



## **INTERIM REMEDIAL ACTION WORK PLAN**

Progress Elementary School  
Spokane Valley, WA

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July 2007  
Washington Department of Ecology  
Toxics Cleanup Program  
Eastern Regional Office  
Spokane, WA

## **1.0 INTRODUCTION**

The Progress Elementary School Site (Site) is located at 710 N. Progress Rd, Spokane Valley, WA in a predominantly residential area (Figure 1). Progress is part of the Central Valley School District and serves over 300 students in grades kindergarten through five. The school is located on property that was formerly used as an apple orchard in the early 1900s. Lead and arsenic levels in soil were shown to exceed cleanup levels. A Model Toxics Control Act Site Hazard Assessment was completed, and a ranking of 3 was assigned with 1 being the highest level of concern and 5 the least.

The WA Department of Ecology (Ecology) intends to complete an interim cleanup action to remediate contaminated soils at the Site. Soils with elevated levels of lead and arsenic will be covered with geotextile liner and capped with clean topsoil and grass. Approximately 5.5 acres of school ground child-use area at the Site will be cleaned up. Information and facts provided in this document are based on records and references available in the file maintained by Ecology for this Site.

## **2.0 PROJECT DESCRIPTION**

### **2.1 SUBJECT BACKGROUND**

Due to growing concerns about the past use of pesticides at agricultural properties that were converting to other use, the Legislature directed Ecology to prepare a statewide strategy to address soil contamination. This work focused on low to moderate levels of lead and arsenic on land that was developed into residential, school, daycare, or other child-use properties. Ecology assembled an Areawide Task Force to study and provide recommendations on this issue.

Task Force deliberations focused on understanding the nature and extent of area-wide soil contamination, making recommendations about effective, practical, and affordable steps individuals and organizations can take to reduce their potential for exposure to area-wide soil contamination, and on creating an alternate, more streamlined approach under MTCA for properties affected by area-wide soil contamination.

Specifically, the Task Force recommendations and Ecology's implementation strategy for schools affected by area-wide soil contamination include the following:

- Implementing individual protection measures.
- Maintaining good soil cover in areas where children play.
- Conducting qualitative evaluations to increase their understanding of where exposure could occur.
- Testing soils where qualitative evaluations indicate the potential for exposure to contaminated soil.
- Implementing additional protection measures such as installing a geotextile fabric barrier between contaminated soils and surfacing materials in play areas or more permanent protection measures if contamination is found.

## 2.2 SITE HISTORY

The property occupied by Progress Elementary School was part of a large agricultural area in the Spokane Valley in the early 1900s. Along with vegetables and other truck farm crops, apples were a primary product of the Valley. The region's history as the primary apple-producing area of Washington State is well documented. In the 1920s, apple production moved to the central part of the state due to changing markets for newer apple varieties. Although orchards remained in the Valley well into the 1950s, most were replaced as development moved east from Spokane.

Around 1905, lead arsenate was introduced as a primary pesticide for controlling codling moths in apple orchards. Because it was less toxic to trees than copper arsenate, it was widely used by apple growers for over 40 years. Due to the properties of both lead and arsenic, it was quite persistent in the environment. Its use diminished rapidly in the late 1940s when DDT was introduced. As such, apple orchards that were in production in the early 1900s are suspected of having lead and/or arsenic contamination due to lead arsenate use.

## 2.3 PROJECT HISTORY

Aerial photographs of the Spokane Valley were surveyed to determine if any school properties were located on land that used to be apple orchards. It was found that eleven schools in the Central Valley School District and four in the East Valley School District were located on or near properties that used to be apple orchards.

In the summer of 2005, Spokane County Regional Health District personnel completed soil sampling at all 15 school properties. Sampling was focused on child-use areas or areas that represented potential exposure routes (such as bare dirt). Results indicated that Progress Elementary had lead and arsenic concentrations exceeding Model Toxics Control Act (MTCA) cleanup levels of 250 mg/kg and 20 mg/kg, respectively. Follow-up soil sampling was performed at Progress to confirm previous data and provide additional delineation of the extent of contamination. Contamination concentrations were confirmed. Over both sampling events, soil samples showed arsenic concentrations averaging about 44 mg/kg with a maximum of 106 mg/kg, and lead averaging 137 mg/kg with a maximum of 643 mg/kg. In August 2006, the site received a MTCA Site Hazard Assessment and was ranked a 3. The ranking was heavily influenced by the fact that young children use the play areas and that lead and arsenic are considered especially toxic for children. The site was also listed on the state's Hazardous Sites List.

## 3.0 REGULATORY CONSIDERATIONS

According to the Model Toxics Control Act (MTCA, the state cleanup regulation), an "interim action" is distinguished from a "cleanup action" in that an interim action only partially addresses the cleanup of a site. The remediation conducted under an interim action may end up constituting the complete cleanup action for a site if the interim action is subsequently shown to meet requirements in the rule for a complete cleanup action.

Under WAC 173-340-430(1)(a), the interim action proposed for Progress Elementary would be considered "a remedial action that is technically necessary to reduce a threat to human health or the environment by eliminating or substantially reducing one or more pathways for exposure to a

hazardous substance at a facility.” By reducing the proximity of school children to the hazardous substances, the interim action will reduce the threat to human health posed by the pathways of direct contact and ingestion.

WAC 173-340-430(2) states that interim actions may:

1. Achieve cleanup standards for a portion of the site.
2. Provide a partial cleanup, that is, cleanup up hazardous substances from all or part of the site, but not achieve cleanup standards. or
3. Provide a partial cleanup of hazardous substances and not achieve cleanup standards, but provide information on how to achieve cleanup standards for a cleanup (for example, demonstration of an unproven cleanup technology).

It is also required that any interim actions be consistent with potential future cleanup actions, and that they not exclude other reasonable cleanup alternatives from being performed in the future. A cleanup action plan has not been prepared, but this interim action is consistent with typical cleanup alternatives that are normally considered for lead- and arsenic-contaminated former orchard land sites in the state.

#### **4.0 INTERIM ACTION ALTERNATIVES**

The following interim cleanup actions were evaluated for Progress Elementary School:

- **No Action:** This option would leave existing conditions as they are. Based on the levels of contaminants that exist at the site and the fact that existing surfaces do not provide long-term protection from exposure, this option was not selected.
- **Institutional Controls and Exposure Reduction Measures:** These measures would not address any soil contamination directly, but would rely on other means to control exposure. These means include physical and institutional barriers, such as deed restrictions, fencing, and signs to control current and future site use. Exposure reduction measures include changing behaviors, such education about proper playing and cleaning habits, prevention of digging or other activities that would expose contaminated soils, and maintenance of barriers like sod or gravel. Although these measures might limit short-term exposures, they are not reliable in the long-term because they rely on the actions of others in the future. Some of these measures may be helpful in combination with other actions, but not alone.
- **Deep Mixing:** This technology involves mixing contaminated soil with underlying clean soil to a depth of four feet. If contamination is largely located in shallow depths and at moderate concentrations, then mixing with clean soil can reduce concentrations below cleanup levels. However, the technology is only applicable in soils with few rocks and can result in uneven ground settling if not performed uniformly across an entire property. Because Spokane Valley soils are relatively high in rock content, and because the school would only need mixing in certain areas, this technology would not yield a final play area that would be suitable to the school district.
- **Capping:** Capping would involve placing a permeable geotextile fabric over the ground surface, grading a 6” layer of clean topsoil over the geotextile, compacting, and restoring the

surface cover. The geotextile fabric would provide a physical barrier/marker between clean and contaminated soils, and the clean topsoil would provide ample separation between children and the contaminated soil. With this action, a deed restriction would need to be used to let any future owners of the site know that contaminated soil still exists at depth, and to prevent any future activities that may interfere with the integrity of the cleanup action.

- Excavation: Under this option, contaminated soil exceeding cleanup standards would be excavated and transported to a permitted landfill. Clean backfill would bring excavated areas back up to grade, and these areas would be compacted and the surface cover restored.

## **5.0 SELECTED INTERIM ACTION**

Of the available alternatives, only capping and excavation are feasible at the site. Deep mixing would protect human health at the site, but wouldn't be feasible due to the fact that the resulting ground surface would not be suitable as a play area. Exposure reduction measures can't be relied on for long-term protection.

In comparing capping and excavation:

- Capping provides a similar, but slightly lower, level of long-term protection when combined with appropriate institutional controls.
- Would cost significantly less.
- Would be less disruptive to school operations and infrastructure. and
- Would have less short-term risks due to the lack of exposed contaminated soil.

Therefore, capping has been selected as the interim action for the site.

## **6.0 INTERIM ACTION WORK PLAN**

During the summer of 2007, a qualified and experienced contractor will be retained to perform the following tasks:

1. Modification of existing irrigation system: The existing irrigation system will have sprinkler heads removed, will be stubbed up so that they are at the new ground surface elevation, and have sprinkler heads replaced.
2. Removal of gravel play areas: The existing gravel and concrete curbing that currently exist will be removed and appropriately disposed of.
3. Placement of geotextile membrane: A geotextile membrane will be placed over the existing permeable (i.e., soil or grass, not concrete or asphalt) ground surface. Accommodations will be made for trees, play equipment, benches, and other existing surface structures as they will not be removed for this project.
4. Placement of clean imported topsoil: Imported topsoil will be spread to a depth of 6" over the entire site. Imported soil will be graded to accommodate the borders with impermeable surfaces and compacted. Water will be available at the site to control dust if necessary.
5. Placement of topsoil nutrient amendment: Amendment will be added to areas that will be receiving hydroseed or sod.

6. Replacement of surface cover: Ground covers that existed prior to work will be replaced in-kind. Hydroseed or sod will be used in areas that previously were grass. Gravel and concrete curbing will be used in the areas under play equipment.
7. Establishment of deed restrictions: Ecology and the Central Valley School District would negotiate restrictive covenant language and ensure that the restrictive covenant is filed with Spokane County.

In addition, the safety of neighbors and potential users of the property will be protected during the duration of work through controlling site access. The site is currently surrounded by a chain link fence with several access points. Through the use of signs and the closing of existing access points, site access will be restricted. The contractor will be required to provide a specific safety & health plan for the site construction activities. A State Environmental Policy Act (SEPA) checklist will be completed and subject to public comment prior to commencement of work activities. All site activities will be closely coordinated with the Central Valley School District so as to maximize communication and public outreach opportunities, and to maximize the benefit to Progress Elementary.

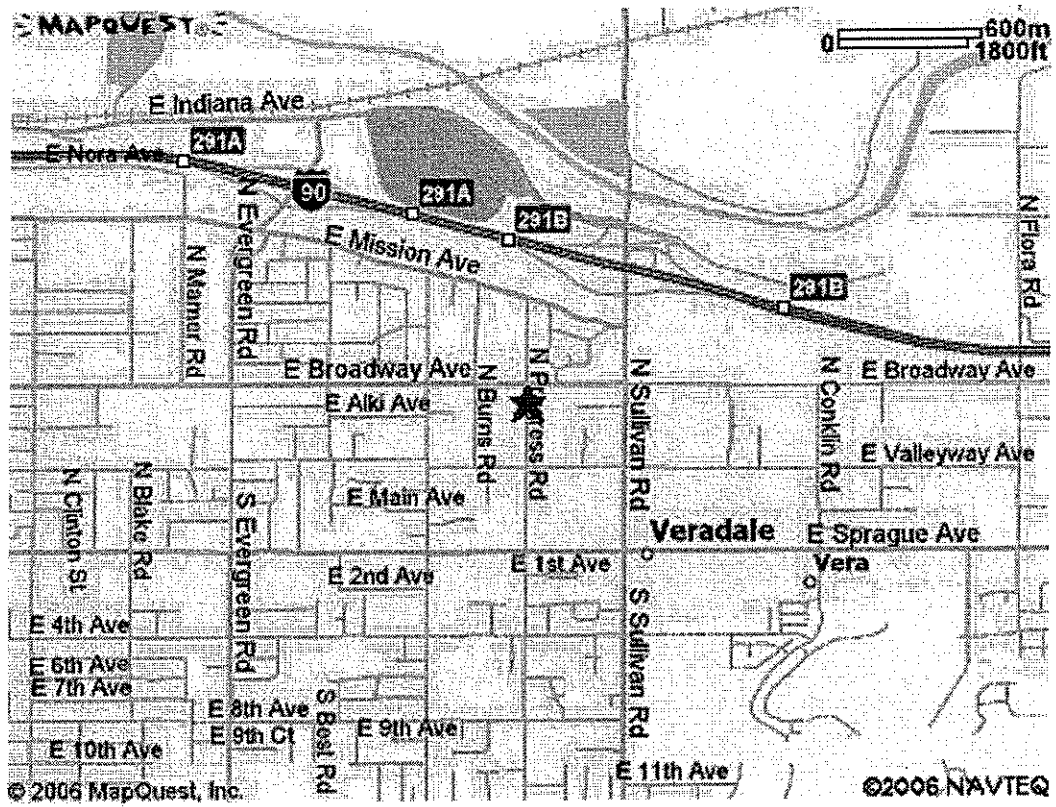


Figure 1 Site Location

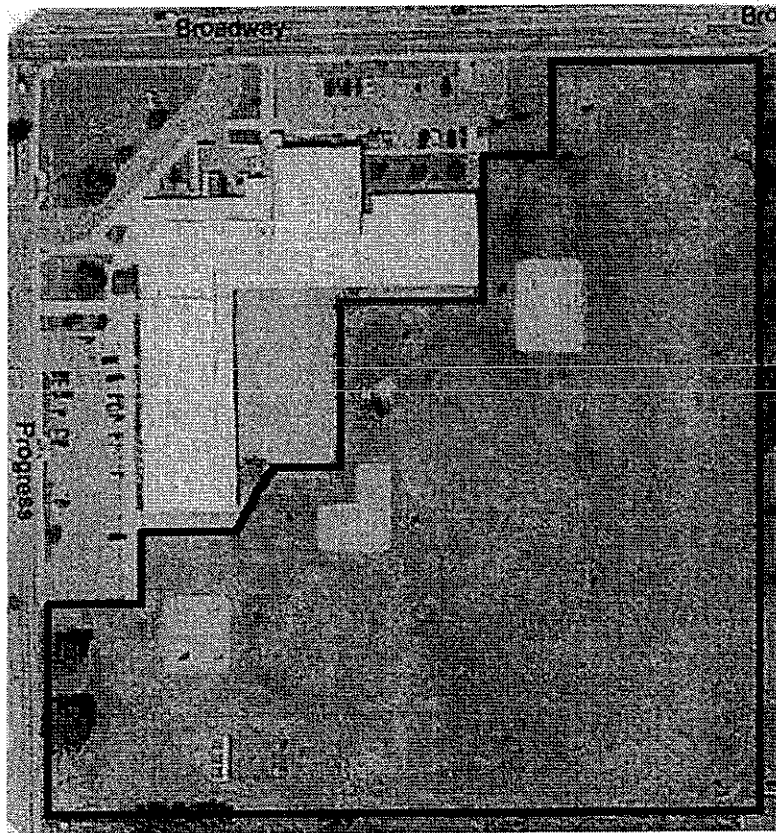


Figure 2 Site Aerial Photo of Play Area