

SUBCHAPTER B: REMEDY STANDARDS

§§350.31 - 350.37

Effective March 19, 2007

§350.31. General Requirements for Remedy Standards.

(a) The person shall ensure the affected property is rendered protective of human health and the environment and shall use Remedy Standard A or B to satisfy cleanup responsibilities at affected properties subject to these rules as specified in §350.2 of this title (relating to Applicability) unless an alternative approach is required by another commission regulation, permit, or order.

(b) For Remedy Standards A and B, in order for a treatment process, including monitored natural attenuation, to achieve decontamination rather than being a physical control measure, the person must demonstrate that the treatment process permanently and irreversibly destroys or extracts COCs in a waste or environmental medium to concentration levels below the critical PCLs and must further demonstrate that any residue remaining after treatment will not pose a threat of a future release of COCs into environmental media at concentration levels greater than the critical PCLs. The executive director shall initially presume that stabilization, solidification, and fixation processes are physical control measures rather than decontamination. The person may rebut this initial presumption by demonstrating that a stabilization, solidification, or fixation process can achieve the performance requirements for a decontamination action.

(c) The person shall sufficiently address affected properties such that surface and subsurface structures do not contain explosive atmospheres originating from the released COCs, and areas of routine construction are adequately protected. The person should consider the proximity of volatile NAPLs and high concentrations of volatile COCs to utility conduits, basements, storm or sanitary sewers, and other surface and subsurface structures which may be subject to vapor accumulations. The person shall conduct monitoring as appropriate and take appropriate actions based on those findings.

(d) The person shall notify the executive director and the agency's office in the region where the affected property is located in writing at least 10 days in advance of performing confirmation sampling to demonstrate that a response action is complete and a remedy standard has been attained.

(e) Unless a response action completion report (RACR) has been approved or is pending review by the executive director, the person shall submit a response action effectiveness report (RAER) to the executive director every three years following submittal of the self-implementation notice (SIN) for Remedy Standard A or the date of approval of the response action plan (RAP) for Remedy Standard B by the executive director to document that sufficient progress is being made to achieve the remedy. The RAER shall be accompanied by an affected property assessment report (APAR) unless an APAR has previously been submitted. The executive director may require a more frequent reporting period. If insufficient progress is being made, the executive director may require the person to evaluate an alternative response action and/or to perform an alternative response action.

(f) Within 90 days of completing a Remedy Standard A response action, the person shall submit a RACR for review and approval by the executive director. The RACR shall be accompanied by an APAR unless an APAR has been previously submitted.

(g) The person attaining Remedy Standard A for commercial/industrial land use or Remedy Standard B for residential or commercial/industrial land use shall provide proof of compliance with the institutional control requirements in §350.111(b),(b)(2), (3), (5), or (6) of this title (relating to Use of Institutional Controls), as applicable, within 90 days of the approval of the RACR by the executive director.

(h) To inform others of ongoing long-term response actions, the executive director may require the person to provide proof of compliance with the institutional control requirements in §350.111(b),(b)(1) of this title (relating to Use of Institutional Controls) within 90 days of a determination made under paragraphs (1) or (2) of this subsection.

(1) The response action is predicted in the SIN, RAP, or RAER to take in excess of 15 years from the date of submittal of the SIN or the date of executive director approval of the RAP to achieve the requirements of subsection (a) of this section at the affected property, or

(2) The response action has not been completed within 15 years of submittal of the SIN or the date of executive director approval of the RAP, and the executive director determines that:

(A) the progress of the response action is unsatisfactory; or

(B) performance monitoring data indicates that the concentrations of COCs will not be reduced to the critical residential PCLs within an additional time frame, which is reasonable given the particular circumstances of an affected property.

(i) Until such time as an institutional control is filed within the real property records of the county for an affected property as required in subsection (g) of this section, or until the executive director approves the RACR for affected property which is not subject to subsection (g) of this section, the on-site and/or off-site owner(s) of affected property shall, with regards to the current environmental conditions of the property and prior to transfer of the property or signing of lease agreements, inform any prospective purchaser or tenant of the property of the existing or planned response actions and of any current or future potential limitations on the use of the property.

(j) The person shall also perform any more stringent or additional response actions which are required by the statute or regulations governing the program areas covered by this chapter as specified in §350.2 of this title (relating to Applicability).

§350.32. Remedy Standard A.

(a) To attain Remedy Standard A, the person shall within a reasonable time frame given the particular circumstances of an affected property:

(1) Remove any listed hazardous waste as defined in 40 Code of Federal Regulations Part 261, Subpart D, as amended, which is contained within a waste management facility component (e.g., tank, surface impoundment, etc.) or which is separable from environmental media using simple mechanical removal processes;

(2) Remove and/or decontaminate any waste or environmental media which is characteristically hazardous due to ignitability, corrosivity, reactivity, or toxicity characteristic as defined in 40 Code of Federal Regulations Part 261, Subpart C, as amended;

(3) Remove and/or decontaminate the surface soil, subsurface soil, and groundwater PCLE zones, other environmental media, and non-hazardous waste to achieve COC concentration levels below the residential or commercial/industrial critical PCLs, as applicable; and

(4) Demonstrate the affected property is protective for ecological receptors.

(b) Response actions under Remedy Standard A must result in permanent risk reduction at an affected property.

(1) The person shall not use physical controls under Remedy Standard A.

(2) The person shall remediate the affected property such that the concentration of COCs in surface soil, subsurface soil, groundwater, and other environmental media do not exceed the applicable critical PCLs.

(3) Remedial alternatives, including the use of monitored natural attenuation as a decontamination remedy, must be capable of achieving the Remedy Standard A objectives within a reasonable time frame, given the particular circumstances at the affected property; and must be appropriate considering the hydrogeologic characteristics of the affected property, COC characteristics, and the potential for unprotective exposure conditions to continue or result during the remedial period. The executive director may require a demonstration of the appropriateness of a remedy in the context of the above-mentioned criteria for any remedy, regardless of the status of self-implementation as allowed in subsection (d) of this section. If the executive director requires such a demonstration, the person is not required to await executive director approval to proceed with self-implementation; however, if the executive director determines that the self-implementing response action is inappropriate based on these criteria, then the executive director shall require appropriate response actions to be taken.

(c) The person shall determine the PCLs for Remedy Standard A using exposure pathways where the human or ecological receptor comes into contact with the COCs directly within, above, or below a source medium. Lateral transport considerations which place the POE at a location outside of the source area cannot be used to determine PCLs for Remedy Standard A, with the exception that, when necessary,

the person shall perform lateral transport calculations to determine whether PCLs calculated based upon on-site commercial/industrial workers are protective of off-site residents.

(d) Remedy Standard A is a self-implementing standard unless the person desires to modify exposure factors under §350.74(j) of this title (relating to Development of Risk-Based Exposure Limits) which requires prior executive director approval, or unless the person chooses not to self-implement. The person shall submit a SIN to the executive director and the agency's office in the region where the affected property is located at least 10 days prior to conducting a response action under this remedy standard. The person may then perform the response action without receiving the executive director's approval, unless such prior approval is required by another agency rule, order, or permit. If the person chooses not to self-implement, then the person shall submit a RAP for review and approval by the executive director. The person shall include an APAR with the RAP unless an APAR has previously been submitted.

(e) The person cannot use a demonstration of technical impracticability when responding to soil and/or groundwater PCLE zones, or other affected environmental media under Remedy Standard A.

(f) The person shall prevent COCs at concentrations above the critical groundwater PCLs from migrating beyond the existing boundary of the groundwater PCLE zone.

(g) There are no post-response action care or financial assurance requirements for Remedy Standard A response actions, provided the person adequately documents attainment of the response objectives provided in subsection (a) of this section. When considered warranted, the executive director may require the person to monitor environmental media to verify that the models used to determine PCLs established under Tiers 2 or 3 as provided in §350.75 of this title (relating to Tiered Human Health Protective Concentration Level Evaluation) yield protective PCLs.

Adopted September 2, 1999

Effective September 23, 1999

§350.33. Remedy Standard B.

(a) To attain Remedy Standard B, the person shall:

(1) Remove, decontaminate, and/or control the surface soil, subsurface soil, and groundwater human health PCLE zones, other environmental media, and hazardous and non-hazardous waste in accordance with the provisions of this section such that humans will not be exposed to concentrations of COCs in the exposure media in excess of the residential or commercial/industrial critical human health PCLs, as applicable, at the prescribed, or any approved alternate POEs established for environmental media in accordance with §350.37 of this title (relating to Human Health Points of Exposure);

(2) Ensure that leachate from the surface and subsurface soil PCLE zones does not increase the concentration of COCs in class 2 groundwater above the measured concentration at the time of RAP submittal in circumstances when an alternate POE to class 2 groundwater is authorized in response to subsection (f)(4) of this section; and

(3) Use either subparagraph (A) or (B) of this paragraph to respond to an affected property when either the initial concentrations of COCs within environmental media exceed only the ecological PCLs (i.e., there is no exceedence of human health PCLs) or when there will be residual concentrations of COCs above the ecological PCLs following completion of a human health response action. When human health PCLs are exceeded within environmental media at an affected property, a person must perform a response action pursuant to paragraph (1) of this subsection to address these risks to human health unless the person adequately demonstrates that the threats to human health are minimal and that a human health-based response action would have a significant and highly disproportionate effect on ecological receptors.

(A) The person shall remove, decontaminate, and/or control the environmental media, and hazardous and non-hazardous waste in accordance with the provisions of this section such that ecological receptors will not be exposed to concentrations of COCs in the exposure medium in excess of the ecological PCLs at the POEs determined in accordance with §350.77 of this title (relating to Ecological Risk Assessment and Development of Ecological Protective Concentration Levels).

(B) When, after consultation with the Natural Resource Trustees, it is determined appropriate by the executive director, the person may use the results of a Tier 2 or 3 ecological risk assessment performed in accordance with §350.77 of this title (relating to Ecological Risk Assessment and Development of Ecological Protective Concentration Levels) and other appropriate information or data to conduct an ecological services analysis of the affected property. However, an ecological services analysis must be conducted whenever concentrations of COCs which exceed ecological PCLs are proposed to be left in place with the potential for continuing exposure. The ecological services analysis must, at a minimum, include an evaluation of the effects of reasonable and feasible remediation alternatives, including complete removal/decontamination to PCLs and a control measure to prevent ecological exposure to COCs in excess of ecological PCLs, with respect to present and predicted losses of ecological services; and clear justification for leaving COCs in place above ecological PCLs. Furthermore, the person shall also ensure, where appropriate, that the ecological services analysis includes a plan to provide compensatory ecological restoration which may also be combined with some type of active response action (e.g., hot spot removal) or passive response action (e.g., natural attenuation) for the affected property. The ecological services produced by the restoration activity must exceed the future ecological service decreases potentially associated with the continued exposure to COCs and/or any selected response action at the affected property. The person must conduct the compensatory ecological restoration and other activities associated with the ecological services analysis with the approval of and in cooperation with the Natural Resource Trustees. The executive director may develop guidance which further describes the ecological services analysis process.

(b) As defined further by the surface and subsurface soil response objectives in subsection (e) of this section and the groundwater response objectives in subsection (f) of this section, the person performing a response action to attain Remedy Standard B may use removal and/or decontamination, removal and/or decontamination with controls, or controls only, with the exception of response actions for Class 1 groundwater PCLE zones which must be removed and/or decontaminated to the critical groundwater PCL for each COC.

(1) The person may use both physical and institutional controls.

(2) For all actions to attain Remedy Standard B, the person shall demonstrate that the response actions which they propose to use will attain the requirements of subsection (a) of this section within a reasonable time frame given the particular circumstances of an affected property. Remedial alternatives, including the use of monitored natural attenuation as a decontamination or control remedy, must be appropriate considering the hydrogeologic characteristics of the affected property, COC characteristics, and the potential for unprotective exposure conditions to continue or result during the remedial period.

(c) PCLs for Remedy Standard B are determined through consideration of on-site and off-site POEs, or alternate POEs.

(d) Remedy Standard B is not a self-implementing standard. The person must receive the executive director's written approval of a RAP and an APAR, either submitted at the same time as the RAP or previously, before commencing response actions to attain the standard, but this does not preclude the person from taking interim measures.

(e) The following are the Remedy Standard B surface and subsurface soil response objectives and associated requirements for response actions performed in accordance with subsections (a)(1) - (2), and (a)(3)(A) of this section to address human health and/or ecological risks at an affected property. A person may choose to attain the surface and subsurface soil response objectives for an affected property either by conducting a response action which makes use of removal and/or decontamination or by conducting a response action which makes use of removal and/or decontamination with controls or controls only.

(1) When all surface and subsurface soil response objectives specified in subsection (a) of this section are met through removal and/or decontamination, then the person shall fulfill any post-response action care obligations described in the approved RAP, but shall not be required to provide financial assurance for the soils.

(2) When a person chooses to attain the surface and subsurface soil response objectives specified in subsection (a) of this section for an affected property by conducting a response action which uses removal and/or decontamination with controls or controls only, then the person must also comply with the requirements of this paragraph.

(A) The person shall demonstrate that any physical control or combination of measures proposed to be used (e.g., waste control unit, cap, slurry wall, treatment that does not attain decontamination; or a landfill) will reliably contain COCs within and/or derived from the surface and subsurface soil PCLE zone materials over time.

(B) The person shall fulfill the post-response action care obligation described in the approved RAP.

(C) The person shall provide financial assurance in accordance with subsections (l) and (m) of this section.

(f) The following are the Remedy Standard B groundwater response objectives and associated requirements for response actions performed in accordance with subsections (a)(1) - (2), and (a)(3)(A) of this section to address human health or environmental risk at an affected property. The person shall achieve the Remedy Standard B groundwater PCLE zone response objectives stated in paragraph (1) of this subsection, unless the person demonstrates that an affected property meets the qualifying criteria for one, or a combination, of the modified groundwater response approaches described in paragraphs (2) - (4) of this subsection. A person who satisfactorily demonstrates technical impracticability as described in paragraph (3) of this subsection, may use technical impracticability to establish a plume management zone as described in paragraph (4) of this subsection for instances when a plume management zone would not otherwise be authorized by the executive director, except that the person shall not allow the groundwater plume management zone to expand beyond the existing boundary of the groundwater PCLE zone. A person who uses one, or a combination, of the modified groundwater response approaches shall fulfill the post-response action care obligations described in the approved RAP. A person who uses one, or a combination, of the modified groundwater response approaches which utilizes a physical control(s) shall provide financial assurance as specified in subsections (l) and (m) of this section.

(1) General groundwater response objectives. For all groundwater classes, the person must:

(A) use either an active restoration approach or monitored natural attenuation (if appropriate considering the hydrogeologic characteristics of the affected property, chemical-specific data for the COCs, and whether the anticipated time frame to achieve the critical groundwater PCLs is reasonable) to reduce the concentration of COCs to the critical groundwater PCLs throughout the groundwater PCLE zone;

(B) while achieving subparagraph (A) of this paragraph, prevent COCs at concentrations above the critical groundwater PCLs from migrating beyond the existing boundary of the groundwater PCLE zone;

(C) prevent COCs from migrating to air at concentration levels above the PCLs for air (i.e., $^{Air}Air_{Inh}$);

(D) prevent COCs from migrating to surface water at concentration levels above the PCLs for groundwater discharges to surface water (i.e., ^{SW}GW); and

(E) prevent human and ecological receptor exposure to the groundwater PCLE zone.

(2) Waste control unit. When the approved RAP includes an existing or planned waste control unit which overlies an existing groundwater PCLE zone, the person may, with the executive director's approval, exclude the groundwater throughout that portion of the groundwater PCLE zone directly underlying the waste control unit from the requirement to meet the groundwater response objectives provided in paragraph (1) of this subsection. To use this approach, the person shall comply with the institutional control requirements in §350.31(g) of this title (relating to General Requirements for

Remedy Standards), with the exception that proof of compliance with the institutional control requirements must be submitted to the executive director within 120 days of approval of the RAP, which provides notice of the existence and location of the groundwater PCLE zone beneath the waste control unit and which prevents usage of and exposure to this groundwater until such time as the COCs may reduce to the critical groundwater PCLs. Beyond the perimeter of the waste control unit, the groundwater response objectives must be met.

(3) Technical impracticability. A technical impracticability demonstration can be used for all three classes of groundwater under Remedy Standard B. To use this approach, the person must:

(A) demonstrate in accordance with the United States Environmental Protection Agency (EPA) "Guidance for Evaluating the Technical Impracticability of Ground-Water Restoration" (Office of Solid Waste and Emergency Response Directive 9234.2-25 or subsequent version), as amended, or other method approved by the executive director, that it is not feasible from a physical perspective using currently available remediation technologies due either to hydrogeologic or chemical-specific factors to reduce the concentration of COCs throughout all or a portion of the groundwater PCLE zone to the applicable critical groundwater PCLs within a reasonable time frame;

(B) use removal or decontamination actions to reduce the concentrations of COCs to the critical groundwater PCLs for any portion of the groundwater PCLE zone for which it is technically practicable;

(C) prevent migration of COCs from that portion of the groundwater PCLE zone which satisfies the technical impracticability demonstration in subparagraph (A) of this paragraph;

(D) achieve the performance criteria in subsection (f)(4)(E) of this section for NAPLs;

(E) establish a plume management zone for the area where COCs cannot be removed so as to attain the critical PCLs, and prevent COCs at concentrations above the critical groundwater PCLs from spreading beyond the existing boundary of the groundwater PCLE zone; and

(F) comply with the institutional control requirements in §350.31(g) of this title (relating to General Requirements for Remedy Standards), with the exception that proof of compliance with the institutional control requirements must be submitted to the executive director within 120 days of the approval of the RAP, which provides notice of the existence and location of the groundwater PCLE zone and which prevents usage of and exposure to groundwater from this zone until such time as the COCs may reduce to the critical groundwater PCLs.

(4) Plume management zones. With the approval of the executive director, the person may use a plume management zone under Remedy Standard B for class 2 and 3 groundwater-bearing units which presently contain a groundwater PCLE zone.

(A) To use a plume management zone, the person must demonstrate that the COCs will not pose a substantial present or potential hazard to human health or the environment as long

as the attenuation action levels are not exceeded at the respective attenuation monitoring points based upon a consideration of the following factors:

- (i) potentially adverse effects on groundwater quality, considering:
 - (I) the physical and chemical characteristics of the COC,
including its potential for migration;
 - (II) the hydrogeological characteristics of the affected property
and surrounding land;
 - (III) the quantity of groundwater and the direction of
groundwater flow;
 - (IV) the proximity and withdrawal rates of groundwater users;
 - (V) the current and future uses of groundwater in the area;
 - (VI) the existing quality of groundwater, including other sources
of COCs and their cumulative impact on the groundwater quality;
 - (VII) the potential for health risks caused by human exposure to
COCs;
 - (VIII) the potential damage to wildlife, crops, vegetation, and
physical structures caused by exposure to COCs;
 - (IX) the persistence and permanence of the potentially adverse
effects; and
- (ii) potentially adverse effects on hydraulically-connected surface water
quality, considering:
 - (I) the volume and physical and chemical characteristics of the
COCs present at the affected property;
 - (II) the hydrogeological characteristics of the affected property
and surrounding land;
 - (III) the quantity and quality of groundwater, and the direction of
groundwater flow;
 - (IV) the patterns of rainfall in the region;
 - (V) the proximity of the source area to surface water;

(VI) the current and future uses of surface waters in the area and any water quality standards established for these surface waters;

(VII) the existing quality of surface water, including other sources of COCs and their cumulative impact on surface-water quality;

(VIII) the potential for health risks caused by human exposure to COCs;

(IX) the potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to COCs; and

(X) the persistence and permanence of the potentially adverse effects.

(B) Provided the person demonstrates that the establishment of a plume management zone is appropriate, the POE to groundwater may be changed from throughout the groundwater PCLE zone to an alternate location established in accordance with §350.37(1) or (m) of this title (relating to Human Health Points of Exposure) as applicable, or at the POE for ecological receptors determined in accordance with §350.77 of this title (relating to Ecological Risk Assessment and Development of Ecological Protective Concentration Levels), where that location is more restrictive.

(C) In order to establish a plume management zone, the person must:

(i) comply with the institutional control requirements in §350.31(g) of this title, with the exception that proof of compliance with the institutional control requirements shall be submitted to the executive director within 120 days of the approval of the RAP, which provides notice of the existence and location of the plume management zone and which prevents exposure to groundwater from this zone until such time as COCs may reduce to the critical groundwater PCLs;

(ii) demonstrate through an appropriate technical presentation that COCs will not migrate beyond the downgradient boundary of the plume management zone at concentrations above the critical groundwater PCLs; and

(iii) demonstrate through the performance of a field survey in the plume management zone that there are no artificial penetrations (e.g., abandoned wells or wells with open-hole completions) which can allow COCs at concentrations which exceed the critical groundwater PCLs to migrate from the groundwater PCLE zone to currently unaffected groundwater-bearing units.

(D) The person shall establish groundwater attenuation monitoring points beginning at an appropriate hydraulically upgradient location within the groundwater PCLE zone and continuing down the approximate central flow path of the COCs to the downgradient extent of the plume management zone.

(i) The number and location of attenuation monitoring points shall be demonstrated to be adequate to reliably verify over time the current and future conformance with the plume management zone response objectives. The number and location of attenuation monitoring points shall depend upon a site-specific evaluation of the hydrogeologic conditions of an affected property, the fate and transport characteristics of the COCs, and the length and configuration of the plume management zone.

(ii) The person shall calculate attenuation action levels for each COC at each attenuation monitoring point that cannot be exceeded in order for the critical groundwater PCLs to not be exceeded at the POE. The person shall periodically evaluate the adequacy of the attenuation action levels using any newly acquired empirical monitoring data and reestablish them as necessary to ensure the critical groundwater PCLs are not exceeded at the groundwater POE.

(iii) The person shall monitor concentrations of COCs in groundwater at the attenuation monitoring points and the POE in accordance with a schedule approved by the executive director which is adequate to reliably demonstrate conformance with the applicable groundwater response objectives. If an attenuation action level is exceeded at its respective attenuation monitoring point, or a critical groundwater PCL is exceeded at the groundwater POE, then the person shall take an active response action to meet the response objectives presented in subparagraph (F) of this paragraph. The executive director may authorize the person to implement an accelerated monitoring program prior to initiating an active response action in order to verify that a response action is warranted.

(E) The person is required to reduce NAPLs which contain COCs in excess of PCLs within a plume management zone to the extent practicable. In the determination of adequate NAPL reduction, the executive director may consider conformance with the following criteria and other relevant factors:

(i) readily recoverable NAPLs have been recovered;

(ii) the NAPLs will not generate explosive conditions as defined in §350.31(c) of this title (relating to General Requirements for Remedy Standards);

(iii) the NAPLs will not discharge to the ground surface, to surface waters, to structures, or to other groundwater-bearing units;

(iv) the vertical and lateral extent of NAPLs will not increase under natural conditions, or sufficient NAPLs have been recovered such that an active recovery system can be demonstrated to effectively control or contain migration of NAPLs (i.e., no increased NAPL extent); and

(v) the NAPLs will not result in the critical groundwater PCLs being exceeded at the downgradient boundary of the plume management zone or in the critical PCLs for other environmental media being exceeded at the applicable POE.

(F) The person shall have the continuing obligation to assess whether changes to local hydraulic gradients would increase the likelihood that COCs can migrate beyond the plume management zone at concentrations above the critical groundwater PCLs. If such changed conditions

occur, the person must take any necessary corrective action to ensure that concentrations of COCs exceeding the critical groundwater PCLs do not migrate beyond the boundary of the plume management zone and report the changed condition to the executive director in a timely manner. The person may demonstrate that the hydrogeologic characteristics of a property are such that off-site activities cannot influence an on-site plume management zone and, thus, not be required to monitor changes in the hydraulic gradient.

(i) A person may choose to attain the groundwater response objectives for a plume management zone at an affected property either by conducting a response action, if necessary, which makes use of removal and/or decontamination, or with use of removal and/or decontamination with controls or controls only. For both of these approaches, in situations where the PCLE zone extends beyond the limits of an institutional control and the POE to groundwater is thus located within the existing limits of the groundwater PCLE zone, a person may use monitored natural attenuation as a decontamination process provided the person shall demonstrate that the groundwater PCLE zone is not expanding and that the critical groundwater PCL will be met at the POE within a reasonable time frame given the particular circumstances of an affected property. In the situation where the groundwater PCLE zone has not reached steady-state conditions and is migrating downgradient within the plume management zone, the person must use a response action other than monitored natural attenuation, unless it can be demonstrated that the critical groundwater PCL and any other critical PCLs will not be exceeded at the respective POEs.

(ii) When a person chooses to attain the groundwater response objectives for a plume management zone at an affected property by conducting a removal and/or decontamination response action, the person must comply with the requirements of this clause.

(I) The person must remove and/or decontaminate the groundwater PCLE zone to the extent necessary so that the critical groundwater PCLs will not be exceeded at the POE and the attenuation action levels are not exceeded at their respective attenuation monitoring points, and so that the critical PCLs for other environmental media will not be exceeded at their applicable POEs.

(II) The person shall fulfill the post-response action care obligations described in the approved RAP.

(III) Provided the person adequately documents attainment of the groundwater plume management zone response objectives provided in subclause (I) of this clause, there are no financial assurance requirements.

(iii) When a person chooses to attain the groundwater response objectives for a plume management zone at an affected property by conducting a response action which uses removal and/or decontamination with controls or controls only, the person must comply with the requirements of this clause.

(I) The person must remove, decontaminate, and/or control the groundwater PCLE zone to the extent necessary so that the critical groundwater PCLs will not be

exceeded at the POE and so that the critical PCLs for other environmental media will not be exceeded at their applicable POEs.

(II) The person may use physical controls (e.g., slurry walls, sheet piling, interceptor trenches, or hydraulic control wells) which are capable of reliably containing and preventing the expansion over time of the groundwater source area.

(III) For any portion of a groundwater PCLE zone within class 2 or 3 groundwater which is outside of any physical control constructed in accordance with subclause (II) of this clause, the person must reduce the concentration of COCs such that the remaining COCs will satisfy the conditions specified in clause (ii)(I) of this subparagraph.

(IV) The person shall fulfill the post-response action care obligations described in the approved RAP.

(V) The person shall provide financial assurance for post-response action care in accordance with subsections (l) and (m) of this section.

(g) The type, method and extent of post-response action care will be defined on a site-specific basis in the approved RAP and shall be a function of the long-term effectiveness of the response action used to address the soil and/or groundwater PCLE zones or other environmental media containing COCs, the nature and design of any physical controls, the physical and chemical characteristics of the COCs, the geology and hydrogeology of the affected property, and the adjacent land use. The person shall conduct post-response action care as appropriate which includes, but is not limited to:

- (1) monitoring of environmental media to verify response action effectiveness over time;
- (2) inspection, operation, and maintenance of physical controls to ensure the effectiveness and integrity of the controls over time; and
- (3) any other actions after the initial completion of the response action at an affected property which are necessary to protect human health or the environment.

(h) The post-response action care period begins upon approval of the RACR by the executive director. The person shall perform post-response action care for 30 years unless the person demonstrates that a shorter post-response action care period would be appropriate due to:

- (1) the nature of the response action;
- (2) the persistence, migration potential, and toxicity of the COCs; and
- (3) the physical characteristics and location of the affected property.

(i) The post-response action care activities shall continue throughout the initial post-response action care period in response to subsection (h) of this section and during any continued post-response action care period in response to subsection (j) of this section until a demonstration is made that there is

no longer a threat to human health or the environment from the presence of COCs in any environmental media or physical controls. If the person submits a demonstration which documents that post-response action care is no longer necessary then, upon written approval by the executive director, the remainder of the initial or any continued post-response action care period will be canceled and the person will be released from the requirement to maintain financial assurance, and the financial assurance will be returned. The demonstration of no threat to human health or the environment shall be made by adequately documenting one of the following conditions:

(1) the concentrations of COCs in soils are less than or equal to the critical surface and subsurface soil PCLs, as applicable, and the concentrations of COCs in groundwater are less than or equal to the critical groundwater PCLs as documented with three consecutive years of groundwater monitoring data, unless an alternate monitoring period is approved by the executive director;

(2) the post-response action care activity consists entirely of monitoring the effectiveness of a physical control, and the physical control has been proven successful and secure (i.e., the physical control is permanent and does not require any inspections or maintenance);

(3) an affected property contains only a groundwater PCLE zone and such groundwater PCLE zone has been demonstrated to be reducing in size and to have boundaries which are sufficiently smaller than the boundaries of an institutional control so as to preclude any potential for the groundwater PCLE zone to migrate beyond the boundaries of the institutional control considering both natural hydrogeologic conditions and changes to hydraulic gradients by off-site activities; or

(4) the COC concentrations in surface and subsurface soils exceed only ^{GW}Soil, but the groundwater PCLE zone has been demonstrated to be reducing in size and to have boundaries which are sufficiently smaller than the boundaries of an institutional control so as to preclude any potential for the groundwater PCLE zone to migrate beyond the boundaries of the institutional control considering both natural hydrogeologic conditions and potential changes to hydraulic gradients by off-site activities.

(j) If the person cannot make one of the demonstrations specified in subsection (i) of this section by the end of the initial post-response action care period specified in subsection (h) of this section, then the person shall be required to continue post-response action care for additional 30-year periods or until a demonstration of no threat to human health or the environment can be made under subsection (i) of this section. A shorter continued post-response action care period can be used provided the person demonstrates that such period would be appropriate due to:

(1) the nature of the response action;

(2) the persistence, migration potential, and toxicity of the COCs; and

(3) the physical characteristics and location of the affected property.

(k) The person shall perform the following record keeping and reporting requirements during the initial and any continued post-response action care period:

- (1) keep a copy of the approved RAP at the property, or specified alternative location;
- (2) keep records of all monitoring data, inspection and maintenance reports, and unexpected occurrences affecting any waste control unit or post-response action care systems;
- (3) submit Post-Response Action Care Reports (PRACRs) in accordance with the schedule in the approved RAP; and
- (4) notify the executive director in writing within 30 days after an unexpected event occurs, or a condition is detected, during the post-response action care period which indicates that additional response actions will be required at an affected property.

(l) For properties using physical control measures in response to subsections (e)(2) and/or (f) of this section, financial assurance shall be established and maintained for the post-response action care period specified in subsection (h) of this section. The person shall prepare and include in the RAP a written cost estimate in current dollars of the total cost of the post-response action care activities for the post-response action care period specified in subsection (h) of this section. The cost estimate shall be based on the costs of hiring a third party to conduct the post-response action care activities. Within 90 days after the executive director's approval of the RAP and before commencing work indicated in the RAP, an acceptable financial assurance mechanism must be submitted to the commission for post-response action care in the amount specified in the approved RAP. If the total post-response action care cost estimate is \$100,000 or less, the executive director may choose to exempt the person from providing a financial assurance demonstration. For persons meeting the requirements of subsection (n) of this section, the amount of financial assurance demonstrated may be less than the total post-response action care cost estimate. Financial assurance for post-response action care shall be demonstrated in compliance with Chapter 37, Subchapter N of this title (relating to Financial Assurance Requirements for the Texas Risk Reduction Program Rules). The executive director may perform the post-response action care activities at an affected property using the funds provided for this purpose when the executive director determines that a person has failed to provide the post-response action care described in an approved RAP.

(m) For properties using physical control measures in response to subsections (e)(2) and/or (f) of this section that require post-response action care beyond the initial post-response action care period, financial assurance shall continue to be demonstrated for the post-response action care period specified in subsection (j) of this section. At least 180 days before the end of the preceding post-response action care period, a written cost estimate in current dollars shall be prepared and submitted for the cost of continuing the post-response action care activities specified in the approved RAP for the additional post-response action care period specified in subsection (j) of this section. The cost estimate shall be based on the costs of hiring a third party to conduct the post-response action care activities. At least 90 days before the end of the preceding post-response action care period, an acceptable financial assurance mechanism shall be submitted for the continued post-response action care period in an amount approved by the executive director. If the total post-response action care cost estimate is \$100,000 or less, the executive director may choose to exempt the person from providing a financial assurance demonstration. For persons meeting the requirements of subsection (n) of this section, the amount of financial assurance demonstrated may be less than the total post-response action care estimate. Financial assurance for post-response action

care shall be demonstrated in compliance with Chapter 37, Subchapter N of this title (relating to Financial Assurance Requirements for the Texas Risk Reduction Program Rule). The executive director may perform the continued post-response action care activities at an affected property using the funds provided for this purpose when the executive director determines that a person has failed to provide the post-response action care described in an approved RAP.

(n) The owner or an authorized officer of a small business, as defined in this subsection, may seek to reduce the amount of financial assurance demonstrated under this subsection if the initial post-response action care period or subsequent post-response action care periods specified in subsections (h) - (j) of this section are greater than ten years. If the executive director determines a person meets the definition as specified in paragraph (2) of this subsection, the person shall submit the affidavit required by paragraph (1) of this subsection and establish and maintain financial assurance for the post-response action care period in an amount based on the following equation: $((\text{total cost estimate})/(\text{number of years in total response action care period})) \times 10$. The owner shall continue demonstrating subsequent post-response action care in ten year periods or as directed by the executive director. The owner or an authorized officer is required to notify the executive director when the definition specified in paragraph (2) of this subsection is no longer met. A small business must comply with subsections (1) and (m) of this section relating to financial assurance.

(1) An affidavit signed by the owner or an authorized officer stating the business meets the definition of a small business as defined in paragraph (2) of this section shall be submitted to the executive director.

(2) Definition of small business.

(A) For purposes of financial assurance, a small business shall be defined as any person, firm, or business which employs, by direct payroll and/or through contract, fewer than 100 full-time employees and has net annual receipts of less than \$3 million. Net annual receipts are defined as annual gross receipts less returns, discounts, and adjustments. The period used to determine net annual receipts shall be the preceding 12-month accounting year and can be either a calendar or fiscal-based period.

(B) A business that is a wholly-owned subsidiary of a corporation shall not qualify as a small business under this section if the parent organization does not qualify as a small business under this section.

Adopted February 21, 2007

Effective March 19, 2007

§350.34. No Further Action.

Particular agency program areas covered by this rule will confirm that a person has completed all necessary response actions at an affected property and that no further action is required. The program areas may issue other letters acknowledging conditional or partial completion of response actions, as appropriate.

(1) For Remedy Standard A, such confirmation will be issued subsequent to approval of the RACR by the executive director and, when applicable, receipt by the agency of proof that any required institutional control noting commercial/industrial land use is in effect for the affected property in accordance with §350.31(g) of this title (relating to General Requirements for Remedy Standards), or noting the use of a non-default exposure area is in effect in accordance with §350.51(l)(3) or 4 of this title (relating to Affected Property Assessment), or noting the use of occupational inhalation criteria as RBELs is in effect in accordance with §350.74(b)(1) or noting the use of non-default RBEL exposure factors is in effect in accordance with §350.74(j)(2) of this title (relating to Development of Risk-Based Exposure Limits).

(2) For Remedy Standard B, a conditional no further action letter will be issued subsequent to approval of the RACR by the executive director and, when applicable, receipt by the agency of proof that any required institutional control noting commercial/industrial land use is in effect for the affected property in accordance with §350.31(g) of this title (relating to General Requirements for Remedy Standards), or noting the use of a non-default exposure area is in effect in accordance with §350.51(l)(3) or 4 of this title, or noting the use of occupational inhalation criteria as RBELs is in effect in accordance with §350.74(b)(1) or noting the use of non-default RBEL exposure factors is in effect in accordance with §350.74(j)(2) of this title. The letter will indicate that the person has conditionally completed response actions at the affected property but must perform post-response action care obligations as described in the approved RAP throughout the initial and any continued post-response action care period in response to §350.33(h) - (j) of this title (relating to Remedy Standard B). The letter will also indicate whether the person must establish and maintain financial assurance in response to §350.33(l) and/or (m) of this title for post-response action care for affected properties which use physical controls.

(3) For Remedy Standard B, a final no further action letter will be issued subsequent to termination of the post-response action care period by the executive director as described in §350.33(i) of this title.

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§350.35. Substantial Change in Circumstances.

(a) Upon receipt of approval by the executive director of the RACR, performance of applicable post-response action care, maintenance of any applicable financial assurance, and termination of any applicable post-response action care period by the executive director, the person will have completed the obligations of this chapter unless a substantial change in circumstances results in an unacceptable risk to human health or the environment.

(b) No person shall cause, suffer, allow, or permit a threat to human health or the environment by changing a land use specified in an approved RACR from commercial/industrial to residential or by removing, altering or failing to maintain a physical or institutional control that applies to an affected property that underwent an approved response action.

(c) If a person plans to change the land use from commercial/industrial to residential, or to eliminate or modify the use of a physical control or institutional control, then that person shall take any actions necessary to make the property protective for such changed conditions. The person making the change shall notify the executive director in writing at least 60 days prior to changing the land use or the use of the approved physical or institutional controls. The person may self-implement actions to satisfy the requirements of paragraph (1) or (2) of this subsection but must obtain prior approval of the executive director to undertake actions for paragraph (3) of this subsection. The person making the change shall then provide a reevaluation of the property at least 30 days prior to the date of the planned change such that the person is able to demonstrate:

(1) that levels of COCs have degraded to concentration levels below the applicable critical PCLs for the planned land use or property condition change;

(2) that the COC removal or decontamination will meet the applicable critical PCLs for the planned land use or property condition change; or

(3) that the application of a proposed physical and/or institutional control will ensure adequate protection of human health and the environment. Any proposed institutional control shall conform with all requirements of §350.111 of this title (relating to Use of Institutional Controls).

(d) A substantial change in circumstances shall include, but is not limited to, the situations described in paragraphs (1) - (5) of this subsection. In response to these substantial changes in circumstances, the person shall use the rule in effect at the time of the substantial change to protect human health or the environment. This subsection will only apply to affected properties regulated under §350.2(g) of this title (relating to Applicability) which have completed response actions under this chapter.

(1) An institutional or physical control fails to prevent exposure at the approved performance level.

(2) An actual exposure condition is determined to be occurring at levels not protective of human health or the environment (e.g, unprotective ecological exposure is occurring).

(3) New information indicates that the presence of COCs at the affected property was not sufficiently characterized such that an unacceptable threat to human health or the environment continues to exist.

(4) The exposure area upon which representative concentrations are based in accordance with §350.51 of this title (relating to Affected Property Assessment) changes, and as a result of the changed exposure area, there is an unacceptable threat to human health or the environment.

(5) A health and safety plan to ensure compliance with occupational inhalation criteria as RBELs as provided for in §350.74(b)(1) of this title (relating to Development of Risk-Based Exposure Limits) will no longer be maintained.

(e) For purposes of this section, changes made to this chapter in response to periodic reviews of the general procedures specified to generate PCLs, or in response to revisions to reflect new toxicity data, do not constitute a substantial change in circumstances, unless these changes are of such magnitude to present an unacceptable threat to human health or the environment when evaluated for future exposure conditions based on property-specific considerations. This subsection will only apply to affected properties regulated under §350.2(g) of this title (relating to Applicability) which have completed response actions under this chapter.

(f) If the person determines that the conditions specified in subsection (c)(1) or (2) of this section are met such that a deed notice, VCP certificate of completion, or restrictive covenant is no longer needed to protect human health and the environment, then the person may request that the executive director approve a superceding deed notice in accordance with §350.111(b)(4) of this title (relating to Use of Institutional Controls) or a restrictive covenant release in accordance with §350.111(b)(7) of this title (relating to Use of Institutional Controls) if a deed notice or restrictive covenant was the form of institutional control. The person shall provide the necessary information to document that the conditions of subsection (c)(1) or (2) of this section are met.

Adopted September 2, 1999

Effective September 23, 1999

§350.36. Relocation of Soils Containing Chemicals of Concern for Reuse Purposes.

(a) A person must comply with this section when relocating soils for reuse purposes from an affected property (on-site or off-site) which is undergoing or has completed a response action under Remedy Standard A or B and the soils contain COCs in excess of naturally occurring background concentrations. Relocation of soils which contain COCs may be subject to additional requirements or limitations (e.g., land disposal restrictions) within each program area identified in §350.2 of this title (relating to Applicability). The person must treat excavated soils containing non-aqueous phase liquids to applicable levels prior to relocation or else manage the soils as wastes. The excavation of soils containing COCs during construction activities (e.g., installation, repair, removal of telephone lines or other utilities, but not closures, remediations, or PST tank removal actions, for example) and the subsequent replacement of those soils into that same excavation shall not be considered to constitute relocation or reuse and shall not be subject to the provisions of this section.

(b) The person may relocate soils for reuse in response to Remedy Standard A when COCs meet the critical soil PCLs and the following requirements for the new location.

(1) Soils to be reused must meet the residential or commercial/industrial critical surface or subsurface soil PCLs as applicable for the new location, depending upon depth of placement, established in accordance with Subchapter D of this chapter (relating to Development of Protective Concentration Levels).

(2) The soil reuse shall be protective of ecological receptors at the new location.

(3) The soil reuse activity must allow the requirements for Remedy Standard A response actions set forth in §350.32(a) of this title (relating to Remedy Standard A) to be met at the new location.

(4) The person shall comply with the institutional control requirement for commercial/industrial land use as specified in §350.31(g) of this title (relating to General Requirements for Remedy Standards). Proof of compliance with the institutional control requirement shall be submitted within 90 days of completing the relocation action.

(5) The reuse of soils with concentrations of COCs which do not exceed the critical soil PCLs for the new location does not require the prior approval of the executive director, when that new location is within the boundary of on-site or off-site property which contains the affected property (i.e., not just within the affected property limits).

(c) The person must meet the following requirements in response to Remedy Standard B when soils that are to be relocated for reuse purposes contain concentrations of COCs that exceed the critical soil PCLs for the new location.

(1) The person shall determine the critical surface and, if applicable, subsurface soil PCLs in accordance with Subchapter D of this chapter (relating to Development of Protective Concentration Levels) for the new location.

(2) The soil reuse must be protective of ecological receptors at the new location.

(3) The person shall demonstrate that the soil reuse activity will allow the requirements for Remedy Standard B response actions set forth in §350.33(a) of this title (relating to Remedy Standard B) to be met for the new location.

(4) The person shall comply with the institutional control requirements specified in §350.31(g) of this title (relating to General Requirements for Remedy Standards). Proof of compliance with the institutional control shall be submitted within 90 days of completing the relocation action.

(5) The reuse of soil under Remedy Standard B requires prior executive director approval.

(6) The executive director may require the person to conduct post-response action care and submit PRACRs.

(7) The executive director may require the person to provide financial assurance for post-response action care in response to §350.33(e)(2)(C) of this title (relating to Remedy Standard B).

(d) If soils which contain concentrations of COCs above naturally-occurring levels resulting from a release are to be relocated for reuse on property not owned by the person, then the person shall obtain the written consent of the landowner prior to relocation of the soils.

(e) Within 90 days of completing a soil relocation action under this section, the person shall complete the applicable portions of a RACR as described in §350.95 of this title (relating to Response

Action Completion Report) and make it available for inspection or submittal upon request of the executive director.

Adopted September 2, 1999

Effective September 23, 1999

§350.37. Human Health Points of Exposure.

(a) General. The person shall use the prescribed on-site and off-site POEs for humans to environmental media to determine PCLs under Remedy Standard A in response to §350.32 of this title (relating to Remedy Standard A) and under Remedy Standard B in response to §350.33 of this title (relating to Remedy Standard B). In order to establish on-site or off-site POEs for commercial/industrial land use, or alternate POEs for on-site or off-site properties, the person must comply with §350.111 of this title (relating to Use of Institutional Controls). Consideration of competent, existing physical controls during the pathway analysis described in §350.71(d) of this title (relating to General Requirements) does not negate or otherwise supercede the POE locations specified in this section. Subsections (b) - (k) of this section identify the media-specific prescribed, on-site and off-site POEs while subsections (l) and (m) of this section establish alternate POEs for class 2 and 3 groundwater under Remedy Standard B. When establishing on-site and off-site POEs for residential or commercial/industrial land use, persons shall use the appropriate receptor as required in §350.71(b) of this title (relating to General Requirements) for the designated land use.

(b) Air human health POEs.

(1) On-site POEs. The prescribed on-site POE to air is within the breathing zone (2 meter height) directly over the soil or groundwater COCs.

(2) Off-site POEs. The prescribed off-site POE to air is within the breathing zone (2 meter height) starting at the nearest boundary with and continuing throughout neighboring off-site properties.

(c) Soil human health POEs.

(1) On-site POEs. The prescribed on-site POE to soil is throughout the surface soil.

(2) Off-site POEs. The prescribed off-site POE to soil is throughout the surface soil starting at the nearest boundary with and continuing throughout neighboring off-site properties.

(d) Human health POEs for class 1, 2, and 3 groundwaters which do not contain any COCs in excess of the critical groundwater PCLs.

(1) On-site POE. The prescribed on-site POE is throughout the upper-most groundwater-bearing unit.

(2) Off-site POE. The prescribed off-site POE is throughout the upper-most groundwater-bearing unit on the nearest boundary with the closest hydraulically downgradient off-site property.

(e) General provisions for human health POEs for class 1, 2, or 3 groundwater.

(1) Whenever there is an existing class 1, 2, or 3 groundwater PCLE zone beneath an existing waste control unit or a waste control unit planned as part of an approved RAP, under Remedy Standard B the person may, with the executive director's approval, exclude the area underlying the waste control unit as a POE to class 1, 2, or 3 groundwater.

(2) Groundwater travel time setback distances for class 1, 2, and 3 groundwater shall be determined based on groundwater seepage velocity which is dependent upon prevailing hydraulic gradient, hydraulic conductivity, and effective porosity.

(f) Human health POEs for class 1 groundwater.

(1) On-site POEs. The prescribed on-site POE to class 1 groundwater is a well which may be completed at all locations throughout the on-site groundwater PCLE zone. For on-site commercial/industrial land use, the person shall establish an additional on-site POE for class 1 groundwater for residents unless the residential-based groundwater PCLE zone already extends off-site. The residential POE shall be set at a distance of two-year groundwater travel time upgradient of the nearest boundary with the closest hydraulically downgradient off-site property. If the residential-based groundwater PCLE zone already extends beyond the two-year groundwater travel time setback distance but not off-site, then the residential POE shall be set at the existing limit of the residential-based groundwater PCLE zone.

(2) Off-site POEs. The prescribed off-site POE to class 1 groundwater is a well which may be completed at all locations throughout an off-site groundwater PCLE zone. For off-site commercial/industrial land use, the person shall establish an additional POE for class 1 groundwater for residents at, and all locations beyond, the existing limit of the off-site residential-based groundwater PCLE zone.

(g) Human health POEs for class 2 groundwater.

(1) On-site POEs. The prescribed on-site POE to class 2 groundwater is a well which may be completed at all locations throughout the on-site groundwater PCLE zone. For on-site commercial/industrial land use, the person shall establish an additional on-site POE for class 2 groundwater for residents unless the residential-based groundwater PCLE zone already extends off-site. The residential POE shall be set at a distance of two years groundwater travel time upgradient of the nearest boundary with the closest hydraulically downgradient off-site property. If the residential-based groundwater PCLE zone already extends beyond the two-year groundwater travel time setback distance but not off-site, then the residential POE shall be set at the existing limit of the residential-based groundwater PCLE zone.

(2) Off-site POEs. The prescribed off-site POE to class 2 groundwater is a well which may be completed at all locations throughout an off-site groundwater PCLE zone. For off-site commercial/industrial land use, the person shall establish an additional POE for class 2 groundwater for residents at, and all locations beyond, the existing limit of the off-site residential-based groundwater PCLE zone.

(h) POEs for class 3 groundwater.

(1) On-site POEs. The prescribed on-site POE to class 3 groundwater is at all locations throughout an on-site groundwater PCLE zone defined by concentrations greater than $^{GW}GW_{Class3}$ for the applicable on-site land use.

(2) Off-site POEs. The prescribed off-site POE to class 3 groundwater is at all locations throughout an off-site groundwater PCLE zone defined by concentrations greater than $^{GW}GW_{Class3}$ for the applicable off-site land use which is sourced from an on-site release of COCs. If commercial/industrial land use is assumed for the off-site property, then the person shall establish an additional POE for class 3 groundwater for residents at, and all locations beyond, the existing limit of the off-site residential-based groundwater PCLE zone.

(i) POEs for surface water runoff or groundwater discharges to surface water. The prescribed POE to surface water will be at the point of surface water runoff or groundwater discharge (i.e., within the groundwater) into and throughout the extent of any on-site or off-site surface water body meeting the definition of surface water in the state as defined in §307.4 of this title (relating to General Criteria), as amended. This includes the surface water body at the initial point of entry and other water bodies that may be impacted by COCs.

(j) POEs for releases of COCs directly to surface water. The prescribed POE for releases directly to surface water is at the point of entry of COCs into and throughout the extent of any surface water body meeting the definition of surface water in the state as defined in §307.4 of this title, as amended.

(k) POEs for sediment. The prescribed POE to sediment is within the upper one-foot of sediment beneath any surface water body meeting the definition of surface water in the state as defined in §307.4 of this title, as amended. For intermittent water bodies, both sediment and surface soil POEs may apply.

(l) Alternate POEs to class 2 groundwater under Remedy Standard B. Provided the person is authorized by the executive director to establish a plume management zone in response to §350.33(f)(4) of this title (relating to Remedy Standard B), the person may establish an alternate on-site POE or off-site POE to class 2 groundwater in accordance with paragraph (1), (2), or (3) of this subsection as dictated by the particular circumstances at the affected property. The current length of the residential-based groundwater PCLE zone shall be determined as of the submittal date of the RAP.

(1) On-site POEs.

(A) The on-site POE to class 2 groundwater may be modified to be a well for residents completed at the on-site downgradient boundary of a plume management zone which includes the current length of the residential-based groundwater PCLE zone plus an additional length determined in accordance with paragraph (4) of this subsection.

(B) In the situation where multiple on-site plume management zones exist, and have commingled, or are within 500 feet of one another such that the management as a combined plume management zone is more feasible and appropriate, with site-specific approval from the executive

director, the person may combine the separate plume management zones into a single, combined plume management zone provided the alternate POE for the combined plume management zone satisfies paragraph (4) of this subsection.

(2) Off-site POEs for off-site properties with class 2 groundwater which currently contains the residential-based groundwater PCLE zone. The person may establish an alternate off-site POE to class 2 groundwater as a well for residents completed at the off-site downgradient boundary of a plume management zone which includes the current length of the groundwater PCLE zone plus an additional length determined in accordance with paragraph (4) of this subsection.

(3) Off-site POEs for off-site properties with class 2 groundwater which currently do not contain the residential-based groundwater PCLE zone.

(A) If the person can demonstrate that the subject groundwater-bearing unit has no reasonably anticipated future beneficial use, then the person may allow a plume management zone to extend onto an off-site property. The person shall establish an alternate off-site POE to class 2 groundwater as a well for residents completed at the off-site boundary of a plume management zone which includes the current length of the groundwater PCLE zone plus an additional length determined in accordance with paragraph (4) of this subsection.

(B) Unless the demonstration discussed in subparagraph (A) of this paragraph is made, the person shall not allow a plume management zone within class 2 groundwater to extend onto any off-site property which does not currently contain a residential-based groundwater PCLE zone.

(C) The determination of future beneficial use under subparagraph (A) of this paragraph shall be based upon the existing quality of groundwater, considering non-point sources of COCs and their cumulative impact on the groundwater quality, the lack of use of the groundwater based on the presence of superior water supplies, proximity and withdrawal rates of groundwater users, or the property is subject to a zoning or governmental ordinance which is equivalent to the deed notice, VCP certificate of completion or restrictive covenant that otherwise would have been required. The executive director may require the collection of groundwater samples to document the presence of the COCs originating from non-point sources.

(4) The maximum additional length of the plume management zone for the situations described in paragraphs (1), (2), and (3) of this subsection shall be established as the smallest of the following applicable distances, unless the affected property is subject to zoning or a governmental ordinance which is equivalent to the deed notice, VCP certificate of completion or restrictive covenant that otherwise would have been required, in which case subparagraphs (C) and (D) of this paragraph do not apply:

(A) up to 500 feet beyond the current length of the residential-based groundwater PCLE zone;

(B) a length of up to 0.25 times the current length of the residential-based groundwater PCLE zone (i.e., up to 25% additional plume length);

(C) to within two years groundwater travel time of the closest hydraulically downgradient off-site property:

(i) for which the owner has not provided written concurrence to allow the recording of an institutional control; or

(ii) which does not contain the residential-based PCLE zone and the groundwater has a reasonably anticipated future beneficial use;

(D) at the current downgradient extent of the residential-based PCLE zone when the residential-based groundwater PCLE zone is already within the two-year travel time setback distance for POEs under subparagraph (C) of this paragraph; or

(E) the distance to a surface water POE as described in subsection (i) of this section.

(m) Alternate POEs to class 3 groundwater under Remedy Standard B. Provided the person is authorized by the executive director to establish a plume management zone in response to §350.33(f)(4) of this title (relating to Remedy Standard B), the person may establish an alternate on-site or off-site POE to class 3 groundwater. The ^{GW}GW_{Class 3} PCL to be applied at this alternate POE shall be based upon residential land use. The boundary of the plume management zone may be established up to the lesser of:

(1) To within two years groundwater travel time upgradient of:

(A) The closest hydraulically downgradient off-site property for which the landowner has not provided written concurrence to allow the recording of an institutional control for situations where zoning or a governmental ordinance does not serve as the institutional control; or

(B) The downgradient limit of a zoning or governmental ordinance that serves as the institutional control; or

(2) The distance to a surface water POE as described in subsection (i) of this section.