FINAL

Appendix L
Updated Remedial Technology Assignment Options for Areas with RAL Exceedances

1 Preliminary Remedial Technology Assignments

This attachment summarizes the rationale used to assign the preliminary remedial technology options[1] to each area with remedial action level (RAL) exceedances. Figures 19 and 20 in the Record of Decision (ROD)[2] describe the process by which remedial technologies are to be assigned during the design process. Figure 19 refers to the decision flowchart for intertidal areas, while Figure 20 refers to the decision flowchart for subtidal areas. A variety of factors govern the preliminary selection of applicable remedial technologies, including mudline elevation, RAL exceedance factor, depth of contamination, and recovery category designation.

Areas that span both intertidal and subtidal elevation ranges are presented herein as distinct subareas within the RAL exceedance area since different flowcharts apply. Within the intertidal and subtidal subareas, different remedial technologies may apply as a result of other factors, including mixed sample results within the subarea or multiple recovery categories spanning the subarea. Engineering and constructability considerations will be evaluated during 30% and 60% remedial design (RD) to determine the final selected remedial technology in each area without data gaps. Additionally, several areas have not been vertically bounded yet, so a final technology cannot be selected. The final remedial technology assignment within areas with vertical data gaps will be determined during 90% RD based on Phase III data. For 30% RD, a single technology will be assumed for each area (or subarea) based on available data, site condition information, and engineering considerations.

Not including a technology assignment for a RAL exceedance area does not preclude that technology from consideration during RD phases. For example, in an area where enhanced natural recovery (ENR) is the indicated preliminary technology assignment, engineering considerations during RD could suggest that dredge and backfill would be more appropriate. Similarly, large areas that are designated as dredge or partial dredge and cap may have subareas that are eligible for ENR.

Potential remedial technologies identified in the ROD for intertidal and subtidal areas include the following:

- Intertidal:
  - Monitored natural recovery (MNR) to benthic sediment cleanup objective (SCO)
  - Area-specific technology[3]
  - ENR
  - Partial dredge and cap

[1] Multiple technologies could be used within a single area with remedial action level (RAL) exceedances.
[2] Figure 20 was corrected after the ROD had been published. Reference to Figure 20 herein refers to the corrected version, which was published in a memorandum from the US Environmental Protection Agency (EPA) dated August 26, 2015.
[3] In areas with structural or access restrictions, area-specific cleanup technologies will be applied as described in ROD Section 13.2.1.3.

  - Dredge and backfill
- Subtidal:
  - MNR
  - Area-specific technology
  - ENR
  - Partial dredge and cap
  - Dredge (with backfill in habitat areas)[4]
  - Cap or armored cap

Each area with RAL exceedances is presented herein, along with the ROD flowchart questions and answers to identify the preliminary remedial technology options. The updated preliminary remedial technology options are summarized by area in Table L-1 and Maps 3-5a and 3-5b.

Table L-1
Preliminary Technology Assignment(s) by RAL Exceedance Area

RAL Exceedance Area	Preliminary Technology Assignment(s)[1]	Notes
1	Dredge or partial dredge and cap	Backfill will be required above -10 ft MLLW if the area extends into habitat areas, based on engineering considerations. Area not vertically bounded.
2	Dredge	None
3	Inside FNC: dredge Outside FNC: dredge or partial dredge and cap	Backfill will be required above -10 ft MLLW if the area extends into habitat areas, based on engineering considerations. Area not vertically bounded.
4	Dredge	Backfill will be required above -10 ft MLLW if the area extends into habitat areas, based on engineering considerations.
5	Dredge	Backfill will be required above -10 ft MLLW if the area extends into habitat areas, based on engineering considerations. Area-specific technology may apply due to adjacent structure(s).
6	Dredge or partial dredge and cap	Interpolation-only area. Backfill will be required above -10 ft MLLW if the area extends into habitat areas, based on engineering considerations.
7	ENR	None
8	Dredge and backfill	Area-specific technology may apply due to adjacent structure(s).
9	Dredge or partial dredge and cap	Interpolation-only area. Backfill will be required above -10 ft MLLW if the area extends into habitat areas, based on engineering considerations.

[4] Habitat areas were defined in the feasibility study as all areas above -10 ft mean lower low water (MLLW).

RAL Exceedance Area	Preliminary Technology Assignment(s)[1]	Notes
		Area-specific technology may apply due to adjacent structure(s).
10	ENR	Area-specific technology may apply due to adjacent structure(s).
11	Dredge or partial dredge and cap	Backfill will be required above -10 ft MLLW. Area-specific technology may apply due to adjacent structure(s). Area not vertically bounded.
12	Dredge	None
13	Dredge	Area-specific technology may apply due to adjacent structure(s).
14	Dredge, or partial dredge and cap	None
15	Dredge or partial dredge and cap	Backfill will be required above -10 ft MLLW.
16	Dredge or partial dredge and cap	Backfill will be required above -10 ft MLLW. Area not vertically bounded.
17	Dredge	None
18	Dredge, dredge and backfill, and/or partial dredge and cap	Backfill will be required above -10 ft MLLW. Area-specific technology may apply due to adjacent structure(s).
19	Dredge and backfill or partial dredge and cap	Area not vertically bounded.
20	Dredge and backfill	None
21	Dredge or partial dredge and cap	Interpolation-only area. Backfill will be required above -10 ft MLLW if the area extends into habitat areas, based on engineering considerations.
22	Dredge, dredge and backfill, and/or partial dredge and cap	Backfill will be required above -10 ft MLLW. Area-specific technology may apply due to adjacent structure(s). Area not vertically bounded.
23	ENR	None
24	Dredge and backfill	Area-specific technology may apply due to adjacent structure(s).
25	ENR	None
26	Dredge and backfill	None
27	Dredge and backfill	None
28	Dredge	The use of backfill above -10 ft MLLW will be assessed during 30% RD, since this area is currently shoaled above the berthing depth of -18 ft MLLW.
29	Dredge, dredge and backfill, and/or partial dredge and cap	None

RAL Exceedance Area	Preliminary Technology Assignment(s)[1]	Notes
30	Dredge and backfill	None
31	Dredge and backfill or partial dredge and cap	Area not vertically bounded.
32	Dredge and backfill	Area-specific technology may apply due to access limitations.
33	ENR	Area-specific technology may apply due to access limitations.
34	Dredge and backfill	Area-specific technology may apply due to access limitations.
35	Dredge and backfill	Area-specific technology may apply due to access limitations.

Notes:
1. Where multiple technology assignments are listed, either more data is needed to finalize the technology assignment, or different technologies apply over different portions of the area. See the detailed analyses for each area below.
ENR: enhanced natural recovery
FNC: Federal Navigation Channel
MLLW: mean lower low water
RAL: remedial action level
RD: remedial design

Area 1: Area 1 is located in a subtidal area.

- Any sediment contaminant of concern (COC) concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  Yes.
- Is there room for a cap without dredging?
  No; a cap would impact the Federal Navigation Channel (FNC) or 10-ft buffer area.
- Would > 1 ft of sediment with COCs > human health (HH) RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  Unknown, since contamination is not vertically bounded in this area. Additional vertical extent of contamination is to be determined during Phase III Pre-Design Investigation (PDI).
- Therefore, **dredge** or **partial dredge and cap** may be applicable for RAL Exceedance Area 1.

Area 2: Area 2 is located in a subtidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.

- Is the area within a Recovery Category 1 area?
  Yes.
- Is there room for a cap without dredging?
  No; cap would impact the FNC or 10-ft buffer area.
- Would > 1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; RAL exceedances are bounded at -21.2 ft MLLW (core 509) in Area 2. Contaminated material would be fully removed and a cap would not be needed.[5]
- Therefore, **dredge** is applicable for RAL Exceedance Area 2.

Area 3: Area 3 is located in a subtidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  Yes.
- Is there room for a cap without dredging?
  No; the Recovery Category 1 area is within the FNC or 10-ft buffer area.
- Would > 1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  Unknown on the side slope outside the FNC, since vertical extent of contamination in the core is unbounded. Additional vertical extent of contamination in this area is to be determined during Phase III PDI. Within the FNC, RAL exceedances are bounded at -20.8 ft MLLW (core 517). Contaminated material would be fully removed and a cap would not be needed (see footnote 5).
- Therefore, **dredge** is applicable within the FNC (plus the 10-ft lateral buffer), and **dredge (with backfill in habitat areas)** or **partial dredge and cap** may be applicable for the non-FNC portion of RAL Exceedance Area 3.

Area 4: Area 4 is located in a subtidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.

[5] Within the FNC, the top of cap may not be above -19 ft MLLW in the upper reach according to the ROD. The ROD assumes a cap placement thickness of at least 3 ft, with more than 1 ft of contamination remaining below the cap. Therefore, contamination must be present to -23 ft MLLW or deeper for partial dredge and cap to be applicable in this part of the FNC.

- Is the area within a Recovery Category 1 area?
  Yes.
- Is there room for a cap without dredging?
  No; cap would impact the FNC or 10-ft buffer area.
- Would > 1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; contamination is bounded at -20.3 ft MLLW (core 527). Contaminated material would be fully removed and a cap would not be needed (see footnote 5).
- Therefore, **dredge (with backfill in habitat areas)** is applicable for RAL Exceedance Area 4.

Area 5: Area 5 is located in a subtidal area.

- Any sediment COC concentration >RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  Yes; the South Park Bridge and potential cable crossing create limitations. There may be a need to apply area-specific remedial technology; this will be determined during 30% design.
- Is the area within a Recovery Category 1 area?
  Yes.
- Is there room for a cap without dredging?
  No; a cap would impact the FNC or 10-ft buffer area.
- Would >1 ft of sediment with COCs >HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; RAL exceedances are bounded at -21.6 ft MLLW in Area 5 (core 535). Contaminated material would be fully removed and a cap would not be needed (see footnote 5).
- Therefore, **dredge (with backfill in habitat areas)** is applicable for RAL Exceedance Area 5. Since there is a structure within or adjacent to this area, an **area-specific technology** may be applicable.

Area 6: Area 6 is located in a subtidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  There are no sample locations exceeding the RALs within the area; area designation is based on interpolated data. Based on interpolated data, MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  Yes.

- Is there room for a cap without dredging?
  No; a cap would impact the FNC or 10-ft buffer area.
- Would >1 ft of sediment with COCs >HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  Unknown, since there are no data from locations within the area.
- Therefore, **dredge (with backfill in habitat areas)** or **partial dredge and cap** may be applicable for RAL Exceedance Area 6.

Area 7: Area 7 is located in both intertidal and subtidal areas.

Intertidal subarea:

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?
  No.
- Therefore, **ENR** is applicable for the intertidal subarea within RAL Exceedance Area 7.

Subtidal subarea:

- Any sediment COC concentration > RALs in appropriate depth interval?
  There are no sample locations exceeding the RALs within the subtidal area. Based on interpolated data, MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?
  No.
- Room for ENR?
  Yes.
- Therefore, **ENR** is applicable for the subtidal subarea within RAL Exceedance Area 7.

Area 8: Area 8 is located in an intertidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?

Yes; the South Park Bridge and potential cable crossing create limitations. There may be a need to apply area-specific remedial technology; this will be determined during 30% design.

- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?
  Yes.
- Would > 1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; contamination is present in the surface sediment only.
- Therefore, **dredge and backfill** is applicable for RAL Exceedance Area 8. Since there is a structure within or adjacent to this area, an **area-specific technology** may be applicable.

Area 9: Area 9 is located in a subtidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  There are no sample locations exceeding the RALs within the area; area designation is based on interpolated data. Based on interpolated data, MNR is not applicable.
- Are there structural or access limitations?
  Yes; the South Park Bridge and cable crossing create limitations. There may be a need to apply area-specific remedial technology; this will be determined during 30% design.
- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?
  Not applicable; ENR is not an allowable remedial technology for shoal areas (per ROD Table 28).
- Room for cap?
  No; the area is within the FNC or 10-ft buffer area and within a shoal area.
- Would > 1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  Unknown, since there are no data from locations within the area.
- Therefore, **dredge (with backfill in habitat areas)** or **partial dredge and cap** may be applicable for RAL Exceedance Area 9. Since there is a structure within or adjacent to this area, an **area-specific technology** may be applicable.

Area 10: Area 10 is located in an intertidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?

Yes; the South Park Bridge and potential cable crossing create limitations. There may be a need to apply area-specific remedial technology; this will be determined during 30% design.

- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?
  No.
- Therefore, **ENR** is applicable for RAL Exceedance Area 10. Since there is a structure within or adjacent to this area, an **area-specific technology** may be applicable.

Area 11: Area 11 is located in a subtidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  Yes; the South Park Bridge and cable crossing create limitations. There may be a need to apply area-specific remedial technology; this will be determined during 30% design.
- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?
  Not applicable; ENR is not an allowable remedial technology for shoal areas (per ROD Table 28).
- Room for cap?
  No; the area is within the FNC or 10-ft buffer area and within a shoal area.
- Would > 1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  There are no vertical data from locations within this area. Vertical extent of contamination is to be determined during Phase III PDI.
- Therefore, **dredge (with backfill in habitat areas)** or **partial dredge and cap** may be applicable for RAL Exceedance Area 11. Since there is a structure within or adjacent to this area, an **area-specific technology** may be applicable.

Area 12: Area 12 is located in a subtidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  No.

- Sediment COC concentrations > ENR upper limits?
  Not applicable; ENR is not an allowable remedial technology for shoal areas (per ROD Table 28).
- Room for cap?
  No; the area is within the FNC or 10-ft buffer area and within a shoal area.
- Would > 1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; contamination is present in the surface sediment only.
- Therefore, **dredge** is applicable for RAL Exceedance Area 12.

Area 13: Area 13 is located in an intertidal area; however, the area is within a berthing area with a berthing depth of -8 ft MLLW, and a small portion of Area 13 is on an armored bank. Therefore, Area 13 was evaluated using the subtidal RAL (0–60 cm) and will be treated as a subtidal area for the purposes of assigning a remedial technology. The armored bank portion of the area will be considered during 30% RD.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  Yes; the South Park Marina floats pose limitations. Additionally, the T-117 public pier and viewpoint structure may limit access of construction equipment. There may be a need to apply area-specific remedial technology; this will be determined during 30% design.
- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?
  ENR is not an acceptable technology in the area since this is a berthing area and the current mudline elevation is higher than the berthing depth of the marina.
- Room for cap?
  Capping is not an acceptable technology here, since this is a berthing area and the current mudline elevation is higher than the berthing depth of the marina.
- Would >1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; contamination is vertically bounded and will be fully removed.
- Therefore, **dredge** is applicable for RAL Exceedance Area 13. Since there is a structure within or adjacent to this area, an **area-specific technology** may be applicable.

Area 14: Area 14 is located in a subtidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.

- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  Yes.
- Is there room for a cap without dredging?
  No; a cap would impact the FNC or 10-ft buffer area.
- Would >1 ft of sediment with COCs >HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  RAL exceedances are bounded at -24.4 ft MLLW (core 568) in Area 14. More than 1 ft of material would remain with COCs > HH RALs following dredging to place a cap (see footnote 5).
- Therefore, **dredge** or **partial dredge and cap** may be applicable for RAL Exceedance Area 14.

Area 15: Area 15 is located in a subtidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
- *Yes; MNR is not applicable.* Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  Yes.
- Is there room for a cap without dredging?
  No; a cap would impact the FNC or 10-ft buffer area.
- Would >1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  RAL exceedances are bounded at -19 ft MLLW (core T117-SE-35-SC) in Area 15. This core is in the side slope of the channel; feasibility of full removal throughout the area will be determined during 30% RD.
- Therefore, **dredge (with backfill in habitat areas)** or **partial dredge and cap** may be applicable for RAL Exceedance Area 15.

Area 16: Area 16 is located in a subtidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  Yes.
- Is there room for a cap without dredging?

No; a cap would impact the FNC or 10-ft buffer area.

- Would >1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  There are no vertical data from locations within this area. Vertical extent of contamination is to be determined during Phase III PDI.
- Therefore, **dredge (with backfill in habitat areas)** or **partial dredge and cap** may be applicable for RAL Exceedance Area 16.

Area 17: Area 17 is located in a subtidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  Yes.
- Is there room for a cap without dredging?
  No; a cap would impact the FNC or 10-ft buffer area.
- Would >1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; contamination is present in the surface sediment only.
- Therefore, **dredge** is applicable for RAL Exceedance Area 17.

Area 18: Area 18 is located in both intertidal and subtidal areas.

Intertidal subarea:

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  Yes; area is adjacent to a bulkhead.
- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?
  Yes.
- Would >1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  More than 1 ft of sediment with COCs > HH RALs or benthic SCOs would remain following dredging to accommodate a cap in locations where deep vertical cores did not reach the bottom of contamination (i.e., cores 582 and 585; see footnote 5). Other portions of the

area are vertically bounded (i.e., cores 579, 581, 588, 592, 597, and 598), so dredging to accommodate a cap would result in full removal of contaminated material.

- Therefore, **partial dredge and cap** and/or **dredge and backfill** may be applicable for the intertidal subarea within RAL Exceedance Area 18. Since there is a structure within or adjacent to this area, an **area-specific technology** may be applicable.

Subtidal subarea:

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  Yes, partially.
- Is there room for a cap without dredging?
  No; constructing a cap without dredging could impact the FNC or 10-ft buffer area and would be impractical in comparison to the intertidal remedy (for which dredging must occur).
- Would >1 ft of sediment with COCs >HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No, the vertical extent of contamination is bounded in the subtidal portion of Area 18 (cores 584, 587, 591, and 596).
- Therefore, **dredge (with backfill in habitat areas)** may be applicable for the subtidal subarea within RAL Exceedance Area 18.

Area 19: Area 19 is located in an intertidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?
  Yes.
- Would > 1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  There are no vertical data from locations within this area. Vertical extent of contamination is to be determined during Phase III PDI.

- Therefore, **dredge and backfill** or **partial dredge and cap** may be applicable for RAL Exceedance Area 19.

Area 20: Area 20 is located in an intertidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?
  Yes.
- Would > 1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; contamination is vertically bounded (core 609) and will be fully removed.
- Therefore, **dredge and backfill** is applicable for RAL Exceedance Area 20.

Area 21: Area 21 is located in a subtidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  There are no sample locations exceeding the RALs within the area; area designation is based on interpolated data. Based on interpolated data, MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  Yes.
- Is there room for a cap without dredging?
  No; a cap would impact the FNC or 10-ft buffer area.
- Would >1 ft of sediment with COCs >HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  Unknown, since there are no data from locations within the area.
- Therefore, **dredge (with backfill in habitat areas)** or **partial dredge and cap** may be applicable for RAL Exceedance Area 21.

Area 22: Area 22 is located in both intertidal and subtidal areas.

Intertidal subarea:

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?

Yes; area is adjacent to a bulkhead.

- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations >ENR upper limits?
  Yes.
- Would >1 ft of sediment with COCs >HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; contamination is vertically bounded (cores 621 and 622) and will be fully removed.
- Therefore, **dredge and backfill** is applicable for the intertidal subarea within RAL Exceedance Area 22.

Subtidal subarea:

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  Yes.
- Is there room for a cap without dredging?
  No; constructing a cap without dredging could impact the FNC or 10-ft buffer area and would be impractical in comparison to the intertidal remedy (for which dredging must occur).
- Would >1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  There are no vertical data from locations within this area. Vertical extent of contamination is to be determined during Phase III PDI.
- Therefore, **partial dredge and cap** or **dredge (with backfill in habitat areas)** may be applicable for the subtidal subarea within RAL Exceedance Area 22. Since there is a structure within or adjacent to this area, an **area-specific technology** may be applicable.

Area 23: Area 23 is located in an intertidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?

No.

- Therefore, **ENR** is applicable for RAL Exceedance Area 23.

Area 24: Area 24 is located in an intertidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  Yes; area is adjacent to a bulkhead.
- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations >ENR upper limits?
  Yes.
- Would >1 ft of sediment with COCs >HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; contamination is vertically bounded (core 632) and will be fully removed.
- Therefore, **dredge and backfill** is applicable for the intertidal subarea within RAL Exceedance Area 24. Since there is a structure within or adjacent to this area, an **area-specific technology** may be applicable.

Area 25: Area 25 is located in an intertidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?
  No.
- Therefore, **ENR** is applicable for RAL Exceedance Area 25.

Area 26: Area 26 is located in an intertidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?

Yes.

- Would >1 ft of sediment with COCs >HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; contamination is present in the surface sediment only.
- Therefore, **dredge and backfill** is applicable for RAL Exceedance Area 26.

Area 27: Area 27 is located in an intertidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?
  Yes.
- Would >1 ft of sediment with COCs >HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; contamination is vertically bounded (see cores 648 through 666) and will be fully removed.
- Therefore, **dredge and backfill** is applicable for RAL Exceedance Area 27.

Area 28: Area 28 is located in a subtidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  Yes.
- Is there room for a cap without dredging?
  No; the area is located within a berthing area.
- Would >1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  This is a berthing area and contamination is bounded above the maximum allowable elevation for the top of a cap (core 673a), so capping is not being contemplated.
- Therefore, **dredge** is applicable for RAL Exceedance Area 28.

Area 29: Area 29 is located in both intertidal and subtidal areas.

Intertidal subarea:

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  Yes.
- Would >1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; contamination is vertically bounded (cores 683 and 684) and will be fully removed.
- Therefore, **dredge and backfill** is applicable for the intertidal subarea within RAL Exceedance Area 29.

Subtidal subarea:

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  Yes.
- Is there room for a cap without dredging?
  No; this area is considered to be within a habitat area based on the ROD definition (>-10 ft MLLW).
- Would >1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  There are no vertical data from locations within this area, but vertical cores in the adjacent intertidal area had no exceedances.
- Therefore, **partial dredge and cap** or **dredge (with backfill in habitat areas)** may be applicable for the subtidal subarea within RAL Exceedance Area 29.

Area 30: Area 30 is located in an intertidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  Yes.

- Would >1 ft of sediment with COCs >HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; contamination is vertically bounded (core 694) and will be fully removed.
- Therefore, **dredge and backfill** is applicable within RAL Exceedance Area 30.

Area 31: Area 31 is located in an intertidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  No.
- Is the area within a Recovery Category 1 area?
  Yes.
- Would >1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  There are no vertical data from locations within this area. Vertical extent of contamination is to be determined during Phase III PDI.
- Therefore, **dredge and backfill** or **partial dredge and cap** may be applicable within RAL Exceedance Area 31.

Area 32: Area 32 is located in an intertidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  Yes; timber groins and the South 98th Street bridge impede access to the area.
- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?
  Yes.
- Would >1 ft of sediment with COCs > HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; contamination is present in the surface sediment only.
- Therefore, **dredge and backfill** is applicable within RAL Exceedance Area 32. Since this area has access limitations, an **area-specific technology** may be applicable.

Area 33: Area 33 is located in an intertidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?

Yes; timber groins and the South 98th Street bridge impede access to the area.

- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?
  No.
- Therefore, **ENR** is applicable within RAL Exceedance Area 33. Since this area has access limitations, an **area-specific technology** may be applicable.

Area 34: Area 34 is located in an intertidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  Yes; timber groins and the South 98th Street bridge impede access to the area.
- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?
  Yes.
- Would >1 ft of sediment with COCs >HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; contamination is present in the surface sediment only.
- Therefore, **dredge and backfill** is applicable within RAL Exceedance Area 34. Since this area has access limitations, an **area-specific technology** may be applicable.

Area 35: Area 35 is located in an intertidal area.

- Any sediment COC concentration > RALs in appropriate depth interval?
  Yes; MNR is not applicable.
- Are there structural or access limitations?
  Yes; timber groins and the South 98th Street bridge impede access to the area.
- Is the area within a Recovery Category 1 area?
  No.
- Sediment COC concentrations > ENR upper limits?
  Yes.
- Would >1 ft of sediment with COCs >HH RALs or benthic SCOs remain following partial dredging to accommodate a cap?
  No; contamination is present in the surface sediment only.
- Therefore, **dredge and backfill** is applicable within RAL Exceedance Area 35. Since this area has access limitations, an **area-specific technology** may be applicable.