

ARTICLES

**ADDRESSING AGRICULTURAL COMMUNITY
CONCERNS ABOUT HAZARDOUS WASTE
TREATMENT FACILITIES
IN ONTARIO**

David R. Cressman and Paul H. Brubacher'

INTRODUCTION

For a variety of reasons, most new municipal and hazardous waste disposal and/or treatment facilities seem to find their way onto agricultural land. Although most siting approval processes require that potential impacts on agriculture and the farm community be addressed in the decision-making process, an "urban-centered" bias is regularly reported by members of farm communities beset by such projects.

It is tempting for project managers to view the relatively open landscape of rural/agricultural communities, with relatively few built structures and low population densities, as prime candidates for facility location. The resulting outcry from agricultural communities is often misunderstood as just more unmanageable **NIMBY**, when in reality it is usually a genuine and legitimate

¹ David Cressman, President of Ecologistics Limited, and Paul Brubacher, Rural Development Consultant of the same firm, collaborate on environmental and agricultural planning and impact assessment projects both in Canada and internationally. Contact address: 490 Dutton Drive, Suite A-1, Waterloo, Ontario, Canada N2L 6H7; email: <drcressma@ecologistics.com>. This paper was first presented at the 18th Canadian Waste Management Conference in Winnipeg, Manitoba, October 1996.

reaction from people whose very livelihood, traditional way of life, and community values are perceived to be at risk.

It is the authors' contention that significant improvements can be made in addressing agricultural concerns during site selection and facility development processes. Over a 20-year period of working with rural communities in Ontario, Canada, on site selection projects, the authors have helped introduce a number of improvements by actively working with agricultural communities to develop improved siting and management procedures. From these efforts, some guiding principles have emerged that are being used in waste management and other related projects. They have been relatively successful in addressing real and perceived concerns and inequities in communities where nonagricultural facilities have been proposed or expanded.

This paper begins with a brief review of some distinctive qualities of Ontario agricultural communities that help explain agricultural community opposition to waste management facilities. The discussion relates to both sanitary and hazardous waste facilities. This is followed by a discussion of typical issues that arise in site selection and assessment processes relative to agricultural interests and resources; it highlights the need to address in an integrated fashion the natural resource, socioeconomic, and cultural dimensions of the community in question. The paper concludes with examples of methodologies from two case studies in Ontario where agricultural issues were addressed both in site selection and site operational plans. The examples are taken from the now-disbanded Ontario Waste Management Corporation proposal and the environmental assessments by Laidlaw Environmental Services for hazardous waste treatment and disposal services at its Lambton facility near Sarnia, Ontario.

Some Distinctive Qualities of Agricultural Communities

Though it has often been difficult to convince social impact specialists, there are some fundamental qualities or characteristics that set farmers and farm families apart from many other rural nonfarm residents. Some of the factors that contribute to these differences include the following:

- Farmers' livelihoods depend on the continuing health, accessibility, and productivity of the resource base, so most farmers are continually adjusting techniques to improve productivity and environmental sustainability in the long term. The farm is more than a place to live.

- Personal satisfaction with individual, family, and community life is intertwined with the health and productivity of the physical environment in which farmers live, and on which they are dependent. Stress associated with abnormal weather conditions can result in stress in human relationships if the farm's "bottom line" is jeopardized, or it can draw a community together in mutually supportive ways.
- Farmers typically have generational ties to the land, if not to a specific location, at least to the vocation of farming. Many have a strong land ethic—a sense of responsibility to pass the land on to the next generation in as good or better condition than when they took over.
- The strength of family and neighborhood interactions is built over time, frequently through contacts and interactions in agricultural, sports, social, or religious organizations.
- There is a relatively recent call, in part from the urban sector, for farmers to be good "stewards of the land." Farmers as well have taken the initiative in Ontario and elsewhere to develop environmental farm plans and to remediate problem areas on-farm (Environmental Farm Plan Coalition 1992). Society is therefore perceived as giving mixed messages when it ships primarily urban-generated wastes into a rural landscape that society also wants "conserved."

Nonagricultural land uses, such as a waste management facility with its industrial attributes, are typically seen as anomalies on the landscape that conflict with some of the most basic community and environmental values held by members of the farming community. But within particular rural communities, the farm perspective may be diluted by the views and political influence of a growing rural nonfarm population. This mix of farm and non-farm populations, especially in the shadow of growing metropolitan areas, is an attribute that increasingly differentiates one rural community from the next.

This is not to say that rural nonfarm residents are indifferent about the quality of their rural life. Rural nonfarm residents may have "escaped" from the city environment, seeking peace and quiet, and are therefore adamant about keeping it that way. Nonetheless, those without family or other historical attachments represent a more transient population and may be more socially and psychologically able to relocate, should intrusions such as

landfill sites be proposed for the rural environment. Thus, farm populations are left feeling politically and economically powerless to protect their interests in the face of urban interests and influence.

AGRICULTURE AND THE SITE SELECTION PROCESS

It is a generally accepted maxim within the field of environmental impact assessment that the effective way of minimizing the adverse environmental impacts of a proposed facility is to select the location that has the optimal characteristics from the perspective of each sector of the environment. The **issue** of how to **adequately** balance the **needs** of **each sector or interest** is fundamental to the success of most site selection and assessment processes but, for the most part, will not be addressed in this paper. The paper deals mainly with ways of minimizing impact on agricultural land, enterprises, and communities during site selection and in optimizing operational procedures. Some approaches for effectively involving farming communities in site selection **and** assessment projects are highlighted.

Siting Issues

Agricultural objective setting

To focus the nature and scope of the agricultural issues in a siting study one needs to clearly establish from the outset the study specific siting objectives that relate to agriculture. The setting of these objectives is the first and perhaps most important opportunity to get on side with the ultimate concerns of potentially affected farming communities. It is the time when the proponent can best gain **an** understanding of the underlying values that will shape the farming community's response to the proposal. Agricultural siting objectives that we have compiled from our **work** with farm communities in past siting studies relate to the physical resource base, agricultural infrastructure, farm displacement, and disruption with attendant social impacts, crop and livestock production and sales, and agriculture's contribution to the local and regional economy. A listing of these siting objectives and related concerns for on-site and off-site areas appear in table 1.

Typically, these objectives are next refined into criteria and indicators that form the link between the available data base and the objectives. They act as "estimates" of potential effects, at least on a relative basis, and are used in comparing alternate sites. By committing to address all of the siting objectives and concerns, one can be reasonably assured that the full range of

potential physical and social impacts of waste management facilities on agriculture **will** be covered.

Table 7. Objectives and methods to minimize/mitigate agricultural effects

Objectives	Concerns	Resolution or mitigation of concerns
<p>1. ON-SITE</p> <p>a) Minimize the loss of high-priority agricultural lands in settings where specialty crop lands or Canada land inventory (CLI) classes 1 to 4 agricultural land predominates</p> <hr/> <p>b) Minimize loss or damage to artificial drainage systems</p> <hr/> <p>c) Minimize the loss of agricultural infrastructure</p>	<ul style="list-style-type: none"> • Permanent loss of agricultural lands normally occurs. The better the soil capability classification for specialty crops and common field crops, the greater the impact. • The quality of agricultural land is a function of soil, topographic, and climatic conditions. For common field crops (e.g., grains and forage crops) on mineral soils, quality is expressed in a separate 7-class rating system for mineral soils—CLI Soil Capability Classification for Agriculture. Highest priority is placed on avoiding specialty crop lands followed by the next best lands for common field crop production. • Disturbance or blockage of artificial drainage systems during facility construction can significantly affect drained lands upstream. Good soil drainage is essential for optimum crop production. • Loss occurs when land is taken for another use and the infrastructure is removed. The loss of infrastructure (barns and sheds, silos, manure storage, and soil conservation systems) is a loss to the local agricultural resource base and may be a loss of public investment in improvements such as soil conservation systems. 	<ul style="list-style-type: none"> • The principle form of mitigation is avoidance. • For certain types of projects, there may be opportunity for a limited amount of rehabilitation of a site to an agricultural after use. • Mitigation of damaged drains is possible by using standard repair procedures and by monitoring effectiveness. • The effect is best mitigated by avoiding locations with significant infrastructure Investments.

Objectives	Concerns	Resolution or mitigation of concerns
<p>d) Minimize effects on the farm community caused by the loss of farm operations</p> <hr/> <p>e) Minimize effects on the local and regional economy caused by the loss of farm operations</p>	<ul style="list-style-type: none"> • Loss of a farm operation may cause the farm operator and his/her family to relocate outside the local farming community. As a result, important linkages and contacts among remaining associated or cooperating farm operations may be severed. These could include the sharing of equipment, labor, management, and leadership skills. • Displacement of farm operations can result in less business for local farm supply and service businesses. If several farm operations in an area are eliminated by a facility, the viability of farm businesses may be jeopardized and the business, in turn, may have to close. 	<ul style="list-style-type: none"> • Effects are minimized by locating new facilities in non-agricultural areas or, if not possible, in areas where the linkages among operations are marginal or insignificant. • Effects are mitigated primarily by displacing, in whole or in part, as few farm operations as possible.
<p>2. OFF-SITE</p> <p>a) Minimize partial loss of the land base and infrastructure of farm operations</p> <hr/> <p>b) Minimize severing of farm properties</p>	<ul style="list-style-type: none"> • Part of a parcel on which the main farm buildings are located is taken, or part of the land base of a farm which operates on several parcels is taken. Partial taking of an agricultural holding can render farm buildings on the remaining parcel(s) no longer viable for commercial agricultural purposes. The new facility may be situated so close to remaining buildings that they are rendered inoperable. • Concern results from the physical separation of farm properties by barriers such as limited access highways. The difficulty and cost of reaching these severed parcels for normal field operations increases. 	<ul style="list-style-type: none"> • The number of farm properties from which a partial taking occurs should be minimized and the size of each taking should be limited. • May achieve partial mitigation by relocating the displaced infrastructure, provided that suitable space is available within the property. • Identifying facility boundaries that conform as much as possible to property boundaries will reduce number of severances and associated effects.

Objectives	Concerns	Resolution or mitigation of concerns
<p>c) Minimize effect on soil productivity</p>	<ul style="list-style-type: none"> Agricultural soils in vicinity of a facility may experience either short- or long-term declines in productivity. A decline in productivity can occur because of an adverse change in soil drainage, chemistry, or biological condition. Change in soil properties may be very gradual and difficult to detect (e.g., water table impacts) or may be quite abrupt (e.g., toxic spills). 	<ul style="list-style-type: none"> Facility design should be optimized, and pollution abatement measures used to minimize risk of off-site contamination from both normal operations and upset or accidental conditions.
<p>d) Minimize effects on crop production and quality</p>	<ul style="list-style-type: none"> Some facilities and related activities can affect off-site environmental conditions and, in turn, reduce crop yields and performance (e.g., dust from facility operations). Effects could cause a reduction in crop productivity and economic losses to the farmer. Certain operations that require certification, such as certified organic growers, can be at risk if evidence of "contaminants" from a nearby facility is found. 	<ul style="list-style-type: none"> Facility design should be optimized, and pollution abatement measures used to minimize risk of off-site contamination from normal operations and upset or accidental conditions.
<p>e) Minimize effects on livestock/poultry production and aquaculture</p>	<ul style="list-style-type: none"> Livestock and poultry are particularly sensitive to a variety of facility-related effects. Sudden changes in the living environment of livestock and poultry can adversely affect their health and productivity. Facilities that cause changes in off-site water quantity and quality, air quality, contaminant levels in soils and crops, noise and odor levels may affect livestock/poultry populations and/or their products (e.g., eggs, meat, and milk). Aquaculture operations would be most vulnerable to effects on the quantity and quality of their water supply. 	<ul style="list-style-type: none"> Adequate abatement of potential effects at source is the best mitigation measure. On-farm mitigation is not appropriate for most of these effects.

Objectives	Concerns	Resolution or mitigation of concerns
f) Minimize effects from facility-related traffic	<ul style="list-style-type: none"> Traffic associated with a facility can affect farm operations that use roads in the area to access fields, ship and receive agricultural products/supplies, and acquire goods and services from the community. Slow-moving, oversized equipment is often transported along roads by farmers. Safety, stress, and loss of time are concerns for affected farm operators. 	<ul style="list-style-type: none"> Mitigation may include turning lanes, wider shoulders, traffic signals, designation and enforcement of truck haul routes.
g) Minimize effects or perception of effects on food quality/safety by potential consumers	<p>Customers may be concerned about the quality (i.e., visual appeal) of the produce at pick-your-own sites (e.g., dust on fruit and vegetables from nearby facilities), and the decrease in quality of the recreational experience. Producers are vulnerable if their produce is found, or is perceived to be, unsafe.</p>	<ul style="list-style-type: none"> Potential for effect should be minimized, and mechanisms put in place to assure consumers of food safety (e.g., emergency response mechanisms to clean up spills quickly). Effective monitoring and communication systems among facility operators, regulators, farm community, food processors, and the media will also assist in mitigating concerns.
h) Minimize effects on the surrounding farm community	<p>The siting and operation of waste facilities can result in disruption to the farming community, and, over time, erode its strength or significantly change its character. This may cause certain farm operators to leave a particular community. Adverse consequences to the remaining farm community may occur when such persons are community leaders and/or are functionally linked to other farm operations.</p>	<ul style="list-style-type: none"> Mitigation of potential effects during the facility siting process include the use of adequate buffer zones and recognition of specific incompatibilities.

Objectives	Concerns	Resolution or mitigation of concerns
<p>i) Minimize effects on the local and regional farm economy</p> <p>j) Minimize potential for spin-off effects</p>	<ul style="list-style-type: none"> • Indirect effects to agriculture can be experienced through facility-related effects on other components of the agri-food industry. The displacement of vital agri-businesses such as suppliers of farm inputs and services and food processors, etc., from a community may have a ripple effect on the viability of farm operations that depend on such businesses. Such effects may be of a short- or long-term nature. • Farmland values could drop, thereby affecting the amount of collateral on which capital or operating loans are based. • New facilities may precipitate additional development that has negative effects on the surrounding agricultural community. Waste facilities could attract other industrial development. 	<ul style="list-style-type: none"> • Land values should be monitored, and a property value protection program considered for the facility neighborhood. • Mitigation of effects will depend primarily on land use policies and implementation measures designed to guide secondary development to areas of lower agricultural significance.

Early inclusion of agriculture in siting processes

To be effective in minimizing impacts on high priority agricultural lands, operations, etc., agriculture must be included as a factor in *each* stage of the site selection process. It is not adequate to address these considerations only after candidate *sites* have been identified and are being compared. Sites have been rejected at board hearings for just such reasons.

Weighting of agricultural criteria

In most siting processes, it is common for different disciplinary factors to be weighted as a way of expressing relative importance. It is essential that weight be given not only to agricultural criteria and indicators, but also to agriculture as an independent discipline. It is not satisfactory to group agriculture with other disciplines when assigning a weight. The magnitude of the weight assigned should reflect the degree to which protection of

agricultural resources is apparent in land use policies and agricultural community input has been incorporated into the assigning of weights.

Strength of agriculture

Since it may not always be possible to fully anticipate all agricultural effects from a facility, it is important that the agricultural criteria and indicators adequately express the relative strength of agriculture in the vicinity of alternate sites. The stronger the agricultural activity in an area, the greater the potential for impact, anticipated and unanticipated. **Also**, given the multi-disciplinary nature of site selection, it is important to ensure that the size of impact study zones for agriculture relative to other disciplines is adequate and fully rationalized.

Buffering sensitive agricultural uses

At the point when candidate sites are being identified, buffers or adequate separation should be provided between the proposed facilities and sensitive agricultural uses. The size of the buffers can vary with the type and scale of facility and with the nature of neighboring agricultural uses. Agricultural interests see similar approaches advocated successfully by other interests—for example, wetlands, watercourses, residential developments—and rightly ask why the same does not apply to agricultural uses.

Community consultation

Although the benefits of consulting with the public during EA preparation are widely recognized, only token participation has historically been required by the law (Rodd et al. 1988). More recently, however, with a June 1996 announcement by the Ontario Ministry of the Environment and Energy (MOEE) of proposed legislative amendments to the environmental assessment act, consultation with the public is "guaranteed" (MOEE 1996). This change in approach may result, in Ontario, in more consultation from the outset of siting studies with agricultural organizations, farm operators and their families, and affected agri-businesses. To be effective, such consultation must provide adequate opportunity for these stakeholders to comment on study methodology, choice of criteria and indicators, data sources, and criteria/indicator weighting, as well as impact mitigation, monitoring, and compensation.

Examples of Deficiencies in Current Siting Practice

Deficiencies in current procedures are outlined below and are a result of prevailing policies, governmental and nongovernmental, that the authors have

witnessed during the course of conducting EAs in the waste management sector.

***Ontario Ministry of Agriculture, Food and Rural Affairs—
Food Land Guidelines*** (OMAF 1978)

The following example illustrates how problems develop when government policies not specifically designed to deal with siting waste management facilities are used in establishing agricultural siting considerations.

Section 3.13 of the guidelines states that high-apability agricultural land must be given priority for productive agricultural purposes when evaluating alternative land uses, and goes on to say that “if the land is to be used for another purpose, the requirement must be justified.” But when the area in question for siting a facility is for the most part high-capability land, the multidisciplinary site selection process has no basis for differentiating areas of relative impact potential on agriculture. Consequently candidate sites can be situated in areas of very significant agricultural activity.

In the Food Land Guidelines, there is no consideration of the relative importance of protecting prime agricultural land in rural areas that are clearly committed to long-term agricultural use versus lands in the “urban shadow” areas where agriculture is either phasing out and/or is under pressure from conflicting urban-related land uses such as rural nonfarm residential. These areas are subject to the process of urbanization that has been or is currently “undermining agricultural resources to the extent that the long-term viability of agriculture is in doubt” (Ecologistics Limited 1984).

To deal with this issue, a methodology was developed by Ecologistics Limited (1984) to delineate urban shadow areas which was **used** successfully in the Ontario Waste Management Corporation (OWMC) site selection process and, in modified form, in several more recent siting studies. The methodology provides a relative indication or ranking of urbanized rural areas in southern Ontario. The data base used was the Census of Agriculture and Census of Population. Indicators **of** urbanization were—

- * Percent of enumeration area (e.a.) improved farmland that was rented;
- Percent of e.a. that is not farmed; and
- Percent of e.a. population that is classified as rural nonfarm.

From an agricultural point of view, a quantifiable analysis was conducted, which was capable of pointing out preferred areas within a high soil capability study area. These were areas where, because of variable degrees of urbanization, alternate sites could be found and differentiated on the basis of relative effect on long-term agricultural significance.

Currently under most EA processes, there is little to prevent waste facilities from being sited on productive agricultural land. Government commitment to protecting agricultural resources is therefore questioned by the agricultural sector. Institutional mechanisms such as "exclusion" or control areas around viable/intensive agricultural enterprises are not in place as they are, for example, around environmentally sensitive areas or priority wetlands. Therefore, solutions demonstrated to be equitable in the face of these realities need to be found.

Agricultural criteria selection

Nonfarm "experts" have frequently facilitated discussions in farm communities where the focus is on putting to paper the right wording for the criteria, rather than on understanding the "heart" level issues of the producers. The latter will only happen when there is a basic credibility/trust level established, based on the proponent's fully understanding the issues and not coming with preconceived ideas about the issues and their resolution. Farm communities must be met on their own turf, in their homes and community facilities, and using their language if the real issues are to be ascertained. Typically the proponent will "listen to," but not truly "hear" the felt needs of the producers.

The criteria setting and evaluation process tends to be driven by the need to satisfy the government review process, rather than to begin to address the local issues brought on by a specific proposal. For example, detailed attempts to quantify *number of close relatives* or *the frequency of helping one's neighbor* may serve only to alienate affected populations who will say that it is important if even one "relation" is affected, and will want to know the mitigation measures available to determine how the affected individual might adjust. Perhaps *population figures* and *length of time lived in an area* can serve as proxy measures, assuming that wherever the facility is sited, the social fabric will be affected.

In some recent siting studies, representatives of agricultural communities have been consulted about the agricultural criteria for use in site selection,

without the benefit of input by qualified professionals with adequate experience in the agricultural aspects of site selection. Lacking familiarity with the available data bases and the relationships between information in those data bases and potential impacts, participants in these “consultations” have ended up either with no sites or sites that fail to realize the agricultural siting objectives. Frustration (if not anger), considerable loss of time, and added expense are the result.

Weighting of criteria

For hazardous waste management facilities, public health and security factors are typically given highest weight. In a number of waste management studies agriculture has received relatively low weighting. Can engineering design ensure that risks can be managed to such a degree that the weighting can legitimately be lowered for these traditionally sensitive factors? In other words, given today’s increasingly sophisticated waste management technologies, is there room for hazardous waste facilities to be sited in industrial parks with sufficient buffer around them? Examples of such can be found in Europe. Once paved over, the agricultural resource base and the associated farming operations are removed from productive use forever while the neighboring farming community must be disadvantaged at least until facility closure. Is this not justification for higher weighting assigned to agriculture?

Establishing buffers

Typically, there are no provincial guidelines for establishing appropriate buffers between farm building complexes or other sensitive agricultural uses amid land uses such as waste management facilities. In their absence it is essential to at least recognize the need for equity among factors in the use of buffers. Wide buffers around wetlands, watercourses, and even woodlots, as some have advocated, can thrust facilities into very close proximity to farm facilities. Likewise, excluding such areas as woodlots from consideration often eliminates siting options on lower capability soils.

Community consultations

Consultation processes in agricultural communities have tended to focus more on the needs of the proponent—that is, the need to satisfy regulatory requirements or guidelines—than on understanding and addressing expressed needs of the affected parties.

CASE STUDIES

This section identifies consultation processes that have been helpful in addressing and, to a significant degree, resolving agricultural community issues. As noted earlier, the authors have been involved in numerous waste management site selection and assessment studies, two of these for hazardous waste management facilities. Both of these studies were conducted under Ontario's environmental assessment act (1975), and both involved sites proposed in agricultural communities.

In the first case, the Ontario Waste Management Corporation (OWMC) undertook a site selection process that resulted in a preferred site near Smithville in the center of the Niagara Peninsula. Early in this site selection process the issue arose of real or perceived impacts on marketability of crops and livestock raised in the vicinity of the proposed site. In the second instance, Laidlaw Environmental Services (LES) initiated in 1994 an EA in support of continuing its landfill services at an existing treatment facility near Samia. A primary issue affecting both the proponent and the local neighborhood was the need to formulate and implement a plan to equitably address existing and potential future environmental impacts associated with the facility.

The rest of this section describes the consultation processes used to solicit input from agricultural stakeholders and, in the end, develop agreements designed to respond to the concerns of the affected agricultural communities.

The Ontario Waste Management Corporation (OWMC)

The Ontario government created the OWMC in July 1981 to find a solution to the problem of hazardous wastes in the province. An initial list of 20 candidate areas was established during the first phase of studies in the Golden Horseshoe study area (lands around the western end of Lake Ontario). Within these candidate areas 152 potential site areas were identified, then eight candidate sites, and finally one preferred site - in West Lincoln Township (OWMC 1985).

The West Lincoln site was announced in 1985. From then until 1988, detailed site assessment studies and finalization of the environmental assessment documents were carried out (OWMC 1988). These were followed by a protracted Joint Hearings Board which, in 1994, rejected OWMC's preferred site for a variety of reasons, but mainly having to do with the

consideration of alternatives to the proposal. Finally, in June 1996, under the Ontario environmental approvals improvement act, the Ontario waste management corporation act was repealed and the OWMC dissolved.

Notwithstanding the ultimate decision of the board, insights were gained from the site selection studies that, from the perspective of the agricultural discipline, have contributed positively to future site selection and site assessment studies and to operational plans for such facilities in agricultural communities.

Throughout the site selection phases, agricultural criteria and indicators were refined at each stage by introducing more detailed information based on secondary and primary data collection methods (Ecologistics Limited 1985, 1988). This more rigorous treatment of agriculture as a study discipline was unprecedented at the time. Likewise, the approach to soliciting community input was novel, with personal interviews with farm operators and agribusinesses, meetings and workshops with provincial and local agricultural organizations, and, in the later stages, kitchen table meetings with neighbors of the site.

Of particular significance during the final stage (site assessment) was the issue that surfaced concerning the long-term viability of local agriculture if consumers rejected agricultural commodities produced in the area because of fears of contamination. It was thought that stack emissions entering the food chain, a poorly phrased media story, or a public already sensitized by previous food contamination problems would be factors that could trigger a negative image of the area and resistance to purchasing local or regional produce. These perceptions and concerns differed considerably from the technical analyses of the site selection consultants, which demonstrated minimal risk associated with the proposal.

Nevertheless, these concerns were deemed of sufficient importance to warrant further investigation on the part of OWMC. Consequently, Ecologistics Limited was commissioned to address the possible negative consumer response to the future operation of the OWMC facility and to recommend measures to maintain consumer confidence in the safety of local agricultural produce (Ecologistics Limited 1991). The key research questions we sought to answer were:

- How do consumers weigh the issue of food safety when making food purchasing decisions, and at what point is food rejected?
- What residue testing and monitoring networks are in place in Ontario and the Niagara Peninsula for assuring the safety of food products?
- What concerns the food industry in the Niagara Peninsula about the proposed siting of the OWMC facility? What has been their experience to date regarding contamination issues and how would they like to be assured about the safety of agricultural produce'?
- What could OWMC do to minimize potential negative consequences to farmers and the food processing industry in the Niagara region should public uncertainty surface about food safety, with an implied or direct link to the OWMC facility?

It became clear during subsequent interviews with stakeholders that answers to these questions would go a long way toward alleviating concerns expressed by the local farming community. The following steps were taken:

- Scientific literature was reviewed to examine food acceptance theory and consumer food purchasing behavior.
- Government ministries and agencies were contacted to determine their roles and responsibilities in routine and emergency testing and monitoring of contaminant residues in agricultural produce.
- Ontario-level processor associations and agricultural marketing boards were contacted to understand their experience with contaminant issues and potential concerns with the OWMC proposal.
- Individual meetings were held with Niagara Peninsula-based food processors, dairies, wineries, and abattoirs to understand the circumstances that could lead to their rejection of agricultural produce, potential concerns with the OWMC proposal, and the mechanisms by which they would like to be assured about the safety of agricultural produce from the area.
- Information was consolidated and impact management recommendations were formulated and forwarded to OWMC in the areas of residue testing

and environmental monitoring procedures, emergency response and preparedness procedures, communications/public information and education programs, and compensation guidelines.

Resulting from this study was a clear consensus among the stakeholders that implementing the recommendations would result in a sense of industry preparedness for addressing consumer concern if the facility were to have been situated in the preferred location. Evidence of the importance attributed to this approach to the issue is seen in the “Community Impact Agreement” signed in May **1993** by OWMC and the Township of West Lincoln (OWMC **1993**). It is important to acknowledge that agreement to these proposed inclusions to conditions of site approval were “notwithstanding” the community’s fundamental opposition to the proposed site location.

Thus, in an agricultural community proposed as the site of a hazardous waste treatment facility, it was felt that the key recommendations under the Agricultural Impact Management component of the agreement would be reasonable for addressing concerns should the site be ultimately approved for this location. They were judged to be reasonable for anticipating and responding to potential negative consumer perceptions, thereby protecting the agricultural community’s interests in this regard.

Laidlaw Environmental Services (LES)

In **1989**, LES took over management of what is now known as the Lambton Facility, a 30-acre property located in Moore Township southeast of Sarnia. Industrial hazardous waste disposal and treatment activities had begun as early as **1966**, and had continually undergone operational improvements to conform to prevailing legislation and the Certificates of Approval for the facility. The operation was expanded in **1982** to include an incinerator and accessory buildings and facilities. Today, Lambton is a fully integrated treatment and disposal facility including a liquid waste incinerator, a physical/chemical treatment plant, and an engineered landfill.

In **1986**, the Ontario Cabinet approved (following a consolidated board hearing) an expansion of the landfill. In **1989**, an EA was initiated and subsequently completed in support of a proposal to build a rotary kiln incinerator for destroying waste in semi-solid and solid form. However, because of market conditions at the time, **LES** dropped the proposal before it went to a hearing. Then in **1994**, an EA was begun in support of a proposed new landfill cell on the existing property to ensure continued

landfill capacity. This latest proposal is currently under review by the provincial review agencies, interest groups, and the local community.

The Lambton facility is located on thick clay soils and is surrounded by agricultural land uses and scattered rural nonfarm residences. The majority (64 percent) of the 180 resident survey households within an approximate 4-kilometer radius (the site assessment study area—SASA) are associated with a farm operation. The dominant agricultural soils are fine-textured, poorly drained clays with an agricultural capability rating of class **3**. Cropping systems are characterized by a corn/soybean/wheat rotation with small pockets of pasture or hay to support small beef operations or horse and mixed farming operations. One farm next to the site producing organically grown field crops was certified for this purpose in the late 1980s.

Because of their proximity to industry in “Chemical Valley” in Sarnia, many of the farm families have at least one member working off-farm, which has helped to support the farm economy during its depressed times. All local services and facilities such as schools, health care, and police and fire protection are located outside the SASA in Sarnia or in smaller centers in the township. The Moore Centre Women’s Institute Hall and the Moore Centre Baseball Park are located approximately **4** km from the facility. A radio-controlled flyers club is located about **2.5** km away, and a small historical cemetery abuts the LES property.

From the outset of the latest landfill EA, it was evident that some of the Lambton facility’s neighbors were quite vocal in their opposition to any further studies that might extend the life of the facility. On the other hand, many of the neighbors, including some living in close proximity, saw no reason to limit the service that the facility was providing.

Through the course of various consultation activities, recurring themes arose that brought into focus the main reasons for opposition. These are noted as follows:

- There is a philosophical difference between the proponent and the community regarding the “need” for such a facility. The community emphasizes the disincentive that a treatment and disposal facility could represent for recycling and reuse. The proponent emphasizes the need to take care of the residual from such processes.

- People report a personal “fatigue” from keeping current with LES’s plans and constantly reading and interpreting LES’s monitoring and EA documents over time.
- There is some continued “re-living” of past experiences with off-site nuisance effects (e.g., noise, odor) experienced prior to the most recent operational improvements.
- Phone calls from neighbors about off-site noise, odors, etc., were sometimes directed to the local MOEE office and not directly to the Lambton facility. Thus, if MOEE staff were unavailable or it was after hours, the complainant would conclude that no action was being taken.
- Even with operational improvements, the Lambton management realizes that odors are difficult to control all the time. Some neighbors will assume there is a health risk associated with the odors even when the technical risk assessment studies show that health risks are minimal; alternatively, they will assume that LES “does not keep its word” when odor is experienced off-site because they were told that improvements were made.
- Some felt that declining groundwater quality in the area in general (high naturally occurring salt and natural gas content) must be related to LES activities.
- There is the feeling that LES is a large corporation and “gets what it wants.”
- There is a general feeling of inequity, that is, that Lambton neighbors are experiencing nuisance effects on behalf of others across the province whose waste gets shipped “out of sight, out of mind.”

In order to address more comprehensively and concretely the above-noted and other barriers to communication and understanding, **LES** management decided to meet their neighbors personally during this EA process. In addition to the standard methods of informing and consulting with the public (e.g., plant tours, resident surveys, EA open houses, liaison committee), new initiatives included:

- **Environmental assessment community advisory committee.** This committee was established early on in the **EA** process, with meetings held monthly except during the summer for the purpose of advising LES on issues related to the EA study process and content. This committee's membership was broadly based and included facility neighbors, local interest groups, the municipal clerk, industry representatives, and a local Technical College representative. LES provided a meeting facilitator, but the committee was chaired by a committee-selected individual.
- **LES one-on-one meetings with neighbors.** Following completion of the personal interview surveys to collect agricultural, land use, demographic, and attitudinal data, summaries of the neighbors' perceptions about, and experience with, the existing Lambton facility were compiled. With the households' results in hand, two LES representatives (one from the facility operations staff) visited neighboring households to discuss concerns and discern which of the issues could be addressed immediately and/or to set the stage for long-term concern resolution.
- **Issue-specific meetings.** The meetings included a working group of immediately affected neighbors to work with LES management and the visual impact consultant in processing visual impact simulation techniques to design a new large perimeter berm and to select natural species for re-vegetation. Other meetings addressed such matters as well-water sampling.
- **Meetings with First Nations.** Several meetings were arranged with the Sarnia and Walpole Island First Nations to provide **EA** updates and to discuss issues of concern.
- **Meetings with participating farmers in the biomonitoring program.** LES staff and a representative of Ecologistics Limited have met regularly with producers around the site where small monitoring plots are located. Analytical laboratory results of the sampling on their properties are presented and discussed in individual meetings. Composited results are shared in report form as adequate sampling is completed for showing temporal and spatial trends of chemical parameters in agricultural crops, soil, natural grass, **and** ditch sediment. This is a voluntary program for both LES and the farm cooperators, not one required by the Certificate of Approval.

- **The good neighbor program (GNP).** As a result of the above-noted communications and information gathering initiatives, **LES** proposed a GNP as a way of responding to new and long-standing concerns of the local community (Laidlaw Environmental Services **1996**). The program, which applies *to* owners of properties within 1.5 km of the facility boundary, was initially vetted with the **EA CAC** who then requested a peer review. **LES** provided funding for an independent peer review, as a result of which some changes and improvements were made. The program was then reviewed by **WOHICA**, a local neighborhood group representing primarily owners of properties abutting the facility. After a 2-day facilitated workshop with the group and their legal counsel, agreement was reached on further improvements to the program. The draft GNP was distributed to property owners within the 1.5 km radius with a request for comments. Overall, feedback from the neighborhood was very positive and only a few minor adjustments were needed to complete the program.

The main components of the GNP include—

- On-site operational improvements to minimize specific sources of emissions.
- An ongoing communications and consultation program with neighbors.
- Improved complaint response mechanism, with a community liaison/ advisory committee playing a key role.
- A damage claims resolution plan.
- A property value protection plan (**PVPP**).
- A special compensation plan (for unique property-specific compensation issues, including consideration of more sensitive agricultural uses).
- A community fund, dispersed as annual payments based on residence and farmland location relative **to** the facility. Farmers, because of their larger land base, will receive a higher payment than those with small acreages.
- A host community agreement with Moore Township, with annual payments to be used to offset extraordinary expenses incurred as a result of facility operations or at council's discretion for other purposes.
- Retroactive reimbursement of eligible property owners for individual hook-ups to the municipal water supply. (Groundwater quality was a historical concern, although there is no evidence that **LES** has contributed to any deterioration).

SOME GUIDING PRINCIPLES FOR "HEARING" AND ADDRESSING NEEDS OF THE AGRICULTURAL COMMUNITY

Experience gained in the two foregoing case studies and other recent waste management studies suggest a number of guiding principles which, if followed, could help alleviate much of the difficulty experienced between project proponents and the farming community. Many are simply common sense but, strangely, are frequently not followed.

1. Both stakeholders and the proponent must develop listening skills. The proponent must recognize that it will **be** projecting, consciously or unconsciously, or it will be perceived to be operating from a position of power, whether it be a private or a public sector proposal. Money is perceived to have influence and to "get what it wants." Communication barriers have to be overcome and trust levels established. It is important to set the stage properly and thoroughly; in farm communities, for example, the study team must include people with farm background and/or training.
2. Use "guided" but not "controlled" community input at each step in the study process
3. Use conflict mediation strategies when it is clear that the relevant parties are at an impasse due to breakdown in communications.
4. When collecting baseline data, rely on local/traditional knowledge as much as possible and admit that the community knows itself better than proponents and their consultants. But at the same time, where "myths" have been perpetuated over time about such matters as groundwater conditions, explain the issues in nontechnical language, using schematics wherever possible.
5. Maximize the use of multidisciplinary planning teams, including individuals experienced in production agriculture and with an ability to understand, communicate effectively with, and be **trusted** by the farming community.
6. Negotiate on specific and **real** matters of importance and substance to the community. This will obviously result in committing some compensation

dollars, but proponents will need to accept the inevitability of compensation if they are serious about establishing credibility, building trust, ensuring that the community's livelihood and quality of life are reasonably maintained, and that equity issues are addressed. The alternative will be a costlier hearings process, which in its own adversarial way, can result in building barriers with the project's future neighbors. It is important not to forget that the community seldom "invites" this nuisance and possible threat; it is usually an unwelcomed imposition.

Applying these principles can help build mutual respect between the agricultural stakeholders and the proponent. Recognizing that differences in opinion will still remain about "philosophy" of hazardous waste management and its intrusive nature, practical mechanisms can be implemented that support the continuation of a viable agriculture community and reduce inequities of one community's bearing the real and perceived costs of living next to a hazardous waste management facility. It is also clear that such principles **for** working with the rural farming community are equally applicable to many other proposals that seek a location in such communities.

REFERENCES

- Ecologistics Limited. 1984. *Site selection process phase 3B: Selection of candidate sites—urbanization*. Prepared for the Ontario Waste Management Corporation.
- Ecologistics Limited. 1985. *Site selection process phase 4A: Selection of a preferred site(s)—agriculture*. Prepared for the Ontario Waste Management Corporation.
- Ecologistics Limited. 1988. *Site selection process phase 4B: Site assessment—agriculture*. Prepared for the Ontario Waste Management Corporation.
- Ecologistics Limited. 1991. "Responding to concerns about food safety." Technical paper prepared for the Ontario Waste Management Corporation.
- Environmental Farm Plan Coalition. 1992. "Our farm environmental agenda." Ontario Coalition of Farm Organizations.
- Laidlaw Environmental Services. 1996. *EA document 3—Draft site assessment Report*. Landfill Service Continuation Environmental Assessment.
- Ontario Ministry of Agriculture and Food (OMAF). 1978. *Food Land Guidelines*. A policy statement of Ontario on planning for agriculture.
- Ontario Ministry of the Environment and Energy (MOEE). 1996. "Amendments to Ontario's environmental assessment act." News release on the *Environmental Assessment and Consultation Improvement Act*.
- Ontario Waste Management Corporation (OWMC). 1985. "Phase 4A report summary."

- Ontario Waste Management Corporation (OWMC). 1988. *Environmental Assessment—Site Assessment* (volume V).
- Ontario Waste Management Corporation (OWMC). 1993. “Community impact agreement.” Signed by the OWMC and the Corporation of the Township of West Lincoln.
- Rodd, S., H. Geerts, and R. Coursey. 1988. *Handbook on Waste Management for Rural Communities*. Prepared for the Ontario Federation of Agriculture.