

COMMUNICATING POTENTIAL RISKS OF UNCONTROLLED SITE DEVELOPMENT AT A FUSRAP SITE

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ABSTRACT

This paper describes a particular risk communication challenge at the FUSRAP Maywood Superfund Site (the Site) in Maywood, New Jersey, USA. That challenge is communicating the potential human exposure risks of uncontrolled site development to landowners, tenants, private contractors and public works entities that may engage in construction activities at or adjacent to Site properties. This is of special concern because the Site does not have the authority to establish physical control over most of the properties where contamination is known or suspected to exist. Consequently, a range of communications techniques have been employed to alert property owners and others to the risks of uncontrolled site development. Each technique has its particular limitations, but collectively this multi-channel communication strategy has proved successful in delivering the risk message.

INTRODUCTION

The Maywood Site is being addressed under the Formerly Utilized Sites Remedial Action Program (FUSRAP), a federal initiative managed by the U.S. Army Corps of Engineers (the Corps). This program was created to identify, investigate and execute appropriate cleanup actions at sites with radioactive contamination from the nation's early atomic energy program. Environmental cleanup at these sites primarily involves removal of contaminated soil and building debris. Although the Maywood Site was historically a commercial operation and not part of the atomic energy program, it was added to FUSRAP because similar radiological contaminants are present. Shaw Environmental, Inc. is the Corps' prime remediation contractor at the Maywood Site. All Site activities are conducted in accordance with the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), more commonly known as the Superfund law [1] [2]. The U.S. Environmental Protection Agency (EPA) has regulatory authority for the Maywood Site, with consultation from the State of New Jersey Department of Environmental Protection.

Site Background and Current Status

The Maywood Site is located in urbanized Bergen County, New Jersey. It is 13 kilometers west of New York City. Properties impacted by Site contaminants are located in three communities: Maywood, Lodi and Rochelle Park. The combined population of these communities is approximately 40,000, with a population density of nearly 5,300 per square kilometer. This compares to New Jersey's statewide density of 705 per square kilometer (ranking the state first in the U.S.) and a national figure of 49.5 per square kilometer [3].

The primary contaminant of concern at the Maywood Site is thorium-232. Thorium is a naturally occurring radioactive element that was commercially extracted from monazite sand at the former Maywood Chemical Works (MCW) plant from about 1916 through the 1950s. The extracted thorium was then sold to other companies for use in the manufacture of industrial products such as mantles for gas lanterns. The chemical extraction process produced a sludge-like byproduct material that was pumped to disposal ponds or deposited in onsite burial pits. Some material was removed from the plant site for use as construction fill on nearby properties. The waste also migrated offsite through sediment transport in surface water.

In the early 1980s, environmental surveys associated with construction projects near the Site revealed the presence of radioactive material at levels above state and federal guidelines. The Site was added to EPA's National Priorities List of hazardous wastes sites in 1983, and subsequently assigned by the U.S. Congress to the U.S. Department of Energy (DOE) in 1984. DOE then placed the Maywood Site in the FUSRAP. Congress transferred responsibility for FUSRAP to the U.S. Army Corps of Engineers in October 1997.

A total of 88 properties have been identified as part of the Site, including residential, commercial and some government-owned properties. These are known as vicinity properties under FUSRAP. All 64 residential vicinity properties have been remediated in compliance with prescribed cleanup standards. The Corps is currently addressing the 24 commercial and government properties that remain. Figure 1 shows the former MCW property (the contaminant source and one of the Maywood Site vicinity properties) and the surrounding area which includes several other vicinity properties. The former MCW property now hosts an active chemical plant not associated with MCW.



Figure 1. A 1995 aerial view of the former Maywood Chemical Works site (center) and vicinity.

Most of the remaining commercial and government-owned vicinity properties house active businesses, ranging from retail properties to light industrial facilities to Fortune 500 company offices. As of this writing, FUSRAP remedial actions have been completed at fourteen properties and are underway at six others. Figure 2 locates all Maywood Site vicinity properties. While the scale of the Figure 2 map lends itself to highlighting whole property parcels, contamination is known or suspected to exist in discrete areas of the individual parcels.

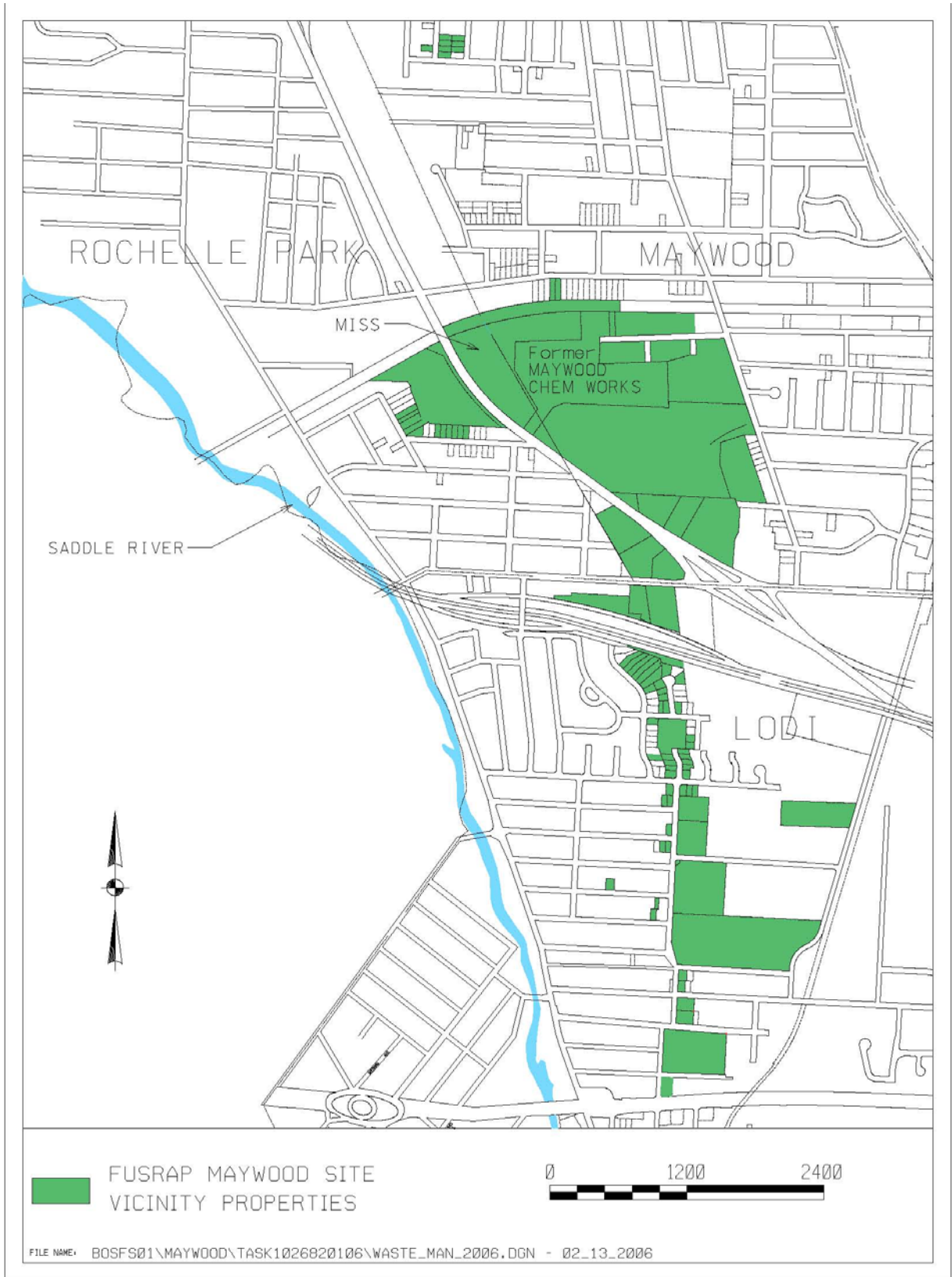


Figure 2. FUSRAP Maywood Superfund Site vicinity properties.

The Site Public Involvement Program

The FUSRAP Maywood Site public involvement program is designed to keep the public informed of Site activities in accordance with CERCLA, while also supporting the safe and efficient remediation of Site properties and minimizing impacts to property operations. The vicinity properties comprising the Site have gone through site investigation (or characterization), remedial design, remedial action (ongoing) and, in some cases, property closeout reporting since the Corps assumed responsibility for FUSRAP in 1997. The following are some of the primary public involvement techniques employed at the Site, including those implemented by the DOE during its management tenure. They are provided to give context to the specific public involvement challenge discussed in the next section.

- Established and maintain the Administrative Record document file
- Established a storefront Public Information Center
- Developed and maintain a community mailing list
- Established a citizens advisory groups (currently inactive)
- Distributed or made available periodic project newsletters to a community mailing list, at the Public Information Center, online and on request
- Provided periodic updates to local officials
- Conducted public information sessions and required public meetings at regulatory milestones
- Issued public notices as required; conducted media outreach as appropriate
- Prepared an update of the Site Community Involvement Plan
- Provided pre-remedial construction briefings to employees at affected properties
- Established a project website at www.fusrapmaywood.com

THE RISK COMMUNICATION CHALLENGE

Land-use pressures and an aging infrastructure in the FUSRAP Maywood Site area make property development and utility work a primary consideration for Site managers. Because there is virtually no open land available for commercial development, existing properties are commonly upgraded or expanded by their current owners or sold to new owners with new site requirements. These activities often include excavation or other site work that disturbs soil. In addition, many underground utilities in the area date from the post-World War II era, when rapid development was changing area land uses from agricultural and scattered residential/commercial to a traditional post-war suburban setting. Naturally, these older utilities require frequent repair

or replacement. Taken together, the development patterns and infrastructure needs in the Site area create conditions ripe for uncontrolled disturbance of FUSRAP soil contaminants. The challenge for Site communications and safety professionals, then, is to communicate the potential risks posed by these actions to property owners, public utilities and civil works agencies, and others who may be engaged in them.

Certain provisions of the FUSRAP Maywood Site Record of Decision are another factor contributing to the risk communication challenge. The ROD is the public document that explains the remedy selection process and describes the remedial action(s) to be used. Under the Maywood ROD, contaminated soil beneath active buildings, roadways and rail lines is considered inaccessible and therefore not subject to remediation. The ROD requires removal of this material if and when it is made accessible by actions of an owner, such as building demolition or road or utility work.

The primary human exposure risk from subsurface FUSRAP soil contamination is inhalation or ingestion of dusts generated during excavations. Layers of monitoring and engineered safety controls are established at active Maywood Site excavations to manage these fugitive dusts, and years of compliance data demonstrate the effectiveness of these measures. However, uncontrolled excavations can occur at properties where contamination is known to exist but remediation is yet to occur. Most of these locations are privately owned and host active businesses, and the Army Corps has no authority to install physical barriers such as fencing or signage to restrict access to contaminated areas. Consequently, a range of communications techniques have been employed to alert property owners to the risks of uncontrolled site development, principally excavation activities that may expose the public to Site hazards or cause releases of Site contaminants.

Communication Techniques and Their Effectiveness

Table 1 lists the communication techniques used to advise Site property owners and others of the potential risks of uncontrolled excavations in known or suspected contaminated areas. It also provides a largely subjective assessment of their effectiveness and limitations.

Table I. Communication Techniques and Their Results

Communication Technique/Audience	Effectiveness Assessment/Limitations
Reference maps posted on the project web site (see Fig. 3)	Recently posted, too soon to assess effectiveness
Joint information session (with Maywood Board of Health) for utilities and other public works agencies	Limited by attendance but followed up with direct mailing of session informational materials to utilities and agencies

Meetings with Site property owners and tenants	Effective but limited by internal communications of the owner (i.e., the risk message may not be carried back to all levels of the property organization)
Certified mail to landowners	Effective in documenting a “good faith” effort to communicate potential risks
Provisions in property access agreements between the Corps and landowners	Effective in that the risk message reaches key property decision makers (agreements are signed by owners, typically after attorney review)
Direct mailings to public utilities and other authorities that may perform excavations or issue excavation permits (i.e., building departments, public works agencies, etc.)	Effective (has resulted in several notifications of planned excavations) but also limited by internal communications of the target organizations
Display maps of risk areas provided to public utilities and other construction or permitting authorities (see Fig. 3)	Effective in their portability (i.e., can be displayed in multiple locations such as administrative offices and work shops as needed)
Direct contact with Site property employees during FUSRAP activities	Effective in reaching line level employees at Site properties (i.e., facility managers or maintenance personnel) who routinely interact with FUSRAP field crews

Figure 3 is an example of the maps referenced in Table 1. The Figure 3 map was made available online and distributed to local public works officials, and includes a prominent advisory on the potential risks of uncontrolled development. In addition, it clearly delineates the area of known or suspected FUSRAP contamination (including public roadways and active rail lines not subject to cleanup under the Maywood Site ROD) and includes specific language asking those planning excavations within the delineated area to contact the Army Corps of Engineers.

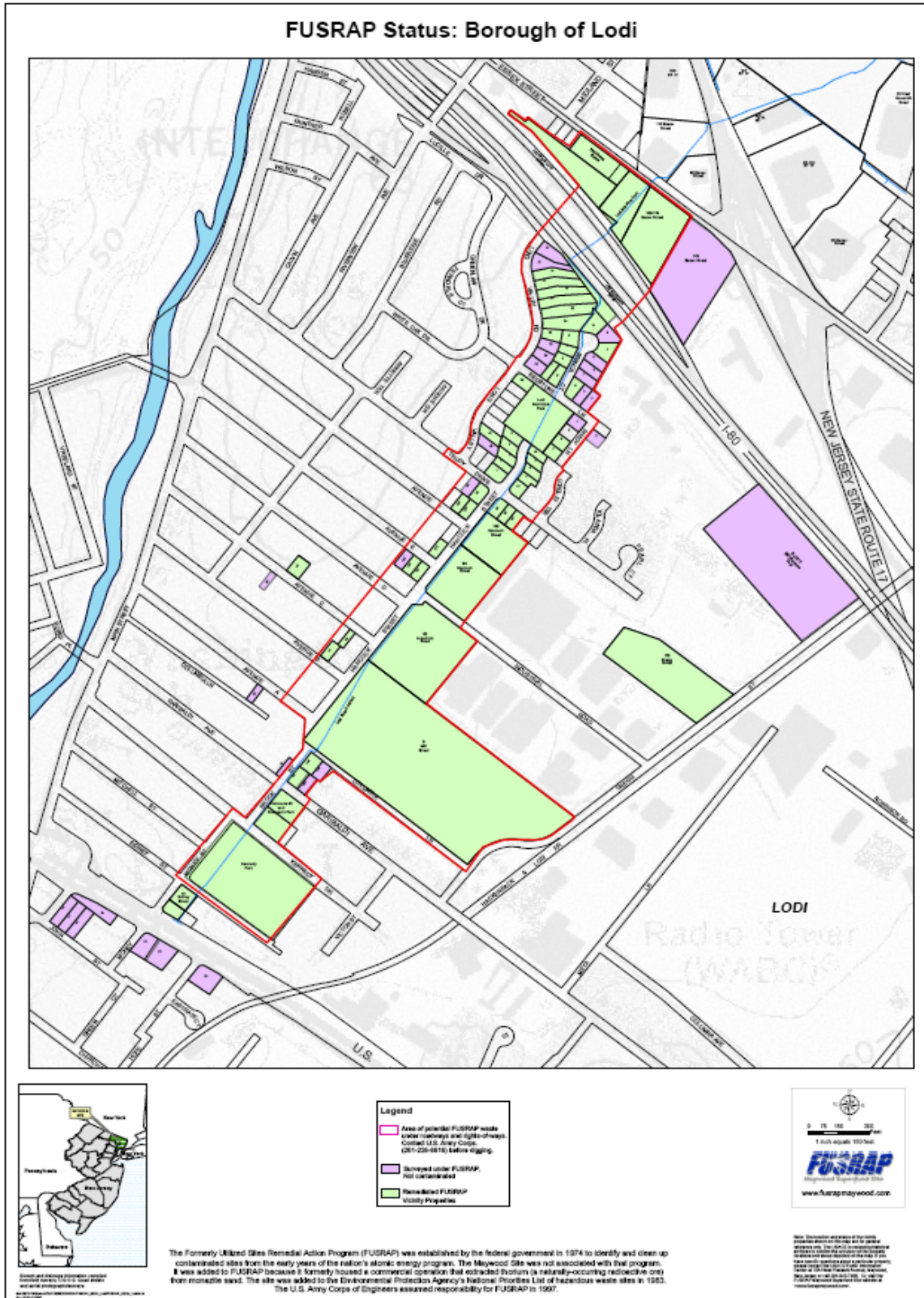


Figure 3. A “call before you dig” map posted on the Maywood project web site and distributed to local public works and construction permitting officials.

The communications techniques presented on Table 1 have generally had good results. In most cases, they effectively prompted their target audiences to notify the Corps of planned excavations on or near Site properties, allowing the parties involved to fully evaluate the safety requirements. This is typically accomplished through a careful stepwise process. First, FUSRAP Maywood safety professionals visit the site of the planned excavation. Historic project data for that location is then reviewed to assess the potential for encountering contaminated material. This data review either “clears” the area where excavation is planned or identifies a need for some level of site characterization or radiation safety control. In the latter cases, Site radiation protection technicians are typically assigned to screen soil with hand-held radiation detection instruments as it is being excavated. If the field screening survey determines that contaminated material is not present, the excavation can continue using standard construction safety practices. If the field screening determines that FUSRAP material is in fact being disturbed, the project and the landowner (or their agent) work together to assess options for safely completing the work and managing the material, taking into account schedule and resource availability of both parties.

However, there have been cases when the Site received no notice of planned excavations on or near Site properties, only learning of them informally (through conversations with employees, for example) or by observing them in progress. In these cases, project personnel immediately contacted landowners through established contact points or directly approached those doing the work, apprised them of the potential risks, and requested that they stand down while radiation safety needs were assessed.

Long-Term Communication Plan

The ability to communicate potential risks of uncontrolled excavations is greatly enhanced by the current status of the FUSRAP Maywood Site. Because property cleanups are actively underway, the FUSRAP Maywood project is a recognized presence in the community. Impacted property owners, employees, local officials and the public are generally familiar with the Site and have some understanding of its activities. Owners, employees, contractors and other visitors to Site properties observe cleanup activities in their daily routines and know how to contact Site personnel if needed. This familiarity serves to promote communication between landowners and Site staff with respect to property development plans. However, the Operation and Maintenance period that will follow active remediation at the Maywood Site will present a different risk communication challenge: how to prevent uncontrolled excavations absent a visible and active presence in the community. This challenge will be addressed by the long-term institutional and engineered controls listed below. These controls will continue to monitor the effectiveness of site cleanup and provide for ongoing communication with affected parties:

- Execution of a Land Use Control Implementation Plan to be developed by the Corps in coordination with owners, occupants, regulators, municipalities, utility companies, and

other interested parties to establish a layered program of administrative, institutional and engineered controls, including site-wide environmental monitoring

- Continuing existing access restrictions at government-owned properties
- Maintaining adequate cover materials including grass, structures and improved surfaces.
- Periodically inspecting all Site properties to identify land use changes that may cause releases of Site contaminants
- Obtaining deed restrictions on a property-specific basis, as necessary, to prohibit changes in land use or construction in contaminated soils
- Formal 5-year reviews (including property inspections) as required by CERCLA

A NOTABLE SUCCESS STORY

In late 2006, representatives from the Passaic Valley Water Commission (PVWC) contacted Maywood Site staff to discuss their need to repair a leaking 8-inch water line in the Borough of Lodi. PVWC is the water utility that serves Lodi and had previously coordinated with Site staff on utility issues during prior FUSRAP remedial actions in Lodi (a sidebar: a second water utility, United Water of New Jersey, serves Maywood and Rochelle Park, the other communities in which Site properties are located. This underscores the challenge of getting the “potential risk of uncontrolled development” message out to all audiences concerned).

The water line was located under Columbia Lane directly adjacent to a Maywood Site property with known contamination. Given this proximity and through their past coordination with Site representatives, PVWC was aware of the potential exposure risks to their workers from excavating at this location. Consequently, they contacted Site staff early in their planning process to assess these risks and explore ways to mitigate them. Following a series of field visits to the repair location, a detailed scoping meeting between key PVWC and Site staff was held at the Maywood Site project office in January 2007. PVWC described the scope of work for the repair, including their best estimate of the leak location, the anticipated depth and lateral extent of excavation required, and the schedule for the work. Site staff (including construction, engineering and radiation safety specialists) in turn offered an assessment of the potential risks to PVWC workers during the excavation, using historical Site data on the extent of contamination on both sides of Columbia Lane near the suspected location of the leak. This assessment concluded that the chance of encountering FUSRAP soil contaminants during the repair excavation was high. Given this likelihood, it was agreed that Site personnel would excavate the repair location to expose the leaking pipe, using all the worker protection, construction safety and soil management protocols required by FUSRAP. After the leak was exposed, a “clean haven” work zone would be created. PVWC contractors would enter that zone and complete the water line repair, backfill the excavation and repave the street. It was also agreed that PVWC would be responsible for notifications to nearby residents and local officials regarding the work. A schedule for the field work was also established.

Mobilization by the Site's field crew occurred on February 6. Initial tasks included traffic control, geophysical surveying, installation of temporary fencing and staging of a fractionation tank to manage potentially contaminated groundwater from the excavation. The pavement was then opened up and the underlying soil was removed to expose the leaking pipe. A clean work zone was established, after which PVWC contractors successfully and safely completed the repair. 186 cubic yards of FUSRAP contaminated soil was excavated during the work. Figure 4 shows the nearly-completed repair site and clearly demonstrates its proximity to a designated FUSRAP Maywood Site vicinity property.



Figure 4. This photo shows the site where FUSRAP remediation was undertaken to support repair of a leaking water line by a local utility. The fenced property behind the stop sign is a Maywood Site vicinity property.

This experience is an excellent model of how coordination between the Site and external organizations operating in the Site area can work. PVWC was aware that their planned repair posed potential occupational exposure risks; they notified the Site early in their scoping process,

allowing ample time to plan for the safe execution of the work; the work was conducted in a controlled fashion and completed in a timely manner.

CONCLUSION

Protection of human health is the first priority at any hazardous waste site cleanup. At the Maywood Site, subsurface radiological contaminants pose little or no risk in their current location as long as they are not disturbed. Risks come if the material is excavated or otherwise disturbed in an uncontrolled manner. Clearly, communicating and managing this risk is key to protecting human health. To that end, the FUSRAP Maywood team uses a range of communication tools at its disposal to reach affected landowners and others who may undertake excavations on or adjacent to Site properties. Individually, these tools all have limitations in that they may not reach all audiences who may be planning excavation work, or do so in a sufficiently timely manner. However, taken together, the strategy of using a range of communication channels to reach multiple audiences has proved to be effective. It has alerted Site managers to planned excavations before they occur, allowed for successful coordination with the parties undertaking them, and resulted in their safe execution.

REFERENCES

1. United States Environmental Protection Agency. 42 U.S.C.9601 et seq., *Comprehensive Environmental Response, Compensation and Liability Act* (1980).
2. United States Environmental Protection Agency. 42 U.S.C.9601 et seq., *Superfund Amendments and Reauthorization Act* (1986)
3. United States Department of Commerce, U.S. Census Bureau. *2000 Decennial Census, various data sets*. April 2000.