State of Rhode Island
Department of Environmental Management
Office of Waste Management

Policy Memo 2014-01

Guidelines for the Management of Historically Agricultural Properties for Future Use as Open Space and/or Recreational Land
"Historical Agricultural Use Policy"

I. Purpose

This policy is intended to further the Rhode Island Department of Environmental Management (the Department) Office of Waste Management's (OWM) goal of protecting the environment and public health while promoting efficiency, accountability, and LEAN management principals. The purpose of this policy memo is to provide guidance regarding the assessment and remedial actions for current or historical agricultural properties for which the proposed reuse is open space, passive recreation, active recreation, or any combination thereof. This policy specifically addresses those historically agricultural properties at which there occurred field application of pesticides in a manner that was consistent with the pesticides' intended purpose and manufacturers' labeling and where other non-agricultural activities did not occur.

Explicitly excluded from this policy are releases of oil or other hazardous materials or hazardous wastes, including disposal of agricultural pesticides. This policy applies to current or historic agricultural properties where the presence of the contaminants of concern is due solely to the field application of pesticides in a manner that was consistent with the pesticides' intended purpose and manufacturers' labeling.

This policy is intended to be used for historically agricultural sites or portions of historically agricultural sites that are to either be used for passive recreation, active recreation, or open space not for recreational use. This policy does not apply to other current or future uses of the property.

This policy is not applicable to hazardous waste, as described in the Rhode Island Rules and Regulations for Hazardous Waste Management.

The field application of pesticides, in many cases, has resulted in residual pesticide concentrations in soils that exceed the Department's Method 1 Residential Direct Exposure Criteria (RDEC). This guidance policy is intended to provide streamlined, practical, and economically feasible options for managing historically agricultural properties while simultaneously maintaining the Department's overall mission of protecting human health and the environment.

II. Background Study

A background study was conducted in order to determine whether sites that were historically used for agricultural purposes and contain jurisdictional releases of pesticides resulting from

years of proper pesticide application may be handled as special cases within the Department's Site Remediation Program. The biggest barrier in bringing these sites into compliance with the Remediation Regulations is the typically large size of the sites and, subsequently, the cost associated with investigating, characterizing, and remediating such large sites. Ultimately, the goal of this study became to develop new investigation, characterization, and remediation strategies and options in the form of a Policy Memo for historically agricultural lands where the only jurisdictional contaminants of concern are those associated with the historic application of pesticides.

The background study focused on the contaminants typically associated with historical pesticide application for which the Department has established numerical standards. The Remediation Regulations, as amended November 2011, includes remedial objectives for arsenic, lead, chlordane, and dieldrin. These four contaminants are referred to in this policy memo as the "Agricultural Contaminants of Concern." The Department is aware, however, that other pesticides for which numerical standards have not been promulgated in Rhode Island do exist on historically agricultural lands and, as such, the Department does intend to conduct further research regarding the presence of other pesticides on historically agricultural sites and to potentially develop remedial objectives for other pesticides.

The amount of analytical data upon which this study and subsequent recommendations are based on is limited to data from fifteen (15) historically agricultural sites for which analytical data and reports were submitted to the OWM. The selected sites vary in size from just under an acre up to 140 acres. The agricultural activities included orchards, row crops, ornamentals, and nurseries. Once the analytical data was collected, the study's goals included the following:

1. Determine the levels at which the Agricultural Contaminants of Concern were detected in soil samples and compare site specific contaminant averages, ranges, and rate of exceedances to the Department's existing RDEC, the Industrial/Commercial Direct Exposure Criteria (I/CDEC), and Section 12.00 Special Requirements for Managing Arsenic in Soil of the Remediation Regulations.

2. Determine whether the levels at which the Agricultural Contaminants of Concern have been detected justify a policy that provides special consideration for historically agricultural sites.

3. Recommend cost effective, straightforward strategies and remedial alternatives that appropriately address the findings of the above analysis.

The analytical soil data from the 15 historically agricultural sites was compiled and analyzed to determine the nature and extent of the impact that historical pesticide application has had on Rhode Island soils. These sites were specifically selected based on the quality of data available to the Department and may not be representative of all agricultural sites in Rhode Island. The vast majority of soil data was representative of the surface (0 – 12 inches below ground surface (bgs), i.e. the top foot of soil) soils on these sites. The Department separately analyzed the limited data on samples taken from depth greater than one foot and found few samples containing

jurisdictional concentrations of the Agricultural Contaminants of Concern which is what was expected as these contaminants tend not to be particularly mobile in shallow soil.

Table 1 summarizes the analytical results for lead and Table 2 summarizes the results for dieldrin and chlordane. Table 3 summarizes the analytical results for arsenic and also contains two additional columns; one indicating if the site would be considered non-jurisdictional for arsenic per Rule 12.03 of the Remediation Regulations and a second column indicated which, if either, section of Rule 12.04 of the Remediation Regulations would be applicable.

Table 1
Sampling Results for Select Historically Agricultural Sites in Rhode Island
Lead

SITE	Site Size (acres)	**Lead** (RDEC - 150 ppm / I/CDEC - 500 ppm)				
		Samples	Exceed RDEC	Exceed I/CDEC	Average (ppm)	Range (ppm)
Orchard 1	93	39	3	1	66.59	ND - 674
Orchard 2	106	not analyzed				
Orchard 3	50	7	none	none	46.36	ND - 138
Orchard 4	13.6	15	none	none	14.68	6 - 46
Orchard 5	11.6	not analyzed				
Orchard 6	6.3	2	none	none	67.65	5.3 - 130
Row Crops 7	17	9	none	none	20.2	8.5 - 28.9
Row Crops 8	57	28	none	none	18.2	ND - 38
Row Crops 9	4.5	7	none	none	11.1	8 - 23
Ornamental/Nursery 10*	140	14	none	none	11.9	5.3 - 22
Ornamental/Nursery 11	8	13	none	none	9.14	2.7 - 20
Ornamental/Nursery 12	1.4	13	6	none	162	7.2 - 390
Ornamental/Nursery 13	0.59	2	none	none	38	19 - 57
Ornamental/Nursery 14	1.6	not analyzed				
Unknown Agriculture 15	6.3	5	none	none	23	19.6 - 25.4

*Site samples collected at a depth of 1 - 2' bgs

ND = Not Detected

ND results evaluated at one half the laboratory MDL/MRL value

Table 2
Sampling Results for Select Historically Agricultural Sites in Rhode Island
Dieldrin & Chlordane

SITE	Site Size (acres)	**Dieldrin** (RDEC - 0.04 ppm / I/CDEC - 0.4 ppm)					**Chlordane** (RDEC - 0.5 ppm / I/CDEC - 4.4 ppm)				
		Samples	Exceed RDEC	Exceed I/CDEC	Average (ppm)	Range (ppm)	Samples	Exceed RDEC	Exceed I/CDEC	Average (ppm)	Range (ppm)
Orchard 1	93	34	9	1	0.048	ND - 0.42	34	none	none	ND	ND
Orchard 2	106	not analyzed					not analyzed				
Orchard 3	50	8	3	none	0.049	ND - 0.152	7	none	none	ND	ND
Orchard 4	13.6	8	4	2	0.42	ND - 1.7	4	1	none	0.932	ND - 1.3
Orchard 5	11.6	not analyzed					not analyzed				
Orchard 6	6.3	20	17	12	0.529	0.004 - 2.6	not analyzed				
Row Crops 7	17	8	none	none	ND	ND	8	none	none	ND	ND
Row Crops 8	57	26	6	none	0.021	ND - 0.1	26	4	none	0.292	ND - 1.6
Row Crops 9	4.5	13	none	none	ND	ND	13	none	none	ND	ND
Ornamental/Nursery 10*	140	14	9	1	0.099	ND - 0.51	14	none	none	0.046	ND - 0.32
Ornamental/Nursery 11	8	22	none	none	0.002	ND - 0.024	28	2	none	0.179	ND - 1.6
Ornamental/Nursery 12	1.4	9	3	none	0.034	ND - 0.17	1	none	none	ND	ND
Ornamental/Nursery 13	0.59	not analyzed					not analyzed				
Ornamental/Nursery 14	1.6	not analyzed					not analyzed				
Unknown Agriculture 15	6.3	not analyzed					not analyzed				

*Site Samples collected at a depth of 1 - 2' bgs

ND = Not Detected

ND results evaluated at one half the laboratory MDL/MRL value

Table 3
Sampling Results for Arsenic & Rule 12.00 Comparison

SITE	Site Size (acres)	**Arsenic** (RDEC - 7 ppm / I/CDEC - 7 ppm)						
		Samples	Exceeds 7.0 ppm	% Exceed 7.0 ppm	Average (ppm)	Range (ppm)	NJD per 12.03	Rule 12.04
Orchard 1	93	34	12	35%	9.19	ND - 72.1		12.04A
Orchard 2	106	332	129	39%	7.63	ND - 62.4		12.04A
Orchard 3	50	65	53	82%	30.1	ND - 133		12.04B
Orchard 4	13.6	15	3	20%	4.82	1.2 - 21	NJD[1,2]	
Orchard 5	11.6	49	2	4%	2.92	0.76 - 16	NJD[1]	
Orchard 6	6.3	24	18	75%	48.8	0.85 - 140		
Row Crops 7	17	30	6	20%	5.72	2.9 - 12.7	NJD	
Row Crops 8	57	19	7	37%	6.32	1.6 - 13		12.04A
Row Crops 9	4.5	13	1	8%	3.6	1.4 - 9.3	NJD[2]	
Ornamental/Nursery 10*	140	14	1	7%	4.14	1.7 - 7.1	NJD[2]	
Ornamental/Nursery 11	8	32	7	22%	5.16	ND - 21	NJD[1]	
Ornamental/Nursery 12	1.4	13	11	85%	11.3	2.8 - 23		12.04A
Ornamental/Nursery 13	0.59	67	25	37%	7.96	ND - 36		12.04A
Ornamental/Nursery 14	1.6	28	26	93%	9.71	6 - 18		12.04A
Unknown Agriculture 15	6.3	11	none	none	4.95	2.2 - 6.6	NJD[2]	

*Site samples collected at a depth of 1 - 2' bgs

ND = Not Detected

ND Results evaluated at one half the laboratory MDL/MRL value

1 - Site would be non-jurisdictial per Rule 12.03 with "hot-spot" removal

2 - Site does not meet the minimum sample requirements for Rule 12.03

The data included in the Tables are comprised of samples taken from the top foot of soil. As depicted in the Tables 1 and 2, not all samples were tested for all four Agricultural Contaminants of Concern; however, Table 3 shows that every site had at least some degree of sampling for arsenic and it was by far the most commonly analyzed contaminant.

Table 1 indicates that lead is not a contaminant that was typically found at jurisdictional levels at the sites included in the study. Only one site had an average lead level above the RDEC of 150 ppm (average of 162 ppm). Even with an elevated average lead concentration, the highest lead concentration detected on that site was 390 ppm, below the Department's I/CDEC and the Rhode Island Department of Health's (RIDOH) "lead-safe" level of 400 ppm. Just one sample out of all samples analyzed for lead (154 total samples) exceeded the Department's I/CDEC, containing a concentration of 674 ppm. While this study cannot definitively state that lead is not an issue on Rhode Island agricultural sites, it does indicate that lead concentrations above the RIDOH "lead-safe" concentration of 400 ppm are not typical on historically agricultural sites. Thus lead does not necessarily need to be handled much differently on historically agricultural sites, as only 6% of samples exceeded the RDEC, especially taking the RIDOH "lead-safe" standard into consideration.

Dieldrin was analyzed to some extent on 10 of the 15 sites. Overall, 31% of soil samples exceeded the Department's RDEC for dieldrin and 10% exceeded the I/CDEC. The site specific averages were typically below the I/CDEC, but almost half hovered around the RDEC mark indicating that reevaluating how the Department handles dieldrin on historically agricultural sites is worth considering in an effort to make investigation, characterization, and remediation of these typically large sites economically feasible.

Chlordane was analyzed on 9 of the sites in this study and detected above the RDEC on just 3. There were no exceedances of the I/CDEC reported. In total, 5% of all samples analyzed for chlordane exceeded the RDEC and, much like lead, it does not appear that chlordane is a significant issue on historically agricultural sites. Site specific chlordane average concentrations were all below the RDEC indicating that Chlordane could be easily managed in a manner similar to that of Rule 12.03 of the Remediation Regulations.

As expected, arsenic was by far the most prevalent and reported contaminant of concern on the historically agricultural sites. The Department has already incorporated into the Remediation Regulations a separate section (Section 12) that includes special requirements for managing arsenic in soils. Table 3 summarized the sampling results for arsenic and also indicates whether the rules found in Section 12 would apply to the site. The special provisions in Section 12 weren't adopted until 2004 and were then amended in 2011, which pre-dates some of the data collected. It is important to note that a few of the sites upon which this study is based would be considered non-jurisdictional with the application of Section 12 today.

All but one site had a jurisdictional release for arsenic and 40% of all samples analyzed for arsenic (746 total samples) contained arsenic above the RDEC. Almost half of those sites could be considered non-jurisdictional for arsenic per Rule 12.03, though 3 sites would require limited "hot-spot" removal to meet the requirements of Rule 12.03 and 4 sites would need additional sample analysis to meet the sampling requirement. The remainder of sites that do not meet the

Rule 12.03 criteria would benefit from the remedial options described in Rules 12.04A and 12.04B.

Based on the results of this background study, it is concluded that sites with jurisdictional releases of the any of the Agricultural Contaminants of Concern as a result of historic agricultural activities can be managed through the development of an end-use specific policy that employs some of the management criteria found in Section 12 of the Remediation Regulations. This policy, which focuses on open-space and recreational reuse options that allow for the averaging of specific contaminant concentrations in Source Areas (as defined by Rule 3.73 of the Remediation Regulations), "hot-spot" removal, and select area remediation could provide a regulatory tool to the majority of the large, historically agricultural sites; offering economically viable options for reuse while remaining protective to both human health and the environment.

Exposure variables are different in open space scenarios than they are in residential situations. Undeveloped open space not used for recreational purposes should be permitted to contain jurisdictional levels of the Agricultural Contaminants of Concern if access is restricted and institutional controls are in place. Sites redeveloped for Passive or Active Recreational purposes (as defined by Rule 3.62 of the Remediation Regulations) carry a greater risk for exposure, especially to children, and as such, should have stricter standards and/or require engineered controls in addition to institutional controls.

Given the potential economic and aesthetic benefits in allowing large, historically agricultural lands to remain as open space, possibly for either passive or active recreational purposes, the Department has developed this policy to serve as a middle ground between the residential and industrial standards. This has been accomplished without creating a new set of standards, through a change in policy that is specific to historically agricultural lands that are to be utilized only for open space or recreational purposes.

This policy memo offers new remedial options with associated criteria that will allow former agricultural lands that are impacted solely with any of the Agricultural Contaminants of Concern and solely as a result of the historical proper application of pesticides which allows these lands to remain open space of varying uses while maintaining compliance with the Remediation Regulations until such time that redevelopment of these lands (or portions thereof) is proposed.

III. Applicability

This Historical Agricultural Use Policy has been established to address the fact that, with respect to site remediation, historically agricultural properties tend to be special cases that can be difficult for a responsible and/or performing party to bring into compliance with the Department's Remediation Regulations, once agricultural operations cease. This guidance policy presents new, economically feasible options for managing former agricultural sites. This policy shall only apply to the investigation and remediation of sites or portions of sites in which the only contaminants of concern are arsenic, lead, and pesticides for which the Department has developed numerical standards (presently those pesticides include only chlordane and dieldrin). The presence of these contaminants must be solely due to historic or current field application of pesticides in a manner that was consistent with the pesticides' intended purpose and manufacturers' labeling. All other contaminant exceedances and reportable concentrations, as

defined by Rule 5.01(B) of the Remediation Regulations shall be addressed as required in the Remediation Regulations.

This guidance policy is not applicable to spills or other activities that would constitute a "release" under CERCLA and which are not integral parts of the pesticide field application process. A "release" under CERCLA is generally any spilling, leaching, leaking, discharging, disposing, etc. into the environment. This may include "hot spots" or concentrated areas of pesticide related contaminants attributable to spills, leaks, or improper disposal of pesticides, areas where pesticides were likely to have been stored or mixed, areas where pesticide-application equipment were cleaned, fence lines, ditches, canals, berms, and other areas that may have been treated or utilized in a manner that differs from an agricultural field. This policy does not apply to the release (as defined by Rule 3.63 of the Remediation Regulations) of any contaminants other than arsenic, lead, and pesticides for which the Department has developed numerical standards for (presently chlordane and dieldrin, as stated above).

This policy is only applicable to properties that have been utilized for agricultural purposes. Sites that may have once been utilized for agricultural purposes but have since been redeveloped for any other use, including but not limited to, industrial/commercial or residential uses cannot utilize this policy and must follow the standard site remediation process as outlined in the Remediation Regulations. This policy is intended to address solely those properties or areas of properties where surface soils (0 – 12 inches bgs, i.e. the top foot of soil) have been impacted with the above referenced Agricultural Contaminants of Concern solely attributed to current or historical pesticide application and not yet redeveloped. Any other contaminants discovered at reportable concentrations are required to be addressed in accordance with the Remediation Regulations.

This policy is intended to be used for historically agricultural sites or portions of historically agricultural sites that are to either be used for passive recreation, active recreation, or open space not for recreational use.

Therefore, those sites or areas of sites that are to be redeveloped for residential or industrial/commercial use must be addressed in accordance with the applicable process outlined in the Remediation Regulations. However, the Department may consider the option to utilize this policy, applied accordingly, at proposed mixed-use properties with the appropriate controls to ensure protectiveness.

This Policy is not applicable to hazardous waste, as described in the Rhode Island Rules and Regulations for Hazardous Waste Management.

This policy is not intended to address issues such as the removal, treatment, or disposal of groundwater, soil below the water table, sediment, underground injection control closures, vapor intrusion, or indoor air concerns. This policy also does not apply to tank removals or any other actions under the jurisdiction of the Underground Storage Tank Program. Those actions shall be consistent with the Regulations for Underground Storage Facilities Used for Petroleum Products and Hazardous Materials.

Prior to response actions, notification to the Department, as outlined in Section 5.0 of the Remediation Regulations, shall be required. Included in the notification shall be a declaration from the responsible or performing party stating that they would like to proceed under this policy. Applicability and use of this policy shall be at the sole discretion of the Department. The Department also reserves the authority to require further investigation and/or remediation actions on any site utilizing this policy.

IV. Project Management and Site Assessment

Site owners, operators, performing parties, consultants, and contractors proceeding under this policy shall:

A. Be protective of human health and the environment and accordingly the response action should result in no additional site related risks than had existed prior to the completion of the response activities;

B. May conduct a Limited Site Investigation in which environmental sampling is limited to surface soils (0-1 foot bgs i.e. the top foot of soil) and the Agricultural Contaminants of Concern provided that:

   a. The Phase I Environmental Site Assessment (ESA), completed in accordance with ASTM E1527-13, demonstrates that the Site, or portion of the site subject to this policy, was likely used for agricultural purposes only. Areas of the site that the Phase I ESA reveals to be potentially impacted with other contaminants resulting from other releases or activities not associated with the proper application of pesticides, including but not limited to fence lines, berms, ditches, pesticide storage, or equipment cleaning areas, will need to be handled separate of this policy in accordance with the Remediation Regulations and/or the Dig & Haul Policy;

   b. The minimum sampling requirements outlined in Section VI are met; and

   c. That the end result of compliance with this policy is the receipt of a No Further Action Letter for the Agricultural Contaminants of Concern.

C. Be consistent with a future site reuse of open space, passive or active recreation, or any combination thereof; and

D. Conduct the response action(s) in a manner consistent with all applicable federal, state, and local requirements, including, but not limited to, the Remediation Regulations, and other Department regulations.

V. Reporting Requirements

A. Notification, as required in Section 5.0 of the Remediation Regulations shall be completed. As part of the notification, a declaration from the performing party shall state their intention to proceed under this policy.

B. An exemption to the notification requirements of Section 5.0 shall apply to properties currently designated for agricultural use that have been impacted from the current or historical field application of pesticides in a manner that was consistent with the pesticides' intended purpose and manufacturers' labeling. Those properties currently and actively used for agricultural purposes are not required to notify the Department until such time that the property, or impacted portion of the property, is proposed to change from the agricultural use designation.

C. The performing party is required to submit an Agricultural Property Site Investigation Report / Agricultural Use Remedial Action Work Plan (Ag SIR/RAWP) that must include the following components:

   a. Provide the legal name of the person, firm, public (municipal or state) organization, or other entity providing the response report. The notifier must be the performing party. If the performing party is different than the property owner, the property owner must also provide certification of consent to the activities described. The name of the performing party may or may not be the same as the name of the site. Do not use a colloquial name. Enter the complete address, telephone number, and email address.

   b. Provide the official or legal name of the site, complete address, and telephone number, if available. Enter the geographic latitude and longitude of the site. Enter the plat and lot numbers as defined by the city/town Tax Assessor. Enter the full legal name of the property owner and the performing party (if different than the owner).

   c. Indicate the performing party and the contact person and contact information for the response action.

   d. Indicate the owner and contact information if different than performing party.

   e. Indicate the environmental professional's (as defined in ASTM E1527-13) name and contact information and include all appropriate signatures and certifications contained in Section IX of this policy with supporting documentation.

   f. A complete Phase I ESA that conclusively justifies the use of this policy and its limited soil sampling requirements.

   g. A Site Figure clearly depicting, at a minimum, the following:

      i. Locations of pesticide application area(s), e.g. orchards, crop fields, etc.;
      ii. Storage areas and/or equipment cleaning areas, if any;

iii. Underground and/or Aboveground Storage Tanks (USTs, ASTs);
iv. Areas that are unlikely to have been impacted by historical pesticide applications;
v. Low lying areas, drainage ditches, and any other surface-water where pesticides may have accumulated;
vi. Former and existing building structures;
vii. Site and lot lines;
viii. Fence lines, berms, or other areas where pesticides may have accumulated;
ix. Locations of all soil sampling; and
x. Any and all other relevant information.

h. Results and detailed discussion of all soil samples and the associated analytical reports (see Section VI for sampling requirements and protocols).

i. Details regarding the selected remedial approach (see section VII for the preapproved remedial options) for the site including the rationale for the selected remedial plan based on the soil sampling data.

j. Draft Environmental Land Usage Restriction (ELUR) and Soil Management Plan (SMP).

k. Pursuant to Rule 10.02 of the Remediation Regulations, an application fee for Remedial Action Approvals in the amount of one thousand ($1,000.00) dollars shall be made payable to the State of Rhode Island General Treasurer and remitted to the Office of Management Services.

D. Following Department approval of the Ag SIR/RAWP through a Program Letter, public notice shall be provided to all abutters in accordance with Rule 7.07 of the Remediation Regulations. Following the completion of the fourteen (14) day public comment period, and after responding to any comments received, the Department will issue a combined Remedial Decision Letter / Remedial Approval Letter (RDL/RAL).

E. Within 60 days of the completion of the Agricultural Use Response Actions, complete an Agricultural Use Response Action Closure Report in addition to the Required Certification form found in Section IX of this policy. Please type or print clearly in the appropriate areas only. The Agricultural Use Response Action Closure Report shall include all appropriate supporting documentation including, but not limited to, the following:

a. A detailed account of the completed remedial activities;
b. A locus plan showing the property location;
c. Scaled site plans showing the specific remedial measures completed, labeled sampling locations, utilities, surface structures, a north arrow, and a graphical scale bar;
d. Complete analytical data from an accredited third-party laboratory, if applicable;
e. All manifests, shipping logs, or bills of lading for any transported soil, if applicable;

f. Weight slips from the receiving facility, if applicable;
g. Recycling, reuse, or disposal certification, as appropriate;
h. A signature sheet with the required certifications as outlines in Section IX of this policy; and
i. A stamped copy of the recorded ELUR.

VI. Sampling Requirements

The Performing Party shall ensure that the number, location, depth, and distribution of samples taken as part of the site investigation are adequate to properly characterize the site and all areas of concern. The Performing Party shall ensure an appropriate rationale has been utilized for selecting sample locations and provide said rationale in the Ag SIR/RAWP. The Department reserves the right to require additional sampling for the Agricultural Contaminants of Concern or other contaminants of concern at any point in the process.

A. Sampling Protocol:

   a. As previously stated, the Agricultural Contaminants of Concern are arsenic, lead, and pesticides for which the Department has developed numerical standards (currently chlordane and dieldrin);

   b. Soil samples must be discrete grab samples collected within the zero to twelve (0 – 12) inches bgs i.e. the top foot of soil. Composite samples collected across sampling locations will not be accepted; and

   c. Soil samples analyzed[1] must be collected from the residual pesticide source area(s) as these are the only areas that this policy applies to, i.e. the area(s) in which pesticides were historically applied.

B. Minimum Sampling Frequency[2]: The following number of samples, at a minimum, shall be collected and analyzed for the Agricultural Contaminants of Concern in order to evaluate site conditions against the remedial options described in Section VII of this policy. Additional samples may be required based upon site-specific conditions.

   Site (or applicable areas of the site) Size (acres) Minimum Number of Site Samples Required:

   1 acre – 8 samples minimum
   1 to 5 acres – 8 samples plus 2 samples per additional acre over 1st acre
   Greater than 5 acres – 16 samples plus 1 sample per additional acre over 5th acre[3]

[1] The laboratory method reporting limit shall be set at or below the agricultural standards (e.g. for arsenic, no greater than 7.0 ppm)
[2] The requirements herein have been set to evaluate site-specific conditions, in lieu of the minimum 20 samples required per Rule 8.06.
[3] For example: A 35 acre site would require a minimum of 22 surface soil samples.

VII. Remedial Options for Jurisdictional Agricultural Releases

The selection of the appropriate remedial options on historically agricultural sites depends upon, in large part, on the proposed reuse of the site. The remedial options presented below are intended to be cost effective while remaining protective of human health and the environment.

The following remedial options may be implemented on historically agricultural sites or portions of sites to address historic pesticide releases that are to remain as either open space not for recreational use, passive recreational use, or active recreational use. Large historically agricultural sites may implement any combination of the remedial options in this section based on the proposed reuse of each area of the site and their respective levels of impact. Areas of the site that are to be developed for either residential or industrial/commercial reuse must be addressed separately in accordance with the Remediation Regulations.

It is acceptable under this policy to reevaluate compliance with any of the below listed standards following soil blending, tilling, and/or hot spot removal in order to utilize one of the remedial options below. A performing party may also exclude specific areas from applicability under this policy, and then re-evaluate compliance with the standard. Note that excluded areas must be addressed separately in accordance with the Remediation Regulations.

It is important to note that a single site may have multiple proposed reuse plans and therefore employ any combination of the remedial options and/or strategies outlined in this section. All areas of the Site with differing end uses shall be clearly depicted on a scaled site plan.

A. Undeveloped Open Space not for Recreational Use:

   a. Remedy consists of recording an ELUR and SMP restricting the use of the property to open space on the deed for the property in accordance with Section VIII if all of the following statements are true:

      i. No more than 10% of arsenic samples are greater than 43 ppm
      ii. No more than 40% of arsenic samples are greater than 7 ppm
      iii. The average[4] concentration of all arsenic samples is less than 20 ppm

      iv. No individual lead sample is greater than 500 ppm
      v. The average concentration of all lead samples is less than 400 ppm

      vi. No individual chlordane sample is greater than 4.4 ppm
      vii. The average concentration of all chlordane samples is less than 1.0 ppm

      viii. No individual dieldrin sample is greater than 0.4 ppm
      ix. The average concentration of all dieldrin samples is less than 0.1 ppm

[4] Analytical results indicating "non-detect," shall be evaluated at half the method reporting limit value for the purpose of calculating average concentrations used to determine compliance with the standards above.

b. Remedy consists of fencing off the site to restrict access and recording an ELUR and SMP restricting the use of the property to open space on the deed for the property in accordance with Section VIII if:

i. No more than 10% of arsenic samples are greater than 43 ppm
ii. The average arsenic concentration is less than 30 ppm

iii. No individual lead sample is greater than 1000 ppm
iv. The average lead concentration is less than 400 ppm

v. No individual chlordane sample is greater than 4.4 ppm
vi. The average chlordane concentration is less than 4.4 ppm

vii. No individual dieldrin sample is greater than 2.0 ppm
viii. The average dieldrin concentration is less than 0.4 ppm

B. Passive Recreation reuse as defined by Rule 3.62(b) of the Remediation Regulations:

Historically Agricultural sites that are intended to be repurposed for passive recreational use may be managed by the recording of an ELUR and SMP for the property if the following conditions regarding the Agricultural Constitutes of Concern are met:

a. Arsenic:

i. No individual sample result from the data set shall be greater than 15 ppm;
ii. No greater than 40% of sample results from the data set shall exceed 7 ppm; and
iii. The average of all sample results shall be 15 ppm or less.

b. Lead:

i. No individual sample result from the data set shall be greater than 500 ppm;
ii. No greater than 20% of sample results shall exceed 150 ppm; and
iii. The average of all sample results shall be below 150 ppm.

c. Chlordane:

i. No individual sample result from the data set shall be greater than 4.4 ppm;
ii. No greater than 25% of sample results shall exceed 0.5 ppm; and
iii. The average of all sample results shall be below 0.5 ppm.

d. Dieldrin:

i. No individual sample result from the data set shall be greater than 0.4 ppm;
ii. No greater than 25% of sample results shall exceed 0.04 ppm; and

iii. The average of all sample results shall be below 0.04 ppm.

C. Active Recreational reuse as defined by Rule 3.62(a) of the Remediation Regulations:

Historically agricultural sites that are intended to be reused for the purposes of active recreation may employ one or more of the following remedial options provided that the conditions in Section VII-B above are met:

a. Excavation and removal of all contaminated soils with concentrations that exceed the RDEC with proposed confirmation sampling to determine compliance with the standards;
b. Encapsulation of existing soils with six (6) inches of clean soil, preventing erosion with adequate vegetation and/or mulch, and recording of an appropriate ELUR and SMP that describe the maintenance of said engineering controls;
c. Encapsulation of existing soils with two (2) inches of gravel with a minimum of two (2) inches of bituminous concrete (asphalt), concrete pavers, or concrete, and recording of an appropriate ELUR and SMP to maintain said engineering controls;
d. Encapsulation of existing soils with a minimum of six (6) inches crushed stone or aggregate, and recording of an appropriate ELUR and SMP to maintain said engineering controls;
e. Encapsulation of existing soils with a minimum of four (4) inches of clean soil over a geo-fabric material, preventing erosion with adequate vegetation and/or mulch, and recording of an appropriate ELUR and SMP to maintain said engineering controls;
f. Encapsulation of existing soils in landscaped areas with a minimum of six (6) inches mulch and recording of an appropriate ELUR and SMP that describe the maintenance of said engineering controls;
g. Soil blending or tilling of wet/damp soil with re-sampling per section VI to determine compliance with the standards in the Remediation Regulations; and/or
h. A site-specific remediation plan that has been reviewed and approved in writing by the Department. Capping alternatives proposed shall include measures equivalent to the protectiveness outlined above.

VIII. Institutional Control Requirements – Environmental Land Usage Restrictions and Owner Notification Requirements

The following institutional control requirements shall be included in the ELUR to manage historically agricultural sites for which the Agricultural Contaminants of Concern are the only jurisdictional contaminants that remain on-site.

A. Undeveloped Open Space Properties that do not constitute a recreational facility for public use pursuant to the Remediation Regulations and Section VII.A:

a. Prior to submission of the site post closure report as required by Section V.E of this policy, the property owner shall record on the property deed an ELUR approved by

the Department, restricting the property to Undeveloped Open Space that does not constitute a recreational facility for public use.

b. The ELUR shall require notification and Department approval when/if there are any changes to the land e.g. change in use, land development of any kind, etc.
c. Annual status reports shall be submitted to the Department confirming that the property use remains undeveloped open space not for recreational use.
d. If fencing is required then the owner shall perform annual inspections of the fencing. The owners shall file the results of said inspections with the Department's Office of Waste Management, indicating compliance with the requirements of the remedy or noting any deficiencies and a schedule to return the fencing to compliance.

B. Passive Recreational Use Properties in accordance with Section VII.B:

a. Prior to submission of the site post closure report as required by Section V.E of this policy, the property owner shall record on the property deed an ELUR approved by the Department, restricting the property use to Open Space / Passive Recreational Use.
b. The ELUR shall require notification and Department approval when/if there are any changes to the land e.g. change in use, land development of any kind, etc.
c. Annual status reports shall be submitted to the Department confirming that the property use remains either open space and/or passive recreation.

C. Active Recreational Use Properties in accordance with Section VII.C:

a. Property owners shall maintain all capping and engineering controls implemented under Section VII.C.
b. Prior to submission of the site post closure report as required by Section V.E of this policy, the property owner shall record on the property deed an ELUR approved by the Department, to maintain the required capping and engineering controls.
c. The owner shall perform annual inspections of all capping and engineering controls. The owner shall file copies of said inspections with the Department's Office of Waste Management, indicating compliance with the requirements of the remedy or noting a schedule to return the site to compliance.

IX. Required Certification

1. I, _____, on behalf of ____*(consulting firm)*____, and representing ____*(performing party)*____, certify that public notice has been completed in accordance with Rule 7.07 (Public Notice) of the Remediation Regulations.

2. I, _____, on behalf of ____*(consulting firm)*____, and representing ____*(performing party)*____, certify that the Response Action has been conducted with Policy Memo 2014-XX, *Guidelines for the Management of Historically Agricultural Properties for Future Use as Open Space and/or Recreational Land.*

3. I, _____, on behalf of ____*(consulting firm)*____, and representing ____*(performing party)*____, certify that the data and environmental information provided is a complete and accurate representation of the environmental conditions at the site and accurately depicts the nature, extent, and the known facts and history of the site justifying the use of the *Guidelines for the Management of Historically Agricultural Properties for Future Use as Open Space and/or Recreational Land* to the best of my knowledge.

4. I, _____, on behalf of ____*(consulting firm)*____, and representing ____*(performing party)*____, certify that the laboratory certificates of analysis received from ____*(laboratory)*____, were reviewed for accuracy relative to sample holding times, detection limits at or below applicable standards, and related laboratory quality assurance and quality control procedures.

Effective Sept. 17th**, 2014**

Leo Hellested, PE, Chief
Office of Waste Management