

An Uneasy Rebirth at **LOVE CANAL**

By Andrew J. Hoffman

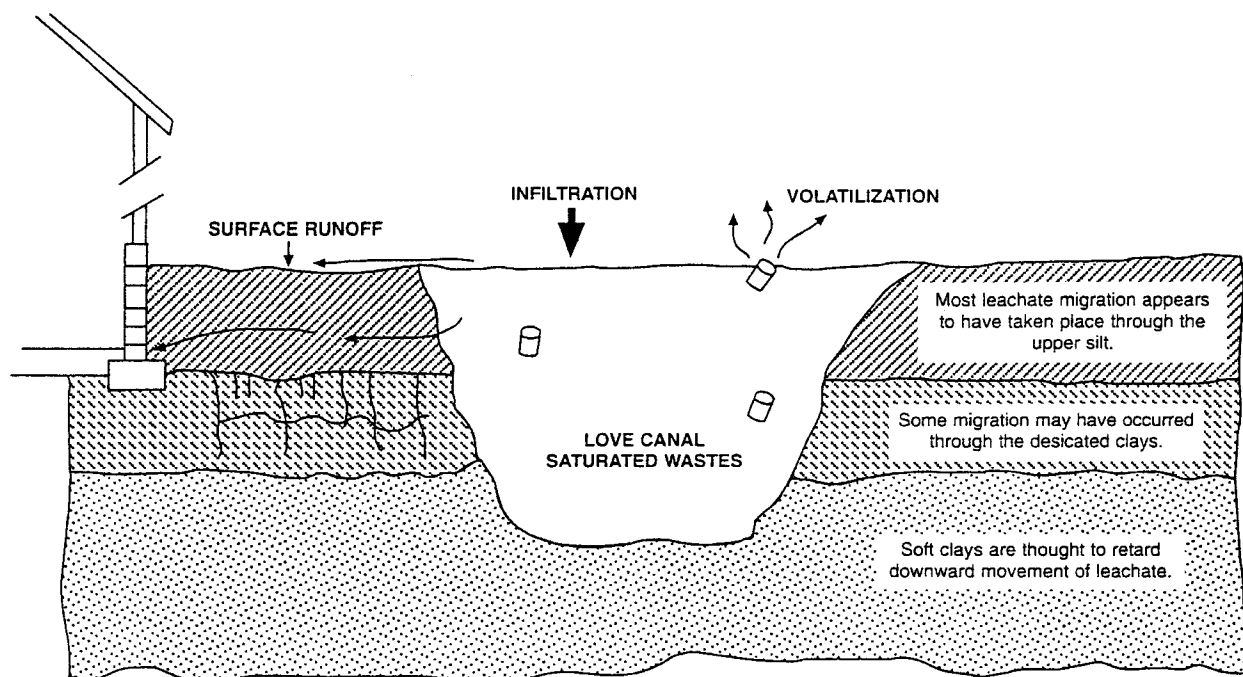
The lasting success of a Superfund cleanup lies not only in the technical aspects of the remediation process and in the compensatory aspects of the legal process but ultimately in the social aspects of the rehabilitation process. Achieving “beneficial reuse” at New York State’s Love Canal—that is, returning the remediated site to its original capacity of sustaining a hazard-free environment—is proving to be a difficult and uncertain goal. The technical solution and the follow-up health study have been critical hurdles to overcome in returning the Love Canal neighborhood to normalcy, but it is the residents’ perceptions of safety that present the more difficult challenge.

After nearly 10 years of cleanup efforts at Love Canal and a final determination of habitability by the New York Department of Health (NYDOH) in 1988, the New York Department of Environmental Conservation (NYDEC) and the U.S. Environmental Protection Agency (EPA) embarked on a controversial program to redevelop this once-thriving neighborhood and to move families back into the long-abandoned houses. But the certainty of safety seems far from clear when the authority of “expert” scientific results and the whims of personal opinion have equal weight. One local resident has said that the issue boils down to whether one believes the government’s determination of or the public’s perception about what is safe.¹

For every resident who fears the potential dangers at Love Canal, another believes they do not exist. The executive director of the Love Canal Area Revitalization Agency (LCARA), Harvey Albond, for example, has said that there is no reason the houses at Love Canal should not be sold, “other than to satisfy the questionable motives” of people who are against the sales.² He does not argue that the 239 homes that once bordered the canal and now lie beneath the landfill cover should not have been condemned,

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FIGURE 1. Schematic of chemical escape from the Love Canal.



Not to scale

SOURCE: New York State Department of Health, *Love Canal Emergency Declaration Area: Proposed Habitability Criteria* (Albany, N.Y.: NY DOH, December 1986), appendix 6, p. 12.

but he does say that the remaining 492 homes should “never have been acquired and evacuated.”

Such differences of opinion among individuals will determine whether efforts to achieve beneficial reuse at Love Canal will be successful. In fact, the issue is no longer simply “how clean is clean” but rather “how safe is safe?” The risks of living next to a hazardous waste site, even one as notorious as Love Canal, are like the risks posed by smoking or eating high-cholesterol foods: They all involve an individual’s perceptual threshold for risk. Regarding Love Canal, these perceptions will decide the success or failure of the rehabilitation effort and therefore the entire cleanup process.

History of Love Canal

The history of Love Canal dates back to the 1890s when entrepreneur William T. Love began digging a canal

to connect the upper and lower Niagara River to provide cheap hydroelectric power for his industrial “city of the future.” Economic hard times and the advent of alternate current—which allowed power to be transmitted over long distances, thus eliminating the need for an industrial plant to be situated near its power source—derailed his efforts, and he abandoned the canal. Local residents used it as a swimming hole until 1942, when it was bought by Hooker Electro-Chemical Company (which was acquired by Occidental Chemical Corporation in 1968). Between 1942 and 1953, Hooker dumped 21,800 tons of toxic chemical wastes on the site. These wastes included more than 13 million pounds of lindane (benzene hexachloride), more than 4 million pounds of chlorobenzenes, and 400,000 pounds of dioxin-contaminated trichlorophenol, all highly carcinogenic compounds.³ In total, at least 200 different

chemicals have been identified at the site.

In 1953, under pressure from the City of Niagara Falls, which was trying to accommodate a rapidly expanding population, Hooker covered the wastes with a protective clay cap and sold the 16-acre parcel for \$1 to the city school board. (A stipulation in the deed warned that hazardous chemicals were buried at the site. Whether this warning constitutes a release of liability for the company has been long debated in the courts.⁴) The 99th Street Elementary School was built on the center of the landfill in 1954, homes were constructed around it, and roads and sewer lines crisscrossed the property. Although these activities disrupted the clay cap covering the wastes, allowing the chemicals to begin migrating, the disruption that made the situation a visible crisis was the construction of the LaSalle Expressway along the canal’s southern end in the

1960s. The expressway blocked the groundwater from migrating to the Niagara River, and by the mid-1970s the chemicals that Hooker had buried 20 years earlier rose to the surface.

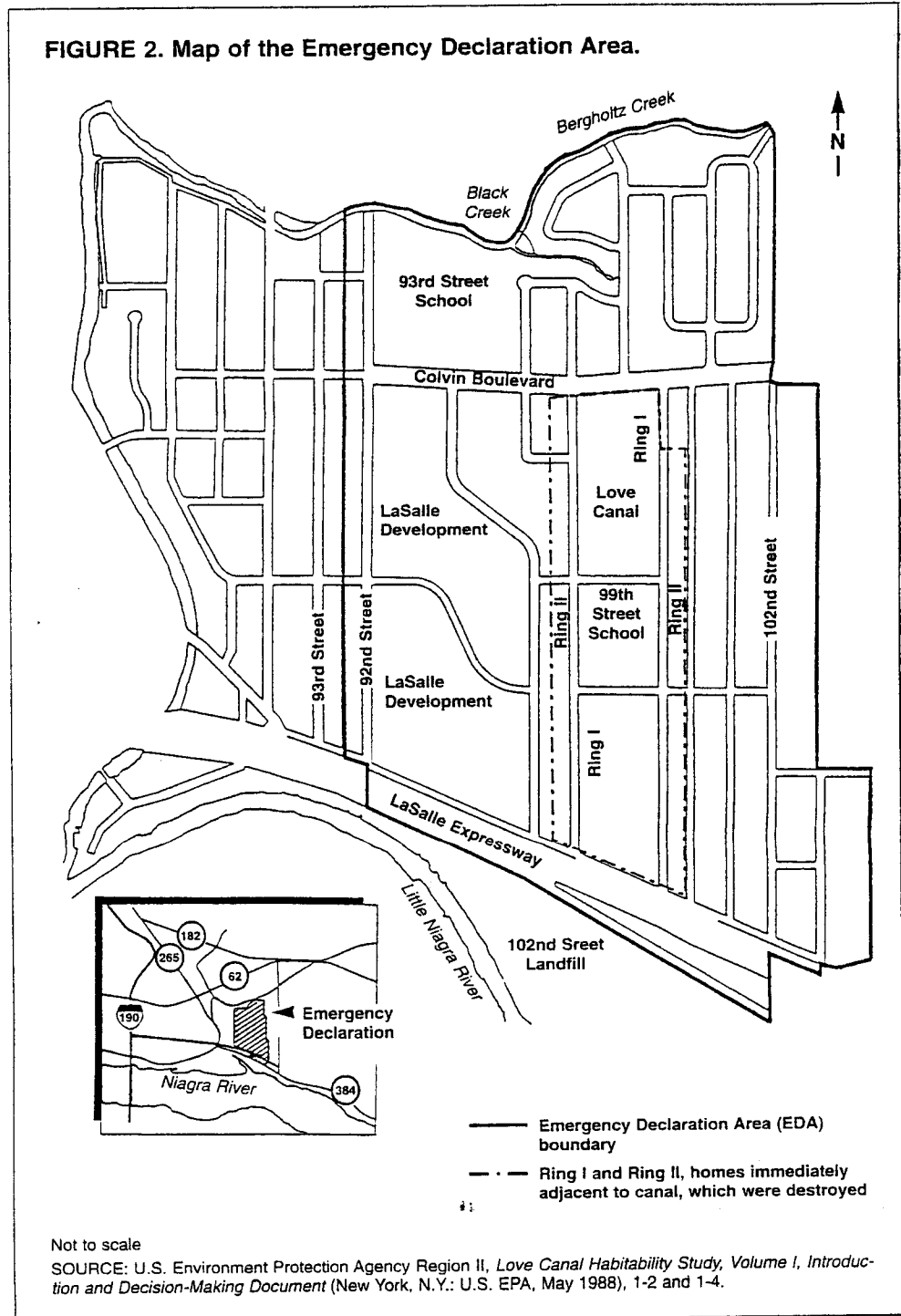
The specific dynamics of the interaction between nature and the expressway construction are interesting to note. A layer of low-permeability clay surrounds the lower sides and bottom of the landfill, and the upper five feet is composed of silt, through which groundwater can easily migrate. The direction of the migration occurs naturally southward toward the Niagara River. With the construction of the expressway, groundwater became trapped, its passage-way blocked. In what became known as the "bathtub" effect, groundwater and rainwater built up and overflowed the clay basin in which the waste sat, thereby carrying contaminants through the upper silt layer and along recently constructed sewer lines into the basements of houses situated to the east, west, and north (see Figure 1 on page 6).

What followed was a nightmare for local residents⁵ and an education for the country. The federal government responded to the chemical bathtub overflow with a series of weak-willed efforts. It was the actions of the Love Canal Homeowners' Association—led by Lois Gibbs, a local resident who organized neighborhood protests—that brought national attention to the situation. On 7 August 1978, President Jimmy Carter declared the nation's first federal emergency for a nonnatural environmental disaster. The same day, New York Governor Hugh Carey arranged for the 239 homes closest to the canal to be evacuated, purchased, and

destroyed. (Homes across the street were deemed to be safe and left standing.) Despite these efforts, the residents continued to panic. In May 1980, a group of homeowners took two EPA officials hostage for five hours to pressure the government into carrying out further evacuations. Two

days after this incident, Carter issued a second emergency declaration, offering federal funds to buy 564 more homes in what was designated the Emergency Declaration Area (EDA)⁶ (see Figure 2 on this page). Residents of all but 72 of the 564 homes chose to move.⁷

FIGURE 2. Map of the Emergency Declaration Area.



Based on the experience at Love Canal and the perception that the nation's hazardous waste problem could be easily resolved—initial studies had concluded that between 1,000 and 2,000 sites nationwide needed remediation at a cost of between \$3.6 and \$44 billion⁸—the Comprehensive Environmental Response, Compensation, and Liability Act (or Superfund) was signed into law on 12 December 1980.

The Cleanup

Since the evacuations at Love Canal and the initiation of federal and state government cleanup programs, more than 10 years of remediation efforts have been targeted at containing the waste in the landfill. Beyond the landfill, cleanup of the EDA included the decontamination of the area's storm sewers, the dredging of 3,000 feet of creekbed contaminated from rainwater runoff; the return to the landfill of 11,000 cubic yards of contaminated soil at the neighboring 93rd Street

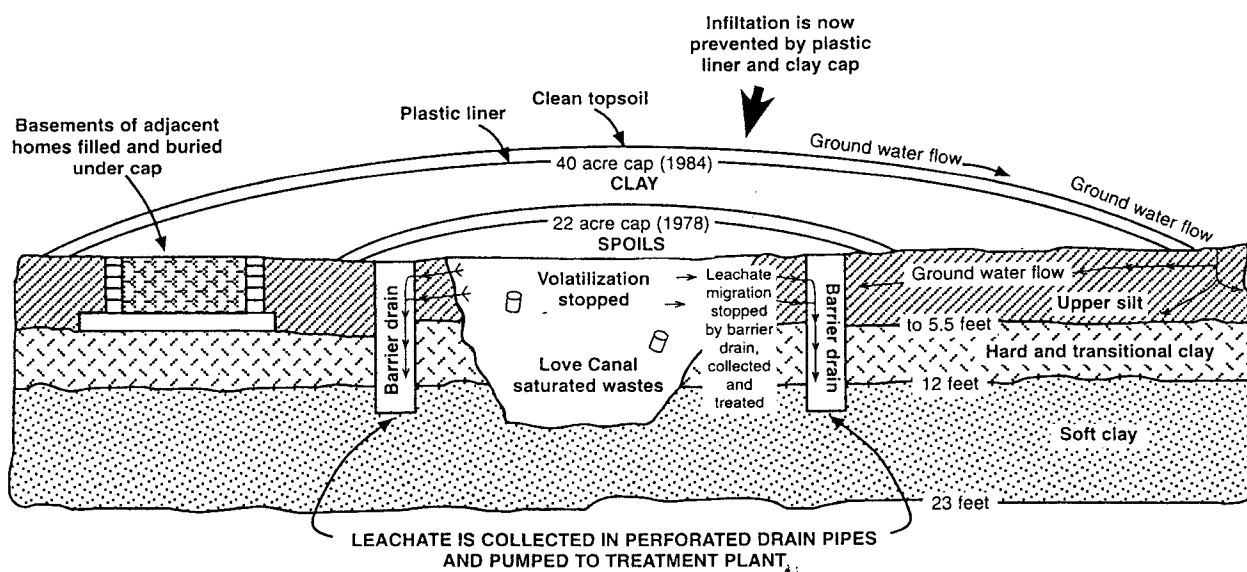
Middle School that was transferred there as fill by the city in the 1960s; and the excavation of lesser amounts of soil from three contaminated "hotspots" that were created when former owners stole fill from the canal before the problem was detected.⁹ No homes—other than the 239 homes that were destroyed—were decontaminated, a fact that alarms those who see unmitigated dangers but not those who say the cleanup was blown out of proportion in the first place.

Today, the landfill spans 40 acres and is surrounded by an eight-foot chain link fence with evenly spaced signs warning: "Danger. Hazardous Waste Area. Unauthorized Personnel Keep Out." Hundreds of orange groundwater monitoring wells poke through the surface of the landfill, while buried beneath that surface is a system designed to keep the untreated 21,000 tons of waste (as well as the remains of the 239 demolished homes and the 99th Street Elementary School) in place for an undetermined time (see Figure 3 on this page). The

40-acre cap, installed in 1984, is a thick layer of clay topped with a high-density polyethylene membrane. Underneath that is a 22-acre cap, which was hastily installed in 1978 as a stop-gap measure. These two caps are supposed to prevent rainwater infiltration from above. The subsurface movement of wastes is to be prevented by the natural bank of low-permeability soft clay upon which the landfill rests. And finally, to stop the lateral migration of wastes, a barrier drain system surrounds the landfill, directing any migrating leachate to a carbon treatment system.¹⁰

According to Susan Bloss, a community relations consultant to EPA, this simple capping system was used because the permanent removal of wastes at Love Canal would be nearly impossible using current technology. She stated that incineration—the method used at the Times Beach, Missouri, waste site—would have been the preferred method at Love Canal. However, unlike the contaminant uniformity of the Missouri waste (dioxin-

FIGURE 3. Schematic of how the chemicals are contained by the remediation.



Not to scale

SOURCE: New York Department of Environmental Conservation, *Love Canal Inactive Hazardous Waste Site: A Remedial Chronology* (Buffalo, N.Y.: NYDEC, January 1992), 4.

laced oil), the chemical "soup" at Love Canal makes it extremely difficult to achieve the required 99.9999 percent destruction efficiency required by Superfund¹¹ (see the box on this page). Containing Love Canal's wastes on-site offered the most advantages, both economical and technical, Bloss said.

Despite these advantages, the containment measures at Love Canal are not a permanent solution and will require continual, possibly perpetual, maintenance. The trench drain for collecting migrating leachate that surrounds the site must be monitored for settling or clogging; the treatment system that removes contamination from that leachate requires ongoing operational upkeep; and even the polyethylene landfill cap, which was installed in 1984 and comes with a 20-year warranty,¹² will have to be periodically repaired and possibly replaced.

By 1990, NYDEC had completed most of the technical aspects of the cleanup, although isolated work continued. The 93rd Street School underwent remediation until 1992, and the three hotspots were still being remediated in 1993.

The Health Study

In 1988, NYDOH published the results of its health study on whether the Love Canal neighborhood was habitable.¹³ The study reached a controversial conclusion: 234 of the 492 abandoned homes were deemed fit for habitation and the remaining areas suitable for commercial, industrial-type development where exposure to contaminants had been lessened. This conclusion was based on a data comparison for the Love Canal neighborhood and other areas near Niagara Falls—not on a standard risk assessment or an illness incidence study. Commercial development, according to Bloss, was deemed appropriate because, "although [concentration levels] may be bad for continuous 24-hour exposure, in commercial use it would only be exposure for 8 hours a day. No one

SOME WASTES ARE HARD TO BURN

At one point during the cleanup of Love Canal, a Canadian company was brought in to use its mobile plasma arc incineration technology to destroy the waste on site (as opposed to trucking it to a fixed commercial facility). Unfortunately, the company was unable to achieve the EPA-required 99.9999 percent destruction efficiency in their trial run and was not allowed to continue waste destruction.

Plasma arc incineration is one of several types of thermal treatment (others are pyrolysis, vitrification, and rotary kiln); it uses high temperatures ranging from 2,500° to 3,000°F to break down hazardous wastes into less harmful compounds.¹ Complete combustion of the feedstock produces carbon dioxide, water vapor, sulfur dioxide, nitrous oxide, hydrochloric acid vapor, and ash. Flue gases from most thermal processes must be treated before emission into the atmosphere. This secondary treatment is usually performed through a series of scrubbers and/or filters. Thus, high-temperature thermal treatment creates hazardous waste in the form of scrubber liquid or filter dust as well as combustion ash, all of which must be landfilled or treated again. For most thermal destruction technologies, the feedstock must be of consistent composition because reactor conditions—temperature, pressure, and residence time—must be set to certain conditions based on the waste composition. If these conditions are not set properly,

incomplete combustion of hazardous waste constituents can cause other toxic by-products.

While the advantage of incineration is that long-term liability is eliminated by having the waste removed and destroyed, there are three distinct disadvantages of this method:

- It is extremely expensive, costing as much as \$1,000 per ton because the waste material rarely has a BTU (British thermal unit) content high enough to sustain combustion and a supplementary fuel such as natural gas or oil needs to be added to completely destroy the waste;
- It exposes workers to hazards from excavating the waste; and
- It has the potential to emit hazardous gases both through fugitive and stack emissions.

Due to the insecurities over emissions quality, this technology has been the focus of intense public opposition and permitting difficulties. Countless attempts to site both fixed commercial and temporary mobile incinerators have been thwarted in the last 10 years.

1. A. Hoffman, "The Hazardous Waste Remediation Market: Innovative Technological Development and the Market Entry of the Construction Industry," CCRE Working Paper 92-1 (Cambridge, Mass.: MIT, Department of Civil Engineering, 1992).

will be doing any gardening. The area will be blacktopped over."¹⁴

A standard risk assessment—which involves analyzing the contaminants present, the potential pathways of exposure, and the probable health hazards to inhabitants—was rejected for three reasons. First, identifying and quantifying all toxic contaminants in the air, water, and soil at Love Canal would be difficult. Although more than 200 contaminants have been identified, many early Hooker manifests simply list "miscellaneous wastes," which compounds the uncertainty because chemical reactions could have occurred in this complex mixture to create even more contaminants. Second, even if information on

the specific contaminants brewing underground were available, not enough toxicity data exist to predict the effect on humans to exposure to the contaminants, particularly in a chronic residential setting. And third, the risk assessment process uses data that might need to be revised as new research is performed and new data emerge. This, some argue, would necessitate even more studies with the advent of even more new data.

A study of the trends in the incidence of health conditions related to the landfill was also rejected because of the small population sample and the long-term latent aspects of health effects from chemical exposure.¹⁵

(continued on page 25)

Love Canal

(continued from page 9)

The approach chosen for the habitability study consisted of two phases. In the first phase, existing state or federal standards regarding acceptable residential chemical exposure levels in the air, soil, or water served as criteria for habitability. Only one existing guideline—dioxin in soil—was considered appropriate. The second phase involved comparing the concentrations of a list of specific “indicator chemicals” detected in the air and soil at the Love Canal neighborhood with those of four similarly inhabited communities in western New York that were not near a chemical waste site. Initially, comparison areas were to be located one mile from the nearest waste site, but because so many known chemical waste sites exist in the Niagara Falls/Buffalo area, no suitable sites were found; the distance was thus shortened to one-half mile.¹⁶

The results of the study showed that the contaminant concentrations in the EDA were equal to or less than the comparison areas, so the neighborhood was deemed suitable for habitation. Based on soil dioxin concentrations, however, the area east of the landfill (defined as EDAs 2 and 3) was considered uninhabitable due to dioxin concentrations above the 1 part-per-billion (ppb) limit that the Centers for Disease Control and Prevention considers safe for residential exposure. Oddly enough, the high concentrations in this area were found in the study to be caused by air deposition during the active period of the landfill and not by groundwater migration created by the “bathtub” effect. Because it was determined to be too expensive to excavate and incinerate the layer of contaminated soil in this area, the 1 ppb threshold was deemed acceptable for industrial use by both NYDOH and the Centers for Disease Control and Prevention. The houses in the neighborhood are to be destroyed, and the area is to be rehabilitated as an industrial park,

with office and manufacturing buildings constructed where houses once were.¹⁷

Twenty-three families live in the 175 homes in the area slated to become the industrial park. Rather than forcing these families to relocate, LCARA has offered to let each of them swap their home for one in the habitable area. Three families have accepted the offer. One resident who did so has said that he felt he had no choice: “My area wasn’t going to be rehabbed. . . . Everything I had went down the drain. Now, at least my home will be increasing in value.”¹⁸ The rest will not be forced to go, leaving the timetable for the proposed transformation uncertain.

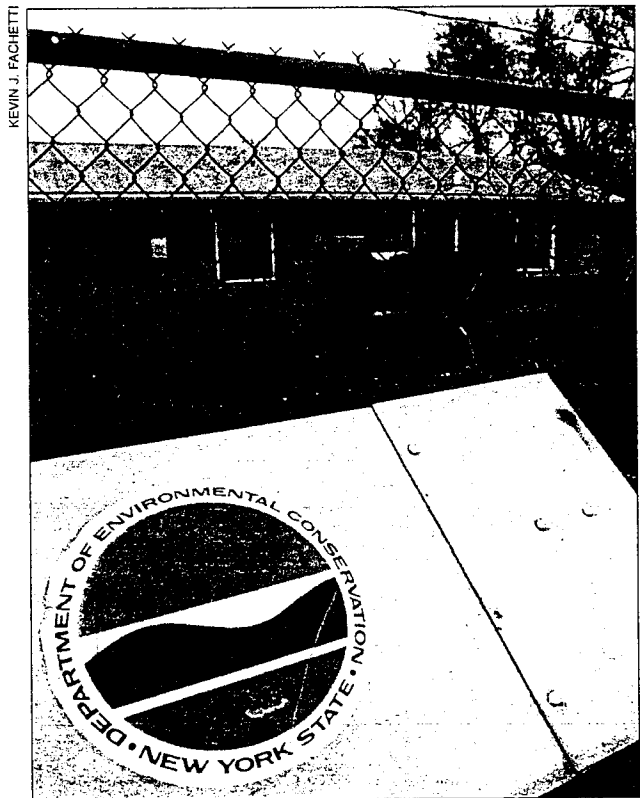
The Sales Pitch

LCARA’s Albond sees Love Canal’s history as a potential asset in enticing companies to the area: “From a marketing point of view, it might be highly attractive to environmental-type companies to come back to ‘Love Canal Industrial Park’ . . . the most identifiable name in the environmental field.”¹⁹

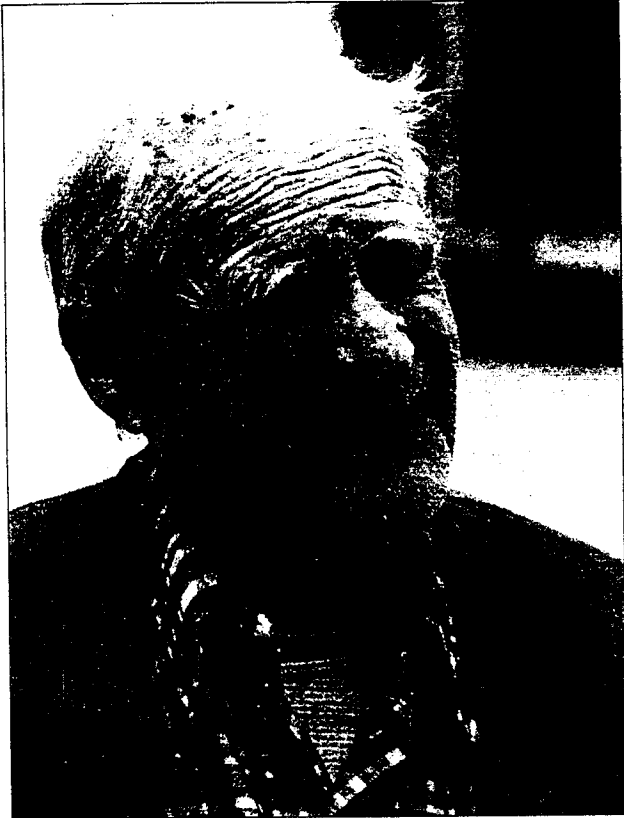
The 234 homes north and west of the landfill, in an area now called Black Creek Village, are being sold to the public. LCARA has been renovating the homes and offering them for sale at prices 10 to 15 percent below market value, ranging from \$14,000 to \$81,000, with an average price of \$53,000.²⁰ Buyers must agree to two clauses in the purchase and sale agreement: to keep the house owner-occupied and to acknowl-

edge having received six LCARA-provided documents on Love Canal’s cleanup and health study. These documents are an aerial photograph of the Love Canal area; NYDOH’s 1988 decision on habitability; NYDOH’s fact sheet concerning the habitability decision; a question-and-answer document about habitability, also prepared by NYDOH; a review of the 1990 habitability study by then EPA Administrator William Reilly; and a copy of an article on Love Canal.²¹ The agreement does not contain an indemnity, or “hold-harmless,” clause against the government, although it does explicitly deny any government warranty or representation of habitability.

Lenny Rinallo, who became LCARA’s first sales agent in 1990, expressed his views about selling these homes: “If I wouldn’t move in, I wouldn’t be selling them to other people. . . . The area they are selling [in] was never proven [to be] contaminated. My job is to put their minds at ease.”²² He stops short though of



Air-monitoring equipment showed that high dioxin levels in some areas were caused by air deposition from the landfill.



KENNY J. FACHETTI

Long-time resident, George Cook, has lived in Love Canal for almost 30 years. He dismisses the costs and issues of cleanup as "just silly."

assuring the potential buyers of a safe environment: "I wouldn't say there's no risk. We just make a disclosure [of the data]." Since the houses went on the market in August 1990, 91 have been sold and 70 have committed buyers. LCARA officials expect the remaining houses to be sold by the end of 1996. This is the goal, although the rate of sales suggests they will all be sold before then.

Lois Gibbs—who was instrumental in bringing Love Canal to national attention—thinks that the financial enticement to attract home buyers is an unfair ploy to get less-wealthy people to assume an unacceptable risk.²³ With legal support from the Natural Resources Defense Council (NRDC), the Sierra Club, and four other environmental organizations, she tried unsuccessfully to stop the sale of the houses on the grounds that the health study was not a legal risk assessment. But in defending the decision not to use a standard risk assessment, EPA

consultant Bloss stated that there was not enough information to do a risk assessment. "We just don't know enough about low-level chronic exposures," she said.²⁴

On 14 May 1990, EPA Administrator Reilly stated in a letter to Gibbs that "the Love Canal Habitability Study was conducted in full compliance with the law."²⁵ But according to NRDC attorney Jim Simon, "[Reilly] said it was okay, but not that a risk assessment was done. All other [Superfund] sites have to do a risk assessment, but at this one they said it was too difficult.

That doesn't make sense."²⁶

Whereas Simon sees semantic side-stepping, Gibbs charges an ulterior motive: "By Love Canal becoming habitable, without a residential exposure limit, they are setting those standards through the back door. Although we still may not have a standard set, government and industry can look to Love Canal and say that people have accepted a certain risk in this area."²⁷

Rehabilitating the Neighborhood

Even though houses are being sold and Love Canal's uneasy rebirth is under way, the anxieties, fears, and uncertainties of those most affected must be addressed before the area's beneficial reuse can be considered a success. The directly affected at Love Canal include people who stayed in the neighborhood despite the government's evacuation order, who were evacuated, who live beyond the evac-

uation zone and were not part of the evacuation effort, and who have bought one of the LCARA homes. Not only do the perspectives of these people concerning the safety of the area vary widely, no clear consensus exists among them on the rationale to use for making such an assessment.

The Affected Speak Out

Interviews of the people affected illustrate various perspectives on the situation at Love Canal. Many, but not all, residents who rejected the 1980 buyout offer and stayed in the neighborhood have refused to be interviewed by the press. In fact, the scrutiny that these people endure includes not only requests for interviews but also tour buses that cruise their streets. To signal their distaste for this sight-seeing, some residents fake limps and twitches as the buses pass by.

Many who stayed at Love Canal did so because they thought the evacuation order was unnecessary; some were older residents who thought the health risks did not merit emotional and financial uprooting; most now think that the government's response to their situation was inept and that the media fueled the disaster by focusing national attention on Love Canal's contamination to satisfy their own environmental agendas.

One long-time resident who reluctantly agreed to be interviewed for this article was 89-year-old George Cook.²⁸ Cook lives in the same house that he had lived in for almost 15 years before Love Canal's contaminants bubbled to the surface. His house is surrounded by boarded-up houses; many have been vandalized, some are missing garage doors and aluminum siding, while graffiti mars others. Sidewalks are cracking and sinking.

Cook dismisses the costs and issues of the cleanup as "just silly." With a 12-inch stack of Love Canal information resting next to his chair (he says he throws out inches of documents from LCARA each week), he explained his rationale for staying: "The authorities came in here and

made the rules. But they didn't know what they were doing and they paid big money for nothing." He recalled that residents who were temporarily housed in hotels before the decision was made to evacuate would return during the day to mow their lawns and clean their houses, "like they were only contaminated at night." He also described how government officials, covered from head to toe in white "moonsuits," took samples from sewers while children—not similarly clad—peered over their shoulders to see what they were doing.

Cook was equally skeptical about the health study that has found his neighborhood uninhabitable due to elevated dioxin levels. "Now they say it's uninhabitable, like the wind just blows over here. The dirt over here is just as good as the dirt over there, and there are more hotspots over there. This was such a fuss about so little." He does not intend to move, despite LCARA's intentions to bulldoze his house for the industrial park.

LCARA's Albond shares Cook's sentiments regarding the safety of the area in which houses are being sold. He does not hesitate to show the houses to would-be buyers, seeing the risks as "psychological, not real."²⁹ Also concurring with Cook is Michael Podd—who, until 24 March 1993, ran an NYDEC public information office from one of the site's abandoned homes.³⁰ He said there is "no environmental reason not to buy a house at Love Canal. The risks are the same [there] as anywhere else in Niagara Falls."³¹

Podd's words lay bare a critical point in the contention over the health study: Exactly how safe is the rest of Niagara Falls? The banks of the Niagara River are lined with chemical industry manufacturers, such as DuPont, Occidental, and Olin. Some feel their century-long presence may have left untold environmental problems throughout the region.

Reverend Charles Excell serves the community displaced by the cleanup. The original church for his parish,

which is across the street from the canal, is boarded up and painted with the words "lead and mercury here." In tending to what he sees as an unusually high number of cancer patients, Excell thinks the contamination and chemical exposure problem at Love Canal will continue. The commercial landfill behind the high school increasingly dominates his concerns. "Come here during the summer when the wind is blowing," he said. "It's not the chemical plants anymore. It's stuff like that landfill. Sometimes people won't go outside because of the air."³² The landfill, operated by CECOS (Chemical Environmental Conservation Systems), can no longer be used for hazardous waste because its permit

cer.³⁴ When asked if she blames the contaminants at Love Canal for her cancer, she answered, "There's so much junk in the food, the air. You just don't know."

Long-time residents of the Love Canal neighborhood are not the only ones who express this fatalistic attitude toward pollution; new residents do, too. According to Leon Demers, who recently bought a LCARA house with his wife Marie, "For ten years I wanted to buy this house. It never scared me." The financial incentives clinched his decision to buy it: "I wanted this place because of the price. . . . I used to live [across town] on Whitmore Road. We had a bigger dump over there."³⁵ Although the house



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to do so has expired; it is now utilized for disposal of ash generated by a local waste-to-energy facility.³³

Excell's comments reflect the "fatalistic attitude about pollution" that he sees in his community. During the interview, for example, a parishioner stated that she lives downstream from the canal and that she has can-

across from Demers is occupied, the rest of the houses on the street remain abandoned. A neighboring property is one of the three "hotspots" undergoing remediation, and Demers—in spite of the informative documents he received before finalizing the purchase—knows little about why it has been carefully stripped of the top foot of

soil, which the original owner had stolen from the landfill before the contamination was identified.

Another resident who sees the resettlement as a good idea is Joan Gaetano, whose house was one of the 239 that were destroyed. "At first," she said, "I was dead set against it. We toured the homes when they first went up for sale. I still don't like the idea. But it's hard to separate the experience [of the evacuation] from what it looks like now."³⁶ In recalling the evacuation, she said, "I got a call from Albany at 8:30 on a Friday night. An

written about the revitalization efforts."

Another former evacuee, Patrick Monti, says that he would consider moving back to the Love Canal neighborhood if he "was looking for that type and price [of home]." He said he felt sad about leaving his home, the basement he had renovated, and the garage he had built. But, he stated, "If I had kids, that might change the issue." One irritating legacy Love Canal has left him is that every time he is not feeling well, his friends and family point to Love Canal. Monti

clusion [after the government tested their water] that it is."³⁸ He also said that when he thinks of buying a home, he is tempted to buy in Black Creek Village.

Rehabilitating the Community Beyond Love Canal

It is not only the attitudes of people in the immediate Love Canal neighborhood that have been affected by the contamination; the entire city has been affected. Some people in the surrounding neighborhoods blame the "hysterical Love Canal people," not Hooker (now Occidental), for ruining the reputation of Niagara Falls. Many residents, who remember the prosperity and jobs that Hooker brought to the area, blame the city and state governments for disrupting the canal, and the U.S. Department of Defense, which they think also dumped waste there. Excell is one of them: "Occidental took the brunt of it and was called the bad guy. But the government was dumping long before Occidental. Many have a strong feeling that somehow the government is getting off the hook." As for the chemical companies, Excell lauds their efforts to give something back to the community and cites the neighborhood baseball field that Occidental recently had built as an example.

Thomas Jennings, Occidental's vice president of environmental affairs, has said that, despite Love Canal, his company's 90-year relationship with the community remains solid. Company retiree meetings draw between 700 and 800 local people, and 1,800 local residents are currently on the payroll. According to Jennings, these numbers show that Occidental is not just "that chemical company over there" to many locals. "In my dealings with community leaders and the state and the federal governments," he said, "I don't find any residual rancor."³⁹ These community relations have developed as a result of Occidental's concerted efforts, Jennings said, adding that he and the entire Occiden-



KEVIN J. FACCHETTI

Joan Gaetano, whose home was one of the 239 that were destroyed, would like to see the community returned to normalcy.

official told me to vacate my home. He didn't say where to go, just get out." And she did, as did hundreds of others who fled to local motels during the evacuation. Now, however, Gaetano said she would like to see the area rehabilitated so that the community can return to normalcy; she expressed concern that "no one [in the press] has

said, "You think about it, but then you go on. What can you do?"³⁷

Reverend David Sifford also had reservations when he accepted his new parish just west of the EDA in 1992. "At first," he said, "we—my wife in particular—had apprehensions about moving here. 'Is the water safe?' we asked. We have since come to the con-

tal staff have been joined in this effort. In fact, a company employee brochure states, "The best way that past and present employees can help is to tell friends and neighbors the facts about Love Canal . . . to let others form their opinions from the facts rather than the myths."⁴⁰

Occidental has also tried to strengthen community relations by establishing advisory panels through which local residents can participate in company decisionmaking on any operations affecting the community. Jennings points out other changes in the company, such as its more aggressive stance on getting the remedial process settled and its establishment of a new pollution minimization program that looks for new ways to reduce the amount of hazardous pollutants created in the company plant processes.

When questioned about the cleanup process, Jennings stated that it takes too long: "Given the regulations, one should think it would take 48 months from identification to cleanup. Our average time is 120 months." Another problem he sees is the joint and several liability clause in Superfund, which he calls "patently unfair," stating that proportional liability is more appropriate. Jennings argued that, although companies with clearly defined responsibility come forward because they know they either pay now or pay later, a company that has a proportionally smaller share but a deep pocket is naturally reluctant to step forward. (Joint and several liability allows the government to charge potentially responsible parties (PRPs) as much as the entire cleanup cost—regardless of the company's proportional responsibility—if other PRPs are unknown or are unable to provide funding. Proportional liability would limit corporate liability to only that percentage for which they are responsible.) Occidental is supporting a coalition of the

KEVIN J. FACHETTI



Occidental employs nearly 1,800 local residents. The company has strengthened community relations by establishing citizens panels and financing a ballfield.

Chemical Manufacturers Association that is petitioning Congress to address what they see as the inherent flaws in the Superfund program.⁴¹

On 21 June 1994, Occidental reached an out-of-court settlement with New York State in which it agreed to pay \$98 million for cleanup expenses at Love Canal and to assume responsibility for the future maintenance of the landfill's leachate treatment system. Although cases are pending involving the federal government and hundreds of people who say the contamination made them sick, the company sees the settlement as a vindication of its actions. Given the limited understanding of the hazards of toxic waste dumping, these actions were, according to the company, not illegal when they occurred and did not warrant punitive damages.⁴²

For others in the community, the legacy of the past looms large. Younger residents, for example, see only the environmental damage that Occidental and others have left behind. Says Mike Ferguson, a senior at nearby LaSalle High School, "Niagara Falls is no longer the honeymoon capital but the toxic waste capital. It [Love Canal] affected the morale and

the spirit of the community very adversely."⁴³ But according to science teacher Cathy Lange, because fewer than 100 of the school's 1,200 students know the facts of the situation, she has added a section on it to her class curriculum.⁴⁴

Social studies teacher Bill Feder stated that the situation has left "psychological scarring" on the students.⁴⁵ Each year, when he asks his ninth-grade students to draw pictures of what represents their city, they draw pictures of chemical plants with billowing smokestacks or pictures of drums and toxic waste. Rarely, he said, do the students draw a positive picture. He also said that many former residents are upset that people will be moving into the houses they gave up. "This is not just business," he said. "This was a community."

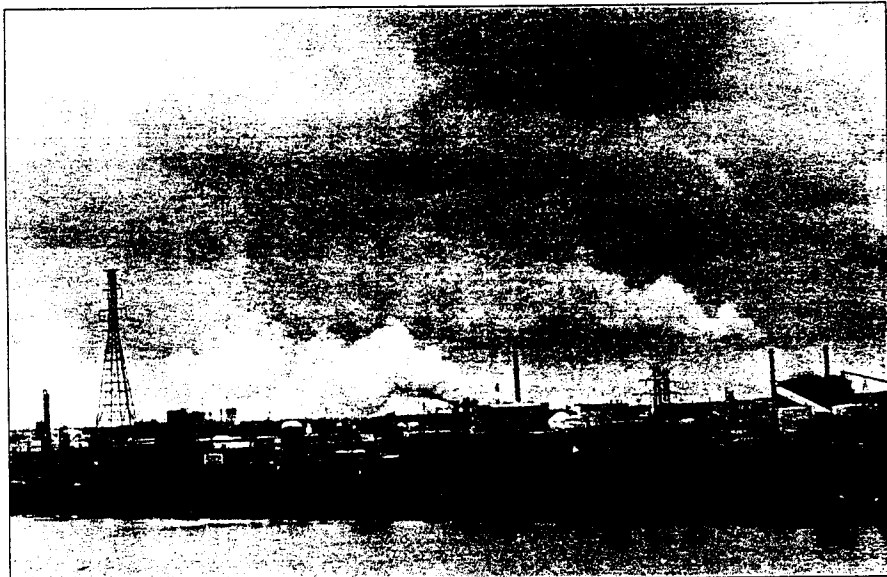
What Next?

The Love Canal experience shows that the results of more than a decade of cleanup efforts and health studies are only as good as they are perceived to be, and that perception is based on many factors other than scientific credibility. As politicians and scien-

tists argue over the merits of removing 1 ppb versus 2 ppb of contaminants and spend millions of dollars on the outcome of that debate, the ultimate success of the remediation effort remains unchanged. In the end, it comes down to individual opinion rather than educated evaluation. There

Senior High School, sees cultural pitfalls in such an approach, saying that “the risk isn’t so great if there’s a monetary reward. People can rationalize anything.”⁴⁶

The question then becomes how to assess what the Superfund program does—or does not—achieve. Is it real-



KEVIN J. FACHETTI

Local students often draw chemical plants and smokestacks to depict their community. Despite long-term revitalization efforts, the Love Canal legacy remains.

is no absolute standard of risk. Regardless of the volume of data generated, no one knows with certainty how to assess the area’s safety or even what rationale to use to make such an assessment. Even the federal government refuses to guarantee that the millions of dollars it has invested has achieved its objective. The purchase and sale agreement that LCARA requires its home buyers to sign states that “neither the Federal Government, nor the Federal Emergency Management Agency, make any representation or warranty as to the habitability of the within Property nor do they authorize this transaction.”

Podd defined government’s role as “providing the public with the necessary information” to let people make the decisions themselves. “After we have done that,” he said, “the decision on where to live is a very personal one.” But is that a fair expectation? Russell Murgia, principal of LaSalle

istic to expect government or science to definitively define the environmental hazards and the health risks in an area deemed fit for beneficial reuse? If millions of dollars are to be spent in an effort to eliminate the risks of a hazardous waste site, without achieving any scientific or social certainty in having achieved that aim, why do it? And if no one is sure that such an ambiguous level of safety has even been achieved, why are people being allowed to move back to such an environment?

For the government, money is not the reason, or at least not entirely. The sale of homes at Love Canal will replenish around \$12 million (or about 5 percent of the entire cleanup costs) to the state and federal fund that originally bought the houses. The rationale to proceed seems to be linked to the lives of the people who must live with Love Canal every day. Murgia, having witnessed a steady decline in the num-

ber of residents in the community and the number of students in his school, said that “this is now an opportunity to revitalize the area and to restore the tax base.” Gaetano feels that eliminating the scarred neighborhood will help remove the reminder that hangs over the city, but adds “How long does it take to forget?” She also acknowledged one worry that may never go away: having a child who, although healthy, was conceived and born at Love Canal. “No follow-up study was done on the kids,” she said. “We were bought out to be gotten rid of. Now the people are scattered. You never know what the future will hold.”

No matter how much the resettlement effort tries to rehabilitate Love Canal, its legacy remains. And perhaps therein lies the lesson to be learned from the experience. The Superfund program is as much about the restoration of people’s lives as it is about the restoration of the natural environment. Because we are learning that we cannot completely eliminate the impact that our industrial society inflicts upon the environment, we must instead seek to understand what living with that impact means. The people at Love Canal do so without this understanding. And education efforts to change this have been tangential to such a goal. Focused more on either ignoring or denying the health risks of Love Canal, Occidental, LCARA, and the government have all tried to change public perception based on some supposedly intrinsic connection between chemical contaminant data and the quality of people’s everyday lives. But using the same data, environmentalists like Lois Gibbs and the NRDC have argued that the hazards are too great. Stuck in the middle, teachers—like Cathy Lange and Bill Feder—are left to sort out the pieces for the community. The residents’ opinions and perspectives, however, remain their own.

But there is a point beneath the current focus on clean versus unclean and safe versus unsafe that is being missed: We have made our lives inherently unsafe. Whether it is cigarette

smoke or automobile exhaust, pesticide application or hazardous waste disposal, chemicals in the environment have become a regrettable part of everyday life. As Love Canal shows, we can neither change that fact nor pretend that it is not true. Therefore, we must educate ourselves on how to live with it. More Superfund effort should be spent on understanding the sociological reality of having trace contaminants in our presence rather than on the technological fantasy of being able to eliminate them. Scientific data without this understanding is useless. Being able to detect increasingly minute parts (now as little as one part per quintillion) of a contaminant exacerbates the lack of applicability scientific methods have to their stated goal, which is analyzing the safety of the environment. And political debate based on such disconnected analysis becomes the ultimate failure of the Superfund program.

Until we learn about the environment we have altered, we will struggle with chemical risks, not with open eyes and educated decisions but with closed eyes and the fatalism of those who live at Love Canal. Logic based on a perverse sort of denial will prevail. When asked if the neighborhood could return to normalcy with the landfill in its midst, one long-time resident answered, "Why not? There was a landfill here before. Now there's just a fence around it."

NOTES

1. Mike Ferguson, resident, Cayuga Island, N.Y., personal communication with the author, 21 April 1993.
2. Harvey Albond, executive director, Love Canal Area Revitalization Agency, Niagara Falls, N.Y., personal communication with the author, 20 April 1993.
3. S. Epstein, L. Brown, and C. Pope, "Dumping in Niagara Falls," in *Hazardous Waste in America* (San Francisco, Calif.: Sierra Club Books, 1982), 92.
4. *Ibid.*, pages 89-132.
5. For a first-hand account of the experience, see L. Gibbs, *Love Canal: My Story* (Albany: State University of New York Press, 1982).
6. The EDA is physically bound to the south by the LaSalle Expressway, to the east by uninhabited wooded wetlands, and to the north by the Black and

Bergholtz Creeks. The boundary to the west is the only sign of a severed neighborhood, with houses on 93rd Street condemned and adjacent houses on 92nd Street unaffected.

7. New York Department of Environmental Conservation (NYDEC), *Love Canal Inactive Hazardous Waste Site: A Remedial Chronology* (Buffalo, N.Y., January 1992).
8. Frost and Sullivan, Inc., *Hazardous Waste Market: Handling, Storage and Disposal* (New York, January 1981), 24.
9. G. Silverman, "Love Canal: A Retrospective," *Bureau of National Affairs Environment Reporter* (15 September 1989), 835-50.
10. NYDEC, note 7 above, page 4.
11. Susan L. Bloss, community relations specialist at Ecology and Environment, Inc., Lancaster, N.Y., and consultant to EPA, personal communication with the author, 15 April 1993.
12. Susan L. Bloss, community relations specialist at Ecology and Environment, Inc., Lancaster, N.Y., and consultant to EPA, personal communication with the author, 20 April 1993.
13. D. Axelrod, *Love Canal Emergency Declaration Area: Decision on Habitability* (Albany: NYDOH, September 1988).
14. Bloss, note 11 above.
15. U.S. Environmental Protection Agency Region II, *Introduction and Decision-Making Documentation of the Habitability Study of the Emergency Declaration Area* (Cleveland, Ohio: ICAIR Life Systems Inc., and Reston, Va.: CH2M Hill Southeast, Inc., May 1988).
16. *Ibid.*
17. Bloss, note 11 above.
18. Name withheld upon request, personal communication with the author, 20 April 1993.
19. Albond, note 2 above.
20. Data provided to the author by LCARA, April 1993.
21. Silverman, note 9 above.
22. Lenny Rinallo, realtor, Stovroff Herman Realtors, Niagara Falls, N.Y., personal communication with the author, 21 April 1993.
23. Lois Gibbs, director, Citizens Clearinghouse for Hazardous Waste, Inc., Falls Church, Va., personal communication with the author, 13 April 1993.
24. Bloss, note 11 above.
25. William K. Reilly, EPA administrator, letter to Lois Gibbs, director, Citizens Clearinghouse for Hazardous Waste Inc., Falls Church, Va., 14 May 1990.
26. Jim Simon, legal counsel, Natural Resources Defense Council, New York, N.Y., personal communication with the author, 15 April 1993.
27. Gibbs, note 23 above.
28. George Cook, resident, Love Canal, Niagara Falls, N.Y., personal communication with the author, 22 April 1993.
29. Albond, note 2 above.
30. "New York Closes Office at Love Canal," *Boston Globe*, 25 March 1993, 23.
31. Michael Podd, former NYDEC citizen participation specialist, Buffalo, N.Y., personal communication with the author, 9 April 1993.
32. Charles Excell, pastor, First United Methodist Church, Niagara Falls, N.Y., personal communication with the author, 22 April 1993.
33. Susan L. Bloss, community relations specialist at Ecology and Environment, Inc., Lancaster, N.Y., and consultant to EPA, personal communication with the author, 7 December 1993.
34. Geraldine Holzle, resident, Niagara Falls, N.Y., personal communication with the author, 22 April 1993.
35. Leon Demers, resident, Niagara Falls, N.Y., personal communication with the author, 20 April 1993.

36. Joan Gaetano, resident and former evacuee, Niagara Falls, N.Y., personal communication with the author, 21 April 1993.
37. Patrick Monti, resident and former evacuee, Niagara Falls, N.Y., personal communication with the author, 21 April 1993.
38. David Sifford, pastor, Church of the Nazarene, Niagara Falls, N.Y., personal communication with the author, 21 April 1993.
39. Thomas Jennings, vice president for corporate environmental affairs, Occidental Chemical Corporation, Niagara Falls, N.Y., personal communication with the author, 27 April 1993.
40. Occidental Chemical Corporation, *Love Canal: The Trial: 20 Questions Your Neighbors Might Ask About the Love Canal Trial* (Niagara Falls, N.Y., October 1990).
41. Jim Green, public affairs consultant, Occidental Chemical Corporation, Niagara Falls, N.Y., personal communication with the author, 20 April 1993.
42. M. Wald, "Out-Of-Court Settlement Reached Over Love Canal," *New York Times*, 22 June 1994, B5.
43. Ferguson, note 1 above.
44. Cathy Lange, earth sciences teacher, LaSalle Senior High School, Niagara Falls, N.Y., personal communication with the author, 21 April 1993.
45. Bill Feder, social studies teacher, LaSalle Senior High School, Niagara Falls, N.Y., personal communication with the author, 21 April 1993.
46. Russell Murgia, principal, LaSalle Senior High School, Niagara Falls, N.Y., personal communication with the author, 21 April 1993.



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