr(VI) and total chromium to achieve cleanup levels.
- 6 years for nitrate to achieve cleanup levels.
- 44 years for strontium-90 to achieve cleanup levels.

Alternative 4

- Includes installing about 13 additional wells. This is mostly due to the longer operational timeframe.
- 39 years for Cr(VI) and total chromium to achieve cleanup levels.
- 13 years for nitrate to achieve cleanup levels.
- 56 years for strontium-90 to achieve cleanup levels.

Public Comment Period July 26 – August 25

Find out more from the notice on the main Hanford website:

100-D/H Proposed Plan: Plan to address remaining soil & groundwater contamination in 100-D/H Area

www.Hanford.gov

From there you will find links to:

- Proposed Plan
- Administrative Record Index
- Fact Sheet
- 100-D/H Operable Units RI/FS