# APPENDIX G

## RATIONALE FOR THE 9-CRITERIA ANALYSIS RATINGS AND COST RATING SCALE

# APPENDIX G

# RATIONALE FOR 9-CRITERIA RATINGS IN FS EVALUATION

The detailed analysis sections of the FS (Sections 8 and 9) utilized a numerical 10-point (0-9) rating approach for the CERCLA 9-criteria analysis to evaluate the surface pathway and NAPL remedial alternatives. The assignment of ratings in the detailed evaluation of remedial alternatives is inherently a subjective process. This appendix presents a summary of the rationale used in assigning numerical ratings to the individual technology components of the remedial alternatives evaluated in the FS. The ratings rationales applied for each of the five balancing criteria (Long Term Effectiveness; Reduction of Toxicity, Mobility and Volume; Short Term Effectiveness; Implementability; Cost)[1] are presented in two tables (Table G-1 and G-2) for the surface pathway and NAPL evaluations respectively.

Tables G-1 and G-2 list numerical ratings between 9 and 0 (left column) that were assigned to the different technology components (middle column) for each of the balancing criteria. A brief description of the rationale for the specific rating is provided on the right side of the tables. For the "Cost" criterion, the numerical ratings are associated with variable cost intervals using a non-linear scale with a rating of 9 for the lowest cost interval and rating of 0 for the highest cost interval. Four different cost ranges were used for the surface pathway evaluation based on whether a parcel belonged to Group 4A, 4B, 3A and 3B, while the NAPL evaluation used a single cost range.

Tables G-1 and G-2 provide ratings for individual technology components that are typically combined with other technology components into one remedial alternative. The final rating for a remedial alternative was based on the ratings assigned to each technology component, though for many alternatives, the ratings for one of the technology components (typically an active remedial technology) controlled the overall rating for the alternative. For example, for the "SVE + ICs + Monitoring" alternative, the LTE rating for SVE determined the overall LTE rating assigned to the alternative because the SVE component contributed most to reducing contaminant mass and risk. For the same alternative, the SVE component's rating also determined the overall ratings assigned to STE and Implementability because both the short term potential health impacts and the implementation challenges associated with the SVE technology component of the alternative were judged to be the most significant. Variations within some technology components were also recognized and are distinguished in the tables. For example, the soil excavation technologies are differentiated, including shallow soil excavation (0-5 ft bgs), deeper excavation (0-15 feet bgs) and excavation adjacent to a building using shoring, with different ratings applied to each. Some technology components (e.g. deep >15 feet bgs NAPL excavation) are included in the tables to describe the end point of the ratings scale (e.g. rating of "0"), though these technology components are not included in any alternatives evaluated in this FS.

[1] As noted in Section 8, of the nine CERCLA criteria, only seven criteria are discussed in the FS. Of these seven criteria, the two threshold criteria were rated as "Yes" or "No" and did not use numerical ratings. Hence, these tables only present rationales for the ratings for the five balancing criteria.

**TABLE G-1**
**RATIONALE FOR 9-CRITERIA RATINGS FOR SURFACE PATHWAY EVALUATION**
**DEL AMO SOIL AND NAPL FS**

| LONG TERM EFFECTIVENESS (LTE) | | |
|---|---|---|
| **Rating** | **Technology Component** | **Rationale** |
| 9 | SVE in Outdoor Soil (OS) | Removes maximum possible amount of threat/contamination (>90%); residual represents acceptable risk. **Highest possible LTE.** |
| 9 | Excavation (0-5 ft bgs) or (0-15 ft bgs) (VOC or non-VOC) | |
| 8 | Capping (existing or new) (non-VOC) | Leaves threat/contamination in place but manages all residuals with physical controls. **Less effective than removing threat.** Group does not matter since risk left in place does not make technology more or less effective. VOCs are more difficult to control than non-VOCs, so their scores differ. |
| 7 | Capping (existing or new) (VOC) | |
| 7 | HVAC mod/SSV (UB) | |
| 6 | SVE Under Building (UB) or adjacent to pipelines/utilities | Removes good amount of threat/contamination (>50%). **Residual risk is left by the technology and not controlled by the technology, so not as effective as cap and HVAC**, which control all residuals. |
| 6 | Excavation adjacent to building or partial excavation | |
| 5 | ICs and Monitoring (non-VOC) | Leaves threat/contamination in place but manages with non-physical (institutional) controls). **IC effectiveness is less certain than engineered controls.** VOCs are more difficult to effectively maintain than non-VOCs, so their scores differ. |
| 4 | ICs and Monitoring (VOC) | |
| 1 | No Action, existing asphalt cap, no ICs [2] | Existing asphalt cap reduces potential for current direct contact exposures, but releases could occur anytime through construction activities or change in land use. **Lowest possible LTE.** |
| 0 | No Action, no asphalt cap, no ICs [1] | With no asphalt cap, there would be **current exposure. This would represent no effectiveness, 0 LTE.** |
| | | |

| REDUCTION OF TOXICITY, MOBILITY AND VOLUME (RTMV) | | |
|---|---|---|
| **Rating** | **Technology Component** | **Rationale** |
| 9 | SVE (OS) (VOCs) | **Removes maximum possible** amount of contaminant volume (>90%) through treatment of source (vapor extraction, excavation). |
| 9 | Excavation (0-5 ft bgs) or (0-15 ft bgs) (VOCs or non-VOCs) | |
| 8 | SVE Under Building or adjacent to pipelines/utilities | **Removes majority** of contaminant volume (50% to 90%) through treatment of source (vapor extraction, excavation). Removal is limited by access near or beneath buildings and utilities. |
| 8 | Excavation adjacent to building or partial excavation | |
| 3 | HVAC mod/SSV (UB) | Removes contaminant volume by capturing and treating off-gases from the source, but **does not directly address source.** Reduces mobility of source by capturing off-gassing chemicals. Low score because reduces contaminant mass by very small amount. |
| 0 | Capping (new or existing) (VOC or non-VOC) | **Not treatment**, but arguably it reduces mobility of water soluble contaminants by limiting infiltration and eliminating dust-borne transport. |
| 0 | ICs and Monitoring (existing cap) (VOC or non-VOC) | **No treatment** or physical reduction of volume or mobility. Risk reduction is entirely through control of the potential receptors. |
| 0 | No Action, no ICs, existing asphalt cap [2] | |
| 0 | No Action, no ICs, no asphalt cap [1] | |
| | | |

**TABLE G-1**
**RATIONALE FOR 9-CRITERIA RATINGS FOR SURFACE PATHWAY EVALUATION**
**DEL AMO SOIL AND NAPL FS**

| SHORT TERM EFFECTIVENESS (STE) [3] | | |
|---|---|---|
| **Rating** | **Technology Component** | **Rationale** |
| 9 | ICs and Monitoring (Groups 3, 4 and 5) (VOCs or non-VOCs) | **No impacts** to health, environment or facility caused by implementation |
| 9 | Capping (existing) | **No impacts** because there is no new construction |
| 8 | HVAC mod | **Minor impacts** to facility but no significant impact to health or environment caused by implementation |
| 8 | Capping (new) | **Minor impacts** to facility from new construction asphalt paving or slurry sealing, but no significant impact to health or environment |
| 7 | SVE (OS), small system | **Small impacts** possible from emissions during installation, process upsets and routine SVE operation of small system |
| 7 | Excavation (0-5 ft), small, (Group 3 and 4) | **Small impacts** from dust and contamination during small shallow excavation of Group 3 and 4 areas. Groups 3 and 4 have less potential impact because they have lower levels of contamination than Group 5. Thus, a release during construction for Groups 3 and 4 would cause less risk than Group 5. |
| 6 | SVE (OS) large system, or adjacent to pipelines | **Moderate impacts** possible from emissions during installation, process upsets and routine SVE operation of large system |
| 6 | SSV (UB) under small portion of building | **Moderate impacts** from trench or suction pit installation inside buildings, in small area (less than SSV in large area) |
| 6 | Excavation (0-5 ft), large (Group 3 and 4) | **Moderate impacts** from dust and contamination during larger shallow excavations of less contaminated soil in Group 3 and 4 areas (less contaminated than Group 5 areas) |
| 6 | Excavation (0-5 ft), small (Group 5) | **Moderate impacts** from dust and contamination during small shallow excavation of higher contaminated soils in Group 5 (higher contamination than Group 3 and 4 areas) |
| 6 | Excavation (0-15 ft), small, no shoring | **Moderate impacts** from shoring, dust and contamination during deep excavation in a small area, regardless of how much contamination is in the soil |
| 6 | SVE(UB), small area under building | **Moderate potential for exposures** during horizontal well installation under buildings, along with possible impacts during process upsets and routine SVE operation. |
| 5 | SSV (UB), large area under building | **Significant impacts** from trench or suction pits installation inside buildings, in large area of building |
| 5 | Excavation (0-5 ft), large area (Group 5) or adjacent to pipelines | **Significant impacts** from dust and contamination during shallow but large excavation of higher contaminated soils in Group 5 areas |
| 5 | Excavation (0-15 ft), small area, adjacent to building/utilities | **Significant impacts** from excavation adjacent to building/utilities/pipelines due to risks from shoring as well as dust and contamination impacts |
| 5 | SVE (UB), large area under building | **Significant potential for exposures** during horizontal well installation under buildings, along with possible impacts during process upsets and routine SVE operation |
| 5 | Excavation (0-15 ft), large area, no shoring/building (Group 3 and 4) | **Significant impacts** from dust and contamination during larger moderate depth excavation of lesser contaminated soil in Group 3 and 4 areas |
| 4 | Excavation (0-15 ft), large area, adjacent to building/utilities | **Significant impacts** from deep excavation adjacent to building/utilities/pipelines due to risks from shoring as well as dust and contamination impacts |
| 2 | Excavation deep (>15 ft), large area, deep shoring [1] | **Major health and environment impacts** from large deep excavation, due to riskiness of deep shoring as well as dust and contamination impacts |
| 0 | Excavation Under Building - Support Building [1] | **The most health and environmental impacts** from riskiness of supporting a building and excavating beneath, as well as dust and contamination impacts |
| | | |

**TABLE G-1**
**RATIONALE FOR 9-CRITERIA RATINGS FOR SURFACE PATHWAY EVALUATION**
**DEL AMO SOIL AND NAPL FS**

| IMPLEMENTABILITY (IMP) | | |
|---|---|---|
| **Rating** | **Technology Component** | **Rationale** |
| 9 | No Action, no ICs [2] | Implementability **rated high** since there is no action, and it is easiest to do nothing |
| 8 | ICs and Monitoring (Groups 3, 4 and 5) (VOCs or non-VOCs) | **Some uncertainties re**garding the City of LA **cooperation**. May require political process. Deed restrictions need **cooperation** of owners, which is **unknown but USEPA has enforcement leverage.** |
| 8 | Capping (existing) (VOCs or non-VOCs) | An existing cap that requires no or minimal upgrading is **next easiest**. Upgrading involves common, proven techniques. Owners likely would be agreeable. |
| 8 | Capping (new) | New cap that requires footprint and construction would involve **common, proven techniques**. Owners **likely would be agreeable**. |
| 7 | HVAC mod | Existing HVAC requires modification to provide building pressurization. **Common techniques**, but **some uncertainty about owner cooperation**. |
| 7 | SVE (OS), small system | **Minor technical challenges** for small system outdoors due to citing equipment in actively used parcels. Owners **possibly would have concerns and issues**. |
| 6 | Excavation (0-5 ft), small, no shoring | **Minor technical challenges** for small shallow excavations on actively used parcels |
| 6 | SVE (OS) adjacent to pipelines or SVE(OS) large system | **Minor technical challenges** for large system or system near pipelines or due to citing larger equipment in actively used parcels |
| 5 | Excavation (0-5 ft), large area or adjacent to pipelines/utilities | **Moderate technical challenges** due to large shallow excavation on actively used parcels |
| 5 | SVE (UB) | **Moderate technical challenges** with installing horizontal wells under building. **Possible concern and issues** with owner. |
| 5 | SSV (UB) over a small portion of a building | **Moderate technical challenges** with installing SSV piping under small part of building. **Likely concern and issues** with owner. |
| 5 | Excavation (0-15 ft), small area, no shoring | **Moderate technical challenges** due to small deep excavation |
| 4 | SSV (UB) covers a large portion of building | **Significant technical challenges** with SSV piping under large part of building. **Likely concern and issues** with owner. |
| 4 | Excavation (0-15 ft) small area, shoring, adj to pipelines | **Significant technical challenges** with small deep excavation with shoring, near pipelines. **Likely concern and issues** with owner. |
| 4 | Excavation (0-15 ft), large area | **Significant technical challenges** with large deep excavation. **Possible concern and issues** with owner. |
| 3 | Excavation (0-15 ft), large area, shoring, adjacent to pipelines | **Significant technical challenges** with large deep excavation with shoring, near pipelines. **Likely concern and issues** with owner. |
| 2 | Excavation (>15 ft) large area, shoring [1] | **Major technical challenges** with large, very deep excavation with shoring. **Likely concern and issues** with owner. |
| 0 | Excavation Under Building - Support Building [1] | **Major technical challenges** with supporting buildings. **Likely concern and issues** with owner. |
| | | |

**TABLE G-1**
**RATIONALE FOR 9-CRITERIA RATINGS FOR SURFACE PATHWAY EVALUATION**
**DEL AMO SOIL AND NAPL FS**

| COST | | | | |
|---|---|---|---|---|
| **Rating** | **Group 4A 0-$2M** | **Group 3A 0-$1.5M** | **Group 4B 0-$20M** | **Group 3B 0-$10M** |
| 9 | 0-$150K | 0-$150K | 0-$150K | 0-$150K |
| 8 | $150K-$300K | $150K-$300K | $150K-$500K | $150K-$400K |
| 7 | $300K-$450K | $300K-$450K | $500K-$1.5M | $400K-$700K |
| 6 | $450K-$600K | $450K-$600K | $1.5M-$3.0M | $700K-$1M |
| 5 | $600K-$750K | $600K-$750K | $3.0M-$5.0M | $1M-$1.5M |
| 4 | $750K-$1.0M | $750K-$900K | $5.0M-$8.0M | $1.5M-$2.5M |
| 3 | $1.0M-$1.25M | $900K-$1.05M | $8.0M-$11M | $2.5M-$4M |
| 2 | $1.25M-$1.5M | $1.05M-$1.2M | $11M-$15M | $4M-$6M |
| 1 | $1.5M-$2M | $1.2M-$1.5M | $15M-$20M | $6M-$10M |
| 0 | >$2M | >$1.5M | >$20M | >$10M |

**Notes**

(1) These technology components are not included in the remedial alternatives evaluated in the FS but are shown here to better define the ratings scale.
(2) "No action" alternative as required by CERCLA.
(3) STE for the "No action" alternative is rated N/A, "Not applicable"; hence it is not listed in the table.
(4) ICs = Institutional Controls; SVE = Soil Vapor Extraction; HVAC = Heating, Ventilation and Air Conditioning; SSV = Subslab venting

**TABLE G-2**
**RATIONALE FOR 9-CRITERIA RATINGS FOR NAPL FS EVALUATION**
**DEL AMO SOIL AND NAPL FS**

| LONG TERM EFFECTIVENESS (LTE) | | |
|---|---|---|
| **Rating** | **Technology Component** | **Rationale** |
| 9 | Deep (>15 ft bgs) Excavation, NAPL removal [(1)] | Provides most long-term certainty for groundwater remedy by removing maximum possible amount of threat/contamination. No or low residual NAPL contamination. **Highest possible LTE.** |
| 8 | In-situ Soil Heating | Actively removes 60-90% of threat/contamination (SAs 12. 3, 6, 11, 9) |
| 7 | In-situ Soil Heating under building | Actively removes 50-80% of threat/contamination (SAs 4, 7 and 8) |
| 7 | In-situ Chemical Oxidation (ISCO) | Actively removes 50-60% of threat/contamination (SAs 12. 3, 6, 11, 9) |
| 7 | Hydraulic Extraction + SVE/BV | Actively removes 50-60% of threat/contamination (SAs 12. 3, 6, 11, 9) |
| 6 | ISCO under building | Actively removes 40-50% of threat/contamination (SAs 4, 7 and 8) |
| 6 | Hydraulic Extraction + SVE/BV for source entirely under building - Vertical wells (Alternative 4A) | Actively removes 40-50% of threat/contamination (SAs 4, 7 and 8) |
| 6 | Hydraulic Extraction + SVE/BV for source entirely under building - Horizontal wells (Alternative 4) | Actively removes 30-40% of threat/contamination (SAs 4, 7 and 8) |
| 5 | SVE/BV (NAPL accumulation, residual NAPL areas) | Actively removes 30-40% of threat/contamination (SAs 12, 3, 6, 11, 9) |
| 5 | SVE/BV for source entirely under building - Vertical wells (Alternative 3A) | Actively removes 20-30% of threat/contamination (SAs 4, 7, 8 and 5) |
| 5 | SVE/BV for source entirely under building - Horizontal wells (Alternative 3) | Actively removes 15-20% of threat/contamination (SAs 4, 7, 8 and 5) |
| 4 | Intrinsic Biodegradation, ICs + Monitoring (NAPL residual areas) | Natural processes eventually degrade threat/contamination; more effective in areas of less NAPL impact |
| 2 | Intrinsic Biodegradation, ICs + Monitoring (NAPL accumulation areas) | Natural processes eventually degrade threat/contamination; less effective in areas with more NAPL impact (SAs 3 and 12) |
| 0 | No action, no ICs, no Monitoring [(2)] | No provisions to improve long-term certainty of groundwater remedy |
| | | |
| **REDUCTION OF TOXICITY, MOBILITY AND VOLUME (RTMV) THROUGH TREATMENT** | | |
| **Rating** | **Technology Component** | **Rationale** |
| 9 | Deep (>15 ft bgs) Excavation, NAPL removal [(1)] | Complete or near complete NAPL removal |
| 8 | In-situ Soil Heating | Mass reduction of 60-90% (SAs 12, 3, 6, 11 and 9) |
| 7 | In-situ Soil Heating under Building | Mass reduction of 50-80% (SAs 4, 7, and 8) |
| 7 | ISCO | Mass reduction of 50-60% (SAs 3, 6, 11 and 9) |
| 7 | Hydraulic Extraction + SVE/BV | Mass reduction of 50-60% (SAs 3, 6, 11 and 9) |
| 6 | ISCO (lower permeability, less mass) | Mass reduction of 40-50%; lower mass removal due to lower permeability (SA12) |
| 6 | ISCO under building | Mass reduction of 40-50% (SAs 4, 7, and 8) |
| 6 | Hydraulic Extraction + SVE/BV (lower permeability) | Mass reduction of 40-50%; lower mass removal due to lower permeability (SA12) |
| 6 | Hydraulic Extraction + SVE/BV for source entirely under building - Vertical wells (Alternative 4A) | Mass reduction of 40-50% (SAs 4, 7 and 8) |
| 5 | SVE/BV | Mass reduction of 30-40% (SAs 3, 6, 11 and 9) |
| 5 | Hydraulic Extraction + SVE for source entirely under building - Horizontal wells (Alternative 4) | Mass reduction of 30-40% (SAs 4, 7 and 8) |
| 4 | SVE/BV for source entirely under building - Vertical wells (Alternative 3A) | Mass reduction up to 20-30% (SAs 4, 7, 8 and 5) |
| 4 | SVE/BV (lower permeability) | Mass reduction up to 20-30%; lower mass removed due to lower permeability (SA12) |
| 3 | SVE/BV for source entirely under building - Horizontal wells (Alternative 3) | Mass reduction up to 15-20% (SAs 4, 7, 8 and 5) |
| 0 | Intrinsic Biodegradation, ICs+ Monitoring | No active treatment employed |
| 0 | No action, no ICs, no Monitoring [(2)] | No active treatment employed |

**TABLE G-2**
**RATIONALE FOR 9-CRITERIA RATINGS FOR NAPL FS EVALUATION**
**DEL AMO SOIL AND NAPL FS**

| SHORT TERM EFFECTIVENESS (STE) [3] | | |
|---|---|---|
| **Rating** | **Technology Component** | **Rationale** |
| 9 | Intrinsic Biodegradation, ICs + Monitoring | - **No impacts** to health or environment are expected |
| 8 | SVE/BV | - **Small impacts** from allowable releases during vapor treatment system operation;<br>- Potential for further **minor risks** from possible short term releases during SVE installation or upsets |
| 7 | SVE/BV (SAs with access issues, e.g. loading dock) or source under building - Horizontal wells (Alternative 3) | - **Same impacts** as SVE/BV (above);<br>- Potential for **moderate risks** from possible short term releases (during installation or upsets) due to location |
| 6 | SVE/BV for source under building - Vertical wells inside building (Alternative 3A) | - **Same impacts** as SVE/BV (above);<br>- Greater potential for **moderate risks** from possible short term releases (during installation or upsets) due to location inside building |
| 6 | Hydraulic Extraction + SVE/BV (all source areas with wells outside building) | - **Same impacts** as SVE/BV (above);<br>- **Small impacts** from allowable releases during groundwater systems installation and operation.<br>- Slightly greater potential for **minor risks** due to short term releases (during system installation or upsets) than with SVE alone. |
| 6 | In-situ Soil Heating (NAPL residual, potential areas) | - **Same impacts** as SVE/BV (above);<br>- Moderately greater potential for **minor risks** from possible short term releases than with SVE alone;<br>- **Potential NAPL migration** from subsurface heating |
| 5 | Hydraulic Extraction + SVE/BV (source under building - wells inside building, Alternative 4A) | - **Same impacts** as SVE/BV (above);<br>- **Small impacts** from allowable releases during groundwater systems installation and operation.<br>- Greater potential for **moderate risks** due to short term releases (during system installation or upsets) than with SVE alone or outside building. |
| 5 | ISCO | - **Same impacts** as SVE/BV (above);<br>- Moderately greater potential for **minor risks** from possible short term releases than with SVE alone;<br>- **Potential NAPL or vapor migration and explosions** from oxidant storage and injection |
| 5 | In-situ Soil Heating (NAPL accumulation areas) | - **Same impacts** as SVE/BV (above);<br>- Moderately greater potential for **minor risks** from possible short term releases than with SVE alone;<br>- **Greater potential for NAPL migration** from subsurface heating due to greater NAPL mass |
| 4 | ISCO under building | - **Same impacts** as SVE/BV (above);<br>- Greater potential for **significant risks** from possible short term releases than with SVE alone;<br>- **Potential NAPL or vapor migration and explosions** from oxidant storage and injection |
| 4 | In-situ Soil Heating under building | - **Same impacts** as SVE/BV (above);<br>- Greater potential for **significant risks** from possible short term releases than with SVE alone;<br>- **Greater potential for NAPL migration** from subsurface heating due to greater NAPL mass |
| 0 | Deep (>15 ft bgs) excavation of NAPL areas [1] | - **Significant impacts** from releases during excavation |

**TABLE G-2**
**RATIONALE FOR 9-CRITERIA RATINGS FOR NAPL FS EVALUATION**
**DEL AMO SOIL AND NAPL FS**

| IMPLEMENTABILITY (IMP) | | |
|---|---|---|
| **Rating** | **Technology Component** | **Rationale** |
| 9 | No action, no ICs, no Monitoring [2] | Highest rating since there is no action - easiest to do nothing. |
| 8 | Intrinsic Biodegradation, ICs+Monitoring | - **No** active remediation is involved;<br>- Small uncertainties with IC implementation |
| 7 | SVE/BV | - Active remediation is **readily implementable**;<br>- **Some** administrative challenges due to business/community impacts<br>- Small uncertainties with IC implementation |
| 6 | Hydraulic Extraction + SVE/BV | - Active remediation is **readily implementable**, but there is more technical system complexity than SVE alone;<br>- **Some** administrative challenges due to business/community impacts<br>- Small uncertainties with IC implementation |
| 6 | SVE/BV (SAs with access issues, e.g. loading dock) | - Active remediation is **readily implementable**;<br>- **More** administrative challenges due to **greater** business/community impacts from location (within business operations area)<br>- Small uncertainties with IC implementation |
| 5 | Hydraulic Extraction + SVE/BV (SAs with access issues, e.g. loading dock) | - Active remediation is **readily implementable**, but there is more technical system complexity than SVE alone;<br>- **More** administrative challenges due to **greater** business/community impacts from location (within business operations area)<br>- Small uncertainties with IC implementation |
| 5 | In-situ soil heating (more available space) | - Active remediation is **implementable**, but has technical **difficulties** (uneven heating);<br>- **Greater** administrative challenges due to **significant** business/community impacts from location and from using unpopular technologies (thermal oxidizer)<br>- Small uncertainties with IC implementation |
| 4 | Hydraulic Extraction + SVE/BV source under building - Horizontal wells (Alternative 4) | - Active remediation has **implementability difficulties** with horizontal wells under building;<br>- **More** administrative challenges due to **greater** business/community impacts from location (beneath building)<br>- Small uncertainties with IC implementation |
| 4 | ISCO | - Active remediation has **implementability difficulties** (injection into low permeability soil);<br>- **Greater** administrative challenges due to **significant** business/community impacts from location and from using unpopular technologies (thermal oxidizer)<br>- Small uncertainties with IC implementation |
| 4 | In-situ soil heating (less available space) | - Active remediation **is implementable** but has technical **difficulties** (uneven heating);<br>- **Greater** administrative challenges due to **more significant** business/community impacts from location (takes greater percentage of space on the parcel) and from using unpopular technologies (thermal oxidizer)<br>- Small uncertainties with IC implementation |
| 4 | SVE/BV for source area entirely under bldg - Horizontal wells (Alternative 3) | - Active remediation has **implementability difficulties** (horizontal wells beneath building)<br>- **More** administrative challenges due to **greater** business/community impacts from location (beneath building)<br>- Small uncertainties with IC implementation |
| 3 | Hydraulic Extraction + SVE/BV source under building - Vertical wells (Alternative 4A) | - Active remediation has **implementability difficulties** (vertical wells inside the building)<br>- **More** administrative challenges due to **greater** business/community impacts from location (within business operations area)<br>- Small uncertainties with IC implementation |
| 3 | SVE/BV for source area entirely under bldg - Vertical wells inside building (Alternative 3A) | - Active remediation has **implementability difficulties** (vertical wells inside building)<br>- **More** administrative challenges due to **greater** business/community impacts from location (within business operations area)<br>- Small uncertainties with IC implementation |
| 3 | ISCO under building | - Active remediation has **greater implementability difficulties** (implementation inside building);<br>- **Greater** administrative challenges due to **significant** business/community impacts from location and from using unpopular technologies (thermal oxidizer)<br>- Small uncertainties with IC implementation |
| 3 | In-situ soil heating under building | - Active remediation has **greater implementability difficulties** (implementation inside building);<br>- **Greater** administrative challenges due to **significant** business/community impacts from location and from using unpopular technologies (thermal oxidizer)<br>- Small uncertainties with IC implementation |
| 3 | ISCO (SAs with lower permeability in upper water table zone) | - Active remediation has **greater implementability difficulties** (injection into more low permeability soil);<br>- **Greater** administrative challenges due to **significant** business/community impacts from location and from using unpopular technologies (thermal oxidizer)<br>- Small uncertainties with IC implementation |
| 0 | Deep (>15 ft bgs) excavation of NAPL areas [1] | - Active remediation has **greatest implementability difficulties** (very deep excavation);<br>- **Greater** administrative challenges due to **significant** business/community impacts from location and from emissions<br>- Small uncertainties with IC implementation |

**TABLE G-2**
**RATIONALE FOR 9-CRITERIA RATINGS FOR NAPL FS EVALUATION**
**DEL AMO SOIL AND NAPL FS**

| COST | |
|---|---|
| **Rating** | **NAPL Source Areas 0-$30M** |
| 9 | 0 - $2M |
| 8 | $2M - $4.5M |
| 7 | $4.5M - $7M |
| 6 | $7M - $10M |
| 5 | $10M - $13M |
| 4 | $13M - $16M |
| 3 | $16M - $19M |
| 2 | $19M - $24M |
| 1 | $24M - $30M |
| 0 | >$30M |

**Notes**

(1) These technology components are not included in the remedial alternatives evaluated in the FS but are shown here to better define the ratings scale.
(2) "No action" alternative as required by CERCLA.
(3) STE for the "No action" alternative is rated N/A, "Not applicable"; hence it is not listed on the table.
(4) ICs = Institutional Controls; SVE/BV = Soil Vapor Extraction/Bioventing; ISCO = In-situ Chemical Oxidation; SA = Source Areas