

1266 TCE concentration to 5.2 $\mu\text{g/L}$ in 20 years. Institutional controls for Alternative 3 would
1267 effectively prevent exposure of on-site workers, and deed restrictions would prevent residential
1268 development.

1269 Alternative 4, Groundwater Extraction and Oxidant Injection, would prevent exposure of on-site
1270 workers, and deed restrictions would prevent residential development at the SWMU. Future
1271 on-site workers would not be exposed to COCs in groundwater because institutional controls
1272 would prevent ingestion of groundwater in the short-term, and the alternative is expected to
1273 achieve PRGs within 20 years. Because groundwater COCs are expected to be achieved, surface
1274 water would not be affected.

1275 Alternative 5, VER Wells at X-231A and X-231B Oil Biodegradation Plots and Groundwater
1276 Extraction, would effectively prevent both on-site workers and future off-site residents from
1277 exposure to groundwater COCs and prevent the migration of COCs from groundwater to surface
1278 water. The PRG for TCE in groundwater is predicted to be achieved in all portions of the
1279 SWMU in less than 30 years. Institutional controls should prevent exposure of on-site workers,
1280 and deed restrictions would prevent residential development in this area. The groundwater
1281 monitoring program would use existing monitoring wells to monitor contaminant fate and
1282 transport.

1283 Alternative 6, VER Wells at X-231A and X-231B Oil Biodegradation Plots, Oxidant Injection,
1284 and Groundwater Extraction, would prevent exposure of both on-site workers and future off-site
1285 residents to COCs in groundwater and prevent migration of COCs from groundwater to surface
1286 water, thus preventing exposure of environmental receptors. This alternative is predicted to
1287 reduce the areal extent of the TCE plume to a maximum concentration of approximately 8 $\mu\text{g/L}$
1288 in 30 years (slightly above the PRG of 5 $\mu\text{g/L}$). Institutional controls would effectively prevent
1289 exposure of on-site personnel, and deed restrictions would prevent residential development at the
1290 SWMU. The groundwater monitoring program would use existing monitoring wells to monitor
1291 contaminant fate and transport.

1292 12.3.2 Compliance with State, Federal, and Local Laws and Regulations

1293 Chemical-Specific ARARs: Alternatives 1 and 2 would not comply with chemical-specific
1294 ARARs because they are not expected to meet the TCE PRG. Alternatives 3, 4, and 5 are
1295 expected to achieve chemical-specific ARARs. Alternative 6 would not achieve chemical-
1296 specific ARARs.

1297 Action-Specific ARARs: Under Alternatives 3, 4, and 5, an action-specific ARAR for the
1298 SWMU is the requirement that VOC-contaminated drill cuttings from installation of extraction
1299 or VER wells be disposed of in a solid waste landfill or, if necessary, to a hazardous waste
1300 facility. Also, for Alternatives 3, 4, 5, and 6, which may bring groundwater to the surface for
1301 treatment prior to discharge, NPDES permit requirements would apply. Air permits must be
1302 obtained for alternatives that utilize VER wells to treat soil and groundwater COCs.

1303 Location-Specific ARARs: Location-specific ARARs do not apply to the alternatives evaluated
1304 for this SWMU.

1305 12.3.3 Long-Term Effectiveness and Permanence

1306 Alternative 1 would not provide long-term effectiveness and permanence. Alternative 2 would
1307 not prevent exposure of environmental receptors and depends on institutional controls to prevent
1308 exposure of on-site and off-site residents as well as future on-site workers. This alternative is
1309 therefore less protective in long term compared to Alternatives 3 through 6. Institutional
1310 controls are only reliable if they can be maintained. Alternatives 3, 4, 5, and 6 would effectively
1311 reduce contaminant levels to PRGs or slightly above PRGs and prevent exposure of potential
1312 environmental receptors. These alternatives also rely on institutional controls to prevent
1313 exposure of current on-site workers. In addition, deed restrictions must be maintained to prevent
1314 future residential use of the SWMU.

1315 12.3.4 Reduction of Toxicity, Mobility, and Volume

1316 Alternative 1 would not meet any remedial action objectives. Alternative 2 would continue the
1317 operation of the three existing extraction wells in conjunction with treatment at the X-622 water
1318 treatment facility. This alternative would reduce contaminant toxicity, mobility, and total
1319 volume but would not meet all cleanup objectives. Alternative 3 would be effective at reducing
1320 contaminant toxicity, mobility, and volume through the installation of 11 extraction wells.
1321 Alternative 3 would meet all cleanup objectives. Alternative 4 would use in situ chemical
1322 oxidant injection in groundwater plume areas with the highest TCE concentrations and therefore
1323 would be effective in reducing the toxicity, mobility, and volume of the plume. Alternative 5
1324 would use VER wells to remediate both groundwater and soil in the two known source areas in
1325 addition to extraction wells in other plume areas. Alternative 6 would combine VER wells,
1326 conventional extraction wells, and groundwater extraction to remediate the plume. Alternatives
1327 5 and 6 would therefore effectively reduce the toxicity, mobility, and volume of the groundwater
1328 plume.

1329 In terms of environmental protection, Alternatives 1 and 2 may impact a jurisdictional wetland
1330 and the X-230K South Holding Pond. Alternatives 3 through 6 are predicted to eliminate the
1331 potential of off-site migration of contaminants. Construction associated with Alternatives 3
1332 through 6 could initially disrupt environmental receptors but is not expected to result in
1333 permanent effects. None of the alternatives would have adverse effects on archaeological
1334 resources, cultural resources, flood elevations, or critical habitats. No socioeconomic effects are
1335 anticipated from implementation of any of the alternatives.

1336 12.3.5 Short-Term Effectiveness

1337 Alternatives that minimize the amount of contaminants in soil that on-site workers could be
1338 exposed to through installation of wells and other remedial activities would provide the greatest
1339 degree of short-term effectiveness. Alternatives 1 and 2 pose fewer risks in the short term

1340 because no construction activities are associated with these alternatives. Alternatives 3 through 6
1341 would pose greater risks in the short term because of construction activities. These risks can be
1342 greatly reduced through proper work safety procedures.

1343 12.3.6 Implementability

1344 All the alternatives are readily implementable and use off-the-shelf components, manpower
1345 requiring limited training, and well-understood operating parameters. Equipment and
1346 administrative controls range from those already in place to those taking up to 18 months to fully
1347 implement.

1348 12.3.7 Cost

1349 The cost for each alternative is broken down below. Costs are presented in descending order.

1350	Alternative 6	Present worth capital costs	\$3,989,000
1351		Present worth O&M costs	<u>\$27,529,000</u>
1352		Total Cost	\$31,918,000
1353	Alternative 5	Present worth capital costs	\$2,212,000
1354		Present worth O&M costs	<u>\$17,404,000</u>
1355		Total Cost	\$19,616,000
1356	Alternative 4	Present worth capital costs	\$2,674,000
1357		Present worth O&M costs	<u>\$14,176,000</u>
1358		Total Cost	\$16,850,000

1359	Alternative 3	Present worth capital costs	\$1,056,000
1360		Present worth O&M costs	<u>\$6,429,000</u>
1361		Total Cost	\$7,485,000
1362	Alternative 2	Present worth capital costs	\$ 0
1363		Present worth O&M costs	<u>\$4,983,000</u>
1364		Total Cost	\$4,983,000
1365	Alternative 1	No costs are associated with this alternative.	

1366 12.3.8 Community Acceptance

1367 Ohio EPA and US EPA evaluated state and local community acceptance during the public
1368 comment period. All comments pertinent to the preferred alternatives were addressed in the
1369 responsiveness summary of this Decision Document (Appendix II).

1370 12.4 X-749/X-120 Area Groundwater Plume

1371 The remedial action objectives for the X-749/X-120 Area Groundwater Plume are as follows:

- 1372 • Achieve PRGs for groundwater whenever practicable
- 1373 • Prevent migration of COCs at concentrations exceeding PRGs (human health and
1374 ecological) from groundwater to surface water
- 1375 • Prevent exposure of future off-site residents to COCs in groundwater at concentrations
1376 exceeding residential PRGs

- 1377 • Prevent exposure of on-site workers to COCs in groundwater at concentrations exceeding
1378 future on-site worker PRGs

1379 12.4.1 Overall Protection of Human Health and the Environment

1380 Alternative 1, No Action, would not be protective of human health and the environment and
1381 would not meet any of the cleanup objectives outlined above. The no action alternative serves as
1382 a baseline option and is retained to facilitate evaluation of the other active remedial measures.

1383 Alternative 2, No further corrective action, involves deed and land-use restrictions in conjunction
1384 with current groundwater extraction and treatment. Alternative 2 would possibly reduce the
1385 likelihood of exposure of current and future on-site workers and the general public to
1386 contaminated groundwater. The useful life of this alternative depends on the ability to maintain
1387 and operate current remedial measures and enforcement of deed and land-use restrictions. The
1388 PRG for TCE would not be met. Environmental receptors could be exposed through migration
1389 of contaminated groundwater to surface water in the area.

1390 Alternative 3, Groundwater Pumping and Treatment, includes a barrier wall around the south end
1391 and east side of X-749 and institutional controls. Alternative 3 would achieve the cleanup
1392 objective for on-site workers through use of institutional controls to prevent exposure to
1393 contaminated groundwater. Deed restrictions would prevent development in the area as well as
1394 use of contaminated groundwater. This alternative would achieve acceptable risk levels currently
1395 proposed in CERCLA and RCRA corrective action guidance within 30 years but would not
1396 achieve the PRG for TCE. Alternative 3 would have minimal impacts on environmental
1397 receptors in the area and would have no effect on wetlands, archaeological and cultural resources,
1398 or critical habitats of threatened or endangered species.

1399 Alternative 4, Pumping and Treatment with Phytoremediation, includes a barrier wall around the
1400 south end and east side of X-749 and institutional controls. Alternative 4 would be effective at

1401 achieving the cleanup objective for on-site workers through the use of institutional controls to
1402 prevent exposure to contaminated groundwater. Deed restrictions would prevent development in
1403 this area as well as use of contaminated groundwater. Continued operation of this alternative is
1404 expected to achieve acceptable risk levels as currently proposed in CERCLA and RCRA
1405 corrective action guidance within 30 years but would not achieve the PRG for TCE.

1406 Alternative 5, Phytoremediation, includes a barrier wall around the eastern and southern portion
1407 of X-749 and institutional controls. Alternative 5 would be effective at achieving the cleanup
1408 objective for on-site workers through the use of institutional controls to prevent exposure to
1409 contaminated groundwater. Access and land-use restrictions would limit exposure to
1410 contaminated groundwater. Continued operation of this alternative is expected to achieve
1411 acceptable risk levels as currently proposed in CERCLA and RCRA corrective action guidance
1412 within 30 years but would not achieve the PRG for TCE. Alternative 5 would not adversely
1413 affect environmental receptors in the area. Future risks would be reduced as contaminants are
1414 removed during remediation.

1415 Alternative 6, Enhanced Bioremediation and Phytoremediation, would be effective at achieving
1416 the cleanup objective for on-site workers through the use of institutional controls to prevent
1417 exposure to contaminated groundwater. Access and land-use restrictions would limit exposure to
1418 contaminated groundwater. Continued operation of this alternative is expected to achieve
1419 acceptable risk levels as currently proposed in CERCLA and RCRA corrective action guidance
1420 but would not achieve the PRG for TCE. Alternative 6 would not adversely affect environmental
1421 receptors in the area. Future risks would be reduced as contaminants are removed during
1422 remediation.

1423 12.4.2 Compliance with State, Federal, and Local Laws and Regulations

1424 Chemical-Specific ARARs: Alternatives 1 and 2 would not achieve chemical-specific ARARs
1425 because they are not expected to meet the PRG for TCE. Alternatives 3, 4, 5, and 6 are not
1426 expected to achieve chemical-specific ARARs because the PRG for TCE is not expected to be
1427 met within 30 years.

1428 Action-Specific ARARs: Under Alternatives 3, 4, 5, and 6, an action-specific ARAR is the
1429 requirement that VOC-contaminated drill cuttings from installation of extraction wells be
1430 disposed of in a solid waste landfill or, if necessary, a hazardous waste facility. Also, for
1431 Alternatives 3 and 4, which may bring groundwater to the surface for treatment prior to
1432 discharge, NPDES permit requirements would apply.

1433 Location-Specific ARARs: Location-specific ARARs do not apply to the alternatives evaluated.

1434 12.4.3 Long-Term Effectiveness and Permanence

1435 Alternative 1 would not provide long-term effectiveness and permanence. Alternative 2 would
1436 not prevent exposure of environmental receptors and depends on institutional controls to prevent
1437 exposure of on-site residents as well as future on-site workers. Institutional controls are only
1438 reliable if they can be maintained. Alternatives 3, 4, 5, and 6 would effectively reduce
1439 contaminant levels to acceptable risk-based levels or levels slightly exceeding groundwater
1440 PRGs. These alternatives would be effective in preventing exposure of potential environmental
1441 receptors. These alternatives also rely on institutional controls to prevent exposure of current on-
1442 site workers. In addition, deed restrictions must be maintained to prevent future residential use
1443 of the area.

1444 12.4.4 Reduction of Toxicity, Mobility, and Volume

1445 Alternative 1 would not meet any cleanup objectives. Alternative 2 would reduce the toxicity,
1446 mobility, and volume of the contaminant plume through natural attenuation only. A large portion
1447 of the plume exceeding the PRG for TCE in groundwater is expected to remain. Alternative 3
1448 would reduce the toxicity, mobility, and volume of the contaminant plume through an active
1449 pump-and-treat system. Although a portion of the plume exceeding the PRG for TCE in
1450 groundwater (approximately 250,000 ft²) is expected to remain, a large volume of the plume
1451 would be removed. Alternative 4 would also be effective at reducing the toxicity, mobility, and
1452 volume of the contaminant plume. TCE levels are expected to be reduced to approximately
1453 16 µg/L (less in 640,000 ft² of the plume).

1454 Alternative 5 would reduce the toxicity, mobility, and volume of the contaminant plume through
1455 the use of phytoremediation (hybrid poplars). TCE levels are expected to remain in groundwater
1456 after 30 years at approximately 30 µg/L (270,000 ft² of the plume). Alternative 6 would reduce
1457 the toxicity, mobility, and volume of the contaminant plume through the combination of two
1458 technologies, enhanced bioremediation and phytoremediation. The combination of technologies
1459 is expected to reduce contaminants levels in groundwater. However, TCE levels in groundwater
1460 are expected to remain above the PRG after 30 years.

1461 12.4.5 Short-Term Effectiveness

1462 Alternatives that minimize the amount of contaminants in soil that on-site workers could contact
1463 during the installation of wells or other remedial activities would provide the greatest degree of
1464 short-term effectiveness. Alternatives 1 and 2 pose fewer risks in the short-term because no
1465 construction activities are associated with these alternatives. Alternatives 3 through 6 pose
1466 greater risks in the short term because of associated construction activities. These risks can be
1467 greatly reduced through proper work safety procedures.

1468 12.4.6 Implementability

1469 All the alternatives are readily implementable and use off-the-shelf components, manpower
1470 requiring limited training, and well-understood operating parameters. Equipment and
1471 administrative controls range from those already in place to those taking up to 18 months to fully
1472 implement.

1473 12.4.7 Cost

1474 The cost for each alternative is broken down below. Costs are presented in descending order.

1475	Alternative 6	Present worth capital cost	\$ 5,228,000
1476		Present worth O&M cost	<u>\$10,182,000</u>
1477		Total Cost	\$15,410,000

1478	Alternative 3	Present worth capital cost	\$ 2,564,000
1479		Present worth O&M cost	<u>\$12,749,000</u>
1480		Total Cost	\$15,313,000

1481	Alternative 4	Present worth capital cost	\$ 2,564,000
1482		Present worth O&M cost	<u>\$11,623,000</u>
1483		Total Cost	\$14,187,000

1484	Alternative 5	Present worth capital cost	\$ 602,000
1485		Present worth O&M cost	<u>\$5,433,000</u>
1486		Total Cost	\$6,035,000

1487	Alternative 2	Present worth capital cost	\$ 0
1488		Present worth O&M cost	<u>\$5,974,000</u>
1489		Total Cost	\$5,974,000

1490 Alternative 1 No costs are associated with this alternative.

1491 12.4.8 Community Acceptance

1492 Ohio EPA and US EPA evaluated state and local community acceptance during the public
 1493 comment period. All comments pertinent to the preferred alternatives were addressed in the
 1494 responsiveness summary of this Decision Document (Appendix II).

1495 13.0 OHIO EPA'S SELECTED ALTERNATIVES FOR QUADRANT I

1496 Ohio EPA has selected a no further corrective action alternative, deferral to D&D, and active
 1497 remedial alternatives for the Quadrant I SWMUs. Each of these categories of alternatives is
 1498 briefly discussed below, along with the SWMUs within the category. US EPA concurred with
 1499 Ohio EPA for all of the Quadrant I selected alternatives presented in this section. The active
 1500 alternatives are for the X-231A and X-231B Oil Biodegradation Plots, X-749/X-120 Area
 1501 Groundwater Plume, and the Five-Unit Groundwater Investigative Area for Quadrant I. SWMUs
 1502 deferred to D&D remain under the auspices of Section VII of the Ohio Consent Decree. Deferral
 1503 of these SWMUs to D&D requires US DOE to re-evaluate and remediate these SWMUs at the
 1504 time of D&D as warranted rather than potentially eliminating these SWMUs from further
 1505 consideration.

1506 If site conditions change and the remedial actions selected in this Decision Document do not
 1507 appear to be meeting cleanup objectives, modifications to the remedial alternatives may be
 1508 necessary. For example, additional extraction wells may be installed to help remediate the

1509 groundwater plume in the Five-Unit Groundwater Investigative Area. In some cases, it may be
1510 necessary to implement alternatives not presented in this Decision Document.

1511 13.1 No Further Corrective Action Alternative

1512 Ohio EPA has selected a no further corrective action remedial alternative for SWMUs that
1513 achieve the risk goals outlined in CERCLA and RCRA corrective action guidance. The 13
1514 SWMUs falling into this category are listed below:

- 1515 • GCEP USTs
- 1516 • X-103 Auxiliary Office Building
- 1517 • X-104A Indoor Firing Range
- 1518 • X-120 Old Training Facility Site (soil only)
- 1519 • X-710 Technical Services Building and Neutralization Pit (soil only)
- 1520 • X-741 Oil Drum Storage Facility
- 1521 • X-747F Miscellaneous Material Storage Yard
- 1522 • X-749 Contaminated Materials Disposal Facility* (soil only)
- 1523 • X-749A Classified Material Burial Ground*
- 1524 • X-749B Peter Kiewit Landfill*
- 1525 • X-750 Mobile Equipment Maintenance Shop, Fuel Station, and Waste Oil Tank
- 1526 • X-751 Mobile Equipment Garage
- 1527 • X-760 Pilot Investigation Building and Neutralization Pit (soil only)

1528 * The landfill caps at these units will be maintained in accordance with the approved O&M
1529 plans for these units. Groundwater will be monitored per the IGWMP.

1530 13.2 SWMUs Deferred to D&D

1531 The following five SWMUs have been deferred to D&D:

- 1532 • X-600 Coal-Fired Steam Plant
- 1533 • X-600A Coal Pile Yard
- 1534 • X-621 Coal Pile Runoff Treatment Facility
- 1535 • X-626 Recirculating Cooling Water Pump House and Cooling Tower
- 1536 • X-770 Mechanical Testing Facility

1537 In addition to these five SWMUs, the following ponds and creek will also be re-evaluated during
1538 D&D:

- 1539 • Big Run Creek
- 1540 • X-230K South Holding Pond
- 1541 • X-2230M Southwest Holding Pond

1542 Available sampling data suggest the following:

- 1543 1. HI values for media-specific total non-carcinogenic risks under the on-site worker
1544 scenarios of generally less than 1; and
- 1545 2. On-site worker scenario ELCR values within the risk range generally 1×10^{-4} to
1546 1×10^{-6} ; or
- 1547 3. Contaminants present generally immobile; or

1548 4. SWMUs identified are within current production areas and operational facilities, and
1549 remedial activities may interrupt operations; also, such areas likely will become
1550 recontaminated from ongoing production of enriched uranium.

1551 Contaminants are not expected to be currently released to the environment from ongoing
1552 production areas. If a release occurs, proper action will be taken to prevent exposure of human
1553 and environmental receptors. However, there may be some instances where contaminants may
1554 be leaching from soils to groundwater for some of the deferred units in the production areas. In
1555 most instances the contaminants are being addressed through remedial actions selected for
1556 groundwater. It was not considered necessary for the SWMUs deferred to D&D to meet all of
1557 the four criteria listed above. In some cases, the total risk level may have fallen outside the
1558 acceptable risk range for current on-site workers based on BRA data in the RFI report. However,
1559 US DOE has implemented administrative controls at PORTS to ensure that workers do not
1560 excavate soil or contact sediment or surface water without proper environmental and health and
1561 safety controls. Such controls include the wearing of proper protective clothing prior to working
1562 in SWMU areas and require notification of US DOE personnel prior to soil excavation activities.
1563 US DOE has installed fencing at PORTS in some areas to control entry of current on-site
1564 workers. Ohio EPA will continue to monitor these areas to ensure that workers are not exposed
1565 to potential contaminants in soil, sediment, or surface water.

1566 13.3 SWMUs Requiring Remedial Alternatives

1567 The alternatives chosen for the three SWMUs requiring remediation are summarized below.

1568 13.3.1 X-231A and X-231B Oil Biodegradation Plots (soil only)

1569 Ohio EPA's preferred alternative for the X-231A and X-231B Oil Biodegradation Plots is
1570 Alternative 4, Multimedia Caps. Alternative 4 consists of engineered caps that will meet the
1571 RCRA substantive requirements as noted in OAC 3745-67-80. Completion of all remedial

1572 activities associated with this unit will meet the substantive requirements of RCRA as noted in
1573 the Ohio EPA's March 1999 DFF&Os for integration, Section VI, Paragraph 2. The caps,
1574 combined with berms and ditches, will direct surface water around the caps and into the drainage
1575 ditch that flows to the X-230K South Holding Pond. Although the caps will not meet the design
1576 requirements of a RCRA Subtitle C or D cap, they will limit surface water infiltration, thereby
1577 preventing or limiting contaminants from leaching to groundwater. Thus, based on the unique
1578 conditions and limitations at this SWMU, the caps will meet the RCRA substantive requirements
1579 of OAC 3745-67-80. Plant administrative controls will require excavation permits before
1580 excavation begins. Control measures such as silt fences, erosion control, and dust prevention
1581 will be implemented to ensure that environmental receptors and habitats surrounding PORTS are
1582 not affected by construction activities.

1583 Alternative 4 will provide the best balance of trade-offs considering the criteria used to evaluate
1584 the alternatives presented in the CAS/CMS report. This alternative will be protective of human
1585 health and the environment in the short and long terms and is considered permanent as long as
1586 the integrity of the caps is maintained. US DOE will periodically inspect the caps to ensure that
1587 they are performing as required. This alternative also will meet ARARs, be cost-effective, and
1588 provide long-term effectiveness. This alternative may be modified as needed to ensure that the
1589 cleanup objectives for the SWMU are met.

1590 13.3.2 Five-Unit Groundwater Investigative Area

1591 Ohio EPA's preferred alternative for the Five-Unit Groundwater Investigative Area is Alternative
1592 3, Groundwater Extraction. Alternative 3 will use the three existing extraction wells and require
1593 installation of an additional 11 conventional extraction wells throughout the contaminant plume.
1594 Extracted groundwater will be treated at the X-622 facility. In areas of the plume where TCE
1595 concentrations are predicted to fall below 5 $\mu\text{g/L}$, wells will be turned off at 5, 10, and 15 years
1596 to facilitate movement of contaminated groundwater to the wells still in operation. Extraction
1597 wells and their predicted periods of operation are summarized in Table 8.

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Table 8
Extraction Wells and Periods of Operation
for Five-Unit Groundwater Investigative Area

Well Identification No.	0 to 5 Years	6 to 10 Years	11 to 15 Years	16 to 20 Years
EW-1	X			
EW-2	X	X		
EW-3	X			
EW-4	X	X		
EW-5	X			
EW-6	X			
EW-7	X	X		
EW-8	X	X		
EW-9	X	X	X	X
EW-10	X	X	X	X
EW-11	X	X	X	
X231B-PW10	X	X		
X-231B-PW11	X	X	X	
X231B-PW12	X	X		

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Institutional controls will effectively prevent exposure of on-site workers during the time this alternative is in operation. Deed and land-use restrictions will limit future land use, place limitations on excavation depths, and prohibit development of groundwater for use as a potable water supply. The groundwater monitoring program will use existing monitoring wells to monitor contaminant fate and transport. Groundwater will be monitored at least semiannually or as needed during the start of the remedial process. The frequency of groundwater monitoring will be evaluated in the approved corrective measures implementation plan, and the monitoring results will be reported in the Integrated Groundwater Monitoring Annual Report for Quadrant I.

1626 The IGWMP will include sampling parameters and frequency. The parameters and frequency of
1627 monitoring may change as remediation progresses.

1628 Alternative 3 will provide the best balance of trade-offs considering the criteria used to evaluate
1629 the alternatives presented in the CAS/CMS report. Ohio EPA believes that this remedy will be
1630 protective of human health and the environment both in the short term and over the long term.
1631 This alternative will meet ARARs, be cost-effective, and provide long-term effectiveness. This
1632 alternative will meet RCRA substantive requirements noted in the March 1999 DFF&Os for
1633 integration, Section VI, Paragraph 2, when the remedial action objectives are met for
1634 groundwater.

1635 Future Ground Water Monitoring

1636 Groundwater in this area will continue to be monitored throughout the remedial process. Five
1637 years after the installation of the selected remedial alternative, (Groundwater Extraction), Ohio
1638 EPA in conjunction with US EPA will evaluate its effectiveness based on the data collected and
1639 submitted via the IGWMP as well as any other groundwater reports. If the selected remedy does
1640 not reduce contaminant levels to below 5 parts per billion (ppb) in wells EW-1, EW-3, EW-5,
1641 and EW-6 as well as lower the concentration to below 100 ppb in wells EW-10, X-231B-PW12,
1642 EW-4, EW-8, and EW-7 as noted in the approved Quadrant I CAS/CMS Report, alternative
1643 remedial measures may be evaluated. Additional extraction wells may be required to expedite
1644 groundwater remediation. Ohio EPA and US EPA may also consider other additional
1645 alternatives which were not evaluated in the approved CAS/CMS Report.

1646 13.3.3 X-749/X-120 Area Groundwater Plume

1647 Ohio EPA's preferred alternative for the X-749/X-120 Area Groundwater Plume is Alternative 5,
1648 Phytoremediation. Alternative 5 consists of planting approximately 27.5 acres of hybrid poplar
1649 trees, constructing a barrier wall around the eastern and southern portion of the X-749 landfill,
1650 institutional controls, deed restrictions, operation of the X-749 and X-749B Peter Kiewit

1651 collection trenches, and groundwater monitoring. The trees will be planted in seven separate
1652 areas, however, the selected remedy may require a phased tree planting approach to ensure proper
1653 tree growth. Trees will be initially planted east and southeast of the X-749 landfill area and
1654 monitored for good growth before the remaining six areas are planted. The phased approach in
1655 tree planting will not detract from the ultimate 30 year goal of Alternative 5. The X-749 and
1656 X-749B Peter Kiewit collection trenches surrounding the landfill will contain the groundwater
1657 plume in the immediate vicinity of the landfill. Groundwater in the trenches will be treated in an
1658 on-site groundwater treatment facility. Groundwater will continue to be monitored to insure that
1659 the remedy contains the plume on-site.

1660 Alternative 5 is predicted to reduce the areal extent of the TCE plume exceeding the PRG to
1661 270,000 ft² within 30 years. Phytoremediation uses the natural growth process of biological
1662 systems to attenuate and reduce contaminants in groundwater. During growth, the trees' root
1663 systems provide oxygen and sugar while uptaking groundwater minerals and contaminants. The
1664 sugars and oxygen serve as nutrients for bacteria in soil, and the enzymes produced during
1665 growth can break down and incorporate waste into new plant material. The bacteria, promoted
1666 by tree growth, aid in the biodegradation of contaminants. By breaking down organic
1667 contaminants, the bacteria obtain carbon and energy to sustain reproduction and maintenance
1668 processes. The enzymes have demonstrated a capability for reducing chlorinated solvents such
1669 as TCE. Studies show that the root systems of the hybrid poplar reach 20 to 30 feet bgs and may
1670 uptake 50 to 350 gallons of water per tree per day.

1671 Groundwater will continue to be monitored throughout the remediation process. Additional
1672 groundwater wells may be installed to monitor remediation progress. Groundwater will be
1673 monitored at least semiannually or as needed during the start of the remedial process. The
1674 frequency of groundwater monitoring will be evaluated in the approved corrective measures
1675 implementation plan, and the monitoring results will be reported in the IGWMP for Quadrant I.
1676 The IGWMP will include sampling parameters and frequency. The parameters and frequency of
1677 monitoring may change as remediation progresses.

1678 Implementation of this alternative would have no adverse effects on wetlands, archaeological
1679 resources, cultural resources, or critical habitats of threatened or endangered species. Deed and
1680 land-use restrictions would limit future land use, place limitations on excavation depth, and
1681 prohibit development of groundwater for use as a potable water supply.

1682 Alternative 5 will provide the best balance of trade-offs considering the criteria used to evaluate
1683 the alternatives presented in the CAS/CMS report. This alternative will be protective of human
1684 health and the environment in the short and long terms. This alternative also will meet ARARs,
1685 be cost-effective, and provide long-term effectiveness.

1686 Future Groundwater Monitoring

1687 Groundwater in this area will continue to be monitored throughout the remedial process. Five
1688 years after the installation of the first phase of trees to the east and south east of the plume
1689 groundwater data will be evaluated in this area to evaluate the effectiveness of the selected
1690 remedy, Phytoremediation. This five year evaluation will be conducted for each phase of the
1691 planting, throughout the life span of the remedy. Groundwater contaminant levels should show a
1692 decrease between 10 and 30 percent by the end of five years for each area planted. US DOE may
1693 be required to install pressure transducers in monitoring wells throughout the plume to
1694 demonstrate that the remedy is effectively interacting with the contaminated groundwater. Over
1695 time, should Phytoremediation fail to adequately address the plume in this area, alternative
1696 remedial measures may be evaluated such as bio-remediation, or groundwater extraction. Other
1697 alternatives not evaluated in the approved Quadrant I CAS/CMS Report may also be considered.

1698 14.0 CONCURRENCE

1699 US EPA has provided Ohio EPA with concurrence for all of the selected remedial alternatives for
1700 Quadrant I outlined above.

APPENDIX I - ARAR'S FOR THE QUADRANT I

1.0 INTRODUCTION

This appendix provides a discussion pertinent to federal and state applicable or relevant and appropriate requirements (ARARs) which may be considered for corrective measures proposed for the 5-Unit Groundwater Investigative Area, X-231A Southeast Oil Biodegradation Plot, X-231B Southwest Oil Biodegradation Plot, and the X-749/X-120 area located in Quadrant I at the Portsmouth Gaseous Diffusion Plant (PORTS) in Piketon, Ohio.

In the absence of federal- or state-promulgated regulations, certain criteria, advisories, guidance values, and proposed standards, although not legally binding, may serve to supplement an ARAR provision by providing useful guidance for setting protective cleanup levels. These are not potential ARARs but are "to be considered" (TBC) guidance.

2.0 REGULATORY HISTORY OF PORTS

A Cleanup Alternative Study/Corrective Measures Study (CAS/CMS) being conducted for PORTS is intended to develop alternatives for remediating hazardous and radioactive contamination present in PORTS groundwater and soil as a result of plant operations. PORTS, which is owned by the United States Department of Energy (U.S. DOE), currently enriches uranium for electrical power generation and until 1991 provided highly enriched uranium to the U.S. Navy.

The environmental restoration program at PORTS is the subject of two enforcement actions. The State of Ohio issued a Consent Decree August 31, 1989, requiring a CAS. An Administrative Order by Consent (AOC) between the U.S. Environmental Protection Agency (U.S. EPA) and DOE under the authority of Section 3008(h) of Resource Conservation and Recovery Act (RCRA) and Sections 104 and 106(a) of the CERCLA Act of 1980 was issued effective September 27, 1989, and amended May 11, 1994 and in August 1997. The U.S. EPA AOC includes requirements for a CMS for solid waste management units (SWMUs) that parallel requirements of the state of Ohio Consent Decree. Tasks in the AOC are patterned after the proposed RCRA corrective action process to be promulgated in Title 40 *Code of Federal Regulations* (CFR) Part 264 Subpart S. The AOC also suggests that CERCLA requirements be integrated into the corrective action process as ARARs or regulatory drivers to address releases of hazardous substances that are not hazardous waste. The intent of implementing CERCLA guidance at PORTS is to supplement policies and decisions not specifically included under RCRA.

CERCLA on-site remedial response actions must comply only with the substantive requirements of a regulation and not the administrative requirements to obtain federal, state, or local permits [CERCLA §121(e)]. To ensure that CERCLA response actions proceed as rapidly as possible, the U.S.

EPA has reaffirmed this position in the final National Contingency Plan (NCP) (55 Federal Register (FR) 8756). **Substantive requirements** pertain directly to the actions or conditions at a site. **Administrative requirements** facilitate the implementation of those substantive requirements. Although these administrative requirements are not ARARs under the CERCLA process, compliance with all administrative requirements (not summarized in this appendix) is necessary until PORTS is listed on the National Priorities List (NPL). Section 121 of CERCLA specifies that remedial actions for cleanup of hazardous substances must comply with ARARs or standards under federal and state environmental laws.

3.0 DEFINITION OF TERMS

The terms defined in the following sections of the appendix are those essential to understanding the information in the appendix.

Applicable requirements are "those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site" (40 CFR 300.5).

Relevant and appropriate requirements are "those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting law that, while not applicable to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site" (40 CFR 300.5).

3.1 Chemical, Location, and Action-Specific ARARs

ARARs will govern remediation activities, generation and management of waste streams, and final disposition of waste streams. To-be-considered guidance will be integrated with ARARs as non-promulgated standards. The following paragraphs provide brief explanations of chemical-, location-, and action-specific ARARs.

3.2 Chemical-Specific ARARs

Chemical-specific requirements set health or risk-based concentration limits or discharge limitations in various environmental media for specific hazardous substances, pollutants, or contaminants (53 FR 51394). Although limited in number, chemical-specific standards have been established under several statutes, including RCRA, Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), and Clean Air Act (CAA). These requirements generally set protective cleanup levels for the chemicals of concern in the designated media or else indicate a safe level of discharge that may be incorporated when considering a specific remedial activity.

3.3 Location-Specific ARARs

Location-specific requirements set restrictions upon the concentration of hazardous substances or the conduct of activities solely because these substances or activities are in special locations (53 FR 51394). Location characteristics that trigger ARARs include the presence of sensitive resources such as wetlands, flood plains, cultural resources, historic sites, and endangered or threatened species.

3.4 Action-Specific ARARs

Performance, design, or other action-specific requirements set controls or restrictions on particular types of activities related to the management of hazardous waste (53 FR 51394). Selection of a particular remedial action at a site will invoke the appropriate action-specific ARARs. These ARARs may specify particular performance standards or technologies as well as specific environmental cleanup levels for discharged or residual chemicals remaining after treatment or following remedial activities.

4.0 ARARs STATUS

ARARs will govern the remediation activities, generation and management of waste streams, and final disposition of waste streams. To ensure protection of human health and the environment, and to ensure proper management of waste, the Ohio EPA and DOE are establishing a list of Federal and State of Ohio promulgated standards, requirements, and cleanup criteria that will be met during the implementation of the remedial activities. The Federal and State of Ohio promulgated standards, requirements, and cleanup criteria presented in Table B.1 include requirements from the Ohio Administrative Code (OAC), Ohio Revised Code (ORC), U.S. EPA Guidance, DOE Orders and Title 40 *Code of Federal Regulations* (CFR). To-be-considered (TBC) guidance will be integrated with ARARs as non-promulgated standards.

This list of ARARs is preliminary in nature and provides a broad spectrum of ARARs for consideration in the Preferred Plan. After the selected remedial action alternative for Quadrant I is chosen, a final list of ARARs will be negotiated and incorporated into the CMI. The preliminary list of ARARs and TBC guidance is presented in Table B.1.

[Note: a list of acronyms is included at the end of Table B.1.]

Table B.1 Preliminary ARARs for Quadrant I

Action	Requirement	Prerequisites	Citation
Historic Preservation (Location)	DOE must take into account the effect of an undertaking on Historic Properties and accord the Advisory Council on Historic Preservation a reasonable opportunity to comment. Historic properties are defined as any prehistoric or historic district, building, site, structure, or object included or eligible for inclusion in, the National Register of Historic Places.	This requirement will include the terms associated with artifacts, records, and persons released to and located within such properties. Historic properties that are to be substantially altered or demolished must be recorded for future use and reference - applicable .	National Historic Preservation Act 16 U.S.C. 470C (Federal) Consideration of Historic Properties 36 CFR Part 800
Archeological resource recovery and preservation (Action/Location)	Upon discovery that a project may cause irreparable loss, destruction, significant scientific finding, prehistoric finding, or loss of historical or archeological data, DOE must notify the Department of Interior in writing and provide appropriate information concerning the project. DOE must, with possible assistance from State Historical Preservation Officer (SHPO), undertake recovery, protection and preservation of the data. Prior to any Federal undertaking which may directly and adversely affect any National Historic Landmark, the Director of Ohio EPA of the responsible agency shall, to the extent possible, minimize the harm to such landmark.	No person shall excavate, remove, damage, or otherwise alter or deface or attempt to excavate, remove, damage, or otherwise alter or deface any archeological resource located on public lands unless such activity is pursuant to a permit. If an EPA activity may cause irreparable loss or destruction of significant scientific, prehistoric, historic, or archeological data, the responsible official or the Secretary of the Interior is authorized to undertake data recovery and preservation activities - applicable . [NOTE: The National Environmental Policy Act requires that federal projects be evaluated to consider adverse effects on archeological and historical sites.]	Archeological and Historic Preservation Act 16 U.S.C. 469, 470 Procedures for Implementing the National Environmental Policy Act (NEPA) 40 CFR 6.301(a),(h)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Protection of wetlands (Location)	Federal agencies conducting certain activities must avoid, to the extent possible, the adverse effects and impacts associated with destruction or loss of wetlands and to avoid support of new construction in wetlands when a practicable alternative exist.	Consideration will be given by DOE to protect wetlands associated with the area near the sites undergoing remediation in Quadrant I - applicable.	Procedure for Implementing NEPA 40 CFR 6.302(a) Executive Order 11990
Flood plain management (Location)	Federal agencies must evaluate the potential effects of actions they may take in a floodplain to avoid, to the extent possible, adverse effects with the direct or indirect development of a floodplain.	DOE must consider floodplain areas located within or effected by the Quadrant I remedial action - applicable.	Procedures for Implementing NEPA 40 CFR 6.302(b) Executive Order 11988
Floodplain (Location)	The limits of solid waste placement and the leachate management system cannot be located in a regulatory floodplain, unless deemed necessary by the Director of Ohio EPA.	Measures will be taken to ensure that the regulatory requirements identified as applicable or relevant and appropriate under this regulation will be adhered to - applicable.	OAC 3745-27-20(c)(2)
Floodplain/wetlands (Location)	DOE shall exercise leadership and take action to: (1) avoid to the extent possible long- and short-term adverse impacts associated with the destruction of wetlands and the occupancy and modification of floodplain and wetlands, and avoid direct and indirect support of floodplain and wetlands	DOE will undertake a careful evaluation of the potential effects of any DOE action taken in a floodplain and any new construction undertaken by DOE in wetlands not located in a floodplain. DOE will identify, evaluate, and as appropriate, implement alternative actions which may avoid or mitigate	DOE Compliance with Floodplain/Wetlands Environmental Review Requirements 10 CFR 1022.3(a),(b)(1),(2),(3),(5),(6),(c),(d),(e), 1022.5(b),(h), and 1022.11(a),(b),(c)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
<p>Floodplain/wetlands (Location) (Continued)</p>	<p>development wherever there is a practicable alternative. (2) incorporate floodplain management goals and wetlands protection considerations into its planning, regulatory, and decision-making processes and shall to the extent practicable: (a) reduce the hazard and risk of flood loss. (b) minimize the impact of floods on human safety, health and welfare. (c) restore and preserve natural and beneficial values served by the floodplain. (d) minimize the destruction, loss or degradation of wetlands. (e) preserve and enhance the natural and beneficial values of wetlands.</p>	<p>adverse floodplain/wetlands impacts. DOE will provide opportunity for early review of any plans or proposals for actions in floodplain and new construction in wetlands. DOE must consider wetlands and areas located within or effected by the Quadrant I remedial action - applicable.</p>	
<p>Best Management Practices Program (BMP) (Action)</p>	<p>BMP programs shall be developed in accordance with good engineering practices and: (1) be documented in a narrative form, including necessary plot plans, drawings, and maps, (2) establish specific objectives for the control of toxic and hazardous pollutants, and</p>	<p>The substantive portions of this regulation may apply to the remedial action(s) undertaken - applicable.</p>	<p>40 CFR 125.104 Subpart K</p>

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Best Management Practices Program (BMP)(Action) (Continued)	(3) establish specific best management practices to meet the specific objectives for control of toxic and hazardous pollutants to the waters of the United States.		
Noise control (Action)	The public must be protected from noises that jeopardize health and welfare.	Because vehicles and equipment would be involved in certain aspects of the remedial action, all substantive requirements of the act are applicable - applicable.	Noise Control Act, as amended 42 U.S.C. 4901 et. seq. Noise Pollution and Abate Act 42 U.S.C. 7641
Solid waste closure regulations (RCRA Subtitle D Municipal) (Action)	RCRA Subtitle D regulations cover the location, operation, and closure of municipal solid waste landfills. Subpart F of 40 CFR 258 covers closure and post-closure.	The substantive portions of 40 CFR 258 Subpart F are identified due to capping requirements - relevant and appropriate.	RCRA Subtitle D Municipal Solid Waste Closure Regulations 40 CFR 258 Subpart F
RCRA corrective actions (Action)	The following promulgated requirements are Federal statutory requirements for RCRA corrective actions.	The remedial action(s) are being conducted pursuant to RCRA and CERCLA requirements - applicable.	RCRA Corrective Actions - Sections 3004(u), 3005(c)(3), 3008(h), and 7003
Radiation protection of public and environment (Chemical)	DOE Orders relating to radiation dose limit, as low as reasonably achievable policy, control of residual radioactive material, management and control of radioactive material, management and control of radioactive materials in liquid discharges, radiation	Management of any materials during remedial action(s) that are contaminated with radioactive compounds should consider the criteria and guidelines established in this DOE Order - TBC.	DOE Order 5400.5

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Radiation protection of public and environment (Chemical) (Continued)	protection of public and the environment, and derived concentration guides for radionuclides contain criteria and guidelines to be considered for management of radioactive material.		
Management of low-level radioactive waste (Chemical)	DOE Order 5820.2A states "low-level radioactive waste may be disposed by methods appropriate to achieve the performance objectives of the disposal facility." Low-level radioactive waste must be disposed of on-site, if possible.	Management of any materials that may be considered low-level radioactive waste should consider the criteria and guidelines established in this DOE Order. If on-site disposal capacity for LLW is insufficient, off-site disposal must be at another DOE facility. An exemption is required for disposal of LLW off-site - TRC.	DOE Order 5820.2A (III)
RCRA corrective actions (proposed regulations) (Action)	RCRA corrective actions are the proposed regulations identified for implementation.	The proposed Subpart S regulations pertaining to RCRA corrective actions are to be considered during remedial actions - TBC.	40 CFR 264 Subpart S
Mixed LLW (Chemical)	To ensure that inappropriate shipments of mixed waste are not occurring, the DOE Office of Environment Restoration and Waste Management issued a Performance Objective for Certification of Nonradioactive Hazardous Waste. In accordance with DOE Order 5820.2A, mixed waste is to be disposed of on the site where it was generated, if possible.	The basic premise of the performance objective is that no mixed waste is to be shipped off-site to a facility not specifically licensed for the radioactive component of the waste - TBC. The waste must be shipped to an off-site treatment/disposal facility holding both a RCRA permit and a NRC permit - TBC.	DOE Order 5820.20A

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
RCRA corrective action (Action)	Guidance from EPA on conducting RCRA corrective actions.	The RCRA Corrective Action Plan guidance is to be considered for the remedial action - TBC.	RCRA Corrective Action Plan OSWER Directive No. 9902.3-2A
Chemicals in drinking water (Solid Waste Disposal Facility) (Chemical)	A solid waste disposal facility shall not contaminate an underground drinking water source beyond the solid waste boundary (outermost perimeter of the waste). The concentration of chemicals shall not exceed background levels or listed maximum contaminant levels (MCLs), whichever is higher.	These requirements would be relevant and appropriate because the SWMUs contains several of the constituents and/or chemicals listed in the regulation - relevant and appropriate.	40 CFR 257.4
Classification of solid waste disposal facilities and practices (Chemical)	Solid waste disposal facilities or practices shall not cause or contribute to the taking of any endangered or threatened species of plants, fish, or wildlife.	The practices shall not result in the destruction or adverse modification of critical habitat of endangered or threatened species identified in 50 CFR Part 17 - applicable.	40 CFR 257.3-2
Endangered and threatened species and plants (Location)	All Federal agencies must ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of the constituent elements essential to the conservation of a listed species within a defined critical habitat.	Additional requirements could apply if it is determined that the remedial action could adversely affect these species or their habitat - applicable.	Endangered Species Act 16 U.S.C. 1531, et. Seq. Endangered and Threatened Wildlife and Plants 50 CFR 17.21, 17.31, 17.61, 17.71 and 17.94 Interagency Cooperation- Endangered Species Act 50 CFR 402.01

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Sanitary landfill groundwater protection - Quality Assessment Program - Corrective Measures Program (Action)	Groundwater monitoring program must be established for all sanitary landfill facilities. The system must consist of a sufficient number of wells that are located so that samples indicate both upgradient (background) and downgradient water samples. The program must be capable of determining concentration, rate, and extent of leachate constituents in groundwater, while evaluating all practical remediation measures capable of controlling and/or eliminating further release.	Establishes minimum requirements to ensure landfill operations are such that releases to groundwater are eliminated or minimized. Applies in order to ensure proper operation and maintenance is maintained at the unit, and that wells have been installed both upgradient and downgradient. Sampling and analysis procedures required by this rule shall be incorporated into site procedures - relevant and appropriate.	OAC 3745-27-10(B)(C)(D)(E)(F)
Use of wells for disposal - (Action)	It is prohibited to inject or re-inject material into the ground without the proper permits.	Relevant and appropriate.	OAC 3745-9-11
Final closure of sanitary landfill facilities (Action)	Final closure standards will require the closure of a landfill in a manner which minimizes the need for post-closure maintenance and minimizes post-closure release of leachate or explosive gases to air, soil, groundwater or surface water, specifies acceptable cap design, soil, barrier layer, granular drainage layer, soil and vegetative layer. Will also provide for use of comparable materials to those specified with approval of Director of Ohio EPA.	Although these requirements apply to new solid waste landfills being created on-site, any expansion of existing solid waste landfills on-site and any existing areas of contamination that are capped in place per the solid waste rules - relevant and appropriate.	OAC 3745-27-11(B)(G)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Sanitary landfill-explosive gas monitoring (Action/Chemical)	Establishes requirements for an explosive gas monitoring plan which is required for solid waste landfills. Specifies the minimum information required in such a plan, including detailed engineering plans, specifications, information on gas generation potential, sampling and monitoring procedures, etc. Establishes minimum threshold limits for implementation of contingency plans for remediation of explosive gas exceedences.	Pertains to any site which has had or will have putrescible solid waste placed on-site and which has a structure located within 1000 feet of the emplaced solid waste - relevant and appropriate. Parameters and schedule for explosive gas monitoring must be identified for any disposal site where explosive gas may be a threat - relevant and appropriate.	OAC 3745-27-12 (A)(B)(D)(E)(K)(M)(N)(O) OAC 3745-27-12(I)(J)
Disturbance where hazardous or solid waste facility was operated (Action)	Requires that a detailed plan be provided to describe how any proposed filling, grading, excavation, building, drilling, or mining on land where a hazardous water facility or solid waste facility was operated will be accomplished. This information must demonstrate that proposed activities will not create a nuisance or adversely affect the public health or the environment. Special terms to conduct such activities may be imposed by the Director of Ohio EPA to protect the public and the environment.	Pertains to any site at which hazardous or solid waste has been managed, either intentionally or otherwise. Does not apply to areas that have had one-time leaks or spills - relevant and appropriate.	OAC 3745-27-13(C)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Post-closure care of sanitary landfill facilities (Action)	Specifies the required post-closure care for solid waste facilities. Includes continuing operation of any leachate or surface water management systems, maintenance of the cap systems, and groundwater monitoring.	Although these requirements apply to new solid waste landfills being created on-site, any expansion of existing solid waste landfills on-site and any existing areas of contamination that are capped in place per the solid waste rules are covered under these requirements. The requirement applies to ensure proper operation and maintenance is maintained at the unit - relevant and appropriate.	OAC 3745-27-14(A) 40 CFR 267.23
Ambient air quality standards and guidelines (Action/Chemical)	Establishes specific air quality standards for carbon monoxide, ozone, and non-methane hydrocarbons.	Pertains to any site that will emit carbon oxides, ozone or non-methane hydrocarbons. Considered for sites that will undergo water treatment, incineration and fuel burning [waste fuel recovery] - applicable.	OAC 3745-21-02(A)(B)
Methods of ambient air quality measurement (Action)	Specifies measurement methods to determine ambient air quality for the following constituents, carbon monoxide, ozone and non-methane hydrocarbons.	Pertains to any site which will emit carbon monoxide, ozone or non-methane hydrocarbons. Considered for sites where treatment systems will result in air emissions - applicable.	OAC 3745-21-03(B)(C)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Exemptions to solid waste regulations (Action)	Defines exemptions to solid waste regulations and establishes limitations on temporary storage of putrescible waste or any solid waste which causes a nuisance or health hazard. Storage of putrescible waste beyond seven days is considered open dumping.	Pertains to any site at which waste will be managed. Consider especially for old landfills where solid waste may be excavated and/or consolidated - applicable .	OAC 3745-27-03(B)
Authorized, limited and prohibited solid waste disposal (Action)	Establishes allowable methods of solid waste disposal, sanitary landfill incineration, and composting. Prohibits management by open burning and open dumping.	Pertains to any site which solid wastes will be managed by open burning or open dumping - applicable .	OAC 3745-27-05(A)(B)(C)
Required technical information for sanitary landfills (Action)	Specifies the minimum technical information required of solid waste permit to install. Included are hydrogeologic investigation report, leachate production and migration information, surface water discharge information, design calculations and plan drawings.	This ARAR will present substantive requirements of a solid waste permit to install. Pertains to any new solid waste disposal facility created on-site and expansions of existing solid waste landfills. Pertains to existing areas of contamination that are capped per solid waste regulations. The regulations establish the minimum information required during the remedial design stage - applicable .	OAC 3745-27-06(B)(C)
Location criteria for solid waste disposal permit (Location)	Specifies the location(s) where solid waste landfills are not to be sited. Includes floodplains, sand or gravel pits, limestone or sandstone quarries, areas above sole source aquifers, wetlands, etc.	No new solid waste landfills and/or expansions of existing solid waste landfills will occur in certain unfavorable locations. Prohibits leaving waste in-place in certain unfavorable locations - applicable .	OAC 3745-27-07(A)(B)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Additional criteria for sanitary landfill approval (Action/Location)	Siting requirements with respect to geology, water supplies, occupied properties, parklands and mine subsidence areas.	Pertains to new sanitary landfills for solid waste disposal and expansions of existing facilities - applicable .	OAC 3745-27-07(D)(F)(G)(H)
Construction specifications for sanitary landfills (Action)	Specifies the minimum requirements for the soil/clay layers.	Pertains to any new solid waste disposal facility located on-site and any expansions to existing solid waste landfills. Requirements applicable to areas of contamination that are capped per solid waste regulations - applicable .	OAC 3745-27-08(C), (D thru I)
Sanitary landfill operations - leachate management, final cover, and surface waste management. (Action)	Includes requirements for the final cap system for areas at final elevations. Surface water must be diverted from areas where solid waste is being, or has been, deposited. Also requires run-on and run-off to be controlled to minimize infiltration through the cover material and to minimize erosion of the cap system.	Although these requirements apply to new solid waste landfills being created on-site, any expansion of existing solid waste landfills on-site and any existing areas of contamination that are capped in place per the solid waste rules - relevant and appropriate . Pertains to new solid waste disposal facilities to be created on-site and existing landfills that will be expanded during remediation. Applies to existing areas of contamination that will be capped in-place per solid waste rules - relevant and appropriate .	OAC 3745-27-19(H) OAC 3745-27-19(J)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Sanitary landfill operation - leachate management, fill cover, and surface water management. (Action)	Requires repair of leachate outbreaks; collection and treatment of leachate on the surface of the landfill; and action to minimize control or eliminate conditions causing leachate outbreaks.	Applies in order to ensure that proper operation and maintenance is maintained at the unit - relevant and appropriate.	OAC 3745-27-19(K)
Sanitary landfill general operational requirements (Action)	Specifies general operations requirements for solid waste landfills. Includes preparation for operating during inclement weather; management to minimize dust and odors and vectors, etc.	Pertains to new solid waste disposal facilities to be created on-site and existing landfills that will be expanded during remediation. Applies to existing areas of contamination that will be capped in-place per solid waste rules - applicable.	OAC 3745-27-19(E)(J)
Sanitary landfill operations construction compliance (Action)	The owner or operator must implement measures to attain compliance with the requirements of the regulations in the event that testing indicates that a component or portion of the landfill has not been constructed in accordance with the regulations.	Pertains to new solid waste disposal facilities to be created on-site and existing landfills that will be expanded during remediation. Requirements also pertain to construction of final cover systems - applicable.	OAC 3745-27-19D(2)
Sanitary landfill operations daily and intermediate cover (Action)	Includes requirements for daily cover and intermediate cover for temporary inactive areas.	Pertains to new solid waste disposal facilities to be created on-site and existing landfills that will be expanded during remediation - relevant and appropriate.	OAC 3745-27-19(F)(G)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
<p>Permit information required for all hazardous waste facilities (Action)</p>	<p>Establishes the substantive hazardous waste land disposal permit requirements necessary for Ohio EPA to determine compliance. Includes information such as facility description, waste characteristics, equipment descriptions, and contingency plan, etc.</p>	<p>Pertains to any site which will have treatment, storage or disposal of hazardous waste contamination on-site that will be capped in-place. - relevant and appropriate.</p>	<p>OAC 3745-50-44(A)</p>
<p>Permit information required for all hazardous waste land disposal facilities (Action)</p>	<p>Establishes the substantive hazardous waste land disposal permit requirements necessary for Ohio EPA to determine adequate protection of the groundwater. Includes information such as groundwater monitoring data, information on interconnecting aquifers, plumes of contamination and plans and reports on the condition of the groundwater monitoring program.</p>	<p>Pertains to any facility which will have hazardous waste disposed of on-site or has existing areas of hazardous waste contamination on-site that will be capped in-place - applicable.</p>	<p>OAC 3745-50-44(B)</p>
<p>Permit information: hazardous waste storage/treatment in containers (Action)</p>	<p>Substantive hazardous waste permit requirements necessary for Ohio EPA to determine adequacy of container storage. Includes information such as containment systems, detailed drawings, etc. See also OAC 3745-55-70 through 3745-55-78 for additional container requirements.</p>	<p>Pertains to sites which will have hazardous waste stored on-site in containers (i.e., waste and contaminated soils that are stored prior to treatment or disposal) - applicable.</p>	<p>OAC 3745-50-44C(1)</p>

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
<p>Permit information: hazardous waste storage/treatment in tanks (Action)</p>	<p>Substantive hazardous waste permit requirements necessary for Ohio EPA to determine adequacy of tank treatment and storage units. Includes information such as assessment of structural integrity, detailed plans of tank systems etc. See also OAC 3745-55-90 through 3745-55-99 for additional container requirements.</p>	<p>Pertains to sites which will have hazardous waste stored on-site in tanks (i.e., storage prior to treatment or disposal) - applicable.</p>	<p>OAC 3745-50-44C(2)</p>
<p>Permit information: hazardous waste storage/treatment in Surface Impoundments (Action)</p>	<p>Surface impoundments requirements necessary for Ohio EPA to determine adequacy of waste piles used to treat or store hazardous waste. Includes information such as waste characteristics, detailed design plans and reports, control of run-on and run-off, closure information, etc.</p>	<p>Pertains to sites which have hazardous waste stored on-site in surface impoundments - applicable.</p>	<p>OAC 3745-50-44C(3)</p>
<p>Permit information: hazardous waste storage/treatment in Waste Piles (Action)</p>	<p>Substantive hazardous waste permit requirements necessary for Ohio EPA to determine adequacy of waste piles used to treat or store hazardous waste. Includes information such as waste characteristics, detailed design plans and reports, control of run-on and run-off, closure information, etc.</p>	<p>Pertains to sites which will have hazardous waste stored on-site in waste piles - applicable.</p>	<p>OAC 3745-50-44C(4)</p>

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Permit information: hazardous waste treatment/disposal by land treatment (Action)	Substantive hazardous waste permit requirements necessary for Ohio EPA to determine adequacy of land treatment to treat or dispose of hazardous waste. Includes information such as waste characteristics, detailed design measure to maximize treatment, dimensions of treatment zone, design of unit, etc. See also OAC 3745-56-70 through 3745-56-83 for additional surface impoundment requirements.	Pertains to sites in which treatment will be used to treat or dispose of hazardous waste stored on-site via land treatment - applicable .	OAC 3745-50-44C(5)
Permit information: environmental performance standards (Action)	Substantive hazardous waste permit requirements necessary for Ohio EPA to determine adequacy of surface impoundments, waste piles, land treatment units, landfills, and underground injection wells used to treat, store, or dispose of hazardous waste. Includes information such as waste characteristics, detailed design plans and reports, control of run-on and run-off, closure information, etc. See also OAC 3745-57-01 for additional requirements.	Pertains to sites at which hazardous waste will be or has been stored, treated, or disposed of in surface impoundments, waste piles, land treatment units, landfills, or underground injection wells - applicable .	OAC 3745-50-44C(6)
Hazardous waste facility permit conditions (Action)	Establishes general permit conditions applied to all hazardous waste facilities in Ohio. Includes O&M, site access, etc.	Pertains to all alternatives that will incorporate treatment, storage and disposal of hazardous waste - applicable .	OAC 3745-50-58(E)(I)(J)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Security for hazardous waste facilities (Action)	Hazardous waste facilities must have security that prevents unauthorized visitors from entering the site.	Pertains to all sites at which hazardous waste is to be treated, stored, or disposed or has been disposed of - relevant and appropriate.	OAC 3745-54-14(A)(B)(C)
Inspection requirements for hazardous waste facilities (Action)	Hazardous waste facilities must be inspected regularly to detect malfunctions, deteriorations, operational errors and discharges. Any malfunctions or deteriorations detected shall be remediated expeditiously.	Pertains to all sites at which hazardous waste is to be treated, stored, or disposed or has been disposed of - relevant and appropriate.	OAC 3745-54-15(A)(C)
Hazardous Waste Rule: Personnel Training (Action)	Ensures that personnel of a hazardous waste permitted facility completes formalized training in operational and emergency procedures.	Personnel are required to participate in an annual review of the initial training. Records of training must be maintained at least three years from date employee last worked at the facility - relevant and appropriate.	OAC 3745-54-16
Requirements for ignitable, reactive, or incompatible hazardous waste (Action, Location)	Precautions will be taken to prevent accidental ignition or reaction of ignitable, reactive or incompatible waste.	Pertains to any sites at which potentially reactive, ignitable or incompatible waste are present - relevant and appropriate.	OAC 3745-54-17(A)(B)(C)
Location standards for hazardous waste TSD facilities (Action)	Prohibits the siting of hazardous waste facilities in areas of seismic activity or floodplains.	Pertains to any sites at which hazardous waste is to be treated, stored, or disposed or has been disposed of - relevant and appropriate.	OAC 3745-54-18(A)(B)(C)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Design and operation of hazardous waste facilities (Action)	Hazardous waste facilities must be designed to prevent the possibility of fire, explosion or release of hazardous waste or hazardous constituents to the air, soil, or surface water.	Pertains to any sites at which hazardous waste is to be treated, stored, or disposed or has been disposed of - relevant and appropriate.	OAC 3745-54-31
Required equipment for hazardous waste facilities (Action)	Hazardous waste facilities must be equipped with emergency equipment, such as alarm systems, fire control equipment, and a telephone or radio.	Pertains to any sites at which hazardous waste is to be treated, stored, or disposed or has been disposed of - relevant and appropriate.	OAC 3745-54-32(A)(B)(C)(D)
Testing and maintenance of equipment: hazardous waste facilities (Action)	The emergency equipment will be tested and maintained in good working condition.	Pertains to any sites at which hazardous waste is to be treated, stored, or disposed or has been disposed of - relevant and appropriate.	OAC 3745-54-33
Access to communications or alarm systems: hazardous waste facilities (Action)	When handling hazardous waste, all personnel shall have immediate access to an internal alarm or emergency communication device.	Pertains to any sites at which hazardous waste is to be treated, stored, or disposed or has been disposed of - relevant and appropriate.	OAC 3745-54-34
Required aisle space at hazardous waste facilities (Action)	Adequate aisle space shall be maintained to allow unobstructed movement of personnel, fire equipment, spill control and decontamination equipment into any area of the facility operation in the event of an emergency.	Pertains to any sites at which hazardous waste is to be treated, stored, or disposed or has been disposed of. Considered for sites where waste will be stored in containers - relevant and appropriate.	OAC 3745-54-35

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
<p>Arrangements/agreements with local authorities (Action)</p>	<p>Arrangements/agreements with local authorities, such as police, fire department and emergency response teams must be made. Documentation of the cooperation or non-cooperation of the local authorities should be recorded.</p>	<p>Pertains to any sites at which hazardous waste is to be treated, stored, or disposed or has been disposed of - relevant and appropriate.</p>	<p>OAC 3745-54-37(A)(B)</p>
<p>Content of Contingency Plan: hazardous waste facilities (Action)</p>	<p>Unplanned releases of hazardous waste or hazardous constituents into the air, soil, or surface water must be addressed in a Contingency Plan.</p>	<p>Pertains to any sites at which hazardous waste is to be treated, stored, or disposed or has been disposed of - relevant and appropriate.</p>	<p>OAC 3745-54-52(A) thru (F)</p>
<p>Copies of the Contingency Plan: hazardous waste facilities (Action)</p>	<p>Per OAC 3745-54-50, copies of the Contingency Plan must be maintained at the facility and submitted to the police, fire department, hospitals and local emergency response teams and the Ohio EPA. The Contingency Plan will be amended if it fails in an emergency. Also, the Contingency Plan will be amended if, the facility changes in its design, construction, maintenance or operation, or if the list of emergency coordinators and/or equipment changes.</p>	<p>Pertains to any sites at which hazardous waste is to be treated, stored, or disposed or has been disposed of - relevant and appropriate.</p>	<p>OAC 3745-54-53(A)(B) OAC 3745-54-54(A)</p>

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Emergency Coordinator: hazardous waste facilities (Action)	There should be at least one employee either on the premises or on call at all times to coordinate all emergency response measures.	Pertains to any sites at which hazardous waste is to be treated, stored, or disposed or has been disposed of - relevant and appropriate.	OAC 3745-54-55
Emergency procedures: hazardous waste facilities (Action)	The regulations specify the procedures to be followed in the case of an emergency.	Pertains to any sites at which hazardous waste is to be treated, stored, or disposed or has been disposed of - relevant and appropriate.	OAC 3745-54-56(A) thru (I)
Design and operating requirements for waste piles (Action)	The requirement specifies the design and operation requirements for waste piles, includes liner systems, leachate collection and removal system, wind dispersal prevention and run-on and run-off.	Pertains to any site at which hazardous waste will be either stored or treated in waste piles - relevant and appropriate.	OAC 3745-56-51(A) thru (F)
Monitoring and inspection of waste piles (Action)	Waste piles must be monitored during construction or installation and operation.	Pertains to any site at which hazardous waste will be either stored or treated in waste piles - relevant and appropriate.	OAC 3745-56-54(A)(B)
Waste pile requirements for ignitable/reactive waste (Action/Chemical)	Precautions taken when dealing with potentially ignitable or reactive hazardous waste that are stored or treated in waste piles.	Pertains to any site at which potentially ignitable or reactive hazardous waste will be either stored or treated in waste piles - relevant and appropriate.	OAC 3745-56-56(A)(B)
Waste pile requirements for incompatible waste piles (Action/Chemical)	Precautions taken when dealing with potentially incompatible waste that are stored or treated in waste piles.	Pertains to any site at which potentially incompatible waste will be either stored or treated in waste piles - relevant and appropriate.	OAC 3745-56-57(A)(B)(C)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Closure and post-closure care for waste piles (Action)	Specifically identifies the closure and post-closure care requirements for waste piles.	Pertains to any site at which hazardous waste will be either stored or treated in waste piles - applicable.	OAC 3745-56-58(A)(B)(C)
Construction inspections for waste piles (Action)	Allows Ohio EPA the opportunity to inspect waste piles during construction.	Pertains to any site at which hazardous waste will be either stored or treated in waste piles - relevant and appropriate.	OAC 3745-56-59(A)
Landfill design and operating requirements (Action)	Specifies design and operating requirements for landfills, includes liner and leachate collection and removal; includes run-on and run-off, etc.	Pertains to all sites at which a hazardous waste landfill will either be located or an existing landfill will be expanded. These requirements address existing land-based areas of contamination - relevant and appropriate.	OAC 3745-57-03(A) thru (I)
Monitoring and inspection of landfills (Action)	Requires inspection of landfills during construction or installation and operation.	Pertains to all sites at which a hazardous waste landfill will either be located or an existing landfill will be expanded. These requirements address existing land-based areas of contamination - relevant and appropriate.	OAC 3745-57-05(A)(B)
Landfill requirements for ignitable/reactive waste (Action/Chemical)	Prohibits the disposal of ignitable or reactive waste in a landfill, unless the waste is treated, rendered or mixed so that the resultant material no longer meets the definition of ignitable or reactive waste.	Pertains to all sites at which ignitable or reactive hazardous waste may be landfilled - relevant and appropriate.	OAC 3745-57-12(A)(B)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Landfill requirements for incompatible waste piles (Action/Chemical)	Prohibits the disposal of incompatible waste in the same cell of a landfill.	Pertains to all sites at which incompatible waste may be landfilled - relevant and appropriate.	OAC 3745-57-13
Landfill requirements for bulk and containerized liquids (Action)	The placement of bulk or non-containerized liquid hazardous waste or hazardous waste containing free liquids (whether or not absorbents have been added) in any landfill is prohibited.	Pertains to all sites at which a liquid hazardous waste containing free liquids are considered for landfills - relevant and appropriate.	OAC 3745-57-14(A) thru (D)
Landfill requirements for containers (Action)	Unless they are very small containers, they must be at least 90% full when placed in the landfill or crushed/shredded prior to placement in the landfill.	Pertains to all sites at which a hazardous waste landfill will either be located or an existing landfill will be expanded and containers are to be disposed of in the landfill - relevant and appropriate.	OAC 3745-57-15(A)(B)
Disposal of small containers of hazardous waste in overpacks (Action)	Lab packs containing hazardous waste may be placed in a landfill if certain requirements are met.	Pertains to all sites at which a hazardous waste landfill will either be located or an existing landfill will be expanded and lab packs are to be disposed of in the landfill - relevant and appropriate.	OAC 3745-57-16(A) thru (E)
Construction inspections for landfills (Action)	Allows Ohio EPA the opportunity to inspect landfills during construction.	Pertains to all sites at which a hazardous waste landfill will either be located or an existing landfill will be expanded. Pertains to existing land-based areas of contamination - applicable.	OAC 3745-57-17(A)

Table B.1 Preliminary ARAIs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Environmental performance standards for miscellaneous units (Action/Chemical)	Establishes location, design, construction, operation and maintenance, and closure requirements for miscellaneous units used to treat, store or dispose of hazardous waste.	Pertains to any alternative that incorporates treatment, storage or disposal of hazardous waste in miscellaneous units - relevant and appropriate.	OAC 3745-57-91(A)(B)(C)
Water/air permit criteria for decision by the Director of Ohio EPA (Action)	A permit to install (PTI) or plans must demonstrate best available technology (BAT) and shall not interfere with or prevent that attainment or maintenance of applicable air quality standards.	Pertains to any site that will discharge to on-site surface water or will emit contaminants into the air. Surface water may be discharged to waters of the state before and after construction in accordance with the CWA requirements - applicable.	OAC 3745-31-05
Water quality criteria for decision by the Director of Ohio EPA (Action)	Specifies substantive requirement and criteria for Section 401 water quality criteria for dredging, filling, obstructing or altering waters of the state.	Pertains to any site that has or will affect waters of the state. The potential exist for discharge to waters of the state before or after construction in accordance with the CWA requirements. There is also a possibility that the remedial alternative chosen may require state waterways to be altered - applicable.	OAC 3745-32-05
Monitoring frequency for radioactivity (Chemical)	Presents monitoring requirements for radioactivity.	Pertains to any site which has contaminated groundwater or surface water that is either being used, or has the potential for use, as a drinking water source - applicable.	OAC 3745-81-26(A)(B)(C)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Location of new groundwater wells (Action/Location)	Maintains that groundwater wells be: (1) located and maintained so as to prevent contaminants from entering well (2) located as to be accessible for cleaning and maintenance.	Pertains to all groundwater wells on the site that either will be installed or have been installed since February 15, 1975. Would pertain to new wells constructed for treatability studies during Feasibility Studies - relevant and appropriate.	OAC 3745-9-04(A)(B)
Construction of new groundwater wells (Action)	Specifies minimum construction requirements for new groundwater wells in regards to casing material, casing depth, potable water, annular spaces, use of drive shoe, openings to allow water entry, and contaminant entry. Establishes specific requirements for well casings, such as suitable material, diameters and condition.	Pertains to all groundwater wells on the site that either will be installed or have been installed since February 15, 1975. Would pertain to new wells constructed for treatability studies during Feasibility Studies - relevant and appropriate.	OAC 3745-9-05(A)1, (B) thru (D)
Surface design of new groundwater wells (Action)	Establishes specific surface design requirements, such as height above ground, well vents, well pumps, etc.	Pertains to all groundwater wells on the site that either will be installed or have been installed since February 15, 1975. Would pertain to new wells constructed for treatability studies during Feasibility Studies - relevant and appropriate.	OAC 3745-9-06(A)(B)(D)(E)
		Pertains to all groundwater wells on the site that either will be installed or have been installed since February 15, 1975. Would pertain to new wells constructed for treatability studies during Feasibility Studies - relevant and appropriate.	OAC 3745-9-07(A) thru (F)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Start-up and operation of groundwater wells (Action)	Requires the disinfection of new wells and use of potable water for priming pumps.	Pertains to all groundwater wells on the site that either will be installed or have been installed since February 15, 1975. Would pertain to new wells constructed for treatability studies during Feasibility Studies - relevant and appropriate.	OAC 3745-9-08(A)(C)
Maintenance and operation of new groundwater wells (Action)	Establishes specific maintenance and modification requirements for casing, pump, and wells in general.	Pertains to all groundwater wells on the site that either will be installed or have been installed since February 15, 1975. Would pertain to new wells constructed for treatability studies during Feasibility Studies - relevant and appropriate.	OAC 3745-9-09(A) thru (C), D(1), (E) thru (G)
Abandonment of test holes and wells (Action)	Following completion of use, wells and test holes shall be completely filled with grout or similar material or shall be maintained in compliance of all regulations.	Applies to the installation of groundwater monitoring well(s) to prevent the contamination of the well. Water well standards are incorporated into PORTS SOPs - relevant and appropriate.	OAC 3745-9-10(A)(B)(C)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Endangered plant species (Location)	Prohibits removal or destruction of endangered plant species. No person shall root up, injure, destroy, remove from public highways, public property, or waters of the state, or on or from the property of another, without the written permission of the owner, lessee, or other person entitled to possession, any endangered or threatened plant listed in OAC 1501-18-1.	Applies to remediation sites where chemicals may harm endangered species. Clearly establishes that receptor plant species must be considered in risk assessments. This act may require consideration for displacement of large volumes of surface soils. Appropriate action will be taken in the event that an endangered or threatened species is discovered - applicable.	OAC 1501-18-1(03)(A) ORC 1518.02
Endangered animal species (Location)	No person shall take or possess any native species of wild animal, or any eggs or offspring thereof, that is threatened with site-wide extinction.	Applies to remediation sites where chemicals may harm endangered species. May apply at sites where remediation could disturb existing habitats - applicable.	OAC 1501-31-23(01) OAC 1501-31-23(A) thru (B) ORC 1531.25
Standard for active asbestos waste site (Action/Chemical)	Establishes operating standards for an active asbestos waste disposal site.	Pertains to sites where asbestos has come to be located and must be consolidated on-site. The remedial action undertaken will implement control measures to prevent disturbance and release to the atmosphere of any asbestos containing material - applicable.	OAC 3745-20-06(A)(B)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Standard for inactive asbestos waste site (Action/Chemical)	Establishes operating standards for an inactive asbestos waste disposal site.	Pertains to sites where asbestos has been located. This requirement will also consider inadequate cover or areas where asbestos will be consolidated. The remedial action undertaken will implement control measures to prevent disturbance and release to the atmosphere of any asbestos containing material - applicable.	OAC 3745-20-07(A)(B)(C)
Institutional controls (Action)	<p>Controls recommended include restrictions on land use, deed restrictions, well drilling prohibitions, well use advisories, and deed notices.</p> <p>Controls include but are not limited to periodic monitoring, appropriate shielding, physical barriers (i.e., fences, warning signs) to prevent access, inspection and repair of coverings, temporary dikes, drainage courses, and appropriate radiological safety measures to ensure protection during activities at the site.</p>	<p>Long-term management of contamination left in place - applicable.</p> <p>Interim management of residual radioactive material above guidelines, including but not limited to that material left in accessible locations - TBC.</p>	<p>40 CFR 300.430(e)(3)</p> <p>DOE Order 5400.5(IV)(6)(c)</p>

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Groundwater protection: (applicability) (Action)	The groundwater program, including monitoring requirements and associated activities will be consistent with the PORTS groundwater protection program, remedial action objectives (RAOs), and selected remedial alternative(s).	The selected remedial alternative will be designed to achieve regulatory compliance with the established groundwater protection standard(s) - applicable.	OAC 3745-54-90
Operational - groundwater protection (Action)	Requires the establishment of detection, compliance, and corrective action monitoring program to ensure protection of groundwater by assessing the performance of the TSD facility during operation.	The groundwater monitoring program is required to be performed during the post-closure period for land disposal facilities where hazardous waste remain after closure. The post-closure monitoring needs to be conducted for a period of 30 years unless the regulatory agency approves an earlier termination date or requires that monitoring period be extended - applicable.	40 CFR 264, (all applicable requirements of Subpart F - OAC 3745-54-91 thru 3745-54-99)
Groundwater corrective action program (Action/Chemical)	Presents the requirements of a groundwater corrective action program that prevents hazardous constituents from exceeding their respective concentration limits at compliance point either by removal or treatment of the constituents.	Remedial action is currently being conducted or being developed to address the contaminants and/or constituents in groundwater at PORTS which exceed their concentration limits - relevant and appropriate.	OAC 3745-55-01

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Content of closure plan: hazardous waste facilities (Action)	Specifies the minimum information required in a closure plan for Ohio EPA to determine the adequacy of the plan.	The substantive requirements will pertain to any site at which hazardous waste is to be treated, stored, or disposed of, or has been treated, stored or disposed of - relevant and appropriate.	OAC 3745-55-12(B)
Post-closure plan (Action)	Specifies the minimum information necessary for Ohio EPA to determine the adequacy of the closure plan.	Pertains to all sites with land-based hazardous waste units (landfills and surface impoundments, waste piles, land treatment units and tanks) that meet requirements of landfills after closure. This includes existing land-based areas of contamination - relevant and appropriate.	OAC 3745-55-18(B)
Notice to local land authority (Action)	Requires that a record of the type, location, and quantity of hazardous waste disposed in each unit be submitted to the local land authority and the Director of Ohio EPA. A notation on the deed to the property be made indicating that the land was used to manage hazardous waste and that certain use restrictions may apply to the property.	Pertains to all sites with land-based hazardous waste units (landfills and surface impoundments, waste piles, land treatment units and tanks) that meet requirements of landfills after closure. This includes existing land-based areas of contamination - relevant and appropriate.	OAC 3745-55-19(B)
Water quality certification (Action)	Specifies substantive criteria for Section 401 water quality criteria for dredging, filling, obstructing or altering waters of the state.	During and/or after construction resulting from remedial action(s), surface water may be discharged to waters of the state - applicable.	OAC 3745-32-05

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Acts of pollution prohibited (Action)	Pollution of waters of the state will be prohibited. Establishes regulations requiring compliance with national effluent standards which may have a point source discharge.	Pertains to any site which has contaminated on-site groundwater or surface water or will have a discharge to on-site surface water or groundwater - applicable.	OAC 6111.04 OAC 6111.04.2
The "Five Freedoms" for surface water (Chemical)	All surface water of the state shall be free from: (1) objectional suspended solids (2) floating debris, oil, and scum (3) materials that create a nuisance (4) toxic, harmful, or lethal substances (5) nutrients that create nuisance growth.	Pertains to both discharges to surface water and any on-site surface waters affected by site conditions during and/or after remedial action(s) - applicable.	OAC 3745-1-04(A)(B)(C)(D)(E)
Antidegradation policy for surface water (Chemical)	Prevents degradation of surface water quality below designated use or existing water quality. Existing instream uses shall be maintained and protected. The most stringent controls for treatment shall be required by the Director of Ohio EPA to be employed for all new and existing point source discharges. Prevents any degradation of "State Resource Waters".	Requires that best available technology (BAT) be used to treat surface water discharges. This requirement may be applied to set standards when existing water quality is better than the designated use - relevant and appropriate.	OAC 3745-1-05(A)(B)(C)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Mixing zone for surface water (Chemical)	Presents the criteria for establishing non-thermal mixing zones for point source discharges, and presents the criteria for establishing thermal mixing zones.	This requirement would pertain to an alternative which could result in a point source discharge to waters of the state or when establishing an alternative discharge point - applicable.	OAC 3745-1-06(A)(B)
Water quality standards and criteria (Action)	Specifies analytical methods and collection procedures for surface water discharges. May be applicable to pollutants which do not have specific numerical or narrative criteria identified in Tables 7-1 thru 7-15 of this rule.	Surface water may be discharged into waters of the state during remedial actions. The required analytical and collection techniques are to be incorporated into the site standard operating procedures (SOPs) - applicable. Surface water may be discharged into waters of the state during remedial action. Pertains to both discharges to surface waters as a result of the remedial action and any surface waters affected by site conditions - applicable.	OAC 3745-1-03 40 CFR Part 136 OAC 3745-1-07(C)
Water use designation for Scioto River (Action/Location)	Establishes water use designations for stream segments within the Scioto River Basin.	Pertinent if stream or stream segment is on-site and is either affected by site conditions or if selected remedial alternative includes direct discharge. Waste load allocations may have to be established and/or modified - applicable.	OAC 3745-1-09

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
<p>Stormwater discharge associated with industrial activity (Action)</p>	<p>A discharge composed entirely of stormwater associated with industrial activities is required to obtain a NPDES permit. These categories of facilities are considered engaging in "industrial activity":</p> <p>(1) Landfills, land application sites, and open dumps that receive or have received any industrial waste (waste that is received from any of the facilities described under this section) including those that are subject to regulation under Subtitle D of RCRA.</p> <p>(2) also includes construction activities including clearing, grading, and excavation activities that disturbs five acres or more of total area.</p>	<p>Sediment and erosion controls and BMP must be used to control run-off from installation and construction activities. Control of stormwater discharge associated with construction activities at industrial sites that result in a disturbance of greater than five acres of total land area - applicable.</p> <p>For those sites with less than five acres affected - relevant and appropriate.</p>	<p>40 CFR 122.26(a)(1)(ii) 40 CFR 122.26(b)(14)(v)(x)</p>
<p>Water pollution control (Action)</p>	<p>No discharge to waters of the state that will exceed discharge limits presented in the NPDES Permit shall occur. All discharges to waters of the state resulting from treatment systems such as a pump-and-treat system will meet the substantive requirements for discharge permits.</p>	<p>Prohibits failure to comply with requirements of sections 6111.01 to 6111.08 or any rules, permit or order issued under those sections - applicable.</p>	<p>ORC 6111.07(A)(C)</p>

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
<p>"Digging" where hazardous or solid waste facility was located (Action/Location)</p>	<p>Filling, grading, excavating, building, drilling or mining on land where a hazardous or solid waste facility was operated is prohibited without prior authorization from the Director of Ohio EPA.</p>	<p>Pertains to any site at which hazardous or solid waste has come to be located. Certain alternatives include potential excavation activities which may uncover solid and/or hazardous waste. Should remedial activities require the management of such waste, an exemption to permitting and other requirements may be warranted - applicable.</p>	<p>ORC 3734.02(H)</p>
<p>Exemptions to solid and hazardous waste TSD requirements (Action)</p>	<p>Provides authority and conditions by which the Director of the Ohio EPA may exempt any person from permitting or other requirements governing the generation, storage, treatment, transport or disposal of solid or hazardous waste.</p>	<p>Pertains to any site at which solid or hazardous waste has come to be located. Certain alternatives include excavation activities which may uncover solid and/or hazardous waste. Should remedial activities require the management of solid or hazardous waste on-site than an exemption to permitting and other requirements may be warranted - applicable.</p>	<p>ORC 3734.02(G)</p>
<p>Air emissions from hazardous waste facilities (Action/Chemical)</p>	<p>No hazardous waste facility shall emit any particulate matter, dust, fumes, smoke, vapor or odorous substance that interfere with the comfortable enjoyment of life or property.</p>	<p>Pertains to any site at which hazardous waste will be managed or where air emissions may occur. Consider sites that will undergo movement of earth or incineration - applicable.</p>	<p>ORC 3734.02(I)</p>

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
<p>Handling low-level radioactive waste prohibited (Action/Chemical)</p>	<p>Prohibits commingling of low-level radioactive waste with any other type of solid waste, hazardous waste or infectious waste. No owner or operator of a solid, infectious or hazardous waste facility shall accept radioactive waste for transfer, storage, treatment or disposal.</p>	<p>Pertains to all sites at which low-level radioactive waste has come to be located - applicable.</p>	<p>ORC 3734.02.7(A)(B)</p>
<p>Prohibits open burning or dumping (Action/Location)</p>	<p>Prohibits open burning or open dumping of solid waste or treated or untreated infectious waste.</p>	<p>Pertains to any site at which solid waste has come to be located or will be generated during remedial action - applicable.</p>	<p>ORC 3734.03</p>
<p>Hazardous waste facility environmental impact (Action/Location)</p>	<p>A hazardous waste facility installation and operation permit shall not be approved unless it proves that the facility represents the minimum adverse environmental impact, considering the state of available technology, the nature and economics of various alternatives and other pertinent considerations.</p>	<p>Pertains to any site at which solid waste has come to be located and/or at which hazardous waste will be treated, stored or disposed of. May be used as siting criteria - applicable.</p>	<p>ORC 3734.05D(6)(c)</p>

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
<p>Hazardous waste siting criteria (Action/Location)</p>	<p>A hazardous waste facility installation and operation permit shall not be approved unless it proves that the facility represents the minimum risk of all of the following:</p> <ul style="list-style-type: none"> (1) contamination of groundwater (2) fires and explosions from the treatment, storage and disposal methods (3) accident during transportation (4) impact on public health and safety (5) air pollution (6) soil contamination 	<p>Pertains to any site at which hazardous waste has come to be located and/or at which hazardous waste will be treated, stored or disposed of. May be used as siting criteria - applicable.</p>	<p>ORC 3734.05D(6)(d)</p>
<p>Hazardous waste siting criteria (Action/Location)</p>	<p>Prohibits the following locations for treatment, storage or disposal of acute hazardous waste:</p> <ul style="list-style-type: none"> (1) within 2000 feet of a residence, school, hospital, jail or prison (2) any naturally occurring wetland (3) any flood hazard area (4) within any state park, national park or recreation area 	<p>Pertains to any site at which hazardous waste has come to be located and/or at which hazardous waste will be treated, stored or disposed of. May be used as siting criteria - applicable.</p>	<p>ORC 3734.05(g)(h)</p>

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
<p>Conditions for disposal of acute hazardous waste (Action/Chemical)</p>	<p>Prohibits the disposal of acute hazardous waste unless it: (1) cannot be treated, recycled or destroyed (2) has been reduced to its lowest level of toxicity (3) has been completely encapsulated or protected to prevent leaching</p>	<p>Pertains to any site at which acute hazardous waste has come to be located - applicable.</p>	<p>ORC 3734.14.1</p>
<p>Explosive gas monitoring (Action/Location)</p>	<p>Several SWMUs may require explosive gas monitoring plans prior to any construction activities. The Director of Ohio EPA may order an owner or operator of a facility to implement an explosive gas monitoring and reporting plan should one not already be established.</p>	<p>Pertains to sanitary landfills except for those that dispose of non-putrescible waste - relevant and appropriate.</p>	<p>ORC 3734.04.1</p>
<p>Protection of human health and the environment (Action)</p>	<p>The Director of the Ohio EPA shall adopt and may modify, suspend, or repeal rules for solid waste facilities in order to ensure that the facilities will be located, maintained, and operated, and will undergo closure and post-closure care, in a sanitary manner so as not to create a nuisance, cause or contribute to water pollution, or create a health hazard, or violate 40 CFR 237.3-2 or 257.3-8.</p>	<p>A waiver for this requirement may be required - relevant and appropriate.</p>	<p>ORC 3734.02(A)</p>

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
<p>Additional permit information: hazardous waste TSD in miscellaneous units (Action)</p>	<p>Establishes substantive hazardous waste permit requirements necessary for Ohio EPA to determine adequacy of miscellaneous units used to treat or store hazardous waste. Includes information such as waste characteristics, detailed design plans and reports, control of run-on and run-off, closure information, etc. See OAC 3745-57-90 to 3745-57-93 for additional requirements for miscellaneous units.</p>	<p>Pertains to sites where hazardous waste may be stored, treated or disposed in miscellaneous units. This requirement will apply to ensure that proper operation and maintenance is maintained at the unit - relevant and appropriate.</p> <p>[NOTE: This requirement will be fulfilled through the CMS/CMI process including and not limited to the remedial design phase.]</p>	<p>OAC 3745-50-44(C)(9)</p>
<p>Waste determination and hazardous waste analysis (Action/Chemical)</p>	<p>Any person who generates a solid waste must determine if that waste is hazardous by using procedures identified in 40 CFR 262.11. An overview of the hazardous waste determination procedures is presented in 40 CFR 260 Appendix I.</p>	<p>The specific project will assess the selected alternative for hazardous waste by reviewing the RFI database, reviewing process/historical records, and performing sampling and analysis (as required). A task-specific sampling and analysis plan will be developed to guide the required waste characterization activities - applicable.</p>	<p>OAC 3745-52-11 OAC 3745-54-13</p>
<p>Hazardous waste container management (Action)</p>	<p>Containers of RCRA hazardous waste will be: (1) maintained in good condition, (2) compatible with other waste streams to be stored, (3) closed during storage, and (4) managed to prevent spills or rupture.</p>	<p>During the remedial action, containers of various types of waste streams could be generated. Containers will be inspected and records of the inspections will be kept. Containers will be stored per applicable containment requirements - relevant and appropriate.</p>	<p>OAC 3745-55-71, 73 to 78</p>

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Residues of hazardous waste in empty containers (Action)	Exempts residues from empty containers when these residues have resulted from remedial action alternatives requiring storage of containers on-site.	Pertains to any alternative that incorporates storage of hazardous waste on-site in containers - relevant and appropriate.	OAC 3745-51-07
Compatibility of hazardous waste with containers (Action)	Containers holding hazardous waste must not react with the container material or liner material.	Pertains to any site at which hazardous waste will be stored in containers. The requirement is being considered relevant and appropriate because hazardous waste pending analysis may be stored at the remediation site - relevant and appropriate.	OAC 3745-55-72
Hazardous waste accumulation time (Action)	A generator may accumulate hazardous waste on-site for 90 days or less without a permit or without having interim status.	During the remedial action, various waste streams could be generated, segregated, and temporarily staged pending analysis. The containers will be managed accordingly until disposal. The applicable requirements will be adhered to - relevant and appropriate.	OAC 3745-52-34

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
General closure performance standard: hazardous waste facilities (Action)	Requires that all hazardous waste facilities be closed in a manner that minimizes the need for further maintenance, controls, minimizes, eliminates or prevents post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off or hazardous waste decomposition products to the ground or surface water or the atmosphere.	Pertains to any site at which hazardous waste is to be treated, stored, or disposed of or has been treated, stored, or disposed of - applicable.	OAC-3745-55-11(A)(B)(C)
Inspection of tank systems (Action)	Inspections will be performed once each operating day.	Pertains to any site at which hazardous waste will be either treated or stored in tanks - relevant and appropriate.	OAC 3745-55-95(A)(B)(C)(D)
Response to leaks or spills of tank systems (Action)	Tanks should not be used if they are not in good condition to prevent releases. Major repairs must be certified by a P.E.	Pertains to any site at which hazardous waste will be either treated or stored in tanks - relevant and appropriate.	OAC 3745-55-96(A) thru (E)
Tank requirements for reactive/ignitable waste (Action)	Precautions will be taken to prevent accidental ignition or reaction of ignitable or reactive waste that are treated or stored in tanks.	Pertains to any site at which ignitable or reactive waste will either be treated or stored in tanks - relevant and appropriate.	OAC 3745-55-98
Tank requirements for incompatible waste (Action)	Precautions will be taken when dealing with incompatible waste that are treated or stored in tanks.	Pertains to any site at which incompatible waste will either be treated or stored in tanks - relevant and appropriate.	OAC 3745-55-99(A)(B)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Disposal/decontamination of equipment, structures and soils (Action)	Requires that all contaminated equipment, structures and soils be properly disposed of or decontaminated.	Pertains to any site at which hazardous waste is to be treated, stored, or disposed of or has been treated, stored, or disposed of - applicable.	OAC 3745-55-14
Landfill closure and post-closure requirements (Action)	Specifies closure and post-closure requirements for hazardous waste landfills, including and not limited to final cover and maintenance.	Pertains to existing land-based areas of contamination - applicable.	OAC 3745-57-10
Hazardous waste restricted from land disposal (Action)	Provides specific requirements pursuant to hazardous wastes that are restricted from land disposal.	Pertains to any alternative that incorporates disposal of a hazardous waste on-site - applicable.	OAC 3745-59-01(C)(E)
Dilution prohibited as treatment (Action)	Prohibits dilution of restricted waste or residuals resulting from treatment of restricted waste (as a substitute for adequate treatment) in order to land disposed a restricted waste.	Pertains to any alternative that incorporates disposal of a hazardous waste on-site - relevant and appropriate.	OAC 3745-59-03(A)(B)
Hazardous waste analysis (Action)	Generators shall test the waste or test extract of the waste according to the frequency and test methods described in the rule to determine if the waste is restricted from land disposal.	Pertains to any alternative that incorporates disposal of a hazardous waste on-site - relevant and appropriate.	OAC 3745-59-07(A)(B)(C)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Restricted waste that exhibit a characteristic (Action/Chemical)	Prohibits land disposal of characteristic waste unless the waste complies with treatment standards of listed waste. If the waste is both listed and characteristic, the treatment standard for the listed waste will operate in lieu of the standard for the characteristic waste.	Pertains to any alternative that incorporates disposal of a hazardous waste on-site - relevant and appropriate.	OAC 3745-59-09
Prohibition on storage of restricted waste (Action)	Prohibits on-site storage of hazardous waste restricted from storage beyond a specified time frame stated in the rule.	Pertains to any site in which storage of hazardous waste will occur on-site to facilitate proper recovery, treatment or disposal. The PORTS site has been granted an extension to store restricted waste beyond the regulatory suggested time frame - TBC.	OAC 3745-59-50(A)(B)(C)(D)(E)
Waste specific prohibitions - California List (Chemical)	Prohibits land disposal of the following waste: (1) liquid waste with pH <2 or pH = 2 (2) liquid waste containing PCBs with concentrations > or = 50 ppm (3) liquid waste with halogen organic loading of > or = 100 mg/l and < 10,000 mg/l	Pertains to any site in which on-site land disposal of PCB or HOC contaminated waste may be disposed as part of an alternative. However, there will be no California waste disposed of at the PORTS site during and/or after any remedial action - applicable.	OAC 3745-59-32(A)(D)(E)(F)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
First Third, Second Third, and Third Third prohibited (Chemical)	Prohibits on-site land disposal of first-, second-, third-third waste unless requirements of paragraph D, E, F, and G are met.	Pertains to any site in which on-site land disposal of first-, second-, third-third hazardous waste may be disposed as part of an alternative. However, there will be no first-, second-, or third-third waste disposed of at the PORTS site during and/or after any remedial action - applicable.	OAC 3745-59-33 (A)(B)(C)(D)(E)(F)(G) OAC 3745-59-34 (A) thru (H) OAC 3745-59-35 (A) thru (I)
Corrective action for waste management units (Action)	Requires an applicant for a hazardous waste permit to institute corrective action for all releases of hazardous waste or constituents from any waste management unit regardless of the time at which the waste was placed in the unit.	Pertains to all sites with land-based hazardous waste units (surface impoundments, waste piles, land treatment units, landfills). This includes existing land-based areas of contamination - applicable. [NOTE: Corrective action will also be implemented during the Corrective Measure Implementation (CMI) process.]	OAC 3745-55-011(A)(C)
Environmental performance standards: land-based units (Action)	Specifies location, design, construction, operation, maintenance and closure requirements for landfills, waste piles, surface impoundments, and underground injection wells.	Pertains to all sites with land-based hazardous waste units (surface impoundments, waste piles, land treatment units, landfills). This includes existing land-based areas of contamination - relevant and appropriate.	OAC 3745-57-01(A) thru (D) 40 CFR 267.10

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Transportation for off-site disposal (Action)	EPA requires that all off-site shipments of CERCLA waste be to a properly permitted treatment, storage, and disposal facility.	In addition, all off-site shipments must comply with the administrative as well as substantive requirements of legally applicable regulations - TBC.	40 CFR 300.400
Hazardous waste shipping requirements: manifest, packaging, labeling, and placarding (Action)	A generator who transports, or offers for transportation, hazardous waste for offsite treatment, storage or disposal shall prepare and meet all hazardous waste manifesting requirements.	Prior to any offsite transportation of hazardous waste materials, all manifesting, packaging, labeling, marking, and placarding requirements shall be met - applicable. [NOTE: If on-site transportation of hazardous waste, then - relevant and appropriate.]	OAC 3745-52-20, 22, 23, 30, 31, 32 and 33
Containment of RCRA waste left in place (Action)	When a cap is being placed over waste (e.g., closing of a landfill), design and construct a cover to: (1) minimize migration of liquids through the capped area, over the long term; (2) function with minimum maintenance; (3) promote drainage and minimize erosion or abrasion of the cover; and (4) accommodate settling and subsidence so that the cover's integrity is maintained.	Applicable to RCRA hazardous waste placed at site after November 19, 1980; relevant and appropriate to waste left in place before 1980 - applicable.	40 CFR 264.310(a) OAC 3745-68-10

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
<p>Post-closure care (Action)</p>	<p>Restrict post-closure use of property as necessary to prevent damage to the cover.</p> <p>Ensure that post-closure care includes:</p> <ul style="list-style-type: none"> (1) maintenance of the integrity and effectiveness of the final cover; (2) maintenance and monitoring of the groundwater system and compliance with all applicable parts of Subpart F, "Releases from Solid Waste Management Units;" and (3) prevention of the damage to the cover from run-on and run-off cover. 	<p>Relevant and appropriate to final closure of a facility with some hazardous materials or residues left in place.</p> <p>Applicable to closure of RCRA - permitted hazardous waste facilities. Relevant and appropriate to final closure of a SWMU with some hazardous materials or residues left in place.</p> <p>[NOTE: See also 40 CFR 264.228(b), 40 CFR 264.310(b)]</p>	<p>OAC 3745-55-17 OAC 3745-68-10</p>
<p>Particulate ambient air quality standards (Chemical)</p>	<p>Establishes the specific standards for total suspended particulates. The primary standard for National Ambient Air Quality Standards (NAAQs) for particulate matter is 50 $\mu\text{g}/\text{m}^3$ annual (averaging time) and 150 $\mu\text{g}/\text{m}^3$ per 24 hours (averaging time).</p>	<p>Fugitive dust will be generated during loading, unloading, transportation and grading of cover material - applicable.</p>	<p>OAC 3745-17-02(A)(B)(C) 40 CFR Section 50</p>

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Air pollution nuisances prohibited (Action)	Defines air pollution nuisance as emission or escape into the air from any source(s) of smokes, ashes, dust dirt, grime, acids, fumes, gases, vapors, odors, and combinations of the above that endanger health, safety or welfare of the public or cause personal injury or property damage. Such nuisances are prohibited.	Fugitive dust may be generated during loading or unloading, transportation and grading of cover material. There are minimal activities anticipated that will result in an air pollution nuisance - applicable.	OAC 3745-15-07(A)
Air discharges (fugitive dust) (Chemical/Location)	The significant deterioration of air quality is prohibited.	Wind dispersal of any debris or stockpiled soil resulting from activities associated with an alternative will be controlled - applicable.	OAC 3745-17-05
Emission Restrictions (Action)	For any fugitive dust source that may cause such a public nuisance, fugitive dust control measures must be implemented.	These controls include use of water or other suitable dust suppressants and the covering at all times of open-bodied vehicles when transporting materials likely to become airborne. Canvas or other suitable coverings must be used. Small sources of fugitive emissions are exempt from air-permitting requirements if the emissions of air contaminants can demonstrably be held to less than 10 lb per day - applicable.	OAC 3745-17-08(B)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Emission Restrictions (Action) (Continued)	All emissions of dust shall be controlled. Considered for all sites which may undergo grading, loading operations, demolition, clearing and construction - applicable.	OAC 3745-17-08A(1) thru A(2) OAC 3745-17-08(D)	
Emission of radionuclides to atmosphere (NESHAP) (Chemical)	Subpart H of 40 CFR 61 addresses atmospheric radionuclide emissions from DOE facilities and may be applicable to airborne emissions during remedial activities. EPA has issued a final NESHAP for amounts that would not cause any member of the public to receive an effective dose equivalent of 10 mrem/year or more.	Title 40 CFR 61.93(b)(4)(1) requires radiological emission measurements at all release points that could discharge radionuclides into the air in quantities that could cause an effective dose equivalent in excess of 1% of the standard 0.1 mrem/year. All radionuclides that contribute greater than 10% of the standard 1 mrem/year for a release point shall be measured - applicable.	40 CFR 61
Control of emissions of organic materials from stationary sources (Action)	All air discharges resulting from equipment or other stationary sources that may emit VOCs to the atmosphere will meet substantive requirements as permitted.	No persons shall cause or allow emissions of an air contaminant to the atmosphere without a permit - applicable.	OAC 3745-21-07 ORC 3704.05
Prohibition of nuisance (Action/Chemical)	Prohibits noxious exhalations or smells and the obstruction of waterways.	Pertains to any site which may have obnoxious smells or obstruction of waterways - relevant and appropriate.	ORC 3767.13

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Prohibition of nuisance (Action/Chemical)	Prohibits against throwing refuse, oil, or filth into lakes, streams or drains.	Pertains to any site located adjacent to lakes, streams or drains - relevant and appropriate.	ORC 3767.14
Conservancy District (Action)	The Board of Director of Ohio EPAs of a Conservancy District may make and enforce rules and regulations pertaining to channels, ditches, pipes, and sewers, etc.	This statute pertains to any site which may affect a construction within a conservancy district - relevant and appropriate.	ORC 6101.19
Worker health and safety (Action)	Response actions under the NCP will comply with the provisions for response action worker safety and health in 29 CFR 1910.120.	All governmental agencies and private employers are directly responsible for the health and safety of their own employees - relevant and appropriate.	40 CFR 300.150
Occupational-worker protection (TBC)	The safety and health standards for general construction presented in 29 CFR 1926 will be followed. The OSHA standards are incorporated into DOE Order 483.1A. The specific requirement will be identified in the task-specific health and safety plan.	The proposed remedial action alternative will be implemented in accordance with applicable OSHA general construction standards. The OSHA standards will apply on their own merit as required through DOE Order 5483.1A - TBC.	29 CFR 1910.120
Occupational worker protection health and safety documentation (TBC)	Employers shall maintain and implement a written safety and health program for their employees involved in hazardous waste operations. All occupational safety and health requirements of 29 CFR 1910 and 1926 are to be followed. In case of a conflict or overlap, the most protective provision will apply.	The proposed remedial action alternative will be implemented in accordance with the provisions of DOE and Portsmouth Gaseous Diffusion Plant Comprehensive Occupational Safety and Health Program. As specified in 29 CFR 1910.120(h)(4), a task-specific health and safety plan will be developed - TBC.	29 CFR 1910.120(b)(4)

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
<p>Radiation protection of the public (TBC)</p>	<p>Exposures of members of the public to radiation sources as a consequence of all routine DOE activities will not cause, in a year, an effective dose equivalent greater than 100 mrem from all exposure pathways.</p> <p>Specific authorizations may be received for a temporary increase of the dose limit up to 500 mrem in a year.</p> <p>The derived concentration guides (DCGs) are provided as reference values for conducting radiological environmental protection programs at operational DOE facilities and sites. DCG values are presented in DOE Order 5400.5 for the following exposures modes: .</p> <ul style="list-style-type: none"> (1) ingestion of water (2) inhalation of air (3) immersion in a gaseous cloud 	<p>Precautions will be taken through the use of appropriate controls to minimize exposure to the public - TBC.</p> <p>The DCG values for internal exposure are based on a committed effective dose equivalent of 100 mrem for the radionuclide taken into the body by ingestion or inhalation during one year - TBC.</p>	<p>DOE Order 5400.5, Chapter II, Section 1.A</p> <p>DOE Order 5400.5 Chapter III</p>
<p>Maximum contaminant levels for inorganic chemicals (Action/Chemical)</p>	<p>Presents maximum contaminant levels for inorganics.</p>	<p>Pertains to any site which storage of hazardous waste will occur on-site to facilitate proper recovery, treatment or disposal. In some cases storage of restricted waste beyond one year is allowed - relevant and appropriate.</p>	<p>OAC 3745-81-11(A)(B)(C)</p>

Table B.1 Preliminary ARARs for Quadrant I (Continued)

Action	Requirement	Prerequisites	Citation
Maximum contaminant levels for organic chemicals (Action/Chemical)	Presents MCLs for organics.	Pertains to any site which has contaminated groundwater or surface water that is either being used, or has the potential for use, as drinking water source - relevant and appropriate.	OAC 3745-81-12(A)(B)(C)
Maximum contaminant levels (MCL) for radium 226, 228, gross alpha particle (Action/Chemical)	Presents MCLs for radium 226, radium 228, and gross alpha particle activity.	Pertains to any site which has contaminated groundwater or surface water that is either being used, or has the potential for use, as drinking water source - relevant and appropriate.	OAC 3745-81-15(A)(B)
MCLs for beta, particle and photon radioactivity (Action/Chemical)	Presents MCLs for beta, particle, and photon radioactivity from man-made radionuclides.	Pertains to any site which has contaminated groundwater or surface water that is either being used, or has the potential for use, as drinking water source - relevant and appropriate.	OAC 3745-81-16(A)(B)
Analytical techniques (Chemical)	Presents the requirements for analytical techniques for MCLs.	Pertains to sites with contaminated groundwater or surface water that either being used or may have the potential of being used for a potable drinking water source - relevant and appropriate.	OAC 3745-81-27(A) thru (E)
Container management (Closure/Action)	Specifies closure requirements for containers and containment system.	Pertains to any site at which hazardous waste will be stored in containers. There is a potential that waste generated from remedial actions will have to be temporarily stored in containers - relevant and appropriate.	OAC 3745-55-78

Table B.1 Preliminary ARARs for Quadrant I

ARARs	Applicable or Relevant and Appropriate Requirements
BAT	Best Available Technology
CAA	Clean Air Act
CAS/CMS	Cleanup Alternatives Study/Corrective Measures Study
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMI	Corrective Measures Implementation
CWA	Clean Water Act
DCG	Derived Concentration Guides
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FR	Federal Register
HOC	Halogenated Organic Compounds
LDR	Land Disposal Restrictions
LLW	Low-level radioactive waste
MCL	Maximum Contaminant Level
NAAQs	National Ambient Air Quality Standards
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards Hazardous Air Pollutants
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRC	Nuclear Regulatory Commission
O&M	Operations & Maintenance
OAC	Ohio Administrative Code
ORC	Ohio Revised Code
OSHA	Occupational Health and Safety Administration
PCBs	Polychlorinated Biphenyls
PORTS	Portsmouth Gaseous Diffusion Plant
ppm	parts per million
PTI	Permit to Install
RAO	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
SDWA	Safe Drinking Water Act
SHPO	State Historical Preservation Officer
SOPs	Standard Operating Procedures
SWMU	Solid Waste Management Unit
TBC	To be considered
TSCA	Toxic Substances Control Act
TSD	Treatment Storage and Disposal
USC	United States Congress



APPENDIX II - RESPONSIVENESS SUMMARY

**SUMMARY OF COMMENTS RECEIVED DURING
THE PUBLIC COMMENT PERIOD**

This responsiveness summary responds to significant comments submitted on the preferred plan for Quadrant I of the Portsmouth Gaseous Diffusion Plant and is intended to be consistent with Sections 113(k) (2) (B) (iv) and 117 (B) fo the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). This section requires that the Agency respond"... to each of the significant comments, criticisms, and new data submitted in written or oral presentations" on the preferred plan. US DOE provided comments describing typographical and grammatical errors which have been addressed. No other comments written or oral were received by Ohio EPA regarding the Quadrant I Preferred Plan.

The Public Notice alerting the public of their opportunity to comment on the Quadrant I Preferred Plan was placed in the *Portsmouth Daily Times* on November 19, 2000 and in the *Pike County News Watchman* on November 5, 2000 and November 19, 2000. The public meeting was held on November 30, 2000 at the Pike County Joint Vocational School in Piketon, Ohio.

PORTSMOUTH DOCUMENT RELEASE FORM

DOCUMENT DESCRIPTION (TO BE COMPLETED BY REQUESTER)

DOCUMENT NUMBER None DRAFT FINAL DOCUMENT DATE 03/01

DOCUMENT TITLE/IDENTIFIER US DOE Portsmouth Quadrant I Decision Document Portsmouth Gaseous Diffusion Plant

AUTHOR(S) (NAME AND AFFILIATION) Ohio Environmental Protection Agency

PURPOSE OF RELEASE For a Public Request at the Environmental Information Center

ADC CLASSIFICATION REVIEW (WHERE POSSIBLE) _____

REQUESTER Janie Crowait, Administrative Record Librarian Signature/Date _____
Date 06/18/02

PATENT, CLASSIFICATION, AND PUBLIC RELEASE REVIEWS (COMPLETED BY CLASSIFICATION AND TECHNICAL REVIEW OFFICE)

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