VILLAGE of SUGAR GROVE
PLANNNING COMMISSION/ZONING BOARD of APPEALS
MINUTES of November 15, 2017 MEETING

1. **CALL TO ORDER:**
The meeting of the Sugar Grove Planning Commission / Zoning Board of Appeals (ZBA) was called to order at 7:00 p.m. by Chairman Ochsenschlager in the Village Hall Board Room.

2. **ROLL CALL:**
Planning Commission/ZBA members present:
Chairman Irv Ochsenschlager, Jim Eckert, John Guddendorf, Becky Sabo, Larry Jones, and Gregory Wilson
Absent: James White

Also present: Walter Magdziarz, Community Development Director
Renee Hanlon, Planning & Zoning Administrator

3. **APPROVAL OF MINUTES:**
Motion was made by Commissioner Guddendorf to approve Minutes of the October 18, 2017 Meeting of the Planning Commission/Zoning Board of Appeals. The motion was seconded by Commissioner Eckert.
Motion passed by unanimous voice vote.

Motion was made by Commission Eckert to approve Minutes of the November 1, 2017 Special Meeting of the Planning Commission/Zoning Board of Appeals. The motion was seconded by Commissioner Guddendorf.
Motion passed by unanimous voice vote.

4. **PUBLIC HEARING:**
Petition 17-022: Rezoning to M-1 Limited Manufacturing District with a Special Use for Mining, Reclamation, and Clean Construction Debris Processing.
Applicant: Heartland Recycling Sugar Grove CCDD, LLC

Chairman Ochsenschlager called the public hearing to order at 7:04p.m. He explained that this public hearing was on November 1, 2017 with no testimony taken and continued to this previously scheduled regular meeting date. The Chairman administered the oath to all in attendance who wished to speak.

Director Magdziarz provided a brief description of the requested zoning and the process through which this petition will be reviewed.

John Savage, Heartland Recycling, presented the zoning petition on behalf of the applicant team. He explained that Heartland Recycling was established to identify distressed properties in Kane County, purchase and take measures to prepare the properties for future development. Mr. Savage stated that Heartland Recycling is currently operating a clean construction debris processing and disposal business in Aurora. He explained that the operation was established four (4) years ago and during that time has received only two (2) complaints from neighbors. Both complaints were about dirt on the roadway. Turning to the Harter Road site, Mr. Savage described the nature of the operation. He explained that there are existing sand stockpiles on the property. Heartland plans to sell those stockpiles and haul them off site. He also stated that any excavation on the property will not exceed the water table. The products that will be trucked onto the site for processing and filling will consist of: clay, dirt, concrete and asphalt. He explained that the reason Heartland Recycling is interested in this property is in close proximity to the tollway. Mr. Savage assured the Planning Commissioners that he had read the suggested conditions listed on the Advisory Report prepared by Village Staff and agrees to all conditions. Anticipating some of the reasons for opposing this project, Mr. Savage addressed measures that Heartland Recycling will take to prevent nuisances. Mr. Savage stated that a tanker truck will always be present on site to mitigate dust. He stated that the property will be equipped with a wheel wash so that trucks leaving the site will not deposit dirt on the roadway. The berms existing on the property will be maintained as a noise barrier. The berms will also visually screen the operation from the public roadway. Heartland recycling plans to utilize a single point of access from Harter Road until such time as the reclamation of the property is complete. Mr. Harter stated that Heartland Recycling had commissioned a traffic study, the results of which were forwarded to the Planning Commission for review. He further explained that Harter Road falls under the jurisdiction of the Kane County Department of Transportation and Heartland Recycling has secured approval to utilize the existing point of access from that department. Mr. Savage stated that he expects that this property will be reclaimed within five (5) years. He reiterated the need for the filling operation due to the distressed nature of the property and without it the property has no useful purpose. He explained that Heartland Recycling will construct a paved driveway and located equipment so that the anticipated 5-10 trucks per hour will not be queuing on Harter Road. As to the potential for water table impact or leaching of contaminates, Mr. Savage explained that every load of material coming into their site much be certified by a professional engineer; Heartland Recycling will do additional testing at the gate; and, then testing of materials will occur after they are deposited onsite. He closed by stating that they know of no problems with their Aurora facility which is located in close proximity to the Fox River and the City of Aurora Water Treatment Facility. He also explained that they have been recently awarded a contract with Kane County to operate a similar facility at Settler's Hill in Geneva..

Tom Enno, Alpha Environmental, appeared as an expert witness on behalf of Heartland Recycling. Mr Enno opened his remarks with a description of this operation. He continued with an explanation of the required state permitting process for the operation and the state agencies involved. He explained that the original permit from the Illinois Department of Mines and Minerals required the reclamation of this property at the end of the mining operation. He explained that once this type of facility is operational, the Illinois Department of Environmental Protection (IEPA) will conduct quarterly inspections of the property to insure that all permit conditions are being met. Mr. Enno stated that, in his opinion, the regulation of this type of facility is more rigorous than the regulation of landfills. He supported this claim by explaining the process by which materials brought to this site for disposal must be certified by a professional engineer or geologist after extensive testing. He explained that this certification must be established prior to Heartland Recycling agreeing to take any material and upon request to take the material, Heartland Recycling will perform their own review of the materials prior to agreeing to take the materials. He closed by stating that it is not in the best interest of Heartland Recycling to skirt any of these regulations and allow contaminated materials to be deposited on the property, because the monetary value of this project is in the sale of the reclaimed land which will not occur if contaminants are present.

John Savage added that an example of a successful reclamation project is the Cantera project at the corner of U.S. Interstate 88 and Winfield Road.

Randy Bus, P.E., Cemcon Limited, appeared as an expert witness on behalf of Heartland Recycling. Mr. Bus directed the Planning Commission member's attention to the Stormwater Management Plan and Final Grading Plans. He stated that these plans are in compliance with the Kane County Stormwater Management Ordinance. He explained that the traffic study anticipates that 40-70 trucks will enter and exit the site per day; however, the majority of these trips will occur between the hours of 8:00a.m. and 3:00p.m. which is outside peak demand periods on Harter Road. He also stated that Harter Road is wide enough to accommodate the passing of a slow turning truck on Harter Road by a passenger vehicle. Mr. Bus closed his statements with an explanation of the stormwater management system and its utilization of property on the north side of the property for collection of stormwater.

John Duggan, PC, an attorney representing Heartland Recycling, stated that if any wetlands are encountered on the property, they will not be disturbed. He further stated that the existing pond on the property will be filled; however, the pond is not identified as waters of the United States, because it was created by the previous mining operation.

Chairman Ochenschlager opened the floor to members of the public.

Tim Leuer, Harter Road, stated this his family has resided on Harter Road for the past 60 years and that he wanted to make clear that he was speaking against this proposal. His

stated that his primary concern is the roadway contaminants will be present on the materials being brought into the site. He stated that the contaminants will have a detrimental effect on the groundwater once the materials are deposited on the property. He stated that he does not trust that the IEPA standards will adequately protect surrounding properties from groundwater contamination. Mr. Leuer stated that the purpose of the zoning ordinance is to protect residents from uses such as this. He stated that it is his belief that this proposal is all risk and it will force citizens to deal with negative effects after Heartland cashes in. Mr. Leuer stated that the Aurora facility operated by Heartland Recycling is located more than 400 feet from the nearest residential property while the Harter Road facility is proposed only 200 feet from residential properties. Mr. Leuer closed by stating that he believes this is an outside company which desires to plunder Sugar Grove and then leave. He stated his belief that Sugar Grove is perfection in its current state and is not in favor of this change. He suggested that this property be developed as a recreation facility.

Dave Blankenship, 4S800 Route 47, presented a 3 page document with the top page being titled, *Aquifer Sensitivity to Contamination*, to the Planning Commission members. This document is attached. Mr. Blankenship stated that his primary concern is the high potential for aquifer contamination. He directed the Planning Commission member's attention to the information he provided which indicates that the Harter Road site is identified as having a high potential for aquifer contamination while the Heartland Recycling Aurora site has a moderately low potential for contamination. Mr. Blankenship concluded his comments by stating his concern about the potential for flooding that this project will have on his property. He stated that when there is a moderate amount of rain, his sump pump runs constantly and it is his belief that this project will force more stormwater onto his property aggravating the situation.

Lisa Leader, 43W555 Old Oaks Road, stated that she is a resident within 250 feet of the subject property. She reiterated the previous testimony relevant to the potential for aquifer contamination. Ms. Leader explained her concern that this project will result in more airborne particulate matter which will cause numerous problems for existing residents and Harter Middle School attendees. Ms. Leader expressed her concern that the wildlife present on this site will be displaced which will lead to more roadway accidents. She further stated that she does not believe that the existing berms will be an adequate noise barrier for the additional noise from equipment and truck engine noise. Ms. Leader stated that she had visited the Heartland Recycling Aurora facility and witnessed massive amounts of dust in the area and mud on the roadway. She closed her comments by stating that in the past, the Village of Sugar Grove had rejected projects which were much less intrusive than this project.

Dan Leuer, 4S787 Harter Road, stated that his family farm is adjacent to this property along two sides. He gave a brief history of the county zoning on this property. He queried the petitioner as to whether or not they had completed a Phase I report for the

property. He also asked if they had taken soil samples on the property. He further stated that both Heartland Recycling and IEPA have admitted that they cannot provide a guarantee that the materials deposited on the site will be one hundred percent contaminate free. If the sand and gravel aquifer are contaminated, hundreds of people will be effected. Mr. Leuer concluded his remarks with the following direction to the Planning Commission: Heartland should be required to secure an IDOT permit and have a point of access only from Route 47, the Village should make Heartland consolidate the lots and then go through the subdivision process after reclamation, the open well on the site must be capped in compliance with Kane County requirements, and this site should be utilized for recreation.

At 8:10p.m. Commissioner Jones left the public hearing.

Brandon Matthews, 4S916 Sugar Grove Parkway, expressed his concern about the effect this use will have on his property immediately north of the site. He stated that his well is located only ten feet from the shared property line and his farm field to the north is underwater most of the year. He directed the Planning Commission member's attention to the Land Use Opinion of the Kane/DuPage Soil and Water Conservation District. He explained that the report identified an area of hydric soil on the north side of the property and that the Heartland Recycling stormwater plans indicate that they are planning to direct all stormwater to that portion of the property with outlets onto his property. He stated his concern that this will have a detrimental effect on his property. He turned to an explanation of the existing topographic grades on his property compared to the subject property. Mr. Matthews stated that it is his opinion that Heartland Recycling is not filling the property, but adding to the existing property in order to match the elevated grades of the berms that were previously installed on the property.

James Leader, 43W555 Old Oaks Road, expressed his desire to show a power point presentation. Director Magdziarz explained that there is a technical issue with the equipment which precludes the presentation. Mr. Leader stated that he would return to the hearing with functional equipment.

Mary Eddings, Harter Road, stated her concern for the impact this operation will have on the children that attend Harter Middle School. She continued by stating her concern that Harter Road was not designed to handle the type of truck traffic this operation will produce. She concluded her remarks by asking the Planning Commission to consider requiring larger public notice signs in the future.

Mary Ann Rees, 4S800 Sugar Grove Parkway, explained that she is primarily concerned about drainage of the property. She stated that the farm field to the north of this site was at one time dry; however, due to broken tiles the area is now prone to flooding. She concluded her comments by stating that she suspects that the Village of Sugar Grove is

not equipped to protect the neighbors from stormwater issues as evidenced by the problems she has heard about at Chelsea Meadows and Mallard Point.

Mike Coghlan, Law Office of Michael Coghlan, explained that he is an attorney appearing on behalf of objectors to this petition. Mr. Coughlan expressed his belief that there exist procedural deficiencies with this zoning request and review. Mr. Coghlan submitted a letter with attachments to the Planning Commission. This document is attached.

Joanna Livengood, 43W507 Old Oaks Road, stated that she had visited the Heartland Recycling Aurora facility where she observed dust, mud on the roadway, tall stock piles of materials, and dangerous truck traffic. She explained that it is her belief that this type of operation is only suited in an industrial area. She continued by explaining that her primary concern is that Heartland Recycling plans to take out the natural sand and gravel groundwater filter that currently existing on the property and replace it with debris that may contain contaminates. She explained that she believe this will result in leachates into the aquifer. She concluded her remarks with a discussion of how adding particulate matter to the air through the pulverizing of concrete and the addition of truck emissions, will create a situation where every day is a bad air day in the area. Ms. Livengood concluded her remarks with an appeal to the Planning Commission members to hold out for a better proposed use of this property.

Kim Hollis, Old Oaks Road, reiterated the previous testimony that this site is different from the Aurora site and that it is not appropriately located for the use.

Chairman Ochsenschlager called for a ten minute recess.

Chairman Ochsenschlager reconvened the public hearing to order at 9:00p.m.

James Leader, 4W555 Old Oaks Road, presented digital photographs via his laptop computer to the Planning Commission members. He explained that he had taken the photos of the Heartland Recycling Aurora Facility. Mr. Leader described the conditions illustrated by these photos. He explained that thick dust was present in the area and mud was present on the roadway. He concluded by stating that he is concerned about these types of nuisances being created by the proposed operation.

Mike Paulus, 43W579 Old Oaks Road, presented the Planning Commission members with a 31 page packet of materials the first page being titled, *MCAA Special Report*. This packet is attached. Mr. Paulus stated that he is concerned about the validity of testing materials such as porous concrete which will be deposited on the property. He reiterated concerns about stormwater runoff onto the property to the north and traffic safety on Harter Road. He concluded his comments with advising the Planning Commission

members to add metrics for assessing and consequences for violations of any conditions the Village may place on this operation.

Lisa Legarreta, 260 Chatsworth, stated her concern that this operation is located too close to Harter Middle School. Ms. Legarreta stated that her concern arises from her expertise as a respiratory therapist and the effect the additional airborne particulate matter will have on children with respiratory problems. As a counter to Heartland Recycling plans for limited the crushing operation to months in which the school is not operational, she pointed out that the park next to the school hosts people all summer long. She also pointed out that the Cantera project, which Mr. Savage had used as a positive example of a filling operation, had occurred at a time when there were no schools or residential uses located in close proximity. She concluded her comments by stating this this is not the right project for this area.

John Savage, Heartland Recycling, explained that it is his opinion that the only way the property will ever be developed is after a fill operation has been completed on the property. He further stated that Heartland will work with the community to address any concerns in order to be a good neighbor.

Dave Blankenship stated his objection to the Village of Sugar Grove using tax increment financing initiatives on farmed properties by declaring that the properties are blighted. He stated that this property, like those farm fields, is not a blighted property.

John Savage responded by stating that Heartland Recycling is not asking for public assistance for this project.

Chairman Ochsenschlager summarized a letter received prior to the hearing from an adjoining property owner. The letter from Jamie Koz dated November 8, 2017 is attached. He further polled members of the public to ensure that everyone felt they had been given ample opportunity to be heard.

Mike Coghlan asked that the hearing be continued so that he could submit additional information in rebuttal to the expert witnesses of the petitioner.

Chairman Oschenslager announced the continuation of this public hearing to November 29, 2017 at 7:00 pm in Village Board Chamber, 10 South Municipal Drive.

<u>Petition 17-026: Zoning Ordinance Text Amendment—Outdoor Illumination</u>
<u>Applicant: Village of Sugar Grove</u>

Chairman Oschenslager opened the public hearing for Petition #17-026 Text Amendment to Village of Sugar Grove Zoning Ordinance—Dark Sky Protection at 9:30p.m. Chairman Ochsenschlager stated that the advanced hour precludes this matter being taken

up at this time and is therefore continued until November 16, 2017 at 7:00p.m. in Village Board Chambers, 10 S Municipal Drive.

5. **NEW BUSINESS:**
None.

6. **OLD BUSINESS**
None.

7. **PLAN COMMISSIONER COMMENTS, PROJECTS UPDATES and MISCELLANEOUS INFORMATION**

Next meeting will be in November 16, 2017.

8. **ADJOURNMENT**
Commissioner Sabo made a motion to adjourn the meeting at 9:35p.m. Commissioner Wilson seconded the motion.
Motion unanimously passed by voice vote.

Respectfully submitted,
Renee Hanlon
Recording Secretary

Dave Blankenship
11.15.17 Public Hearing

Illinois Department of Natural Resources
ILLINOIS STATE GEOLOGICAL SURVEY
William W. Shilts, Chief

AQUIFER SENSITIVITY TO CONTAMINATION
KANE COUNTY, ILLINOIS

William S. Dey, Alec M. Davis, and B. Brandon Curry
2007

Aquifer Sensitivity

Introduction

The map aquifer sensitivity to contamination (Dey et al 2007) is a representation of the potential vulnerability of aquifers in an area to contamination from sources of contaminants at or near the surface. The U.S. Environmental Protection Agency (1993) defines aquifer sensitivity/contamination potential as "a measure of the ease with which a contaminant applied on or near the land surface can migrate to an aquifer. It is a function of the intrinsic characteristics of both the geologic materials comprising the aquifer as well as the overlying saturated and unsaturated material. It is independent of land use and the types of contaminant introduced."

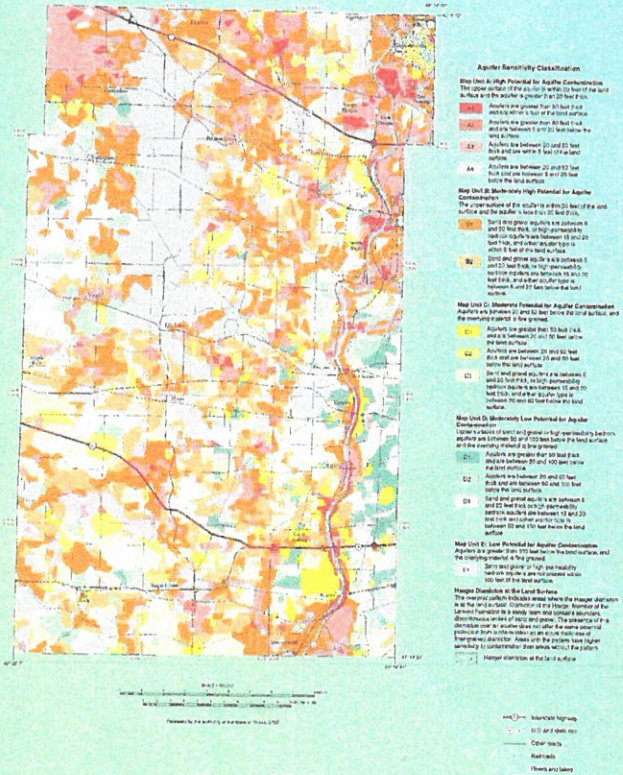
Methods

The method for classifying aquifer sensitivity used in producing the aquifer sensitivity map of Kane County (Dey et al., 2007) was based on the mapping system developed by Berg (2001). The system uses depth to and thickness of the uppermost aquifer or aquifer material and relative permeability of overlying material to assign a classification rating. Aquifers are defined as geologic materials that are saturated and sufficiently permeable to yield economic quantities of water to wells or springs (Fetter 1994). In Kane County, shallow aquifers are generally composed of unlithified sand and gravel deposits, or of bedrock units of fractured carbonates. For this map, sand and gravel deposits were defined as aquifers in areas where the units were greater than 5 feet thick (35 Ill. Adm. Code 620.210) and extended over at least a square mile of area. Carbonate bedrock of Silurian age was defined as an aquifer where it was the uppermost bedrock unit and greater than 15 feet thick (35 Ill. Adm. Code 620.210). The Silurian rock is commonly fractured at its upper surface (Graese et al. 1988). Geologic materials that would be classified as aquifers but are above the water table and therefore not saturated were grouped with aquifers in the interpretation for this map because they still provide a conduit for the vertical flow of water and potential contaminants. Glacial diamicton (an unsorted mixture of gravel, sand, silt, and clay commonly called "till"); wind-blown silt (loess), peat, silty and clayey river and lake sediment, shale, and unfractured carbonate bedrock are not considered aquifers because they are generally fine-grained and have limited potential to yield water to a well.

Aquifer vulnerability is assumed to decrease with depth. Studies in Minnesota (Klaseus et al. 1989) and Iowa (Libra et al. 1993) found a decrease in agricultural chemicals in water samples collected at a depth of greater than 100 feet. Schock et al. (1992) found that depth to uppermost aquifer was useful for predicting the occurrence of agricultural chemicals in drilled wells in rural Illinois, using depth intervals of less than 50 feet and greater than 50 feet. In a subsequent study, Mehnert et al. (2003) found that the depth to the uppermost aquifer was useful for predicting the occurrence of agricultural chemicals in monitoring wells in rural Illinois, using intervals of less less than 20 feet, 20 to 50 feet, and greater than 50 feet.

Thicker aquifers provide a greater groundwater resource than thinner aquifers, potentially yielding more water and being utilized by more people. The importance of protection from contamination theoretically increases with aquifer thickness. Thus, vulnerability increases with aquifer thickness. Following Berg's (2001) recommendation, aquifer thickness intervals used were 5 to 20 feet (or 15 to 20 feet for fractured carbonate), 20 to5 0 feet, and greater than 50 feet.

The Haeger Member is a sandy loam diamicton with abundant, discontinuous lenses of sand and gravel and thin beds of silt and clay. It is not uniformly coarse enough to be considered aquifer material. However it is coarse enough that its presence over an aquifer does not offer the same protection from contamination as an equal thickness of a finer-grained diamicton. Although the Haeger Member is treated as non-aquifer material for this aquifer sensitivity map, its presence at the land surface is uniquely noted due to the lower potential protection it offers underlying aquifers.



Classification Sequence

The aquifer sensitivity classification rates sequences from Map Unit A to Map Unit E in order of decreasing sensitivity to aquifers becoming contaminated.

Map Unit A: High Potential for Aquifer Contamination

Map Unit A is defined as areas where the upper surface of the aquifer is within 20 feet of the land surface and with sand and gravel or high-permeability bedrock aquifers greater than 20 feet thick. Map Unit A is classified as an area of high aquifer sensitivity. It is most prevalent in southern and northwestern Kane County and along the Fox River where the drift is thin. In these areas, contaminants from any source can move rapidly through the sand and gravel deposits to wells or nearby streams. Land use practices should be very conservative in all areas mapped as unit A.

Map Unit A1. Aquifers are greater than 50 feet thick and are within 5 feet of the land surface. Small patches of Unit A1 occur throughout the county. Notable occurrences are found northwest of Hampshire (as part of a large alluvial fan extending west of the Marengo Moraine and north of the Bloomington Moraine System (fig. 1)) and along reaches of the Fox River (where glacial drift is thin, and fractured dolomite or thick sand deposits are at or very near ground surface).

Map Unit A2. Aquifers are more than 50 feet thick and between 5 and 20 feet below ground surface. This map unit is not very common in Kane County.

Map Unit A3. Aquifers between 20 to 50 feet thick occur within 5 feet of the land surface. Because of their similar definitions, the distribution of Unit A3 is in areas where Unit A1 is also mapped. It also is common in northern Kane County.

Map Unit A4. Aquifers are between 20 and 50 feet thick between 5 and 20 feet below the land surface. Unit A4 is much more common than similarly defined Unit A2. Large areas of Unit A4 also occur in southern Kane County associated with the Elburn Complex (fig. 1).

Map Unit B: Moderately High Potential for Aquifer Contamination

Unit B is defined as areas where aquifers are within 20 of the land surface, and sand and gravel aquifers are between 5 and 20 feet thick or high-permeability bedrock aquifers are between 15 and 20 feet thick. Groundwater is sensitive to contamination due to the minimal barrier of diamicton or silt and clay.

Map Unit B1. Sand and gravel aquifers are between 5 and 20 feet thick and high permeability bedrock aquifers are between 15 and 20 feet thick either type is within 5 feet of the land surface. This unit is common throughout the county. Notable occurrences include areas in the Elburn Complex (fig. 1) along Route 47 north of Sugar Grove, and in outwash terraces along the Fox River.

Map Unit B2. Sand and gravel aquifers are between 5 and 20 feet thick and high permeability bedrock aquifers are between 15 and 20 feet thick either type is between 5 and 20 feet of the land surface This unit is found in patches throughout the county in association with Unit B1. Unit B2 is most common in the Elburn Complex (fig. 1) and in north-central Kane County.

Map Unit C: Moderate Potential for Aquifer Contamination

In Unit C areas, aquifers are buried by 20 to 50 foot thick, fine-grained deposits, including all diamicton units and silt and clay of the Equality Formation. The mantle of fine-grained material offers moderate protection for underlying aquifers from waste spreading or from septic systems. Schock et al. (1992) reported that pesticide and nitrate detections in Illinois were significantly fewer where aquifers were buried by 20 to 50 feet than where aquifers were shallower.

Figure 1 Wisconsin Episode moraines in northeastern Illinois.

Map Unit C1. Aquifers are greater than 50 feet thick and buried by 20 to 50 feet of fine-grained material. Unit C1 occurs in isolated patches throughout the county. It is most common in southeastern Kane County near the Fox River.

Map Unit C2. Aquifers are between 20 to 50 feet thick and are buried by 20 to 50 feet of fine-grained material. This unit is widespread in the Elburn Complex (fig. 1)

Map Unit C3. Sand and gravel aquifers are between 5 and 20 feet thick and high-permeability bedrock aquifers are between 15 and 20 feet thicken and either type is buried by 20 to 50 feet of fine-grained material. Again, these units are widespread in the Elburn Complex (fig. 1).

Map Unit D: Moderately Low Potential for Aquifer Contamination

The probability that groundwater will become contaminated is moderately low in places where sand and gravel aquifers are buried by fine-grained deposits 50 to 100 feet thick. In Kane County, such areas occur below moraines.

Map Unit D1. Aquifers are more than 50 feet thick and are buried by 50 to 100 feet of fine-grained material. The largest mapped areas of Unit D1 occur in southeastern Kane County.

Map Units D2. Aquifers are between 20 to 50 feet thick and are buried by 20 to 50 feet of fine-grained material. These units are widespread in the Bloomington Moraine System, Elburn Complex, and the Minooka and St. Charles Moraines (fig. 1).

Map Units D3. Sand and gravel are aquifers between 5 and 20 feet thick and bedrock aquifers between 15 and 20 feet thick that are buried by 20 to 50 feet of fine-grained material. These units have a similar distribution to Unit D2.

Map Unit E: Low Potential for Aquifer Contamination

Map Unit E occurs in places where diamicton, lacustrine silt and clay, or shale is more than 100 feet thick. Discontinuous lenses of sand and gravel may occur in the diamicton, but they typically are not aquifers. The large area mapped as Unit E is associated with the Marengo Moraine and, to a lesser degree, the Bloomington Moraine System. Isolated patches of this unit occur throughout the rest of the county.

Overprint Pattern: Sandy Diamicton (Haeger Member) at Land Surface

A stippled overprint pattern shows where the Haeger Member is at the land surface. Overprinted map units have a higher potential of sensitivity to contamination, than the same map unit in areas without the stipple overprint pattern. The Haeger Member only occurs in northeastern Kane County east of the Fox River.

Application

Kane County's 2030 Land Resource Management Plan (Kane County 2004) recognized the vulnerability of the county's water resources to contamination. Nine objectives for water-resources management are articulated in the Plan (p. 104), the second of which addresses protecting the county's groundwater resources. The Aquifer Sensitivity to Contamination Map (Dey 2007) is a useful tool for county wide planning. The map should be used as a guide in decisions that have a potential to impact groundwater quality. The map is based on generalized textural properties and assumptions about hydraulic characteristics of geologic materials and hydraulic gradients, but not results from water quality or groundwater flow analysis. Because of generalizations used in preparing the map, any mapped unit may contain small areas of greater or lesser aquifer sensitivity to contamination. This map should not be used as a substitute for evaluation of individual sites. It should not be enlarged. The map is available at http://www.isgs.uiuc.edu/maps-data-pub/icgm/pdf-files/kane_co_as_icgm.pdf

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Aquifer Sensitivity Classification

Map Unit A: High Potential for Aquifer Contamination
The upper surface of the aquifer is within 20 feet of the land surface and the aquifer is greater than 20 feet thick.

- A1 — Aquifers are greater than 50 feet thick and are within 5 feet of the land surface.
- A2 — Aquifers are greater than 50 feet thick and are between 5 and 20 feet below the land surface.
- A3 — Aquifers are between 20 and 50 feet thick and are within 5 feet of the land surface.
- A4 — Aquifers are between 20 and 50 feet thick and are between 5 and 20 feet below the land surface.

Map Unit B: Moderately High Potential for Aquifer Contamination
The upper surface of the aquifer is within 20 feet of the land surface and the aquifer is less than 20 feet thick.

- B1 — Sand and gravel aquifers are between 5 and 20 feet thick, or high-permeability bedrock aquifers are between 15 and 20 feet thick, and either aquifer type is within 5 feet of the land surface.
- B2 — Sand and gravel aquifers are between 5 and 20 feet thick, or high-permeability bedrock aquifers are between 15 and 20 feet thick, and either aquifer type is between 5 and 20 feet below the land surface.

Map Unit C: Moderate Potential for Aquifer Contamination
Aquifers are between 20 and 50 feet below the land surface, and the overlying material is fine grained.

- C1 — Aquifers are greater than 50 feet thick and are between 20 and 50 feet below the land surface.
- C2 — Aquifers are between 20 and 50 feet thick and are between 20 and 50 feet below the land surface.
- C3 — Sand and gravel aquifers are between 5 and 20 feet thick, or high-permeability bedrock aquifers are between 15 and 20 feet thick, and either aquifer type is between 20 and 50 feet below the land surface.

Map Unit D: Moderately Low Potential for Aquifer Contamination
Upper surfaces of sand and gravel or high-permeability bedrock aquifers are between 50 and 100 feet below the land surface, and the overlying material is fine grained.

- D1 — Aquifers are greater than 50 feet thick and are between 50 and 100 feet below the land surface.
- D2 — Aquifers are between 20 and 50 feet thick and are between 50 and 100 feet below the land surface.
- D3 — Sand and gravel aquifers are between 5 and 20 feet thick or high-permeability bedrock aquifers are between 15 and 20 feet thick and either aquifer type is between 50 and 100 feet below the land surface.

Map Unit E: Low Potential for Aquifer Contamination
Aquifers are greater than 100 feet below the land surface, and the overlying material is fine grained.

- E1 — Sand and gravel or high-permeability bedrock aquifers are not present within 100 feet of the land surface.

Haeger Diamicton at the Land Surface
The overprint pattern indicates areas where the Haeger diamicton is at the land surface. Diamicton of the Haeger Member of the Lemont Formation is a sandy loam and contains abundant, discontinuous lenses of sand and gravel. The presence of this diamicton over an aquifer does not offer the same potential protection from contamination as an equal thickness of finer-grained diamicton. Areas with the pattern have higher sensitivity to contamination than areas without the pattern.

- Haeger diamicton at the land surface

- Interstate highway
- U.S. and state rou
- Other roads
- Railroads
- Rivers and lakes
- Municipal bounda

Classification Sequence

The aquifer sensitivity classification rates sequences from Map Unit A to Map Unit E in order of decreasing sensitivity to aquifers becoming contaminated.

Map Unit A: High Potential for Aquifer Contamination

Map Unit A is defined as areas where the upper surface of the aquifer is within 20 feet of the land surface and with sand and gravel or high-permeability bedrock aquifers greater than 20 feet thick. Map Unit A is classified as an area of high aquifer sensitivity. It is most prevalent in southern and northwestern Kane County and along the Fox River where the drift is thin. In these areas, contaminants from any source can move rapidly through the sand and gravel deposits to wells or nearby streams. Land use practices should be very conservative in all areas mapped as unit A.

Map Unit A1. Aquifers are greater than 50 feet thick and are within 5 feet of the land surface. Small patches of Unit A1 occur throughout the county. Notable occurrences are found northwest of Hampshire (as part of a large alluvial fan extending west of the Marengo Moraine and north of the Bloomington Morainic System (fig. 1)) and along reaches of the Fox River (where glacial drift is thin, and fractured dolomite or thick sand deposits are at or very near ground surface).

Map Unit A2. Aquifers are more than 50 feet thick and between 5 and 20 feet below ground surface. This map unit is not very common in Kane County.

Map Unit A3. Aquifers between 20 to 50 feet thick occur within 5 feet of the land surface. Because of their similar definitions, the distribution of Unit A3 is in areas where Unit A1 is also mapped. It also is common in northern Kane County.

Map Unit A4. Aquifers are between 20 and 50 feet thick between 5 and 20 feet below the land surface. Unit A4 is much more common than similarly defined Unit A2. Large areas of Unit A4 also occur in southern Kane County associated with the Elburn Complex (fig. 1).

Map Unit B: Moderately High Potential for Aquifer Contamination

Unit B is defined as areas where aquifers are within 20 of the land surface, and sand and gravel aquifers are between 5 and 20 feet thick or high-permeability bedrock aquifers are between 15 and 20 feet thick. Groundwater is sensitive to contamination due to the minimal barrier of diamicton or silt and clay.

Map Unit B1. Sand and gravel aquifers are between 5 and 20 feet thick and high permeability bedrock aquifers are between 15 and 20 feet thick either type is within 5 feet of the land surface. This unit is common throughout the county. Notable occurrences include areas in the Elburn Complex (fig. 1) along Route 47 north of Sugar Grove, and in outwash terraces along the Fox River.

Map Unit B2. Sand and gravel aquifers are between 5 and 20 feet thick and high permeability bedrock aquifers are between 15 and 20 feet thick either type is between 5 and 20 feet of the land surface This unit is found in patches throughout the county in association with Unit B1. Unit B2 is most common in the Elburn Complex (fig. 1) and in north-central Kane County.

Map Unit C: Moderate Potential for Aquifer Contamination

In Unit C areas, aquifers are buried by 20 to 50 foot thick, fine-grained deposits, including all diamicton units and silt and clay of the Equality Formation. The mantle of fine-grained material offers moderate protection for underlying aquifers from waste spreading

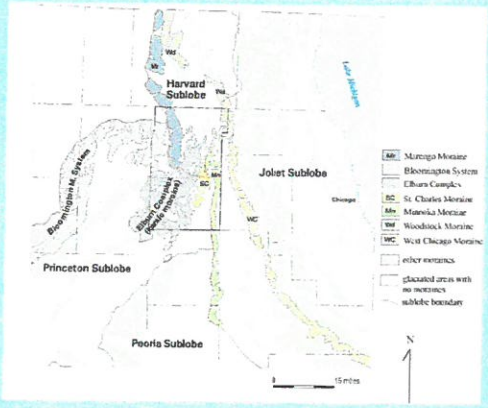


Figure 1 Wisconsin Episode moraines in northeastern Illinois.

or from septic systems. Schock et al. (1992) reported that pesticide and nitrate detections in Illinois were significantly fewer where aquifers were buried by 20 to 50 feet than where aquifers were shallower.

Map Unit C1. Aquifers are greater than 50 feet thick and buried by 20 to 50 feet of fine-grained material. Unit C1 occurs in isolated patches throughout the county. It is most common in southeastern Kane County near the Fox River.

Map Unit C2. Aquifers are between 20 to 50 feet thick and are buried by 20 to 50 feet of fine-grained material. This unit is widespread in the Elburn Complex (fig. 1)

Map Unit C3. Sand and gravel aquifers are between 5 and 20 feet thick and high-permeability bedrock aquifers are between 15 and 20 feet thicken and either type is buried by 20 to 50 feet of fine-grained material. Again, these units are widespread in the Elburn Complex (fig. 1).

Map Unit D: Moderately Low Potential for Aquifer Contamination

The probability that groundwater will become contaminated is moderately low in places where sand and gravel aquifers are buried by fine-grained deposits 50 to 100 feet thick. In Kane County, such areas occur below moraines.

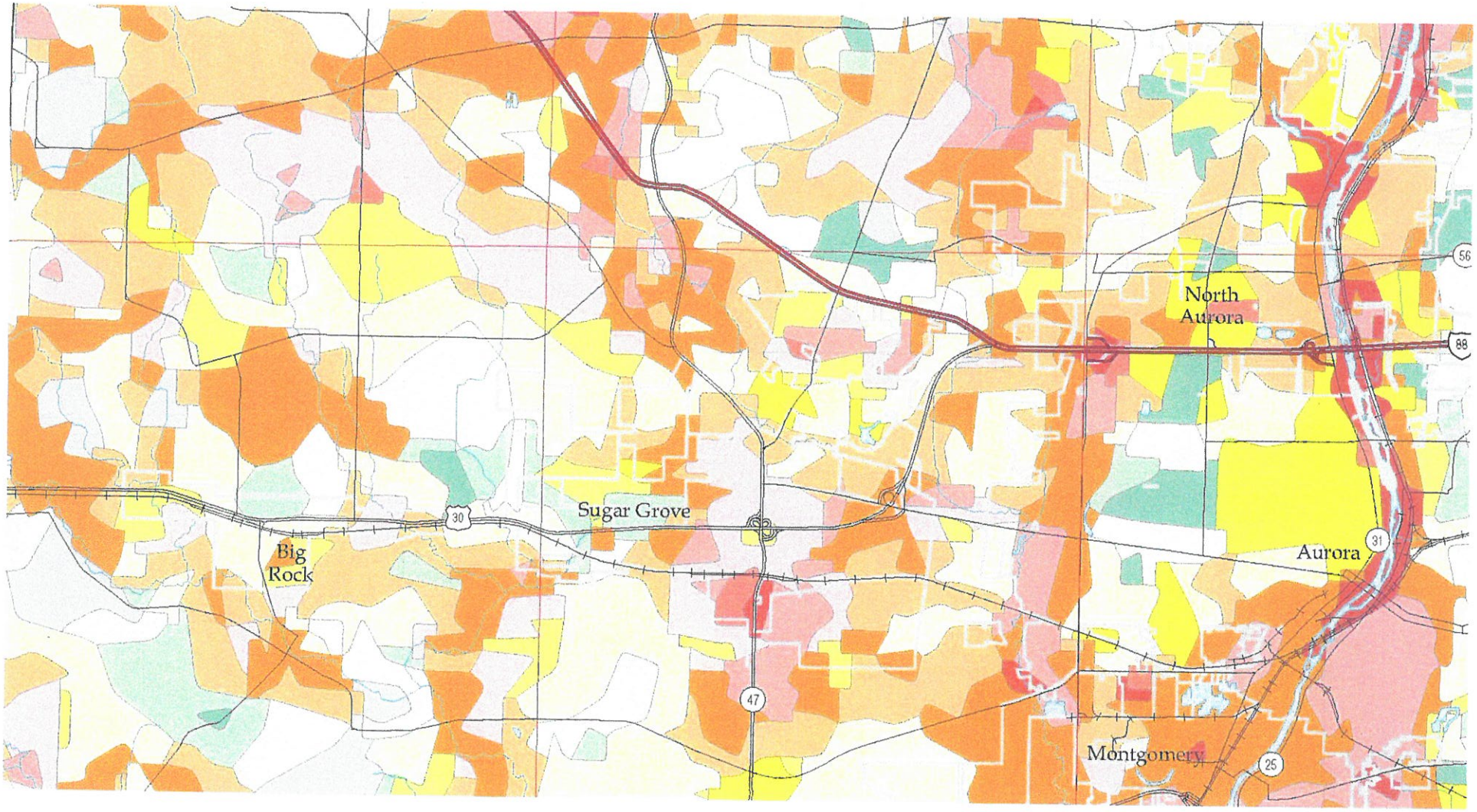
Map Unit D1. Aquifers are more than 50 feet thick and are buried by 50 to 100 feet of fine-grained material. The largest mapped areas of Unit D1 occur in southeastern Kane County.

Map Units D2. Aquifers are between 20 to 50 feet thick and are buried by 20 to 50 feet of fine-grained material. These units are widespread in the Bloomington Morainic System, Elburn Complex, and the Minooka and St. Charles Moraines (fig. 1).

Map Units D3. Sand and gravel are aquifers between 5 and 20 feet thick and bedrock aquifers between 15 and 20 feet thick that are buried by 20 to 50 feet of fine-grained material. These units have a similar distribution to Unit D2.

Map Unit E: Low Potential for Aquifer Contamination

Map Unit E occurs in places where diamicton, lacustrine silt and clay, or shale is more than 100 feet thick. Discontinuous lenses of sand and gravel may occur in the diamicton, but they typically are not aquifers. The large area mapped as Unit E is associated with the Marengo Moraine and, to a lesser degree, the Bloomington Morainic System. Isolated patches of this unit occur throughout the rest of the county.


North
Aurora
Sugar Grove
Big
Rock
Aurora
Montgomery
56
88
30
31
47
25

Mike Paulus
11.15.17 Hearing

MCAA Special Report

OSHA Proposed Rule on Crystalline Silica

On August 23, the U.S. Occupational Safety and Health Administration (OSHA) announced that it will soon publish a Notice of Proposed Rulemaking (proposed rule) aimed at curbing worker exposure to crystalline silica. Crystalline silica is a natural occurring component of soil, sand, granite and other minerals. According to OSHA, about 1.85 million construction workers are exposed to respirable crystalline silica annually. Exposure occurs during construction activities when workers are cutting, grinding, crushing or drilling materials that contain silica, such as concrete, masonry, tile or rock.

This MCAA special report provides a summary of OSHA's proposed rule on crystalline silica in a question and answer format. It is not legal advice and is offered for general information purposes only. For advice on how the proposed rule may impact your construction operations, consult your safety advisor, insurance agent and/or legal counsel.

Why did OSHA publish this rule?

According to OSHA, its proposal "seeks to lower worker exposure to crystalline silica, which kills hundreds of workers and sickens thousands more each year." OSHA estimates that, once the rule is fully implemented, it will "result in saving nearly 700 lives per year and prevent 1,600 new cases of silicosis annually." OSHA's current rule on silica was adopted in 1971 and has not been updated since that time.

Why is respirable crystalline silica dangerous?

Exposure to crystalline causes silicosis, an incurable lung disease caused by tiny silica particles, small enough to inhale. Once inhaled, the particles can cause scarring and damage to the lungs. This reduces the lungs' ability to take in oxygen and makes an individual more susceptible to lung infections and other diseases, including lung cancer.

What construction activities are most likely to expose workers to silica?

Many common construction operations can expose workers to silica, including using masonry saws, using hand-operated grinders, tuckpointing, using jackhammers, using rotary hammers or drills, operating vehicle-mounted drills, drywall finishing using silica-containing materials, and using heavy equipment during earthmoving. Note that employees, who are in proximity to such activities, even though not directly involved, also may be exposed to silica.

What will the OSHA proposed require of construction employers?

Generally, OSHA's proposed rule would require construction employers to measure workers' exposure to silica; train workers on how to avoid exposure to silica; limit worker access to areas where they could be exposed to silica; provide technological means to protect workers, such as dust controls and respirators; offer medical exams to workers exposed to silica; and keep records on worker exposure and medical exams.

You said that construction employers will have to measure workers' exposure to silica. When does that requirement apply?

Under OSHA's proposed rule, a construction employer would have to measure and keep records of the amount of silica that its workers are exposed to if it may be at or above 25 µg/m3 (micrograms of silica per cubic meter of air),

averaged over an 8-hour day. This is known as the "action level." A construction employer would have to protect its workers from respirable crystalline silica exposures above a permissive exposure level of 50 µg/m3, averaged over an 8-hour day. This is known as the PEL. It is our understanding that at the proposed action level, all works on a construction jobsite would fall under this standard.

Under OSHA's proposed rule, what procedures will I have to use to protect workers?

OSHA's proposed rule essentially provides four ways to protect workers from crystalline silica:

1. Train workers on the dangers of silica exposure and ways to mitigate exposure.
2. Limit workers' access to areas where they could be exposed above the PEL.
3. Use dust controls to protect workers from silica exposures above the PEL.
4. Provide respirators to workers when dust controls cannot limit exposures to the PEL.

In its proposed rule, OSHA provides some flexibility to employers on how to comply. For example, an employer would not have to measure its workers' exposure to silica if it chooses to control silica dust using OSHA-designated methods to control silica dust on specified construction activities. Alternatively, a construction employer could choose to measure its workers' exposure to silica and independently decide which dust controls work best on its jobsites.

You also said that an employer would have to offer medical exams to workers exposed to silica.

That's right. OSHA's proposed rule would require an employer to offer medical exams, including chest X-rays and lung function tests, to workers who have been exposed to silica above the PEL for 30 or more days per year.

You also mentioned recordkeeping. What kind of recordkeeping will I have to keep?

OSHA's proposed rule requires employers whose workers are exposed to silica to keep records concerning worker exposure to silica and the medical exams provided to these workers. Again, the rule sets forth significant detail.

What is MCAA doing about OSHA's proposed silica rule?

To begin with, MCAA staff and advisors are reading and studying the 577-page proposed rule. The document is not just long, but it is complex, offering several alternatives for construction employers. In its evaluation, MCAA will determine whether OSHA's proposed rule:

- Adequately addresses the unique nature of the masonry construction with non-fixed worksites and transient employees.
- Is technologically feasible in the masonry industry with its varied tasks, operations and controls.
- Is economically feasible in the masonry industry, which is dominated by small firms.
- Is consistent with other federal government rules and regulations.

In addition, MCAA is a member of the Construction Industry Safety Coalition, a construction industry-wide coalition, which is coordinating an industry response to OSHA's proposed silica rule. The Coalition already has retained a firm to conduct a technological and economic feasibility study of OSHA's proposed rule.

Once MCAA conducts a thorough study of OSHA's proposed rule, the Association will prepare and submit comments to OSHA.

What can I do to help?

First, as a construction employer, you should first evaluate your own jobsites, both to assure that you are protecting your employees against exposure to respirable crystalline silica and that you are complying with current OSHA requirements.

Then, you should evaluate the proposed OSHA rule to determine how you would comply, how much it would cost, and the impact on your employees and your company. Share that information with MCAA President Jeff Buczkiewicz at jeffb@masoncontractors.org or 800-536-2225.

Finally, you can file your own comments with OSHA by visiting the Federal e-Rulemaking Portal at http://www.regulations.gov/#!home, entering Docket ID# OSHA-2010-003, and then submitting your comments; remember your comments will be part of the public record.

Where can I learn more about OSHA's proposed rule on crystalline silica?

OSHA has established a Web site on its proposed rule at https://www.osha.gov/silica/, where you can get a copy of the proposed rule, OSHA-prepared fact sheets, and even link to the site where you can file your own comments. Of course, MCAA also will continue to provide its members with information, as it completes its evaluation of OSHA's proposed rule and files its own comments with OSHA.

The MCAA would like to thank the ASA (A Construction Industry Safety Coalition member) for preparing these questions and answers.

Silica, Crystalline

Respirable Crystalline Silica Menu

Health Effects

Health Effects Information Health Effects Resources

Breathing in very small ("respirable") crystalline silica particles, causes multiple diseases, including silicosis, an incurable lung disease that leads to disability and death. Respirable crystalline silica also causes lung cancer, chronic obstructive pulmonary disease (COPD), and kidney disease. Exposure to respirable crystalline silica is related to the development of autoimmune disorders and cardiovascular impairment. These occupational diseases are life-altering and debilitating disorders that annually affect thousands of workers across the United States.

Silicosis

Breathing crystalline silica dust can cause silicosis, which in severe cases can be disabling, or even fatal. When silica dust enters the lungs, it causes the formation of scar tissue, which makes it difficult for the lungs to take in oxygen. There is no cure for silicosis.

Silicosis typically occurs after 15–20 years of occupational exposure to respirable crystalline silica. Symptoms may or may not be obvious; therefore, workers need to have a chest x-ray to determine if there is lung damage. As the disease progresses, the worker may experience shortness of breath upon exercising. In the later stages, the worker may experience fatigue, extreme shortness of breath, chest pain, or respiratory failure.

Because silicosis affects the immune system, exposure to silica increases the risk of lung infections, such as tuberculosis. In addition, smoking causes lung damage and adds to the damage caused by breathing silica dust.

In rare instances, individuals exposed to very high concentrations of respirable crystalline silica can develop typical silicosis symptoms as well as fever and weight loss within weeks instead of years. In these cases, medical evaluation should be performed as soon as possible.

Lung Cancer

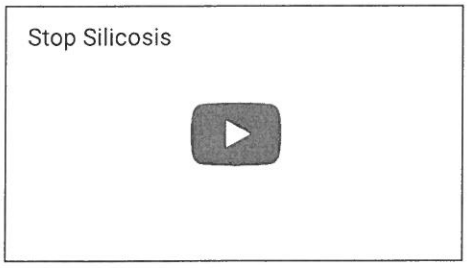
Exposure to respirable crystalline silica increases the risk of developing lung cancer. Lung cancer is a disease where abnormal cells grow uncontrollably into tumors, interfering with lung function. The abnormal cancer cells can also travel ("metastasize") and cause damage to other parts of the body. Most cases are not curable.

Chronic Obstructive Pulmonary Disease (COPD)

Exposure to respirable crystalline silica increases the risk of other lung diseases, primarily COPD, which includes emphysema and chronic bronchitis. The main symptom of COPD is shortness of breath due to difficulty breathing air into the lungs. COPD is not usually reversible and may worsen over time.

Kidney Disease

Studies of workers exposed to respirable crystalline silica have found that these workers are at increased risk of developing kidney disease. For instance, kidney failure has been observed among workers with high silica exposure, such as in abrasive blasters who also were suffering from silicosis.



1938 "Stop Silicosis" Video

The hazard of respirable crystalline silica exposure has been known for decades. This 1938 video features former Secretary of Labor, Frances Perkins (1933-1945), and describes both the hazards associated with silica exposure and the U.S. Department of Labor's early efforts to ensure safe and healthful working conditions for America's working men and women. Although tremendous progress has been made since this video was produced, evidence indicates

2016 "Stop Silicosis" Video.

An introduction to the respirable crystalline silica standards impact on worker health.

that a substantial number of workers still suffer from silica-related diseases. This video is available for download at http://archive.org/details/StopSilicosis

These resources provide information about the adverse health effects caused by inhaling respirable crystalline silica.

- NIOSH Hazard Review (April 2002). U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health (NIOSH). Describes published studies and literature on the health effects of occupational exposure to respirable crystalline silica among workers in the U.S., and many other countries.
- Centers for Disease Control and Prevention (CDC) Morbidity and Mortality Weekly Reports
  - Silicosis mortality trends and new exposures to repsirable crystalline silica – U.S., 2001-2010. (February 13, 2015)
  - Silicosis Mortality – United States, 1999-2013. (June 19, 2015)
- National Toxicology Progam (NTP) Report on Carcinogens (RoC). U.S. Department of Health and Human Services (DHHS), National Toxicology Program (NTP). Identifies and discusses agents, substances, mixtures, or exposure circumstances that may pose a health hazard due to their carcinogenicity. The listing of substances in the RoC only indicates a potential hazard and does not establish the exposure conditions that would pose cancer risks to individuals. Silica, Crystalline (Respirable Size). NTP classification: Known to be a human carcinogen.
- International Agency for Research on Cancer (IARC) Monographs on the Evaluation of Carcinogenic Risks for Humans. World Health Organization, International Agency for Research on Cancer, (2006). IARC Classification: Carcinogenic to humans (Group 1).
- Silica Exposure. WorkSafe BC video shows how respirable crystalline silica can cause permanent damage to the lungs.
- Adverse Effects of Crystalline Silica Exposure. American Thoracic Society (1996).
- Appendix B: Medical Surveillance Guidelines (Construction | General Industry and Maritime). OSHA. This document describes the silica related diseases and provides resources and references.
- Several resources for information on radiography are available:
  - Chest Radiography: The NIOSH B Reader Program. Provides information on becoming a B Reader for silica radiography and recent developments impacting the program.
  - Chest Radiography: Digital Imaging Updates. Provides a repository of information and resources for the B reader program.

Silica, Crystalline

Respirable Crystalline Silica Menu

General Industry and Maritime

Complying with the General Industry and Maritime Standard General Industry and Maritime Resources

OSHA's Respirable Crystalline Silica standard for general industry and maritime requires employers to limit worker exposures to respirable crystalline silica and to take other steps to protect workers.

Among other things, the standard requires employers to:

- Assess employee exposures to silica if it may be at or above an action level of 25 $\mu g/m^3$ (micrograms of silica per cubic meter of air), averaged over an 8-hour day;
- Protect workers from respirable crystalline silica exposures above the permissible exposure limit (PEL) of 50 $\mu g/m^3$, averaged over an 8-hour day;
- Limit workers' access to areas where they could be exposed above the PEL;
- Use dust controls to protect workers from silica exposures above the PEL;
- Provide respirators to workers when dust controls cannot limit exposures to the PEL;
- Use housekeeping methods that do not create airborne dust, if feasible;
- Establish and implement a written exposure control plan that identifies tasks that involve exposure and methods used to protect workers;
- Offer medical exams - including chest X-rays and lung function tests - every three years for workers exposed at or above the action level for 30 or more days per year;
- Train workers on work operations that result in silica exposure and ways to limit exposure; and
- Keep records of exposure measurements, objective data, and medical exams.

General industry and maritime employers must comply with all requirements of the standard by June 23, 2018, except for the following:

Medical surveillance must be offered to employees who will be exposed at or above the action level for 30 or more days a year starting on June 23, 2020. (Medical surveillance must be offered to employees who will be exposed above the PEL for 30 or more days a year starting on June 23, 2018.)

Hydraulic fracturing operations in the oil and gas industry must implement engineering controls to limit exposures to the new PEL by June 23, 2021.

Until June 23, 2018, general industry and maritime employers must limit employee exposure to respirable crystalline silica to the previous PELs:

General Industry (29 CFR 1910)

- 1910.1000, Air contaminants
  - Table Z-3, Mineral dusts

Maritime (29 CFR 1915)

- 1915.1000, Air contaminants

General Industry and Maritime Outreach Materials

Small Entity Compliance Guide for the Respirable Crystalline Silica Standard for General Industry and Maritime. Discusses suggested engineering and work practice controls, exposure assessments, respirator use, medical surveillance, written exposure control plans, and other aspects of compliance.

General Industry and Maritime Fact Sheet. Provides a summary covering the requirements of the respirable crystalline silica standard for general industry and maritime.

OSHA Standards, Interpretations, and Directives

General Industry and Maritime Standard (29 CFR 1910)

- 1910.1053, Respirable Crystalline Silica
  - Appendix A, Methods of Sample Analysis
  - Appendix B, Medical Surveillance Guidelines

OSHA Directives

- Search all available directives.

Standard Interpretations

- Search all available standard interpretations.

Frequently Asked Questions

- Search all available frequently asked questions (FAQs) for the silica rule.

State Standards

There are twenty-eight OSHA-approved State Plans, operating state-wide occupational safety and health programs. State Plans are required to have standards and enforcement programs that are at least as effective as OSHA's and may have different or more stringent requirements.

General Industry and Maritime Resources

- Silica. National Institute for Occupational Safety and Health (NIOSH) Safety and Health Topic. Provides information about silica as well as links to related publications and references.
  - Controlling Silica Dust from Foundry Casting-Cleaning Operations. U.S. Department of Health and Human Services (DHHS), National Institute for Occupational Safety and Health (NIOSH) Publication No. 98-106 (Hazard Controls 23), (1997, December). The local exhaust ventilation system described in this document may keep worker exposures to respirable silica below permissible limits and eliminate the need for workers to wear respirators.
  - Dust Monitoring and Control Downloadable Mining Publications. National Institute for Occupational Safety and Health (NIOSH) Mining Safety and Health Research.
  - Dust Control Handbook for Industrial Minerals Mining and Processing. U.S. Department of Health and Human Services (DHHS), National Institute for Occupational Safety and Health (NIOSH) Publication No. 2012-112, (January 2012). Handbook covering engineering controls in mining operations for reducing dust generation and limiting worker exposure.
  - CPWR's Sample Written Exposure Control Plans
  - Silicosis Prevention Furthered by NIOSH Pilot Program Aiding Identification of Cases in Seven Participating States. National Institute for Occupational Safety and Health (NIOSH) Update, (1997, March 25). Describes a program used to gather occupational information on silicosis disease and silica exposures.
- OSHA NIOSH Hazard Alert: Worker Exposure to Silica during Countertop Manufacturing, Finishing and Installation. This Hazard Alert discusses ways to protect workers from significant crystalline silica exposure during manufacturing, finishing, and installing natural and manufactured stone countertops. The Hazard Alert follows reports of 46 workers in Spain and 25 workers in Israel who developed silicosis as a result of exposure to crystalline silica in their work manufacturing stone countertops.
- OSHA NIOSH Hazard Alert: Worker Exposure to Silica During Hydraulic Fracturing. U.S. Department of Health and Human Services (DHHS), National Institute for Occupational Safety and Health (NIOSH) Publication No. 2012-166, (2012). This Hazard Alert discusses the health hazards associated with hydraulic fracturing and focuses on worker exposures to silica in the air. It covers the health effects of breathing silica, recommends ways to protect workers, and describes how OSHA and NIOSH can help.
- OSHA Fact Sheet: Protecting Workers from the Hazards of Abrasive Blasting Materials. OSHA Publication 3697, (2013).
- Video: "Don't Let Silica Dust You!" Produced by the Association of Occupational and Environmental Clinics with support from NIOSH, the California Department of Public Health, San Francisco Bay area bricklayers and roofers unions, and other partners, the video describes the use of controls and identifies enablers and barriers for reducing workplace exposure to crystalline silica.
- OSHA Clinicians page. The page provides information for clinicians to understand important ethical, regulatory, and clinical issues.

Related Safety and Health Topics Pages

- Medical Screening and Surveillance
- Personal Protective Equipment (PPE)
- Respiratory Protection
- Sampling and Analysis
- Carcinogens
- Construction Industry
- Chemical Hazards and Toxic Substances

Silica, Crystalline

Respirable Crystalline Silica Menu

FAQs

Background and Health Impacts

What is crystalline silica?

Crystalline silica is a common mineral found in many naturally occurring materials and used in many industrial products and at construction sites. Materials like sand, concrete, stone and mortar contain crystalline silica. Crystalline silica is also used to make products such as glass, pottery, ceramics, bricks, concrete and artificial stone. Industrial sand used in certain operations, such as foundry work and hydraulic fracturing (fracking), is also a source of crystalline silica exposure. Amorphous silica, such as silica gel, is not crystalline silica.

How can exposure to crystalline silica affect workers' health?

Inhaling very small ("respirable") crystalline silica particles, causes multiple diseases, including silicosis, an incurable lung disease that can lead to disability and death. Respirable crystalline silica also causes lung cancer, chronic

Around 2.3 million workers are exposed to crystalline silica on the job. Simply being near sand or other silica-containing materials is not hazardous. The hazard exists when specific activities create respirable dust that is

There is strong scientific evidence showing that exposure to respirable crystalline silica can increase a person's risk of developing lung cancer. The World Health Organization's International Agency for Research on Cancer – the leading international voice on cancer causation – and the National Institutes of Health's National Toxicology Program have conducted extensive reviews of the scientific literature and have designated crystalline silica as a **known human carcinogen**. The American Cancer Society has adopted the WHO and NIH's determinations.

More than 50 peer-reviewed epidemiological studies that OSHA evaluated for this rulemaking have examined the link between silica exposure and lung cancer in at least 10 industries. In particular, several studies of workers in specific industrial sectors support the link between exposure to respirable crystalline silica and lung cancer among workers.

How does the crystalline silica rule protect workers' health?

The new rule requires that employers use engineering controls – such as ventilation and wet methods for cutting and sawing crystalline silica-containing materials – to reduce workers' exposure to silica dust. Once the full effects of the rule are realized, OSHA expects it to prevent 600 deaths a year from silica-related diseases – such as silicosis, lung cancer, other respiratory diseases and kidney disease – and to prevent more than 900 new cases of silicosis each year.

Rule Requirements

How can silica exposures be controlled to keep exposure at or below the PEL?

Employers must use engineering controls and work practices as the primary way keep exposures at or below the PEL.

- Engineering controls include wetting down work operations or using local exhaust ventilation (such as vacuums) to keep silica-containing dust out of the air and out of workers' lungs. Another control method that may work well is enclosing an operation ("process isolation").
- Examples of work practices to control silica exposures include wetting down dust before sweeping it up or using the water flow rate recommended by the manufacturer for a tool with water controls.
- Respirators are only allowed when engineering and work practice controls cannot maintain exposures at or below the PEL.

For construction, the standard includes Table 1, a list of common construction tasks along with exposure control methods and work practices that work well for those tasks and can be used to comply with the requirements of the standard.

Why can't silica-exposed workers just wear respirators all the time?

Respirators are not as protective as engineering controls, and they aren't always as practical either. Unless respirators are selected for each worker, individually fitted and periodically refitted, and regularly maintained, and unless filters and other parts are replaced as necessary, workers will continue to be exposed to silica. In many cases, workers using only respirators would also have to wear more extensive and expensive protection. Even when

respirators are selected, fitted, and maintained correctly, they must be worn consistently and correctly by workers to be effective. Respirators can also be uncomfortable, especially in hot weather, and cannot be used by some workers.

What is Table 1: "Specified Exposure Control Methods When Working with Materials Containing Crystalline Silica"?

Table 1 is a flexible compliance option that effectively protects workers from silica exposures. It identifies 18 common construction tasks that generate high exposures to respirable crystalline silica and for each task, specifies engineering controls, work practices, and respiratory protection that effectively protect workers. Employers who fully and properly implement the engineering controls, work practices, and respiratory protection specified for a task on Table 1 are not required to measure respirable crystalline silica exposures to verify that levels are at or below the PEL for workers engaged in the Table 1 task.

OSHA developed Table 1 in response to stakeholders in the construction industry, who indicated the need for guidance and a standard that is different than a standard for general industry. Among the concerns of construction industry stakeholders were the impracticality of exposure monitoring based on short duration of task and constantly changing conditions, such as weather, job sites and materials.

Are the air sampling methods used to detect and measure silica reliable?

Yes, worker exposures to silica at the new PEL and action level can be reliably measured using existing sampling and analytical methods. Moreover, to improve reliability of silica measurements, employers must ensure that their silica samples are analyzed by laboratories that meet the qualifications and use methods specified in Appendix A of the standard.

- OSHA has carefully reviewed the available science and expert testimony contained in the rulemaking record on the ability of modern sampling and analytical methods to reliably measure respirable crystalline silica at the new PEL and action level.
- Published OSHA, NIOSH, and MSHA methods for analyzing respirable crystalline silica are able to measure concentrations at the new PEL and action level with acceptable precision, based on analyses of quality control samples and on studies conducted when those methods were developed in the 1970s.
- There are high-flow dust samplers now available that can collect more airborne dust, and more silica, than other samplers commonly used. Collecting more dust means that laboratories can measure the amount of silica in the dust with greater precision.

Why are construction employers required to implement engineering and work practice controls a year before laboratories are required to meet specifications for analyzing air samples?

There are approximately 40 laboratories in the U.S. that already meet the sample analysis requirements in the final rule. Demand for laboratory analysis of construction industry samples is likely to be modest because OSHA expects most construction employers to implement the specified exposure control measures in Table 1; therefore they will not be required to conduct exposure assessments. The small portion of construction employers that do not implement Table 1 will need to perform air monitoring, but they will be able to obtain reliable measurements of their employees' exposures from those laboratories. Employers in general industry and maritime, who are required to conduct exposure assessments, have an additional year to come into compliance.

What is the purpose of medical surveillance?

The purpose of medical surveillance is, when reasonably possible, to:

- Identify adverse health effects associated with respirable crystalline silica exposure so that appropriate actions can be taken.
- Determine if an employee has any condition, such as a lung disease, that might make him or her more sensitive to respirable crystalline silica exposure,
- Determine the employee's fitness to use respirators.

In response to the information gained through medical surveillance, employees can take actions to improve their health, such as making job choices to reduce exposures, wearing a respirator for extra protection, or making personal lifestyle or health decisions, such as quitting smoking or getting flu shots.

Why are the results of medical surveillance only given to the worker and not the employer?

The employer receives the physician or other licensed health care professional's recommended limitations on respirator use, which is vitally important information that the employer needs to protect the worker because those who are not fit to wear a respirator but wear one can be at risk of sudden incapacitation or death.

Other findings of the medical examination are only given to the employee because many employees and physicians testified that if employers received the results of the examination, many employees would not participate in medical surveillance because they feared discrimination or retaliation.

Employers do not need medical findings because they should base employee protections on exposure levels and how well controls are working. On the other hand, employees need the results of medical examinations to manage their health.

Compliance Dates

When must employers comply with the standard for general/industry and maritime?

For all operations in general industry and maritime, other than hydraulic fracturing operations in the oil and gas industry:

- Employers are required to comply with all obligations of the standard, with the exception of the action level trigger for medical surveillance, by June 23, 2018.
- Employers are required to offer medical examinations to employees exposed above the PEL for 30 or more days a year beginning on June 23, 2018.
- Employers are required to offer medical examinations to employees exposed at or above the action level for 30 or more days a year beginning on June 23, 2020.

For hydraulic fracturing operations in the oil and gas industry:

- Employers are required to comply with all obligations of the standard, except for engineering controls and the action level trigger for medical surveillance, by June 23, 2018.
- Employers are required to comply with requirements for engineering controls to limit exposures to the new PEL by June 23, 2021. From June 23, 2018 through June 23, 2021, employers can continue to have employees wear respirators if their exposures exceed the PEL.
- Employers are required to offer medical examinations to employees exposed above the PEL for 30 or more days beginning on June 23, 2018.
- Employers are required to offer medical examinations to employees exposed at or above the action level for 30 or more days a year beginning on June 23, 2020.

Why is there a different compliance date for the hydraulic fracturing industry?

Because controls for respirable crystalline silica in hydraulic fracturing are still in development, the rule allows hydraulic fracturing employers additional time to implement engineering controls to take advantage of emerging technologies. Those employers do not have to implement engineering controls to limit exposures to the new PEL until June 23, 2021, three years later than other general industry and maritime employers. From June 23, 2018 to June 23, 2021, hydraulic fracturing employers can continue to have employees use respirators when exposures exceed the PEL.

When must employers comply with the standard for construction?

Employers are required to comply with all obligations of the standard (except methods of sample analysis) by September 23, 2017.

Employers are required to comply with methods of sample analysis by June 23, 2018.

State Plans and Compliance Assistance

Will states with OSHA-approved programs adopt the standards?

Yes. States with OSHA-approved state plans have six months to adopt standards that are at least as effective as Federal OSHA standards. Many state plans adopt standards identical to OSHA, but some state plans may have different or more stringent requirements.

What resources are available to help small businesses and other employers comply with the standards?

OSHA recognizes that most employers want to keep their employees safe and protect them from workplace hazards. We therefore provide extensive compliance assistance through our Compliance Assistance Specialists, website, publications, webinars, and training programs, many of which are geared toward small and mid-sized employers. For silica, OSHA will develop a Small Entity Compliance Guide, fact sheets and other compliance assistance resources. For more information, see the Crystalline Silica Rulemaking page.

OSHA's On-Site Consultation Program provides professional, high-quality, individualized assistance to small businesses at no cost. This service, which is provided by consultants from state agencies or universities, is separate and independent from enforcement programs in federal or state OSHA's programs, and provides free and confidential workplace safety and health evaluations and advice to small and medium-sized businesses. In FY 2015, the On-Site Consultation Program conducted more than 27,800 free visits to small and medium-sized business worksites, helping to remove more than 3.5 million workers from hazards nationwide.

PSR® Physicians for Social Responsibility

1985 NOBEL PEACE PRIZE

United States Affiliate of International Physicians for the Prevention of Nuclear War

Coal Ash: Hazardous to Human Health

What is coal ash? Coal ash is the waste that is left after coal is combusted (burned). It includes fly ash (fine powdery particles that are carried up the smoke stack and captured by pollution control devices) as well as coarser materials that fall to the bottom of the furnace. Most coal ash comes from coal-fired electric power plants.

Why is it dangerous? Depending on where the coal was mined, coal ash typically contains heavy metals including arsenic, lead, mercury, cadmium, chromium and selenium, as well as aluminum, antimony, barium, beryllium, boron, chlorine, cobalt, manganese, molybdenum, nickel, thallium, vanadium, and zinc.[i] If eaten, drunk or inhaled, these toxicants can cause cancer and nervous system impacts such as cognitive deficits, developmental delays and behavioral problems. They can also cause heart damage, lung disease, respiratory distress, kidney disease, reproductive problems, gastrointestinal illness, birth defects, and impaired bone growth in children.

How dangerous is coal ash to humans? The Environmental Protection Agency (EPA) has found that living next to a coal ash disposal site can increase your risk of cancer or other diseases. If you live near an unlined wet ash pond (surface impoundment) and you get your drinking water from a well, ***you may have as much as a 1 in 50 chance of getting cancer*** from drinking arsenic-contaminated water.[ii] Arsenic is one of the most common, and most dangerous, pollutants from coal ash. The EPA also found that living near ash ponds increases the risk of damage from cadmium, lead, and other toxic metals.

Is coal ash a big problem? The EPA estimates that 140 million tons of coal ash are generated annually.[iii] That makes coal ash the ***second largest industrial waste stream in the United States***, second only to mine wastes. Coal ash is disposed at nearly a thousand sites across the nation, in all states except Rhode Island, Vermont and Idaho.

What do they do with all that ash? More than a third is disposed in dry landfills, frequently at the power plant where the coal was burned. Coal ash may also be mixed with water and disposed in so-called "ponds" – some are more like small lakes – behind earthen walls. These wet "surface impoundments" account for about a fifth of coal ash disposal.[iv] About 38 percent of coal ash is "recycled" in agricultural and engineering applications rather than being disposed, and an additional five percent is dumped in abandoned mines as fill.[v]

Are these disposal sites risky? Two factors dramatically increase the risk from disposal units: the use of wet surface impoundments instead of dry landfills, and whether disposal units have composite liners to prevent leaking and leaching. Surface impoundments (the wet ash ponds) consistently show higher risks than landfills.[vi] Some are little more than pits in the earth, totally lacking in protective liners.

What about recycling? Coal ash recycling poses health risks, especially where the ash is exposed to water: for example when sprinkled as cinders on snowy roads, spread as agricultural fertilizer, or used as a landfill or to fill abandoned mines. These uses risk leaching into ground water or surface water.

What is "leaching"? When coal ash comes into contact with water, its toxic constituents can "leach" or dissolve out of the ash and percolate through water. ***Coal ash toxics have leached from disposal sites in more than 100 communities***, carrying toxic substances into above-ground waterways such as rivers, streams and wetlands, and into underground water supplies or aquifers that supply drinking wells, forcing families to find new drinking supplies. One community has even been designated a Superfund toxic cleanup site, due to coal ash leaching that contaminated the drinking water.[vii]

Is leaching the only threat from coal ash? Coal ash toxics also travel through the environment due to erosion and runoff, and through the air as fine particles or dust.

Has coal ash actually caused harm? The law requires the EPA to examine documented cases of coal ash disposal "in which **danger to human health or the environment has been proved**".[viii] The EPA has formally identified 70 of these damage cases where coal ash poison has contaminated drinking water, wetlands, creeks, or rivers.[ix] In addition, two nonprofit organizations, Earthjustice and the Environmental Integrity Project, using information in the files of state agencies, have documented an additional 31 cases shown to have caused contamination.[x] This brings the total number of damage cases to more than 100, with more being investigated.

Just how bad are the damage cases? The examples below indicate how bad it can get.

Giant spill: Just before Christmas 2008, at a coal-fired power plant in Kingston, TN, the earthen wall holding back a 40-acre coal ash disposal pond failed. More than a billion gallons of water and coal ash spilled into the adjacent river valley, covering some 300 acres with thick, toxic sludge, destroying three homes and contaminating the Emory and Clinch Rivers.[xi] When the EPA tested water samples after the spill, they found arsenic at 149 times the allowable standard for drinking water, as well as elevated levels of other toxic metals including lead, thallium, barium, cadmium, chromium, mercury, and nickel.[xii]

Leaching contaminates drinking water wells with lead: Coal ash generated by the Niagara (NY) Mohawk Power Corporation on Lake Erie was found to be contaminating nearby wells with lead, a very potent neurotoxicant that can harm the developing nervous system, even at low levels of exposure. Contaminated wells could no longer be used. The landfill owner was ordered to close the facility, and monitoring of ground water and surface water were expected to continue for 30 years after final closure of the facility.[xiii]

Contamination from use as "fill": At a 216-acre golf course in Chesapeake, VA, 1.5 million cubic yards of fly ash were recycled to give contour to the course. When groundwater at the golf course was tested, arsenic, boron, chromium, copper, lead and vanadium were detected.[xiv]

PSR concludes that coal ash is dangerously toxic and poses a threat to human health. Its wet storage should be phased out, and its dry storage should be engineered for maximum control to prevent leaching, blowing or leakage of toxicants.

[i] U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Office of Resource Conservation and Recovery. "Human and Ecological Risk Assessment of Coal Combustion Wastes." Draft EPA document. April 2010. Pp 2-4.

[ii] U.S. Environmental Protection Agency (EPA), "Human and Ecological Risk Assessment of Coal Combustion Wastes" (draft). (Released as part of a Notice of Data Availability) Aug. 6, 2007.

[iii] Hazardous and Solid Waste Management System Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals from Electric Utilities. Proposed rule. Page 344. http://www.epa.gov/wastes/nonhaz/industrial/special/fossil/ccr-rule/ccr-rule-prop.pdf

[iv] Barry Breen, Acting Assistant Administrator, Office of Solid Waste and Emergency Response, US EPA. Testimony delivered to Committee on Transportation and Infrastructure, Subcommittee on Water Resources and the Environment, U.S. House of Representatives, April 30, 2009. http://transportation.house.gov/Media/file/water/20090430/EPA%20Testimony.pdf

[v] Barry Breen, Acting Assistant Administrator, Office of Solid Waste and Emergency Response, US EPA. Testimony delivered to Committee on Transportation and Infrastructure, Subcommittee on Water Resources and the Environment, U.S. House of Representatives, April 30, 2009. http://transportation.house.gov/Media/file/water/20090430/EPA%20Testimony.pdf

[vi] RTI. "Human and Ecological Risk Assessment of Coal Combustion Wastes. Draft document." Prepared for U.S. Environmental Protection Agency, Office of Solid Waste. 2007. http://www.publicintegrity.org/assets/pdf/CoalAsh-Doc2.pdf

[vii] U.S. Environmental Protection Agency, Office of Solid Waste. *Coal Combustion Waste Damage Case Assessments.* July 9, 2007. Downloaded from http://www.publicintegrity.org/assets/pdf/CoalAsh-Doc1.pdf

[viii] "Regulatory Determination on Wastes from the Combustion of Fossil Fuels (Final Rule)." Federal Register 65:99 (May 22, 2000) p. 32218

[ix] U.S. Environmental Protection Agency. "Appendix Q. 1948-2008 US Historical Damage Cases Associated with Electric Utility Plant CCR Disposal Units." In docket folder, proposed rule; downloaded from http://www.regulations.gov/search/Regs/home.html#docketDetail?R=EPA-HQ-RCRA-2009-0640

[x] Stant J. "Out of Control: Mounting Damages from Coal Ash Waste Sites." February 24, 2010. Environmental Integrity Project and Earthjustice. http://www.environmentalintegrity.org/news_reports/news_02_24_10.php

[xi] Testimony of Stephan A. Smith, DVM, Executive Director, Southern Alliance for Clean Energy. Submitted to the U.S. Senate Committee on Environment and Public Works. January 8, 2009. http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=e918d2f7-9e8b-411e-b244-9a3a7c3359d9

[xii] Testimony of Stephan A. Smith, DVM, Executive Director, Southern Alliance for Clean Energy. Submitted to the U.S. Senate Committee on Environment and Public Works. January 8, 2009. http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=e918d2f7-9e8b-411e-b244-9a3a7c3359d9

[xiii] U.S. Environmental Protection Agency. HAZARDOUS AND SOLID WASTE MANAGEMENT SYSTEM; IDENTIFICATION AND LISTING OF SPECIAL WASTES; DISPOSAL OF COAL COMBUSTION RESIDUALS FROM ELECTRIC UTILITIES. [EPA-HQ-RCRA-2009-0640; FRL-9149-4] Proposed rule. Page 220. http://www.epa.gov/osw/nonhaz/industrial/special/fossil/ccr-rule/fr-corrections.pdf

[xiv] U.S. Environmental Protection Agency. HAZARDOUS AND SOLID WASTE MANAGEMENT SYSTEM; IDENTIFICATION AND LISTING OF SPECIAL WASTES; DISPOSAL OF COAL COMBUSTION RESIDUALS FROM ELECTRIC UTILITIES. Proposed rule, Appendix, page 426. http://www.epa.gov/wastes/nonhaz/industrial/special/fossil/ccr-rule/ccr-rule-prop.pdf

OSHA® FactSheet

OSHA's Crystalline Silica Rule: General Industry and Maritime

OSHA is issuing two standards to protect workers from exposure to respirable crystalline silica — one for general industry and maritime, and the other for construction — in order to allow employers to tailor solutions to the specific conditions in their workplaces.

Who is affected by the general industry and maritime standard?

About 295,000 workers are exposed to respirable crystalline silica in over 75,000 general industry and maritime workplaces. Exposure to respirable crystalline silica can cause silicosis, lung cancer, other respiratory diseases, and kidney disease.

Some of the affected industries are shown below.

Number of Workers Exposed to Respirable Crystalline Silica in Selected General Industry/ Maritime Sectors

Industry sector	Workers currently exposed	Workers currently exposed above the new PEL
Asphalt Roofing Materials	3,158	1,410
Concrete Products	32,981	9,391
Cut Stone	9,429	5,243
Dental Laboratories	31,105	864
Foundries	34,591	12,173
Jewelry	6,772	2,434
Porcelain Enameling	4,113	1,654
Pottery	6,269	2,496
Railroads	16,895	5,340
Ready-Mix Concrete	27,123	19,941
Shipyards	3.038	2,228
Structural Clay Products	7,893	3,198
Support Activities for Oil and Gas Operations	16,960	11,207

Source: OSHA Directorate of Standards and Guidance

OSHA estimates that over 100,000 workers in general industry and maritime are exposed to silica levels that exceed the new permissible exposure limit (PEL).

What does the standard require?

The standard for general industry and maritime requires employers to:

- Measure the amount of silica that workers are exposed to if it may be at or above an action level of **25 µg/m³** (micrograms of silica per cubic meter of air), averaged over an 8-hour day;
- Protect workers from respirable crystalline silica exposures above the permissible exposure limit of 50 **µg/m³**, averaged over an 8-hour day;
- Limit workers' access to areas where they could be exposed above the PEL;
- Use dust controls to protect workers from silica exposures above the PEL;
- Provide respirators to workers when dust controls cannot limit exposures to the PEL;
- Restrict **housekeeping** practices that expose workers to silica where feasible alternatives are available;
- Establish and implement a **written exposure control plan** that identifies tasks that involve exposure and methods used to protect workers;
- Offer medical exams — including chest X-rays and lung function tests — every three years for workers exposed at or above the action level for 30 or more days per year;
- Train workers on work operations that result in silica exposure and ways to limit exposure; and
- **Keep records** of workers' silica exposure and medical exams.

Examples — Dust control methods

In most cases, dust controls such as wet methods and ventilation can be used to limit workers' exposure to silica. These technologies are widely available, affordable and already commonly used by many employers.

A worker cutting granite using a saw that applies water to the blade. The water reduces the amount of silica-containing dust that gets into the air.

Photo: Alliance — OSHA Cooperative Program

A worker grinding castings in a foundry. The work is performed in a ventilated booth to reduce the worker's exposure to silica.

When are employers required to comply with the standard?

General industry and maritime employers must comply with all requirements of the standard by **June 23, 2018**, except for the following:

- **Medical surveillance** must be offered to employees who will be exposed **at or above the action level** for 30 or more days a year starting on June 23, 2020. (Medical surveillance must be offered to employees who will be exposed **above the PEL** for 30 or more days a year starting June 23, 2018.)
- **Hydraulic fracturing** operations in the oil and gas industry must implement engineering controls to limit exposures to the new PEL by June 23, 2021.

Additional information

Additional information on OSHA's silica rule can be found at www.osha.gov/silica.

OSHA can provide extensive help through a variety of programs, including technical assistance about effective safety and health programs, workplace consultations, and training and education.

OSHA's On-site Consultation Program offers free and confidential occupational safety and health services to small and medium-sized businesses in all states and several territories across the country, with priority given to high-hazard worksites. On-site consultation services are separate from enforcement and do not result in penalties or citations. Consultants from state agencies or universities work with employers to identify workplace hazards, provide advice on compliance with OSHA standards, and assist in establishing and improving safety and health management systems. To locate the OSHA On-site Consultation Program nearest you, call 1-800-321-OSHA (6742) or visit www.osha.gov/dcsp/smallbusiness.

For more information on this and other health-related issues impacting workers, to report an emergency, fatality, inpatient hospitalization, or to file a confidential complaint, contact your nearest OSHA office, visit www.osha.gov, or call OSHA at 1-800-321-OSHA (6742), TTY 1-877-889-5627.

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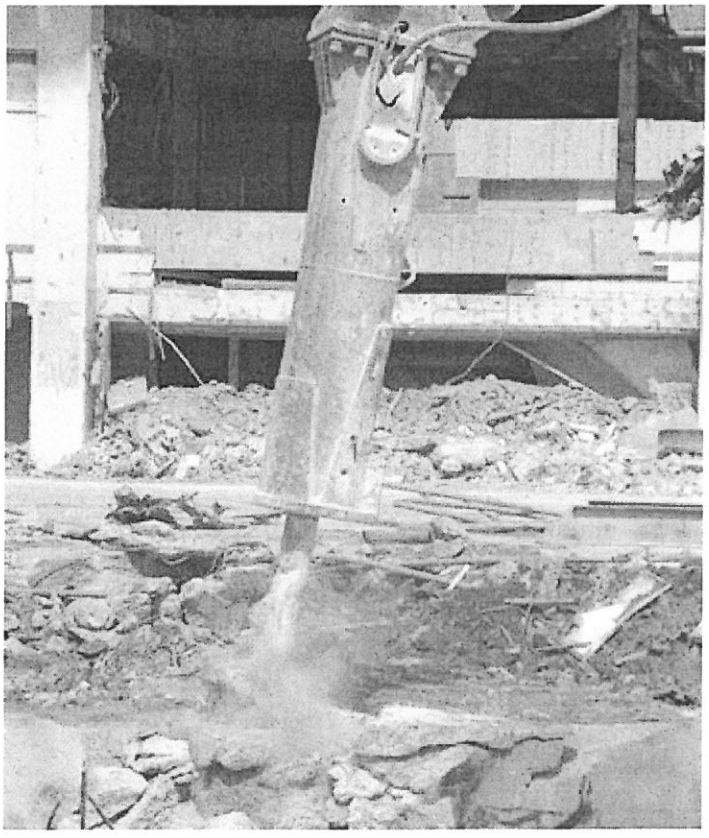
Construction & Demolition Recycling (/magazine/) / July 2011 (/magazine/issue/July 2011)



Material Safety Data Sheet

Section 1: PRODUCT AND COMPANY INFORMATION

Product Name(s): Lafarge Crushed Concrete

Product Identifiers: Crushed Concrete, Recycled Concrete, Crushed Concrete Base Course, Recycled Concrete Base Course, Reclaimed Concrete Material (RCM), Recycled Concrete Pavement (RCP).

Manufacturer:
Lafarge North America Inc.
12018 Sunrise Valley Drive, Suite 500
Reston, VA 20191

Information Telephone Number:
703-480-3600 (9am to 5pm EST)
Emergency Telephone Number:
1-800-451-8346 (3E Hotline)

Product Use: Crushed concrete is used as an aggregate in concrete or asphalt bases, concrete or asphalt mixes, flowable fill, as bulk fill material and other construction applications.

Note: This MSDS covers many concrete products. Individual composition of hazardous constituents will vary between types of crushed concrete.

Section 2: COMPOSITION/INFORMATION ON INGREDIENTS

Component	Percent (By Weight)	CAS Number	OSHA PEL -TWA (mg/m^3)	ACGIH TLV-TWA (mg/m^3)	LD_{50} (mouse, oral)	LC_{50}
Crystalline Silica	0-90	14808-60-7	[(10) / (%SiO_2+2)] (R); [(30) / (%SiO_2+2)] (T)	0.025 (R)	NA	NA
Calcium Hydroxide	15-25	1305-62-0	15 (T); 5 (R)	5 (T)	7300 mg/kg	NA
Portland Cement*	0-10	65997-15-1	15 (T); 5 (R)	1 (R)	NA	NA
Particulate Not Otherwise Regulated	-	NA	15 (T); 5 (R)	10 (T); 3 (R)	NA	NA

Note: Exposure limits for components noted with an * contain no asbestos and <1% crystalline silica

Concrete is a mixture of gravel or rock, sand, Portland cement and water. It may also contain fly ash, slag, silica fume, calcined clay, fibers (metallic or organic) and color pigment. Properties and composition of crushed concrete can vary depending on the original properties and composition of the recovered concrete.

Concrete contains cement which is made from materials mined from the earth and is processed using energy provided by fuels. Trace amounts of chemicals may be detected during chemical analysis. For example, cement may contain trace amounts of calcium oxide (also known as free lime or quick lime), free magnesium oxide, potassium and sodium sulfate compounds, chromium compounds, nickel compounds, and other trace compounds.

Section 3: HAZARD IDENTIFICATION

WARNING

Toxic - Harmful by inhalation.
(Contains crystalline silica)

Use proper engineering controls, work practices, and personal protective equipment to prevent exposure to wet or dry product.

Read MSDS for details.


Respiratory Protection


Eye Protection


Gloves

Section 3: HAZARD IDENTIFICATION (continued)

Emergency Overview: Crushed concrete varies in size, shape and color, depending on final use. They are not combustible or explosive. A single, short-term exposure to concrete dust presents little or no hazard.

Potential Health Effects:

Eye Contact: Airborne dust may cause immediate or delayed irritation or inflammation. Eye contact with large amounts of concrete dust can cause moderate eye irritation and abrasion. Eye exposures require immediate first aid and medical attention to prevent significant damage to the eye.

Skin Contact: Concrete dust may cause dry skin, discomfort, irritation and dermatitis.

Dermatitis: Concrete dust, in association with sweat and friction, can lead to skin irritation and dermatitis. Skin affected by dermatitis may include symptoms such as, redness, itching, rash, scaling, and cracking. Irritant dermatitis is caused by the physical properties of concrete dust such as abrasion.

Inhalation (acute): Breathing dust may cause nose, throat or lung irritation, including choking, depending on the degree of exposure.

Inhalation (chronic): Risk of injury depends on duration and level of exposure.

Silicosis: This product contains crystalline silica. Prolonged or repeated inhalation of respirable crystalline silica from this product can cause silicosis, a seriously disabling and fatal lung disease. See Note to Physicians in Section 4 for further information.

Carcinogenicity: Concrete is not listed as a carcinogen by IARC or NTP; however, concrete contains trace amounts of crystalline silica which is classified by IARC and NTP as known human carcinogens.

Autoimmune Disease: Some studies show that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis may be associated with the increased incidence of several autoimmune disorders such as scleroderma (thickening of the skin), systemic lupus erythematosus, rheumatoid arthritis and diseases affecting the kidneys.

Tuberculosis: Silicosis increases the risk of tuberculosis.

Renal Disease: Some studies show an increased incidence of chronic kidney disease and end-stage renal disease in workers exposed to respirable crystalline silica.

Ingestion: Do not ingest concrete. Although ingestion of small quantities of concrete is not known to be harmful, large quantities can cause distress to the digestive tract.

Medical Conditions Aggravated by Exposure: Individuals with lung disease (e.g. bronchitis, emphysema, COPD, pulmonary disease) can be aggravated by exposure.

Section 4: FIRST AID MEASURES

Eye Contact: Rinse eyes thoroughly with water for at least 15 minutes, including under lids, to remove all particles. Seek medical attention for abrasions and burns.

Skin Contact: Wash with cool water and a pH neutral soap or a mild skin detergent. Seek medical attention for rash, irritation, dermatitis.

Inhalation: Move person to fresh air. Seek medical attention for discomfort or if coughing or other symptoms do not subside.

Ingestion: Do not induce vomiting. If conscious, have person drink plenty of water. Seek medical attention or contact poison control center immediately.

Note to Physician: The three types of silicosis include:

- Simple chronic silicosis – which results from long-term exposure (more than 20 years) to low amounts of respirable crystalline silica. Nodules of chronic inflammation and scarring provoked by the respirable crystalline silica form in the lungs and chest lymph nodes. This disease may feature breathlessness and may resemble chronic obstructive pulmonary disease (COPD).
- Accelerated silicosis – occurs after exposure to larger amounts of respirable crystalline silica over a shorter period of time (5-15 years). Inflammation, scarring, and symptoms progress faster in accelerated silicosis than in simple silicosis.
- Acute silicosis – results from short-term exposure to very large amounts of respirable crystalline silica. The lungs become very inflamed and may fill with fluid, causing severe shortness of breath and low blood oxygen levels.

Progressive massive fibrosis may occur in simple or accelerated silicosis, but is more common in the accelerated form. Progressive massive fibrosis results from severe scarring and leads to the destruction of normal lung structures.

Section 5: FIREFIGHTING MEASURES

Flashpoint & Method: Non-combustible

General Hazard: Avoid breathing dust.

Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Firefighting Equipment: Crushed concrete does not pose a fire-related hazard. A SCBA is recommended to limit exposures to combustion products when fighting any fire.

Combustion Products: None.

Section 6: ACCIDENTAL RELEASE MEASURES

General: Place spilled material into a container. Avoid actions that cause the concrete dust to become airborne. Avoid inhalation of concrete dust. Wear appropriate protective equipment as described in Section 8.

Waste Disposal Method: Dispose of crushed concrete according to Federal, State, Provincial and Local regulations.

Section 7: HANDLING AND STORAGE

General: Ensure adequate load-bearing capacity of ground, floors or platforms when storing crushed concrete. Crushed concrete is heavy and pose risks such as sprains and strains to the back, arms, shoulders and legs during lifting. Handle with care and use appropriate control measures.

Engulfment hazard. To prevent burial or suffocation, do not enter a confined space, such as a silo, bin, bulk truck, or other storage container or vessel that stores or contains crushed concrete. Dust can buildup or adhere to the walls of a confined space. The dust can release, collapse or fall unexpectedly.

Do not stand on stockpiles of crushed concrete, they may be unstable. Use engineering controls (e.g. wetting stockpiles) to prevent windblown dust from stockpiles, which may cause the hazards described in Section 3.

Usage: Cutting, crushing or grinding hardened cement, concrete or other crystalline silica-bearing materials will release respirable crystalline silica. Use all appropriate measures of dust control or suppression, and Personal Protective Equipment (PPE) described in Section 8 below.

Housekeeping: Avoid actions that cause the concrete dust to become airborne during clean-up such as dry sweeping or using compressed air. Use HEPA vacuum or thoroughly wet with water to clean-up dust. Use PPE described in Section 8 below.

Storage Temperature: Unlimited. **Storage Pressure:** Unlimited.

Clothing: Promptly remove and launder clothing that is dusty. Thoroughly wash skin after exposure to dust.

Section 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls: Use local exhaust or general dilution ventilation or other suppression methods to maintain dust levels below exposure limits.

Personal Protective Equipment (PPE):

Respiratory Protection: Under ordinary conditions no respiratory protection is required. Wear a NIOSH approved respirator that is properly fitted and is in good condition when exposed to dust above exposure limits.

Eye Protection: Wear ANSI approved glasses or safety goggles when handling crushed concrete and when involved with activities that generate dust, to prevent contact with eyes. Wearing contact lenses when using crushed concrete, under dusty conditions, is not recommended.

Skin Protection: Wear gloves when handling crushed concrete. Remove clothing and protective equipment that becomes dusty and launder before reusing.

Foot Protection: Wear ANSI approved hard-toed safety boots when handling crushed concrete.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid.	**Evaporation Rate:**	NA.
Appearance:	Various colors and shapes.	**pH (in water):**	7
Odor:	None.	**Boiling Point:**	None, solid.
Vapor Pressure:	NA.	**Freezing Point:**	None, solid.
Vapor Density:	NA.	**Viscosity:**	None, solid.
Specific Gravity:	2.5	**Solubility in Water:**	Not Soluble.

Section 10: STABILITY AND REACTIVITY

Stability: Stable.

Incompatibility: None known.

Hazardous Polymerization: None. **Hazardous Decomposition:** None.

Section 11 and 12: TOXICOLOGICAL AND ECOLOGICAL INFORMATION

For questions regarding toxicological and ecological information refer to contact information in Section 1.

Section 13: DISPOSAL CONSIDERATIONS

Dispose of waste and containers in compliance with applicable Federal, State, Provincial and Local regulations.

Section 14: TRANSPORT INFORMATION

This product is not classified as a Hazardous Material under U.S. DOT or Canadian TDG regulations.

Section 15: REGULATORY INFORMATION

OSHA/MSHA Hazard Communication:	This product is considered by OSHA/MSHA to be a hazardous chemical and should be included in the employer's hazard communication program.
CERCLA/SUPERFUND:	This product is not listed as a CERCLA hazardous substance.
EPCRA SARA Title III:	This product has been reviewed according to the EPA Hazard Categories promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 and is considered a hazardous chemical and a delayed health hazard.
EPRCA SARA Section 313:	This product contains none of the substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
RCRA:	If discarded in its purchased form, this product would not be a hazardous waste either by listing or characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.
TSCA:	Concrete and crystalline silica are exempt from reporting under the inventory update rule.
California Proposition 65:	Crystalline silica (airborne particulates of respirable size) is a substance known by the State of California to cause cancer.
WHMIS/DSL: 	Products containing crystalline silica is classified as D2A, E and is subject to WHMIS requirements.

Section 16: OTHER INFORMATION

Abbreviations:

>	Greater than	NA	Not Applicable
ACGIH	American Conference of Governmental Industrial Hygienists	NFPA	National Fire Protection Association
CAS No	Chemical Abstract Service number	NIOSH	National Institute for Occupational Safety and Health
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	NTP	National Toxicology Program
		OSHA	Occupational Safety and Health Administration
CFR	Code for Federal Regulations	PEL	Permissible Exposure Limit
CL	Ceiling Limit	pH	Negative log of hydrogen ion
DOT	U.S. Department of Transportation	PPE	Personal Protective Equipment
EST	Eastern Standard Time	R	Respirable Particulate
HEPA	High-Efficiency Particulate Air	RCRA	Resource Conservation and Recovery Act
HMIS	Hazardous Materials Identification System	SARA	Superfund Amendments and Reauthorization Act
IARC	International Agency for Research on Cancer	T	Total Particulate
		TDG	Transportation of Dangerous Goods
LC_{50}	Lethal Concentration	TLV	Threshold Limit Value
LD_{50}	Lethal Dose	TWA	Time Weighted Average (8 hour)
mg/m^3	Milligrams per cubic meter	WHMIS	Workplace Hazardous Materials Information System
MSHA	Mine Safety and Health Administration		

This MSDS (Sections 1-16) was revised on March 1, 2011.

An electronic version of this MSDS is available at: www.lafarge-na.com under the Sustainability section.

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Concrete Recycling and Disposal Fact Sheet

Publication WA 605

Rev. 2017

WISCONSIN
DEPT. OF NATURAL RESOURCES

P.O. Box 7921
Madison, Wisconsin
53707-7921

What is the purpose of this fact sheet?

This fact sheet is intended to help property owners, renovation and demolition contractors and used concrete handlers determine what painted concrete can be recycled or how it must be disposed of. "Clean" concrete is exempt by rule from most regulations. With certain location limitations, clean concrete may be crushed and used as fill, aggregate in road beds or concrete to concrete recycling. Most painted concrete can be used for these purposes in accordance with rule exemptions. This fact sheet explains when painted concrete is considered clean and is exempt for use vs. when painted concrete is not considered clean and where a specific approval is required by the Department of Natural Resources.

On what basis is painted concrete considered clean vs. not clean?

Painted concrete is considered to be clean if the concrete has not been coated with lead-bearing paint. "Lead-bearing paint" is defined by s. 254.11(8), Wis. Stats., to mean:

> Any paint or other surface coating material containing more than 0.06 percent lead by weight, calculated as lead metal, in the total nonvolatile content of liquid paint, more than 0.5 percent lead by weight in the dried film of applied paint, or more than 1 milligram of lead per square centimeter in the dried film of applied paint.

Note: Latex-based paint does not contain lead and, therefore, concrete coated only with latex-based paint is considered clean.

Who is responsible to determine what type of paint is on the concrete and whether it is lead-bearing?

The generator or owner of the painted concrete has the responsibility to determine if the paint on the concrete is latex or oil-based and if it has been coated with lead-bearing paint. The responsible individuals include:

- The property owner
- Individuals carrying out a renovation or demolition project
- Individuals that later take ownership or control of painted concrete materials for recycling or disposal

So, tell me again, exactly what painted concrete should have the paint tested for lead?

Paint on concrete should be tested for lead if the paint is not latex-based and both of the following are true:

1. The painted concrete will be processed and/or used under a rule exemption for fill, aggregate or concrete to concrete recycling, and
2. The structure was built before 1978.

These criteria apply to painted concrete from all structures, whether used for residential, farm, commercial, industrial or other purposes. Information below explains how to sample and test paint for lead to determine if the painted concrete is clean for exempt use.

Paint other than latex-based paint manufactured before 1978 may contain lead at concentrations that define lead-bearing paint and the paint must be tested for lead to determine if the painted concrete is clean for exempt use. Because an owner of a structure older than 25 years won't usually know if only latex paint was used over the entire life of the building, lead testing is normally needed for all pre-1978 structures.

Note: If the painted concrete is disposed of in a landfill approved by the DNR, the paint doesn't have to be tested.

What management options are available for concrete coated with paint that isn't lead-bearing?

Concrete coated with paint that is not lead-bearing paint may be used as fill, aggregate or concrete to concrete recycling in accordance with the following rule exemptions:

Reuse of clean concrete is exempt under s. NR 500.08(2)(a), Wis. Adm. Code. Certain environmental performance, location and operational requirements apply. Please review these requirements [s. NR 504.04(3)(c) and s.NR 504.04(4)] before placing used concrete on the land. For more information about this disposal exemption, refer to a separate frequently asked question, *What is defined as "clean fill" that does not have to be taken to a landfill?*, on the DNR website at http://dnr.wi.gov/topic/Waste/SolidFAQ.html Concrete coated with paint that is not lead-bearing may also be disposed of in a landfill.

What management options are available for concrete coated with lead-based paint?

Landfill disposal is an available management option for concrete coated with lead-based paint. The landfill must be either a construction and demolition landfill approved under ch. NR 503, or a municipal solid waste landfill approved under ch. NR 504.

If someone wishes to use ground concrete coated with lead–bearing paint for structural fill beneath an impermeable material such as a building foundation or a parking lot, they should fill out an Application for Low Hazard Waste Exemption for Reuse of Concrete Coated with Lead-bearing Paint http://dnr.wi.gov/files/pdf/forms/4400/4400-274.pdf and submit it to the local DNR office. If DNR reviews the application and is convinced the proposed use will not impact human health and the environment, they will grant a written exemption under s. 289.43(8), Wis. Stats. and s. NR 500.08(5)(a).

Who should I contact if I have questions about painted concrete recycling and disposal?

Questions about disposal of painted concrete should be directed to the DNR Waste and Materials Management Program. Find your local DNR solid waste contact at http://dnr.wi.gov/topic/waste/.

Is the paint sampling recommended by the DNR the same as what's required by the Department of Health Services?

No. The lead sampling and testing for paint on concrete for recycling and disposal purposes isn't subject to the same (more rigorous) DHS requirements that may apply to occupied structures, especially schools and residences.

If a structure will be used for residential purposes after the project is complete, DHS rules require sampling by a certified individual. Also, according to federal law, a seller (or landlord) of a home built before 1978 is required to provide information to a buyer (or renter) about whether the home contains lead-bearing paint or any lead poisoning hazards. For more information about this, visit https://www.dhs.wisconsin.gov/lead/homepurchase.htm.

Who can sample and test paint samples from concrete for recycling and disposal purposes?

There is no specific requirement or certification required for an individual sampling paint from concrete for recycling and disposal purposes to determine if the painted concrete is clean for exempt use. An individual may take their own samples or a DHS certified individual may be hired to do the sampling. However, unless an XRF instrument is used by a qualified individual to determine lead concentrations on site, the paint samples must be sent to a certified laboratory for analysis.

Lists of certified lead-bearing paint inspectors, risk assessors and laboratories are available from DHS at https://www.dhs.wisconsin.gov/lead/company-list.htm. If you contact a DHS-certified individual but you only need to determine lead levels in paint on concrete to comply with recycling and disposal requirements, be sure to say this. The following summarizes sampling and testing options for lead-bearing paint for recycling and disposal purposes:

- Hire a Lead Inspector: A lead inspector may test paint using XRF (x-ray) instruments that "peer" through layers of paint to determine lead content immediately. A lead inspector can also collect samples for laboratory analysis. If immediate results are desired, be sure to inquire about on site testing with an x-ray instrument.
- Hire a Risk Assessor: A risk assessor will collect

paint samples and send them to a laboratory for lead testing. Normally, a week or more may be needed for a laboratory to complete testing and additional time for a risk assessor to review results and get back to you. For time sensitive projects, it may be possible to obtain an "expedited" laboratory analysis and results interpretation, which may cost more, and may still require several days.

- Self-Sampling: For recycling and disposal purposes only, a DHS certified individual isn't required to do the sampling. Instead, an individual may take their own samples and send the samples to a certified laboratory for testing. One or two samples are unlikely to be enough since multiple layers of paint types may be present in different areas. Sampling recommendations for recycling and disposal purposes are listed below.

The U.S. Environmental Protection Agency hasn't approved and doesn't recommend do-it-yourself lead test kits that do not include laboratory analysis because they may not be sufficiently accurate to identify lead-bearing paint. For example, one lead test kit manufacturer claims their product can reliably detect lead levels down to only 0.5 percent lead, almost 10 times the level used to define "lead-bearing paint" in Wisconsin.

If I want to take my own samples of paint from concrete for recycling and disposal purposes, how many samples should I take?

Take at least one sample from each area of painted concrete, based on consideration of the different areas of a structure:

- Interior
- Exterior
- Foundation
- Upper walls
- Each room, or other area, where differences in coatings is visually apparent or seems likely

Each sample should be taken as a composite (mixture) of all paint layers at that location. Use a sharp knife to cut down to the concrete and a sharp scraper to release the paint from the concrete. (Thoroughly wash your hands after collecting paint samples.) Prior to collecting a sample, contact a certified laboratory to find out what cost is charged, how much paint sample is needed and what type of sample container is recommended. Normally, a sealable plastic bag or clean and dry jar is suitable. *These sampling recommendations are not intended for assessment of lead hazard to occupants but are only for recycling and disposal purposes to determine if painted concrete is clean for exempt disposal.*

What are the concerns about disposal of concrete coated with lead-bearing paint and where can I get more information?

Paint that contains lead poses potential risks. In the environment, paint from concrete will chip and lead can leach from the paint over time where the painted concrete is disposed of. The lead could leach into groundwater or be carried to surface water by soil erosion. If the concrete is crushed, windblown dust carrying the lead is an additional concern. Further information is available from the following sources:

- Wisconsin Department of Health Services Lead homepage, https://www.dhs.wisconsin.gov/lead/index.htm
- National Lead Information Center, 800-424-5323 or http://www.epa.gov/lead/pubs/nlic.htm

For more information

DNR Waste & Materials Management Program, PO Box 7921
Madison, WI 53707
608-266-2111; DNRWasteMaterials@Wisconsin.gov

Frequently Asked Questions

Preguntas frecuentes (Frequently Asked Questions - Spanish) (http://www.silica-safe.com/ask-a-question/body/Frequently-Asked-Questions_091317_SPANISH.pdf)

1. **What is silica?**
   Silica is one of the most common naturally occurring elements on the planet. Silica, the mineral compound silicon dioxide (SiO_2), is found in two forms -- crystalline or noncrystalline (also referred to as amorphous). Sand and quartz are common examples of crystalline silica.

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2. **When is silica a hazard for construction workers?**
   Materials that contain crystalline silica are not hazardous unless they are disturbed, generating small-sized particles that can get in your lungs ("respirable crystalline silica"). For example, blasting, cutting, chipping, drilling and grinding materials that contain silica can result in silica dust that is hazardous for construction workers and others to breathe. For a list of construction materials that contain silica go to the **"Know the Hazard"** (http://www.silica-safe.com/know-the-hazard) section of this website.

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3. **What construction materials contain silica?**
   Many common construction materials contain silica including, for example, asphalt, brick, cement, concrete, drywall, grout, mortar, stone, sand, and tile. A more complete list of building materials that contain silica, as well as information on how to find out if the material you're working with contains silica, can be found in Step 1 of the **Create-A-Plan** (http://plan.silica-safe.com/) section of the website.

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4. **How much silica dust is too much?**
   It only takes a very small amount of the very fine respirable silica dust to create a health hazard. Recognizing that very small, respirable silica particles are hazardous, OSHA regulation 29 CFR 1926.55(a) requires construction employers to keep worker exposures at or below a Permissible Exposure Level (PEL) of 50 $\mu g/m^3$. The American Conference of Governmental Industrial Hygienists has a lower non-regulatory Threshold Limit Value of 25 $\mu g/m^3$. More information about the hazard and links to examples of exposures with and without controls compared to the OSHA PEL, can be found at **"Know the Hazard? Why is Silica Hazardous?".**

(http://www.silica-safe.org/know-the-hazard/why-is-silica-hazardous) **Back to the top** (#top)

5. **What illnesses can result from breathing in dust that contains silica?**
   Inhaling crystalline silica can lead to serious, sometimes fatal illnesses including silicosis, lung cancer, tuberculosis (in those with silicosis), and chronic obstructive pulmonary disease (COPD). In addition, silica exposure has been linked to other illnesses including renal disease and other cancers. In 1996, the World Health Organization – International Agency on Cancer Research (IARC) identified crystalline silica as a *"known human carcinogen"* (they reaffirmed this position in 2009). The American Thoracic Society and the American College of Occupational and Environmental Medicine have also recognized the adverse health effects of exposure to crystalline silica, including lung cancer.

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6. **What is silicosis?**
   Silicosis is a disabling, irreversible, and sometimes fatal lung disease. When a worker inhales crystalline silica, the lungs react by developing hard nodules and scarring around the trapped silica particles. If the nodules become too large, breathing becomes difficult and death can result. The risk of silicosis is high for workers in several industries, including the construction industry, according to the Center for Disease Control (CDC), the National Institute for Occupational Safety and Health (NIOSH), and the Occupational Safety and Health Administration (OSHA).

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7. **I don't know anyone with silicosis so why should I be worried?**
   Unlike a work-related injury where the effects are seen immediately, silicosis and other silica-related illnesses may not show up for many years after exposure. The most common early symptoms are a chronic dry cough and shortness of breath with physical activity. There are three types of silicosis:
   - *Chronic silicosis*, which usually occurs after 10 or more years of exposure to crystalline silica at relatively low concentrations;
   - *Accelerated silicosis*, which results from exposure to high concentrations of crystalline silica and develops 5 to 10 years after the initial exposure; and
   - *Acute silicosis*, which occurs where exposure concentrations are the highest and can cause symptoms to develop within a few weeks to 4 or 5 years after the initial exposure.

   Silicosis is a progressive disease – meaning it continues to get worse, even when exposure to respirable silica has stopped.

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8. **How many people are diagnosed with silicosis each year?**
   Millions of workers are exposed to dust containing silica. A recent study, *Estimating the Total Number of Newly-Recognized Silicosis Cases in the U.S.,* determined that between 3,600 to 7,300 new cases of silicosis occur annually in the United States. However, only two of the 50 states, New Jersey and Michigan, have surveillance programs to track cases of silicosis. As a result, many cases of silicosis are not reported and many more are not properly diagnosed. One study, *Previously Undetected Silicosis in New Jersey Decedents,* which reviewed the chest x-rays of individuals exposed to silica dust during their life-time, found

evidence of silicosis that had not been diagnosed.

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9. **How should I avoid bringing dust home on my clothes?**
   The National Institute for Occupational Safety and Health (NIOSH) recommends that workers avoid bringing silica dust home from work by:
   - Changing into disposable or washable work clothes at the worksite.
   - Showering (if possible) and changing into clean clothes before leaving the worksite to prevent contamination of other work areas, cars, and homes.
   - Parking your car where it will not be contaminated with silica.

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10. **What should employers do to protect their employees?**
    Planning is essential to reducing exposures and protecting workers. Paragraph (g) of the OSHA Standard (**§1926.1153 Respirable Crystalline Silica** (http://www.silica-safe.org/plan/body/Silica-Construction-Standard.pdf)) requires employers to have a "Written exposure control plan" that contains ***at least the following elements***: "(i) A description of the tasks in the workplace that involve exposure to respirable crystalline silica; (ii) A description of the engineering controls, work practices, and respiratory protection used to limit employee exposure to respirable crystalline silica for each task; (iii) A description of the housekeeping measures used to limit employee exposure to respirable crystalline silica; and (iv) A description of the procedures used to restrict access to work areas, when necessary, to minimize the number of employees exposed to respirable crystalline silica and their level of exposure, including exposures generated by other employers or sole proprietors." The standard also requires employer to "review and evaluate the effectiveness of the written exposure control plan at least annually and update it as necessary", and designate a "competent person" to implement the plan. **Note:** The Silica Control Plan generated by using the "**Create-A-Plan** (http://plan.silica-safe.org/) " tool can also be presented as a toolbox talk.

    In addition, paragraph (i)(2) of the standard requires employers to train all employees – workers and supervisors – on the information in the plan, including how to identify a silica hazard, proper use and maintenance of equipment and controls, the importance of using personal protective equipment provided, and the medical surveillance procedures. The "**Create-A-Plan** (http://plan.silica-safe.org/) " section of this website is a free resource designed to help employers develop their written exposure control plan. The planning tool walks an employer through 3 critical planning steps and generates a silica control plan that can be printed, emailed, or saved. The "**Training and Other Resources** (http://www.silica-safe.org/training-and-other-resources) " section includes silica-related instructional materials, toolbox talks, handouts, videos, and other resources employers can use to train their employees.

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11. **How do I prevent exposures and control the dust?**
    Preventing the dust from becoming airborne is a good way to reduce exposures. Water can be used to suppress the dust and vacuums can be used to capture it at the source. When water or vacuums are not feasible, or if the exposures are still high even with these controls, a NIOSH approved respirator should be used; however, respirators won't protect those working close by. Other ways to reduce or eliminate exposures include using different materials, such as aluminum oxide instead of sand for abrasive blasting, or using work practices that help minimize dust. **The "Create-A-Plan" tool on this website provides examples by material and task for controlling dust.** (http://plan.silica-safe.org/examples-equipment-and-control-options)

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12. **What can I do to protect myself?**
    It is your employer's responsibility by law to provide a safe workplace. This is an OSHA requirement. However, it is a worker's responsibility to use the equipment provided, participate in educational programs on silica, and follow his or her employer's safety and health instructions. NIOSH recommends that workers:
    - Become informed of the health effects of breathing silica dust and the tasks that generate this dust on the job.
    - Reduce their exposure by avoiding working in dust whenever possible, using controls provide, and wearing a respirator when needed.
    - Take advantage of health or lung screening programs offered.
    - Use good personal hygiene at work:
      - *Do not eat, drink, or use tobacco products in dusty areas.*
      - *Wash hands and face before eating, drinking, or smoking outside dusty areas.*

- *Change into disposable or washable work clothes at the worksite.*
- *Shower (if possible) and change into clean clothes before leaving the worksite to prevent contamination of other work areas, cars, and homes.*
- *Park cars where they will not be contaminated with silica.*

To learn more read ***"Silicosis: Learn the Facts!"*** (http://www.silica-safe.com/ask-us-a-question/body/1-Q-A-NIOSH-Silicosis-Learn-the-Facts.pdf)

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13. **Where can I find out about silica related rules and regulations?**
OSHA is the primary source for information on regulations that cover silica exposures and measures employers are required to take to protect their employees. In March 2016 OSHA issued the new silica standard for the construction industry. To learn more go to **OSHA Silica Standard for Construction** (https://www.osha.gov/silica/%20)

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14. **Where can I find help in my area on silica?**
OSHA offers **free and confidential** advice to small and medium-sized business through an On-site Consultation Program. According to OSHA, the "On-site Consultation services are separate from enforcement and do not result in penalties or citations. Consultants from state agencies or universities work with employers to identify workplace hazards, provide advice on compliance with OSHA standards, and assist in establishing safety and health management systems." To learn more visit ***OSHA On-Site Consultation*** (http://www.osha.gov/dcsp/smallbusiness/consult.html)

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15. **If my task isn't on Table 1, what do I have to do to comply with the standard?**
OSHA offers three methods an employer can choose from to demonstrate compliance and assess employee exposure. An employer can use one of the three or any combination of them to ensure their employees are protected. The options are:
    - Table 1: includes pre-defined tasks and specified control methods. An employer that fully implements an equipment-control option on Table 1 for a task will not have to perform air monitoring for that task.
    - Performance or 'Objective Data': includes air monitoring data compiled by the employer or third parties, such as universities, trade associations, or manufacturers, which is sufficient to accurately characterize exposure to prove the control method used reduces silica dust exposure below the permissible exposure level (PEL) of 50 µg/m3 over an 8-hour time weighted average (TWA). The data relied on us must reflect conditions that are similar or worse than the employers current worksite conditions.
    - Scheduled Air Monitoring program: assesses exposure by implementing a scheduled air monitoring program to ensure employees are not exposed above the PEL. When this option is used, an employer is required to implement an air monitoring program when workers are exposed over the Action Level (AL) of 25 µg/m3 over an 8-hour TWA, and implement control methods.

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16. **If my task is listed on Table 1, do I have to follow Table 1?**
It is important to note that for tasks that are included on Table 1, employers can **choose** to use the equipment/control options in Table 1 *or* they can use one of the alternative exposure control methods (performance or objective data, and scheduled air monitoring) to demonstrate compliance.

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17. **When do respirators need to be used and what type should be used?**
Personal protective equipment, including respirators, should be the last option to prevent a silica exposure. Silica dust should be controlled at the point of origin through the use of vacuum or water controls. However, if using engineering and work practice controls are not enough to reduce the exposure to below the PEL, respirators may be required.

The types of respirators required will depend on the task and degree of protection needed. Any respirator used will fall under OSHA's respiratory protection standard. Please see OSHA's website on respiratory protection for more information on the right respirators for your job tasks and how to comply with the OSHA respiratory protection standard, **https://www.osha.gov/SLTC/respiratoryprotection/index.html** (https://www.osha.gov/SLTC/respiratoryprotection/index.html) . Table 1 of the silica standard includes respirator requirements for certain tasks and under certain conditions.

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18. **How do I clean dust on surfaces?**
Dust should always be cleaned by using wet methods, a HEPA vacuum or another method which effectively minimizes dust exposure. Dry sweeping or dry brushing is **NOT** allowed unless other methods are not feasible.

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19. **What is a competent person under the standard and what are they responsible for?**
A "competent person" is defined in OSHA's silica standard for construction as "an individual who is capable of identifying existing and foreseeable respirable crystalline silica hazards in the workplace and who has authorization to take prompt corrective measures to eliminate or minimize them. The competent person must have the knowledge and ability necessary to fulfill the responsibilities set forth in paragraph (g) of this section."

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20. **Do I need to provide all of my employees with medical surveillance?**
OSHA's silica standard for construction only requires employers to offer a medical examination to workers who will be required to wear a respirator for 30 or more days per year when performing work covered by the standard. Workers that fall into this category must be given the opportunity to have the examination required under the standard within 30 days after the initial assignment of work "unless the employee has received a medical examination that meets the requirements ... within the last three years." If the employee can demonstrate that they have already had an exam within the last three years, the employer does not have to offer another medical exam.

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11/08/2017

To: Walter Margdziarz – Sugar Grove Planning Commission

From: Jamie L. Koz, 4s917 Harter Road, Sugar Grove, IL 60554

Below are my concerns in regard to the annexation & rezoning (Heartland Recycling) that is up for discussion on November 15, 2017.

As I will not be able to attend, I would like my concerns recorded as follows:

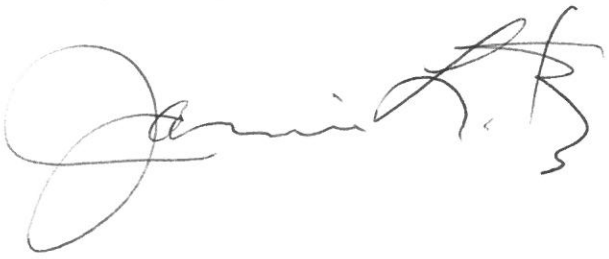
- I am very concerned about the negative impact this will have on the value of my property (address above). Since my husband passed away in March 2015, I have been trying to rehab my 126 year old home so I can, one day, receive a nice return on the upgrades. I did not plan on selling/moving for another 5 years.
- I am on a well and septic system. Will this recycling operation affect this?
- I have seasonal allergies and asthma. Will this recycling operation impact my health?
- What will the noise, odor and/or traffic be like while the recycling operation is underway?
- What are the hours of operation and for how long?
- What will happen to the lake and fish that currently reside on this property that the recycling operation will be working on?
- What does this look like in the future for the middle school with bus traffic and/or parents transporting children to/from classes?
- The children at the school do activities outside periodically (band practice, sports, etc.). How will this impact them?

In closing, I have enjoyed living in Sugar Grove for the past 26 years.

When we first purchased this home (10/1992) it was all farm land across the street. Then, much to our surprise, it was sold and rezoned for the school & park! (We didn't even know it was for sale!) After that initial shock, we learned to accept our new "neighbors" as we have a grandson attending the middle school and his younger brother will attend next year. Education is very important and our youth need the facilities to make that happen!

I try to spend my money here in Sugar Grove as much as possible to help support our old and new businesses as I know it's important for the community growth. What I don't want to happen is to feel I'm being overlooked as a longtime resident (even though I live in the "sticks", or what used to be.....)!

Respectfully Submitted,



THE LAW OFFICE
OF
MICHAEL P. COGHLAN, LLC

November 15, 2017

Village of Sugar Grove
Board of Trustees
Plan Commission
10 S. Municipal Drive
Sugar Grove, Illinois

Please see that attached courtesy copies of documents, reports, and caselaw pertaining to the Heartland Recycling Rezoning, Special Use and Request for Annexation on Harter Road.

All necessary information requested through the Freedom of Information Act has not yet been provided. There are due process issues that require the production of information in the possession of the Village of Sugar Grove.

The health and safety issues appear to present a public policy situation where additional tax dollars are secondary to the public health and safety concerns.

Thank you,

Michael P. Coghlan

Michael P. Coghlan

444 E. Hillcrest Drive, Suite 330 • DeKalb, IL 60115 • PH. 815-787-0800 • FX. 815-425-3859

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PURPOSE AND INTENT

This report presents natural resource information to officials of the local governing body and other decision makers. Decisions concerning variations, amendments or relief of local zoning ordinance may reference this report. Also, decisions concerning the future of a proposed subdivision of vacant or agricultural lands, and the subsequent development of these lands because of these decisions may reference this report. This report is a requirement under the Soil and Water Conservation District Act contained in ILCS 70, 405/1 ET seq.

This report intends to present the most current natural resource information available in an understandable format. It contains a description of the present conditions and resources available and their potential impact on each other. This information comes from standardized data, on-site investigations and other information furnished by the petitioner.

Please read the entire report to coordinate and interrelate all natural resource factors considered. This report, when used properly, will provide the basis for good land use change decisions and proper development while protecting the natural resource base of the county.

The conclusion of this report in no way indicates the impossibility of a certain land use. However, it should alert the reader to possible problems that may occur if the capabilities of the land are ignored. Please direct technical questions about data supplied in this report to:

Kane-DuPage
Soil and Water Conservation District
2315 Dean Street, Suite 100
St. Charles, IL 60175

LAND COVER IN THE EARLY 1800'S

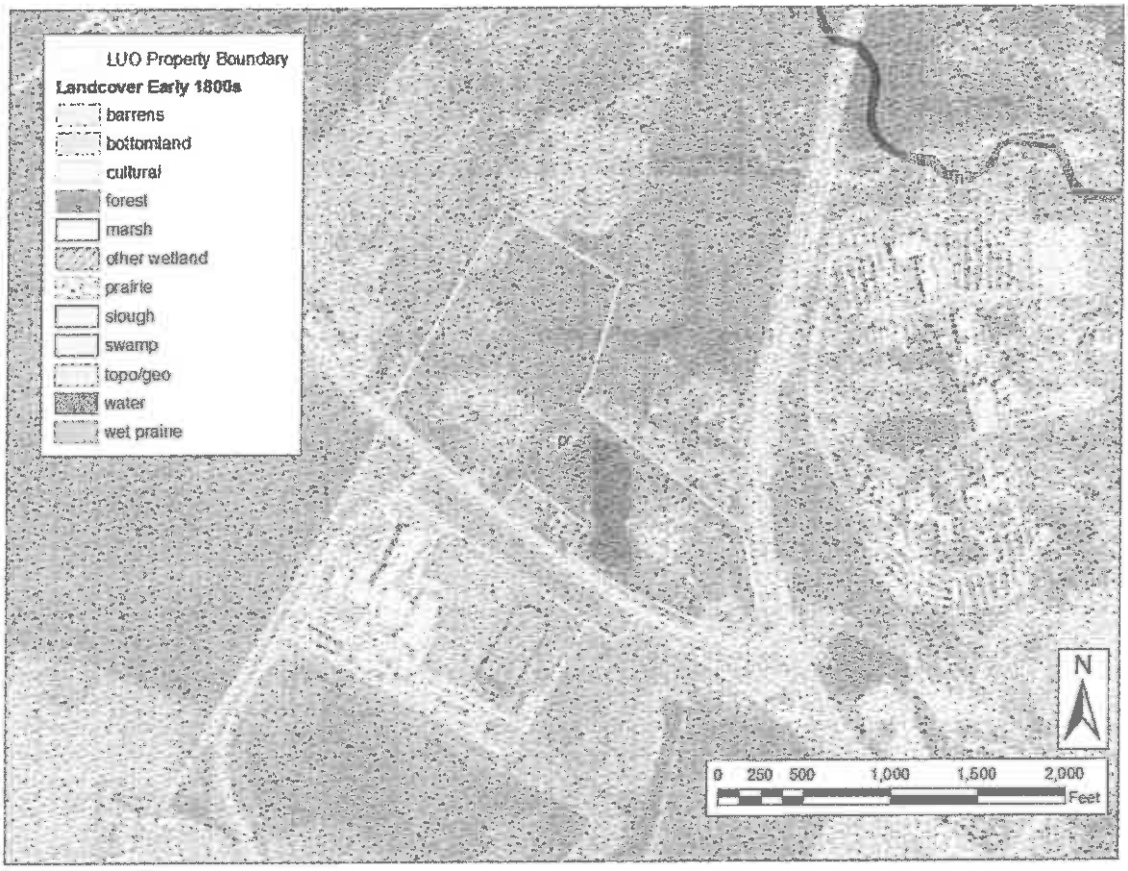

Figure 1: Land Cover in the Early 1800's

Illinois Department of Natural Resources, Illinois Natural History Survey, Land Cover of Illinois in the Early 1800s., Vector Digital Data, Version 6.0, August, 2003.

These surveys represent one of the earliest detailed maps for Illinois. The surveys began in 1804 and were largely completed by 1843. They predate our county land ownership maps and atlases. These plat maps and field notebooks contain a wealth of information about what the landscape was like before the flood of settlers came into the state.

The vast majority of the landscape of Illinois in the early 1800's consisted of two different natural resource areas. These two areas were prairie and forest. Prairie and woodland ecosystems are extremely valuable resources for many reasons. These areas:

- provide wildlife habitat and support biodiversity
- provide areas for recreational opportunities
- improve soil health and reduce soil loss
- improve air and water quality

Other designations include, cultural (or agricultural area), marsh, wet prairie, wetland, barrens and water. Please note that these designations are based on surveys taken in the early 1800's, and may not represent exact site conditions.

This site is located in an area surveyed as prairie on the land cover in the early 1800's map. The District recommends preserving as much as of the natural character of the site as possible during this land use change. It is also recommended that native plants be utilized for landscaping whenever possible. Removal of invasive species is also encouraged.

GREEN INFRASTRUCTURE

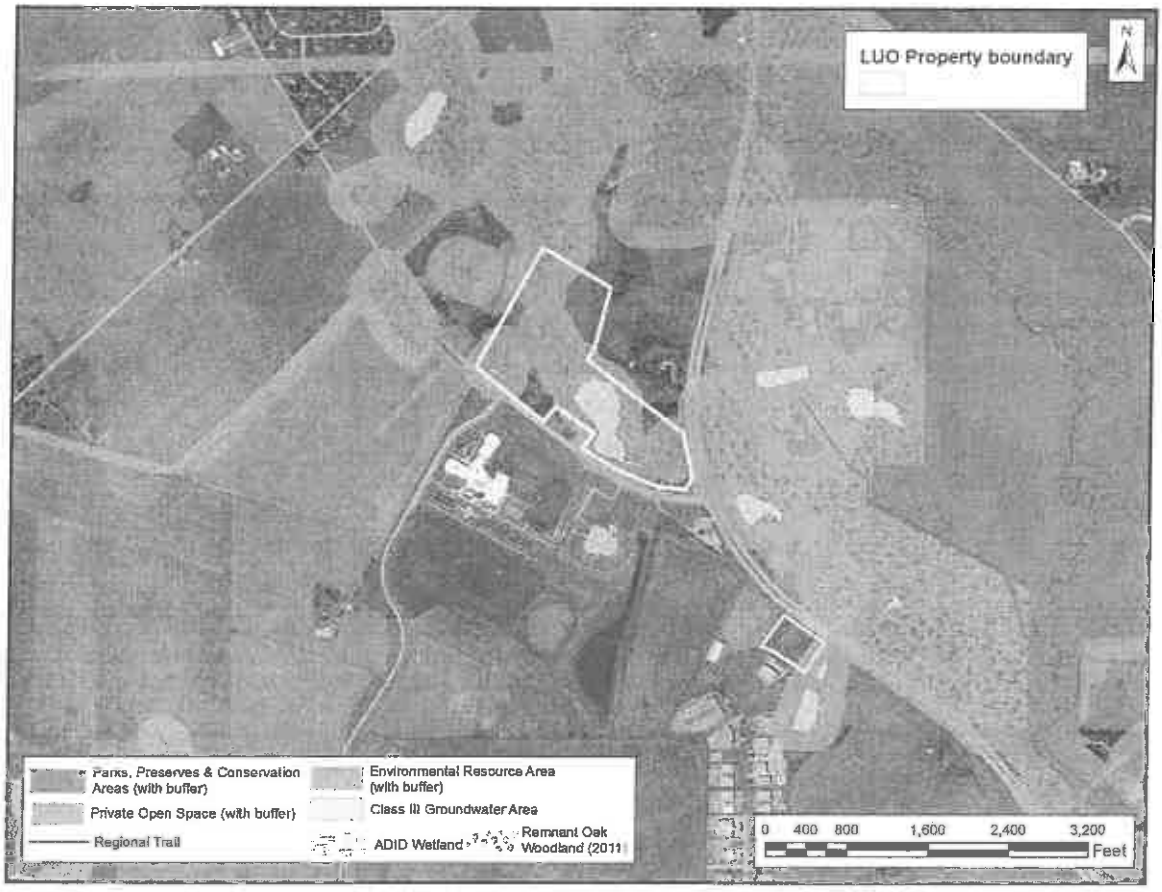

Figure 2: Kane County Green Infrastructure Plan

County of Kane. "Kane County 2040 Green Infrastructure Plan". Adopted December 10, 2013.

From the Kane County Green Infrastructure Plan, "Green infrastructure is an interconnected system of natural areas and open spaces including woodlands, wetlands, trails and parks, which are protected and managed for the ecological values and functions they provide to people and wildlife. The Kane County 2040 Green Infrastructure Plan includes analysis of existing natural resources in the County and recommendations for green infrastructure priorities and approaches. The ultimate goal of the Kane County 2040 Green infrastructure Plan is to lay the groundwork for green infrastructure planning and projects at the regional, community, neighborhood and site levels."

The benefits of green infrastructure include:

- Preservation of habitat and biodiversity
- Water and soil conservation
- Flood storage and protection
- Improved public health
- Encourage local food production
- Economic benefits
- Mitigation and adaptation for climate change

This site includes the following priority areas as designated on the Kane County 2040 Green Infrastructure Plan: Water, Wetlands, Remnant Oak Woodlands, Environmental Resource Area, Class III Groundwater Area.

NWI WETLANDS

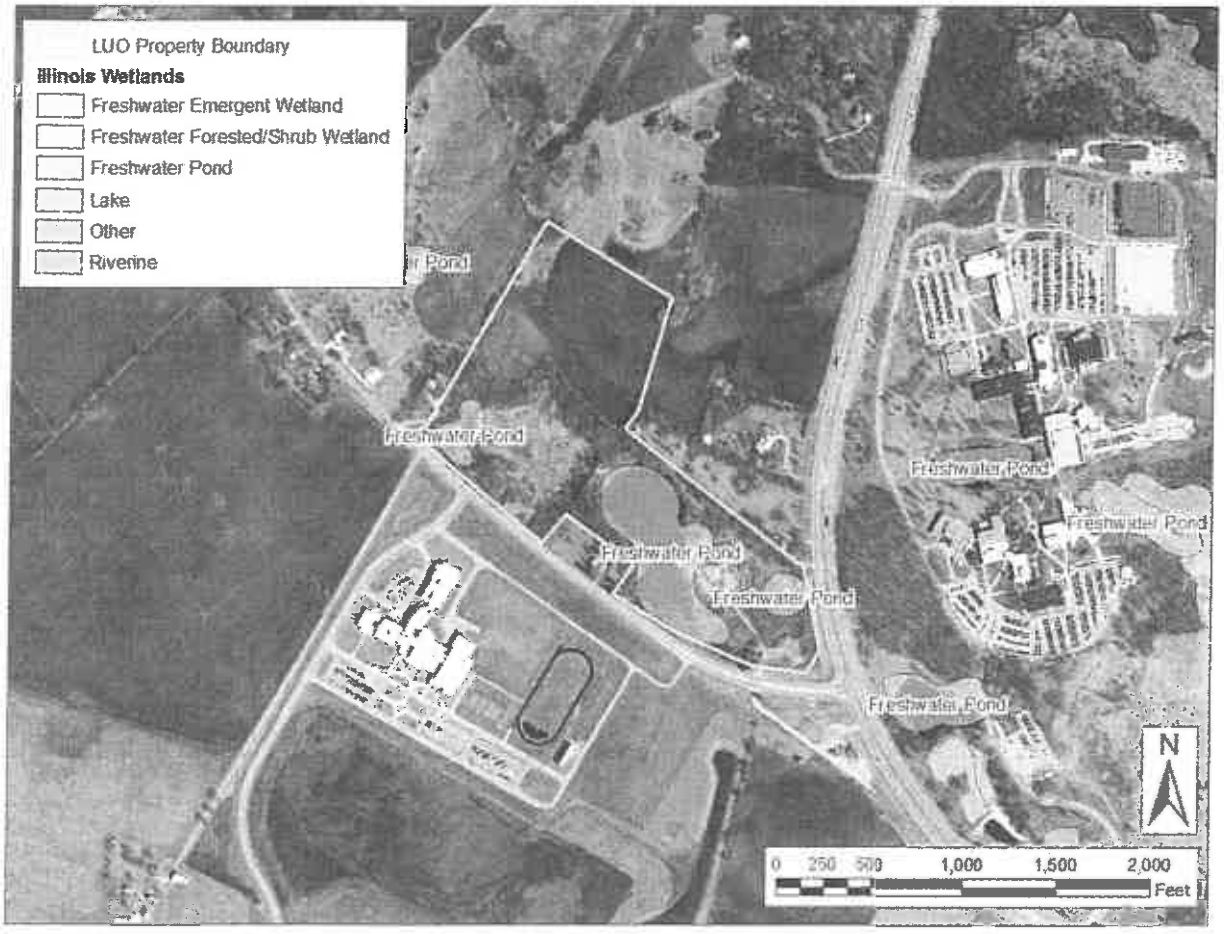

Figure 3: National Wetland Inventory Map

United States Department of the Interior, Fish and Wildlife Service, National Wetlands Inventory Photo Year 1983-1984, Digitized 1985-1986.

Wetlands are some of the most productive and diverse ecological systems on earth. The U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency define wetlands as follows, "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas." Some other common wetlands located in this part of Illinois are fens and wet meadows.

Wetlands function in many ways to benefit mankind. Some of their many functions and benefits include:

- Controlling flooding by offering a slow release of excess water downstream or through the soil.
- Cleansing water by filtering out sediment and pollutants.
- Functioning as rechargers of our valuable groundwater.
- Providing essential breeding, rearing, and feeding grounds for many species of wildlife.

The National Wetland Inventory Map identifies wetlands on to this site.

ADID WETLANDS

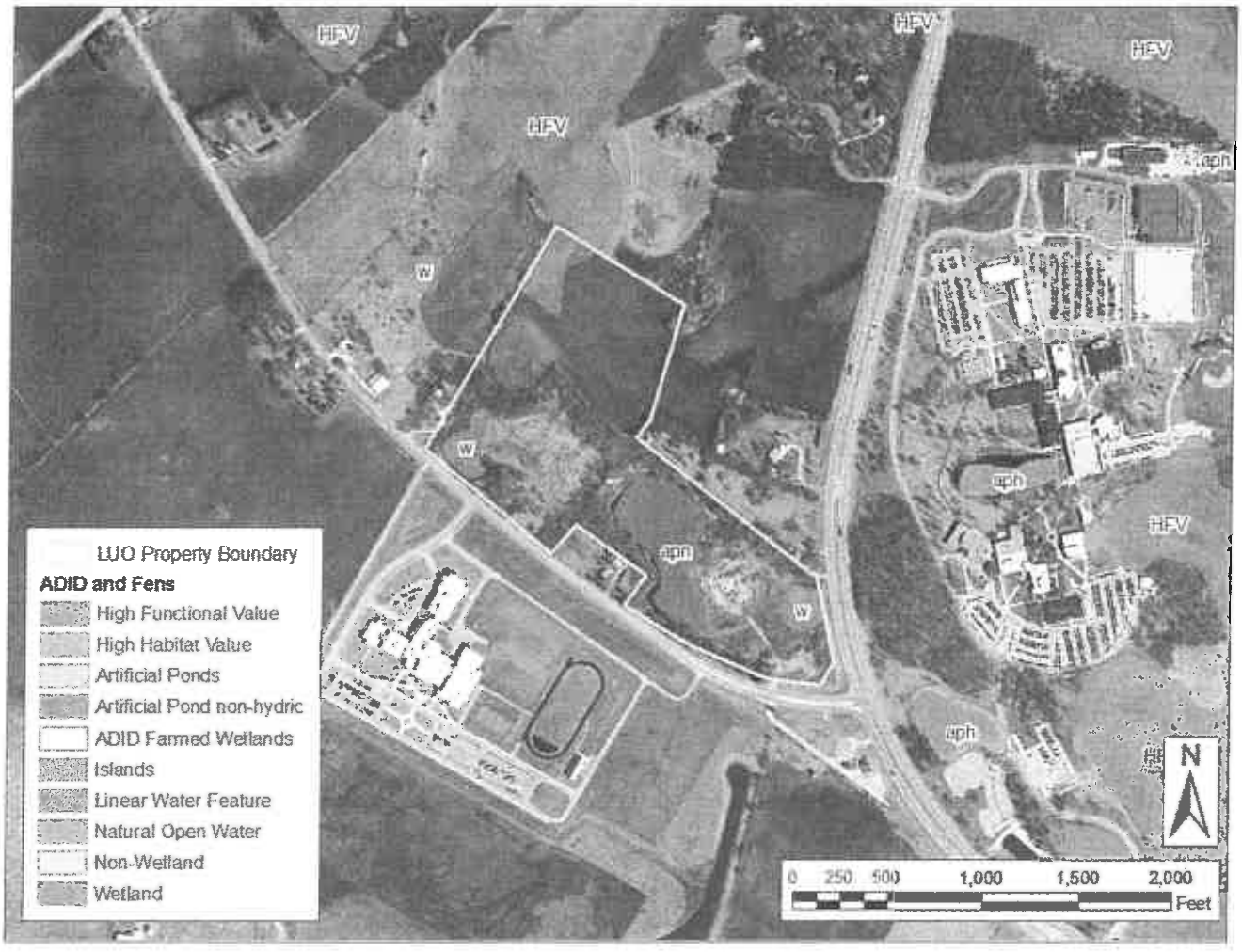

Figure 4: ADID Wetlands

Kane County's Wetlands and Streams Advanced Identification (ADID) Study completed in 2004.

Released in August of 2004, the Kane County Advanced Identification of Aquatic Resources (or ADID) study is a cooperative effort between federal, state, and local agencies to inventory, evaluate, and map high quality wetland and stream resources in the county. ADID studies are part of a U.S. Environmental Protection Agency program to provide improved awareness of the locations, functions, and values of wetlands and other waters of the United States. The primary purpose is to identify wetlands and streams unsuitable for dredging and filling because they are of particularly high quality. This information can be used by federal, state, and local governments to aid in zoning, permitting, and land acquisition decisions. In addition, the information can provide data to agencies, landowners, and private citizens interested in restoration, acquisition, or protection of aquatic sites and resources. For more detailed information regarding wetlands in Kane County, please refer to the full Kane County ADID study at : http://dewprojects.countyofkane.org/adid/index.htm

A review of the Kane County ADID map revealed that ADID wetlands were identified on this site. ADID wetlands #3118, 31181, 31182 and 3113 were mapped on this site. One of these wetlands has been designated as having a high functional value.

FLOODPLAIN

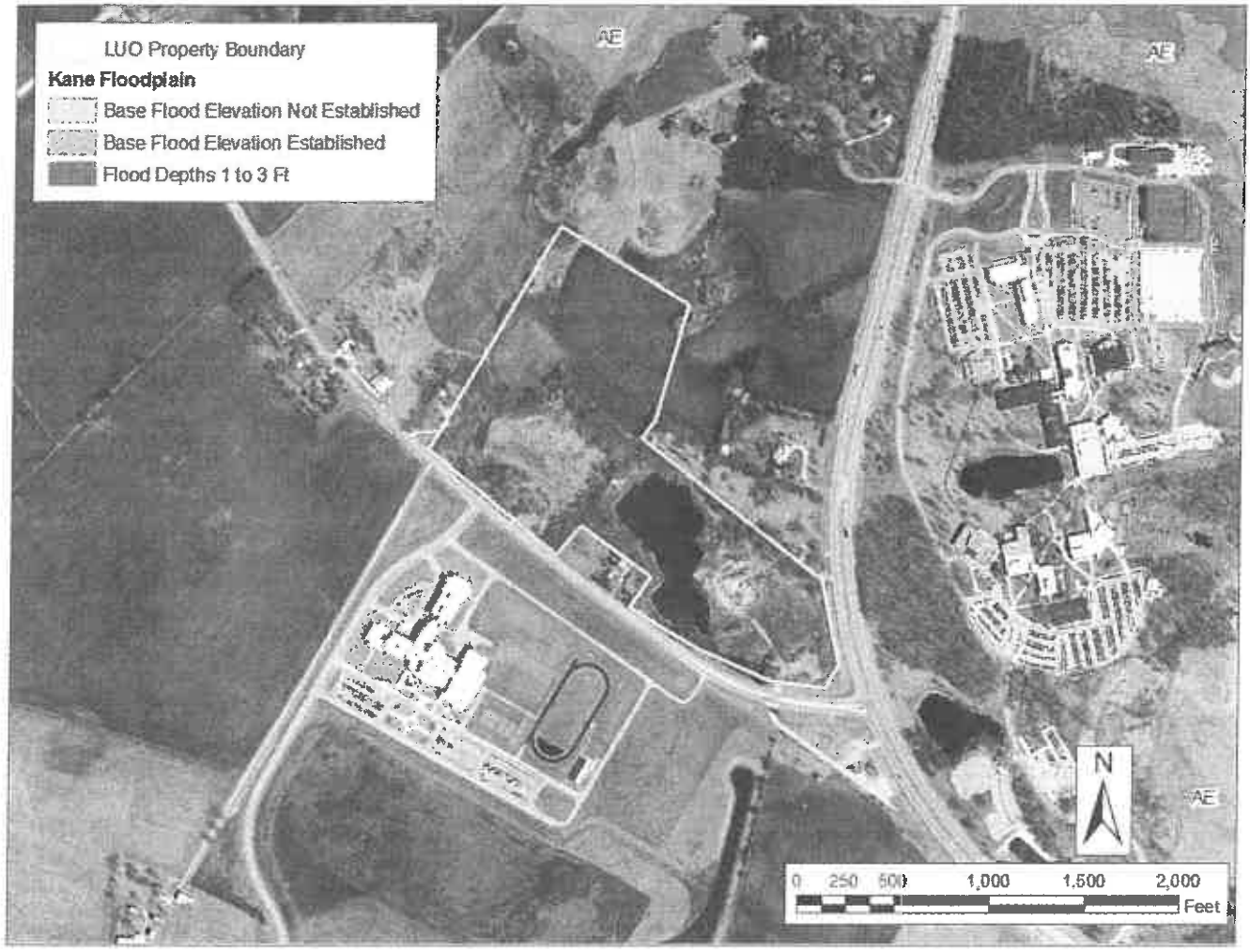

Figure 5: Floodplain Map

From FEMA's Floodplain Natural Resources and Functions Chapter 8, "Undeveloped floodplain land provides many natural resources and functions of considerable economic, social and environmental value. Nevertheless, these and other benefits are often overlooked when local land-use decisions are made. Floodplains often contain wetlands and other important ecological areas as part of a total functioning system that impacts directly on the quality of the local environment."

There are so many benefits of the floodplain that not all can be listed here, but the following is a general list of benefits and functions:

- natural flood storage and erosion control
- water quality maintenance
- groundwater recharge
- nutrient filtration
- biological productivity/wildlife habitat
- recreational opportunities/aesthetic value

According to the Flood Insurance Rate Map, no part of this site is within the boundaries of a 100-year floodplain. This development should not impede the beneficial functions of the floodplain. Please see 8 for information regarding floodplain regulations.

STREAMS AND WATERSHED MANAGEMENT

Rivers and Streams are necessary components of successfully functioning ecosystems. It is important to protect the beneficial functions and integrity of our local streams and rivers. Development near stream systems has the potential to increase flooding, especially in urban areas where there is a lot of impervious surface and a greater amount of stormwater runoff. Pollution is also an issue for stream systems in urban and rural areas. It is rare for any surface waters to be impacted by only one source of pollution. With few exceptions, every land-use activity is a potential source of nonpoint source water pollution (IEPA– Nonpoint Source Pollution).

The Illinois Environmental Protection Agency provides the following in regards to nonpoint source pollution, "Nonpoint source pollution (NPS) occurs when runoff from rain and snowmelt carries pollutants into waterways such as rivers, streams, lakes, wetlands, and even groundwater. Examples of or sources of NPS pollution in Illinois include runoff from farm fields, livestock facilities, construction sites, lawns and gardens, city streets and parking lots, surface coal mines, and forestry. The major sources of NPS pollution in Illinois are agriculture, urban runoff, and habitat modification."

Local watershed management planning is an important effort that involves citizens of a watershed in the protection of their local water resources. Water quality is a reflection of its watershed.

Common Watershed Goals:

- Protect and restore natural resources
- Improve water quality
- Reduce flood damage
- Enhance and restore stream health
- Guide new development to benefit watershed goals
- Preserve and develop green infrastructure
- Enhance education and stewardship

There are many subwatershed plans that have already been developed in Kane County. Please follow the link to the Kane County 2040 Green Infrastructure Plan. See page 108 for a list of local watershed plans.

http://countyofkane.org/FDER/Pages/development/planning.aspx

Nutrient management is of vital importance to the health of our rivers and streams. Nutrient load in our local streams and rivers has contributed to the Gulf of Mexico hypoxia, or a "dead zone" located where the Mississippi River meets the Gulf of Mexico. This dead zone has little to no biological activity. Yearly averages indicate the dead zone to be greater than 5,000 square miles in size. Illinois was required and has introduced a plan to reduce nutrient loss from point source pollution sources, such as wastewater treatment plants and industrial wastewater, as well as nonpoint pollution sources. Read Illinois's Plan for reducing nutrient loss here:

http://www.epa.illinois.gov/topics/water-quality/watershed-management/excess-nutrients/nutrient-loss-reduction-strategy/index

REGULATORY INFORMATION

The laws of the United States and the State of Illinois assign certain agencies specific and different regulatory roles to protect the waters within the State's boundaries. These roles, when considered together, include protection of navigation channels and harbors, protection against floodway encroachment, maintenance and enhancement of water quality, protection of fish and wildlife habitat As well as recreational resources. Unregulated use of waters within the State of Illinois could permanently destroy or alter the character of these valuable resources and adversely impact the public. Therefore, please contact the proper regulatory authorities when planning any work associated with Illinois waters so that proper consideration and approval can be obtained.

REGULATORY AGENCIES:

Wetland/U.S. Waters: U.S. Army Corps of Engineers, Chicago District, 111 North Canal Street, Chicago, IL 60606-7206. Phone: (312) 353-6400.

http://www.lrc.usace.army.mil/

Wetland/Isolated: Kane County Water Resources Division, 719 Batavia Avenue, Geneva, IL 60134. (630)232-3400.

http://www.countyofkane.org/FDER/Pages/environmentalResources/water.aspx

Floodplains: Illinois Department of Natural Resources\Office of Water Resources, 2050 W. Stearns Road, Bartlett, IL 60103. (847)608-3100.

https://www.dnr.illinois.gov/WaterResources/Pages/Permit%20Programs.aspx

Who Must Apply:

Wetland and/or Floodplain Permit: Anyone proposing to dredge, fill, riprap, or otherwise alter the banks or beds of, or construct, operate, or maintain any dock, pier, wharf, sluice, dam, piling, wall, fence, utility, floodplain or floodway subject to State or Federal regulatory jurisdiction should apply for agency approvals.

Construction Permit: Anyone disturbing an acre or more of land during proposed construction activities should apply for the NPDES General Construction Permit ILR10. Building and stormwater permits should also be obtained locally from municipal government and/or Kane County.

NPDES General Construction Permit ILR10: Illinois Environmental Protection Agency, Division of Water Pollution Control, 1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794. (217)782-0610.

http://www.epa.illinois.gov/topics/forms/water-permits/storm-water/construction/index

Coordination: We recommend early coordination with the regulatory agencies BEFORE finalizing work plans. This allows the agencies to recommend measures to mitigate/compensate for adverse impacts. Also, the agency can make possible environmental enhancement provisions early in the project planning stage. This could reduce time required to process necessary approvals. Please be advised that failure to coordinate with regulatory agencies could result in project shut down, fines and/or imprisonment.

AQUIFER SENSITIVITY

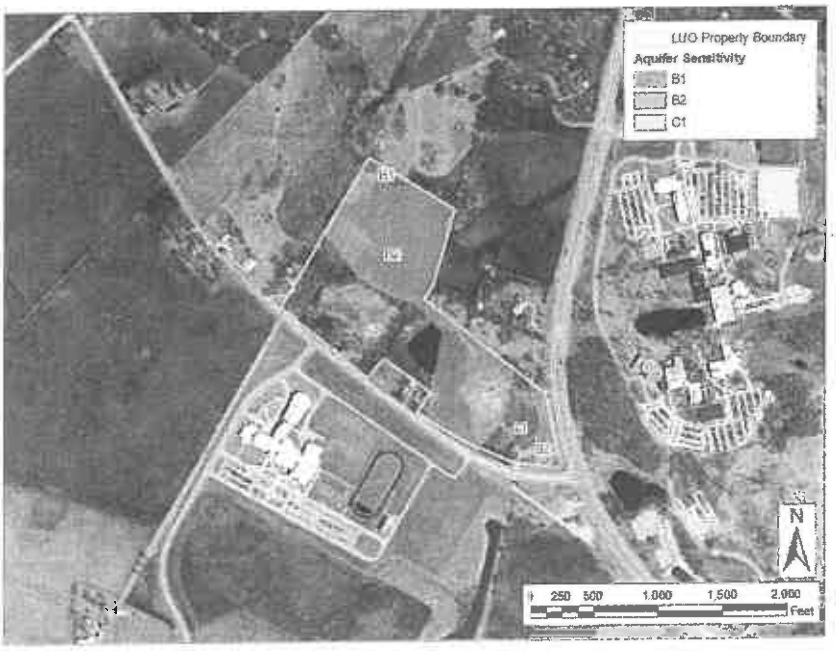

Figure 6: Aquifer Sensitivity Map

Dey, W.S., A.M. Davis, and B.B. Curry 2007, Aquifer Sensitivity to Contamination, Kane County, Illinois: Illinois State Geological Survey, Illinois County Geologic Map, ICGM Kane-AS

The map aquifer sensitivity to contamination (Dey et al 2007) is a representation of the potential vulnerability of aquifers in an area to contamination from sources of contaminants at or near the surface. The U.S. Environmental Protection Agency (1993) defines aquifer sensitivity/contamination potential as "a measure of the ease with which a contaminant applied on or near the land surface can migrate to an aquifer."

Aquifers function as a storage area for groundwater recharge, which makes them a reliable source of fresh water. Groundwater accounts for a considerable percentage of the drinking water in Kane County. The chart below shows the aquifer sensitivity classifications. This site is classified as having a moderately high potential for contamination.

A = High Potential, B = Moderately High Potential, C=Moderate Potential, D = Moderately Low Potential, E = Low Potential

A1	Aquifers are greater than 50ft thick and within 5ft of the surface	**C1**	Aquifers are greater than 50ft thick and between 20 and 50ft below the surface
A2	Aquifers are greater than 50ft thick and between 5 and 20ft below the surface	**C2**	Aquifers are between 20 and 50ft thick and between 20 and 50ft below the surface
A3	Aquifers are between 20 and 50ft thick and within 5ft of the surface	**C3**	Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 20 and 50ft below the surface
A4	Aquifers are between 20 and 50ft thick and between 5 and 20ft below the surface	**D1**	Aquifers are greater than 50ft thick and between 20 and 50ft below the surface
B1	Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both within 5ft of the surface	**D2**	Aquifers are between 20 and 50ft thick and between 50 and 100ft below the surface
B2	Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 5 and 20ft below the surface	**D3**	Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 50 and 100ft below the surface
E1	Sand and gravel or high-permeability bedrock aquifers are not present within 100 ft of the land surface		

TOPOGRAPHY AND DRAINAGE

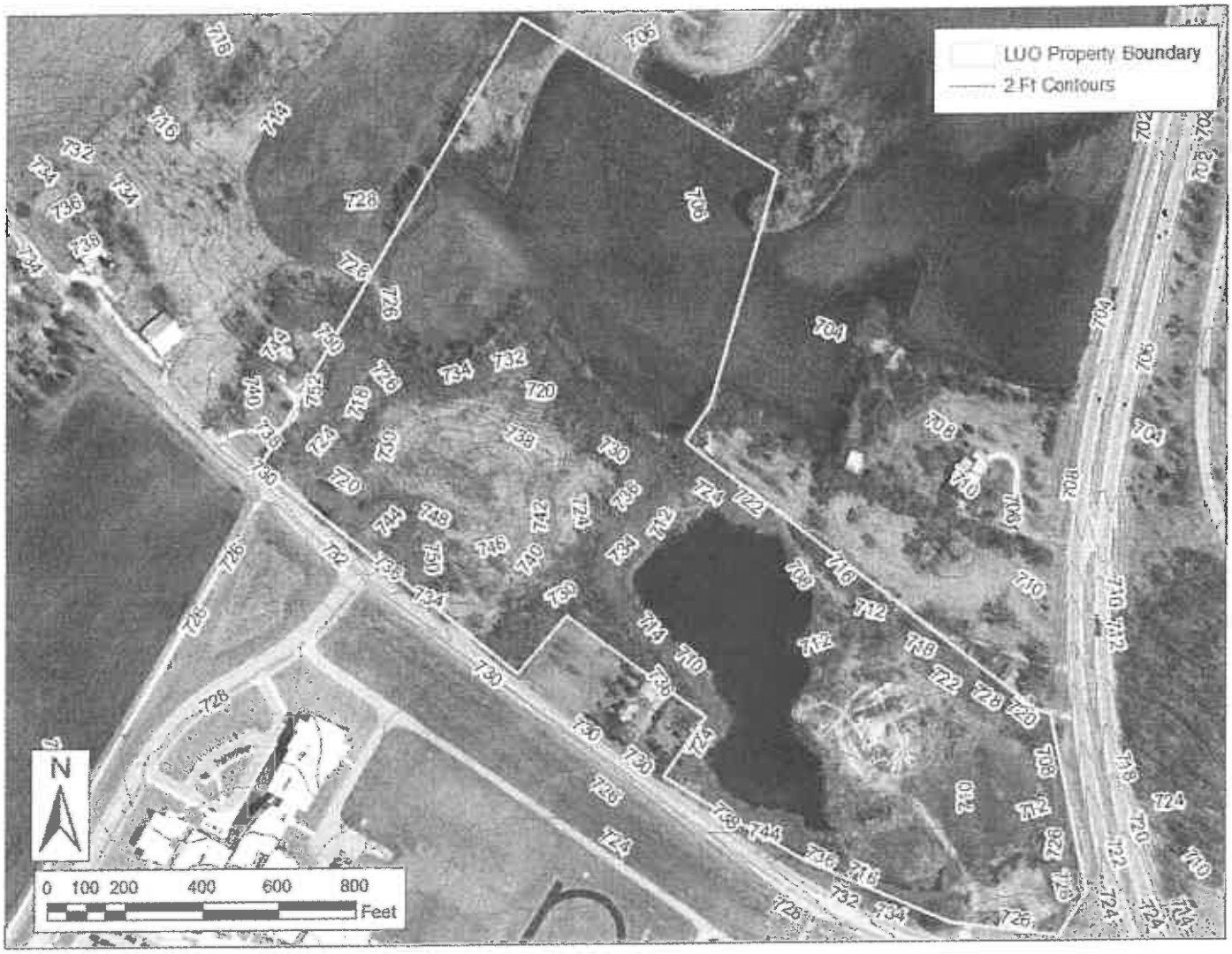

Figure 7: Municipalities 2 Ft Contours

USGS Topographic maps and other topographic surveys give information on elevations, which are important to determine slopes, natural drainage directions, and watershed information. Elevations determine the area of impact of flooding. Slope information determines steepness and erosion potential of the site. Slope has the greatest impact in determining the erosion potential of a site during construction activities. Drainage directions determine where water leaves the property in question, possibly impacting surrounding natural resources.

It is important to consider drainage during any proposed construction onsite. Any areas where water leaves the site should be monitored for potential pollutants which could contaminate downstream waters.

The high point of this property is located in the western portion of the site at an elevation of 752 feet above mean sea level. The property generally drains to the east via overland, at the lowest elevation on the property at 704 feet above sea level.

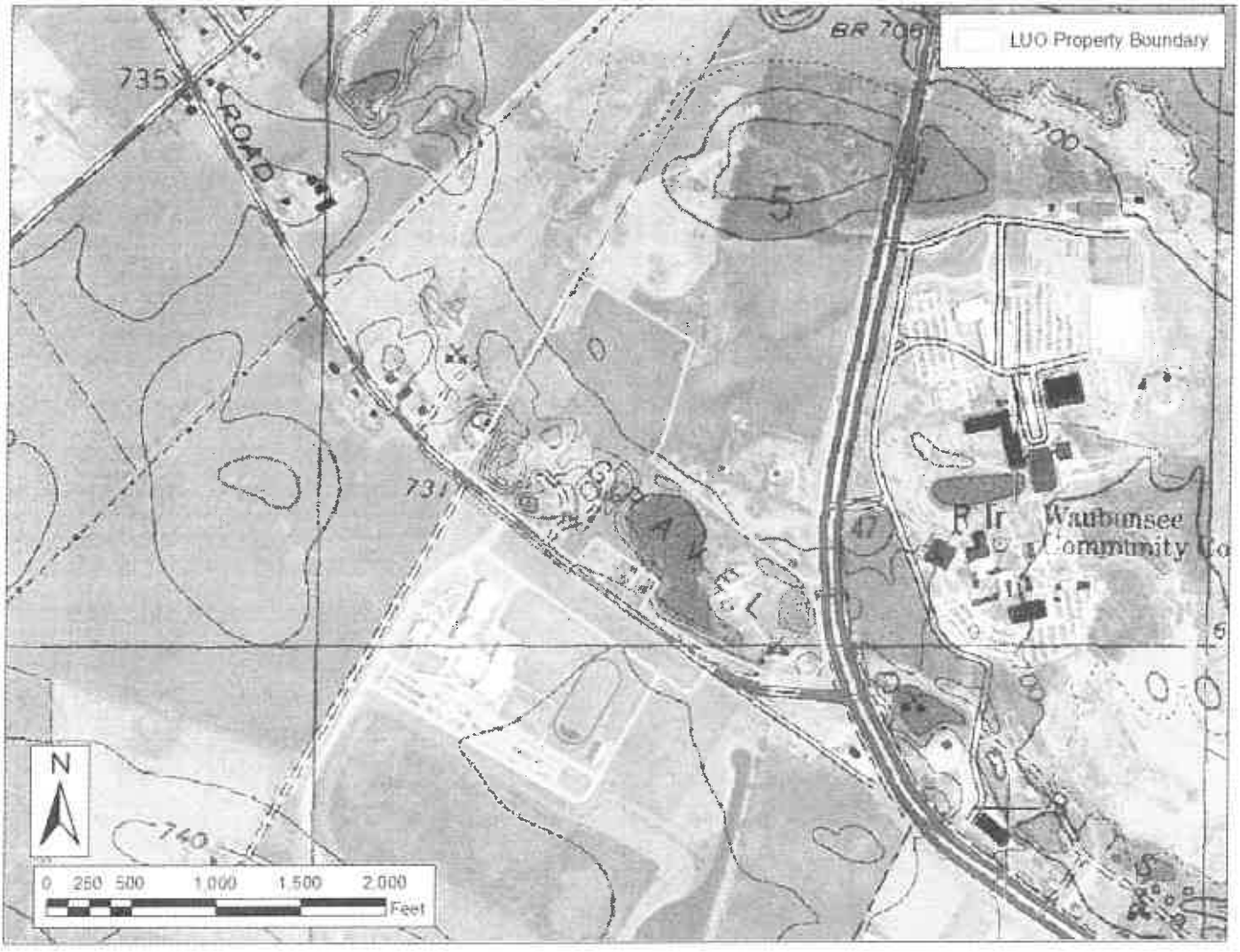

Figure 8: USGS Topographic Map

STORMWATER

Any proposed removal of vegetation, compaction of soil, and addition of impervious surfaces (rooftops, roadways, etc.) will greatly increase the amount of stormwater runoff generated on this site. The District recommends the use of onsite stormwater management strategies whenever possible. IEPA now recommends that stormwater pollution prevention plans include post-construction stormwater management which retains the greatest amount of post-development stormwater runoff practicable, given the site and project constraints. From the ILR10 permit for construction sites 1 acre or more, "Such practices include but are not limited to: stormwater detention structures (including wet ponds); stormwater retention structures; flow attenuation by use of open vegetated swales and natural depressions; infiltration of runoff onsite; and sequential systems (which combine several practices)."

Site assessment with soil testing should help to determine what stormwater management practices are best for your site. Insufficient stormwater management has the potential to cause or aggravate flooding conditions on surrounding properties, or elsewhere in the watershed. Please refer to the Kane County Stormwater Ordinance for stormwater requirements and minimum standards.

http://www.countyofkane.org/FDER/Pages/environmentalResources/waterResources/

SOIL EROSION

Development on this site should include the use of a soil erosion and sedimen-tation control plan. Due to the soil type and slope of the site, the District believes that the potential for soil erosion during and after any proposed construction could be **large**. Furthermore, the erosion and resulting sedimentation may become a primary nonpoint source of water pollution. Eroded soil during the construction phase can create unsafe conditions on roadways, degrade water quality, and destroy aquatic ecosystems lower in the watershed. Soil erosion also increases the risk of flooding due to choking culverts, ditches, and storm sewers, and by reducing the capacity of natural and man-made detention facilities.

Erosion and sedimentation control measures include: 1) staging the construction to minimize the amount of disturbed areas present at the same time, 2) maintaining or planting vegetative groundcover, and 3) keeping runoff velocities low.

Soil erosion and sedimentation control plans, including maintenance responsibilities, should be clearly communicated to all contractors working on the site. Special care must be taken to protect any wetlands, streams and other sensitive areas.

Please refer to the Illinois Urban Manual for erosion and sediment control information and technical guidance when creating erosion and sediment control plans. The practice standards and standard drawings from the Illinois Urban Manual represent the minimum standard in Illinois.

SOILS INFORMATION

IMPORTANCE OF SOILS INFORMATION

Soils information is taken from the Soil Survey of Kane County, Illinois, United States Department of Agriculture, Natural Resource Conservation Service. This information is important to all parties involved in determining the suitability of the proposed land use change.

SOIL MAP UNITS

The soil survey map of this area (Figure 1) indicates soil map units. Each soil map unit has limitations for a variety of land uses such as septic systems, and buildings site development, including dwellings with and without basements. All of the soils contain **very limiting** conditions for building site development. **See Soils Interpretations section and attached Soil Tables.**

The Soil Survey Geographic (SSURGO) data base was produced by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies for the Soil Survey of Kane County, Illinois. The soils were mapped at a scale of 1:12,000. The enlargement of these maps to scales greater than that at which they were originally mapped can cause misunderstanding of the detail of the mapping. If enlarged, maps do not show the small areas of contrasting soil that could have been shown at a larger scale. The depicted soil boundaries and interpretations derived from them do not eliminate the need of onsite sampling, testing, and detailed study of specific sites for intensive uses. Thus, this map and its interpretations are intended for planning purposes only.

LIST OF SOIL MAP UNITS

SOIL MAP UNIT	PERCENT OF PARCEL	ACRES
67A—Harpster	<1%	0.05
193B—Mayville	<1%	0.09
193C2—Mayville	<1%	0.08
210A—Lena	14%	6.85
369A—Waupecan	1%	0.31
662B—Barony	11%	5.57
802B—Orthents	61%	30.32
W—water	12%	6.10
Table 1: Soil Map Units	**Total**	**49.38**

All percentages and acreages are approximate.

We suggest that a geotechnical engineer conduct an on site investigation. This should determine, specifically, what soils type is present at a particular location, along with its associated limitations or potential for a particular use. It will also assist in determining which types of engineering procedures are necessary to account for the limitations of the soil on the site.

SOILS LIMITATIONS

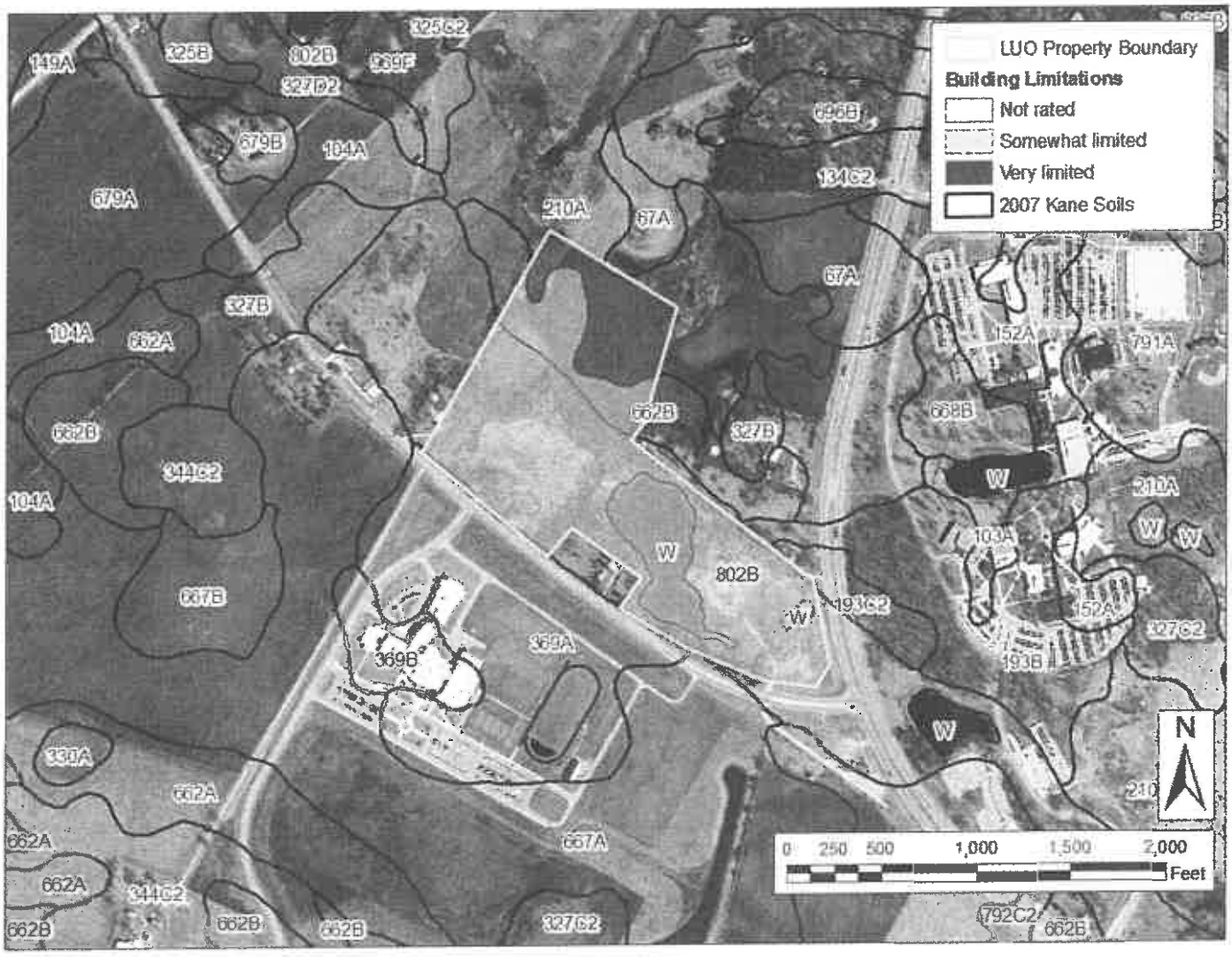

Figure 9: Soil Survey Map

The soil limitation ratings are used mainly for engineering designs of dwellings with or without basements, local streets and roads, small commercial buildings, septic tank absorption fields, and etc. The ratings of not limiting, somewhat limiting, and very limiting are based on national averages and are defined and used as follows:

Not Limiting (Slight) - This limitation rating indicates that the soil properties are generally favorable for the specified use and that any limitations are minor and easily overcome.

Somewhat Limiting (Moderate) - This rating indicates that the soil properties and site features are unfavorable for the specified use, but that the limitations can be overcome or minimized with special planning and design.

Very Limiting (Severe) - This indicates that one or more soil properties or site features are very unfavorable and difficult. A major increase in construction effort, special designs, or intensive maintenance is required. These costly measures may not be feasible for some soils that are rated as severe.

There are limitations for building site development on this site. A comprehensive soil assessment should be completed prior to any earth disturbing activities on this site.

HYDRIC SOILS

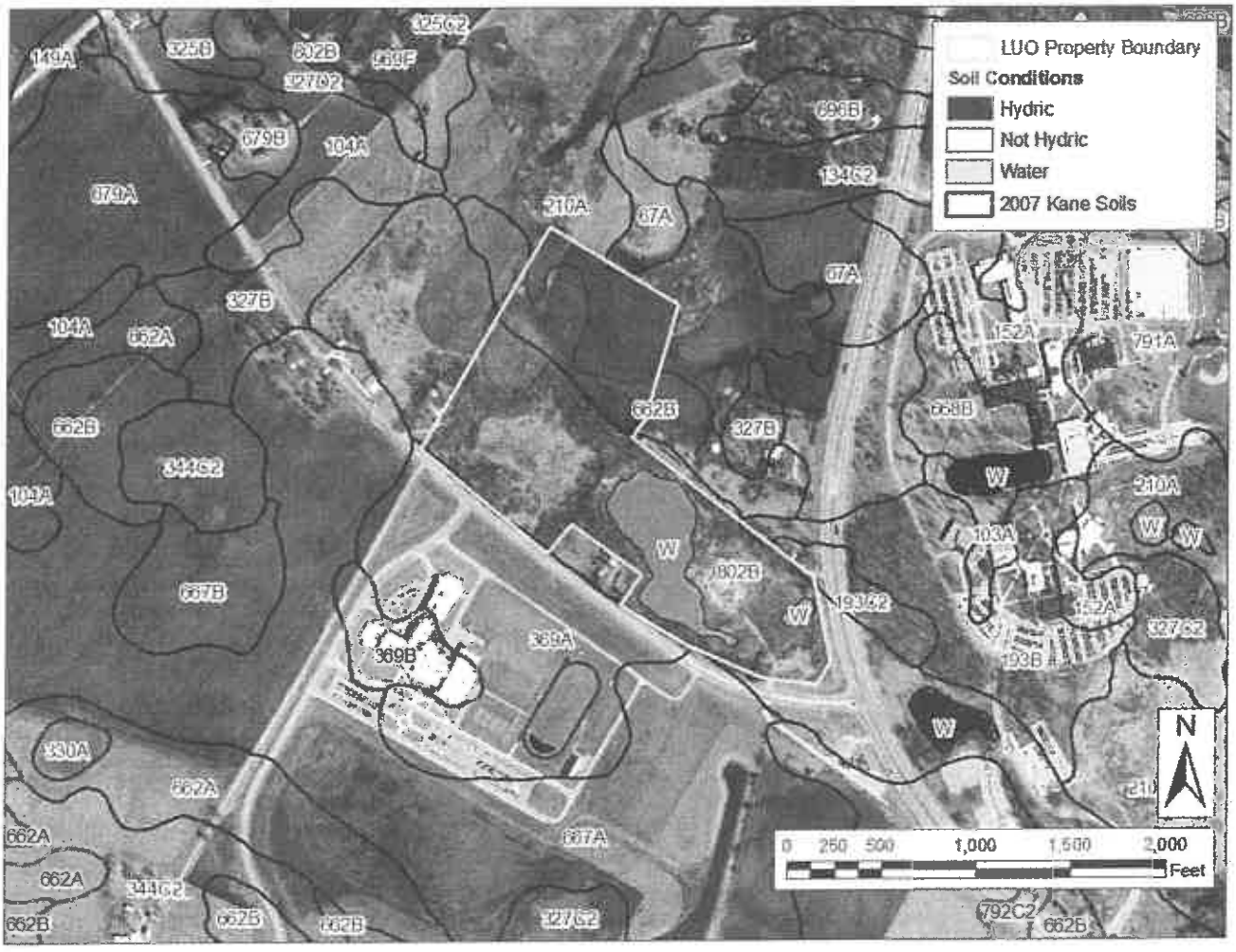

Figure 10: Hydric Soils

United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Kane County SSURGO soil layer certified in 2007. Hydric soils are shaded purple and soils with hydric inclusions are shaded yellow.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

Hydric inclusions are small areas, or inclusions, of nonhydric soils in the higher positions of the landform or map units dominantly made of nonhydric soils with inclusions of hydric soils in the low positions on the landform.

Hydric soils provide limitations for building site development due to their potential for ponding and poor drainage capacity. This often results in the need for improved drainage onsite prior to any proposed development. Any change to the natural drainage onsite has the potential to create flooding issues on and adjacent to the site. Hydric soils are often organic (peat or muck) and not suitable construction material. Hydric soils also may indicate wetlands onsite.

There are hydric soils on this site. A comprehensive soil assessment should be completed prior to any earth disturbing activities on this site.

LESA– PRIME FARMLAND

NOTE: The Kane County LESA System was revised and updated in 2004. Scores are reflected through a 33 point system used for the soils or Land Evaluation (LE) portion of the LESA Score.

Through the use of Kane County's Land Evaluation and Site Assessment System (LESA), a numerical value was determined for this site. The LESA System is designed to determine the quality of land for agricultural uses and to assess sites or land areas for their long term agricultural economic viability. In agricultural land evaluation, soils of a given area are rated ranging from the best to the worst suited for a stated agricultural use, i.e., cropland, forest land, or rangeland. A relative value is determined for each soil. The best soils are assigned a value of 33 and all others are assigned lower values. Therefore, the closer the relative value is to 33, the more valuable and more productive the site's soils are for agricultural purposes.

The land evaluation represents thirty-three percent of the total LESA score. It is based on data from the National Cooperative Soil Survey. The site assessment portion of a LESA represents sixty-seven percent of the LESA score. It is based on factors such as zoning and land use compatibility

The land evaluation for this site is 16.5, whichdoes not represent the upper percent level of agricultural productivity.

Our opinion is based on information from the following sources:

Illinois Department of Natural Resources, Illinois Natural History Survey, Land Cover of Illinois in the Early 1800s., Vector Digital Data, Version 6.0, August, 2003.

County of Kane. "Kane County 2040 Green Infrastructure Plan". Adopted December 10, 2013.

United States Department of the Interior, Fish and Wildlife Service, National Wetlands Inventory, Photo Year 1983-1984, Digitized 1985-1986.

Kane County's Wetlands and Streams Advanced Identification (ADID) Study completed in 2004.

Federal Emergency Management Agency, National Flood Insurance Program, Q3 Flood Data, Disc 6, 2011.

U.S. Geological Survey, Illinois Digital Orthophoto Quadrangles, 2006 photos, Published: Champaign, Illinois State Geological Survey, 2006.

Nonpoint Source Pollution– What's it All About?. Illinois Environmental Protection Agency. http://www.epa.illinois.gov/topics/water-quality/watershed-management/nonpoint-sources/what-is-nonpoint-source-pollution/index. 2015 Illinois EPA .

United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Kane County, IL SSURGO soil layer certified in 2007, and DuPage County, IL SSURGO soil layer certified in 2007 and accompanying interpretations.

Dey, W.S., A.M. Davis, and B.B. Curry, 2007, Aquifer Sensitivity to Contamination, Kane County, Illinois: Illinois State Geological Survey, Illinois County Geologic Map, ICGM Kane-AS.

An on-site investigation conducted by the SWCD Resource Assistant, Jennifer Shroder on October 12, 2017.

We respectfully submit this information in compliance with the Illinois Soil and Water Conservation Districts Act (ILCS 70, 405/1 et seq). The District Board reviews proposed developments. Jennifer Shroder, Resource Assistant, prepared this report.

cc: Heartland Recycling—Aurora CCDD, LLC
213 Mettel Road
Aurora, IL 60504

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Map unit: 67A - Harpster silty clay loam, 0 to 2 percent slopes

Component: Harpster, drained (93%)

The Harpster, drained component makes up 93 percent of the map unit. Slopes are 0 to 2 percent. This component is on plains, depressions. The parent material consists of calcareous loess and/or glacial drift. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, May. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 2w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 23 percent.

Map unit: 193B - Mayville silt loam, 2 to 5 percent slopes

Component: Mayville (90%)

The Mayville component makes up 90 percent of the map unit. Slopes are 2 to 5 percent. This component is on ground moraines on uplands. The parent material consists of loess over loamy till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 26 inches during January, February, March, May, November, December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 15 percent. There are no saline horizons within 30 inches of the soil surface.

Map unit: 193C2 - Mayville silt loam, 5 to 10 percent slopes, eroded

Component: Mayville (93%)

The Mayville component makes up 90 percent of the map unit. Slopes are 2 to 6 percent. This component is on ground moraines on uplands. The parent material consists of loess over loamy till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 26 inches during January, February, March, May, November, December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 15 percent. There are no saline horizons within 30 inches of the soil surface.

Map unit: 210A - Lena muck, 0 to 2 percent slopes

Component: Lena (90%)

The Lena component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on ground moraines. The parent material consists of herbaceous organic material. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, May, June, November, December. Organic matter content in the surface horizon is about 80 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 23 percent.

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Map unit: 369A - Waupecan silt loam, 0 to 2 percent slopes

Component: Waupecan (90%)

The Waupecan component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on outwash plains. The parent material consists of loess or other silty material and in the underlying loamy and gravelly outwash. Depth to a root restrictive layer, strongly contrasting textural stratification, is 40 to 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon

Map unit: 369A - Waupecan silt loam, 0 to 2 percent slopes

Component: Waupecan (90%)

is about 4 percent. Nonirrigated land capability classification is 1. This soil does not meet hydric criteria.

Map unit: 662B - Barony silt loam, 2 to 5 percent slopes

Component: Barony (92%)

The Barony component makes up 92 percent of the map unit. Slopes are 2 to 5 percent. This component is on outwash plains. The parent material consists of loess or other silty material and in the underlying outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Map unit: 802B - Orthents, loamy, undulating

Component: Orthents, loamy (92%)

The Orthents, loamy component makes up 92 percent of the map unit. Slopes are 1 to 6 percent. This component is on leveled land. The parent material consists of earthy fill. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 51 inches during February, March, April. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Dwellings With Basements

Rating Options

Attribute Name: Dwellings With Basements

Dwellings are single-family houses of three stories or less. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Map symbol	Map unit name	Rating	Component name and % composition Rating reasons
67A	Harpster silty clay loam, 0 to 2 percent slopes	Very limited	Harpster, drained 93% Ponding Depth to saturated zone Shrink-swell Drummer, drained 5% Ponding Depth to saturated zone Shrink-swell Elburn 2% Depth to saturated zone Shrink-swell
193B	Mayville silt loam, 2 to 5 percent slopes	Very limited	Mayville 90% Depth to saturated zone Elpaso, drained 10% Ponding Depth to saturated zone Shrink-swell
193C2	Mayville silt loam, 5 to 10 percent slopes, eroded	Very limited	Mayville 93% Depth to saturated zone Elpaso, drained 7% Ponding Depth to saturated zone Shrink-swell
210A	Lena muck, 0 to 2 percent slopes	Very limited	Lena 90% Ponding Subsidence Depth to saturated zone Organic matter content Harpster 3% Ponding Depth to saturated zone Shrink-swell Drummer 2% Ponding Depth to saturated zone Shrink-swell
369A	Waupecan silt loam, 0 to 2 percent slopes	Not limited	Waupecan 90%
662B	Barony silt loam, 2 to 5 percent slopes	Somewhat limited	Barony 92% Depth to saturated zone Shrink-swell
802B	Orthents, loamy, undulating	Somewhat limited	Orthents, loamy 92% Shrink-swell Depth to saturated zone

Dwellings Without Basements

Rating Options

Attribute Name: Dwellings Without Basements

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Map symbol	Map unit name	Rating	Component name and % composition Rating reasons
67A	Harpster silty clay loam, 0 to 2 percent slopes	Very limited	Harpster, drained 93% Ponding Depth to saturated zone Shrink-swell Drummer, drained 5% Ponding Depth to saturated zone Shrink-swell
193B	Mayville silt loam, 2 to 5 percent slopes	Somewhat limited	Mayville 90% Depth to saturated zone Shrink-swell
193C2	Mayville silt loam, 5 to 10 percent slopes, eroded	Somewhat limited	Mayville 93% Depth to saturated zone Shrink-swell
210A	Lena muck, 0 to 2 percent slopes	Very limited	Lena 90% Ponding Subsidence Depth to saturated zone Organic matter content Harpster 3% Ponding Depth to saturated zone Shrink-swell Drummer 2% Ponding Depth to saturated zone Shrink-swell
369A	Waupecan silt loam, 0 to 2 percent slopes	Somewhat limited	Waupecan 90% Shrink-swell
662B	Barony silt loam, 2 to 5 percent slopes	Somewhat limited	Barony 92% Shrink-swell
802B	Orthents, loamy, undulating	Somewhat limited	Orthents, loamy 92% Shrink-swell

Small Commercial Buildings

Rating Options

Attribute Name: Small Commercial Buildings

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification of the soil). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Map symbol	Map unit name	Rating	Component name and % composition Rating reasons
67A	Harpster silty clay loam, 0 to 2 percent slopes	Very limited	Harpster, drained 93% Ponding Depth to saturated zone Shrink-swell Drummer, drained 5% Ponding Depth to saturated zone Shrink-swell
193B	Mayville silt loam, 2 to 5 percent slopes	Somewhat limited	Mayville 90% Depth to saturated zone Shrink-swell Slope
193C2	Mayville silt loam, 5 to 10 percent slopes, eroded	Very limited	Mayville 93% Slope Depth to saturated zone Shrink-swell Elpaso, drained 7% Ponding Depth to saturated zone Shrink-swell
210A	Lena muck, 0 to 2 percent slopes	Very limited	Lena 90% Ponding Subsidence Depth to saturated zone Organic matter content Harpster 3% Ponding Depth to saturated zone Shrink-swell Drummer 2% Ponding Depth to saturated zone Shrink-swell
369A	Waupecan silt loam, 0 to 2 percent slopes	Somewhat limited	Waupecan 90% Shrink-swell
662B	Barony silt loam, 2 to 5 percent slopes	Somewhat limited	Barony 92% Shrink-swell
802B	Orthents, loamy, undulating	Somewhat limited	Orthents, loamy 92% Shrink-swell

CONTACTS

Federal Agencies

U. S. Army Corps of Engineers
Regulatory Branch
231 S LaSalle Street, Suite 1500
Chicago, Illinois 60604
(312)846-5330

http://www.usace.army.mil

U.S.D.A. Natural Resources Conservation Service
2315 Dean Street Suite 100
St. Charles, Illinois 60175
(630)584-7960 ext. 3

http://www.il.nrcs.usda.gov/

U.S. Fish & Wildlife Service
Chicago Illinois Field Office
230 South Dearborn Suite 2938
Chicago, IL 60604
(847)298-3250

http://www.fws.gov/

U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604
(312)353-2000 or (800)621-8431

http://www.epa.gov/region5/
r5hotline@epa.gov

State Agencies

Illinois Department of Natural Resources
1 Natural Resources Way
Springfield, Illinois 62702-1271
(217)782-6302

http://dnr.state.il.us/

Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217)782-3397

http://www.epa.state.il.us/

Illinois Department of Transportation
2300 South Dirksen Parkway
Schaumburg, Illinois 62764-0001

(217)782-7820/(800)452-4368

http://www.idot.illinois.gov/

Illinois Natural History Survey
1816 South Oak Street MC652
Champaign, Illinois 61820
(217)333-6880

http://www.inhs.uiuc.edu/

County Offices

Kane County
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719 South Batavia Ave.
Geneva, IL 60134
(630)232-3400

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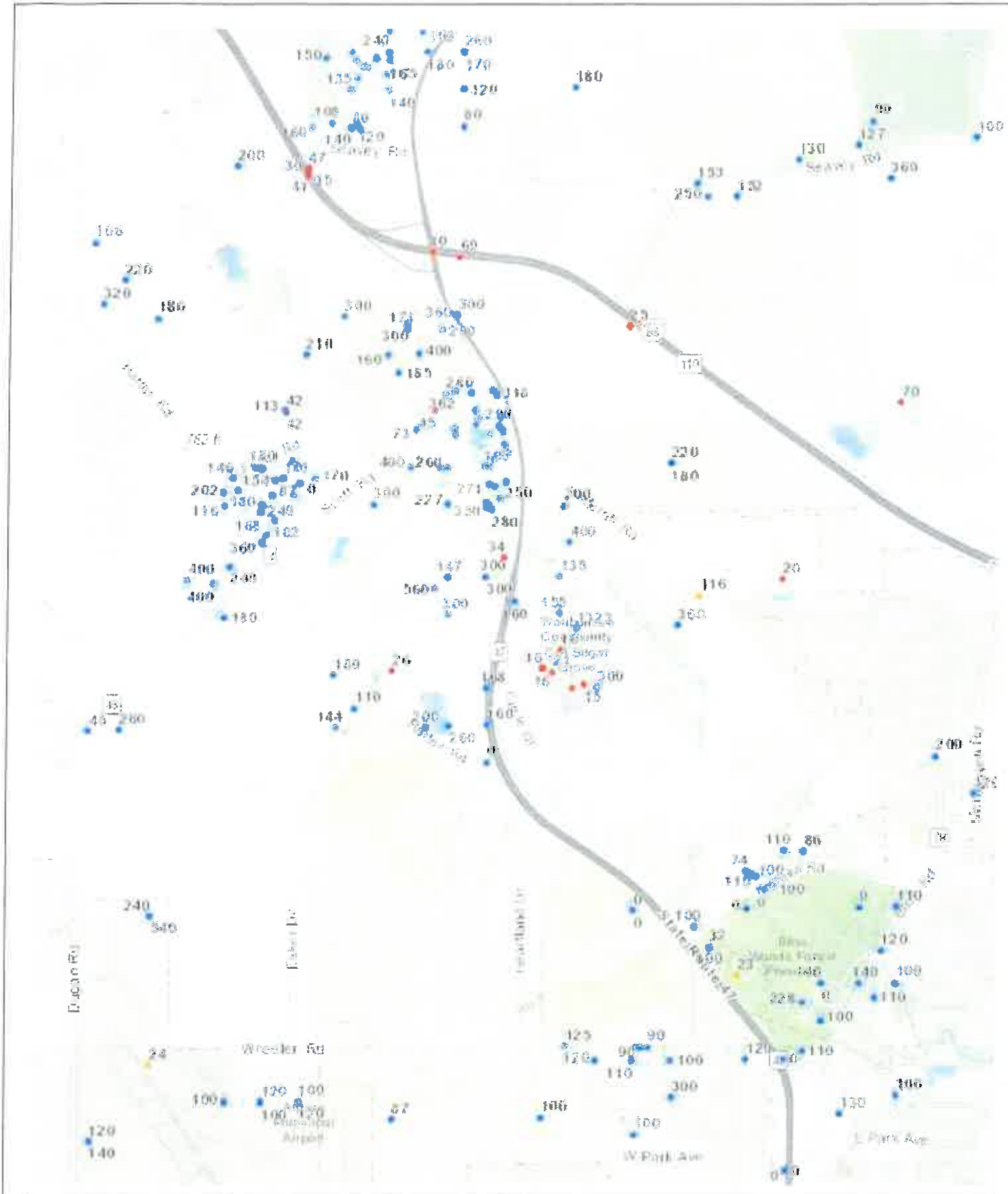
Development Department
(630)232-3492

Department of Environmental Management
(630)208-5118

Forest Preserve District
1996 South Kirk Road, Suite 320
Geneva, IL 60134
(630)232-5980
forestpreserve.countyofkane.org

Health Department
1240 North Highland Avenue
Aurora, IL 60506
(630)208-3801



Affected Wells

ILLINOIS STATE GEOLOGICAL SURVEY
PRAIRIE RESEARCH INSTITUTE

Date: Nov 15, 2017

Getting Up to Speed

GROUND WATER CONTAMINATION

Ground water contamination is nearly always the result of human activity. In areas where population density is high and human use of the land is intensive, ground water is especially vulnerable. Virtually any activity whereby chemicals or wastes may be released to the environment, either intentionally or accidentally, has the potential to pollute ground water. When ground water becomes contaminated, it is difficult and expensive to clean up.

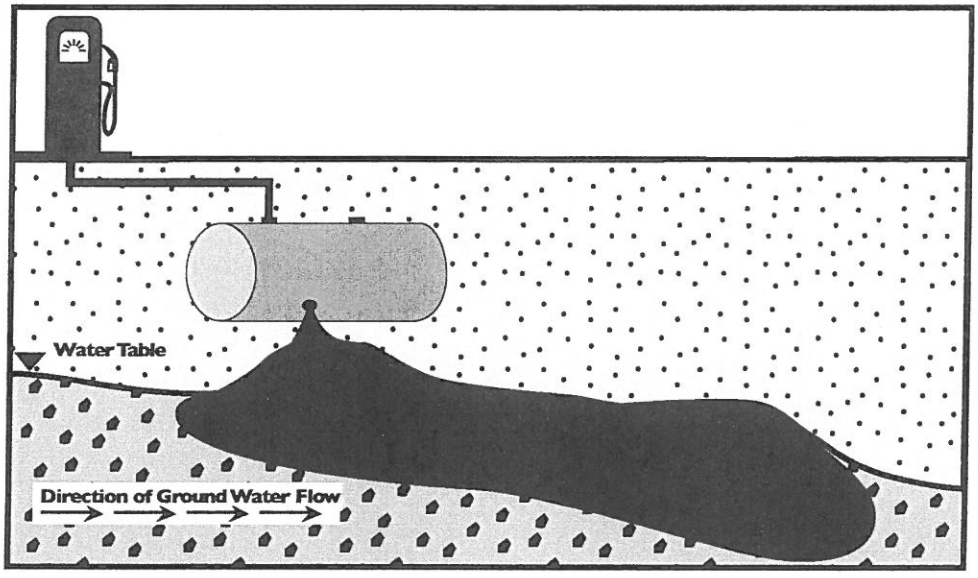
To begin to address pollution prevention or remediation, we must understand how surface waters and ground waters interrelate. Ground water and surface water are interconnected and can be fully understood and intelligently managed only when that fact is acknowledged. If there is a water supply well near a source of contamination, that well runs the risk of becoming contaminated. If there is a nearby river or stream, that water body may also become polluted by the ground water.

HOW DOES GROUND WATER BECOME CONTAMINATED?

Depending on its physical, chemical, and biological properties, a contaminant that has been released into the environment may move within an aquifer in the same manner that ground water moves. (Some contaminants, because of their physical or chemical properties, do not always follow ground water flow.) It is possible to predict, to some degree, the transport within an aquifer of those substances that move along with ground water flow. For example, both water and certain contaminants flow in the direction of the topography from recharge areas to discharge areas. Soils that are porous and permeable tend to transmit water and certain types of contaminants with relative ease to an aquifer below.

Just as ground water generally moves slowly, so do contaminants in ground water. Because of this slow movement, contaminants tend to remain concentrated in the form of a plume (see Figure 1) that flows along the same path as the ground water. The size and speed of the plume depend on the amount and type of contaminant, its solubility and density, and the velocity of the surrounding ground water.

Figure 1 CONTAMINANT PLUME



Ground water and contaminants can move rapidly through fractures in rocks. Fractured rock presents a unique problem in locating and controlling contaminants because the fractures are generally randomly spaced and do not follow the contours of the land surface or the hydraulic gradient. Contaminants can also move into the ground water system through macropores—root systems, animal burrows, abandoned wells, and other systems of holes and cracks that supply pathways for contaminants.

In areas surrounding pumping wells, the potential for contamination increases because water from the zone of contribution, a land area larger than the original recharge area, is drawn into the well and the surrounding aquifer. Some drinking water wells actually draw water from nearby streams, lakes, or rivers. Contaminants present in these surface waters can contribute contamination to the ground water system. Some wells rely on artificial recharge to increase the amount of water infiltrating an aquifer, often using water from storm runoff, irrigation, industrial processes, or treated sewage. In several cases, this practice has resulted in increased concentrations of nitrates, metals, microbes, or synthetic chemicals in the water.

Under certain conditions, pumping can also cause the ground water (and associated contaminants) from another aquifer to enter the one being pumped. This phenomenon is called interaquifer leakage. Thus, properly identifying and protecting the areas affected by well pumping is important to maintain ground water quality.

Generally, the greater the distance between a source of contamination and a ground water source, the more likely that natural processes will reduce the impacts of contamination. Processes such as oxidation, biological degradation (which sometimes renders contaminants less toxic), and adsorption (binding of materials to soil particles) may take place in the soil layers of the unsaturated zone and reduce the concentration of a contaminant before it reaches ground water. Even contaminants that reach ground water directly, without passing through the unsaturated zone, can become less concentrated by dilution (mixing) with the ground water. However, because ground water usually moves slowly, contaminants generally undergo less dilution than when in surface water.

Sources of Ground Water Contamination

Ground water can become contaminated from natural sources or numerous types of human activities. (See Tables 1 and 2 and Figure 1.) Residential, municipal, commercial, industrial, and agricultural activities can all affect ground water quality. Contaminants may reach ground water from activities on the land surface, such as releases or spills from stored industrial wastes; from sources below the land surface but above the water table, such as septic systems or leaking underground petroleum storage systems; from structures beneath the water table, such as wells; or from contaminated recharge water.

■ Natural Sources

Some substances found naturally in rocks or soils, such as iron, manganese, arsenic, chlorides, fluorides, sulfates, or radionuclides, can become dissolved in ground water. Other naturally occurring substances, such as decaying organic matter, can move in ground water as particles. Whether any of these substances appears in ground water depends on local conditions. Some substances may pose a health threat if consumed in excessive quantities; others may produce an undesirable odor, taste, or color. Ground water that contains unacceptable concentrations of these substances is not used for drinking water or other domestic water uses unless it is treated to remove these contaminants.

■ Septic Systems

One of the main causes of ground water contamination in the United States is the effluent (outflow) from septic tanks, cesspools, and privies.

Table I TYPICAL SOURCES OF POTENTIAL GROUND WATER CONTAMINATION BY LAND USE CATEGORY

Category	Contaminant Source	
Agriculture	Animal burial areas	Irrigation sites
	Animal feedlots	Manure spreading areas/pits
	Fertilizer storage/use	Pesticide storage/use
Commercial	Airports	Jewelry/metal plating
	Auto repair shops	Laundromats
	Boat yards	Medical institutions
	Construction areas	Paint shops
	Car washes	Photography establishments
	Cemeteries	Railroad tracks and yards
	Dry cleaners	Research laboratories
	Gas stations	Scrap and junkyards
	Golf courses	Storage tanks
Industrial	Asphalt plants	Petroleum production/storage
	Chemical manufacture/storage	Pipelines
	Electronics manufacture	Septage lagoons and sludge sites
	Electroplaters	Storage tanks
	Foundries/metal fabricators	Toxic and hazardous spills
	Machine/metalworking shops	Wells (operating/abandoned)
	Mining and mine drainage	Wood preserving facilities
Residential	Fuel oil	Septic systems, cesspools
	Furniture stripping/refinishing	Sewer lines
	Household hazardous products	Swimming pools (chemical storage)
	Household lawns	
Other	Hazardous waste landfills	Recycling/reduction facilities
	Municipal incinerators	Road deicing operations
	Municipal landfills	Road maintenance depots
	Municipal sewer lines	Storm water drains/basins
	Open burning sites	Transfer stations

Source: U.S. EPA, 1991a.

Approximately one-fourth of all homes in the United States rely on septic systems to dispose of their human wastes. Although each individual system releases a relatively small amount of waste into the ground, the large number and widespread use of these systems makes them a serious contamination source. Septic systems that are improperly sited, designed, constructed, or maintained can contaminate ground water with bacteria, viruses, nitrates, detergents, oils, and chemicals. Along with these contaminants are the commercially available septic system cleaners containing synthetic organic chemicals (such as 1,1,1-trichloroethane or methylene chloride). These cleaners can contaminate water supply wells and interfere with natural decomposition processes in septic systems.

Most, if not all, state and local regulations require specific separation distances between septic systems and drinking water wells. In addition, computer models have been developed to calculate suitable distances and densities.

Table 2 POTENTIAL HARMFUL COMPONENTS OF COMMON HOUSEHOLD PRODUCTS

Product	Toxic or Hazardous Components
Antifreeze (gasoline or coolants systems)	Methanol, ethylene glycol
Automatic transmission fluid	Petroleum distillates, xylene
Battery acid (electrolyte)	Sulfuric acid
Degreasers for driveways and garages	Petroleum solvents, alcohols, glycol ether
Degreasers for engines and metal	Chlorinated hydrocarbons, toluene, phenols, dichloroperchloroethylene
Engine and radiator flushes	Petroleum solvents, ketones, butanol, glycol ether
Hydraulic fluid (brake fluid)	Hydrocarbons, fluorocarbons
Motor oils and waste oils	Hydrocarbons
Gasoline and jet fuel	Hydrocarbons
Diesel fuel, kerosene, #2 heating oil	Hydrocarbons
Grease, lubes	Hydrocarbons
Rustproofers	Phenols, heavy metals
Car wash detergents	Alkyl benzene sulfonates
Car waxes and polishes	Petroleum distillates, hydrocarbons
Asphalt and roofing tar	Hydrocarbons
Paints, varnishes, stains, dyes	Heavy metals, toluene
Paint and lacquer thinner	Acetone, benzene, toluene, butyl acetate, methyl ketones
Paint and varnish removers, deglossers	Methylene chloride, toluene, acetone, xylene, ethanol, benzene, methanol
Paint brush cleaners	Hydrocarbons, toluene, acetone, methanol, glycol ethers, methyl ethyl ketones
Floor and furniture strippers	Xylene
Metal polishes	Petroleum distillates, isopropanol, petroleum naphtha
Laundry soil and stain removers	Hydrocarbons, benzene, trichloroethylene, 1,1,1-trichloroethane
Other solvents	Acetone, benzene
Rock salt	Sodium concentration
Refrigerants	1,1,2-trichloro-1,2,2-trifluoroethane
Bug and tar removers	Xylene, petroleum distillates
Household cleansers, oven cleaners	Xylenols, glycol ethers, isopropanol
Drain cleaners	1,1,1-trichloroethane
Toilet cleaners	Xylene, sulfonates, chlorinated phenols
Cesspool cleaners	Tetrachloroethylene, dichlorobenzene, methylene chloride
Disinfectants	Cresol, xylenols
Pesticides (all types)	Naphthalene, phosphorus, xylene, chloroform, heavy metals, chlorinated hydrocarbons
Photochemicals	Phenols, sodium sulfite, cyanide, silver halide, potassium bromide
Printing ink	Heavy metals, phenol-formaldehyde
Wood preservatives (creosote)	Pentachlorophenols
Swimming pool chlorine	Sodium hypochlorite
Lye or caustic soda	Sodium hydroxide
Jewelry cleaners	Sodium cyanide

Source: "Natural Resources Facts: Household Hazardous Wastes," Fact Sheet No. 88-3, Department of Natural Science, University of Rhode Island, August 1988.

Sewers and Other Pipelines

Sewer pipes carrying wastes sometimes leak fluids into the surrounding soil and ground water. Sewage consists of organic matter, inorganic salts, heavy metals, bacteria, viruses, and nitrogen. Other pipelines carrying industrial chemicals and oil brine have also been known to leak, especially when the materials transported through the pipes are corrosive.

Pesticide and Fertilizer Use

Millions of tons of fertilizers and pesticides (e.g., herbicides, insecticides, rodenticides, fungicides, avicides) are used annually in the United States for crop production. In addition to farmers, homeowners, businesses (e.g., golf courses), utilities, and municipalities use these chemicals. A number of these pesticides and fertilizers (some highly toxic) have entered and contaminated ground water following normal, registered use. Some pesticides remain in soil and water for many months to many years. Another potential source of ground water contamination is animal wastes that percolate into the ground from farm feedlots. Feedlots should be properly sited and wastes should be removed at regular intervals.

Between 1985 and 1992, EPA's Office of Pesticides and Toxic Substances and Office of Water conducted a National Pesticide Survey to determine the number of drinking water wells nationwide that contain pesticides and nitrates and the concentration of these substances. The survey also analyzed the factors associated with contamination of drinking water wells by pesticides and nitrates. The survey, which included samples from more than 1,300 public community and rural domestic water supply wells, found that approximately 3.6 percent of the wells contained concentrations of nitrates above the federal maximum contaminant level, and that over half of the wells contained nitrates above the survey's minimum reporting limit for nitrate (0.15 mg/L).

The survey also reported that approximately 0.8 percent of the wells tested contained pesticides at levels higher than federal maximum contaminant levels or health advisory levels. Only 10 percent of the wells classified as rural were actually located on farms. There is a higher incidence of contamination by agricultural chemicals in farm wells used for drinking water.

After further analysis, EPA estimated that for the wells that contain pesticides, a significant percentage probably contain chemical concentrations that exceed the federal health-based limits (e.g., maximum contaminant levels or health advisory levels). Approximately 14.6 percent of the wells tested contained levels of one or more pesticides above the minimum reporting limit set in the survey. The most common pesticides found were atrazine and metabolites (breakdown products) of dimethyl tetrachloroterephthalate (DCPA, commonly known as Dacthal), which is used in many utility easement weed-control programs and for lawn care.

Drainage Wells

Drainage wells are used in wet areas to help drain water and transport it to deeper soils. These wells may contain agricultural chemicals and bacteria.

Injection Wells/Floor Drains

Injection wells are used to collect storm water runoff, collect spilled liquids, dispose of wastewater, and dispose of industrial, commercial, and utility wastes. These wells are regulated by the U.S. EPA's Underground Injection Control Program. In New England, these wells may not be used to inject hazardous wastes from industrial, commercial, and utility operations. The injection wells used in this region are typically shallow and include sumps and dry wells used to handle storm water.

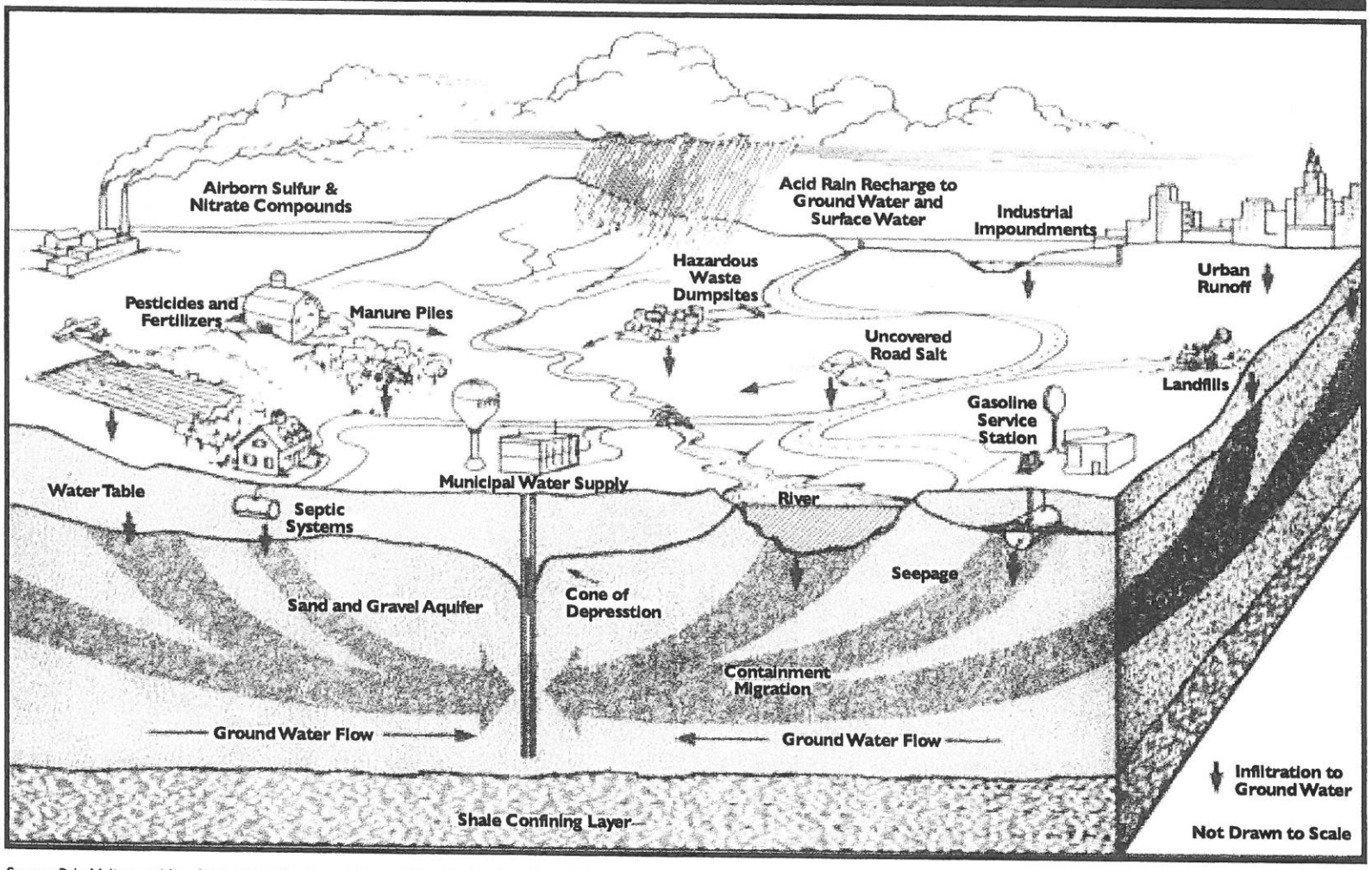
Floor drains were historically used by businesses to handle spills. Today, if a business operates or handles waste fluids that drain to a septic system, dry well, or floor drain, it is required to submit information regarding its operation to the U.S. EPA or its state environmental protection agency. Disposal wells that pose threats to drinking water supplies are prohibited and must be closed, con-

KEY TERMS

- **Clean Water Act**
- **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or Superfund)**
- **Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)**
- **Interaquifer Leakage**
- **Plume**
- **Resource Conservation and Recovery Act (RCRA)**
- **Safe Drinking Water Act**
- **Toxic Substances Control Act (TSCA)**
- **Zone of Contribution**

"Getting Up to Speed" for section C, "Ground Water Contamination" is adapted from US EPA Seminar Publication. *Wellhead Protection: A Guide for Small Communities*. Chapter 3. EPA/625/R-93/002.

Figure 2 **SOME POTENTIAL SOURCES OF GROUND WATER CONTAMINATION**



Source: Paly. Melissa and Lee Steppacher. *The Power to Protect: Three Stories about Ground Water.* U.S.E.P.A. Massachusetts Audubon Society and NEIWPCC.

Ground water and contaminants can move rapidly through fractures in rocks. Fractured rock presents a unique problem in locating and controlling contaminants because the fractures are generally randomly spaced and do not follow the contours of the land surface or the hydraulic gradient. Contaminants can also move into the ground water system through macropores—root systems, animal burrows, abandoned wells, and other systems of holes and cracks that supply pathways for contaminants.

In areas surrounding pumping wells, the potential for contamination increases because water from the zone of contribution, a land area larger than the original recharge area, is drawn into the well and the surrounding aquifer. Some drinking water wells actually draw water from nearby streams, lakes, or rivers. Contaminants present in these surface waters can contribute contamination to the ground water system. Some wells rely on artificial recharge to increase the amount of water infiltrating an aquifer, often using water from storm runoff, irrigation, industrial processes, or treated sewage. In several cases, this practice has resulted in increased concentrations of nitrates, metals, microbes, or synthetic chemicals in the water.

Under certain conditions, pumping can also cause the ground water (and associated contaminants) from another aquifer to enter the one being pumped. This phenomenon is called interaquifer leakage. Thus, properly identifying and protecting the areas affected by well pumping is important to maintain ground water quality.

Generally, the greater the distance between a source of contamination and a ground water

contaminants that reach ground water directly, without passing through the unsaturated zone, can become less concentrated by dilution (mixing) with the ground water. However, because ground water usually moves slowly, contaminants generally undergo less dilution than when in surface water.

Sources of Ground Water Contamination

Ground water can become contaminated from natural sources or numerous types of human activities. (See Tables 1 and 2 and Figure 1.) Residential, municipal, commercial, industrial, and agricultural activities can all affect ground water quality. Contaminants may reach ground water from activities on the land surface, such as releases or spills from stored industrial wastes; from sources below the land surface but above the water table, such as septic systems or leaking underground petroleum storage systems; from structures beneath the water table, such as wells; or from contaminated recharge water.

Natural Sources

Some substances found naturally in rocks or soils, such as iron, manganese, arsenic, chlorides, fluorides, sulfates, or radionuclides, can become dissolved in ground water. Other naturally occurring substances, such as decaying organic matter, can move in ground water as particles. Whether any of these substances appears in ground water depends on local conditions. Some substances may pose a health threat if consumed in excessive quantities; others may produce an undesirable odor, taste, or color. Ground water that contains unacceptable concentrations of these substances is not used for drinking water or other domestic

Table I TYPICAL SOURCES OF POTENTIAL GROUND WATER CONTAMINATION BY LAND USE CATEGORY

Category	Contaminant Source	
Agriculture	Animal burial areas	Irrigation sites
	Animal feedlots	Manure spreading areas/pits
	Fertilizer storage/use	Pesticide storage/use
Commercial	Airports	Jewelry/metal plating
	Auto repair shops	Laundromats
	Boat yards	Medical institutions
	Construction areas	Paint shops
	Car washes	Photography establishments
	Cemeteries	Railroad tracks and yards
	Dry cleaners	Research laboratories
	Gas stations	Scrap and junkyards
	Golf courses	Storage tanks
Industrial	Asphalt plants	Petroleum production/storage
	Chemical manufacture/storage	Pipelines
	Electronics manufacture	Septage lagoons and sludge sites
	Electroplaters	Storage tanks
	Foundries/metal fabricators	Toxic and hazardous spills
	Machine/metalworking shops	Wells (operating/abandoned)
	Mining and mine drainage	Wood preserving facilities
Residential	Fuel oil	Septic systems, cesspools
	Furniture stripping/refinishing	Sewer lines
	Household hazardous products	Swimming pools (chemical storage)
	Household lawns	
Other	Hazardous waste landfills	Recycling/reduction facilities
	Municipal incinerators	Road deicing operations
	Municipal landfills	Road maintenance depots
	Municipal sewer lines	Storm water drains/basins
	Open burning sites	Transfer stations

Source: U.S. EPA, 1991a.

Approximately one-fourth of all homes in the United States rely on septic systems to dispose of their human wastes. Although each individual system releases a relatively small amount of waste into the ground, the large number and widespread use of these systems makes them a serious contamination source. Septic systems that are improperly sited, designed, constructed, or maintained can contaminate ground water with bacteria, viruses, nitrates, detergents, oils, and chemicals. Along with these contaminants are the commercially available septic system cleaners containing synthetic organic chemicals (such as 1,1,1-trichloroethane or methylene chloride). These cleaners can contaminate water supply wells and interfere with natural decomposition processes in septic systems.

Most, if not all, state and local regulations require specific separation distances between septic systems and drinking water wells. In addition, computer models have been developed to calculate suitable distances and densities.

Improper Disposal of Hazardous Waste

Hazardous waste should always be disposed of properly, that is to say, by a licensed hazardous waste handler or through municipal hazardous waste collection days. Many chemicals should not be disposed of in household septic systems, including oils (e.g., cooking, motor), lawn and garden chemicals, paints and paint thinners, disinfectants, medicines, photographic chemicals, and swimming pool chemicals. Similarly, many substances used in industrial processes should not be disposed of in drains at the workplace because they could contaminate a drinking water source. Companies should train employees in the proper use and disposal of all chemicals used on site. The many different types and the large quantities of chemicals used at industrial locations make proper disposal of wastes especially important for ground water protection.

Releases and Spills from Stored Chemicals and Petroleum Products

Underground and aboveground storage tanks are commonly used to store petroleum products and other chemical substances. For example, many homes have underground heating oil tanks. Many businesses and municipal highway departments also store gasoline, diesel fuel, fuel oil, or chemicals in on-site tanks. Industries use storage tanks to hold chemicals used in industrial processes or to store hazardous wastes for pickup by a licensed hauler. Approximately 4 million underground storage tanks exist in the United States and, over the years, the contents of many of these tanks have leaked and spilled into the environment.

If an underground storage tank develops a leak, which commonly occurs as the tank ages and corrodes, its contents can migrate through the soil and reach the ground water. Tanks that meet federal/state standards for new and upgraded systems are less likely to fail, but they are not foolproof. Abandoned underground tanks pose another problem because their location is often unknown. Aboveground storage tanks can also pose a threat to ground water if a spill or leak occurs and adequate barriers are not in place.

Improper chemical storage, sloppy materials handling, and poor-quality containers can be major threats to ground water. Tanker trucks and train cars pose another chemical storage hazard. Each year, approximately 16,000 chemical spills occur from trucks, trains, and storage tanks, often when materials are being transferred. At the site of an accidental spill, the chemicals are often diluted with water and then washed into the soil, increasing the possibility of ground water contamination.

Landfills

Solid waste is disposed of in thousands of municipal and industrial landfills throughout the country. Chemicals that should be disposed of in hazardous waste landfills sometimes end up in municipal landfills. In addition, the disposal of many household wastes is not regulated.

Once in the landfill, chemicals can leach into the ground water by means of precipitation and surface runoff. New landfills are required to have clay or synthetic liners and leachate (liquid from a landfill containing contaminants) collection systems to protect ground water. Most older landfills, however, do not have these safeguards. Older landfills were often sited over aquifers or close to surface waters and in permeable soils with shallow water tables, enhancing the potential for leachate to contaminate ground water. Closed landfills can continue to pose a ground water contamination threat if they are not capped with an impermeable material (such as clay) before closure to prevent the leaching of contaminants by precipitation.

Surface Impoundments

Surface impoundments are relatively shallow ponds or lagoons used by industries and municipalities to store, treat, and dispose of liquid wastes. As many as 180,000 surface impoundments exist in the United States. Like landfills, new surface impoundment facilities are required to have liners, but even these liners sometimes leak.

Table 2 **POTENTIAL HARMFUL COMPONENTS OF COMMON HOUSEHOLD PRODUCTS**

Product	Toxic or Hazardous Components
Antifreeze (gasoline or coolants systems)	Methanol, ethylene glycol
Automatic transmission fluid	Petroleum distillates, xylene
Battery acid (electrolyte)	Sulfuric acid
Degreasers for driveways and garages	Petroleum solvents, alcohols, glycol ether
Degreasers for engines and metal	Chlorinated hydrocarbons, toluene, phenols, dichloroperchloroethylene
Engine and radiator flushes	Petroleum solvents, ketones, butanol, glycol ether
Hydraulic fluid (brake fluid)	Hydrocarbons, fluorocarbons
Motor oils and waste oils	Hydrocarbons
Gasoline and jet fuel	Hydrocarbons
Diesel fuel, kerosene, #2 heating oil	Hydrocarbons
Grease, lubes	Hydrocarbons
Rustproofers	Phenols, heavy metals
Car wash detergents	Alkyl benzene sulfonates
Car waxes and polishes	Petroleum distillates, hydrocarbons
Asphalt and roofing tar	Hydrocarbons
Paints, varnishes, stains, dyes	Heavy metals, toluene
Paint and lacquer thinner	Acetone, benzene, toluene, butyl acetate, methyl ketones
Paint and varnish removers, deglossers	Methylene chloride, toluene, acetone, xylene, ethanol, benzene, methanol
Paint brush cleaners	Hydrocarbons, toluene, acetone, methanol, glycol ethers, methyl ethyl ketones
Floor and furniture strippers	Xylene
Metal polishes	Petroleum distillates, isopropanol, petroleum naphtha
Laundry soil and stain removers	Hydrocarbons, benzene, trichloroethylene, 1,1,1-trichloroethane
Other solvents	Acetone, benzene
Rock salt	Sodium concentration
Refrigerants	1,1,2-trichloro-1,2,2-trifluoroethane
Bug and tar removers	Xylene, petroleum distillates
Household cleansers, oven cleaners	Xylenols, glycol ethers, isopropanol
Drain cleaners	1,1,1-trichloroethane
Toilet cleaners	Xylene, sulfonates, chlorinated phenols
Cesspool cleaners	Tetrachloroethylene, dichlorobenzene, methylene chloride
Disinfectants	Cresol, xylenols
Pesticides (all types)	Naphthalene, phosphorus, xylene, chloroform, heavy metals, chlorinated hydrocarbons
Photochemicals	Phenols, sodium sulfite, cyanide, silver halide, potassium bromide
Printing ink	Heavy metals, phenol-formaldehyde
Wood preservatives (creosote)	Pentachlorophenols
Swimming pool chlorine	Sodium hypochlorite
Lye or caustic soda	Sodium hydroxide
Jewelry cleaners	Sodium cyanide

Source: "Natural Resources Facts: Household Hazardous Wastes," Fact Sheet No. 88-3, Department of Natural Science, University of Rhode Island. August 1988.

■ Sewers and Other Pipelines

Sewer pipes carrying wastes sometimes leak fluids into the surrounding soil and ground water. Sewage consists of organic matter, inorganic salts, heavy metals, bacteria, viruses, and nitrogen. Other pipelines carrying industrial chemicals and oil brine have also been known to leak, especially when the materials transported through the pipes are corrosive.

■ Pesticide and Fertilizer Use

Millions of tons of fertilizers and pesticides (e.g., herbicides, insecticides, rodenticides, fungicides, avicides) are used annually in the United States for crop production. In addition to farmers, homeowners, businesses (e.g., golf courses), utilities, and municipalities use these chemicals. A number of these pesticides and fertilizers (some highly toxic) have entered and contaminated ground water following normal, registered use. Some pesticides remain in soil and water for many months to many years. Another potential source of ground water contamination is animal wastes that percolate into the ground from farm feedlots. Feedlots should be properly sited and wastes should be removed at regular intervals.

Between 1985 and 1992, EPA's Office of Pesticides and Toxic Substances and Office of Water conducted a National Pesticide Survey to determine the number of drinking water wells nationwide that contain pesticides and nitrates and the concentration of these substances. The survey also analyzed the factors associated with contamination of drinking water wells by pesticides and nitrates. The survey, which included samples from more than 1,300 public community and rural domestic water supply wells, found that approximately 3.6 percent of the wells contained concentrations of nitrates above the federal maximum contaminant level, and that over half of the wells contained nitrates above the survey's minimum reporting limit for nitrate (0.15 mg/L).

The survey also reported that approximately 0.8 percent of the wells tested contained pesticides at levels higher than federal maximum contaminant levels or health advisory levels. Only 10 percent of the wells classified as rural were actually located on farms. There is a higher incidence of contamination by agricultural chemicals in farm wells used for drinking water.

After further analysis, EPA estimated that for the wells that contain pesticides, a significant percentage probably contain chemical concentrations that exceed the federal health-based limits (e.g., maximum contaminant levels or health advisory levels). Approximately 14.6 percent of the wells tested contained levels of one or more pesticides above the minimum reporting limit set in the survey. The most common pesticides found were atrazine and metabolites (breakdown products) of dimethyl tetrachloroterephthalate (DCPA, commonly known as Dacthal), which is used in many utility easement weed-control programs and for lawn care.

■ Drainage Wells

Drainage wells are used in wet areas to help drain water and transport it to deeper soils. These wells may contain agricultural chemicals and bacteria.

■ Injection Wells/Floor Drains

Injection wells are used to collect storm water runoff, collect spilled liquids, dispose of wastewater, and dispose of industrial, commercial, and utility wastes. These wells are regulated by the U.S. EPA's Underground Injection Control Program. In New England, these wells may not be used to inject hazardous wastes from industrial, commercial, and utility operations. The injection wells used in this region are typically shallow and include sumps and dry wells used to handle storm water.

Floor drains were historically used by businesses to handle spills. Today, if a business operates or handles waste fluids that drain to a septic system, dry well, or floor drain, it is required to submit information regarding its operation to the U.S. EPA or its state environmental protection agency. Disposal wells that pose threats to drinking water supplies are prohibited and must be closed, con-

nected to a public sewage system, or connected to a storage tank.

■ Improperly Constructed Wells

Problems associated with improperly constructed wells can result in ground water contamination when contaminated surface or ground water is introduced into the well.

■ Improperly Abandoned Wells

These wells can act as a conduit through which contaminants can reach an aquifer if the well casing has been removed, as is often done, or if the casing is corroded. In addition, some people use abandoned wells to dispose of wastes such as used motor oil. These wells may reach into an aquifer that serves drinking supply wells. Abandoned exploratory wells (e.g., for gas, oil, or coal) or test hole wells are usually uncovered and are also a potential conduit for contaminants.

■ Active Drinking Water Supply Wells

Poorly constructed wells can result in ground water contamination. Construction problems, such as faulty casings, inadequate covers, or lack of concrete pads, allow outside water and any accompanying contaminants to flow into the well. Sources of such contaminants can be surface runoff or wastes from farm animals or septic systems. Contaminated fill packed around a well can also degrade well water quality. Well construction problems are more likely to occur in older wells that were in place prior to the establishment of well construction standards and in domestic and livestock wells.

■ Poorly Constructed Irrigation Wells

These wells can allow contaminants to enter ground water. Often pesticides and fertilizers are applied in the immediate vicinity of wells on agricultural land.

■ Mining Activities

Active and abandoned mines can contribute to ground water contamination. Precipitation can leach soluble minerals from the mine wastes (known as spoils or tailings) into the ground water below. These wastes often contain metals, acid, minerals, and sulfides. Abandoned mines are often used as wells and waste pits, sometimes simultaneously. In addition, mines are sometimes pumped to keep them dry; the pumping can cause an upward migration of contaminated ground water, which may be intercepted by a well.

Effects of Ground Water Contamination

Contamination of ground water can result in poor drinking water quality, loss of water supply, degraded surface water systems, high cleanup costs, high costs for alternative water supplies, and/or potential health problems.

The consequences of contaminated ground water or degraded surface water are often serious. For example, estuaries that have been impacted by high nitrogen from ground water sources have lost critical shellfish habitats. In terms of water supply, in some instances, ground water contamination is so severe that the water supply must be abandoned as a source of drinking water. In other cases, the ground water can be cleaned up and used again, if the contamination is not too severe and if the municipality is willing to spend a good deal of money. Follow-up water quality monitoring is often required for many years.

Because ground water generally moves slowly, contamination often remains undetected for long periods of time. This makes cleanup of a contaminated water supply difficult, if not impossible. If a cleanup is undertaken, it can cost thousands to millions of dollars.

Once the contaminant source has been controlled or removed, the contaminated ground water can be treated in one of several ways:

- Containing the contaminant to prevent migration.
- Pumping the water, treating it, and returning it to the aquifer.

- Leaving the ground water in place and treating either the water or the contaminant.
- Allowing the contaminant to attenuate (reduce) naturally (with monitoring), following the implementation of an appropriate source control.

Selection of the appropriate remedial technology is based on site-specific factors and often takes into account cleanup goals based on potential risk that are protective of human health and the environment. The technology selected is one that will achieve those cleanup goals. Different technologies are effective for different types of contaminants, and several technologies are often combined to achieve effective treatment. The effectiveness of treatment depends in part on local hydrogeological conditions, which must be evaluated prior to selecting a treatment option.

Given the difficulty and high costs of cleaning up a contaminated aquifer, some communities choose to abandon existing wells and use other water sources, if available. Using alternative supplies is probably more expensive than obtaining drinking water from the original source. A temporary and expensive solution is to purchase bottled water, but it is not a realistic long-term solution for a community's drinking water supply problem. A community might decide to install new wells in a different area of the aquifer. In this case, appropriate siting and monitoring of the new wells are critical to ensure that contaminants do not move into the new water supplies.

Potential Health Problems

A number of microorganisms and thousands of synthetic chemicals have the potential to contaminate ground water. Drinking water containing bacteria and viruses can result in illnesses such as hepatitis, cholera, or giardiasis. Methemoglobinemia or "blue baby syndrome," an illness affecting infants, can be caused by drinking water that is high in nitrates. Benzene, a component of gasoline, is a known human carcinogen. The serious health effects of lead are well known—learning disabilities in children; nerve, kidney, and liver problems; and pregnancy risks. Concentrations in drinking water of these and other substances are regulated by federal and state laws. Hundreds of other chemicals, however, are not yet regulated, and many of their health effects are unknown or not well understood. Preventing contaminants from reaching the ground water is the best way to reduce the health risks associated with poor drinking water quality.

Regulations to Protect Ground Water

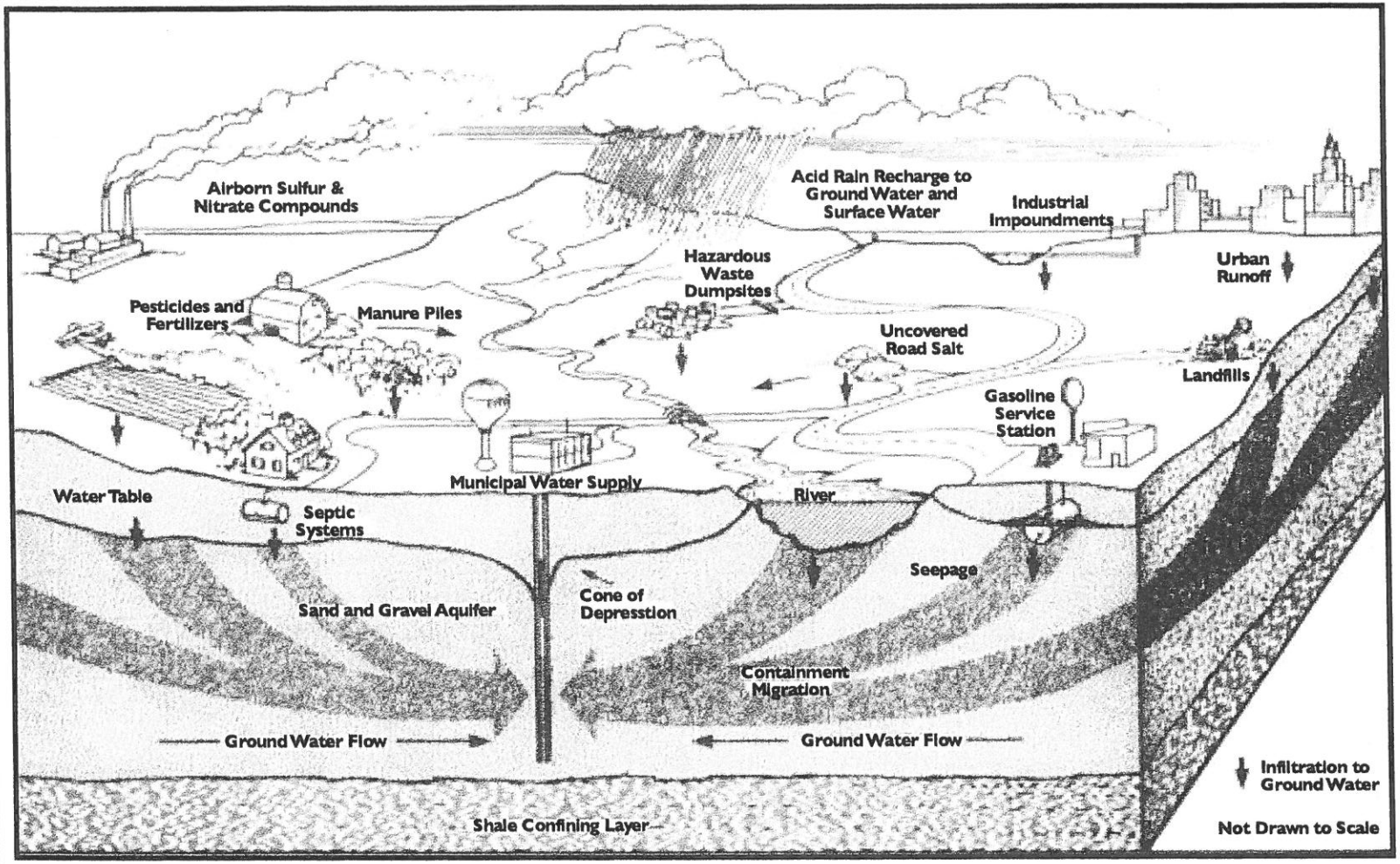
Several federal laws help protect ground water quality. The Safe Drinking Water Act (SDWA) established three drinking water source protection programs: the Wellhead Protection Program, Sole Source Aquifer Program, and the Source Water Assessment Program. It also called for regulation of the use of underground injection wells for waste disposal and provided EPA and the states with the authority to ensure that drinking water supplied by public water systems meets minimum health standards. The Clean Water Act regulates ground water that is shown to have a connection with surface water. It sets standards for allowable pollutant discharges to surface water. The Resource Conservation and Recovery Act (RCRA) regulates treatment, storage, and disposal of hazardous and nonhazardous wastes. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or Superfund) authorizes the government to clean up contamination or sources of potential contamination from hazardous waste sites or chemical spills, including those that threaten drinking water supplies. CERCLA includes a "community right-to-know" provision. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) regulates pesticide use. The Toxic Substances Control Act (TSCA) regulates manufactured chemicals.

KEY TERMS

- **Clean Water Act**
- **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or Superfund)**
- **Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)**
- **Interaquifer Leakage**
- **Plume**
- **Resource Conservation and Recovery Act (RCRA)**
- **Safe Drinking Water Act**
- **Toxic Substances Control Act (TSCA)**
- **Zone of Contribution**

"Getting Up to Speed" for section C, "Ground Water Contamination" is adapted from US EPA Seminar Publication. *Wellhead Protection: A Guide for Small Communities*. Chapter 3. EPA/625/R-93/002.

Figure 2 **SOME POTENTIAL SOURCES OF GROUND WATER CONTAMINATION**

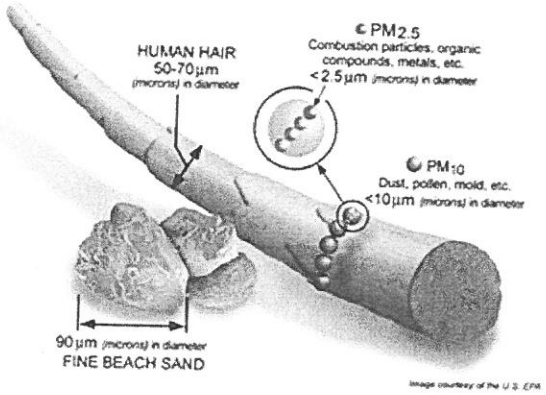


Source: Paly. Melissa and Lee Steppacher. *The Power to Protect: Three Stories about Ground Water.* U.S.E.P.A. Massachusetts Audubon Society and NEIWPCC.

Fast Facts on Frac Sand Mining: Silica Dust, Air Quality and Our Health

Apr 07, 2014

How does silica dust impact our health?



- Silica dust is a known carcinogen, according to the latest update in the 2014 report on carcinogens by the National Institute of Health. Silica dust is produced by frac sand mining operations as a waste byproduct. Most studies are on sillicosis and cancer linked to occupational exposure, but the report acknowledges that "residents near quarries and sand and gravel operations potentially are exposed to respirable crystalline silica."

- Breathing silica dust causes silicosis, a serious and incurable lung condition that causes scarring in the lungs, difficulty breathing, and in some cases, death.

NEWS TAGS

wolves (1)
wolf (2)
wetlands (3)
water (4)
transportation (5)
rural (6)
rail safety (7)
public trust doctrine (8)
phosphorus (9)
petition for corrective action (10)
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mining (12)
land (13)
lakes (14)
great lakes compact (15)
great lakes (16)
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frac sand (19)
frac (20)
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enbridge (25)
drinking water (26)
crude oil (27)
coal (28)
climate change (29)
clean water act (30)
clean air act (31)
air (32)
agriculture (33)

How do people come in contact with silica dust in the air?

- Fugitive dust is an emission created when silica dust blows off of mine sites and off of the backs of trucks. Although efforts can be taken to reduce the amount of fugitive silica dust that enters the air, such fugitive dust is still likely to enter the lungs of families who live near frac sand mines.

- Near frac sand mining in Auburn, Wisconsin, citizens have found layers of silica dust on their belongings. They have also been particularly concerned about the health of children who attend a school located only a quarter of a mile away from a loading station.

- People who are exposed to silica dust can be at risk for silicosis *even if the dust is not visible to the eye.* If the dust is visible, the risk is almost definite.

- One of the only ways to prevent silicosis from worsening is to avoid sources of silica dust. This will be nearly impossible for families whose lands are increasingly surrounded by frac sand mines that emit silica dust. Such families may not have the resources to move elsewhere.

Is the government regulating frac sand mining and protecting our air?

- Citizens petitioned the Wisconsin DNR in 2011 to adopt and enforce an air quality standard of 3 micrograms of silica per cubic meter of air, the standard adopted by

- Silicosis also causes severe cough and weakness. It hinders the body's ability to fight infections, leaving the patient vulnerable to other illnesses that can cause chest pains and respiratory failure.

- Risk factors and potential effects of silicosis include susceptibilities to bronchitis, chronic obstructive pulmonary disorder, lung cancer, and tuberculosis, according to the Occupational Safety and Health Administration.

- Symptoms of silicosis may not manifest themselves for fifteen to twenty years after silica dust exposure. The negative public health effects of frac sand mining in Wisconsin will not be fully understood for decades.

- In Wisconsin, 75 people have died of silicosis between 1996 and 2005, according to the National Institute for Occupational Safety and Health. Most victims were mining and manufacturing workers, but this demographic could change as more citizens are exposed to higher levels of silica dust and if the state requires more air quality monitoring and scientists study the data.

Share:

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California. The DNR denied the petition, even though the DNR conducted a study that documented the health risks of silica dust and concluded that it meets the definition of a known carcinogenic hazardous air pollutant.

- By contrast, Minnesota governmental health, environment, transportation, agriculture agencies collaborated to develop and issue model air quality standards to guide government and industry planning. The Minnesota Environmental Quality Board published an in-depth toolkit to assist local governments in planning for and regulating frac sand mining activity on March 19, 2014. More information on frac sand mining in Minnesota can be found on the Minnesota Pollution Control Agency's silica sand mining page.

Other resources

Centers for Disease Control and Prevention, National Institute of Occupational Safety and Health – Workplace Safety and Health Topic: Silica

Environmental Protection Agency, Office of Air and Radiation – Basics on air quality and particle pollution

University of Wisconsin – Eau Claire, Watershed Institute for Collaborative Environmental Studies – Health effects of particulate matter and silica exposure

/ tagged: air, frac sand, frac

Whipple v. Vill. of N. Utica

Appellate Court of Illinois, Third District

April 25, 2017, Opinion Filed

Appeal No. 3-15-0547

Reporter

2017 IL App (3d) 150547 *; 79 N.E.3d 667 **; 2017 Ill. App. LEXIS 275 ***; 414 Ill. Dec. 32 ****

MARY WHIPPLE, MONTY WHIPPLE, DONNA COLEMAN, PHYLLIS COLEMAN, MORGAN COLEMAN, JOE HARMON, DEE HARMON, RITA WHIPPLE, MALCOLM WHIPPLE, MARK WOLD, SUE WOLD, FRED BLUE, and MONICA BLUE, Plaintiffs-Appellants, v. THE VILLAGE OF NORTH UTICA, La Salle County, Illinois, and ARAMONI LLC, Defendants-Appellees.

Subsequent History: Appeal denied by Whipple v. Vill. of North Utica, 2017 Ill. LEXIS 819 (Ill., Sept. 27, 2017)

Prior History: **[***1]** Appeal from the Circuit Court of the 13th Judicial Circuit, La Salle County, Illinois. Circuit No. 14-MR-62. Honorable Cornelius J. Hollerich, Judge, Presiding.

Whipple v. Vill. of N. Utica, 2017 IL App (3d) 150547-U, 2017 Ill. App. Unpub. LEXIS 481 (Mar. 9, 2017)

Disposition: Affirmed in part and reversed in part; cause remanded.

Counsel: Kerry D. Nelson and William C. Meters, of Goldberg Kohn Ltd., Nancy C. Loeb and Deborah G. Musiker, of Bluhm Legal Clinic, both of Chicago, and Walter J. Zukowski, of Zukowski Law Offices, of Peru, for appellants.

Jamie A. Robinson and Ronald S. Cope, of Nixon Peabody LLP, of Chicago, Herbert J. Klein, of Jacob & Klein, Ltd., and James A. Andreoni, of Perona, Peterlin, Andreoni & Brolley, LLC, both of Peru, for appellees.

Kate E. Scwartz, of Hughs Socol Piers Resnick & Dym, Ltd., of Chicago, for amicus curiae La Salle County Farm Bureau.

Albert F. Ettinger, of Chicago, for amici curiae Openlands et al.

Judges: JUSTICE LYTTON delivered the judgment of the court, with opinion. Presiding Justice Holdridge concurred in the judgment and opinion. Justice McDade concurred in part and dissented in part, with opinion.

Opinion by: LYTTON

Opinion

[**35]** **[**670]** JUSTICE LYTTON delivered the judgment of the court, with opinion.

Presiding Justice Holdridge concurred in the judgment

and opinion.

Justice McDade concurred in part and dissented in part, with opinion.

OPINION

[*P1] Plaintiffs, 13 owners and possessors of land in La Salle County, filed a three-count complaint against defendants, the Village of North Utica and Aramoni LLC, seeking to invalidate several village ordinances that allowed Aramoni to operate a silica sand mine in Waltham Township and requesting an injunction based on prospective nuisance. The trial court granted defendants' motion to dismiss plaintiffs' second amended complaint under section 2-615 of the Code of Civil Procedure (Code) (735 ILCS 5/2-615 (West 2014)), and plaintiffs' appeal. We reverse the dismissal of counts I and III and remand **[***2]** for further proceedings.

[*P2] I. BACKGROUND

[*P3] Aramoni is a sand mining company that owns approximately 497 acres north of Interstate 80 in Waltham Township near Utica, Illinois. Aramoni's property is comprised of tracts A, B, C, D and E. Plaintiffs own, reside on, and/or operate **[**671]** **[****36]** farmland that is adjacent to or within 1/2 mile of the company's mining property.

[*P4] In 2009, North Utica annexed tracts A and B into the village pursuant to an annexation agreement between Aramoni and North Utica. Tracts A and B contain 375 acres of Aramoni's property. Both tracts were previously zoned A-1 Agricultural and retained that designation under the agreement.

[*P5] In August of 2013, Aramoni petitioned the village to amend the 2009 annexation agreement to include tracts C, D, and E, which the county had also zoned A-1 Agricultural. At the time Aramoni petitioned the village, a moratorium on new sand mines and high capacity wells had been imposed in La Salle County, which prevented Aramoni from constructing a silica sand mine on property outside the village limits. The proposed amendments to the 2009 annexation agreement stated that future use of all five tracts of land would be silica sand mining. The petition was **[***3]** contingent upon North Utica granting (1) A-1 Agricultural zoning to tracts C, D, and E, and (2) a special use permit allowing Aramoni to mine silica sand from the entire 497-acre parcel. Under North Utica zoning ordinances, mining is a permissible special use in A-1 Agricultural zones.

[*P6] North Utica Planning Commission and North Utica Board of Trustees held joint hearings on the petitions. Plaintiffs and other members of the community opposed the proposed amendments and the special use permit. They testified that the proposed mine threatened their health and safety, jeopardized the productivity of their farmland, and interfered with the use and enjoyment of their property. The planning commission voted to recommend that the village deny the proposed

claim for violation of their substantive **[***6]** due process rights based on their legally cognizable interest in property adjacent to or nearby the proposed mine. However, the court granted defendants' motion to dismiss the complaint pursuant to section 2-615 of the Code, finding that plaintiffs' allegations were insufficient to sustain a cause of action for constitutional relief. The court dismissed plaintiffs' complaint without prejudice, noting that the owners and residents had not raised substantive due process issues in their previous pleadings.

[*P13] In response to the court's order, plaintiffs filed a second amended complaint, reasserting substantive due process violations and including two new claims: equal protection and prospective nuisance. Count I alleged that North Utica's adoption of the amended agreement and ordinances and approval of the special use permit violated plaintiffs' substantive due process rights. Count II claimed that the adoption of the ordinances violated plaintiffs' equal protection rights. Count III alleged prospective nuisance based on the planned construction and operation of the proposed silica sand mine.

[*P14] In addition to the general allegations of harm contained in the first amended complaint, the second amended complaint **[***7]** contained detailed factual allegations that the sand mine would harm plaintiffs' property and alleged that the mine constituted a prospective nuisance in relation to nearby residents. Plaintiffs set forth specific harms that would likely occur if Aramoni was allowed to operate its sand mine in Waltham Township, including (1) harm to plaintiffs by exposure to airborne silica sand, (2) harm to the level of plaintiffs' wells and the quality of their well water, (3) harm due to flooding of plaintiffs' properties, (4) damage to plaintiffs' farm tiles, (5) extreme noise caused by blasting during extended hours, (6) harm related to increased truck traffic, (7) harm caused by lighting at the sand mine, and (8) diminution of plaintiffs' property values.

[*P15] Defendants filed a motion to dismiss, seeking dismissal based on lack of standing under section 2-619 of the Code and failure to state a cause of action under section 2-615 of the Code. The trial court found that plaintiffs had standing to bring their complaint, but granted defendants' motion to dismiss under section 2-615, finding that plaintiffs failed to state a cause of action as to all three counts. The court's written order dismissed plaintiffs' complaint with prejudice.

[*P16] II. **[***8]** STANDING

[*P17] Before reaching the substance of plaintiffs' arguments, we must first address defendants' claim that plaintiffs lack standing to challenge North Utica's annexation ordinances and its decision to grant Aramoni a special use permit.

[*P18] **[****38]** **[**673]** A party with an injury in fact to a "legally cognizable interest" has standing to bring a claim for that injury. *Village of Chatham v. County of*

Sangamon, 216 Ill. 2d 402, 419, 837 N.E.2d 29, 297 Ill. Dec. 249 (2005). The injury, threatened or actual, must be "(1) distinct and palpable; (2) fairly traceable to defendant's actions; and (3) substantially likely to be prevented or redressed by the grant of the requested relief." *Wexler v. Wirtz Corp.*, 211 Ill. 2d 18, 23, 809 N.E.2d 1240, 284 Ill. Dec. 294 (2004). Illinois courts have held that this standard is met where a plaintiff has a "possessory interest" in land that is adjacent to or nearby the property on which a threatened harmful action is proposed. *Rodriguez v. Henderson*, 217 Ill. App. 3d 1024, 1036-37, 578 N.E.2d 57, 160 Ill. Dec. 878 (1991) (plaintiffs who occupy land near rezoned property have standing); *Metroweb Corp. v. County of Lake*, 130 Ill. App. 3d 934, 936, 474 N.E.2d 900, 85 Ill. Dec. 940 (1985) (possessory interest is sufficient to confer standing). In this case, each plaintiff alleges a possessory interest in property adjacent to or nearby the proposed mine site. Further, the harms plaintiffs complain of may be prevented or redressed by the injunctive relief they requested.

[*P19] Moreover, lack of standing to bring an action is an affirmative defense, and the **[***9]** burden of proving the defense is on the party asserting it. Here, defendants have not shown that the facts establishing plaintiffs' standing are legally insufficient. See 735 ILCS 5/2-619(a)(9) (West 2014); *PennyMac Corp. v. Colley*, 2015 IL App (3d) 140964, ¶ 11 (burden of disproving standing is on the party asserting lack of it). Defendants' motion to dismiss for lack of standing was properly denied.

[*P20] III. ANALYSIS

[*P21] Plaintiffs appeal from the trial court's grant of defendants' motion to dismiss counts I, II and III of their second amended complaint for failure to state a claim under section 2-615 of the Code.

[*P22] On a section 2-615 motion to dismiss, a court must accept as true all well-pled facts in the complaint, as well as any reasonable inferences that may arise from those facts. *DeHart v. DeHart*, 2013 IL 114137, ¶ 18. At the motion to dismiss stage, the merits of the case are not yet considered. *Kilburg v. Mohiuddin*, 2013 IL App (1st) 113408, ¶ 19. Rather a court is to construe the complaint liberally and should not dismiss it unless it is clearly apparent from the pleadings that "no set of facts can be proved which would entitle the plaintiff to recover." *Napleton v. Village of Hinsdale*, 229 Ill. 2d 296, 305, 891 N.E.2d 839, 322 Ill. Dec. 548 (2008). We are not to determine whether the plaintiffs have met the heavy burden of proving that the legislative actions are unconstitutional but only whether they have alleged sufficient facts to allow the cause to proceed **[***10]** further. *Rodriguez*, 217 Ill. App. 3d at 1030-34. Our inquiry upon review is whether the allegations of the complaint, when construed in the light most favorable to the nonmoving party are sufficient to establish a cause of action upon which relief may be granted. *DeHart*, 2013 IL 114137, ¶ 18. We review a motion to dismiss *de*

novo. Id.

[*P23] In this case, we must also consider the substantive rational basis standard because it is at the heart of the motion to dismiss. The rational basis standard requires the municipality to prevail if any set of facts reasonably may be conceived to justify the classification in its legislation. *Jacobson v. Department of Public Aid*, 171 Ill. 2d 314, 323-24, 664 N.E.2d 1024, 216 Ill. Dec. 96 (1996). At **[**674]** **[****39]** this juncture in the proceedings, however, we review the allegations under the rational basis standard to determine whether the complaint survives the dismissal motion. See *Wroblewski v. City of Washburn*, 965 F.2d 452, 459 (7th Cir. 1992) (discussing review process when rational basis standard meets the standard applied to dismissal under Federal Rule of Civil Procedure 12(b)(6)). It is with that review process in mind that we evaluate the trial court's order dismissing plaintiffs' substantive due process and equal protection claims.

[*P24] A. Substantive Due Process

[*P25] In dismissing count I of plaintiffs' complaint, the trial court held that plaintiffs failed to state a claim of arbitrary and capricious rezoning that would have violated **[***11]** their substantive due process rights. In the trial court's view, plaintiffs failed to allege facts showing that the adoption of the annexation ordinances was invalid under *La Salle National Bank of Chicago v. County of Cook*, 12 Ill. 2d 40, 145 N.E.2d 65 (1957) and *Sinclair Pipe Line Co. v. Village of Richton Park*, 19 Ill. 2d 370, 167 N.E.2d 406 (1960), and that North Utica's decision to grant Aramoni a special use permit violated the principles set forth in *City of Chicago Heights v. Living Word Outreach Full Gospel Church & Ministries. Inc.*, 196 Ill. 2d 1, 749 N.E.2d 916, 255 Ill. Dec. 434 (2001).

[*P26] To state a cause of action for a violation of substantive due process, a plaintiff must allege that the deprivation of his or her property interest is arbitrary, unreasonable, or capricious, and that the legislation at issue bears no rational relationship to the public welfare. *Safanda v. Zoning Board of Appeals*, 203 Ill. App. 3d 687, 695, 561 N.E.2d 412, 149 Ill. Dec. 134 (1990). When a legislative zoning ordinance is challenged based on substantive due process, we examine the ordinance for arbitrariness under the six-factor test set forth in *La Salle National Bank. Our Savior Evangelical Lutheran Church v. Saville*, 397 Ill. App. 3d 1003, 1027, 922 N.E.2d 1143, 337 Ill. Dec. 566 (2009). Those factors include (1) the existing uses and zoning of nearby property, (2) the extent to which property values are diminished by the particular zoning restrictions, (3) the extent to which the destruction of the plaintiff's property values promotes the health, safety, morals, or general welfare of the public, (4) the relative gain to the public as compared to the hardship imposed on the individual property owner, (5) the suitability of the subject property **[***12]** for the zoned purposes, and (6)

the length of time the property has been vacant as zoned. *La Salle National Bank*, 12 Ill. 2d at 46-47. Our supreme court identified additional factors to consider in *Sinclair Pipe Line*, namely (1) whether a comprehensive zoning plan for land use and development exists, and whether the ordinance is in harmony with it, and (2) whether the community needs the proposed use. *Sinclair Pipe Line*, 19 Ill. 2d at 378. Courts evaluate the factors as a whole to determine whether the zoning or rezoning action was reasonably related to a legitimate government interest and was a reasonable method to achieve that purpose. *Napleton v. Village of Hinsdale*, 374 Ill. App. 3d 1098, 1110, 872 N.E.2d 23, 313 Ill. Dec. 263 (2007). The list is not exclusive, and no single factor is controlling. *La Salle National Bank*, 12 Ill. 2d at 47. Moreover, a complaint does not fail simply because it does not allege facts in support of each and every factor. *Rodriguez*, 217 Ill. App. 3d at 1029-30.

[*P27] In *Living Word*, our supreme court held that a municipality's decision to grant a special use permit is also a legislative action that is reviewed for arbitrariness as **[**675]** **[****40]** a matter of substantive due process. *Living Word*, 196 Ill. 2d at 25-26. The court noted that, generally, a special use permit may not be denied on the ground that the use is not in harmony with the surrounding neighborhood. However, "a special use permit must be denied when it is determined from the facts and circumstances **[***13]** that the grant of the requested special exception use would result in an adverse effect upon adjoining and surrounding properties unique and different from the adverse effect that would otherwise result from the development of such a special exception use located anywhere within the zone." (Internal quotation marks omitted.) *Id.* at 21-22.

[*P28] Evaluating plaintiffs' substantive due process claim under the *La Salle/Sinclair* factors and *Living Word* in the context of a motion to dismiss, we find that the trial court erred in dismissing count I of plaintiffs' complaint.

[*P29] The first *La Salle/Sinclair* factor is the existing use and zoning of nearby property. The property surrounding the proposed sand mine is zoned A-1 Agricultural, the same zoning designation as the Aramoni property, and A-1 Agricultural includes a special use for mining. Plaintiffs' complaint states that "[t]he neighborhood surrounding the annexed land on which the Proposed Mine will be operated has historically been and is today overwhelmingly rural and agricultural." The map attached to the complaint shows that the surrounding area is zoned A-1 and indicates that another sand mine is located within the A-1 zone. Thus, while nearby property is **[***14]** primarily agricultural, the annexation ordinances conform to the A-1 designation and use of the other properties in the zoning area.

[*P30] Plaintiffs' complaint alleges that the second factor, diminution of property values, weighs in their favor. It states that the "development and operation of a

silica sand mine in close proximity to plaintiffs' homes and farms will adversely affect the value of their properties." Plaintiffs support their claims with reports of diminished property values due to sand mines in other locations and a report from the Federal Reserve Bank stating that studies of gravel and coal mining in other parts of the country show that homes situated near a mine or sand truck route lose value. These allegations are sufficient, for purposes of a 2-615 motion, to support a claim that the annexation ordinances diminish the value of the property surrounding Aramoni's property.

[*P31] The third and fourth factors also favor plaintiffs' position. The promotion of public welfare and the gain/loss balance are additional *La Salle/Sinclair* factors that, as alleged, suggest North Utica's legislative action may have violated substantive due process. The parties have alleged that "[t]he harm to **[***15]** Aramoni from denial of the special use would be the inability to profit from the Proposed Mine at this location." By contrast, as detailed in the second amended complaint, plaintiffs will suffer harm to their health, water supply, and agricultural land, and they will experience a decrease in the values of their properties. These harms may outweigh the loss of any potential gain to Aramoni.

[*P32] The next two factors, five and six, are easily resolved regardless of the procedural stage of the case. Factor five indicates that the property is suitable for the zoned purpose. The property is zoned A-1 Agricultural and mining is a special use in an A-1 zone. Factor six is not a factor because the property has not been vacant for any length of time.

[*P33] The last two *La Salle/Sinclair* factors tip the balance in plaintiffs' favor. The seventh factor involves the care with which the community has undertaken to plan its **[**676]** **[****41]** land use development, and the eighth factor tests the need in the community for the proposed use. As alleged in the complaint, the plan specifically mandates that the north and northeast sections of the planning area should continue as agricultural. Section 7-1 of the plan defines "agricultural" as **[***16]** "undeveloped or sparsely developed or primarily used for farm-related activities." In contrast, mining is specifically listed as an "industrial" use. Thus, the annexation ordinances are not in harmony with the community's comprehensive plan. The eighth factor also favors plaintiffs where the community's need for the use is minimal. Three silica sand mines are currently in operation in La Salle County, and plat maps attached to the complaint indicate that two are in close proximity to Aramoni's proposed mine. Taking as true the facts pleaded in the second amended complaint, the need for additional sand mines in Waltham Township is negligible.

[*P34] Plaintiffs' second amended complaint also alleges sufficient facts to satisfy the *Living Word* test in light of a section 2-615 motion to dismiss. Plaintiffs have sufficiently alleged numerous adverse effects that will result from the proposed mine's "particular use" at the "particular location" in immediate proximity to their homes and farms that differ from adverse effects that

would result if the mine were located elsewhere in the A-1 zone. They have alleged a concentration of mine-related truck activity and noise and harms that would adversely affect the **[***17]** quality and flood potential of a nearby stream. None of these specific harms would necessarily result from the proposed mine at another location in the zoning area. Accepting plaintiffs' allegations of harm as true, they have stated a claim for a violation of their substantive due process rights under *Living Word*.

[*P35] Here, it was improper to dismiss plaintiffs' second amended complaint at the pleading stage for perceived failure to meet the *La Salle/Sinclair* criteria and the *Living Word* test. Plaintiffs' met a significant number of the factors and thereby stated a constitutional substantive due process claim. Therefore, the trial court erred in dismissing count I based on failure to state a claim.

[*P36] B. Equal Protection

[*P37] Plaintiffs also argue that they sufficiently stated a claim for a violation of their equal protection rights as pleaded in count II.

[*P38] To state a cause of action for a violation of equal protection, plaintiffs must allege that there are other similarly situated people who are being treated differently than them and that there is no rational basis for this difference. *Safanda*, 203 Ill. App. 3d at 695. The guarantee of equal protection means that if a governmental body treats similarly situated people dissimilarly, **[***18]** it must have a rational basis for doing so. *Jenkins v. Wu*, 102 Ill. 2d 468, 477, 468 N.E.2d 1162, 82 Ill. Dec. 382 (1984). The classification must be reasonable, not arbitrary and must rest on some ground of difference having a fair and substantial relation to the legislation. *Id.* The threshold question is whether similarly situated people are being treated dissimilarly. *Safanda*, 203 Ill. App. 3d at 695. The burden of proof is on the one asserting the unconstitutionality of an ordinance, and there is a presumption that the ordinance is valid. *Village of Cahokia v. Wright*, 11 Ill. App. 3d 124, 131, 296 N.E.2d 30 (1973).

[*P39] Plaintiffs' second amended complaint alleges that the annexation agreement:

> "abrogates the protection of [North Utica's] nuisance laws solely with respect to plaintiffs and others living and farming in the immediate vicinity of the proposed **[****42]** mine **[**677]** while continuing to provide the far-reaching protections of its nuisance laws to all others. This denial of equal protection is irrational and violates plaintiffs' equal protection rights."

These allegations fail to provide sufficient support for a claim of a violation of equal protection because they are legal conclusions rather than statements of fact. See *Smith v. Malone*, 317 Ill. App. 3d 974, 979, 742 N.E.2d 785, 252 Ill. Dec. 247 (2000) (court must accept as true

all well-pleaded factual allegations and disregard conclusions of law).

[*P40] In this case, the annexation agreement does not single **[***19]** out plaintiffs for disparate treatment. First, the village's actions of adopting the annexation ordinances and granting the special use permit do not shield plaintiffs from the protection of nuisance laws. North Utica's nuisance ordinances do not prohibit plaintiffs from taking action against the sand mine under state or common law. They also do not prohibit the village from taking action against the sand mine if it is operated in a manner contrary to the ordinances. The annexation ordinances simply provide that the lawful, normal operation of a silica sand mine is not a nuisance under the village ordinances.

[*P41] Moreover, the annexation agreement does not treat plaintiffs any differently than the other residents of North Utica. It does not single out plaintiffs for unequal treatment. North Utica's interpretation of its ordinance applies generally and equally to all residents of the village. Plaintiffs are permitted to bring a nuisance action against Aramoni if the mining activity creates an irreparable harm or causes injury, as is any resident of North Utica.

[*P42] In *Beverly Bank v. Board of Review*, 117 Ill. App. 3d 656, 453 N.E.2d 96, 72 Ill. Dec. 791 (1983), the court held that a plaintiff alleging that a law is neutral on its face, but administered in an unequal fashion must allege **[***20]** that the discrimination was "intentional or purposeful." *Id.* at 664. To establish an intentional or purposeful act, a plaintiff must plead and show that the decision maker singled out a particular group for disparate treatment and selected the course of action, at least in part, for the purpose of causing adverse effects on an "identifiable group." (Internal quotation marks omitted.) *Id.* Here, no such allegation has been made in plaintiffs' second amended complaint. Because this legislation operates the same as to each resident of North Utica and plaintiffs have not alleged any facts to suggest that it is being applied in a discriminatory manner, their equal protection claim must fail. Thus, the trial court properly dismissed count II of plaintiffs' second amended complaint.

[*P43] C. Prospective Nuisance

[*P44] Plaintiffs argue that the trial court erred in dismissing their prospective nuisance claim because they alleged that it is "highly probable" that the proposed mine will harm plaintiffs' health and safety and welfare, the availability of ground water, their crops and property values, and the peaceful use and enjoyment of their homes and farms. They maintain that the allegations contained in the second **[***21]** amended complaint were not merely legal conclusions and were supported by ample evidence in the record, including sworn testimony and submissions by defendants.

[*P45] A private nuisance is the substantial invasion of a person's interest in the use and enjoyment of his

property. *Helping Others Maintain Environmental Standards v. Bos*, 406 Ill. App. 3d 669, 689, 941 N.E.2d 347, 346 Ill. Dec. 789 (2010). The invasion must be substantial, either intentional or negligent, and unreasonable. **[**678]** **[****43]** *In re Chicago Flood Litigation*, 176 Ill. 2d 179, 204, 680 N.E.2d 265, 223 Ill. Dec. 532 (1997). Whether particular conduct constitutes a "nuisance" is determined by the conduct's effect on a reasonable person. *Id.* A "nuisance must be physically offensive to the senses to the extent that it makes life uncomfortable." *Dobbs v. Wiggins*, 401 Ill. App. 3d 367, 375-76, 929 N.E.2d 30, 340 Ill. Dec. 726 (2010). A prospective nuisance is a candidate for injunctive relief where the defendant is engaged in a hazardous undertaking at a location "which seriously and imminently poses a threat to the public health." *Village of Wilsonville v. SCA Services, Inc.*, 86 Ill. 2d 1, 30, 426 N.E.2d 824, 55 Ill. Dec. 499 (1981). Moreover, the existence of possible government oversight does not prevent nuisance or provide the appropriate recourse under a prospective nuisance claim. *Village of Bensenville v. City of Chicago*, 389 Ill. App. 3d 446, 494, 906 N.E.2d 556, 329 Ill. Dec. 358 (2009).

[*P46] In *Fink v. Board of Trustees of Southern Illinois University*, 71 Ill. App. 2d 276, 218 N.E.2d 240 (1966), the plaintiff sought to enjoin construction of a dam and also the discharge of sewage effluent in a watercourse, which flowed past plaintiffs' property. Construction of the dam was not enjoined, but the discharge of effluent was prospectively enjoined. **[***22]** The court stated:

> "While, as a general proposition, an injunction will be granted only to restrain an actual, existing nuisance, a court of equity may enjoin a threatened or anticipated nuisance, where it clearly appears that a nuisance will necessarily result from the contemplated act or thing which it is sought to enjoin. This is particularly true where the proof shows that the apprehension of material injury is well grounded upon a state of facts from which it appears that the danger is real and immediate. While care should be used in granting injunctions to avoid prospective injuries, there is no requirement that the court must wait until the injury occurs before granting relief." *Id.* at 281-82.

[*P47] Here, the alleged nuisance is prospective because the silica sand mine is not yet in operation. As noted above, a plaintiff may seek injunctive relief for a prospective nuisance. *Id.* at 282. A "defendant may be restrained from entering upon an activity where it is highly probable that it will lead to a nuisance, although if the possibility is merely uncertain or contingent he may be left to his remedy of damages until after the nuisance has occurred." Prosser & Keeton on the Law of Torts § 89, at 640-41 (W. Page Keeton **[***23]** et al. eds. 5th ed. 1984). The plaintiff must show by a preponderance of the evidence that the defendant's operation is a prospective nuisance. *Village of Wilsonville*, 86 Ill. 2d at 14.

[*P48] In *Village of Wilsonville*, the defendant's attempt to establish and operate a chemical waste disposal site

was properly enjoined where the trial court heard conflicting evidence regarding the hazards likely to arise. The trial court accepted the plaintiff's evidence, finding that it showed that it was "highly probable" that the toxic chemical waste deposited at the site could escape, either through explosions, migration, subsidence of the site itself, or groundwater. The court found no abuse of discretion in granting the preliminary injunction, observing that "[a] court does not have to wait for [the harm] to happen before it can enjoin such a result." *Village of Wilsonville*, 86 Ill. 2d at 27; see also *Nickels v. Burnett*, 343 Ill. App. 3d 654, 663, 798 N.E.2d 817, 278 Ill. Dec. 433 (2003) (appellate court affirmed trial court's decision to enjoin the construction of a hog farm based on extensive affidavits and articles describing harms associated with hog farms).

[*P49] [**44] [**679]** In this case, we agree with defendants that some of plaintiffs' allegations of irreparable harm are based on legal conclusions that are not sufficiently supported by facts. Claims such as harm to field tile. **[***24]** flooding, and well contamination are speculative and are not supported by affidavits or other documents demonstrating a direct harm.

[*P50] However, not all of the allegations in count III can be so easily dismissed. Other facts and allegations have been adequately alleged in support of plaintiffs' prospective nuisance claim. Plaintiffs have also alleged (1) that there will be continuous lights and noise of up to 133 decibels from blasting, drilling, and rock crushing equipment, (2) that 146 trailer loads of sand exiting the operation each day will increase traffic on rural roads, (3) that the operation will discharge up to 1.25 million gallons of effluent per day into the Pecumsaugan Creek, and (4) that the mining operation will add particulate silica dust to the air around the mining site. These are facts, not legal conclusions. When these facts are considered in tandem with the operating parameters allowed by the annexation agreement and ordinances, plaintiffs' allegations are sufficient to state a claim of prospective nuisance. The annexation agreement, which was attached to plaintiffs' complaint, states that Aramoni is allowed to conduct silica sand mining operations 24 hours a day, **[***25]** seven days a week, and to use explosive devices during daylight hours five days a week and on Saturday if necessary. Considering the potential to mine 365 days a year using mining equipment, lights and trucks, plaintiffs' complaint alleged sufficient facts to support the argument that the proposed mine will lead to a nuisance. Accepting all well-pleaded allegations as true and considering them in a light most favorable to plaintiffs, it is likely that the noise, lights, dust, and traffic will substantially interfere with plaintiffs' ability to use and enjoy their property.

[*P51] Defendants cite *Village of Willow Springs v. Village of Lemont*, 2016 IL App (1st) 152670, 410 Ill. Dec. 393, 70 N.E.3d 210, in support of their argument that the trial court properly dismissed plaintiffs' prospective nuisance claim. In *Willow Springs*, the village filed a prospective public nuisance complaint

seeking to enjoin its neighboring village, Lemont, from approving a zoning reclassification and proposed industrial development of certain property. On appeal, the court affirmed the trial court's dismissal of the plaintiff's complaint, noting that to survive a motion to dismiss, a plaintiff seeking to enjoin a prospective nuisance must allege that the harms are more than just a possibility, it must allege that the **[***26]** harms are highly probable. *Id.* ¶ 48. The court found that Willow Springs failed to meet that threshold. The court also determined that the village's allegations of harm were too uncertain to survive a motion to dismiss because the proposed zoning reclassification and development had not yet been approved by the neighboring village. *Id.* ¶ 51.

[*P52] We find *Willow Springs* distinguishable. Unlike the village of Willow Springs, plaintiffs have alleged that the proposed mine constitutes a prospective private nuisance based on detailed allegations of harm. They have alleged specific harms to their property, nearby waterways and surrounding roads. *Willow Springs* is also distinguishable in that the challenged annexation agreement in this case has already been accepted by North Utica and ordinances have been passed permitting Aramoni to develop the property. Contrary to the proposed development in *Willow Springs*, defendant's development and operation of a silica sand mine has already been approved by the municipality.

[*P53] **[****45]** **[**680]** Illinois courts have held that invasions of property rights as a result of noise, water contamination, bright lights, and diminished property values constitute a cognizable private **[***27]** nuisance. See *Dobbs*, 401 Ill. App. 3d at 379 (noise from barking dogs in a kennel next to residence in a rural area was a private nuisance); *Fink*, 71 Ill. App. 2d at 281-82 (effluent released into creek which then flowed onto plaintiff's property was a nuisance); *Phelps v. Winch*, 309 Ill. 158, 140 N.E. 847 (1923) (noises and bright lights from cars leaving an event were a nuisance); *Nickels*, 343 Ill. App. 3d at 663 (extensive evidence of potential harms to health, safety, and welfare of nearby residents and diminished property values established prospective nuisance of proposed hog farm). Plaintiffs have alleged that similar invasions on their properties constitute a prospective nuisance. It remains to be seen whether plaintiffs can prove that it is highly probable that Aramoni's proposed sand mine will lead to a nuisance. However, a section 2-615 motion does not require plaintiffs to prove their case at this juncture, and plaintiffs' allegations are sufficient to show that the operation of the mine may result in a private nuisance. Thus, the trial court erred in dismissing count III.

[*P54] IV. CONCLUSION

[*P55] The judgment of the circuit court of La Salle County granting defendants' section 2-615 motion to dismiss is affirmed in part and reversed in part, and the cause is remanded for further proceedings.

[*P56] Affirmed in part and reversed in part; cause

remanded. **[***28]**

Concur by: McDADE (In Part)

Dissent by: McDADE (In Part)

Dissent

[*P57] JUSTICE McDADE, concurring in part and dissenting in part.

[*P58] The majority has reversed the order of the trial court granting the defendants' motion to dismiss counts I and III of the plaintiffs' complaint. I concur with that decision.

[*P59] I dissent from the affirmance of the dismissal of count II, which raises a claim that plaintiffs' equal protection rights were violated by their annexation into North Utica. No claim should be dismissed unless there is no set of facts alleged which could state a viable claim for relief. "[A] cause of action should not be dismissed pursuant to section 2-615 unless it is clearly apparent that no set of facts can be proved that would entitle the plaintiff to recovery." *Marshall v. Burger King Corp.*, 222 Ill. 2d 422, 429, 856 N.E.2d 1048, 305 Ill. Dec. 897 (2006).

[*P60] Included in all three counts of the complaint is paragraph 28, which states:

> "28. On information and belief, the annexation of the Proposed Mine site into North Utica was proposed by Aramoni to evade or circumvent the moratorium on sand mines in effect in LaSalle County at the time. Further, irrespective of intent, the annexation did evade or circumvent the moratorium on sand mines in effect in LaSalle County at the time."

[*P61] Here plaintiffs have alleged that they lived in an **[***29]** area in which they were protected by La Salle County's moratorium against the initiation of any additional sand mining activities and that they were cut out of the group of county residents who were protected by the moratorium and annexed into North Utica so that Aramoni would be free to begin a new sand mining operation. They have also alleged within count II that they will suffer significant specified harm to their persons and their property that those who continued under the protection of the moratorium would escape and that the harm is irreparable because they have been deprived of legal recourse by the annexation agreement's declaration and definition of the mine as *not* a nuisance. Although the plaintiffs **[**681]** **[****46]** did not formulate their argument in this precise manner, I believe these facts they have alleged could, if they were allowed to replead, state a viable claim of an equal protection violation. I would, therefore, find that the trial court also erred in dismissing count II with prejudice.

End of Document

McCOMB v. STATE

Court of Claims of Illinois

June 10, 1941, Opinion Filed

Nos. 3353, 3354, 3355, 3356, 3357, 3358, 3359, consolidated

Reporter

11 Ill. Ct. Cl. 580 *; 1941 Ill. Ct. Cl. LEXIS 82 **

JOE McCOMB AND JAMES McCOMB, NO. 3353, ALBERT JACOBS AND FAYE JACOBS, NO. 3354, ED. P. SMITH, NO. 3355, OSCAR LAMORE AND ZEPHYR LAMORE, NO. 3356, ARTHUR BENOIT, NO. 3357, ALFRED GIROUX AND LEONARD GIROUX, NO. 3358, HENRY P. WRIGHT, E. BELLE WRIGHT, EDWARD WRIGHT AND MILTON WRIGHT, NO. 3359, Claimants, vs. STATE OF ILLINOIS, Respondent.

Disposition: **[**1]** No. 3353, claimant awarded $ 562.50, No. 3354, claimant awarded $ 120.00, No. 3355, claimant awarded $ 486.00, No. 3356, claimant awarded $ 1,881.00, No. 3357, claimant awarded $ 652.50, No. 3358, claimant awarded $ 732.50, No. 3359, claimant awarded $ 936.00.

Counsel: JOHN H. BECKERS, for claimants.

GEORGE F. BARRETT, Attorney General; MURRAY F. MILNE, Assistant Attorney General, for respondent.

Judges: MR. JUSTICE LINSCOTT delivered the opinion of the court.

Opinion by: LINSCOTT

Opinion

[*581] MR. JUSTICE LINSCOTT delivered the opinion of the court:

The above entitled cases are all claims for damages caused by the pollution of a stream known as Rock Creek, by the Manteno State Hospital; all grew out of the same state of facts, and therefore, upon motion of the several claimants have been consolidated for the purposes of the hearing and consideration thereof.

The Manteno State Hospital is a charitable institution operated and maintained by the State of Illinois through its Department of Public Welfare. It is located on 1.220 acres of land owned by the State, located in Sections 22, 23, 25, 26, 27 and 35 in Township 32 North Range 12 East of the Third Principal Meridian in Kankakee County.

[2]** The institutional buildings are located on Section 26, and the remainder of the land is devoted to agriculture, orchards, nursery, etc. The original buildings and improvements were constructed in 1930, and then consisted principally of the following: eight two-story ward buildings; one administration building; one sewage

disposal plant; one power house; two employees' dormitories; five doctors' cottages; one Managing Officer's residence; one farm house; one kitchen building; garages, etc.

In 1933 eight additional ward buildings, a dining room, and a hospital were erected.

In 1935 a kitchen building, a general stores building, and a laundry building were erected.

In 1936 and 1937 twelve ward buildings, one mechanical stores building, one building for tubercular patients, one diagnostic building, two employees' buildings, one assembly hall, seven doctors' cottages, one chief engineer's residence, and two hydro-therapy buildings were erected.

The number of patients and employees housed on the premises from 1935 to 1939 inclusive, were as follows: in 1935, 1,446; in 1936, 3,144; in 1937, 3,187; in 1938, 4,451; and in 1939, 6,093.

The sewage from the several buildings is carried through **[**3]** an 18-inch sanitary sewer which empties into Rock Creek approximately sixty or seventy feet east of the highway running north and south between Sections 22 and 23.

[*582] The property is also provided with a 48-inch sewer called a storm sewer, which empties into Rock Creek just west of the 18-inch sewer.

Rock Creek is a natural water course which traverses the northwest corner of Section 23 and continues in a southwesterly and westerly direction through the lands of the claimants, and finally empties into the Eankakee River about seven and one-half miles west and two miles south of Manteno; and the effluent from the sewage disposal plant and the storm sewer system of the institution empties into such creek. The creek is a winding and sluggish stream, twenty-five to thirty feet in width, with many holes in the bottom which catch and retain the sludge and solids from the institution. The fall is about ten feet in the first three and one-half miles, and an additional ten feet in the next mile.

The original sewage disposal plant constructed in 1930 as aforesaid consisted of a primary settling tank, six mechanical aerators; a secondary settling tank; a sludge digester and three **[**4]** sludge drying beds, which were able to take care of a population as follows: primary tank, 1,280; aerator tanks, 2,530; settling tank, 2,670; digester tank, 3,210; sludge beds, 3,760. From February, 1935 until July 20, 1937 the waste water from the institution laundry was discharged directly into the storm sewer system (and eventually into Rock Creek) without passing through the sewage disposal plant. Since July 20, 1937 the waste water from the laundry has been run through the sewage disposal plant, and after treatment therein, is discharged into Rock Creek along with other effluent from the plant, through the sanitary sewer.

The original plant was put into operation in 1931, and thereafter no provisions were made for any alterations therein or additions thereto until December 29, 1938,

when a contract was let for the installation of a new primary settling tank, sewage lift station and mechanical bar screen.

The several complaints herein were filed February 3, 1939, and on December 14, 1939 a contract was let for certain alterations and additions to the sewage treatment plant. The alterations and improvements above mentioned had not been completed at the time the taking of testimony **[**5]** herein was concluded, but one of the witnesses for the respondent testified, over objection by claimants, that after the completion of such alterations and improvements the capacity of the sewage disposal **[*583]** plant would be sufficient to take care of a population of 10,000 people, and that with proper operation the effluent from the plant should not possess any offensive odor and should not render the stream unfit for cattle to drink or to stand in. The witness admitted that such results would depend upon the proper construction of the plant, and the proper operation thereof, and that in any event, even with the new alterations and improvements the stream would not be in its natural state.

Alfred A. Brensley, a sanitary engineer called by the claimants, stated that in his opinion if the plant were constructed according to the plans in evidence, it would not furnish sufficient treatment to insure the original uses which were afforded by the creek waters before the original plant was constructed; and that the effluent discharged from the plant would reduce the extent of the available uses of the creek as to the riparian owners for general farming purposes and dairying.

No **[**6]** attempt is made by the respondent to deny or excuse the conditions as they existed prior to the filing of the several complaints herein. The sewage disposal plant in use prior to the filing of such complaints was wholly inadequate to treat the sewage and effluent from the institution, and all of such sewage and effluent was and continued to be discharged into the waters of Rock Creek.

In short, the respondent created and thereafter maintained a public ***nuisance*** of an aggravated nature. The supply of water in Rock Creek was not only increased in volume but polluted as well.

After the alterations and additions hereinbefore referred to are completed, the effluent from the entire institution will continue to be emptied into Rock Creek, and the evidence of Dr. Hinton, the Managing Officer of the hospital, was to the effect that from 1934 to the time of the hearing, from 150 to 200 gallons of water per person per day were consumed at the hospital. All of such water was eventually emptied into Rock Creek by the respondent, so that in 1939 there was from 900,000 to 1,200,000 gallons of water per day emptied into Rock Creek through the sewers of the institution.

The claimants, Joe McComb **[**7]** and James McComb, do not own the land they farm, but are tenants in possession thereof. In their complaint herein such claimants seek an award for **[*584]** $ 1,405.00, for the following items of damages, to wit: decrease in milk

production; the cost of extra feed for livestock; loss of livestock; and the cost of veterinary services.

The claimants, Albert Jacobs and Faye Jacobs, are the owners of the land involved in their claim, and the claimant, Ed P. Smith, is the tenant in possession of said land. In the original cornplaint filed by Albert Jacobs and Faye Jacobs, damages are claimed in the amount of $ 980.00 for the loss of rent, and for the cost of excavating and hauling away slime, sludge and sediment which had accumulated in the bottom of Rock Creek. By amendment thereafter made, such claimants added the item of depreciation in the fair cash market value of their property, for which they asked an additional award in the sum of $ 2,000.00.

The claimant, Ed P. Smith, in his complaint asks for damages in the sum of $ 915.00 for depreciation in the value of livestock, loss of livestock, decrease in milk production, cost of extra feed for livestock, and cost of veterinary services.

[8]** The claimants, Oscar LaMore and Zephyr LaMore, are the owners of the land involved in their claim, but Oscar Lamore alone farms the land, and he is the sole owner of the livestock thereon. In their original complaint Oscar LaMore and Zephyr LaMore, claim damages in the sum of $ 2,000.00 for loss of rent, and for the cost of excavating and hauling away slime, sludge and sediment which had accumulated in the bottom of Rock Creek, and the claimant, Oscar LaMore, personally claims damages in the total amount of $ 2,795.00 for loss of livestock, loss of use of livestock, decrease in milk production, cost of extra feed for livestock, and cost of veterinary services. By amendment thereafter made to their complaint, said claimants added the item of depreciation in the fair cash market value of their property for which they asked additional damages in the sum of $ 7,200.00.

The claimant, Arthur Benoit, does not own the land he farms, but is a tenant in possession under Carl Becker, the owner thereof, and claims damages in the sum of $ 1,102.50 for decrease in milk production; cost of extra feed for livestock, and cost of veterinary services.

The claimant, Alfred Giroux, is the owner of the **[**9]** land involved in Claim No. 3358, and the claimant, Leonard Giroux, is the tenant in possession thereof. In their original cornplaint **[*585]** the claimant, Alfred Giroux, claims damages in the sum of $ 1,325.00 for loss of rent and cost of excavating and hauling away slime, sludge and sediment which had accumulated in the bottom of Rock Creek, and the claimant, Leonard Giroux, claims damages in the sum of $ 1,392.50 for loss of livestock, depreciation in the value of other livestock, decrease in milk production, and cost of extra feed for livestock. By amendment thereafter made, the claimant, Alfred Giroux, added the item of depreciation in the fair cash market value of his property, for which he asked additional damages in the sum of $ 6,000.00.

The claimants, Henry P. Wright, E. Belle Wright, Edward Wright and Milton Wright, are the owners of and operate

the land involved in their claim. In their original complaint they claim damages in the sum of $ 3,516.00 for loss of rent, cost of excavating and hauling away slime, sludge and sediment which had accumulated in the bottom of Rock Creek, decrease in milk production, and cost of extra feed for livestock. By amendment thereafter **[**10]** made, claimants added the item of depreciation in the fair cash market value of their property, for which they asked additional damages in the sum of $ 5,000.00.

The evidence produced on behalf of the several claimants shows that those portions of the farms in question traversed by the creek were devoted to pasture; that since the pollution of the stream commenced, such farm land has depreciated in value; that livestock standing in the creek, or drinking the water therefrom became diseased; that some of the stock died and that some of it depreciated in value because of the sores which developed on the animals; that by reason of the polluted condition of the stream it became necessary to remove the livestock from the pasture along the creek during the summer months of each year when the condition of such creek was most objectionable, and that during these months, and due to the inability to use these pastures, the occupying claimants were compelled to use or obtain extra feed for the livestock; that due to their removal from the pasture and the diseased condition of the livestock, the milk production of the occupying claimants fell off, and that they therefore lost the sale of certain **[**11]** quantities of milk that ordinarily would have been available for such purposes; and that it was necessary, **[*586]** in some instances, to secure the services of veterinaries in efforts to relieve or cure the livestock.

The respondent contends:

1. That as a matter of law these claims present a situation in which the State is not liable to respond in damages for the reason that the State is not liable for the negligent acts or omissions of its officers, agents or employees; that if the officers, agents or employees of the State by their acts or omissions have polluted Rock Creek and have created a continuing ***nuisance***, the remedy of the plaintiff is by injunction to restrain the continuance thereof; that the State is not liable in tort for damages arising from the creation or continuance of such ***nuisance***; that no award can be made on the claims predicated upon tort liability.

2. That where the injury complained of constitutes a public ***nuisance***, the provisions of Section 13 of Article 2 of the Constitution which provides that private property shall not be taken or damaged for public use without just compensation, has no application; that the Criminal Code makes the pollution of a **[**12]** stream a public ***nuisance***, and that therefore the right to maintain and continue such public ***nuisance*** cannot be obtained by the payment of compensation or damages; that the constitutional provisions embrace only those cases in which the Act creating the damage is a lawful act and which by the payment of compensation, can therefore

be lawfully maintained; that the aforementioned constitutional provision has no application to this case, and that the claimants cannot predicate their right of recovery thereunder; that their remedy was to abate the ***nuisance*** in its inception.

3. That even if a liability exists under the constitutional provision, claimants who are tenants have not offered any evidence to establish a proper measure of damages; that the evidence shows that the tenants occupied the land in question under leases which were renewed from year to year; that no evidence as to depreciation of the value of their leasehold was presented and that in any event it would be competent only as to the lease which was in existence when the injury arose; that subsequent leases or renewals after the creek was polluted were made with a knowledge of that fact and its effect on the land in question, **[**13]** and such facts were taken into consideration in the execution of subsequent leases or renewals.

[*587] 4. That upon the completion of the improvements now in progress or contemplated, the creek will no longer be polluted by the sewage from the hospital, and that therefore the pollution of a stream is not a permanent condition, and that the claimants who are the owners of land are not entitled to recover permanent damages therefor.

It is clear that the State in the construction, maintenance and operation of Manteno State Hospital is engaged in a governmental function; also that the State in the exercise of its governmental functions is not liable for the negligence or misconduct of its officers, servants and agents under the doctrine of respondeat superior, in the absence of a statute making it liable. *Minear* vs. *State Board of Agriculture*, 259 Ill. 549; *Gebhardt* vs. *Village of La Grange Park*, 354 Ill. 234, 188 N.E. 372; *LePitre* vs. *Chicago Park District*, 374 Ill. 184; *Finney* vs. *State*, 8 Ill. Ct. Cl. 327; *I. C. R. R. Co.* vs. *State*, 10 Ill. Ct. Cl. 410; Bishop, et *al.* vs. *State*, 10 Ill. Ct. Cl. 664. **[**14]**

In this case, however, the claimants are not relying upon any negligent acts or conduct on the part of the officers, agents or employees of the respondent. It is not claimed that the sewage disposal plant in question was improperly constructed, but it is claimed that although the facilities for disposal of sewage were sufficient at the time the institution was erected, and continued to be sufficient for some time thereafter, yet, the institution grew so rapidly both as to the number of buildings and the number of people quartered therein, that it was but a short time until the facilities for the disposal of sewage were inadequate and insufficient, and the several complaints are based upon the action of the State in casting additional waters into the stream, and in polluting the same, to the damage of the claimants as hereinbefore set forth.

Section 13, Article 2 of the Constitution, provides that "private property shall not be taken or damaged for public use without just compensation." It seems elemental that the words "private property" are words of

general application, and that they cannot be confined to any species of property, either real or personal. In the case of *Metropolitan City Railway* Co. vs. *Chicago City Railway Co.*, *87* Ill. 317, **[**15]** our Supreme Court, on page 324, said:

"Property, in its broadest and most comprehensive sense, includes all rights and interest, in real and personal property, and also in easements, **[*588]** franchises, and incorporeal hereditaments. That which may be taken for public uses is not exclusively tangible property."

So also, in the case of *I. C. R. R. Co.* vs. *Commissioners of Highways*, 161 Ill. 247, the Supreme Court, on page 250, said:

"'Property,' in the sense in which that word is thus used in the constitution, is that dominion or indefinite right of user and disposition which one may lawfully exercise over particular things or subjects, and generally to the exclusion of all others."

In Volume 6, Words and Phrases, page 5693, the law is set forth as follows:

"Property is nomen generallissimum, and extends to every species of valuable right and interest, including real and personal property, easements, franchises, and other incorporeal hereditaments."

In Volume 3, Words and Phrases, 2d series, page 1275, the author cites the case of *I. C. R.* Co. vs. *State*, ex rel, 94 Miss. 579, in support of the following proposition, to wit:

"The term **[**16]** 'property,' as used in Const. 1906, Art. 3, Sec. 17, providing that an individual's property shall not be taken or damaged for public use, except on due compensation first made, includes every species of value, right or interest."

We are of the opinion, therefore, that the constitutional provision protects the individual in the ownership of all of its property whether the same be real or personal.

One of the earliest cases in this State bearing upon the questions here involved was the case of *Nevins* vs. *City of Peoria, 41* Ill. 502. In that case the City of Peoria in raising the grade of a street directed the flow of water from its natural channel to a new channel, and thereby the house and grounds of the plaintiff were flooded with mud and water and a stagnant pond was formed within a short distance from his house, rendering it unhealthy and ruining his business. The defendant contended, as in this case, that there was no liability on the part of the City of Peoria.

In disposing of such contention the court said, page 508:

"The city is the owner of the streets, and the legislature has given it power to grade them. But it has no more power over them than a private **[**17]** individual has over his own land, and it cannot, under the specious plea of public convenience, be permitted to exercise that dominion to the injury of another's property in a mode that would render a private individual responsible in

damages, without being responsible itself. Neither State nor municipal government can take private property for public use without due compensation, and this benign provision of our Constitution is to be applied by the courts whenever the property of the citizen is invaded, and without ref; erence to the degree." Also, on page 515: "We are unable to see why the property of an individual should be sacrified for the public convenience **[*589]** without compensation. We do not think it sufficient to call it damnum absque injuria. We know our Constitution was designed to prevent these wrongs. We are of the opinion, that, for injuries done to the property of the appellant in the case before us, by turning a stream of mud and water upon his premises, or by creating in the immediate neighborhood of his dwelling an offensive and unwholesome pond, if the jury find these things to have been done, the city of Peoria must respond in damages."

The case of *Holm* vs. *Cook County*, 213 Ill. App. 1, **[**18]** was a case very similar on the facts to the case at bar. In that case the Oak Forest Infirmary, a county institution which furnished a home and refuge for about 3,000 inmates and employees, conducted its sewage through the farm tiling of the plaintiff and across his premises, causing damage similar to that complained of in this case. In that case the county of Cook took the same position as is being taken by the Attorney General in this case, and in disposing of such contention the court, on page 4, said:

"It is insisted by plaintiff that the action here brought is one to recover compensation for the wrongful taking of and damage to his lands and tiling system for a public use without compensation. Defendant, on the other hand, argues that, being a municipality in the exercise of its governmental functions, an action in tort will not lie against it.

"So far as the *form* is concerned, if an action does lie against Cook County for the injuries complained of, trespass on the case is the appropriate one. *Bradbury* vs. *Vandalia Levee & Drainage Dist.*, 236 Ill. 36; *Allen* vs. City *of Decatur,* 23 Ill. 332.

"The paramount question here presented **[**19]** for determination is, whether any action will lie against Cook County under the facts hereinabove related.

"Section 13 of the Bill of Rights (Const. Ill. of 1870, Art. II) provides that 'private property shall not be taken or damaged for public use without just compensation'; that 'such compensation, when not made by the State, shall be ascertained by a jury, as shall be prescribed by law.'"

"It will be seen, from an examination of the declaration, that when defendant constructed the said Oak Forest Infirmary, it contemplated that all sewerage was to be conducted from its lands into the Calumet Drainage District Ditch, by means of plaintiffs said tiling system, which was in fact done. Such action was tantamount to an appropriation not only of plaintiffs lands for this purpose, but also the tiling system which plaintiff had laid for purposes entirely foreign to the one to which defendant put it. While it is true, as argued by

defendant, that the servient estate must yield to the dominant one in carrying off surface waters, etc., yet such right cannot be enlarged to permit the defendants herein to unlawfully appropriate plaintiff's said tiling system for the purpose of conducting the **[**20]** entire sewerage of the institution in question through plaintiff's lands. In our opinion, plaintiff's declaration sets up a state of facts from which it appears Chat his said property has been both taken and damaged for public use without compensation."

[*590] In the case of *Highland* vs. *Auer*, 235 Ill. App. 327, the plaintiff Auer sought an injunction to restrain the City of Highland from polluting certain waters whereby sewage was deposited upon the lands of said plaintiff. In considering the rights of the plaintiff under the Constitution, the court in that case said:

"Our Constitution guarantees to every citizen that his property shall not be taken or damaged for public use without just compensation. Art. 2, Sec. 13. It protects him against damages caused by a ***nuisance***."

The case of *Cook* vs. *City* of *Du Quoin*, 256 Ill. App. 452, is another case which, on the facts, is almost identical with the case at bar. In disposing of the question there involved, the court said (page 455):

"It is the right of every owner of land over which a stream of water flows, to have it flow in its natural state, and with its quality unaffected. It is **[**21]** a part of the freehold of which the owner cannot be disseized except by due process of law, and the pollution of a stream constitutes the taking *of* property, which may not be done without compensation."

In considering the effect of the aforementioned constitutional provision, our Supreme Court in the case of *Roe* vs. *County* of *Cook*, 358 Ill. 568, said:

"Section 13 of Article 2 of the Constitution, principally relied upon in support of the judgment, is as follows: 'Private property shall not be taken or damaged for public use without just compensation. Such compensation, when not made by the State, shall be ascertained by a jury, as shall be prescribed by law,' etc. It is contended by plaintiff in error that the Constitution does not point out a remedy and that no express remedy is afforded by statute. From this it is argued that the parties damaged are left to the common law for relief, and that no liability exists at common law against an involuntary municipal corporation (such as the County of Cook) to respond in damages for a tort, in the absence of a statute creating such a liability. *(Board of Trustees* of *Odell* vs. *Schroeder*, 58 Ill. 353; **[**22]** *County of Cook* vs. *City* of *Chicago*, 311 Ill. 234.) On the other hand, the defendants in error argue that the constitutional provisions above quoted are self-executing, and that a county may not take or damage the property of an individual for public use without eminent domain proceedings and without compensation and then escape liability for its act by saying that it cannot be sued. We are impressed with the justice and soundness of the latter view. The constitutional right of all property owners to a compensation when their

property has been damaged or taken for public use is one of the most salient provisions of our bill of rights." * * *

"When the Constitution forbids the taking or damaging of private property without just compensation and points out no remedy, and no statute affords one, for the invasion of the right of property thus secured, the common law, which affords a remedy for every wrong, will furnish the appropriate action for the redress of such grievance." * * *

[*591] "The constitutional provision itself, without remedial legislation, is basic law, which not only confers a right but pre-supposes a remedy. Standing alone, Section 13 is **[**23]** self-executing and forms the basis for recovery at common law by an action on the case." * * *

"Counties may sue and be sued in Illinois, (Cahill's Stat. 1933, Chap. 34, Secs. 22, 31) and while they may not be held liable for damages in tort actions, where the doctrine of respondeat superior must be invoked, they are nevertheless liable for the value of property appropriated to their own use and for damages done to abutting property by reason of public improvements made in pursuance of their corporate powers." * * *

"It is now immaterial whether the declaration be considered as one in tort or in assumpsit, as the breach of duty relied upon is the same and it contains all the necessary averments of fact for an action in assumpsit."

The case of *Barrington Hills Club* vs. *Barrington,* 357 Ill. 11, mas another case in which the facts were very similar to those in the case at bar. In that case the plaintiffs were riparian owners of lands who sought an injunction against the village of Barrington to prevent such village from discharging sewage and the efflux from its sewage treatment plant, into the creek above their premises. In that case the court said, page 18: **[**24]**

"The claim cannot be sustained that the Village of Barrington had an inherent right to use the creek as the only available natural watercourse to carry off its sewage and waste water." * * *

Also, on page 19: "Here, in addition to the placing of an additional burden upon the servient estates of defendants in error, as lower riparian owners, through the drainage of water coming from the water system and deep wells supplying water to the village, another property right is invaded, viz., by pollution of the stream."

The Supreme Court of the United States has held in numerous cases that a claim for compensation for property taken for public use by the Federal Government is a claim founded upon an implied contract. *Phelps* vs. *U. S.*, 274 U.S. 341, 71 L. Ed. 1083; *North American Transfer* Co. vs. *U. S.,* 253 U.S. 330, 64 L. Ed. 935; Tempel, 248 U.S. 121, 63 L. Ed. 162.

The cases cited would seem to be conclusive of the right of the several claimants to recover, under the provisions of the Constitution, such damages as they

have sustained, limited, however, to the allegations of their several complaints, the testimony in the record, **[**25]** and the law governing the proper measure of damages in cases of this kind.

The respondent, however, contends that the conditions complained of constitute a public ***nuisance*** in violation of the provisions of Section 221 of the Criminal Code of this State which provides that it is a public ***nuisance*** "to corrupt or **[*592]** render unwholesome or impure the water in a stream, river, pond or lake, to the injury or prejudice of others"; that inasmuch as the same constitute a public ***nuisance*** the State cannot obtain the right to continue such ***nuisance*** by paying damages to the plaintiffs and that therefore the plaintiffs are not entitled to recover in this case. If such contention were sound, it would follow as a necessary consequence that if the State causes pure water to flow upon the lands of the claimants which such lands would not ordinarily receive in the course of nature, and thereby adds to the burden upon such lands, the claimants would be entitled to maintain an action therefor, but if the waters so cast upon the lands of the claimants are of such a nature that the stream is polluted thereby and a public ***nuisance*** created, the claimants would have no remedy therefor.

We are not **[**26]** impressed either with the soundness of this contention or the justice thereof; nor are we impressed by the further contention of the respondent that the claimants are limited in their remedy, to the abatement of the ***nuisance***. Our courts in numerous cases have held that in cases of this character, a suit for damages and the abatement of the ***nuisance*** by injunction are concurrent remedies.

In the case of *Barrington Hills* Club vs. *Barrington*, ante (357 Ill. 11) our Supreme Court said:

"The law in Illinois is, and has long been, settled upon the controlling questions involved in this case. A private ***nuisance*** may be enjoined by a suit in equity or the party suffering damage and injury may proceed at law, and the remedies are concurrent and not exclusive. (*Springer* vs. *City* of *Chicago*, 308 Ill. 356; *Village of Dwight* vs. *Hayes*, 150 Ill. 273; *City of Kewanee* vs. Otley 204 Ill. 402.)

On the question of damages, Lewis on Eminent Domain, Second Edition, Volume 2, page 1416, Section 653b, lays down the following rule:

"Where a suit is brought for damages to property by the construction, use or operation of **[**27]** a work for public use, the question arises whether all damages, past, present and ***prospective***, must be recovered in a single suit, or whether the damages must be limited to those sustained prior to the commencement of the suit, leaving future damages to be redressed by future suits, as such damages occur. If there can be but one suit and one recovery it necessarily follows: first, that the measure of damages is the diminution in the value of the property by reason of the permanent continuance of the construction or use which causes the damage;" etc. * * * "On the other hand if there may be successive actions then, first, the measure of damages is the injury

sustained up to the commencement of the suit;" etc. * * * "and successive actions may be brought as often as damages are sustained or **[*593]** injury done and a recovery had of all damages sustained subsequent to the prior suit."

It is well settled in this State that where the injury in question is of a permanent character, all damages arising on account thereof, past, present and ***prospective***, must be recovered in one proceeding; but where the injury in question is not of a permanent character, but is continuing, damages may **[**28]** be recovered only up to the time of the commencement of the proceeding, and successive actions may be maintained from time to time as damages are inflicted. *City of Centralia* vs. *Wright,* 156 Ill. 561, 41 N.E. 217; *Suehr* vs. *Chicago Sanitary District,* 242 Ill. 496; *Strange* vs. *C. C. C. & St. L.* Ry. *Co.,* 245 Ill. 246, 91 N.E. 1036; *Jones* vs. *Sanitary District of Chicago, 252* Ill. 591.

It therefore becomes necessary to determine whether the injury involved in this case is of a permanent or a continuing character.

In the case of *Baker* vs. *Leka,* 48 Ill. App. 353, the court, in considering the question as to whether a certain ditch constituted a permanent invasion of the plaintiff's rights, said:

"This is not to be determined from a consideration alone of its enduring character, or that if not changed by the hand of man it would likely continue forever. *To* be permanent in a legal sense, a structure must, in addition to being permanent or enduring within itself, be such that its continuation is lawful; because if not lawful, it is subject to be removed or abated by a legal proceeding **[**29]** and therefore cannot be deemed permanent." * * * "A ***nuisance*** which may be abated by law is not regarded as a permanent source of injury but *as* a continuing ***nuisance***. Successive actions for damages occasioned by it may be maintained from time to time as such damages are inflicted." * * *

In the case of *City* of *Kewanee* vs. *Otley*, ante, the court, on page 412, said:

"The principle of law which contemplates that damages sustained for a permanent injury to land shall be recovered in one action is applicable only to those cases where the party or agent committing the injury acts within the authority of the law. In this case, when the sewage of the defendant city, or any part thereof, though combined with sewage or deleterious waters from other sources, was cast upon the lands of appellees or mingled with the waters of a stream running over the same, so that *a* ***nuisance*** was created as to appellees and they were injured thereby, such act of the defendant was unlawful and it could not be sanctified by time Nor could it be said that such a ***nuisance*** was a permanent one, for it would be the duty of its authors to have it abated."

The case of *Jones* vs. *Sanitary District* of Chicago, *252* Ill. 591, **[**30]** was a case in which the plaintiff sought to recover damages which he claimed had been done to

his lands during **[*594]** the period of five years prior to the commencement of his suit, as the result of the overflowing of such lands by the defendant. It appeared in that case that the damage to the' plaintiff's lands was not the result of the construction of the Drainage Canal, but that such damage resulted from the use made of such canal, and the court there held that where the continuance and operation of a permanent structure are not necessarily injurious, but may or may not be so, that the injury is not considered a permanent injury, and only the damages sustained prior to the commencement of the suit may be compensated in that proceeding.

In Lewis on Eminent Domain, Volume 2, page 1422, the author says:

"In suits for the pollution *of* a stream with sewerage, it was held that *the* recovery should be limited to damages up to the commencement *of* the suit."

We are of the opinion, that under the facts in this case the ***nuisance*** in question cannot be considered a permanent ***nuisance*** within the meaning of those words as used in cases of this kind. The buildings of the respondent **[**31]** which constitute the Manteno State Hospital. although permanent structures, do not. of themselves, constitute the ***nuisance*** complained of. Such ***nuisance*** consists of the discharge of the waters and sewage from such institution upon the lands of the claimants. The discharge of such sewage upon the lands of the claimants constitutes a public ***nuisance*** in violation of the Criminal Code of this State and being unlawful, cannot ripen into or form the basis of a right to continue or maintain such ***nuisance***. Furthermore, the testimony offered on behalf of the respondent shows that a very substantial enlargement or addition to the sewage treatment plant is now under construction; and that upon the completion thereof the effluent from the Manteno State Hospital will be unobjectionable and will not constitute a public ***nuisance***. Under the testimony in the record, we are of the opinion that the ***nuisance*** in question, being unlawful, cannot be considered as of a permanent character, but on the contrary, must be considered as a continuing ***nuisance***.

There are some cases in this State in which the owners of land have treated a structure as a source of permanent injury and brought suit for and recovered **[**32]** both present and future damages, although such structure was unlawful and **[*595]** subject to abatement by legal action. This was upon the theory that where the structure is in its nature permanent, the one damaged thereby may elect to treat it as permanent in law. though he may abate it as a ***nuisance*** and may sue for and recover damages present and ***prospective***. If he does so, he is to be regarded as having consented to its continuation and is estopped from the recovery of further damages. *Baker* vs. *Leka,* 48 Ill. App. 353; *Strange* vs. *C. C. C. & St. L. Ry. Co.*, 245 Ill. 246, 91 N.E. 1036; *Dowd* vs. *Drainage District,* 160 Ill. App. 476; *Bernhardt* vs. *B. & O. Ry. Co.*, 165 Ill. App. 408.

Such cases, however, are limited to cases involving

structures which are in their nature permanent and in which it is apparent that the injury will continue indefinitely. In this case, as previously stated, the source of injury was not the hospital buildings, which are permanent structures, but the depositing of the sewage therefrom on the lands of the claimants. Furthermore, it is apparent that the pollution complained **[**33]** of will not continue indefinitely, as the evidence shows that a substantial enlargement of the sewage treatment plant is now in course of construction. Consequently, the cases last cited can have no application to the claims now under consideration.

In the recovery of the damages sustained by them, the claimants are therefore confined to the damages which they have sustained up to the time of the commencement of the present proceeding, and no recovery can be had in this proceeding for any permanent injury to the real estate, that is to say, the damage claimed for depreciation in the fair cash market value of the real estate is not a proper element of damage in this proceeding.

Some of the property owners claim as an element of damage the cost of removing the sediment from Rock Creek. Whether such cost is a proper element of damages it is not necessary to decide at this time, as the evidence offered is too indefinite, uncertain and speculative to form the basis of an award. The testimony shows that the creek is winding and of varying widths, and that there are holes in the bottom which are filled with such sediment, but there is no evidence to show the distance the creek traverses **[**34]** the several tracts, or the width of the creek on each of such tracts. There is some general testimony to the effect that the creek is from 25 to 30 feet in width, but there is nothing definite as to any particular **[*596]** piece of property, nor is there any definite testimony as to the thickness of the deposit of sediment on the several tracts, or the number or the size of the holes in the bed of the creek. Apparently the estimates of the owners with reference to the amount of such sediment and the cost of removal thereof were merely guesses, and not based upon any definite measurements or information either as to the amount of the sediment or the cost of removal.

There is some testimony'to the effect that after the new addition to the sewage treatment plant is in operation, the effluent from the institution will be unobjectionable, and the flood waters will wash away all old sediments, and there is also testimony to the effect that the flood waters will have no effect upon the removal of such sediment. Even if such item were a proper element of damage, it would be necessary that the testimony disclose some definite basis upon which an award could be made, and in the present state **[**35]** of the record, we are of the opinion that no award can be made for such item.

The respondent also contends that the tenants who leased their property subsequent to the time Rock Creek was first polluted, are not entitled to recover any damages in this proceeding, for the reason that the

nuisance was in existence at the time they went into possession of the property, and therefore they must be held to have leased the property subject to the conditions as they then existed.

This is the rule which applies in cases of a permanent injury, but such rule has no application in cases where the injury complained of is of a continuing rather than a permanent character. *Baker* vs. *Leka*, *48* Ill. App. 353, 360.

In the present claims the tenants had a right to assume that the ***nuisance***, being unlawful, would be abated.

As to the damages claimed by the occupying claimants, the respondent contends that there is no competent evidence to support such claims. It goes without saying that in cases of this kind the exact amount of the damages sustained is difficult to ascertain, but that fact of itself does not deprive the claimants of their rights to recover therefor.

The case of **[**36]** *Johnston* vs. *City of Galva*, 316 Ill. 598, was a case very similar to the case at bar upon the facts. The plaintiff there sought to recover damages for the pollution of a natural watercourse which ran across his farm. The items **[*597]** of damages claimed by him were similar to those sought by the claimants herein. In fact, it seems probable that the claimants in this case in preparing their claims for damages followed the authority of the Johnson case.

In that case, in considering the question of damages, the court said, page 603:

"It is further contended by the plaintiff in error that the items for (1) the cost of hay and grain fed to the cows of the defendant in error while confined to the barn lot because of the pollution of the waters of the creek, (2) the alleged resulting loss of milk, and (3) the cost of labor and the value of the defendant in error's time in driving his horses to and from water, were purely speculative and conjectural and for that reason are not proper elements of damage. If by reason of the wrongful acts of which the defendant in error complained he sustained these items of damage they were proper elements to be submitted to the jury. **[**37]** Damages must, however, be the proximate result of the wrong of which complaint is made. Where the right of recovery exists the defendant cannot escape liability because the damages are difficult of exact ascertainment. The nature of the inquiry in the instant case is such that it is difficult, if not impossible to ascertain with mathematical certainty the amount of the defendant in error's damages, but this difficulty affords no answer to a cause of action which results from a breach of duty imposed by law. The unliquidated damages growing out of the commission of a tort are seldom susceptible of exact measurement. The rule is, that while the law will not permit witnesses to speculate or conjecture as to possible or probable damages, still the best evidence which the subject will admit is receivable, and this evidence is often nothing better than the opinions of persons well informed upon the subject under investigation."

We now come to the consideration of the amount of

damages to which the claimants are entitled under their several complaints, the proof in the record, and the law as hereinbefore set forth.

Claim No. 3353, Joe McComb and James McComb. These claimants are tenants **[**38]** on the farm described as the Southeast Quarter (SE1/4) and the South Half (S1/2) of the Northeast Quarter (NE1/4) of Section Twenty-nine (29), owned by Mrs. Grace Cooley. Claimants have lived on this farm for five years and have fourteen head of cattle. During the years 1936, 1937 and 1938 these claimants had to take their livestock out of the pasture during the months of June, July and August of each year on account of the pollution of Rock Creek, and had to buy additional feed for them. As the result of such pollution and the dry feeding of the livestock on account thereof, claimants' milk production was reduced two hundred (200) gallons per year. The evidence shows that fifteen cents (15c) per gallon was a fair price for such milk, and **[*598]** that the cost to these claimants of such dry feeding was fifteen cents (15c) per day per animal. The evidence also shows that these claimants lost one horse and two cows during the month of August, 1939, and that at that time they paid Thirty Dollars ($ 30.00) in veterinary fees. The complaint in this case was filed February 3, 1939 and consequently under the law as hereinbefore set forth, claimants are not entitled to recover anything **[**39]** in this proceeding for the horse and the cows which died, nor for the money paid to the veterinary, for the reason that all of such matters occurred subsequent to the filing of the complaint herein. The damages to which the claimants are entitled in this proceeding must be confined to the damages which accrued prior to the filing of the complaint. These claimants are therefore entitled to an award for the following items of damage, to wit: reduction in milk gallonage, 200 gallons a year for the years 1936, 1937 and 1938, at 15c per gallon, $ 90.00; extra feed for fourteen head of cattle for seventy-five days a year in each of said three years, at 15c per day, $ 472.50;--total, $ 562.50.

Claim No. 3354, Alfred Jacobs and Faye Jacobs. These claimants are the owners of Lots 1 and 3 of Tyson's Subdivision in the East Half (E1/2) of Section Twenty-two (22). This land adjoins the land owned by Oscar LaMore and Zephyr LaMore. Among other items of damage, claimants sought to recover for the permanent injury to their lands, but in accordance with the views hereinbefore expressed, they cannot recover such damages in this proceeding. Claimants' entire tract consists of approximately eighty-four **[**40]** acres, of which ten acres is leased to the claimant, Ed P. Smith. The testimony in the record shows that this land was rented to Ed P. Smith during the years 1937 and 1938 at a reduction of Sixty Dollars ($ 60.00) per annum on account of the pollution of the creek. Claimants are therefore entitled to recover this item of damages in the amount of One Hundred Twenty Dollars ($ 120.00).

Case No. 3355, Ed P. Smith. The testimony in the record confines the loss sustained by Mr. Smith to the year 1937 and to the months of June, July and August

of that year. Such testimony warrants an award in favor of Mr. Smith for the following items of damages, to wit: loss on the sale of six head of cattle which ordinarily would have sold for $ 600.00, but which were sold for $ 190.00, on account of their condition, **[*599]** making a loss of $ 410.00; money expended for medicine for such livestock, $ 40.00; extra feed for ten cattle for two months at twenty cents per day, $ 120.00; reduction in milk gallonage, thirty' days. eight gallons per day at fifteen cents per gallon, $ 36.00;--making a total of $ 606.00. From this amount there must be deducted the sum of $ 120.00, being the reduction in rent **[**41]** allowed to Smith by his landlord on account of the pollution of the creek.

Case No. 3356, Oscar LaMore and Zephyr LaMore. These claimants are the owners of the Northeast Quarter (NE1/4) and the East Half (E1/2) of the Southeast Quarter (SE1/4) of Section Twenty-two (22). This property lies immediately west of the lands occupied by the Manteno State Hospital, and is approximately eighty (80) feet distant from the outlet of the sewers in question. Evidence was offered to show the depreciation in the fair cash market value of this property as the result of the pollution of Rock Creek, but as previously stated, such depreciation does not constitute a proper element of damage in this proceeding. The testimony in the record, however, does warrant an award in favor of the claimant, Oscar LaMore, who operated the farm, for the following elements of damage, to wit: reduction in milk gallonage, 500 gallons a year for each of the years 1935, 1937 and 1938, at fifteen cents per gallon, $ 225.00; extra feed for twenty-three head of cattle for ninety days in each of the years 1935, 1936, 1937 and 1938, at twenty cents per day, $ 1,656.00;--making a total of $ 1,881.00.

There was some testimony **[**42]** to the effect that the claimant, Oscar LaMore, paid $ 39.00 for veterinary services; that one cow and one colt of said claimant died, and that the mother of such colt became sick and claimant lost the use of such mare. However, neither the testimony of the veterinary nor of the claimant himself shows that the sickness or death of any of such animals resulted approximately from the pollution of Rock Creek, and consequently no allowance can be made for any of such items.

Case No. 3357, Alfred Benoit. This claimant is a tenant in possession of the Southwest Quarter (SW1/4) of Section Twenty-two (22), except the North 30.39 acres thereof, which farm is owned by Cark Becker and lies west of the LaMore property. The testimony in the record shows that the claimant is entitled to an award for the following items of damage, **[*600]** to wit: for reduction of milk gallonage, 250 gallons a year for the years 1936, 1937 and 1938, at fifteen cents per gallon, $ 112.50; extra feed for ten cows for ninety days in each of the years 1935, 1936 and 1937, at twenty cents per day, $ 540.00; total, $ 652.50.

Case No. 3358, Alfred Giroux and Leonard Giroux. The claimant, Alfred Giroux, is the owner **[**43]** of the East

Half (E1/2) of Section Twenty-eight (28) lying north of the Illinois Central Railroad, and Lots Six (6) to Ten (10), both inclusive, in Hilaire Giroux's Subdivision of the West Half (W1/2) of Section Twenty-eight (28), containing approximately 215 acres; all of which is farmed by the claimant, Leonard Giroux. There is testimony in the record which shows a depreciation in the fair cash market value of this property as the result of the pollution of Rock Creek, but as previously stated, such testimony is not competent in this proceeding. The testimony shows that the claimant, Leonard Giroux, is a tenant on a cash rent basis and pays a rent of $ 5.00 per acre for the entire farm. Alfred Giroux testified that if it were not for the present condition of the creek, the farm should rent for $ 8.50 per acre, but on account of the creek he rents it to his son for $ 5.00 per acre. However, other testimony in the record shows that Leonard Giroux has rented the property since 1934 for $ 5.00 per acre. No loss on account of the pollution of the creek is claimed prior to 1936, and under the evidence we fail bo see that the claimant, Alfred Giroux, up to the time of the commencement of **[**44]** this proceeding, has suffered any loss of rent, or any other damage for which he is entitled to an award in this proceeding. From the evidence in the record it appears that the claimant, Leonard Giroux, is entitled to an award for the following items, to wit: loss of $ 80.00 on the sale of two cattle which ordinarily would be worth $ 90.00 each, one of which was sold for $ 55.00 and the other for $ 45.00; reduction of milk gallonage, 250 gallons a year for the years 1936, 1937 and 1938 at fifteen cents per gallon, $ 112.50; extra feed for ten cows for ninety days in each year during the years 1936, 1937 and 1938 at twenty cents per cow, $ 540.00;--total, $ 732.50.

There was also some testimony to the effect that one of claimants' cows died and two others became sick, but there is nothing in the record to show that the death of the one cow or the sickness of the others was the proximate result **[*601]** of the condition of the stream in question, and no allowance can be made for either of such items.

Claim No. 3359. The claimants, Henry P. Wright; E. Belle Wright, Edward Wright, and Milton Wright, are the owners and tenants in common of 134 acres in the Southeast Quarter (SE1/4) **[**45]** (west of the railroad) of. Section Twenty-one (21), and 44 acres in the Northwest Quarter (NW1/4) of the Northeast Quarter (NE1/4) of Section Twenty-eight (28), which farm is operated by them as partners. This land is approximately one and one-half miles west of the Manteno State Hospital and is traversed by Rock Creek for a distance of a little over one-half mile. There is testimony in the record as to the depreciation in the value of this farm, but as previously stated, such item of damages cannot be considered in this proceeding. The evidence shows, however, that the claimants have sustained damages and are entitled to an award for the following items, to wit: reduction in milk gallonage of 600 gallons a year during the years 1936 and 1937, at fifteen cents per gallon, $ 180.00; extra feed for cattle during the years 1936 and 1937, twenty-one cows for

ninety days in each year, at twenty cents per day, $ 756.00;--total, $ 936.00.

An award is therefore entered in favor of the several claimants as follows:

Claim No. 3353, Joe McComb and James McComb, Five Hundred Sixty-two Dollars and Fifty Cents ($ 562.50).

Claim No. 3354, Alfred Jacobs and Faye Jacobs, One Hundred Twenty Dollars **[**46]** ($ 120.00).

Claim No. 3355, Ed P. Smith, Four Hundred Eighty Six Dollars ($ 486.00).

Claim No. 3356, Oscar LaMore, Eighteen Hundred Eighty-one Dollars ($ 1,881.00).

Claim No. 3357, Alfred Benoit, Six Hundred Fifty-two Dollars and Fifty Cents ($ 652.50).

Claim No. 3358, Leonard Giroux, Seven Hundred Thirty-two Dollars and Fifty Cents ($ 732.50).

Claim No. 3359, Henry P. Wright, E. Belle Wright, Edward Wright, and Milton Wright, Nine Hundred Thirty-six Dollars ($ 936.00).

Barton v. Chicago & N. W. Transp. Co.

Appellate Court of Illinois, First District, Fifth Division

September 14, 2001, Decided

No. 1-99-2285

Reporter

325 Ill. App. 3d 1005 *; 757 N.E.2d 533 **; 2001 Ill. App. LEXIS 704 ***; 258 Ill. Dec. 844 ****

RACHEL BARTON, Plaintiff-Appellee, v. ***CHICAGO*** AND NORTH WESTERN TRANSPORTATION COMPANY, n/k/a THE UNION PACIFIC RAILROAD COMPANY, and NORTHEAST ILLINOIS REGIONAL COMMUTER RAILROAD CORPORATION, Defendants-Appellants.

Subsequent History: **[***1]** Released for Publication October 31, 2001.

Prior History: APPEAL FROM THE CIRCUIT COURT OF COOK COUNTY. THE HONORABLE ALLEN FREEMAN, JUDGE PRESIDING.

Disposition: Affirmed.

Counsel: For Appellant: Clausen Miller P.C., of ***Chicago*** and Williams & Montgemery, Ltd., of ***Chicago*** (James T. Ferrini, Lisa Marco Kouba and Barbara I. Michaelides, of counsel.).

For Appellee: Clifford Law Offices, of ***Chicago*** (Robert A. Clifford, Kevin P. Durkin, David A. Novoselsky Kevin M. Forde, Robert C. Sheridan and Leslie J. Rosen, of counsel).

Judges: PRESIDING JUSTICE CAMPBELL delivered the opinion of the court. Buckley, J., concurs. O'Brien, J., dissents in part and concurs in part.

Opinion by: CAMPBELL

Opinion

[*1009] **[**538]** **[****849]** PRESIDING JUSTICE CAMPBELL delivered the opinion of the court:

Plaintiff Rachel Barton filed suit against defendants ***Chicago*** & North Western Transportation Company, n/k/a the Union Pacific Railroad Company (CNW) [1], and the Northeast Illinois Regional Commuter Railroad Corporation (NIRCRC), alleging that she was dragged by a train because defendants did not have a proper procedure to determine whether a passenger was caught in the train's doors before **[*1010]** leaving a station. [2] Following **[***2]** a jury trial in the circuit court of Cook County, defendants were found liable to plaintiff on the claims brought against each of them. The trial

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[1] The CNW merged with the Union Pacific Railroad Company in October 1995.

[2] Plaintiff's brief states that Barton was dragged 366 feet. Although defendants do not appear to dispute this figure, it is not supported by the record citation in plaintiff's brief.

court denied defendants' post-trial motions. Defendants timely filed a Notice of Appeal to this court.

The record on appeal discloses the following facts. NIRCRC is a corporation maintained, supervised and directed by the Commuter Rail Board (CRB), the governing body of the Commuter Rail Division (CRD) of the Regional Transportation Agency (RTA) under the RTA Act. See 70:LLCS 361 5/2.20(a)(xii), 3B.01, 3B.02 (West 2000). Defendants' brief states that "the CRD/NIRCRC are known to the public through the service mark 'Metra.'" [3]

[*3]** The CRB may provide public transportation by operating facilities or through purchase of service agreements (PSAs) **[**539]** **[****850]** with other transportation agencies. See 70 ILCS 3615/2.01, 2.03 (West 2000). The CRD and CNW entered into a PSA. Article II, Section 2.04 of the PSA states in part that the CRD may, at any time, direct changes in Contract Standards. Article I of the PSA defines "Standards" as "the standards specified in Exhibit 2-C." Exhibit 2-C states in part as follows:

> "1. SAFETY
>
> The Contract Services shall be operated or provided by [CNW] in accordance with the applicable standards of safety established by any agency of the Federal Government or the State of Illinois, and any other standards established by the [RTA] pursuant to Section 2.04 of this Agreement. [CNW] shall maintain its existing practices and procedures *** for the safety of its passengers, employees and property used in providing the Contract Services ***."

Article IV, section 4.01 of the PSA states in part that CNW is an independent contractor for the CRD, and shall have managerial control with respect to the Contract Services. The PSA was in effect through December 31, 1998.

[*4]** Plaintiff Rachel Barton, born in October 1974, began playing the **[*1011]** ***violin*** when she was three and a half years old. By the time she was 11 years old, Barton was practicing eight hours daily and had joined the Civic Orchestra in ***Chicago***, which trained people to be concert masters in professional orchestras. When Barton was a teenager, she would go dancing on Friday and Saturday nights; she began dating at age 14. Barton engaged in local, national and international ***violin*** competitions. Barton paid her living and musical expenses and would travel alone. When Barton's instruction ended at age 17, she spent more time with friends and family. She hoped eventually to get married and have children.

At age 18, Barton had left the Civic Orchestra and was playing with the Grant Park Symphony and the Lyric

[3] The defendants do not cite the record in support of this statement. However, NIRCRC was sued as Metra in Ramirez v. Village of River Grove, 266 Ill. App. 3d 930, 641 N.E.2d 7, 204 Ill. Dec. 48 (1994). The CRD was sued as Metra in Wehde v. Regional Transportation Authority, 237 Ill. App. 3d 664, 604 N.E.2d 446, 178 Ill. Dec. 190 (1992). As defendants have chosen to treat the CRD and NIRCRC as interchangeable in this case, this court will adopt a similar convention in referring to Metra.

Opera Orchestra, as well as substituting for ill members of the ***Chicago*** Symphony Orchestra. Barton began giving ***violin*** lessons at the Music Center of the North Shore in Winnetka (MCNS). Barton's compact disc of Spanish classical music was released at the end of 1994.

On January 16, 1995, at 10:30 am., Barton boarded the last car of CNW northbound train No. 317 at the Ravenswood stop in ***Chicago***. **[***5]** She was going to teach at MCNS. Barton was wearing jeans, a T-shirt, possibly a flannel shirt, a bulky sweater with shoulder pads, a puffy down coat with fashion shoulder pads, gym shoes, earmuffs and thin leather gloves.

Barton was carrying a book bag, her purse and a food bag. Barton also was carrying a ***violin*** in a "cushy case" that insulated it from the cold. The ***violin*** was loaned to Barton by her patron and insured in the amount of $ 500,000. [4] **[****851]** Barton testified that she was carrying these items on her shoulder. According to Barton, these items would not slip down her shoulder, ***due*** to the puffiness of her coat. Barton stated that she routinely carried her items in the following order: purse, ***violin***, book bag, food bag.

[*6]** During the trip, Barton removed her gloves and worked on student reports. **[**540]** Barton testified that she noticed that the Winnetka stop was coming up, based on her knowledge of the prior stops. Barton stated that the train was still moving when she loaded up her belongings, but had stopped by the time she reached the vestibule of the car. Dr. Caroline **[*1012]** Clements, who was riding in the same car, heard Barton ask whether the stop was Winnetka. Dr. Clements thought that Barton would not be able to exit the train in time, but stated that the train had not stopped when she entered the vestibule.

Barton testified that her purse, ***violin*** case, briefcase and food bag were all on her left shoulder. As she tried to descend the stairs, the ***violin*** case became caught on one or two poles in the vestibule. According to Barton, while she tried to keep her belongings at her side, the ***violin*** case had "jostled sort of in back of" her. Barton stated that she took a step back, reorganized her belongings, descended the stairs and stepped off the train.

As Barton stepped onto the platform, she could hear "ambient train noise." Barton testified that she did not see or hear the train doors close, but felt and **[***7]** heard a bump. Barton attempted to take another step, but was unable to complete it. Barton thought that her ***violin*** case had become caught again. Barton testified that it was as if her left shoulder was pinned to the train. Barton could not turn to the right, so she began to turn to the left. Barton stated that she was bowed backwards because her feet were on the edge of the platform. As

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[4] Barton testified that the ***violin*** was handmade in Italy by the Brothers Amati, the sons of Andrea Amati, who some think invented the ***violin*** in the late 1500's. The Brothers Amati were also the uncles of Nicola Amati, who taught ***violin***-making to Antonio Stradivarius. Barton later testified that when she was 14, she had lost a ***violin*** that had been a birthday present from her grandmother by leaving it in a taxicab. That ***violin***, which was insured, was valued at $ 6,500.

she turned her head, Barton could not see her ***violin*** case and deduced that it must have been inside the train.

Barton testified that based on her experience riding on CTA trains, she tried to spring open the train doors. Barton stated that it was difficult to get her right hand into the rubber where the doors met, given her body position. Barton could not see a door handle. Barton got a palm on the right door, but her hand slid down the door. Meanwhile, Barton was saying, "Hey, wait. Hey, open up the doors," thinking someone would hear her. Theresa Croghan, who was jogging on the opposite side of the train at the time, heard a very annoyed voice say, "Wait. Wait. Wait a minute. Wait a minute." Barton stated she had no sense of danger at this time, believing that a conductor would put his head out, **[***8]** see her and open the doors. Ten seconds elapsed before the train began to move.

Barton testified that she could not have removed the strap from her shoulder with a flick of the wrist. Barton stated that she would have had several factors working against her, including: her gloved hand, her awkward angle, the weight of her belongings hanging from her left shoulder; and the puffiness of her coat.

Barton testified that the train suddenly began to move northward while she was facing southward. Barton testified that she immediately stumbled and fell as the train pulled and she was pulled to the ground. Croghan testified that as the train started to move, she heard Barton saying, "No. Stop. No. Stop. No," in a very intense voice. Croghan **[*1013]** testified that she knew this was not, as she had thought, someone who had missed a train, but that Barton was attached to the train or that there was a violent crime occurring on the platform.

As the jogging path was roughly three feet lower than the train tracks, Croghan began to look under the wheels of the train. Croghan kept hearing Barton say, "Oh, God." Croghan described it as the most bloodcurdling thing she had ever heard. Croghan testified that **[***9]** she then saw a brown coat in a horizontal position between wheels, which then flashed underneath **[**541]** **[****852]** and disappeared. Croghan began running and screaming to nearby people, "Stop the train. She is being dragged. Call 9-1-1."

Barton testified that she was dragged in a half-sitting position, bumping along gravelly ground next to the wheels. Barton screamed at the top of her lungs. Barton thought she was probably going to die and had to choose between continuing to be dragged, or trying to release herself from her straps. Barton stated that she thought either choice was likely to kill her; if she freed herself by pushing the bags off, she could flip herself under the wheels of the train.

Barton testified that she decided to try to free herself. According to Barton, this was difficult, ***due*** to her gloved hand and the force pulling on her and her belongings.

Barton testified that the ***violin*** strap was the third down, so she got her hand under the straps as a bunch, gave a push to get them over the lump of her coat, and flipped away from the train.

Barton found herself in the gravelly area between the train tracks and the platform. Barton continued screaming because she wanted someone to hear **[***10]** her. Barton testified that she did not know so much pain could exist. Barton stated that all she could see "was like blood and [her] left leg was gone." Checking herself, Barton concluded that her internal organs and upper extremities were intact, at which point she thought she might live. Barton felt cold. Barton wanted to lie down and close her eyes, but thought that if she did, she would never awake. Barton decided she had to try to distract herself from thinking about her legs. At this point, people were coming toward her, one of whom was carrying something.

Brian McCarthy, another passenger on train No. 317, testified that he was walking to the vestibule of the train to exit at the next stop when he heard loud, bloodcurdling screams. McCarthy entered the vestibule from the south; a lady entering from the north said something about a young lady and a ***violin***. McCarthy saw a ***violin*** at an angle, near the bottom of the steps.

McCarthy pushed a signal button in the vestibule until the train began to slow down. When the train stopped, McCarthy used a pen to **[*1014]** trigger the train doors to open, as he had seen conductors do. The ***violin*** tumbled out of the car onto the railroad ties. McCarthy **[***11]** looked behind the train, where he saw Barton in the gravelly area between the tracks and the platform.

McCarthy left the train, carrying the ***violin*** as he went toward Barton. McCarthy was the first person to reach Barton. McCarthy put the ***violin*** on the platform, approximately six to eight feet away. McCarthy could see that one of Barton's legs had been amputated, that the other leg was mutilated, and that blood was spurting out with her every heartbeat. McCarthy removed his belt and began to apply it as a tourniquet on her left leg.

McCarthy testified that Jim Tuck, one of his friends and neighbors, arrived shortly thereafter. Tuck's belt was applied as a tourniquet to Barton's other leg. According to McCarthy, Barton was alert and calm. McCarthy testified that Barton asked him something about the ***violin***; McCarthy told her the ***violin*** was "right here." McCarthy also obtained Barton's name and her mother's telephone number. McCarthy and Tuck held onto the tourniquets until paramedics relieved them.

Barton testified that she kept talking while McCarthy was working, telling him her name, trying to remember her telephone number, and asking him to call her mother. Barton asked McCarthy **[***12]** what he was carrying, because she thought it might **[**542]** **[****853]** have been her ***violin***. Barton stated that she kept repeating these sorts of statements, even after she was put into an ambulance, also asking about her purse

and asking to have someone call her workplace, because she thought that if she stopped, she would have been "freaking out again." Barton recalled that her leg had been put next to her on the stretcher, like a jigsaw puzzle, or a broken Barbie doll.

Dr. Glen Reinhart, a board-certified orthopedic surgeon, testified that he was called to Evanston Hospital to treat Barton, who was already under anesthesia when he arrived. The lower part of Barton's left leg was attached only by a bridge of skin behind the knee. The front of Barton's right leg was missing most of the skin and soft tissue from mid-thigh to mid-leg. There was a large gap in the bone just below the right knee. The skin over the front half of Barton's right foot was torn away, exposing the bones over her toes.

Dr. Reinhart spent approximately eight hours operating on Barton that day. Barton's left leg below the knee was removed. Some of the removed tissue and bone was placed in the tissue bank for later reconstructive **[***13]** surgery. The toes on Barton's right foot had to be removed. Dr. Reinhart was deeply concerned as to whether Barton's right leg could be saved, in part because he knew that Barton ultimately was going to have an amputation of the left leg above the **[*1015]** knee, which would require a bigger prosthesis that would require more energy to use. There was no muscle remaining around Barton's right knee, the lower part of which was smashed into small pieces.

According to Dr. Reinhart, the surgeons could only close the wound on Barton's right thigh, as the skin on her shin was missing. Dr. Reinhart stated that open fractures such as this present a risk of infection. Dr. Reinhardt knew that he was going to have to remove unhealthy or contaminated skin every 24 to 48 hours for the next 10 days.

On January 23, 1995, Barton's left leg was amputated above the knee. Dr. Reinhart testified that this surgery left enough skin to cover the bone. During this surgery, doctors also filled the gap below Barton's right knee with beads made from bone cement containing antibiotic powder. Later in January, Dr. Gerald Harris removed a strip of muscle from the front of Barton's abdomen, transplanted it to her leg, and **[***14]** transplanted skin grafts from Barton's thigh to cover the muscle.

On March 14, 1995, Dr. Reinhart and his colleagues began to try to rebuild the bone in Barton's right leg, using the bone graft harvested during the initial surgery. In May 1995, Barton's leg was placed in an external device, similar to a cage, to support walking; Barton wore this device for 1 1/2 years. The medical team had intended to add more bone graft in May 1995, but discovered Barton's bone was infected. Dr. Reinhart was concerned that if the infection was severe, Barton's right leg could have to be amputated. Infection also makes later surgeries, such as a total knee replacement, riskier. On October 23, 1995, Barton had more infected material removed.

The infection reoccurred in January 1996, requiring

surgery to remove the infected material. ***Due*** to the recurring infection, Barton's leg was left open to heal naturally, aided by the periodic addition of bone chips and bone substitute. The wound required daily care, including the use of cleansing solutions and antibiotics. The wound was open in varying degrees until December 1996.

[543]** **[****854]** Dr. David Stulberg, an orthopedic surgeon and a board member of the Rehabilitation **[***15]** Institute of ***Chicago*** (RIC), helped found a program for performing artists at RIC in the 1980's. When Dr. Stulberg began seeing Barton in late 1996 or early 1997, Barton had no flexion in her right knee. Dr. Stulberg worked to improve the strength and motion in Barton's right knee through physical therapy and injections of synthetic joint lubricant.

Dr. Stulberg also recommended plastic surgery that could make her knee more pliable and prepare it for probable future procedures. Dr. Gregory Dumanian, a board-certified plastic surgeon, testified that Dr. Stulberg referred Barton to him for procedures (apparently in **[*1016]** 1998) to expand the tissue on her right leg. The tissue expansion involved the surgical insertion of a balloon under the skin on Barton's right leg, which was periodically inflated with injections of a saline solution.

Dr Alice G. Brandfonbrener, the founding director of the program for performing artists at RIC, examined Barton's left wrist when a problem arose as a result of having an intravenous feeding tube inserted there. This problem was resolved. [5] Dr. Brandfonbrener also testified that a violinist does not use just her arms and fingers, but also uses her back and **[***16]** leg muscles.

Barton testified that during the period of 1995-98, she had 25 surgeries, 223 medical appointments, 122 prosthetics appointments and 170 physical rehabilitation sessions. Her medical bills totaled $ 672,570.97.

Dr. Reinhart testified that except for a few steps, Barton would always need the assistance of crutches or a walker to walk. Barton cannot climb or descend stairs. According to Dr. Reinhart, Barton may be able to eat and dress, but for things involving a lot of movement or lifting or carrying, she needs help or to stay in her wheelchair. Dr. Reinhart stated that as Barton matures, she will have less mobility; at some point, she will be in a wheelchair most of the time.

Dr. Stulberg testified that Barton would have to think about stump care issues on a daily basis, as her removable prosthesis depended on **[***17]** her skin for suction and various factors can cause her skin to change or break down. Dr. Brandfonbrener testified that Barton was having problems with skin breakdown. Barton testified that the skin breakdown was painful. Plaintiff's Exhibit No. 176, a photograph of skin breakdown taken the day of Barton's testimony that she described as "one of those embarrassing ones [with] the raw open stuff right in the bikini area," was shown to the

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[5] Barton testified that the intravenous tube had bruised the nerve of the carpal tunnel during the initial hospitalization. Barton regained her full playing ability in September 1995.

jury.

Dr. Stulberg testified that Barton would eventually need a knee replacement, to regain substantial motion and address pain likely to be associated with Barton's progressive arthritis. Dr. Stulberg opined that Barton would probably require further surgery on the stump of her right foot and possibly her right ankle. Dr. Stulberg further testified that Barton would need supervised physical therapy four days a week, along with a daily program, for the rest of her life. Dr. Stulberg testified that Barton will require assisted care in her activities of daily living for the rest of her life. Dr. Stulberg also testified that as Barton **[*1017]** gets older, she will need emotional support, ideally professional support. Dr. Stulberg expected that Barton would benefit **[***18]** from future developments in prosthetics and in knee surgery techniques.

[544]** **[****855]** Dr. Gary Yarkony, a board-certified specialist in physical medicine and rehabilitation, prepared a future care plan for Barton at counsel's request that included attendant care for various daily activities from a certified nurse's assistant. Dr. Yarkony's plan also included a wheelchair-accessible van and periodic replacement prostheses and wheelchairs. Dr. Yarkony recommended that Barton travel by air in first class. Dr. Yarkony also testified regarding the special performance chair built for Barton by engineers at RIC.

Dr. Reinhart testified that Barton's right leg was forced to stick out from the wheelchair, increasing the risk that other people will run into it and potentially damage it. Barton cannot drive a normal vehicle. Traveling, especially by airplane, is difficult. Barton testified that she can only sit in one seat in coach class on an airplane--the bulkhead with the aisle to her right--to accommodate her right leg. She will board the airplane before most passengers, but this often results in others bumping into her right leg as they board. [6]

[*19]** Barton testified that she has to travel with her companion. Barton cannot engage in her normal daily activities at a hotel, because she does not bring her wheelchair when she travels. Barton was not paying her companion and already felt beholden to him for carrying as many of her belongings as he does. [7] Barton met her companion in **[*1018]** 1995 through her church, initially

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[6] Although the defendants do not appeal the jury's award of economic damages, the jury heard evidence regarding Barton's career, her disability's impact on her choice of career, and the amount of travel involved in that career. Barton's childhood career goal was to become a soloist, but thought that as a backup position, she could become a concert master for a major orchestra. Barton testified that she now did not believe she could work seven days a week as a concert master.

Richard Corrado, Barton's manager, testified that it is practically impossible for Barton to play successive dates in different cities ***due*** to the travel time she needs. Corrado noted that older concert halls are not very accessible to the disabled; there had been occasions where Barton's traveling companion had to carry her up a flight of stairs at a venue. Barton testified that she went to every engagement she was supposed to have in 1997 and 1998, even when she was in horrible pain, because she needed the money to pay bills and to maintain a professional reputation.

[7] Barton's luggage includes her performance chair, packed in a large cube-shaped case, suitcases for Barton and her companion, the ***violin*** and her companion's brief case. Barton stated that with that luggage, the wheelchair would not fit in any vehicle a concert presenter might use to pick them up at an airport.

striking up a friendship, but now living together. Barton stated that it was nice to have someone to hold her when she would experience "phantom pain" in her missing limb. The phantom pain can be anything from the feeling of an electrical shock, to itching, to the feeling that part of the limb is being slowly sliced or pierced by a million needles.

[*20]** Barton also testified regarding the difficulties and limitations she has regarding any sexual activity with her companion. Barton testified that her injuries, surgical scars, and flab (as she is no longer as physically active as she was) make her resemble "one big Frankenstein's monster." Barton thought that her companion would eventually tire of her difficulties and limitations. Barton testified that even if she could find someone who was willing to be a stay-at-home husband, she did not think she would find someone who would want to take care of all of the domestic activities and care for her also. According to Barton, she is unable to care for herself to the degree that there was no possibility she could care for a child.

[545]** **[****856]** Gregory Larson, who was in charge of commuter service for the Union Pacific and formerly for the CNW, testified that in the late 1950's or early 1960's, the CNW adopted a fail-safe door light system. According to Larson, the train doors must close to create a connection that lights a green light signaling the engineer to proceed. Larson testified that one advantage of this system is that it does not depend on visibility; factors such as inclement weather or **[***21]** a curved track will not defeat the door light. Larson noted that a train may have up to 11 cars, each of which is 85 feet long. Another advantage is that if the door light goes out while the train is moving, the engineer can contact the conductors to investigate whether a door has been opened.

If the door light system malfunctions, a backup procedure known as the "second look system" is used. According to Larson, under the "second look system," the conductor charged with closing the train doors closes all of the doors other than those at his or her location. That conductor then steps off or leans out of the train and looks up and down the length of the train. If the conductor does not see any passenger movement, the conductor closes his or her own door and uses a buzzer to signal the engineer to proceed.

Larson also testified that the train doors are edged with two inches of rubber. According to Larson, this creates a four-inch distance that allows passengers who stick a hand, arm, leg, foot or package into closing doors to remove them. Larson further testified that the train at issue had an event recorder that showed the train had stopped in Winnetka for 27 or 29 seconds.

[*1019] John **[***22]** Deutch, a conductor for the Union Pacific Railroad, worked on the CNW train at issue on January 16, 1995. According to Deutch, the train at issue consisted of a locomotive and four cars, three of which were used for passengers. The front car was being used for mail delivery.

Deutch testified that his job that day was to deliver company mail to the ticket agents up and down the line. Deutch did not look up and down the span of the train when reboarding the train because it was not his job. Deutch stated that the conductors assigned to the passenger cars, Mark Giocamara and Shawn White, also went onto the platform in Winnetka.

Giocamara testified that he had been on the second car from the locomotive. When Giocamara was satisfied that the passengers had safely deboarded, he and White signaled each other to proceed. Giocamara testified as a matter of practice, he would look up and down the train; if he saw anyone other than White on the platform, he would give the signal to stop. Otherwise, Giocamara would reboard the train. According to Giocamara, White had the responsibility for closing the train's doors.

White testified that he was assigned to the trailing passenger car on the day **[***23]** at issue; he and Giocamara would both work the middle passenger car. On January 16, 1995, the weather was a little cloudy; traffic was light. While on the Winnetka platform, White saw Deutch reboard the train, but did not remember whether Deutch closed the door on the mail car.

White testified that one or two seconds would pass between the time the conductors checked for passenger movement and the time it takes him to push the buttons that close the doors. Another one or two seconds might pass before the doors begin to close. According to White, it could take three or four seconds for the doors to close entirely.

White testified that closing all of the doors would activate the door light signal **[**546]** **[****857]** for Perry Goosie, the train's engineer. White closed the doors on the trailing car, then the doors on Giocamara's car, then the doors in the middle car where White was located. White testified that he did not hear any voice outside the train after closing the doors. White believed that if he had looked up and down the exterior of the train before closing his doors, he would have seen someone exiting.

White further testified that when the train stopped, he used the intercom to contact Goosie, **[***24]** who told him buzzers were going off and that he had lost air pressure in the last car. White rushed to the last car, where he saw that the doors had been opened. Passengers told him they had heard screaming. White left the train and headed toward Barton, who was being attended by a passenger.

[*1020] Goosie testified that there was a side mirror on the locomotive which he used to watch passengers and conductors on the platform, but it was not his primary responsibility to look in the mirror before leaving the station.

Barton introduced testimony from 12 witnesses and the files of three claimants regarding prior substantially similar occurrences (SSOs) reported to CNW or Metra between April 1990 and July 1994, in which passengers

had limbs and clothing become stuck in the closing doors of trains. In one case, a child became separated from its mother. Passengers were dragged in three of these incidents. Though some of the passengers were injured in these incidents, none suffered injuries of the magnitude Barton suffered, as the people involved were able to free themselves. Defendants elicited testimony that the train doors were open when the train began to move in some of these cases.

Carl **[***25]** Biron, the former transportation superintendent for CNW, was responsible for the safe and on-time operation of three suburban train lines. Biron testified that prior to January 1995, he was not familiar with the details of any dragging incident. Biron admitted that he had known about an incident introduced into evidence involving Josephine Rose. Robert Szczecinski, who was CNW's special claims counsel and supervised CNW's claims operations for Illinois and Wisconsin from 1990-95, testified that he handled the Josephine Rose case. According to Szczecinski, in May 1990, Rose was dragged by a CNW train after her coat became caught in the train doors. Szczecinski testified that this was a serious event. Szczecinski also testified without objection that it was part of the train crew's responsibility to use the highest degree of care consistent with the mode of conveyance and the practical operation of a common carrier by rail to prevent such incidents.

Biron was also questioned about an incident involving Ted Mizuno. Biron replied that he believed that name came up in his deposition; Biron's deposition testimony was that he did not recall the details, but if it happened, he was sure he **[***26]** knew about it. Mizuno testified that in February 1992, his right arm was trapped up to the shoulder when the doors closed as he was deboarding a CNW train. The train began to leave the station. Mizuno kept up with the train and was able to free his arm after approximately 30 or 40 feet.

Biron testified that he recalled an incident that took place in Norwood Park. Anna Mae Gibson testified that on July 1, 1993, she boarded a CNW train at Norwood Park, along with Rita Pryska, who lived in her building. Gibson took an exterior handle as Pryska boarded the train.

Gibson had placed her right foot on the train stairs when the train **[*1021]** began to move. Gibson stated that she was unable to get **[**547]** **[****858]** her left foot up into the train. Pryska grabbed Gibson's left hand. Gibson stated that she then fell between the platform and the wheels. Gibson testified that she was on her back, being dragged underneath the train. Gibson testified that she kept thinking, "Oh, please, God, don't let her let go of my arm," because Gibson thought that had Pryska let go, she would not have an arm. According to Gibson, she was dragged approximately 100 feet before she was pulled into the train by others. The back of Gibson's **[***27]** clothes were torn. Gibson testified that after the train came to a stop, she asked the conductors whether they could retrieve her shoes. Gibson testified that the doors were open during this

incident; CNW claims investigator Mary Hart testified that there was a problem with the door light in that case. CNW's final report on this incident states in part that the cause of the accident was a "conductor using buzzer because of doors on Car # 7860." Defendants' brief cites CNW's final report in stating that the second look system was in use at the time of the Gibson incident, but defendants' record citation does not support that statement.

Biron further testified that CNW was responsible for developing its own rules and regulations. Biron testified that he had been involved in decisions to change safety rules prior to January 1995.

Larson testified that a change in CNW's rules was not taken lightly and would generally involve input from a number of different departments. According to Larson, CNW had an Operating Safety Steering Committee (OSSC), which consisted of "the senior management of the operating department, vice president of operations, vice president of transportation, engineering, **[***28]** mechanical, the safety department, the rules department, the claims department, [and] the legal department." Larson testified that the OSSC would gather all of their collective information to determine whether a change was warranted. Larson did not believe the SSOs warranted a change in system.

Mark VanCleave, the former Assistant Vice President of CNW's Commuter Operations Department, testified that others, including the claims department, had jobs that involved analyzing the frequency and severity of incidents that occurred in the operation of the railroad. According to VanCleave, he would be notified only when the severity of an incident warranted it, or if there appeared to be an unsafe trend. VanCleave testified that "severity means where someone is physically harmed to a high degree." VanCleave testified that the prior incidents never came to his attention through the railroad's safety group, transportation group, or through his subordinates. VanCleave stated his belief that the people below him handled the SSOs properly.

Dennis Mogan, Metra's Director of Safety and Rules, testified that **[*1022]** Metra owns the cars and engines operated by its purchase-of-service carriers. Mogan also **[***29]** testified that lines operated by Metra used the second look system. When Metra took over the operation of the Illinois Central line (n/k/a the Metra Electric line), Metra required the second look system in addition to the existing door light system. Mogan testified that Metra and CNW had a cooperative effort on safety matters. Mogan stated that if he had been made aware of the SSOs, he would have conducted a safety audit. Mogan stated that a safety audit would have been conducted upon the first such complaint, regardless of whether the person was injured.

Richard Tidwell, Metra's Deputy Executive Director, testified that Metra had the power to make suggestions and recommendations to CNW. When asked whether using **[**548]** **[****859]** the second look system together with the door light system would be safer than

using only one system, Tidwell testified that "intuitively, it would sound that way, but I don't have anything to convince me of that."

Economist Charles Linke, Ph.D., testified regarding the net worth of CNW as of December 3, 1994, and the net worth of the Union Pacific Railroad as of December 31, 1997.

James Finan, a former railroad accident investigator for the National Transportation Safety **[***30]** Board (NTSB), testified for the plaintiff. Finan stated that his prior investigations had not involved door closings. In this case, Finan reviewed the passenger safety rules of the Long Island Railroad, CSX, and the MBT Boston, as well as those of CNW and Metra. Finan spoke to friends who worked for New Jersey Transit and Metro North about the second look system. Finan also examined the train at issue shortly after the accident, along with representatives of CNW. The jury was shown a videotape of the examination of the door light system on the train car at issue. According to Finan, the door light could be activated when the doors on the car at issue were open 9 to 12 inches. Finan opined that this was a cause of the 14 prior incidents introduced into evidence. Finan acknowledged that the time difference resulting from the 9 to 12 inch gap would be only a fraction of a second if someone was not stuck in the doors.

Finan testified that there was no federal, state or industry rule or regulation mandating the second look system. Finan testified that, relative to the custom and practice of passenger railway systems, the second look system was the most prevalent. Finan also stated that **[***31]** the Metra system was his preference, but admitted that other commuter rail systems may have other preferences.

Finan opined that Metra should have known the difference between its rules and CNW's rules, stating that it was like a parent not knowing what the child is doing. Finan also opined that "they have **[*1023]** that degree of responsibility to rec - have the ability - have the hierarchy in place to recognize a problem," but it was not working. Finan further opined that CNW's failure to incorporate the second look system into its door-closing procedure was a cause of the accident. Finan opined that Metra failed to exercise the highest degree of care for Barton's safety by not recommending that CNW incorporate the second look system, stating that Metra "has a relationship to oversee their contractors, to make sure that their contractors are performing in a safe and efficient manner" and was "remiss in their duties as a parent company."

Gary Wolf, President of Rail Sciences, Incorporated, a consulting firm specializing in railway operational matters, testified for the defense. After reviewing 27 other commuter rail agencies, Wolf concluded that each had different door-operating systems. **[***32]** Wolf opined that both Metra and CNW had systems that met the applicable standard of care for a common carrier by rail and that the second look system was not required.

Wolf testified that there were no major similarities among the SSOs introduced into evidence. Wolf stated that there was no pattern in their timing and that none involved a significant injury. Wolf further stated that, based on statistics already introduced into evidence, 14 or 15 incidents out of approximately 224 million ingresses and egresses over the same five-year period meant that there was a six-millionths of one percent chance of such an incident, which was statistically insignificant.

[549]** **[****860]** Wolf was cross-examined regarding the procedures of the railroads he had reviewed. Wolf testified that there were five railroads that had door lights, but no second look system. Wolf also testified that "it is safe to say, in all of these matters, there is some human side of it or some procedure." [8] Wolf testified that the Calgary Transit System, which uses both a door light and a second look system, experienced a fatal dragging incident.

[*33]** Jerry Purswell, a safety and ergonomics consultant, testified that testing of the train at issue showed that it took between 4.6 to 8 **[*1024]** seconds to travel five feet from a stopped position. Purswell also conducted tests designed to replicate someone being caught in a strap in the manner Barton described, determining that it took approximately 1 1/2 to 2 seconds to free oneself from a strap. Purswell opined that Barton should not have had any difficulty freeing herself from the strap as the train as it began to move, had she chosen to do so.

Purswell admitted that he formed his opinions prior to learning of Croghan's testimony. Purswell also admitted that the coat used in his testing had less shoulder padding and was made of more slippery material than the coat used in plaintiff's demonstration to the jury, which he had not seen before. Purswell added that the ***violin*** case strap he used was shorter than the actual strap.

Following jury instructions and closing arguments, the jury deliberated and returned a verdict in favor of Barton on March 1, 1999, in the following amounts: $ 9 million for disability; $ 8 million for disfigurement; $ 8 million for pain in suffering; $ 3 million in **[***34]** future pain and suffering; $ 20,250 in lost wages; $ 104,370 in future lost wages; $ 672,570.97 in medical expenses; and $ 1,293,018 for future medical expenses. The jury allocated 62.5% of the fault to CNW, 33% of the fault to Metra, and 4.5% of the fault to Barton. After the 4.5% reduction, the total verdict was $ 28,736,149.57. The jury also awarded $ 900,000 in punitive damages, which were reduced 4.5% to $ 859,500. On March 3, 1999, the trial court entered a judgment on the verdict.

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[8] Wolf admitted that Greater Ontario Transit required the crew member controlling the doors to observe the side of the train until it had left the platform, but stated this rule was ***due*** to be superceded. Greater Cleveland is supposed to require the operator to stick his head out the window during boarding and deboarding. Santa Clara required the operator to look out at a mirror after closing the doors to determine whether it is clear. The Tri-County Commuter Rail Authority had a rule stating that the crew should notice whether persons are hanging onto the side of the cars. Wolf admitted that San Diego Trolley had a second look system.

On March 10, 1999, plaintiff filed an emergency motion seeking to have the trial court quash subpoenas believed to have been issued for the deposition of jurors. On March 17, 1999, defendants' response alleged that a juror referred to as Ms. A gave false information on her Juror Information Form and in response to questioning during voir dire as to whether she had ever been a party to any lawsuit, whether she was a party to any case now pending in the Circuit Court of Cook County, and whether she had ever been involved in an accident where people were injured.

As an exhibit to their response, defendants attached a copy of the voir dire transcript. Defendants also attached a copy of a complaint **[***35]** filed in the circuit court on December 10, 1998, naming Ms. A as the plaintiff. This complaint alleged that Ms. A injured her right index finger when she attempted to enter a Kohl's Department Store while a customer was attempting to exit the store through the **[**550]** **[****861]** same door, ***due*** to the alleged negligence of the store in controlling the door, or the negligent failure to inspect or mark the door. Defendants also attached a record from the Illinois Industrial Commission showing that Ms. A filed a worker's compensation claim in December 1986. Defendants sought to depose Ms. A, but were not seeking to depose the jury's foreman at that time.

[*1025] The trial court held a hearing and decided that it would question Ms. A and the jury's foreman. The trial court allowed the parties to submit questions to be asked of the witnesses.

On March 24, 1999, the trial court conducted a hearing in which the trial judge questioned Ms. A and the jury's foreman. The trial court stated that it was not going to allow any of the questions submitted by the parties, but then stated that it might use parts of both parties' questions. When the trial court questioned Ms. A regarding her failure to state during voir dire **[***36]** that she was a party to a pending lawsuit, Ms. A responded that she had not remembered the suit at that time and did not remember it until it was raised in a telephone call from a reporter. After a colloquy with the parties' attorneys, the trial judge asked Ms. A about the answers on her Juror Information Form. Ms. A responded she did not remember the lawsuit because in 1998, her company had gone bankrupt, her daughter was expecting a baby, and her husband had been diagnosed with cancer, which required her to take him places for care and to be trained to administer shot to him. Ms A's husband died in October 1998. Ms. A testified that she had asked her daughter to handle the filing of the lawsuit. After a further colloquy with the attorneys, the trial court asked Ms. A when she had last spoken to her counsel about that lawsuit; Ms. A responded that it would have been before the case was filed. The trial court declined to ask Ms. A any further questions.

The trial court then questioned the jury's foreman, who testified that the jury deliberated for 17 hours and that all of the jurors participated. The foreman opined that had Ms. A not been present, the other 11 jurors would have reached **[***37]** the same result. The foreman also

opined that Ms. A did not have a greater influence than any other juror. The foreman thought the jury followed the jury instructions. The trial court then ended the questioning, stating that the court was "not interested in what exactly each juror said," adding that "as long as it was a unanimous vote, that does it."

The trial court also denied defendants leave to subpoena other jurors and members of the media. On April 29, 1999, the trial court scheduled the filing and hearing of post-trial motions. [9]

On May 17, 1999, defendants filed their post-trial motion, which included issues relating to Ms. A's jury service. Defendants attached an affidavit by Summer Heil, an associate with one of the defense firms in this case. The affidavit states that on March 29, 1999, Heil **[*1026]** contacted three jurors to discuss **[***38]** statements regarding Ms. A's jury service that were attributed to jurors in articles published by the ***Chicago*** Tribune and the ***Chicago*** Sun-Times. Two of the jurors declined to speak to Heil. The third, Martha Mueller, told Heil that she agreed with statements attributed to juror Charlene Wright that Ms. A "was very one-sided" and wanted "more money for Rachel." According to Heil, Mueller stated that Ms. A was "strong-willed," **[**551]** **[****862]** "knew her mind," "stated her mind," and was not easily swayed. Mueller declined to execute a sworn affidavit on the matter.

On June 14, 1999, following a hearing on the matter, the trial court denied defendants' post-trial motion. Defendants filed a timely Notice of Appeal to this court.

I

Defendants first argue that they are entitled to a new trial, claiming that they were denied ***due process*** of law because they were not tried before a properly constituted jury. The standard of review is whether the trial court abused its discretion in granting or denying the motion for a new trial. Pekelder v. Edgewater Automotive Co., 68 Ill. 2d 136, 138, 368 N.E.2d 900, 901, 11 Ill. Dec. 292 (1977). An abuse of discretion occurs when the judge's ruling is **[***39]** arbitrary, fanciful, or unreasonable, or when no reasonable person would take the same view. People v. Illgen, 145 Ill. 2d 353, 364, 583 N.E.2d 515, 519, 164 Ill. Dec. 599 (1991). An application of impermissible legal criteria also justifies reversal. Boatmen's National Bank of Belleville v. Martin, 155 Ill. 2d 305, 314, 614 N.E.2d 1194, 1199, 185 Ill. Dec. 509 (1993).

The Illinois Constitution guarantees the right to trial by a jury of 12 members. See Hartgraves v. Don Cartage Co., 63 Ill. 2d 425, 427, 348 N.E.2d 457, 458 (1976). Plaintiffs and defendants alike have the right to an impartial jury. Smithers v. Henriquez, 368 Ill. 588, 598, 15 N.E.2d 499, 504 (1938). Voir dire protects the right to an impartial jury by exposing possible biases of potential jurors. McDonough Power Equipment, Inc. v. Greenwood, 464 U.S. 548, 554, 78 L. Ed. 2d 663, 670,

[9] Defendants' petition for an original writ of mandamus or a supervisory order from the Illinois Supreme Court, seeking depositions of the jurors, was denied on May 7, 1999.

104 S. Ct. 845, 849 (1984). A new trial is required where the movant establishes that: (1) a juror answered falsely on voir dire; and (2) prejudice resulted therefrom. Pekelder, 68 Ill. 2d at 139, 368 N.E.2d at 901 (1977).

As **[***40]** to the first prong of the Pekelder test, "whether intentional or not," Ms. A falsely answered questions on her form and during voir dire. Pekelder, 68 Ill. 2d at 140-4 1, 368 N.E.2d at 902. Plaintiff argues that intentional dishonesty is required, based on the court's statement in People v. Olinger, 176 Ill. 2d 326, 354-55, 680 N.E.2d 321, 335, 223 Ill. Dec. 588 (1997), that "defendant [had] failed to demonstrate that the juror lied **[*1027]** during her voir dire examination." However, the Olinger court so stated because the defendant had claimed the juror lied; the court also noted that the record did not "demonstrate any falsity in the juror's voir dire testimony." Olinger, 176 Ill. 2d at 354, 680 N.E.2d at 335 (emphasis added). Plaintiff also cites McDonough, in which the Supreme Court stated that to obtain a new trial, a party must demonstrate that "a juror failed to answer honestly a material question on voir dire ***." McDonough, 464 U.S. at 556, 78 L. Ed. 2d at 671, 104 S. Ct. at 850. However, five Justices in McDonough also opined that dishonesty is relevant, but not required in **[***41]** all cases. See McDonough, 464 U.S. at 556-57, 78 L. Ed. 2d at 672, 104 S. Ct. at 850 (Blackmun, Stevens, O'Connor, JJ., concurring); 464 U.S. at 557-59, 78 L. Ed. 2d at 672-74, 104 S. Ct. at 850-51 (Brennan, Marshall, JJ., concurring in the judgment).

As for the second prong of the Pekelder test, defendants claim they have shown prejudice per se because having pending litigation in the same court is sufficient cause for challenging a potential juror under the Jury Act. 705 ILCS 305/14 (West 1998). The Pekelder court was not required to address that argument. Pekelder, 68 Ill. 2d at 141, 368 N.E.2d at 902. However, the Pekelder **[**552]** **[****863]** court noted that this court had rejected similar claims. Pekelder, 68 Ill. 2d at 140, 368 N.E.2d at 902, discussing Kuzminski v. Waser, 314 Ill. App. 438, 41 N.E.2d 1008 (1942), and Maher v. New York. ***Chicago*** & St. Louis R.R. Co., 290 Ill. App. 267, 8 N.E.2d 512 (1937).

More recently, in Diaz v. Kelley, 275 Ill. App. 3d 1058, 657 N.E.2d 657, 212 Ill. Dec. 456 (1995), a juror stated that he had never **[***42]** been a party to a lawsuit, but was a defendant in two collection actions for medical bills. This court held that the plaintiff had failed to show actual prejudice in favor of the defendant medical provider, regardless of whether the litigation was pending. Diaz, 275 Ill. App. 3d at 1064, 657 N.E.2d at 663. In Mathieu v. Venture Stores. Inc., 144 Ill. App. 3d 783, 797, 494 N.E.2d 806, 814, 98 Ill. Dec. 684 (1986), a juror told the court that, after being sworn, he had been served with a summons as a defendant in a civil suit; this court refused to reverse based on section 14 of the Jury Act, absent a showing of prejudice. It is true that in Mathieu, the statutory condition arose after voir dire, but that fact should not matter if the condition created bias per se.

Defendants note that McDonough held that a new trial is warranted when "a correct response would have provided a valid basis for a challenge for cause." McDonough, 464 U.S. at 556, 78 L. Ed. 2d at 671, 104 S. Ct. at 850. However, when read in context, that condition is linked to a finding of dishonesty. That a true response on voir dire would have been **[***43]** a valid basis for a challenge for cause may be insufficient to warrant a new trial in cases of mistake or forgetfulness.

[*1028] In this case, the trial court ruled that Ms. A's post-trial testimony was truthful. Defendants argue that this ruling was an abuse of discretion because Ms. A persisted in giving false answers. The record shows that Ms. A did not deny past or pending litigation when questioned after the trial. Defendants also argue that Ms. A gave "facile and inconsistent post-trial excuses ***." The transcript shows that Ms. A did not give facile answers; her grammar was consistent with plaintiff's counsel's description of Ms. A having an immigrant background. Nor were Ms. A's answers inconsistent, when read in context. Defendants further argue that "media accounts make plain that Ms. A has demonstrated an over-active penchant for notoriety." However, defendants have not identified evidence showing that Ms. A sought out the media, rather than vice versa. Thus, defendants have failed to show that the trial court's finding was arbitrary, fanciful, or unreasonable.

Nevertheless, even without a finding of dishonesty, there are cases where a presumption of prejudice may arise. **[***44]** See People v. Porter, Ill. 2d 386, 404, 111 Ill. 2d 386, 489 N.E.2d 1329, 1336, 95 Ill. Dec. 465 (1986); see McDonough, 464 U.S. at 556-57, 78 L. Ed. 2d at 672, 104 S. Ct. at 850 (Blackmun, Stevens, O'Connor, JJ., concurring); 464 U.S. at 557-59, 78 L. Ed. 2d at 672-74, 104 S. Ct. at 850-51 (Brennan, Marshall, JJ., concurring in the judgment). The test is whether the probability of prejudice is such that ***due process*** would be deemed inherently lacking. See People v. Holmes, 69 Ill. 2d 507, 514, 372 N.E.2d 656, 659, 14 Ill. Dec. 460 (1978).

Defendants cite federal cases presuming bias where the prospective juror has been in a similar situation or has pending similar litigation. See, Hunley v. Godinez, 975 F.2d 316, 319 (7th Cir. 1992); Consolidated Gas & Equipment Co. of America v. Carver, 257 F.2d 111, 115-16 (10th Cir. 1958). However, Illinois courts are generally not bound to follow federal case law. E.g., People v. Eyler, 133 Ill. 2d 173, 225, 139 Ill. Dec. 756, 549 N.E.2d 268, **[**553]** **[****864]** 291, (1989). Indeed, the Carver court noted that Kuzminski and Maher reached **[***45]** a conclusion contrary to its position. Carver, 257 F.2d at 115.

In sum, this court has never held that circumstances such as those presented here create a presumption of prejudice. Instead, this court has consistently ruled that a party seeking relief based a juror's unintentional failure to disclose prior or pending litigation must show actual prejudice.

Defendants argue that the trial court precluded them from showing actual prejudice. An opportunity to show actual prejudice is required by ***due process*** concerns, but there are few Illinois cases addressing the proper procedures for a hearing on juror bias. It is clear that the burden was on the defendants to support their allegations of **[*1029]** bias; a mere suspicion of bias is not sufficient. Porter, Ill. 2d at 404, 489 N.E.2d at 1336.

Defendants chiefly rely on cases involving juror exposure to extraneous information. A juror may testify as to whether such information was brought to the jury's attention without threatening the jury secrecy courts generally seek to protect. Holmes, 69 Ill. 2d at 516, 372 N.E.2d at 660. A juror's statement that he or she was not influenced is not conclusive. **[***46]** People v. Hryciuk, 184, 5 Ill. 2d 176, 125 N.E.2d 61, 65 (1954). The inquiry may extend to asking jurors whether they were exposed to extraneous information by others and, if so, what information was exchanged. Van Hattem v. Kmart Corp., 308 Ill. App. 3d 121, 130-31, 719 N.E.2d 212, 220-21, 241 Ill. Dec. 351 (1999).

Defendants also cite federal cases, such as U.S. v. Boney, 314 U.S. App. D.C. 287, 68 F.3d 497 (D.C. Cir. 1995), which held that the district court held an inadequate hearing after a juror failed to disclose his prior felony convictions. As is the case in Illinois, the Boney court noted that review of such inquiries tends to be case-specific. See Boney, 68 F.3d at 501. In a given case, examination by counsel may be necessary to probe for a juror's concealed bias. See Boney, 68 F.3d at 502. The Boney court ruled that the juror should have been asked more probing questions, such as whether he disclosed his prior felony convictions to the jury, information he learned from his prosecution and sentencing, or any attitudes he acquired thereby. See Boney, 68 F.3d at 500, 502-03. **[***47]** The Boney court also found error in the trial court's refusal to allow counsel to question the juror, subject to the authority of the trial judge to hear objections. Boney, 68 F.3d at 500, 503.

In this case, the testimony permitted the trial court to infer that Ms. A had not referred to her pending litigation or finger injury during the jury deliberations. The Heil affidavit does not suggest otherwise. Moreover, unlike Boney, the trial court questioned the suspect juror and the foreman.

The fact that the court's inquiry could have been more searching does not require a new trial. See Porter, Ill. 2d at 403, 489 N.E.2d at 1336. Defendants note that they were precluded from asking Ms. A and the jury foreman whether they agreed that Ms. A was very one-sided in the deliberations and had wanted more money for the plaintiff. However, even assuming arguendo that the Heil affidavit's contents were true, the question would remain as to whether Ms. A's positions were subconsciously influenced by her alleged finger injury, or were the product of the evidence presented at trial. See Porter, Ill. 2d at 405, 489 N.E.2d at 1337. Defendants **[***48]** raise no specific objections to the **[**554]** **[****865]** court's refusal to ask the other

questions they submitted, **[*1030]** none of which seem designed to uncover a subconscious bias. [10] The trial court was not required to permit counsel to ask questions that were irrelevant to this issue. Nor was the court required to act as defense counsel by asking the questions defendants could have properly requested. Thus, the trial court, which was in a position to observe the witnesses and their demeanor, could reasonably conclude that defendants failed to carry their burden of showing a probability, rather than a suspicion, of subconscious bias.

Defendants argue that the trial court's analysis **[***49]** of prejudice was solely based on whether the jury would have reached the same verdict without Ms. A, which they claim was error under Van Hattem and Hryciuk, which involved alleged juror exposure to extraneous information. As noted above, the trial court could infer that Ms. A did not disclose such information. Moreover, the transcript shows that the trial court also used the foreman's testimony as a check against the court's assessment of Ms. A's testimony, the truthfulness of which was clearly relevant to the issue of bias.

In sum, defendants have failed to show that the trial court's refusal to grant a new trial based on Ms. A's failure to disclose prior or pending litigation was an abuse of discretion.

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[10] A review of those questions shows that defendants sought to discover: whether jurors had retained counsel and the terms of any such agreement; whether jurors had spoken to Barton or her attorneys; who, if anyone, jurors contacted after receiving a subpoena from defendants; and what positions Ms. A took during the jury deliberations on various issues.

II

Defendants next argue that the trial court erred in not granting them judgment notwithstanding the verdict (JNOV) on plaintiff's claim of punitive damages to the jury. A motion for JNOV should be entered only when all of the evidence, viewed in the light most favorable to the opponent, so overwhelmingly favors the movant that no contrary verdict could ever stand. Pedrick v. Peoria & Eastern R.R. Co., 37 Ill. 2d 494, 511, 229 N.E.2d 504, 513-14 (1967). **[***50]** Defendants also argue that the jury instruction defining willful and wanton conduct was improper.

"It has long been established in this State that punitive or exemplary damages may be awarded when torts are committed with fraud, actual malice, deliberate violence or oppression, or when the defendant acts willfully, or with such gross negligence as to indicate a wanton disregard of the rights of others ***." Kelsay v. Motorola, Inc., 74 Ill. 2d 172, 186, 384 N.E.2d 353, 359, 23 Ill. Dec. 559 (1978). As there was no evidence of a deliberate intention to harm Barton, Illinois Pattern Jury **[*1031]** Instructions, Civil, No. 14.01 (3d ed. 1993) (hereinafter IPI Civil 3d) was given to the jury in the following form:

> "When I use the expression 'willful and wanton conduct' I mean a course of action which shows an utter indifference to or conscious disregard for a person's own safety." See IPI Civil 3d No. 14.01, Notes on Use at 14-3.

Defendants argue that Ziarko v. Soo Line R.R. Co., 161 Ill. 2d 267, 641 N.E.2d 402, 204 Ill. Dec. 178 (1994), "stands for the proposition that punitive damages cannot be recovered upon a jury finding rendered in response to the **[***51]** abbreviated form of IPI 14.01," but only for intentional willful and wanton conduct.

[555]** **[****866]** Defendants concede in their brief that "Ziarko did not involve a question of punitive damages." Defendants fail to note that Ziarko produced only a plurality opinion. Poole v. City of Rolling Meadows, 167 Ill. 2d 41, 48, 656 N.E.2d 768, 771, 212 Ill. Dec. 171 (1995). While the Poole court adhered to the ultimate holding in Ziarko, drawing a distinction between intentional and reckless willful and wanton misconduct for the purposes of analyzing principles of contribution and comparative fault, it did not refer to the language in the Ziarko plurality opinion that defendants read as suggesting that punitive damages can only be awarded in cases of intentional willful and wanton conduct. See Poole, 167 Ill. 2d at 48, 656 N.E.2d at 771. Our supreme court has continued to state that punitive damages may be awarded for gross negligence showing a wanton disregard for the rights of others. Cirrincione v. Johnson, 184 Ill. 2d 109, 115, 703 N.E.2d 67, 70, 234 Ill. Dec. 455 (1998). Thus, the jury instruction was properly given.

The question **[***52]** remains as to whether the trial court should have granted JNOV. Whether punitive damages can be awarded for a particular cause of action is a matter of law, but the question of whether a defendant's conduct was sufficiently willful or wanton to justify imposing punitive damages is generally for the jury to decide. Cirrincione, 184 Ill. 2d at 116, 703 N.E.2d at 70.

Evidence of SSOs is admissible to show a conscious disregard for the safety of others. Loitz v. Remington Arms Co., 177 Ill. App. 3d 1034, 1063, 532 N.E.2d 1091, 1109, 127 Ill. Dec. 262 (1988), rev'd on other grounds, 138 Ill. 2d 404, 563 N.E.2d 397, 150 Ill. Dec. 510 (1990). Defendants rely on the supreme court's decision in Loitz, which discussed the probative value of SSOs as notice to a defendant in assessing the propriety of an award of punitive damages. The Loitz court considered the following factors: the ratio of prior SSOs to the total number of products sold and the number of products in use; the ratio of SSOs to the frequency of the product's use; and the product's inherent dangers. See Loitz, 138 Ill. 2d at 419-20, 563 N.E.2d at 404. **[***53]** The Loitz court ruled that notice of **[*1032]** 94 shotgun-barrel explosions similar to the one that injured the plaintiff was insufficient to notify Remington of an alleged defect, given that Remington made three million such barrels and the estimated number of times such shotguns would have been fired. See Loitz, 138 Ill. 2d at 419-20, 563 N.E.2d at 404; see also Kopczick v. Hobart Corp., 308 Ill. App. 3d 967, 721 N.E.2d 769, 242 Ill. Dec. 490 (1999) (hand injuries sustained in using a meat-cutting saw); Dunn v. Illinois Central Gulf R. Co 215 Ill. App. 3d 190, 574 N.E.2d 902, 158 Ill. Dec. 789 (1991) (railroad's failure to install

flashing lights or crossing gates at a crossing).

Defendants believe that the supreme court's decision in Loitz applies here, where the evidence shows that the 14 or 15 SSOs out of approximately 224 million ingresses and egresses was statistically insignificant. Defendants stress that this case is the first to result in a serious injury.

Loitz and its progeny involve inherently dangerous products or situations. As the supreme court noted, "guns are inherently dangerous instrumentalities, and the mere **[***54]** occurrence of other explosions does not, without more, establish outrageous misconduct or some other basis sufficient to warrant the imposition of punitive damages." Loitz, 138 Ill. 2d at 419, 563 N.E.2d at 404. Even Dunn involved a railroad crossing, not a passenger attempting to deboard a train stopped at a **[**556]** **[****867]** station. Railroad crossings are inherently dangerous (Hunter v. ***Chicago*** & North Western Transportation Co., 200 Ill. App. 3d 458, 466, 558 N.E.2d 216, 221, 146 Ill. Dec. 253 (1990)), but defendants cite no authority stating that deboarding a commuter train stopped at a station is inherently dangerous. Thus, the trial court did not err in admitting the evidence of SSOs to show a conscious disregard for the safety of others.

Defendants also note that in Loitz, Remington knew of the SSOs, but claimed that they were all caused by the use of high-pressure shells; the plaintiff did not present any evidence that cast doubt on Remington's good faith in investigating the SSOs. Loitz, 138 Ill. 2d at 426-27, 563 N.E.2d at 407. Defendants claim that this case is similar. However, defendants also suggest that four of the SSOs here **[***55]** were cases where the door light was malfunctioning. Defendants state that the second look system was used in the incident involving Gibson, but their assertion is not supported by their citation to the record. Moreover, defendants have not identified evidence in the record that CNW's agents concluded that the SSOs were solely caused by factors other than reliance on the door light system.

Defendants further claim in passing that James Finan's testimony that "information was stuck in the pipeline" shows an inadvertent failure to correct a problem, not willful and wanton conduct. **[*1033]** Defendants' unstated premise is that CNW is not liable for punitive damages unless officials as senior as Larson and VanCleave were aware of SSOs. However, defendants have failed to cite authority in support of such a proposition, thus waiving the issue on appeal. 177 Ill. 2d R. 341(e)(7). [11]

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[11] Notwithstanding defendants' waiver, we note that punitive damages may be awarded against a corporation based on vicarious liability where: the principal authorized the doing and the manner of the act or omission; the agent was unfit and the principal was reckless in employing the agent; the agent was employed in a managerial capacity and was acting within the scope of employment; or the principal or a managerial agent thereof ratified or approved of the act. See, e.g., Mattyasovszky v. West Towns Bus Co., 61 Ill. 2d 31, 36-37, 330 N.E.2d 509, 512 (1975). The record shows that trial court refused defendants' instruction listing these circumstances. However, defendants have not appealed that ruling, thus waiving that objection as well. Even so, the evidence adduced at trial meets the Mattyasovszky criteria.

[*56]** In this case, Biron, who was responsible for the safe operation of CNW's suburban train lines and had been involved in CNW's rulemaking ***process***, testified that he knew of at least three of the SSOs. Indeed, Biron did not deny that his department had "actual or paperwork knowledge" of all of them. Szczecinski, who supervised CNW's claims operations for Illinois and Wisconsin, personally handled one of the SSOs, which he described as a serious event of the sort CNW has a duty to prevent. Yet VanCleave testified that he believed that the people below him handled the SSOs properly and Larson stated that he did not believe the SSOs warranted a rule change.

[**868]** Viewing the evidence in the light most favorable to the plaintiff, CNW knew that the door light system was not fail-safe. Responsible CNW officials knew of the SSOs and did nothing, even though adding the second look system would have cost nothing. Other high-level CNW officials approved of their subordinates' failure to notify them of a problem. CNW's officials approved of a system defining the severity of the SSOs in terms of the injuries actually suffered, rather than the injuries that were reasonably foreseeable from such incidents. **[**557]** **[***57]** Viewing the evidence in the light most favorable to the plaintiff, there was evidence of a conscious disregard of passenger safety.

In sum, defendants have failed to show that the trial court erred in respect to the jury instruction or in submitting the claim to the jury. Defendants are not entitled to JNOV.

III

Defendants also argue that Metra owed Barton no duty of care because Metra was not a common carrier as to Barton. Whether **[*1034]** the undisputed facts establish the relationship of common carrier and passenger is a question of law for the court to determine. Burns v. RTA, 112 Ill. App. 3d 464, 469, 445 N.E.2d 348, 352, 67 Ill. Dec. 868 (1982), rev'd on other grounds, Stack v. RTA, 101 Ill. 2d 284, 461 N.E.2d 969, 78 Ill. Dec. 135 (1984). In this case, Mogan testified that Metra owned the train cars and engines operated by its purchase-of-service providers. Metra admitted in its pleadings that it owned the train at issue. Metra admitted in its Fourth Amended Answer that it is a common carrier, but now argues that it was not a common carrier as to Barton because CNW was operating Metra's train.

Illinois law has rejected similar arguments for **[***58]** over a century. E.g., Wabash, St. Louis & Pacific Rv. Co. v. Peyton, 106 Ill. 534 (1883); see also Cobb v. Marshall Field & Co., 22 Ill. App. 2d 143, 153-54, 159 N.E.2d 520, 524-25 (1959) (elevator owner is considered a common carrier, even when the elevator is operated by an independent contractor). A common carrier by rail cannot exonerate itself of its duties by entering into a contract with another. Peyton, 106 Ill. at 540; see also Gordon v. ***Chicago*** Transit Authority, 128 Ill. App. 3d 493, 501, 470 N.E.2d 1163, 1169, 83 Ill. Dec. 743 (1984) (common carrier's duty to passengers is non-delegable). A common carrier may voluntarily place its engine and cars under the control of

employees of another road, but this merely means that those employees are also deemed to be the servants of the first common carrier. Peyton, 106 Ill. at 540-41. There is no rule precluding joint liability in such a case. Peyton, 106 Ill. at 541-42.

Moreover, this court has held that CTA ticket holders had a contractual relationship not only with the CTA, but also with the RTA, where the RTA was statutorily **[***59]** authorized to enter into financial grant agreements with the CTA and had the authority to determine fares. Burns, 112 Ill. App. 3d at 470, 445 N.E.2d at 352, rev'd on other grounds, Stack v. RTA, 101 Ill. 2d 284, 461 N.E.2d 969, 78 Ill. Dec. 135 (1984). In this case, the record shows that the defendants have a similar relationship as existed in Burns. In addition, Mogan testified that Metra and CNW had a cooperative safety effort.

The record also shows that the train cars and the uniforms of the train crews bore Metra insignia. The ticket Barton held was a Metra ticket. Defendants assert that plaintiff avoided any claim of apparent agency, ***due*** to Metra's claim of statutory immunity (which is discussed below). However, the issue of duty is separate from that of immunity. Defendants have not explained why these undisputed facts are not relevant to show that Metra was a common carrier as to Barton.

[*1035] The cases defendants cite in their brief on the question of duty are inapposite. Most of them do not involve common carriers; none overrule Peyton and its **[**558]** **[****869]** progeny. [12] Thus, we conclude that Metra was a common carrier as to Barton and was bound to **[***60]** exercise a high degree of care toward her, including the responsibility to prevent injuries which could have been reasonably foreseen and avoided. E.g., Letsos v. ***Chicago*** Transit Authority, 47 Ill. 2d 437, 441, 265 N.E.2d 650, 653 (1970).

[*61]** Defendants next argue that Metra is immune from liability under section 5.03 of the RTA Act (70 ILCS 3615/5.03 (West 1998)) for acts or omissions of CNW as a result of Metra having a PSA with CNW. [13]

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[12] Defendants note that the PSA states that CNW is an independent contractor. Although Metra cannot shed its duties as a common carrier, we note that the parties' description of their relationship in a contract is not always controlling. Drivers of taxicabs (which are common carriers) may be employees of the company leasing the taxicabs, given indicia of control and the economic reality of the situation. See, e.g., Morgan Cab Co. v. Industrial Commission, 60 Ill. 2d 92, 324 N.E.2d 425 (1975) (and cases cited therein).

Moreover, an employer of an independent contractor may be held liable if, through the exercise of reasonable care, it should have known that the work was being carried out in a dangerous manner, and had an opportunity to prevent injury by the exercise of the power of control it retained, but took no action. Pasko v. Commonwealth Edison Co., 14 Ill. App. 3d 481, 488, 302 N.E.2d 642, 648 (1973). Exhibit 2-C to the PSA plainly states that the contract services shall be performed in accordance with "any other standards established by the [RTA] pursuant to Section 2.04," despite defendants' omission of that language from the quotations in their briefs. Indeed, Metra is authorized by law to establish, enforce and maintain safety standards for public transportation it provides through PSAs. See 70 ILCS 3615/2.11, 2.20 (West 1998). Metra failed to do so, even though it used the second look system on lines it operated directly.

The right to change safety standards also disposes of the argument that proximate cause was lacking, which was based on the premise that "CNW did not have to take Metra's advice."

[13] As we presume that the legislature did not intend a meaningless act, section 5.03 of the RTA Act suggests that the legislature believed that the RTA otherwise could be held

Section 5.03 immunizes Metra against vicarious liability for claims such as those at issue in Goertz v. ***Chicago*** & North Western Ry. Co., 19 Ill. App. 2d 261, 267-68, 153 N.E.2d 486, 489-90 (1958), which held that the servants in charge of the train were required to exercise ***due*** care to know that a passenger was attempting to deboard the train **[*1036]** before they started it. Metra relies on Rascher v. City of Champaign, 262 Ill. App. 3d 592, 596, 634 N.E.2d 1121, 1123, 199 Ill. Dec. 767 (1994), which rejected a plaintiff's attempt to avoid the Local Governmental and Governmental Employees Tort Immunity Act (Tort Immunity Act) by pleading that a duty to warn of hazards discovered during an inspection was separate from the duty to inspect. In this case, Metra's liability does not result from omissions by CNW, but from Metra's independent failure to establish the second look system on the CNW line as it had on the lines it operated **[***62]** directly.

Defendants argue that the trial court erred in denying Metra leave to amend its answer to claim that its failure to recommend the second look system was a policy decision or discretionary act protected by the Tort Immunity Act. See 745 ILCS 10/2-109, 2-201 (West 1998). Generally, at any time prior to final judgment, amendments may be allowed to add new defenses on just and reasonable terms. 735 ILCS 5/2-616(a) (West 1998). Whether to allow an amendment is within the discretion of the trial court. Carlisle v. Harp, 200 Ill. App. 3d 908, 915, 558 N.E.2d 318, 322, 146 Ill. Dec. **[**559]** **[****870]** 355 (1990). **[***63]** Where the facts sought to be alleged are known to the party at the time of a prior pleading and no good reason is offered for failing to amend at that time, leave to amend is properly denied. See Carlisle, 200 Ill. App. 3d at 915, 558 N.E.2d at 322. An untimely pleaded defense cannot be considered, even if the evidence suggests it exists. Carlisle, 200 Ill. App. 3d at 916, 558 N.E.2d at 323.

The trial court ruled that Metra had waived the Tort Immunity Act defense, as it was first raised post-verdict. Metra argues that it was responding to plaintiff's Fifth Amended Complaint, which was filed on the day the jury returned its verdict. However, Barton's Third Amended Complaint, filed in October 1998, alleged that Metra failed to adopt the second look system. The Tort Immunity Act could have been asserted at that time. Thus, there was no abuse of discretion.

IV

Defendants also seek a new trial, contending that the verdict was against the manifest weight of the evidence. A judgment is against the manifest weight of the evidence when an opposite conclusion is apparent, or when the findings appear to be unreasonable, arbitrary or not based upon the evidence. **[***64]** Rhodes v. Illinois Central Gulf R.R., 172 Ill. 2d 213, 242, 665 N.E.2d 1260, 1274, 216 Ill. Dec. 703 (1996). In an appeal from a jury verdict, a reviewing court may not reweigh the evidence and substitute its judgment for

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liable when providing public transportation by entering into a PSA. Section 5.03 also provides that the RTA is not barred from agreeing to pay such claims, as Metra apparently did in the PSA here.

that of the jury. Rhodes, 172 Ill. 2d at 242, 665 N.E.2d at 1274. **[*1037]**

Defendants assert that "plaintiff necessarily had to have held the doors open as she descended" for the accident to occur, but point to no testimony or evidence in the record to this effect.

Defendants claim that the jury's allocation of fault was against the manifest weight of the evidence because the strap on the ***violin*** case was 45 1/2 inches long. Defendants' brief asserts that "it is uncontroverted that the strap could readily have been removed," but this assertion is blatantly false, given Barton's testimony as recited above. Defendants also state that Barton's counsel acknowledged there was "evidence of 'sufficient slack.'" The record shows that during a sidebar, Barton's counsel accepted that defendants' expert had so opined, which is not a stipulation or judicial admission that there was in fact sufficient slack on the strap for Barton to free herself. **[***65]** The expert testimony may have raised a question of fact, but given Barton's testimony and the demonstrative evidence, we cannot conclude that the verdict was against the manifest weight of the evidence.

The same rule applies to defendants' assertion that Barton had sufficient time to free herself before the train started moving, but chose not to free herself because she did not want to let go of the ***violin***. Defendants' experts opined that Barton had time to free herself. The record disclosed the value of the ***violin***. The record discloses that when McCarthy and Tuck arrived to aid Barton, she asked about the ***violin***. The record contains testimony from an emergency room doctor that Barton said that she went back to get her ***violin*** (and that she was alert when she said it).

However, Barton also testified as to what she did before the train started moving and why she did not feel endangered at that time. Barton testified that after the incident, she kept talking, asking people to call MCNS to say she would not be coming, and so forth, in order to remain calm. McCarthy, who the record shows had the presence of mind to stop the train, open its **[**560]** **[****871]** doors and rush to Barton's aid, testified that **[***66]** he brought the ***violin*** with him. Neither party explains why McCarthy did so. The jury also heard evidence of the Anna Mae Gibson incident, in which, after Gibson was pulled into the train, she asked the conductors if they could retrieve her shoes. The parties do not appear to have focused on the value of Gibson's shoes.

The jury heard this evidence. The jury could reasonably have concluded that the evidence showed that in traumatic episodes like these incidents, the people involved may do or say things which, in hindsight, seem odd. The jury could reasonably have concluded that the victims in such incidents may focus on things that seem unimportant in hindsight, but represent an attempt to regain control over their circumstances, or to fend off hysteria. Barton's comment to the **[*1038]** emergency room doctor that she "went back" to get her ***violin***

implies that it was left behind, which was obviously not the case at the point where Barton was attached to the train. Defendants point to no evidence that she had left the ***violin*** case and reboarded the train to retrieve it. Barton's comment might refer to her initial difficulty when the ***violin*** case became caught on poles at the top of the vestibule, **[***67]** but such speculation only demonstrates the ambiguity that confronted the jury.

In sum, the jury weighed opposing evidence and concluded that Barton was 4.5% at fault. That verdict reflects the jury's judgment that while Barton bore some responsibility, her injuries were not primarily the result of a desire to hang on to the ***violin*** case. Given the record in this case, defendants have failed to show that the jury's conclusion was unreasonable, arbitrary or not based upon the evidence in this respect. The cases defendants cite wherein Illinois courts have found the allocation of fault against the manifest weight of the evidence are factually distinguishable, even from the descriptions provided in defendants' brief See, e.g., Johnson v. O'Neal, 216 Ill. App. 3d 975, 987, 576 N.E.2d 486, 495, 159 Ill. Dec. 817 (1991) (allocation of 72.5% of fault to passenger for failing to leave a speeding vehicle was untenable in light of driver's negligence).

Defendants claim that the allocation of fault must be attributed to trial error. Defendants claim that Barton's expert was not qualified. [14] Defendants cite Jones v. O'Young, 154 Ill. 2d 39, 607 N.E.2d 224, 180 Ill. Dec. 330 (1992), **[***68]** and its progeny, but those cases involve the qualification of medical experts, particularly the "school of medicine" rule, which is not at issue here. An expert witness is a person who, because of education, training or experience, possesses specialized knowledge beyond that of the average person on a factual matter material to a claim or defense in the litigation. Lee v. ***Chicago*** Transit Authority, 152 Ill. 2d 432, 459, 605 N.E.2d 493, 504, 178 Ill. Dec. 699 (1992). Whether a witness is qualified to testify as an expert rests within the sound discretion of the trial court. Schaffner v. ***Chicago*** & North Western Transportation Co., 129 Ill. 2d 1, 36, 541 N.E.2d 643, 658, 133 Ill. Dec. 432 (1989).

The record shows that Finan was a former NTSB **[***69]** accident investigator and was currently certified by the Federal Railroad Administration as an operating practices inspector. Finan testified that he investigated accidents on a number of systems, including the **[*1039]** CTA, the New York subway system, and others that the record **[**561]** **[****872]** shows are commuter rail services. Finan had never investigated a door-closing incident, but this court has not required the degree of specificity in expertise that defendants suggest. See, e.g., Patel v. Brown Machine Co., 264 Ill. App. 3d 1039, 1056, 637 N.E.2d 491, 502, 201 Ill. Dec. 902 (1994). Finan's prior lack of familiarity with door-closing standards goes to the weight of his

[14] Barton claims waiver based on defendants' failure to renew their objection after cross-examining Finan, but the transcript shows that defendants were not permitted to cross-examine Finan on his qualifications before he gave his opinions.

testimony, not his competency. See Buford by Buford v. ***Chicago*** Housing Authority, 131 Ill. App. 3d 235, 244, 476 N.E.2d 427, 435, 86 Ill. Dec. 926 (1985).

Defendants claim that Finan offered no testimony regarding the applicable standards of care and their alleged breach. The record shows that Finan offered such opinions. Indeed, the record shows that the defendants objected to many of them, when directed toward Metra. [15]

[*70]** For example, defendants assert that Finan improperly testified that Metra was like a parent that needed to instruct its child, or was the parent company of CNW. Defendants objected at trial, based on Illinois Supreme Court Rule 213 (177 Ill. 2d R. 213), which generally requires that, upon written interrogatory, a party must disclose the subject matter, conclusions, opinions, qualifications and reports of a witness who will offer any opinion testimony. Department of Transportation v. Crull, 294 Ill. App. 3d 531, 536, 690 N.E.2d 143, 146, 228 Ill. Dec. 834 (1998). Rule 213 establishes stricter standards regarding disclosure than did the now-repealed Rule 220, which formerly governed expert witnesses. Crull, 294 Ill. App. 3d at 538-39, 690 N.E.2d at 148. However, elaborating on a disclosed opinion does not automatically violate Rule 213, where the testimony states logical corollaries to the opinion, rather than new reasons for it. See Seef v. Ingalls Memorial Hospital, 311 Ill. App. 3d 7, 23, 724 N.E.2d 115, 127-28, 243 Ill. Dec. 806 (1999). The trial court's ruling admitting the evidence will not be reversed absent an abuse of discretion. **[***71]** Seef 311 Ill. App. 3d at 22, 724 N.E.2d at 126.

Finan's testimony that Metra had "a relationship to oversee their contractors, to make sure that their contractors are performing in a safe and efficient manner" may not be an opinion; Mogan testified that Metra conducted safety audits in cooperation with CNW. Finan's reference to a parent-child relationship, when read in context, refers to the fact that Metra owns and operates many lines, yet has a PSA with CNW as to this particular line. Finan elsewhere referred to the lines as sisters. Defendants failed to object to Finan's testimony that Metra was "remiss in [its] duties as the parent company" in their **[*1040]** post-trial motion, thus waiving the argument. 155 Ill. 2d R. 366(b)(2)(iii). [16]

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[15] The record shows that defendants did not object at trial to Finan's alleged assertions that CNW must insure passenger safety, resulting in waiver on appeal.

[16] Notwithstanding defendants' waiver, we note that an error in admitting evidence affecting the allocation of fault may require a new trial where it is probable that excluding it would have caused the jury to find that: (1) the plaintiff was more than 50% negligent, thus barring recovery under 735 ILCS 5/2-1116 (West 1994); (2) a defendant that was not found negligent had some culpability; or (3) a defendant was more than 25% culpable, giving rise to joint liability as to that defendant under 735 ILCS 5/2-1117 (West 1994). See Regala v. Rush North Shore Medical Center, slip op., No. 1-99-4049 (1st Dist. 1st Div., August 10, 2001), slip op. at 6-7 (modified on denial of rehearing); LoCoco v. XL Disposal Corp., 307 Ill. App. 3d 684, 695, 717 N.E.2d 823, 832, 240 Ill. Dec. 474 (1999); Parker v. Illinois Masonic Warren Barr Pavilion, 299 Ill. App. 3d 495, 504-05, 701 N.E.2d 190, 196, 233 Ill. Dec. 547 (1998).

Defendants argue that Regala establishes a per se rule that the admission of an opinion in violation of Rule 213 requires a new trial. However, Regala was based in part on "the effect of the erroneous admission of *** undisclosed opinions," which does not create a per se rule. Regala, No. 1-99-4049, slip op.

[562]** **[***72]** **[****873]** Defendants claim that prior to trial, Finan opined only that the door light procedure was unsafe and that the prior incidents should have alerted defendants that there was a problem. However, Finan's May 21, 1998, report notes his test of the train at issue, which showed that the doors could be open as much as a foot when the door light was activated. Finan's report also states that defendants were aware of the SSOs. Finan's report states that Metra should have known of the difference in door-closing procedures. Finan found it "difficult to believe" that Metra and CNW waited until after the Barton incident to install the second look system, which Finan opined was the industry custom and standard. Finan's report concluded that defendants had **[*1041]** failed to take reasonable measures to ensure passenger safety, because it was known that CNW's procedure was producing injury, yet defendants failed to act.

Given this report, it could be inferred that Finan believed that the SSOs were caused by reliance on the door light system, both in theory and as tested on the train car at issue. It could also be inferred that Finan believed that both defendants had a duty to recognize the problem and breached **[***73]** their duty of care by not implementing the second look system. Thus, the trial court did not abuse its discretion in admitting Finan's testimony.

Defendants object to the admission of videotape, along with stills taken therefrom and Finan's explanatory testimony, of the inspection of the train at issue. Defendants argue that the evidence lacked foundation, because Barton could not show that the train was in the same condition as it was at the time of her injury. At trial, the court overruled the objection, subject to Barton tying up later. Larson later testified that, barring some reported event, he would expect that the train was in the same condition it was at the time of the injury.

Defendants also objected that evidence showing that the door light went on while the doors were open 9 to 12 inches was irrelevant to show causation because the testimony showed that the doors were closed for 10 seconds before the train started to move. However, such evidence was relevant to show whether the defendants breached their duty by relying on the door light system. [17]

[563]** **[***74]** **[****874]** Defendants objected to

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at 7. Seef 311 Ill. App. 3d at 24, 724 N.E.2d at 128, also cited "the cumulative effect" of admitting the undisclosed opinions. In Adami v. Belmonte, 302 Ill. App. 3d 17, 24, 704 N.E.2d 708, 713, 235 Ill. Dec. 135 (1998), the trial court barred opinions prior to trial; this court affirmed, in part because the admission of the opinions would have prejudiced the defendant. Regala, Seef and Adami rely on Crull, 294 Ill. App. 3d at 531, 690 N.E.2d at 143, a Fourth District case. The Fourth District requires that a party show prejudice resulting from a Rule 213 violation to obtain a reversal. Linn v. Damilano, 303 Ill. App. 3d 600, 606, 708 N.E.2d 533, 537, 236 Ill. Dec. 947 (1999). The Fourth, First and Second Divisions of the First District also require a showing of prejudice. Mitchell v. Palos Community Hospital, 317 Ill. App. 3d 754, 763-64, 740 N.E.2d 476, 483, 251 Ill. Dec. 395 (2000); Copeland v. Stebco Products Corp., 316 Ill. App. 3d 932, 946, 738 N.E.2d 199, 211, 250 Ill. Dec. 235 (2000); Parker, 299 Ill. App. 3d at 503, 701 N.E.2d at 195. Given the verdict in this case, the alleged errors would not meet the criteria of Regala, LoCoco or Parker.

[17] Goosie later testified that the door light problem did not show up in the pre-trip inspection, but such testimony merely created a question of fact for the jury to resolve.

evidence of the SSOs and CNW's responses to them, which was introduced to support the claim for punitive damages. As the trial court did not err in submitting that claim to the jury, the evidence was properly admitted, with one exception. Evidence that neither defendant disclosed Croghan as a witness is "not proper grist for an award of punitive damages." Kopczick, 308 Ill. App. 3d at 978, 721 N.E.2d at 779. However, Kopczick did not reverse the punitive damage award based on the introduction of evidence of discovery violations. Given the record here, defendants have not shown reversible error. See, e.g., Lee 152 Ill. 2d at 472, 605 N.E.2d at 510; LoCoco, 307 Ill. App. 3d at 695, 717 N.E.2d at 832.

Defendants have not shown that the verdict was against the manifest weight of the evidence.

V

Defendants contend that damages awarded in this case for **[*1042]** pain and suffering, disability, and disfigurement are "excessive to an extreme." The determination of damages is a question generally reserved to the trier of fact; a reviewing court will not lightly substitute its opinion for the judgment rendered in the **[***75]** trial court. Richardson v. Chapman, 175 Ill. 2d 98, 113, 676 N.E.2d 621, 628, 221 Ill. Dec. 818 (1997). In this case, the record discloses that the jury not only observed Barton, but also was shown photographs regarding Barton's surgeries and disfigurement. For example, Dr. Dumanian's videotaped testimony regarding the tissue expansion surgeries apparently included enlarged pre- and post-operative photographs. The jury also was shown a "day in the life" videotape to demonstrate the extent of Barton's injuries and resulting limitations on her normal life activities. The transcript discloses that plaintiff's counsel used such material during closing argument.

Defendants have failed to identify where any of this material appears in the record on appeal. No videotape was included in the record on appeal. The transcript of proceedings reveals almost no detail of the "day in the life" videotape, as it was shown to the jury without sound. Moreover, while defendants have objected to the introduction of still photographs taken from the videotape of the inspection of the train car, and included a copy of one such photographic exhibit in their appendix, they did not identify **[***76]** where the exhibit appears in the record, further supporting the conclusion that the photographic exhibits were not included in the record on appeal.

Defendants, as the appellants, have the burden of presenting the court with an adequate record for review. Haudrich v. Howmedica, Inc., 169 Ill. 2d 525, 546-47, 662 N.E.2d 1248, 1258, 215 Ill. Dec. 108 (1996). Although Barton and others testified on the issue of noneconomic damages, some cases exemplify the cliche that "a picture is worth a thousand words"; much that sounds cold coming from a witness may be better conveyed by a photograph. Parson v. City of ***Chicago***, 117 Ill. App. 3d 383, 390, 453 N.E.2d 770, 775, 72 Ill. Dec. 895 (1983); see Edward Hines Lumber Co. v.

Village of Villa Park, 34 Ill. App. 3d 711, 716, 340 N.E.2d 339, 343 (1976). Accordingly, we conclude that we are foreclosed from addressing defendants' argument by their failure to provide this significant photographic and videotaped material on appeal. Schoonover v. International Harvester Co., 171 Ill. App. 3d 882, 887, 525 N.E.2d 1041, 1044-45, 121 Ill. Dec. 734 (1988) (consideration of adequacy of damages **[***77]** foreclosed where appellant failed to include videotaped evidence depositions of his medical experts); see People **[**564]** **[****875]** ex rel. City of Rockford v. City of Loves Park, 47 Ill. App. 2d 286, 292-93, 198 N.E.2d 133, 137 (1964). The verdict was rendered by a jury which observed all of the evidence at trial. Defendants' post-trial motion failed to convince the trial judge, **[*1043]** who observed all of the evidence. On appeal, defendants cannot expect this court to substitute its opinion for that of the jury absent the photographic and videotaped material that so directly bears on the issue of noneconomic damages.

For all of the aforementioned reasons, the judgment of the circuit court of Cook County is affirmed.

Affirmed.

Buckley, J., concurs.

O'Brien, J., dissents in part and concurs in part.

Concur by: O'Brien (In Part)

Dissent by: O'Brien (In Part)

Dissent

Justice O'Brien dissenting in part, and concurring in part:

What is the appropriate analysis and remedy for a violation of Supreme Court Rule 213?

James Finan, plaintiff's expert, was disclosed and deposed as a former NTSB accident investigator and an operating practices inspector certified by the Federal Railroad Association. His disclosed **[***78]** expertise and opinions concerned the physical capabilities and performance for the train doors in question and the safety rules and practices regarding the doors.

However, at trial Finan testified that Metra was like a parent not knowing what the child is doing, that Metra was "remiss in their duties as a parent company", that Metra had a "relationship to oversee their contractors, to make sure that their contractors are performing in a safe and efficient manner". These opinions, which speak to the relationship between Metra and CNW and to any duties of Metra and CNW, were not disclosed pursuant to Supreme Court Rule 213 and thus, violated Rule 213.

The committee comments to Rule 213 state that, "in order to avoid surprise, the subject matter of all opinions must be disclosed pursuant to this rule * * * and that no new or additional opinions will be allowed unless the interests of justice require otherwise." 177 Ill. 2d R. 213(g), Committee Comments. Upon written interrogatory, a party must disclose the subject matter, conclusions, opinions, qualifications and reports of any

witnesses who will offer any opinion testimony and seasonably supplement any previous answers when additional **[***79]** information becomes known. Department of Transportation v. Crull, 294 Ill. App. 3d at 536-37.

The importance of an expert and the impact that expert has upon the trier of fact in undisputed. An expert is integral to a case because an expert can assist the trier of fact to understand evidence or to decide a fact in issue which is difficult to comprehend or to explain. **[*1044]** See generally: Wojcik v. City of ***Chicago***, 299 Ill. App. 3d 964, 979, 234 Ill. Dec. 137, 702 N.E.2d 303 (1998); Thacker v. UNR Industries, Inc., 151 Ill. 2d 343, 365, 177 Ill. Dec. 379, 603 N.E.2d 449 (1992); ***Chicago*** Title and Trust Co. v. Brescia, 285 Ill. App. 3d 671, 682, 221 Ill. Dec. 709, 676 N.E.2d 230 (1996). Separate and unique discovery rules have been established in recognition of the significance of an expert. If separate and unique discovery exists for the disclosure of experts, should not the analysis and remedy for a violation of that disclosure differ from the analysis and remedy for a violation of other discovery rules?

Rule 213 establishes stricter standards regarding disclosure than did the now-repealed Rule 220. See generally: Seef v. **[**565]** **[****876]** Ingalls Memorial Hospital, 311 Ill. App. 3d at 21; **[***80]** Department of Transportation v. Crull, 294 Ill. App. 3d at 538-39; Adami v. Belmonte, 302 Ill. App. 3d 17, 24, 235 Ill. Dec. 135, 704 N.E.2d 708 (1998). If a stricter Rule 213 replaced Rule 220, should not the analysis and remedy for a violation of Rule 213 require a stricter and different analysis than a violation of Rule 220?

We have answered "yes" in Adami, Seef and Regala v. Rush North Shore Medical Center, slip op., No. 1-99-4049 (1st Dist. August 10, 2001) and have moved from a "harmless" or "no prejudice" analysis employed in Rule 220 violations to a *per se* analysis as exhibited in Regala. And, although the majority cites Regala in a footnote and states that it does not establish a *per se* analysis, the Regala opinion, citing Seef states otherwise. See Regala, No. 1-99-4049, slip op. at 6-8. The Rule 213 disclosure requirements are mandatory and subject to strict compliance by the parties. Seef v. Ingalls Memorial Hospital, 311 Ill. App. 3d at 21; Department of Transportation v. Crull, 294 Ill. App. 3d at 538-39; Adami v. Belmonte, 302 Ill. App. 3d at 24. The testimony **[***81]** of an expert is so powerful that any expert testimony at trial not previously disclosed is itself prejudicial and requires a new trial. See e.g., Regala, No. 1-99-4049, slip op. at 6-8. And, because Finan's testimony impacted upon the allocation of fault between Metra and CNW, a new trial as to both Metra and CNW should be granted.

Admittedly, this analysis is neither facile nor Mosaic but it appears consistent and equal; in Regala, plaintiffs were granted a new trial and here, defendants are requesting a new trial. Recognizing the difficulties with this analysis, the guidance of the Supreme Court is earnestly desired for the intermediate and trial courts so that the last days of Rule 220 and the reasons for its

demise do not return.

Accordingly, I would reverse and remand this cause for a new trial on the Rule 213 issue. On all other issues, I concur.

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