Roundtable Involvement in Remedial Design and Remedial Action for the Lower Duwamish Waterway

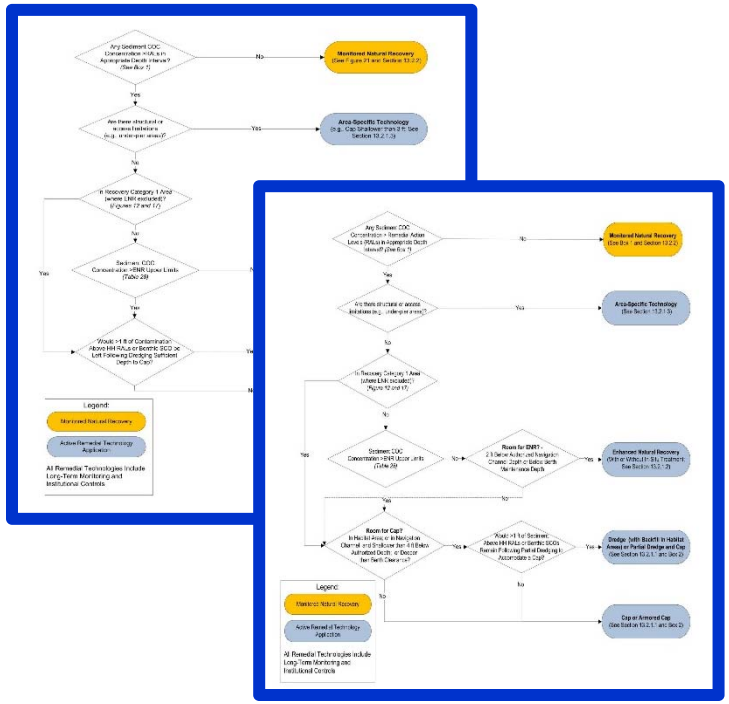
October 11, 2018

What is Remedial Design (RD)?

Gather data, conduct studies

Use the Record of Decision to determine what cleanup methods applies where

Develop designs

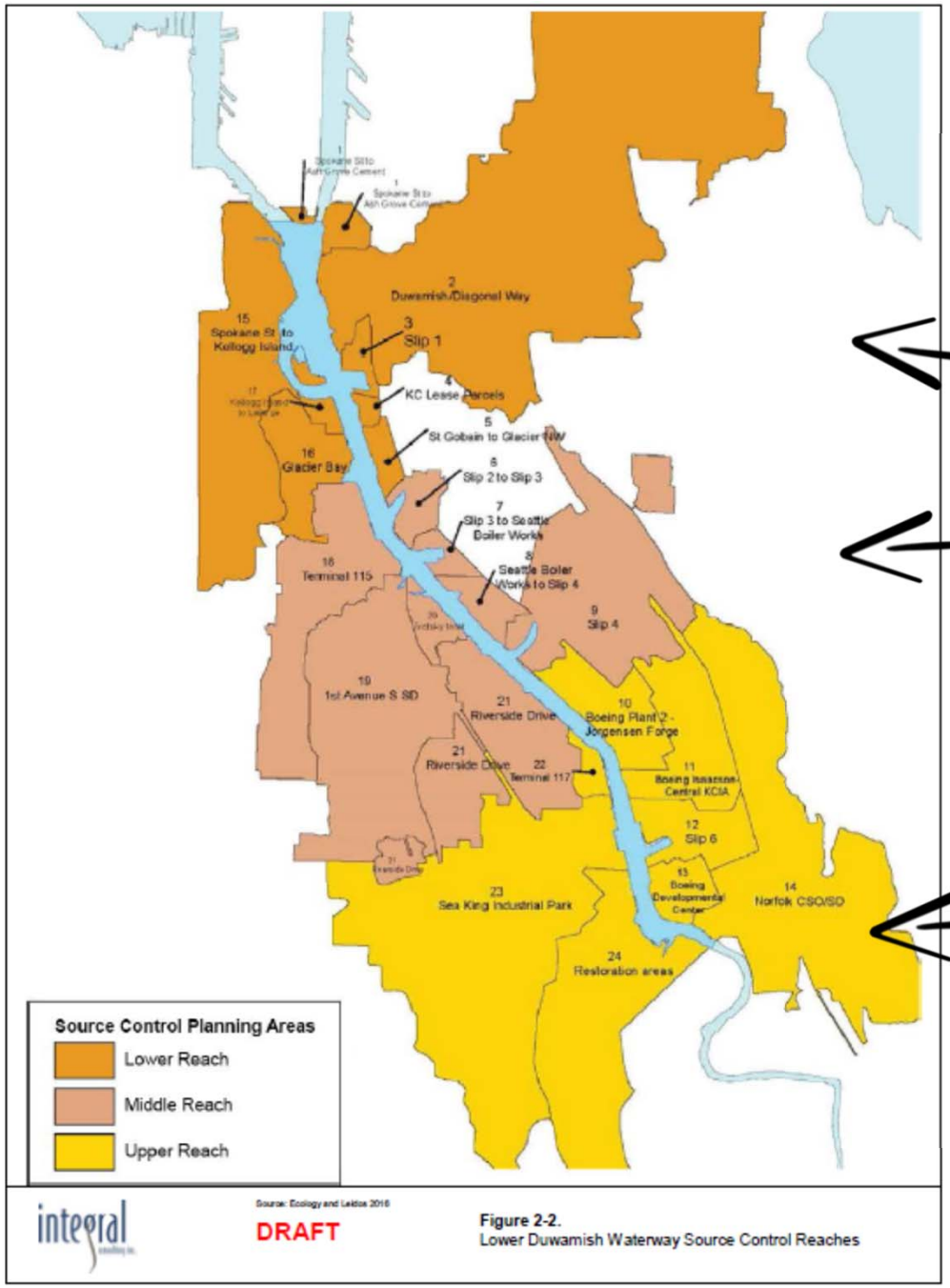


What is Remedial Action?

Cleanup at site begins



Sequencing of RD/RA



Lower Reach*

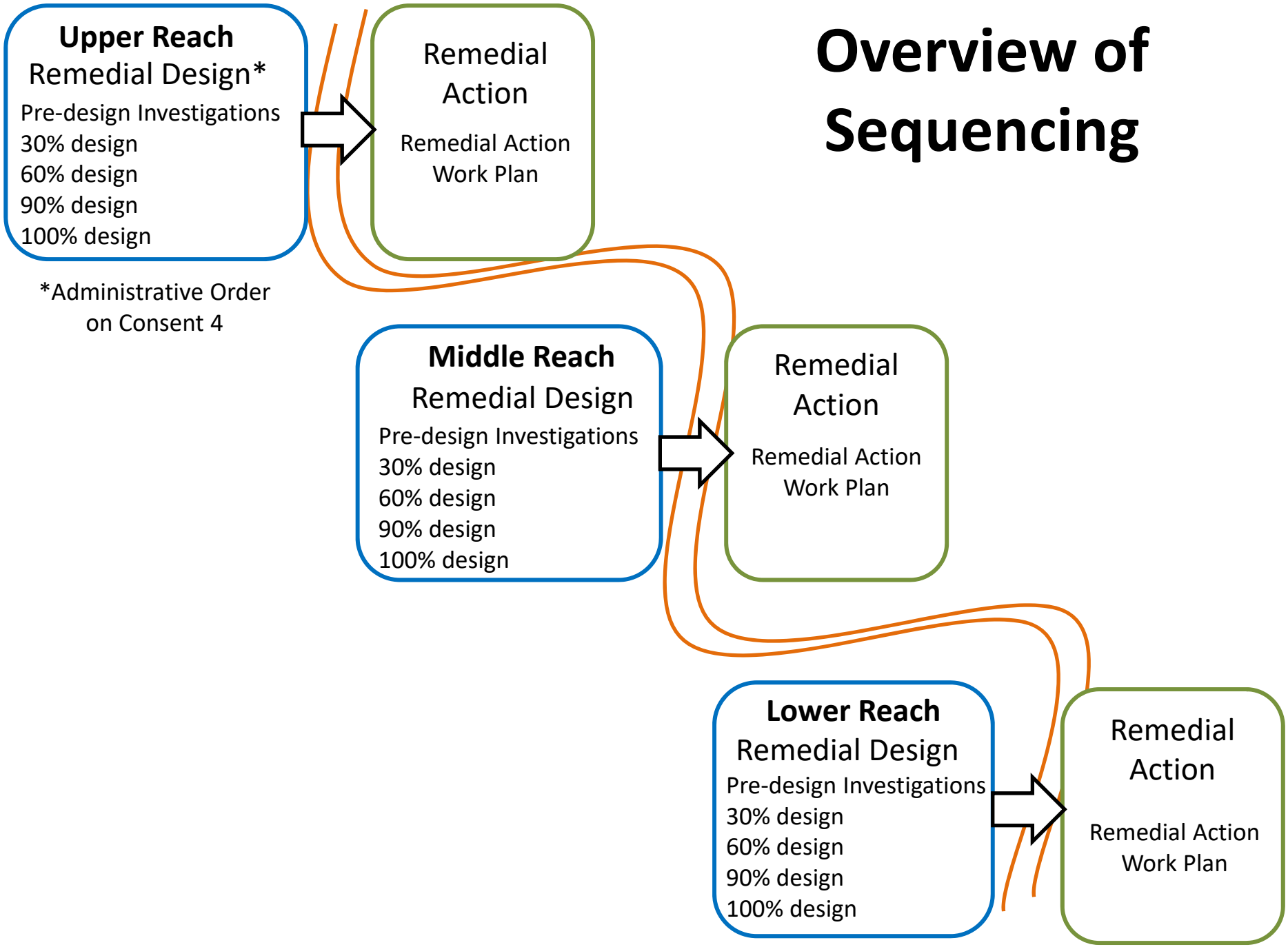
Middle Reach*

Upper Reach*

(First)

*Based on Ecology's Source Control Planning Areas

Overview of Sequencing



How will the Roundtable be involved with Remedial Design?

Remedial Design Work Plan

Pre-Design Investigations (PDI) Work Plan and Quality Assurance Plan

- PDI Sampling and Analysis (field work/data collection)
- PDI Data Evaluation Report

Preliminary 30% Remedial Design*

Intermediate 60% Remedial Design*

Pre-Final 90% Remedial Design

Final 100% Remedial Design

Associated Plans

- Water Quality Monitoring during construction
- Construction Quality Assurance to verify that construction requirements are being met
- Habitat Area Identification
- Site access and vessel management
- Worker health and safety requirements
- Waste transport and disposal
- Green and Sustainable remediation practices
- Community Outreach & Communications *
- General information about ICs
- General approach to future (long term) monitoring – part of future site-wide monitoring plan
- Compliance with legal requirements
  - Archeological Discovery Plan
  - Compensatory Mitigation Plan
  - Biological Assessment
  - Section 408 Compliance Documentation

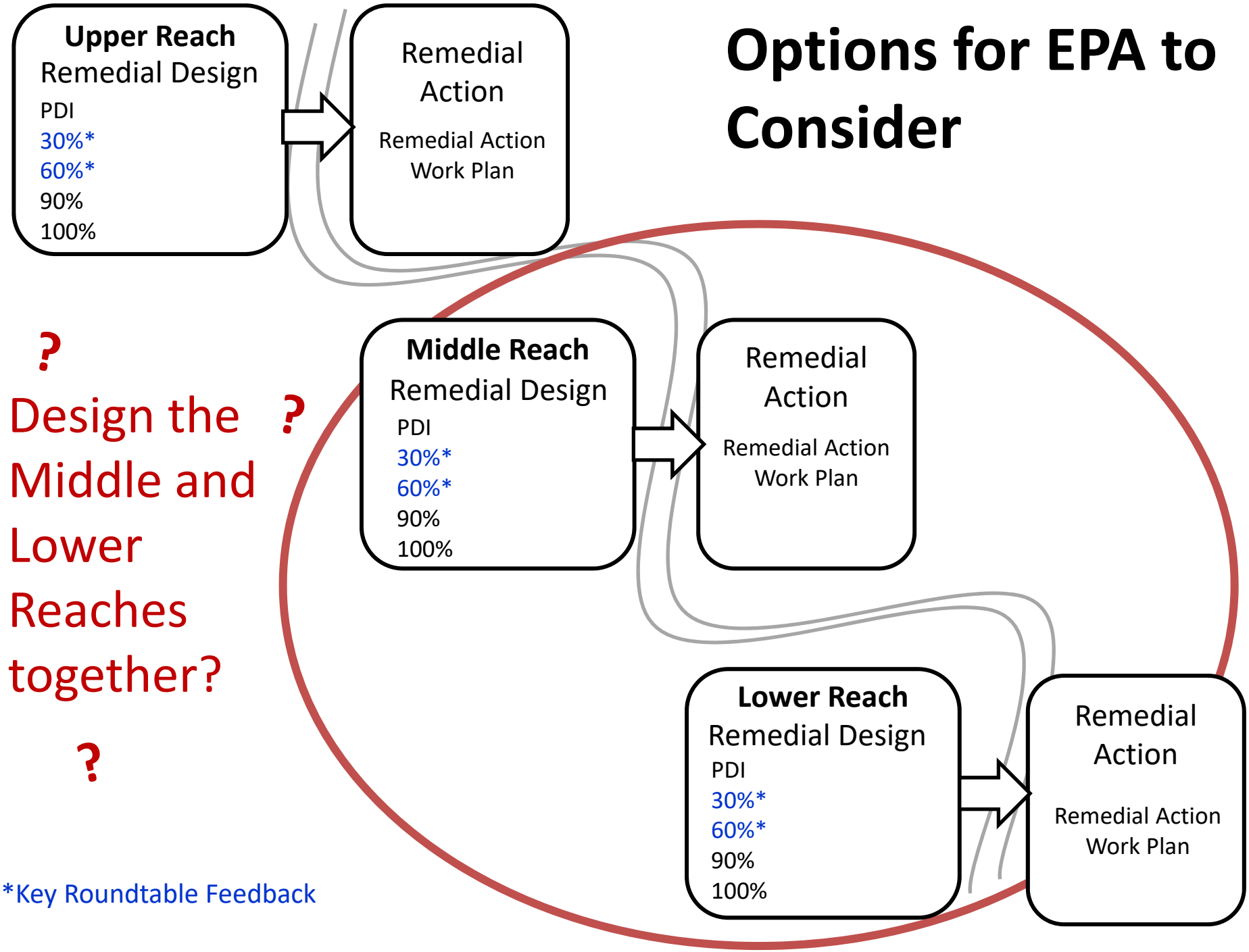
*Key Roundtable Feedback

How will the Roundtable be involved with Remedial Action?

- Remedial Action Work Plan
- Responding to construction impacts on business and residents

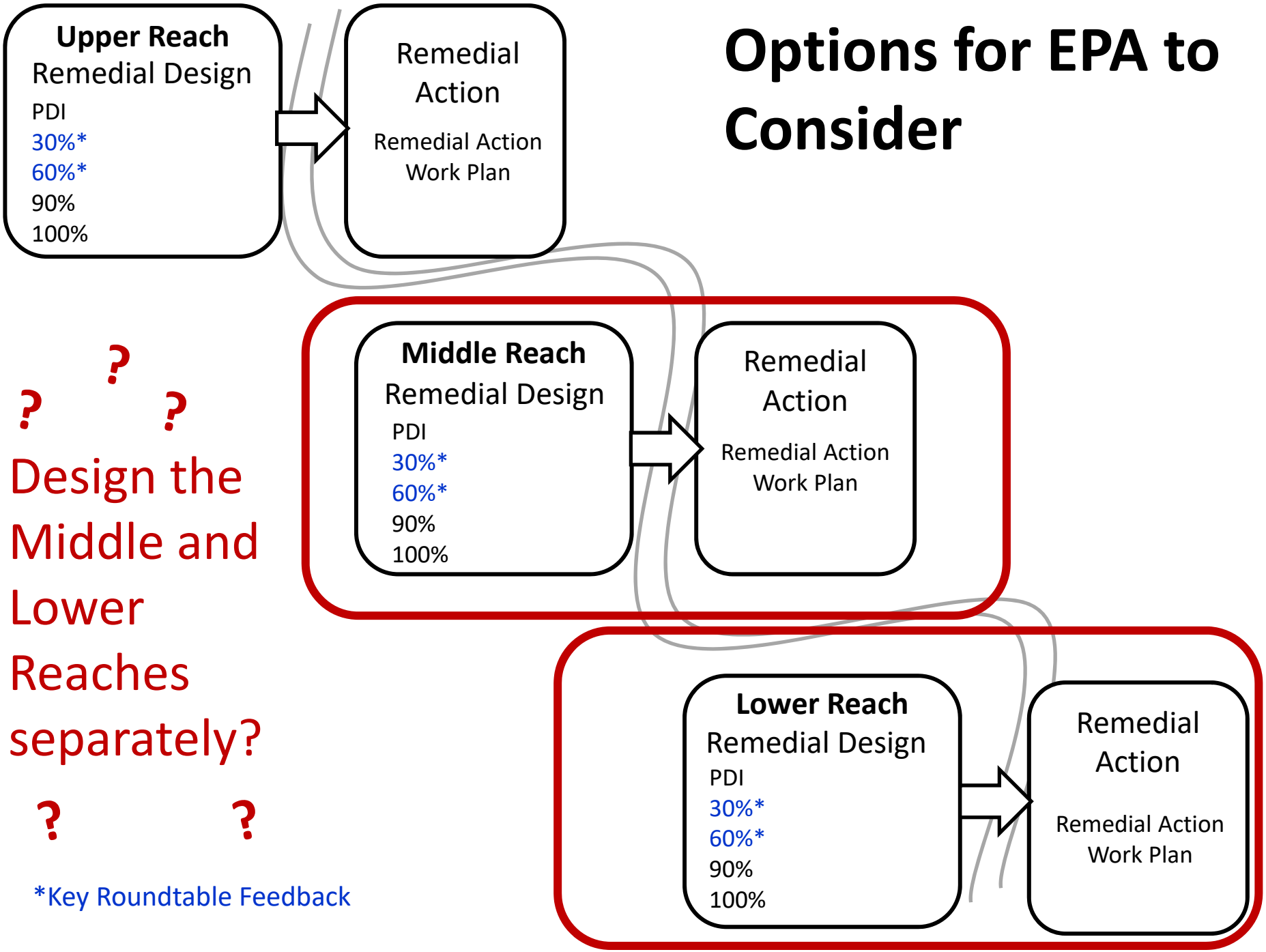


Options for EPA to Consider



*Key Roundtable Feedback

Options for EPA to Consider

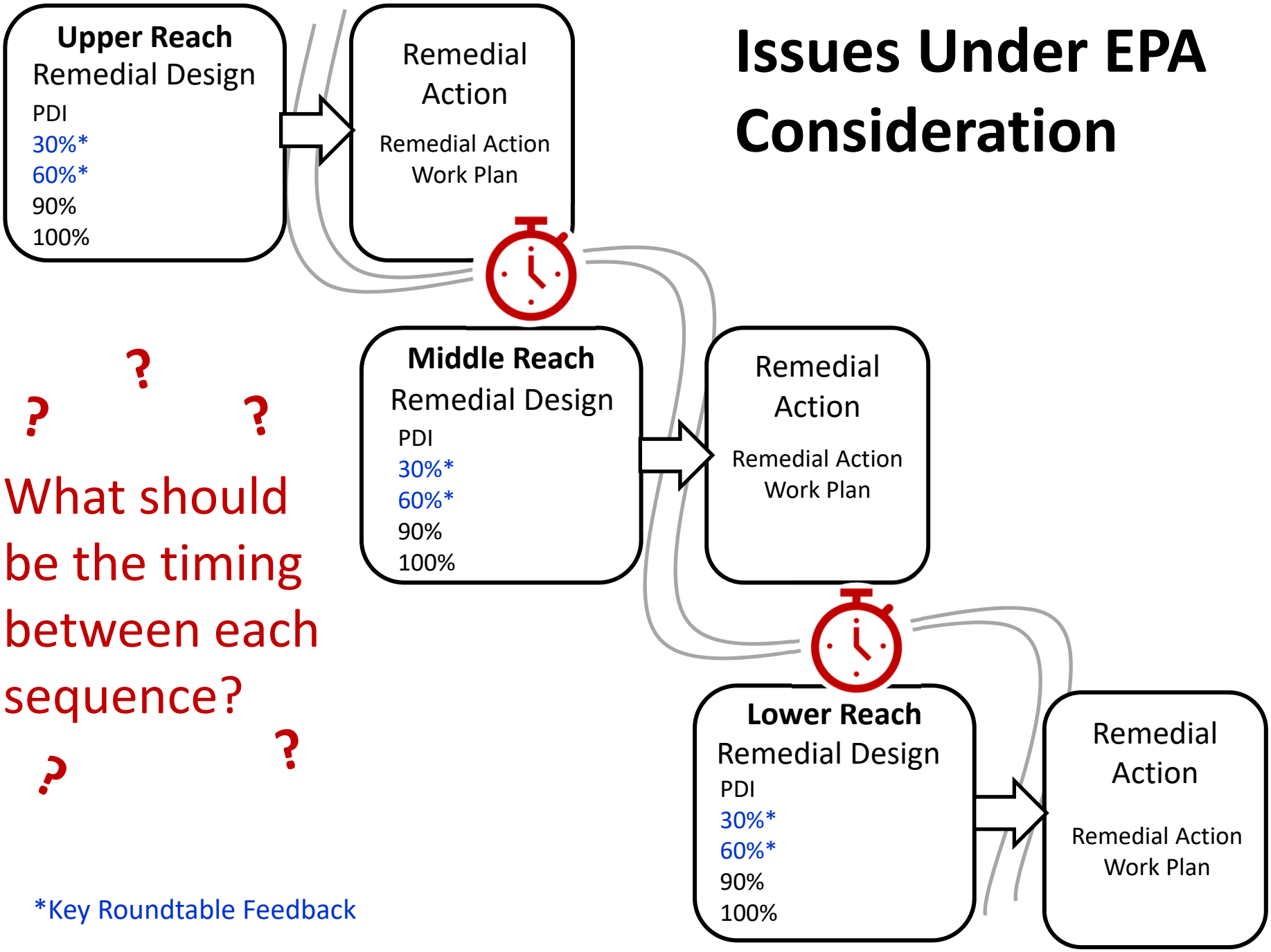


? ? ? ?

Design the Middle and Lower Reaches separately?

*Key Roundtable Feedback

Issues Under EPA Consideration



*Key Roundtable Feedback

Roundtable Recommendations to EPA

RD/RA Topics

Upper Reach
Remedial Design
PDI
30%*
60%*
90%
100%

→ Remedial Action
Remedial Action Work Plan

Middle Reach
Remedial Design
PDI
30%*
60%*
90%
100%

→ Remedial Action
Remedial Action Work Plan

Lower Reach
Remedial Design
PDI
30%*
60%*
90%
100%

→ Remedial Action
Remedial Action Work Plan

*Key Roundtable Feedback

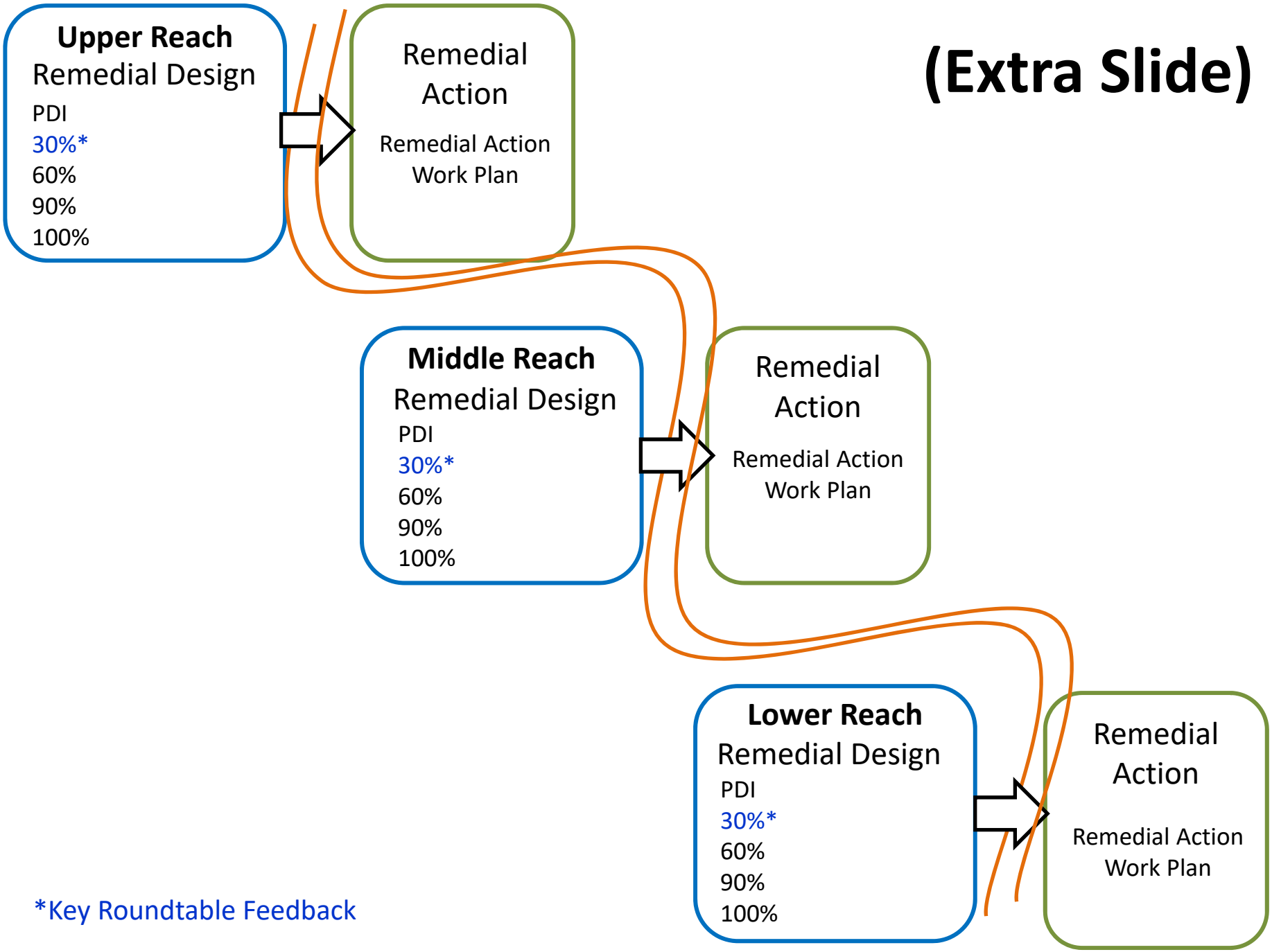
Other Topics

- Rail Traffic
- Public Access
- Barge Traffic
- Vessel Movement
- Habitat Restoration
- Jobs and trainings
- Corps of Engineers navigation dredging
- Shoreline activities
- Fishing*
- Other?

**For issues that fall outside the Institutional Control (IC) program*

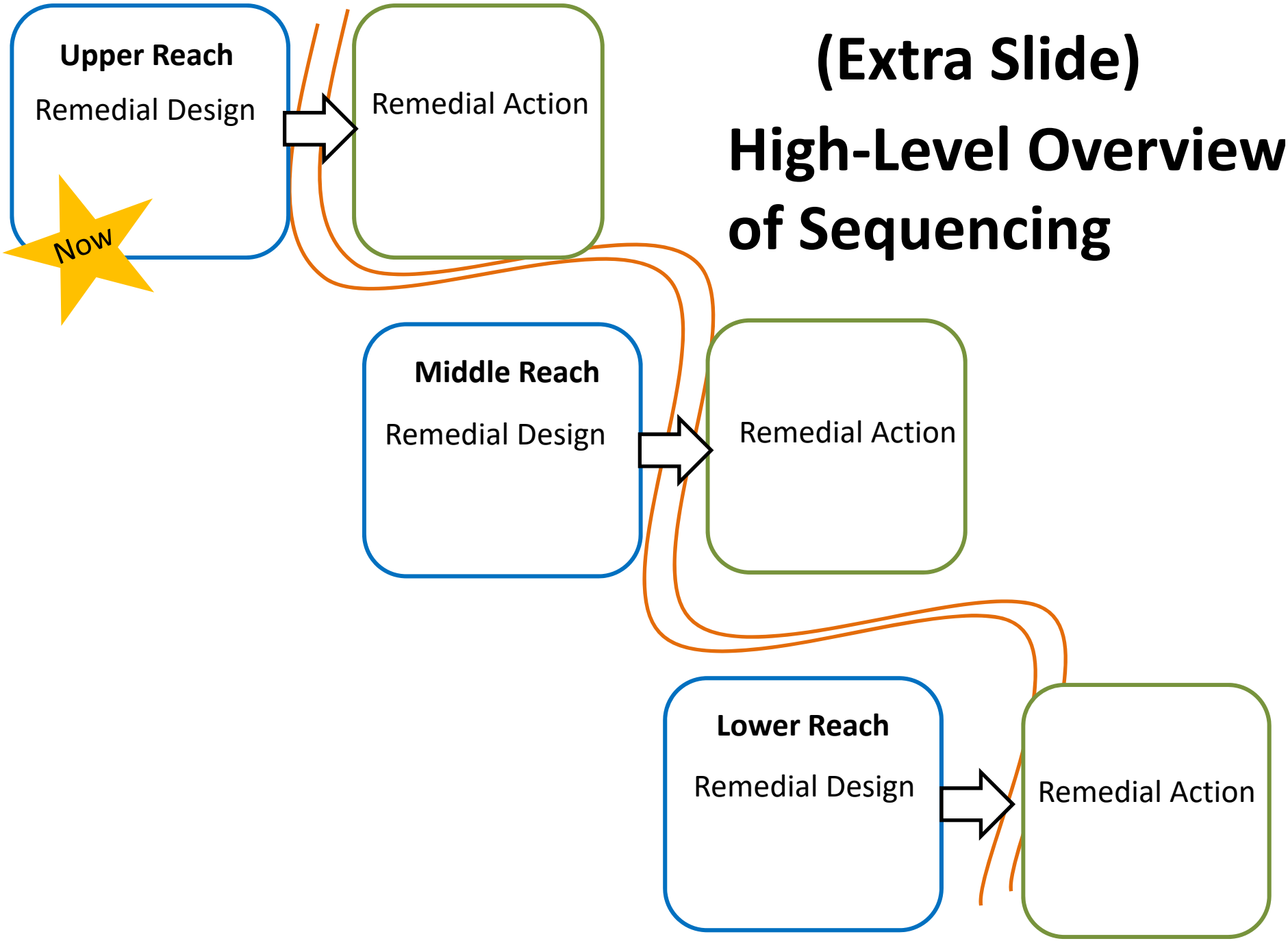
EXTRA SLIDES FROM HERE ON

(Extra Slide)



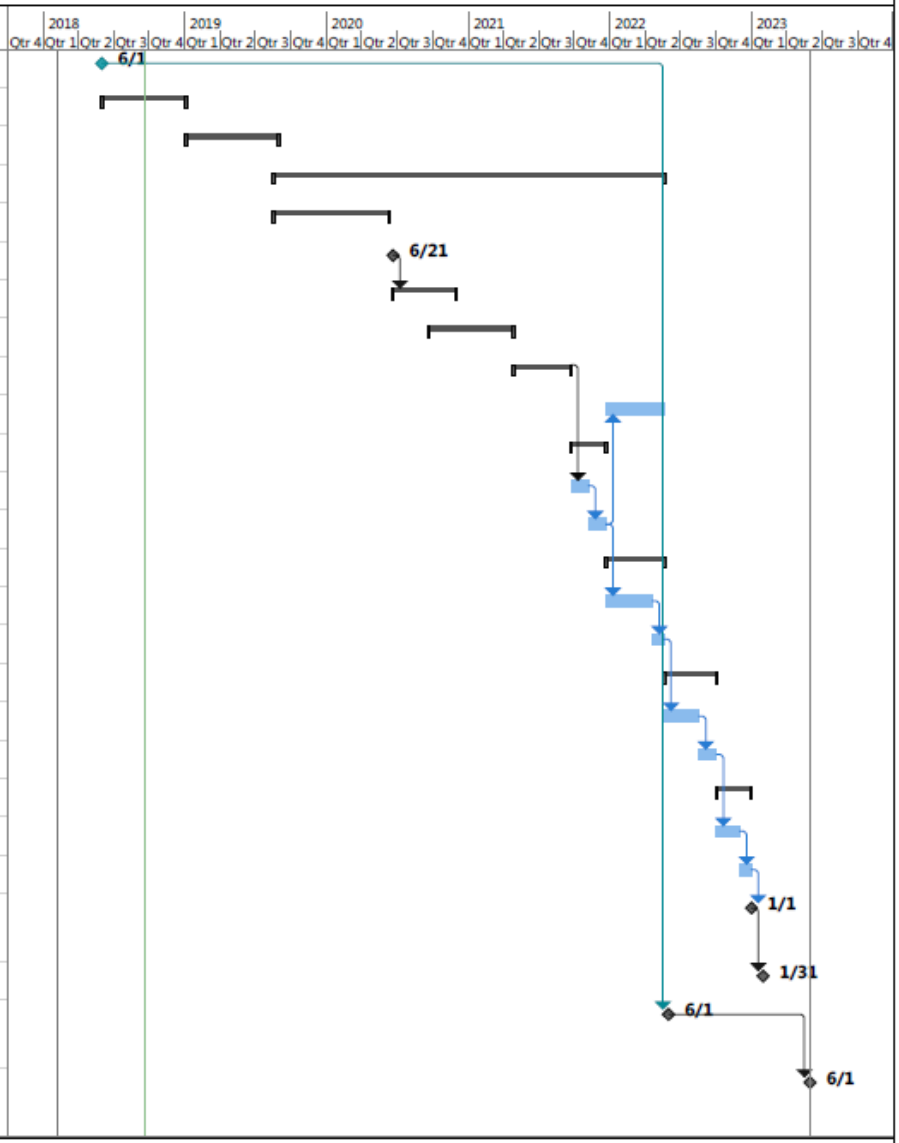
*Key Roundtable Feedback

(Extra Slide) High-Level Overview of Sequencing



DRAFT AOC4 SCHEDULE - ILLUSTRATION ONLY

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
1		AOC 4 Signatures	0 days	Fri 6/1/18	Fri 6/1/18	
2		**Contracting**	**155 days**	**Fri 6/1/18**	**Fri 1/4/19**	
7		**RD Work Plan (Incl. PDI Work Plan)**	**171 days**	**Fri 1/4/19**	**Sat 8/31/19**	
13		**Pre Design Investigations**	**720 days**	**Sat 8/17/19**	**Sat 5/21/22**	
14		**PDI QAPP (w/Phase I SAP)**	**213 days**	**Sat 8/17/19**	**Thu 6/11/20**	
21		**Phase I PDI data submittal**	0 days	Sun 6/21/20	Sun 6/21/20	20FS+10 edays
22		**Phase I PDI Evaluation Report**	**117 days**	**Sun 6/21/20**	**Wed 12/2/20**	**21**
28		**Phase II**	**156 days**	**Sat 9/19/20**	**Tue 4/27/21**	
32		**Phase II PDI Evaluation Report**	**107 days**	**Tue 4/27/21**	**Thu 9/23/21**	**31**
38		**Phase III (if needed)**	150 edays	Wed 12/22/2	Sat 5/21/22	41
39		**30% DESIGN**	**64 days**	**Thu 9/23/21**	**Wed 12/22/21**	
40		draft	45 edays	Thu 9/23/21	Sun 11/7/21	32
41		EPA review	45 edays	Sun 11/7/21	Wed 12/22/21	40
42		**60% DESIGN**	**108 days**	**Wed 12/22/2**	**Sat 5/21/22**	
43		draft	120 edays	Wed 12/22/2	Thu 4/21/22	41
44		EPA review	30 edays	Thu 4/21/22	Sat 5/21/22	43
45		**90% DESIGN**	**95 days**	**Sat 5/21/22**	**Mon 10/3/22**	
46		draft	90 edays	Sat 5/21/22	Fri 8/19/22	44
47		EPA review	45 edays	Fri 8/19/22	Mon 10/3/22	46
48		**100% DESIGN**	**65 days**	**Mon 10/3/22**	**Sun 1/1/23**	
49		draft	60 edays	Mon 10/3/22	Fri 12/2/22	47
50		EPA review	30 edays	Fri 12/2/22	Sun 1/1/23	49
51		Recommended SC Sufficiency Report	0 days	Sun 1/1/23	Sun 1/1/23	50
52		**Advertisement For Construction Bi**	0 days	Tue 1/31/23	Tue 1/31/23	51FS+30 edays
53		Periodic Monitoring QAPP Addendum (if needed)	0 edays	Wed 6/1/22	Wed 6/1/22	1FS+1461 edays
54		Periodic Monitoring Data/Evaluation Report (if needed)	0 days	Thu 6/1/23	Thu 6/1/23	53FS+365 edays



Project: draft AOC4 Schedule 0
Date: Tue 9/18/18

Task	Project Summary	Manual Task	Start-only	Deadline	
Split	Inactive Task	Duration-only	Finish-only	Progress	
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress	
Summary	Inactive Summary	Manual Summary	External Milestone		

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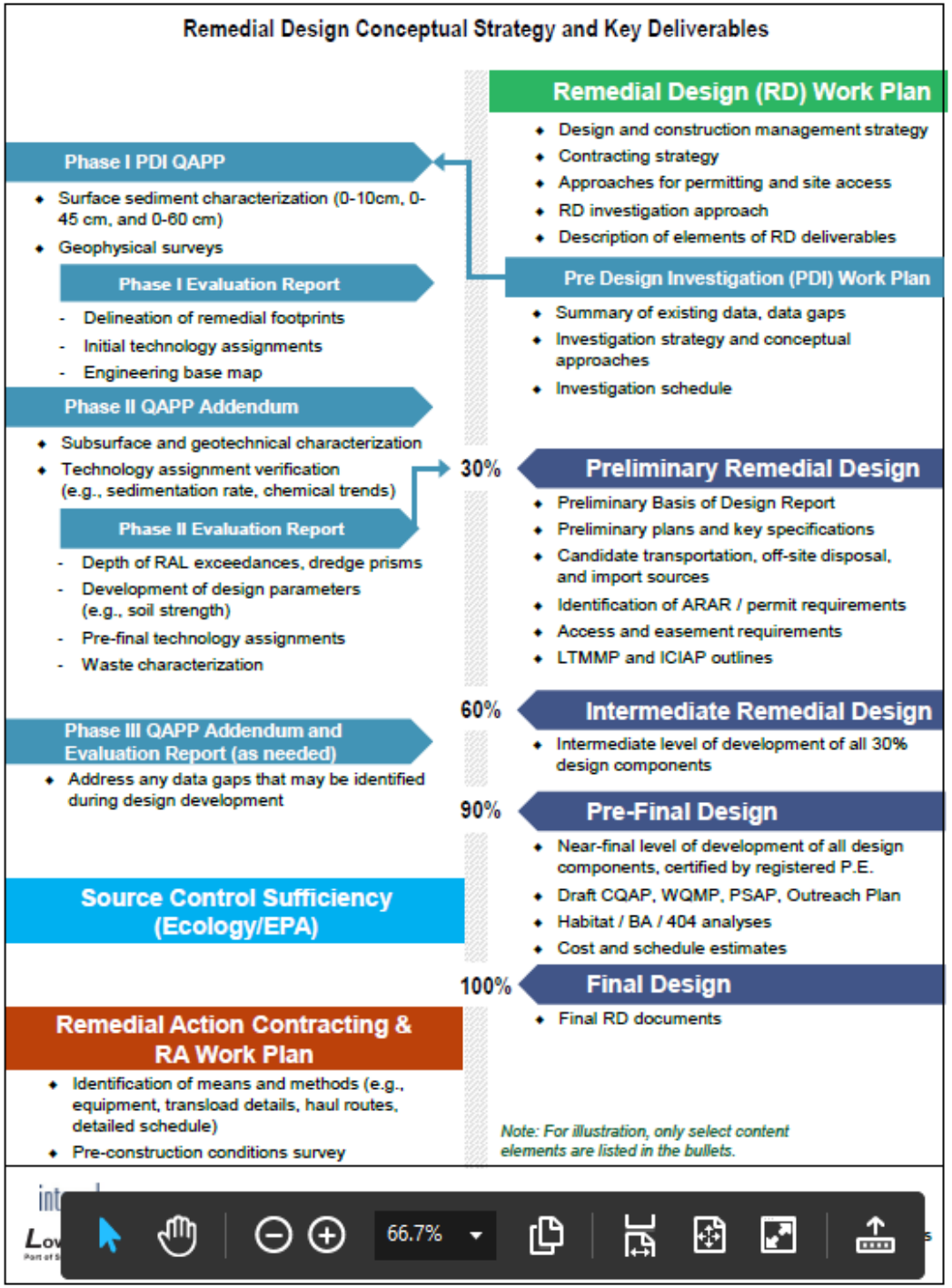
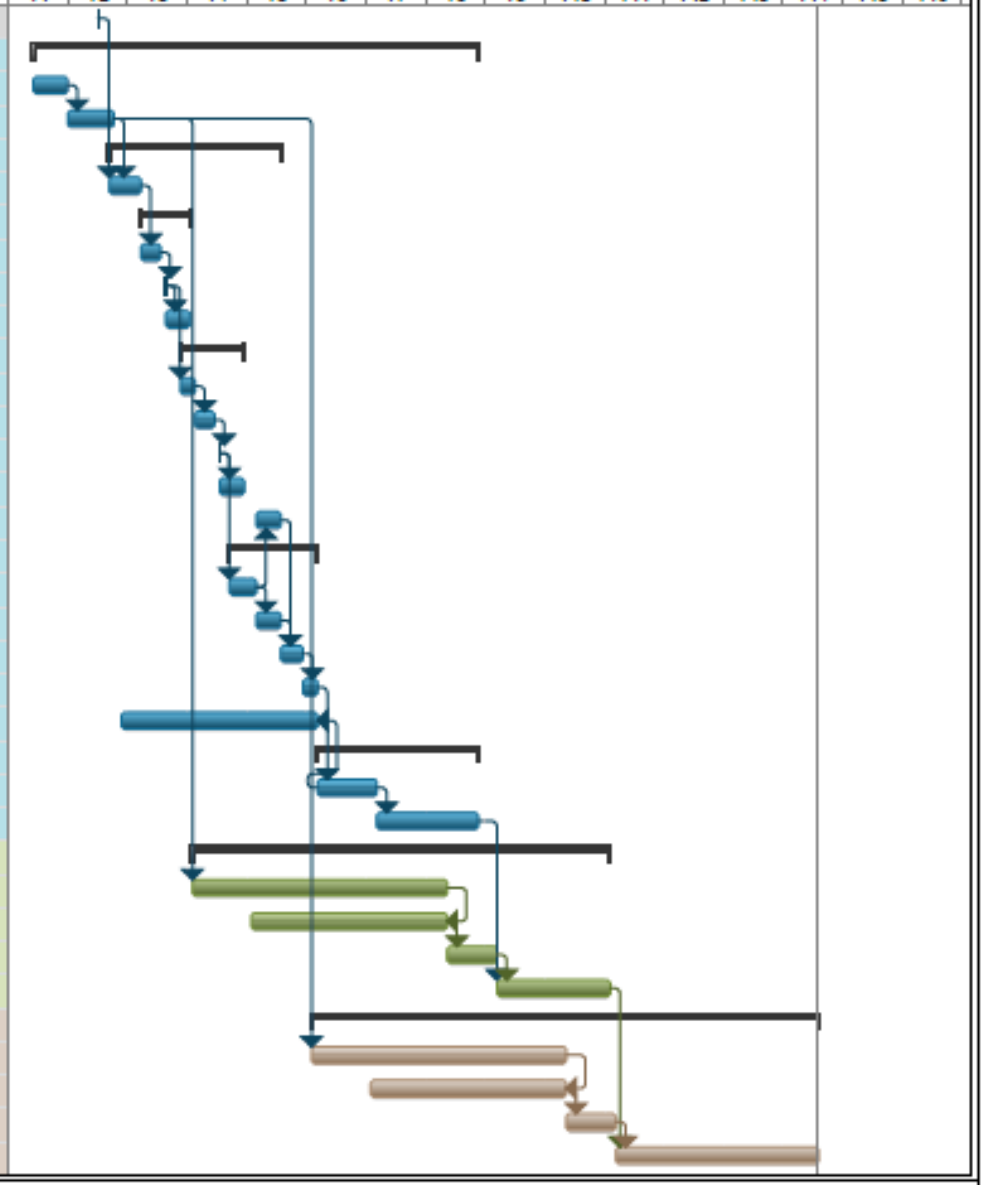

Remedial Design Conceptual Strategy and Key Deliverables
Remedial Design (RD) Work Plan
Design and construction management strategy
Contracting strategy
Approaches for permitting and site access
RD investigation approach
Description of elements of RD deliverables
Phase I PDI QAPP
Surface sediment characterization (0-10cm, 0-45 cm, and 0-60 cm)
Geophysical surveys
Phase I Evaluation Report
- Delineation of remedial footprints
- Initial technology assignments
- Engineering base map
Pre Design Investigation (PDI) Work Plan
Summary of existing data, data gaps
Investigation strategy and conceptual approaches
Investigation schedule
Phase II QAPP Addendum
Subsurface and geotechnical characterization
Technology assignment verification (e.g., sedimentation rate, chemical trends)
Phase II Evaluation Report
- Depth of RAL exceedances, dredge prisms
- Development of design parameters (e.g., soil strength)
- Pre-final technology assignments
- Waste characterization
30%
Preliminary Remedial Design
Preliminary Basis of Design Report
Preliminary plans and key specifications
Candidate transportation, off-site disposal, and import sources
Identification of ARAR / permit requirements
Access and easement requirements
LTMMP and ICIAP outlines
Phase III QAPP Addendum and Evaluation Report (as needed)
Address any data gaps that may be identified during design development
60%
Intermediate Remedial Design
Intermediate level of development of all 30% design components
90%
Pre-Final Design
Near-final level of development of all design components, certified by registered P.E.
Draft CQAP, WQMP, PSAP, Outreach Plan
Habitat / BA / 404 analyses
Cost and schedule estimates
Source Control Sufficiency (Ecology/EPA)
100%
Final Design
Final RD documents
Remedial Action Contracting & RA Work Plan
Identification of means and methods (e.g., equipment, transload details, haul routes, detailed schedule)
Pre-construction conditions survey
Note: For illustration, only select content elements are listed in the bullets.
66.7%

Design Strategy Report
final draft Oct 10

- Sent 10/10/18 to DRCC and others for comment.
- Included LDWG response to EPA comments.
- Graphics will mostly look familiar
- Describes the typical remedial design process, which is also set forth in Upper Reach AOC4.
- Describes the kinds of information needed.
- Helpful overview for those who weren't involved with past design (Slip 4, T-117, other early actions).
- Discusses uncertainties in schedule and alternative strategies. **Look at Table 4-1**

ID	Task Name	Duration	Predecessors
1	LDWG Pre-Design Studies Completion	1 day	
2	UPPER REACH RD/RA	2728 days	
3	Design Contracting	210 days	
4	RD Work Plan (Incl. PDI Work Plan)	285 days	3
5	Pre Design Investigations	1052 days	
6	PDI QAPP	195 days	4FS-30 days,1
7	Phase I PDI	301 days	
8	Field/Analytical/Validation	120 days	6
9	Data Submittal	1 day	8FS+30 days
10	Data Evaluation Report	150 days	9
11	Phase II PDI	391 days	
12	Phase II QAPP Addendum	90 days	9FS+90 days
13	Field/Analytical/Validation	120 days	12
14	Data Submittal	1 day	13FS+30 days
15	Data Evaluation Report	150 days	14
16	Phase III PDI (if needed)	150 days	18
17	Remedial Design	540 days	
18	Preliminary (30%) Design	165 days	14FS+60 days
19	Intermediate (60%) Design	150 days	18
20	Draft Final (90%) Design	135 days	19,16
21	Final (100%) Design	90 days	20
22	Source Control Sufficiency Determination	1200 days	24SF
23	Remedial Action	986 days	
24	RA Contracting, RAWP Preparation	365 days	21
25	RA Construction	621 days	24
26	MIDDLE REACH RD/RA	2560 days	
27	RD Contracting, RDWP, PDI, RD	1561 days	4
28	Source Control Sufficiency Determination	1200 days	27FF
29	RA Contracting, RAWP Preparation	305 days	28
30	RA Construction	694 days	29,25
31	LOWER REACH RD/RA	3107 days	
32	RD Contracting, RDWP, PDI, RD	1561 days	4
33	Source Control Sufficiency Determination	1200 days	32FF
34	RA Contracting, RAWP Preparation	305 days	33
35	RA Construction	1241 days	34,30



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DRAFT FINAL

Lower Duwamish Waterway Group

Port of Seattle / City of Seattle / King County / The Boeing Company

Figure 4-2.
Remedial Design/Remedial Action Conceptual Schedule

New Table 4-1 discusses schedule uncertainties and strategies. (4 sheets on 11X17 paper)

Table 4-1. Summary of Potential Schedule Uncertainties and Strategies for LDW Remedial Design/Remedial Action Activities

No.	Schedule Item [a]	Description	Potential Implication to RD/RA Duration [b,c]	Comments
General Schedule Considerations				
1	Construction scope and duration	Construction quantities and production rates are based on estimates in the ROD	−2 to +2 years	• Scope of required active remediation (e.g., dredge quantities) is highly uncertain until after 30% design for each segment. • Production rates depend on many factors and will be re-evaluated in RD, with best estimates developed by the contractor in its RA work plan. • Higher production rates can affect project quality, environmental impacts, costs, and quality of life factors; contract incentives must balance these tradeoffs. • Inherent uncertainties, such as rail capacity, availability of construction resources, and economic conditions, are not controllable.
2	Timing of design completion	Timing of design approval and construction contracting, for full utilization of in-water construction windows	0 to +12 months per reach	• Construction window is assumed as Oct 1–February 14. • 100% design should be approved in the period Jan–March to allow RA contracting, development, and approval of work plans, finalization of site access, mobilization, and facility preparation by Oct 1. • Later design approval will result in partial or complete loss of a construction season. • Conceptual schedule currently assumes no schedule losses from this factor. • Close coordination required throughout the design process to reduce the potential schedule implication.
3	Source control sufficiency recommendations and timing	Timing of source control sufficiency, for full utilization of in-water construction windows	0 to +12 months per reach	• Sufficiency recommendation should be complete prior to construction bid advertisement (i.e., in the period Jan–March). • Localized insufficiency can potentially be dealt with through modified scheduling of the construction in that area, assuming a plan is in place to address the problem, and by adding optional construction components in the construction contract. • Conceptual schedule currently assumes no schedule losses from this factor. • Close coordination required throughout the design process to reduce this schedule risk.
4	Pilot studies	Pilot studies to support remedial design	0 to +3 months per reach	• The selected RD contractor could propose to conduct bench- or pilot-level studies to support certain elements of the design or construction, such as dewatering or water treatment. • Current conceptual strategy and schedule does not anticipate or include provisions for pilot studies, although certain bench testing programs could potentially be achieved within the conceptual timeline. • The need for bench/pilot testing will be identified in the RDWP.
5	Coordination with Tribal fishers	Coordination with Tribal fishing activities	0 to +3 months per reach	• Active net fishing within the LDW during remedial construction activities could lead to delays. • Coordination/negotiation with the Tribes may be necessary to facilitate construction in areas that are subject to Tribal fishing rights.
Middle/Lower Reach Schedule Strategies [d]				
6	RD schedule start	Initiate RD contracting and design sooner to reduce time between RD/RA activities in each reach	−3 to +3 months per reach	Pros: • Potentially reduces overall RD/RA time frame. • Provides increased opportunity for real-time coordination between upstream/downstream RD/RA activities.

Data Reports

from baseline and other AOC3 sampling

- Fish and Crab – Final, available on LDWG.org
- Sediment – Final Draft submitted Oct 8
- Seeps – Draft submitted September 11
- Surface Water – Due later this year
- Clams – Due Oct 16, with addendum for porewater

Sneak Preview –
Draft Figures for Data Evaluation Report

- EPA has not commented on figures
- Show results for AOC3 samples to date
- Legends provide references – SWAC from RI/FS, predicted SWACs for year 0 and 5 after EAAs, RALs, and cleanup levels (partial).
- Baseline results do not define cleanup areas for design or risk assessment
- Overall: Good news! Early Actions, Source control and natural processes (sedimentation over time) seem to be helping. We still need to clean up.

Other AOC3 submittals

- Recovery Category Recommendations Report, draft Sept 13

- Data will be interpreted in the Data Evaluation Report – expect to see it in December or January. Feedback on graphics?

Other work ongoing

- Carbon amendment pilot
  - 2018 Year 1 data (porewater, sediment)
  - 2019 will get Year 2
  - 2020 year 3 (with benthic and tissue study) and evaluation report
- Institutional Controls
  - Going well! Not subject of today's roundtable.
  - Update at Stakeholder meeting 11/7

That’s all for now!

Thanks for being here.