APPENDIX C
Land Use Controls
Siberia Area, Watervliet Arsenal
Watervliet, New York

Contents

1.0 Background

The Siberia Area was purchased by the Watervliet Arsenal in the early 1940's. Once a swampy area, the Siberia Area, upon its purchase, was filled in with slag, cinders, and debris to facilitate use by Arsenal personnel. It is comprised of approximately 14 acres on the extreme western side of the facility, immediately north of the Route 155 overpass. A property boundary survey was completed in June 2002. A metes-and-bounds description of the Siberia Area and a property map are included in Attachment 1 to this document.

Environmental investigations starting in the mid-1980s revealed the presence of various contaminants in soil and groundwater at the Siberia Area. Several remedies have been implemented to remediate contaminated soil and groundwater and to prevent unacceptable exposures to humans and the environment. The findings of the environmental investigations, as well as descriptions of the selected remedies, are summarized in the *Corrective Measures Study, Siberia Area, Watervliet Arsenal, Watervliet, New York (Malcolm Pirnie, 2003)* and in the Decision Document to which this document is appended.

2.0 Land Use Control Definition

Land use controls (LUCs) include any type of physical, legal, or administrative mechanism that restricts the use of, or limits access to, real property to prevent exposure to contaminants above permissible levels. The intent of using these controls is to protect human health, the environment, and the integrity of an engineering remedy by limiting the activities that may occur at a particular contaminated site (DERP Fact Sheet, 2002). On January 17, 2001, the Department of Defense (DoD) promulgated a memorandum entitled *Policy on Land Use Controls Associated with Environmental Restoration Activities* to provide a DoD framework for implementing, documenting, and managing LUCs for real property being transferred out of Federal control and for active installations. This LUC document for the Siberia Area of the Watervliet Arsenal has been prepared in accordance with the DoD policy outlined in the January 17, 2001 memorandum.

3.0 Purpose

The purposes of this document are to:

- Integrate site remedies with LUCs into the installation's facility planning process.
- Implement a process to ensure appropriate long-term maintenance of LUCs. The process will elevate general awareness of LUCs by installation personnel to ensure long-term protection.
- Implement a process for the installation to periodically update the New York State Department of Environmental Conservation (NYSDEC), the New York State Department of Health (NYSDOH) and the United States Environmental Protection Agency (USEPA) concerning the continuation of any LUCs and any planned changes in land use.

4.0 Siberia Area Current and Anticipated Future Uses

4.1 Current Usage

The Siberia Area is chiefly used for storage activities and handling/disposal of waste metal cuttings (chips) from the Main Manufacturing Area. In 1999, the New York State division of the Army National Guard (NYARNG) selected the WVA as the location for a vehicle distribution center. NYARNG personnel occupy a significant portion of Building 145 in Siberia and utilize much of the open areas in Siberia for vehicle parking. A total of ten buildings and structures are located in the Siberia Area (see Figure C-1):

- Structure 143 is an electrical substation.
- Building 145 is a large warehouse used for storage of various items, including hazardous waste for off-site disposal (less than 90 day storage).
- Building 148 is a public works supply and salt shed.
- Structure 149 is a scrap waste ramp used to load roll-off containers.
- Building 151 is a public works storage shed.
- Buildings 141, 150 and 152 are used for the processing of metal lathe shavings ("chips") generated by machining activities in the Main Manufacturing Area of the Watervliet Arsenal.
- Structure 142 is a metal chip storage pad.
- Building 153 is a NYARNG supply building constructed in 2004.

4.2 Future Usage

The NYARNG is expanding its presence at the Siberia Area, and recently finished construction of a supply building (Building 153) in the northeast corner of the site (see Figure C-1). It is anticipated that the future usage of the Siberia Area will remain similar to current usage.

5.0 Land Use Controls

5.1 Controls for Preventing Soil Exposures

Most of the soil containing contaminant concentrations above the NYSDEC-approved Corrective Action Objectives (CAOs) has been removed and the excavations have been backfilled with certified clean fill. A portion of the excavated soil was disposed off site, and approximately 14,000 cubic yards were treated on site in landfarming treatment cells. There are certain portions of the Siberia Area that could not be excavated due to the presence of utilities or other restricted access issues. These areas were capped with asphalt in summer 2004. The land use controls to be implemented in regards to preventing soil exposures are discussed below.

5.1.1 Asphalt Capping Maintenance

Asphalt capping will be maintained in good condition to prevent soil exposures. Any ground-disturbing activities in capped areas will not be conducted without prior written notification to and approval from the designated Army official. Upon discussion with the designated Army official, an appropriate health and safety plan will be prepared and maintained on file. Additionally, any soil-disturbing activities will be conducted by using appropriate Personal Protective Equipment (PPE), and work in these areas shall be accomplished following all applicable federal, state, and local occupational health and safety laws and regulations. This requirement shall be in place as long as the potentially contaminated soil is located beneath the asphalt caps.

5.1.2 Disposition of Treated Soil

The soil that was treated in the landfarming treatment cells at the Siberia Area was maintained on site for use within the Siberia Area.

5.2 Controls for Preventing Groundwater Exposures

Long-term groundwater monitoring data indicate that, with the exception of the northeast portion of the site, the groundwater at the Siberia Area is not contaminated above NYSDEC Class GA groundwater criteria. Chlorinated volatile organic compounds (VOCs)

have been detected at concentrations greater than the NYSDEC Class GA criteria in the northeast portion of the Siberia Area. In addition, samples collected from monitoring wells directly down-gradient from the off-site Perfection Plating facility (MW-EA-7, MW-EA-8, and MW-ESE-9) contained elevated hexavalent chromium concentrations. The elevated hexavalent chromium concentrations are related to former operations at the Perfection Plating facility. A groundwater extraction system installed by the NYSDEC is now operating to treat this contamination; this groundwater extraction system includes a collection trench that is located on Army property (see Figure B-1). Oily sheens and petroleum odors were noted during monitoring well development and groundwater sampling activities at several locations within the Siberia Area. However, analytical results for these samples showed relatively few contaminants present at concentrations greater than groundwater standards, indicating that the petroleum hydrocarbons and associated PAHs in the soil do not partition into the groundwater to a large degree.

In 1998, the Army installed two *in situ* reactive barriers (see Figure B-1) to reduce concentrations of chlorinated VOCs in the northeast portion of the Siberia Area. In addition, a network of monitoring wells has been installed throughout the Siberia Area to monitor groundwater quality in accordance with an approved long-term monitoring plan. A groundwater collection trench is located in the northeast corner of the site adjacent to the Perfection Plating property (see Figure B-1) to collect chromium-contaminated water for treatment.

The land use controls to be implemented in regards to preventing groundwater exposures are discussed below.

5.2.1 General Groundwater Restriction

No subsurface excavation, digging, drilling, or other disturbance shall be conducted without prior written approval from the designated Army official, with the exception of emergency repair of existing utilities. If groundwater is encountered during the course of activities at the property (e.g., during excavation activities), work shall be conducted in accordance with a Health and Safety Plan, which is to be consistent with the standards of OSHA and any other applicable worker safety regulations. If groundwater extraction is required, the extracted water shall be analyzed for chemical parameters to be specified in a

NYSDEC-approved work plan. The disposition of the water shall depend upon the results of the chemical testing.

5.2.2 Monitoring Well Maintenance

Monitoring wells shall not be disturbed. If any of the monitoring wells are damaged, they shall be repaired or replaced and re-surveyed. This requirement will terminate at such time as the long-term groundwater monitoring program is ceased.

5.2.3 In Situ Reactive Barrier Maintenance

Alterations, improvements and disturbances shall not be permitted in the vicinity of the *in situ* permeable reactive barriers. An offset of at least 10 feet from the center-line of each reactive barrier shall be maintained for all intrusive work. Caution shall be taken when driving heavy equipment in the vicinity of the barriers. No groundwater extraction activities (including excavation dewatering) shall be conducted in the vicinity of the reactive barriers without prior written approval from the designated Army official. This requirement will terminate when groundwater monitoring in the vicinity of the reactive barriers shows that concentrations of chlorinated VOCs have been reduced to acceptable levels and/or the NYSDEC determines no further action.

5.2.4 Groundwater Collection Trench

An offset of at least five feet from the center-line of the Perfection Plating groundwater collection trench shall be maintained for all intrusive work in the vicinity of the trench. Caution shall be taken when driving heavy equipment over the location of the trench. The NYSDEC, as operator of the groundwater treatment system, shall be notified prior to any work being performed in the vicinity of the collection trench. This LUC will terminate at such time as the NYSDEC informs the Arsenal that the groundwater treatment system will no longer be operated.

5.3 Controls for Preventing Soil Vapor Exposures

VOCs in soil and groundwater can partition to the vapor phase and subsequently migrate via diffusive and/or advective forces towards areas of lower concentration or pressure. In undeveloped areas, migration of vapor-phase contaminants is towards the ground

surface and into the ambient air. The presence of a building or other subsurface structure can provide an alternative diffusive 'sink' for vapor phase VOCs. Most vapor-phase intrusion occurs via cracks in masonry foundations, the annular space around incoming utility pipes, as well as shear, settling, or shrinking cracks that can develop over time within the foundation slab. In order to prevent potential exposures to vapors containing VOCs, any new buildings to be constructed at the Siberia Area will be equipped with vapor mitigation systems to be designed in accordance with NYSDOH guidelines, and subject to approval by NYSDOH.

6.0 Site Inspections

The Arsenal shall designate a responsible person to perform visual inspections of the Siberia Area once a month to ensure that the LUCs detailed above are properly maintained. The NYSDEC, NYSDOH, and USEPA shall be notified in writing if any deficiencies are noted, and all appropriate measures will be taken to correct deficiencies. The Arsenal shall submit an annual letter report to the NYSDEC, NYSDOH and USEPA confirming the continued retention of all LUCs.

7.0 Land Use Changes

The Arsenal will notify the NYSDEC, NYSDOH and USEPA in writing of any major land use changes that would affect implementation of the LUCs. The definition of "major change in land use" is as follows:

1. Any change in land use (e.g., from industrial to residential) that would be inconsistent with the exposure assumptions listed in the Siberia Area Exposure Assessment (Malcolm Pirnie, 1998b) and summarized in the Corrective Measures Study.
2. Any site activity that may disrupt the effectiveness of the implemented LUC.
3. Any site activity intended to alter or negate the need for the specific LUC(s) implemented at the Siberia Area.

8.0 LUC Management

In order to manage these LUCs properly, the Watervliet Arsenal will incorporate this document into existing land use planning and management systems routinely used for construction and planning activities. A copy of this document shall be inserted into the Installation Management Plan, and this document will be distributed to the Arsenal Department of Public Works and to the Real Estate Office.

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9.0 References

Defense Environmental Restoration Program Fact Sheet (2002), *Policy on Land Use Controls Associated with Environmental Restoration Activities,* February 2002.

Office of the Under Secretary of Defense Memorandum (2001), *Policy on Land Use Controls Associated with Environmental Restoration Activities* January 17, 2001.

Malcolm Pirnie (1998a), *Corrective Measures Study Field Data Report, Siberia Area, Watervliet Arsenal, Watervliet, New York*, October 1998.

Malcolm Pirnie (1998b), *Exposure Assessment, Siberia Area, Watervliet Arsenal, Watervliet, New York*, April 1998.