

ILLINOIS POLLUTION CONTROL BOARD  
February 15, 2001

ANTHONY and KAREN ROTI, PAUL )  
ROSENSTROCK, and LESLIE WEBER, )  
 )  
Complainants, )  
 )  
v. ) PCB 99-19  
 ) (Enforcement – Noise, Citizens)  
LTD COMMODITIES, )  
 )  
Respondent. )

STEVEN P. KAISER, OF THE LAW OFFICE OF STEVEN P. KAISER, APPEARED ON BEHALF OF COMPLAINANTS; and

JOSEPH E. KOLAR, OF BAIZER & KOLAR, P.C., APPEARED ON BEHALF OF RESPONDENT.

INTERIM OPINION AND ORDER OF THE BOARD (by N.J. Melas):

This citizens' enforcement action concerns a trucking operation in Bannockburn, Lake County, Illinois. Complainants, Anthony and Karen Roti, Paul Rosenstock, and Leslie Weber, allege that Respondent LTD Commodities' (LTD) trucking operation exceeds Illinois' numeric nighttime sound limits, impulse noise limits, and nuisance noise standards. Complainants contend that LTD has therefore violated Section 24 of the Environmental Protection Act (Act) (415 ILCS 5/24 (1998)) and the Board regulations at 35 Ill. Adm. Code 900.102, 901.102(a), 901.102(b), and 901.104.

The Board finds that LTD has violated the nuisance noise provisions at Section 24 of the Act and 35 Ill. Adm. Code 900.102. The Board finds that LTD has not violated the daytime numeric noise limits at 35 Ill. Adm. Code 901.102(a). The Board finds that the analysis of nighttime numeric noise data and impulse noise data was improper. As a result, the Board finds that LTD did not violate the nighttime numeric noise limits at 35 Ill. Adm. Code 901.102(b), nor the impulse noise limits at 35 Ill. Adm. Code 901.104.

PROCEDURAL MATTERS

Complainants filed a complaint on July 22, 1998. On September 3, 1998, the Board accepted the noise pollution allegations for hearing. On November 5, 1998, the Board granted in part and denied in part LTD's motion to dismiss. The Board dismissed the alleged violation of Section 23 of the Act because it is merely a legislative declaration but directed that the remaining noise pollution allegations in the complaint proceed to hearing. 415 ILCS 5/23 (1998); Roti v. LTD Commodities (November 5, 1998), PCB 99-19.

Board Hearing Officer John Knittle held a hearing in this matter from November 1, 1999, through November 5, 1999, May 23, 2000, and May 24, 2000. Complainants presented ten witnesses. Complainants also offered 78 exhibits, 69 of which were admitted.<sup>1</sup> Respondents presented five witnesses.<sup>2</sup> Respondents offered 61 exhibits, all of which were admitted.

Complainants submitted their closing brief on July 7, 2000. LTD submitted its closing brief on August 8, 2000. Complainants submitted their reply brief on September 11, 2000, and a motion for leave to file the reply brief *instanter* on September 14, 2000. LTD did not object to the motion to file *instanter*. The Board grants the motion.

## FINDINGS OF FACT

### Description of Parties and Vicinity

#### LTD

LTD is located at the northeast corner of the Interstate 94 tollway (tollway) and Route 22 at 2800 North Lakeside Drive in Bannockburn, Illinois. Tr. at 8, 36-37.<sup>3</sup> Lakeside Drive is on the east side of LTD. Going north from Route 22, one would first encounter landscaping, then a southern parking lot, and then LTD's warehouse. There are 26 truck docks at the north end of the warehouse. Immediately north of the warehouse is the truck staging area. The truck staging area is eight to ten feet below grade level and immediately north of the staging area is a retention wall. There are concrete pylons against the retention wall which hold truck bumpers made of springs, wood, and rubber. A gate separates the retention wall from a sidewalk and immediately north of the sidewalk is a row of pine trees. North of the pine trees is the north parking lot. The north parking lot is the closest part of LTD's property to complainants' residences. Tr. at 158, 217, 556, 561, 1032, 1069, 1159, 1182-83, 1482; Resp. Exh. 72, 73, 74, 75, 89; Comp. Br. at 5.

#### Complainants

Anthony and Karen Roti, along with their five children (aged 5 to 16 at the time of hearing), live at 1591 Wedgewood Drive. Tr. at 667, 749, 937-40; Resp. Exh. 89; Comp. Br. at 3. The northern boundary of LTD, which shares a common property line with the Roti

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<sup>1</sup> Complainants' exhibit 38 is made up of 13 parts - 38A through 38M - and is counted as 13 exhibits.

<sup>2</sup> Both parties presented Jack Voigt as a witness.

<sup>3</sup> The transcript of the hearing is cited as "Tr. at \_\_\_." Complainants' exhibits are cited as "Comp. Exh. \_\_\_." LTD's exhibits are cited as "Resp. Exh. \_\_\_." Complainants' closing brief is cited as "Comp. Br. at \_\_\_." LTD's closing brief is cited as "Resp. Br. at \_\_\_." Complainants' reply brief is cited as "Reply Br. at \_\_\_." Public Comments are cited as "PC \_\_\_." The Board notes that Complainants' Exhibits 15 and 45 are respectively the same as Respondents' Exhibits 12 and 15.

property and the other complainants' properties, is also the boundary between Bannockburn and Lake Forest. Tr. at 9-10, 155, 668, 1183-84, 1402; Resp. Exh. 79, 88; Comp. Br. at 1. The south wall of the Roti residence is less than 100 yards from the LTD loading docks. Tr. at 10. East of the Roti residence is a large grassy area. Tr. at 412.

The Rosenstock residence is at 1541 Wedgewood Drive. It is about 125 yards from the LTD docks and is just east of the large grassy area. Tr. at 10, 552, 558; Resp. Exh. 89; Comp. Br. at 3. Rosenstock's nine-year-old daughter (at the time of hearing) Rachel lives with him. Comp. Br. at 3. Rosenstock's bedroom faces south towards LTD. Tr. at 548-549; Resp. Exh. 83. From his bedroom, Rosenstock is able to see the LTD dock area during the fall as the trees between his property and LTD lose their leaves. Tr. at 554, 556, 616-17.

The Weber residence is at 1481 Wedgewood Drive in Lake Forest. The Weber residence is about 150 yards from the docks and is east of and adjacent to the Rosenstock house. The Weber property is the farthest east of all the complainants' properties and does not touch the LTD property. The Weber house is directly north of the Corporate 100 (Corporate 100) office building. Tr. at 10, 19, 244, 441, 443, 446-47, 504, 513, 881-82; Comp. Exh. 37; Resp. Exh. 89. Leslie Weber lives with her husband Henry and her sons Scott (16 years old at the time of hearing) and Christopher (nine years old at the time of hearing). Tr. at 441, 882.

Roti solicited support from her neighbors in her efforts to stop the noise from LTD. Tr. at 752-55; Resp. Exh. 10. She spoke to both the Karasik and Lakin families. Tr. at 783, 786, 1651. Kendra Karasik provided a public comment at hearing, and her husband Mark submitted a written comment. The Karasiks and their two sons live at 1590 Wedgewood Drive in Lake Forest – directly north of and across the street from the Rotis. The Karasik family moved into their home in mid-1998. Tr. at 1630, 1637, 1643-45, 1648; PC 1. Ken Lakin of 1566 Wedgewood Drive in Lake Forest submitted a public comment supporting complainants. PC 3. Thomas D. Wells of 1520 Wedgewood Drive and State Representative Susan Garrett also submitted public comments supporting complainants. PC 2, 4.

### Surrounding Area

Corporate 100 is located directly east of LTD. Tr. at 26, 156; Resp. Exh. 88. There is a fenced-in area for garbage on the northwest corner of Corporate 100 with mobile trash dumpsters. Tr. at 26, 176; Resp. Exh. 55. The garbage area is on the northwest corner of the Corporate 100 property that is adjacent to the northeast corner of the LTD property. The garbage area is "right next to" the Rosenstock and Weber residences. Tr. at 26, 623; Resp. Exh. 89.

The tollway is located about 1,000 feet west of the Roti residence. Tr. at 27. The tollway is also west of LTD, and there is a tollbooth on a northbound ramp that is adjacent to the southwest corner of the LTD's warehouse. Tr. at 27, 155, 1179; Resp. Exh. 56, 57, 88.

### LTD's Operations

LTD is a mail order catalog company that has facilities in Bannockburn and Aurora Illinois.<sup>4</sup> Both LTD's corporate headquarters and one of its warehouses are located in Bannockburn. LTD sells household items such as toys and clothing that it advertises in its catalog. LTD does not manufacture the items that it sells. Tr. at 33, 112, 1034; Comp. Exh. 1, 2. LTD purchases items from manufacturers and those items are shipped to the LTD facility by various shipping and trucking companies. Items from other LTD warehouses and supplies such as corrugated boxes and packing materials are also shipped to the facility. Tr. at 34, 1054-58, 1070-71, 1097-98, 1154-55. LTD employees unload deliveries and those items are stored in the LTD warehouse. To fill out an order, LTD employees find items in the warehouse and put them in boxes or crates. The boxes and crates are then loaded on to trucks. These items are then either shipped to LTD's customers or to LTD's other warehouses. Tr. at 31-38, 163, 284-86, 365-66, 1070-71, 1395-96, 1483-84. LTD does not lease storage space in its facility. Tr. at 1485.

Jack Voigt has worked at LTD since 1990 and is currently the vice president of distribution. Tr. at 1029, 1482. Voigt reported that 65% of the warehouse is devoted to storage of shipping materials and packaged items. Voigt stated that merchandise is typically stored from two to four weeks. The other 35% of the warehouse is used for LTD's packing operation, receiving, returns, maintenance, and housekeeping. Tr. at 1485-88.

LTD's business volume has been growing, and as a result there was much more truck traffic in 1998 than in 1988. Tr. at 62-63, 1036-37. The volume of shipping at the Bannockburn facility decreased substantially in 1998 and 1999 as LTD opened up its Aurora facility. Tr. at 65, 1149-51, 1199-1204. LTD has also used satellite warehouses in Franklin Park, Bolingbrook, Libertyville, and Gurnee, Illinois and Kenosha, Wisconsin. Tr. at 1035, 1101.

LTD does not own any of the trucks coming in and out of its facility nor does it employ any long haul truck drivers. Tr. at 150-51, 195.

LTD uses CTC as a contractor. CTC takes packages from the LTD facility and sorts them according to US Postal Service criteria. CTC ships all items out of all of LTD's warehouses. Tr. at 1052-53. Since the early 1990s, CTC has operated a yard tractor (also called a yard pig) on the LTD property. The yard tractor disengages a trailer from an overland truck and then pulls trailers from one part of LTD's property to another. Once the trailer has been emptied, the yard tractor also recouples the trailer with the overland trucks. The yard tractor also backs trailers against the northern wall of the staging area. Tr. at 28, 52-53, 151, 554, 558, 568-69, 655-57, 887, 1064; Resp. Exh. 74; Comp. Br. at 5-6. The yard tractor backs into a trailer truck, and lifts up the trailer slightly. The yard tractor's "fifth wheel" then engages with the pin on the trailer and pulls the trailer away. Tr. at 55, 274.

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<sup>4</sup> Unless otherwise noted, all references to LTD concern the Bannockburn facility.

In order to handle a large increase in business and the associated truck traffic, every year LTD doubles its work force between about August 1st and December 15th. In addition to a day shift, which generally run from about 5:30 or 6:00 a.m. until 2:00 or 3:00 p.m., LTD often runs night shifts, which it began doing in the late 1980s. The second shift runs from about 3:30 or 4:00 p.m. until 12:30 a.m., but when the second shift works overtime it can run as late as 1:30 or 2:30 a.m. during the fall and during the Christmas season. During September and October of 1999, the second shift usually ended by 1 a.m. During September 1 to December 15, 1998, LTD would sometimes operate on Saturday, which is also considered overtime. Tr. at 13, 59-60, 64, 180, 182, 186-87, 867-68, 1060-64, 1067, 1090-1102, 1185-87, 1191; Comp. Exh. 55, 56. According to Mike Hara, the chief operating officer of LTD, LTD must continue its night shift until after midnight in Bannockburn even though the Aurora facility is now operational. However, the Aurora facility should end the need for operating the Bannockburn facility until 2:30 a.m. Tr. at 186-87.

LTD regularly employs in excess of 600 people at its Bannockburn facility, and during the Christmas season the number swells to between 1,200 or 1,300. LTD also provides significant tax revenue to all of the local taxing districts in which it is located. The total real estate tax that LTD paid during 1999 was in excess of \$300,000. Tr. at 39, 1419 -23, 1471; Resp. Exh. 39.

#### History of Property Uses

FMC built a warehouse on the property in about 1976 or 1977 with eight truck docks. LTD purchased the property in December 1986 and then added 18 docks bringing the total number of docks to 26. At about this time, LTD constructed an addition that doubled the size of LTD from 100,000 square feet to 200,000 square feet. Tr. at 8-9, 17-18, 1271-72. In the late 1980s, LTD purchased property on the south end of its existing property. This purchase allowed LTD enough room to again double the size of its facility again to 400,000 square feet in 1994. 350,000 square feet of its facility is warehouse space. Tr. at 10, 46, 163, 1031, 1436; Comp. Exh. 3; Resp. Exh. 88.

The Village of Bannockburn did not want LTD's docks visible from Route 22, so LTD built its docks on the north side of the warehouse. Comp. Exh. 62 at 2.

LTD's expansion and warehouse addition during 1994 and 1995 took place on a parcel of land it had acquired to the south of its original facility. Tr. at 19. LTD did not add truck docks at this time. As a condition of expanding the warehouse, Bannockburn suggested that LTD commit to a landscaping project on the south side of its property to obscure the warehouse and parking lot. Comp. Exh. 62 at 1. LTD added the retaining wall to the staging area, built the truck bumpers, and planted the pine trees. Tr. at 1033, 1082, 1205.

LTD paid \$6.6 million when it purchased property from FMC in the mid 1980s. It paid between \$1.5 and \$2 million for its first warehouse expansion and then paid \$3.9 million when it purchased the land for its warehouse expansion in 1989. LTD paid \$6 million for the expanded warehouse in 1994. Tr. at 41-42, 142-43.

In a 1980 aerial photograph, no houses are shown directly north of the FMC warehouse. Tr. at 162; Resp. Exh. 86. The complainants were aware of the commercial property to the south when they moved into their homes. Tr. at 497-502; Comp. Br. at 7.

In 1987 the Brown family bought the lot that they eventually sold to the Rotis. In March of 1990 the Rotis purchased their current home from the Browns, and the Rotis moved in the following August. Tr. at 18, 19, 667, 731, 959, 1254, 1616; Resp. Exh. 88. On July 6, 1988, the Webers bought their lot. The Webers had their current home built on the property and moved in during January 1992. Tr. at 18-20, 444, 443, 505, 883, 906, 1254. In 1987, Rosenstock entered into a contract to buy his lot and house. The purchase closed in the summer of 1988. Tr. at 18-19, 547, 1254; Resp. Exh. 88. Rosenstock had extra insulation installed in his home to protect against noise and had a berm built on the south end of his home in order to shield his home from LTD and Corporate 100. Tr. at 614.

#### Sources of Noise/Description of Noise

Complainants alleged that the noise comes from the operation on the north side of LTD's property. Tr. at 9.

Complainants heard hissing noise from air brakes, which happens anytime that a tractor disengages from a trailer. Greg Zak, the noise advisor for the Illinois Environmental Protection Agency (Agency), described it as short duration, impulse sound. Tr. at 85-86, 266, 275, 420, 465, 473, 483, 492, 567, 580, 629, 722-33, 949, 1006, 1086; Comp. Exh. 42.

The hydraulic system on the yard tractor's fifth wheel raises the trailer up high enough to allow the pin to fit into the fifth wheel, and then it lowers the trailer when the yard tractor has move the trailer into position. Complainants heard noise from the fifth wheel on a truck or yard tractor engaging, disengaging, or "slamming" into the truck trailers. Tr. at 52-53, 55, 73, 448, 450, 459, 463, 492, 559, 566, 629, 679, 683, 691, 884, 889, 893-94, 948-49, 956, 1075-78, 1080-82, 1088; Comp. Exh. 7 and 12.

Zak described the noise from the fifth wheel engaging or disengaging with a trailer pin as impulse sound. Weber described the engaging/disengaging as a hissing noise, similar to the release of air brakes. Tr. at 106, 274-75, 450-51, 483, 693-94.

Complainants heard the sound of the motors on trucks and the yard tractor. The noise from the yard tractor's motor was even worse prior to 1997, but it was still making noise as of the date of hearing. Tr. at 76, 559, 563-65, 580-81, 770, 944, 1078-79; Comp. Exh. 12. Leslie Weber complained about the noise from the accelerating and idling of diesel engines, including the yard tractor. She claimed that these noises come from the staging area and Lakeside Drive. Tr. at 450, 473, 493, 513.

There is also a boom sound when the back doors of truck trailers (which are not locked) swung open and closed as the yard tractor moved the trailer into position. Tr. at 459-60, 483, 512, 884, 893; Comp. Exh. 8, 12.

Complainants also heard the sounds of trucks or the yard tractor as it moved trailers against the bumpers on the north wall of the staging area. Rosenstock described it as a smash or boom that “sounds like an explosion or a bomb has gone off.” The collision of the trailers against the bumpers caused the ground to vibrate under Rosenstock’s home, and the shaking once caused a light fixture to fall. Noise from LTD has also caused low frequency vibrations at the Roti residence about six times a day, but there were no such vibrations at the Weber residence. Anthony Roti testified that the windows stopped rattling after LTD got a quieter yard tractor, but, as of the hearing date, his residence shook occasionally from other LTD noises. Karen Roti reported that vibrations from the yard tractor were not as noticeable in 1999 as they were in 1998. Tr. at 24, 98, 518, 559, 568-69, 571-78, 580-81, 617, 619-20, 630, 632, 695, 703, 711, 725-28, 770-71, 945, 995, 1006, 1083; Comp. Exh. 15, 42, 44; Resp. Exh. 12.

Complainants heard backup warning devices on trucks and yard tractors. Tr. at 75-76, 98, 276, 277, 474-75, 567, 580, 618, 695, 898, 901, 956; Comp. Exh. 12, 15, 42, 44; Resp. Exh 12. Mark Karasik and Thomas D. Wells complained about beeping noises as well. PC 1, 4. Ken Lakin complained of a “loud chirping noise.” PC 3. Karen Roti testified that the beeping noise from LTD became much more prevalent beginning in August 1999, and lasted from about 5:30 a.m. until 12:30 a.m. Tr. at 718-721. Leslie Weber and Anthony Roti reported a new mostly constant beeping noise in the fall of 1999 coming from LTD. They claimed that the beeping noise was not the backup warning device from garbage trucks at Corporate 100. Tr. at 474-478, 951, 1005-6. Voigt said that the yard tractor at LTD was fitted with a backup warning device for the first time in 1999. Over-the-road tractors have backup warning devices and had them prior to 1999. Tr. at 1142-43.

Complainants also heard the sound of air horns coming from LTD. Tr. at 98, 586, 695, 703, 947, 956, 980; Comp. Exh. 15, 44; Resp. Exh. 12. They also heard nonspecific slamming, banging, booming, and crashing sounds from LTD. Tr. at 98, 447-48, 695, 703, 711, 722, 723, 944, 947-48, 956; Comp. Exh. 15, 44; Resp. Exh 12.

Anthony Roti and Leslie Weber have heard noise from LTD as late as 2:00 a.m. Leslie Weber has heard it as late as 3:00 a.m., but she claimed that the noises were loud during the early evening hours as well. Tr. at 493, 514, 895, 944. Rosenstock claimed that he heard noise from the LTD property 24 hours a day, including hearing the yard tractor during the early morning hours after LTD’s second shift has ended. Tr. at 658. Voigt claimed that LTD has never operated 24 hours a day. Tr. at 1152, 1320. Karen Roti also testified she has heard the noise 24 hours a day in rotations of an hour and a half. Tr. at 693, 712, 779. Henry Weber heard noise at 6:00 a.m. when he got up for work. Tr. at 895.

#### Description of Ambient Noise

Tom Thunder, an expert in audiology (the study of hearing) and acoustics (the study of sound), stated that the American National Standards Institute (ANSI) defines ambient noise as “all-encompassing noise from sources near and distant that are always in the background.” Tr. at 1510.

Complainants testified that they heard constant noise from the tollway and the northbound on-ramp to the tollway. Tr. at 26, 76, 507, 913-15, 978-79, 982, 1004. Karen Roti has heard trucks accelerate away from the tollbooths on the tollway. Tr. at 738. Rosenstroch was aware of the tollway noise when his window was open. Tr. at 606. The Webers and the Rotis testified that noise was louder when the wind is blowing from west to east (from the tollway to complainants' homes). Tr. at 26, 508, 758, 913, 980. Henry Weber testified that that the noise from the tollway was quieter when traffic is backed up. Tr. at 929. Anthony Roti testified that noise from the tollway did not disturb him. Tr. at 1005.

The Rotis and the Webers hear noise from the Corporate 100 garbage facility. These noises include the backup warning devices from trucks, the clanging noise of the dumpster being lifted and tipped upside down, and the banging the trucks cause when they place the dumpsters on the pavement. There is also noise from the Corporate 100 parking lot. Leslie Weber testified that the truck noise at Corporate 100 in the past happened at 5:00 to 5:30 a.m., but as of 1999 was happening at 6:00 or 6:30 a.m. Anthony Roti testified that the garbage pickup at Corporate 100 is a weekly occurrence that only lasts for five to ten minutes. Tr. at 26, 516-19, 738-740, 899-900, 916, 918, 985-87, 1001-02. Rosenstroch has heard the backup warning device on the garbage trucks at Corporate 100 as well, but no other noises. Tr. at 625. Leslie Weber claims that car and truck traffic from the vicinity of Corporate 100 has never woken up her or her family. Tr. at 454. The Webers admit that they are disturbed, annoyed, and woken up by trucks in the Corporate 100 garbage facility. Tr. at 516-519, 529, 918-19. However, Henry Weber testified that the backup warning devices on the trucks in the Corporate 100 parking lot only last 30 seconds, while the backup warning devices at LTD can last for an entire evening. Tr. at 933.

Leslie Weber can hear trucks on Lakeside Drive. Tr. at 513-14. Karen Roti can hear trucks accelerate from the staging area to Lakeside Drive. Tr. at 738-39. Karen Roti and the Leslie and Henry Weber heard construction noises from a nearby office building during 1998 and 1999. Tr. at 523-24, 759, 915-16.

### Interference

Rosenstroch's annoyance with LTD's noises began after they built the below-grade staging area, expanded their hours of operation, and began using yard tractors. This occurred about the time of the 1994 expansion. Tr. at 562, 591-92, 610, 612-13, 660-62. Henry Weber claims that the operating hours and intensity of operations changed at this point. Tr. at 922. Prior to the LTD warehouse expansion in 1995, Karen Roti testified that she heard noise from the LTD facility but that it was not "disruptive." Tr. at 1633.

Beginning in 1996 and continuing through the hearing, complainants were disturbed by the noise beginning each year in the late summer/early fall and ending in mid to late December. Tr. at 444-47, 455, 458, 472, 496 883-84, 889-90, 892-95, 897 (Webers); Tr. at 671, 679-80, 681, 686-89, 711, 730-31, 771-72, 943 Comp. Exh. 15 (Rotis). Roti said that she can still hear noise at other times, but it is worse during the August to December period. Tr. at 776, 780-81.



Complainants testified that they heard noise from LTD Monday through Friday nights. Tr. at 478-79, 534, 888 (Weber); Tr. at 682, 713-17, 775-76 (Roti). Leslie Weber heard noises from LTD once every five to ten minutes. Tr. at 463-64.

Paul Rosenstock was the only complainant who kept a kept a log of noise from LTD that was admitted as an exhibit at hearing. The log reflected the noises that Rosenstock heard coming from LTD during a one-hour period in the evening between 10:00 and 11:00 p.m. Rosenstock heard noises 32 times during that hour, and the noises lasted from 10 to 40 seconds each. Rosenstock also kept track of the very loud noises and occasional shaking of his house. Tr. at 24, 483-84, 570-81; Comp. Exh. 42. Although his log tracked only the week of October 20-26, 1999, and, in particular, October 27, 1999, Rosenstock said the noises were typical of the ones that he had heard from late summer to mid December during 1996 through 1998. Tr. at 582-83.

The noise from LTD made it difficult for complainants and their families to fall asleep and the noise awakened them from sleep. Tr. at 14, 679, 680, 696, 723-26, 947, 952-53, 956-57 (Rotis); Tr. at 448-49, 453-55, 529-30, 896; Comp. Exh. 8 (Webers); Tr. at 571-73, 577, 584 Comp. Exh. 42 (Rosenstock). On a few occasions, Leslie Weber would awaken in the middle of the night and drive to the Corporate 100 parking lot to investigate the sources of the noise from the dock area of LTD. Tr. at 448-50, 530. The Webers admitted that their son Christopher is not awakened by the noise from LTD. Tr. at 24, 512, 923-24. However, Weber's son Scott has heard the noises from LTD in his bedroom. Tr. at 530; Comp. Exh. at 8. Karen Roti testified that she could sleep on nights when there was noise from LTD only by taking "[T]ylenol with codeine or Benadryl or a couple beers." Tr. at 714, 776-77. Karen Roti also testified that she had not yet been woken up in the middle of the night during 1999. Tr. at 779.

The lack of sleep affected complainants' personalities, causing them to become tired, tense, short-tempered, grouchy, and irritable. Tr. at 471-72, 890, 894, 896, 930 (Leslie Weber); Tr. at 681, 712-13, 717, 952, 957 (Roti). The Roti children could not wake up for school on some mornings. Tr. at 680.

Noise from LTD distracted complainants while they tried to read. Tr. at 494, 890 (Webers), 567, 924, 931-32 (Rosenstock). The noise disrupted the Roti children while they studied. Tr. at 947-49. The noise from LTD disturbed Rosenstock when he talked on the telephone. Tr. at 567. The Webers were disturbed by LTD's noises when they were in their living room playing games and doing other quiet activities around the house. Tr. at 534, 888, 894, 898 (Webers). The noise interrupted Anthony Roti while he tried to work at home. Tr. at 947-50, 952, 956.

In the late summer and early fall, the noise made it difficult for the Webers to enjoy the use of their outdoor decks. Tr. at 457-58, 533, 891, 898 (Webers). The noise from LTD made the Rotis' youngest daughter afraid to go outside, and it also startled her inside the residence. Tr. at 696.

As a result of the noise from LTD, Rosenstock does not open his windows. Tr. at 659. During late summer and fall of 1996, Anthony Roti would not open the doors and windows to his home. Tr. at 946. Nevertheless, complainants could hear the sounds from LTD when their windows and doors were closed. Tr. at 565-66, 659 (Rosenstock); Tr. at 693, 703, 950 (Roti); Tr. at 885-86 (Weber).

Rosenstock testified that the noise from LTD was “tremendously annoying, very disruptive of my life and my house.” Tr. at 579.

Kendra Karasik testified that she started hearing the noises from LTD soon after moving in. Tr. at 1637-38. She could hear the noises during the day and “intermittently” at night. Tr. at 1649. She could hear the constant hum of tollway from her house but it did not disturb her or her family. Tr. at 1638, 1645. Karasik said that she heard noise from LTD from September through December of 1998. Tr. at 1645. She claimed that November of 1998 was particularly difficult because her sons were being tested at school but they were tired and sick. Tr. at 1638, 1644. Karasik said that both of her sons are affected by the noise. Tr. at 1649. Karasik could not watch television at 9:00 p.m. due to the noise from LTD. Tr. at 1639.

The Rotis listed their house for sale in the summer and fall of 1996 with a realtor named Marcia Rowley and in 1997 listed it with a realtor named Karen Dickey. Karen Roti claims that her family contemplated moving to another house because they needed another bedroom. Karen Roti claims that she did not mention the LTD noise to the realtors, while Anthony Roti cannot recall if he did or not. Rowley did not recall the Rotis mentioning the noise from LTD. Tr. at 25, 762-69, 968-70, 976-77, 1015-16, 1349-51, 1362-63; Resp. Exh. 8, 9. Rowley mentioned several reasons that prospective buyers did not want the house, but none mentioned noise. Tr. at 1355, 1357-58. The Rotis have decided not to put their house back on the market until the case before the Board concluded first. Tr. at 782.

### Efforts to Achieve Noise Reduction

#### Complainants

Karen Roti estimates that she has spent “[h]undreds of hours” trying to address the noise from LTD. Tr. at 730. At various times, the Rotis contacted Greg Zak<sup>5</sup> and officials from LTD, the Village of Lake Forest, and the Village of Bannockburn in order to seek a reduction in the level of noise. Tr. at 14, 98, 682, 700-4, 946; Comp. Exh. 15, 27, 29, 45; Resp. Exh. 12, 15. Karen Roti also went to a Village of Bannockburn meeting in about 1996. Tr. at 682. As early as January of 1997, Leslie Weber had been in contact with the Village of Bannockburn regarding her concerns with the noise from LTD. Tr. at 51; Comp. Exh. 7 and 8. Leslie Weber wrote a letter to David Lothspeich, Administrator for the Village of Bannockburn, in January 1997 to ask for assistance with the noise problem. Comp. Exh. 8. By July of 1998, when it became clear to complainants that LTD would not build a noise wall, complainants filed this matter before the Board Tr. at 15-16.

### LTD

LTD engaged in various activities to address the noise problem, such as hiring Acoustic Associates, Ltd. (Acoustic Associates) in 1997 to begin studying the noise problem. However, Lothspeich and other Village of Bannockburn officials were often concerned that LTD was not addressing the noise problem in a prompt manner. Tr. at 67; Comp. Exh. 6, 10, 16, and 17.

Nevertheless, it is worth examining LTD’s actions. After receiving complaints about noise, LTD began developing a “good neighbor policy” in 1996 and implemented it during 1997. LTD asked truckers not to blow their horns at the LTD facility unless it was for safety reasons. LTD asked truckers to avoid excessive acceleration of their engines and to refrain from shouting on LTD’s property. LTD asked truckers to stay off the north parking lot of LTD’s property. LTD told truckers that if they parked or idled on Lakeside Drive, the Bannockburn Police Department would ticket them. LTD gave pamphlets to truckers and mailed pamphlets to trucking companies with information about the good neighbor policy. LTD posted signs for truckers explaining the good neighbor policy. LTD also posts a guard at the entrance to its parking lot in order to keep trucks away from the north parking lot. LTD warned each trucker that multiple violations of the policy could result in LTD’s refusal to do business with that trucker’s company. Tr. at 28-29, 100-1, 159, 626, 651, 1071-72, 1169-72, 1183, 1195, 1220; Comp. Exh. 4, 25, and 33; Resp. Exh. 18, 36, and 77.

Voigt testified that LTD now requires doors on the backs of trailers to be hitched open in order to prevent those doors from swinging, hitting the trailer, and making noise. Tr. at 1172.

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<sup>5</sup> Zak has 27 years of experience in the Agency’s noise program and is an expert in the field of human sensitivity to noise. Tr. at 338, 376. Zak responds to about 3,000 noise complaints a year. Tr. at 431. Zak testified at hearing after the complainants subpoenaed him. Tr. at 267-68.

LTD also asked truck drivers to raise the heights of the legs on the trailers in order to reduce the distance that a trailer would be raised or dropped by the fifth wheel on a yard tractor during uncoupling/recoupling of the trailers. Voigt admitted that if the legs of the trailer are at a certain height and if the engagement happens at an appropriate speed, the noise of the engaging / disengaging is not as loud. However, yard tractors (or trucks) and trailers may not hook properly if the drivers are overly concerned with noise reduction. Raising the trailer can cause connection problems that could result in repeated couplings and more noise. Tr. at 108, 1089, 1173-74; Comp. Exh. 24.

In 1997, LTD requested that CTC secure a quieter yard tractor, and CTC complied. LTD also asked CTC to drive the yard tractor slower in order to reduce noise levels. Tr. at 28, 54, 98, 101, 169-70, 188, 1065, 1172-73, 1190. Comp. Exh. 15; Resp. Exh 12. LTD also considered securing an electric tractor, but the record does not indicate if LTD made any further inquiries. Comp. Exh. at 33. Rosenstock admitted that he noticed a decreased amount of noise from the yard tractor after 1996. Tr. at 563.

Leslie Weber admitted that noise from the yard tractor at LTD did not bother her as much in 1999 as it did in 1997. Tr. at 519. Anthony Roti said that the noise from the yard tractor is more muffled in 1997 than it was in 1996. Tr. at 947-49, 951, 979. Karen Roti said that she could still hear truckers blowing their horns at least three times a day in 1999, although the noise was not as prevalent as it was during 1997 and 1998. Tr. at 774. Karen Roti also noticed an improvement, but she said that the noise from the yard tractor remained a "serious problem for LTD's neighbors." Comp. Exh. at 15; Resp. Exh. 12.

Voigt testified that during a week in September 1999 and for a couple of days during the week of hearing in November 1999, LTD disconnected the yard tractor's backup warning device. Voigt indicated that LTD might be willing to disconnect the backup warning devices if it was legal and if it did not compromise safety. Tr. at 1149, 1154. However LTD's counsel warned of potential liability problems as a result of removing the backup warning devices, so they were reinstalled. Tr. at 102, 109, 172-73, 195.

While on a tour of LTD, Zak suggested that LTD should fix its dock levelers. Dock levelers extend from the dock into a trailer bed and allow forklifts to enter and exit truck trailers. Often when a trailer pulls away from the warehouse, the dock leveler will drop and slam against the side of the warehouse or up against itself. LTD fixed its dock levelers by having worn parts replaced so that the leveler would come down at a slower rate of speed. The repairs to the dock levelers prevent them from striking the truck dock walls. Tr. at 28, 1166-69, 1171-72. Voigt estimated that the repairs to the dock leveler cost less than \$20,000. Tr. at 1196.

### Suggested Noise Reduction Measures

#### Noise Abatement Wall and Materials

Thunder recommended that LTD contact Huff Company (Huff) for information on a noise wall. Tr. at 230, 1544. Huff, which specializes in the “design, supply, and installation of noise control products and systems,” submitted several preliminary proposals and a final proposal to Hara and LTD. Tr. at 11, 200. Huff has sold other noise walls in the Chicago area and the Midwest, including selling a wall to the Illinois Toll Authority. Tr. at 211, 217, 233, 243. Steve Mitchell, owner and president of Huff, testified that Huff could build a noise wall in between LTD and complainants’ properties. Tr. at 11, 200.

In March of 1998, Huff submitted a preliminary proposal and estimated that the cost of a sound barrier wall with dimensions of 15 feet in height by 250 feet in length at a cost of \$42 per square foot would be \$158,000. This figure incorporated engineering, support structure, wall panels, and installation. Huff estimated that such a wall would have to bear a tremendous wind load (up to 100 mph) and thus would have a support structure set deep in the ground. Tr. at 219; Comp. Exh. 26, 38B. After analyzing the Huff proposal, assuming that the LTD facility would be Class B land, and using the \$42 per square foot estimate, Thunder determined that LTD would need a wall varying in height from 5 to 13 feet, 375 feet in length, and costing about \$120,000, but later revised the estimate to \$115,000. Tr. at 1548-50, 1594-95; Comp. Exh. 31, 32, 36, and 38C. Thunder then testified that the \$120,000 proposal would not result in a “noticeable” sound reduction of five dB or more. Tr. at 1545-48, 1590-91.

On November 17, 1998, Mitchell sent Huff’s proposal for the noise wall to Voigt. Comp. Exh. 38I. The proposal showed a wall that would be about six feet north of the retention wall, thus separating the truck staging area and the north parking lot. The east end of the wall would be at the entrance to the parking lot, and the west end would be at the west end of the staging area. Tr. at 216-17, 239, 241, 246; Comp. Exh. 38E. The Huff proposal was further refined as the wall would only need to stand gusts of 80 miles per hour (mph) pursuant to local construction codes. Tr. at 225, 1145; Comp. Exh. 38F. The proposal called for a 14-foot tall by 682-foot long acoustical barrier wall with five-inch thick painted galvanized steel panels. The panels would be perforated on the side of the noise source and are therefore better able to absorb noise. There would be three openings for access to the parking lot. Some removal of trees and shrubbery in the area would be necessary but these costs were not included in the final proposal. The total cost, including materials and installation, was just under \$300,000. Tr. at 143, 228-30, 232, 240, 1145; Comp. Exh. 38I.

Voigt was surprised at how the estimate for the cost of the wall had grown. In early 1999, at Voigt’s request, Huff also provided “cost reduction options” such as making the wall 12 feet high (a \$28,300 savings) or 10 feet high (a \$56,700 savings) and eliminating a 16-foot wide section of panels (\$5,100 to \$6,400 depending on the height of the wall). Tr. at 233-35; Comp. Exh. 38J, 38K.

Complainants favor the construction of the 12-foot by 682-foot noise wall. Comp. Br. at 1. Voigt testified that, as a result of LTD’s contractors not being able to guarantee the effectiveness of the wall in stopping noise to the complainants’ satisfaction, LTD decided not to construct the wall. Tr. at 143, 1137; Comp. Exh. 33.

### Other Measures

Both Thunder and Zak testified that some of the noise problem could be traced to sounds from the LTD staging area, which reflect off the north wall of the LTD building and back to complainants' properties. Thunder said that acoustically absorptive materials could be placed on the north wall of the LTD facility to reduce the amount of reflective noise but that the materials "might not look good." Tr. at 420-21, 1600-02, 1605. In his deposition, Schomer agreed that acoustically absorptive material on LTD's north wall would reduce noise levels. Schomer also testified that acoustically absorptive materials might be useful on the walls of the staging area but that he would want to examine this option further. Comp. Exh. 65 at 132-33, 145-47.

Thunder also wrote that a parking garage for the north parking lot or a dome could serve as a sound barrier. Comp. Exh. 35.

Thunder testified that administrative changes might work because impulsive sound is usually the result of someone not being very careful. However, LTD might have trouble controlling people who are not their employees. Thunder suggested that LTD have an on-site employee (a "dock pilot") work with the off-site employees to encourage the off-site employees to slow down and be more careful in their actions, especially at night. Tr. at 1535-36.

In their reply brief, complainants requested that the Board order LTD to undertake measures to ensure that the noise will stop, such as ceasing operations between the hours of 10:00 p.m. and 7:00 a.m. If the Board will not do this, complainants asked that the Board order LTD to construct a noise wall, or "at the very least" order LTD to disengage the backup warning device on the yard tractor. Reply Br. at 2, 13. LTD acknowledges that federal Occupational Safety and Health Administration (OSHA) regulations require either backup warning devices or observers to guide trucks. However, respondents claim that hiring an observer at night is dangerous because truck drivers may not be able to see observers in the dark. Resp. Br. at 26-27. Complainants replied that LTD keeps their dock area well lit. Complainants stated that LTD should employ an observer to guide the trucks instead of relying on backup warning devices. Reply Br. at 13.

Hara testified that eliminating the second shift would "destroy" LTD. LTD would have to lay off half of its workers and would not have the capacity to ship orders out during the Christmas season. Tr. at 174, 184-85. Even if the second shift ended at 10 p.m., LTD could not ship its Christmas orders. Tr. at 186.

Rosenstock, who is a licensed commercial truck driver, suggested that LTD ban the blowing of air horns on their property. He also suggested barring LTD from backing trucks into the north wall of the staging area. Tr. at 552, 586-89, 594, 628; Comp. Exh. 43.

The Village of Bannockburn retained Dr. Paul D. Schomer as an expert. Comp. Br. at 4; Resp. Br. at 12. Schomer has worked in the field of acoustics for over 30 years and was

involved in the development of the Board's noise regulations, including land classification. Tr. at 20-21, 80, 117, 1465; Comp. Exh. 65 at 8-9, 11-17, 23-27, 102. In his deposition, Schomer testified that a berm would be 1/3 the cost of a wall, but that berms require a large amount of horizontal space relative to their vertical height. Alan Kracower is a land planning and land use consultant in addition to a landscape architect with over 30 years' experience in these fields. He is LTD's land use planning expert and observed the operations at LTD. Tr. at 1382, 1436. Kracower said that there is not enough room to build a berm between LTD's facility and complainants' properties. Tr. at 1425; Comp. Exh. 65 at 124.

### Sound Measurements and Analysis

The Village of Bannockburn asked LTD to hire a noise consultant. Tr. at 177. LTD hired Acoustic Associates in January of 1997. Tr. at 10, 1114-15, 1498. Thunder is the principal for Acoustic Associates. Tr. at 811, 1491-95. Roger Harmon is a field engineer contractor for Acoustic Associates and works on industrial noise control, noise surveys for industrial facilities, and residential noise complaints. Harmon has over 30 years of experience in the field of acoustics. Tr. at 810-11, 1508; Comp. Exh. 6.

On September 23, 1997, Thunder and Harmon went to the LTD facility in preparation for conducting noise measurements. Tr. at 816-18, 824, 1499, 1509. Voigt described the activity at LTD the night as typical for September of 1997. Tr. at 1176-77. That night, Harmon set up instruments, and took noise measurements on the line between the Roti and Rosenstock properties. Tr. at 10-11, 816-18, 821-22, 1562; Comp. Exh. 19.

Harmon estimates that the instruments were set up at spots 10 and 50 feet from the fence separating complainants' properties from LTD. Harmon estimated that the instruments were about 300 or 400 feet from the truck docks at LTD. The microphone capturing the sounds was 5.5 feet above the ground. After setting up the instruments, Harmon drove to the west end of the LTD parking lot to observe LTD's operations while the instruments were on. The monitoring included recording sound levels from LTD for a nominal one-hour period plus additional monitoring to assess background noise. He recorded events at LTD, off and on, from 11:41 p.m. on September 23 until 3:01 a.m. on September 24. It was not raining. Harmon recorded events at LTD at about midnight while LTD employees were present, turned off the instruments for awhile, and then turned them back on again after the LTD employees had left in order to record background noise. While recording the noise levels, Harmon took field notes of significant events occurring at the site along with the time of occurrence. The temperature was 53 degrees Fahrenheit with wind blowing at approximately five mph from the east. Tr. at 832-34, 1513-14; Resp. Exh. 97 at 2.

Harmon monitored the sound levels at both locations by using a Bruel & Kjaer Type 2221 precision, integrating, sound level meter connected to Sony TCD-D8 digital audio tape (DAT) recorders. Res. Exh. 97 at 1 and Tr. 826. The microphones were set at 5.5 feet above the ground. The sound level meters were calibrated by recording a calibration tone using a Bruel & Kjaer Type 4231 precision calibrator and subsequently verifying the calibration tone in the laboratory by using a sound level analyzer. Harmon used a Hewlett-Packard Model

6569A Signal Analyzer to verify the calibration tone and the sound levels recorded on the DAT recorders. Tr. at 825-26, 834, 860-61; Resp. Exh. 97 at 1-2. The measurements recorded at the 10 foot and 50 foot locations were less than one decibel (dB) apart, so LTD used the measurements from the 10 foot location in its analysis. Tr. at 839-44, 854-55; Comp. Exh. 19.

Harmon did an initial analysis on the noise measurements in the laboratory by using the Hewlett Packard analyzer. He verified the calibration tone to ensure that the analyzer is in calibration before feeding the recording to the analyzer, which generated an integrated, 1/3-octave band spectrum every 5 seconds. Res. Exh. 97 at 2. Harmon then transferred the data to Thunder for further analysis. Tr. 837. Thunder performed further analysis of the sound monitoring data and summarized the results in a report to LTD dated January 8, 1998 (January 8 Report).

Thunder determined the A-weighted sound levels in terms of Leq using a reference time of five seconds to evaluate the impulsive sounds emanating from the LTD dock. He also determined the sound levels for octave bands in terms of Leq with a reference time of 54 minutes. Thunder's report also included sound levels in 1/3-octave band, and A-weighted levels measured on a fast time-constant. In addition, the report included the measured ambient sound levels, which were above the sound levels measured during the operation of LTD's facility. He noted that because the ambient noise levels were higher, a correction to determine the actual noise radiated from the LTD dock alone could not be made reliably. Resp. Exh. 97 at 3.

In order to assess the impact of noise from LTD operations, Thunder estimated the ambient noise level by using an  $L_{90}$  spectrum. By comparing the measured octave band sound levels with the estimated background sound levels, he concluded that noise from LTD's docks and staging area were audible and that the noise in higher frequencies was significantly above the estimated background noise. Resp. Exh. 97 at 4. In addition, Thunder stated that random impact noise events appear to exceed the Board's impulsive noise limits. Resp. Exh. 97 at 3-4.

In order to gather more data on ambient noise, Harmon took additional measurements on March 28, 1998, starting at 12:48 a.m. A light rain was falling at the time. Harmon took measurements at several locations along the property line between LTD and complainants' properties. Harmon set up two sets of instruments for measuring sound that night. One set of instruments was located 50 to 100 feet from the fence separating the LTD property and the tollway property. Harmon moved the other set of instruments to three locations: the first was between "the dumpster and the little crook in the north end of the parking lot" which was 20 feet from where the 10-foot measurement was taken on the night of September 23-24, 1997; the second location was 200 feet closer to the tollway (west of the first location); and the third location was 200 feet further away from the tollway (east of the first location). That night the wind was again blowing east to west. Tr. at 848-51, 868-73; Resp. Exh. 98 at 1. Acoustic Associates submitted a report to LTD dated May 6, 1998 (May 6 Report) describing the measurements taken on March 28, 1998. In the May 6 1998 Report, Thunder wrote that noise monitoring at 150 feet from the tollway did not reveal any significant changes in ambient noise



readings from 1:00 to 3:00 a.m. Thunder also wrote that estimated ambient readings did not change either. Resp. Exh. 98.

## DISCUSSION

The Board will first discuss the alleged violations of the numeric noise standards at 35 Ill. Adm. Code 901.102(a), 901.102(b), and 901.104. The Board will then discuss the alleged violations of the nuisance noise prohibitions of the Act at 415 ILCS 5/24 (1998) and the Board's regulations at 35 Ill. Adm. Code 900.102.

### Numeric Violation

#### Nighttime Numeric Noise Limits

The Board has numeric sound limits for daytime and nighttime hours. The numeric limits for daytime hours are less stringent than for nighttime hours. See 35 Ill. Adm. Code 901.102(a) and (b). The Board also has a separate set of limits for impulsive noise. Complainants alleged violations of both daytime and nighttime numeric limits, but there was very little information in the record about alleged violations of daytime limits and no measurement of daytime noise, so the Board confines its analysis to alleged violations of nighttime limits and impulse limits. The nighttime numeric limits are at Section 901.102(b) that provides:

- b) Except as elsewhere in this Part provided, no person shall cause or allow the emission of sound during nighttime hours from any property-line-noise-source located on any Class A, B or C land to any receiving Class A land which exceeds any allowable octave band sound pressure level specified in the following table, when measured at any point within such receiving Class A land, provided, however, that no measurement of sound pressure levels shall be made less than 25 feet from such property-line-noise-source.

The numeric nighttime noise limits from Class B and Class C Land at Section 901.102(b) are shown below along with the Acoustic Associates results from the January 8 Report:

Octave Band Center Frequency (Hertz)	Allowable nighttime Octave Band Sound Pressure Levels (dB)	Measured Sound Levels from LTD Facility (dB)	Measured Ambient Noise Levels (dB)	Estimated Ambient Noise Levels (dB) - L <sub>90</sub>
	Class C to A Land			
31.5	69	60	57	54
63	67	59	61	54
	Class B to A Land			

125	62	55	53	56	48
250	54	47	43	52	38
500	47	40	41	51	37
1000	41	35	40	55	37
2000	36	30	39	41	37
4000	32	25	31	39	22
8000	32	25	23	35	16

Nighttime hours are 10:00 p.m. to 7:00 a.m. 35 Ill. Adm. Code 900.101. LTD's facility is a property line noise source. A property line noise source is defined as:

any equipment or facility, or combination thereof, which operates within any land used as specified by 35 Ill. Adm. Code 901.101. Such equipment or facility, or combination thereof, must be capable of emitting sound beyond the property line of the land on which operated. 35 Ill. Adm. Code 900.101.

The Board finds that LTD is a property line noise source. In addition, complainants' properties are residential and thus Class A land. See 35 Ill. Adm. Code 901.101(a), 901.Appendix B. Complainants allege that LTD is Class B land. Tr. at 11. Complainants want the Board to compare the noise from LTD using the Class B land to Class A land noise limits. LTD asserts that it should be classified as Class C land. Tr. at 20, 79, 111, 193. Generally, the numeric noise limits from a Class C land property line noise source are not as strict as the limits from a Class B source.

The land use classifications in the Board's regulations are derived from the Standard Land Use Coding Manual (SLUCM) that categorizes land use according to Standard Industrial Classification (SIC) codes. There was extensive discussion at hearing and several exhibits introduced regarding LTD's land use. Based on the information in the record, the Board finds that LTD's proper SIC code pursuant to the SLUCM is either 4921-4 (warehouse for a freight forwarding service) or 4922-4 (warehouse for a packing and crating service). Both of these SIC codes are classified as Class C land. See 35 Ill. Adm. Code Subtitle H, Appendix B. For purposes of determining numeric noise violations of the Board's regulations, the Board finds that LTD is a Class C land property line noise source.

The noise levels that Acoustic Associates measured from LTD exceeded the Board's nighttime numeric noise limits at the 2000-Hertz frequency. The measured and estimated ambient noise levels (in other words, the non-LTD noises) appear to be above the Board's nighttime numeric noise limits at several frequencies. However, the Board can determine a violation only if Acoustic Associates performed the noise measurements and analysis in accordance with the measurement protocols at 35 Ill. Adm. Code 900.103(b).

Measurement Protocols. The Board's noise regulations at 35 Ill. Adm. Code 900.103 (b) specify detailed instrumentation requirements and measurement procedures for determining whether emissions of sound comply with the Part 901 numeric limits.

b) Procedures Applicable only to 35 Ill. Adm. Code 901

All measurements and all measurement procedures to determine whether emissions of sound comply with 35 Ill. Adm. Code 901 shall be in substantial conformity with ANSI §1.6-1967, ANSI §1.4-1971 - Type I Precision, ANSI §1.11-1966, and ANSI §1.13-1971 Field Method, and shall with the exception of measurements to determine whether emissions of sound comply with 35 Ill. Adm. Code 901.109, be based on Leq averaging, as defined in 35 Ill. Adm. Code 900.101, using a reference time of one hour. All such measurements and measurements procedures shall correct or provide for the correction of such emissions for the presence of ambient noise as defined in ANSI §1.13-1971.

As already stated, 35 Ill. Adm. Code 901.102(b) requires that the sound measurements be taken at least 25 feet from the property-line-noise-source.

The Board finds that Acoustic Associates' noise monitoring instrumentation is in compliance with the requirements of Section 900.103(b). Harmon testified that he was familiar with the Board's noise measurement requirements. Tr. at 826-27. Further, Harmon stated that while he did not refer specifically to the regulations, he noted that the monitoring was intended to generate useful data. Tr. at 828. The Board also finds that the location of the monitoring site meets the 25-foot requirement of 35 Ill. Adm. Code 901.102(b).

However, the noise monitoring did not comply with the Board requirements pertaining to one-hour Leq averaging and correction for ambient noise. As noted above, Section 900.103(b) requires that the emissions of sound be based on Leq averaging using a reference time of one hour. It appears that the sample chosen to determine the octave sound pressure levels were averaged over a period of 54 minutes instead of one hour. See Res. Exh. 97, Figure 3. While Thunder stated monitoring was conducted for a nominal one-hour period suggesting that the time period was less than 60 minutes, the Board regulations are very clear that sound levels must be averaged over 60 minutes.

In addition, Section 900.103 requires sound measurements to be corrected for ambient noise. In this regard, Thunder admitted that correction for background noise could not be made because the background noise from traffic on the tollway was above the numeric limits in all octave bands. Res. Exh. 97 at 3. While Thunder estimated the ambient noise levels by determining a  $L_{90}$  spectrum, such estimated levels were not used to correct the measured sound levels.

Strict adherence to the provisions of 35 Ill. Adm. Code 901.103 is necessary in order to prove a violation of the Board's numeric noise standards. See Discovery South Group, Ltd. v. Pollution Control Board, 275 Ill. App. 3d. 547, 559, 656 N.E.2d 51, 59 (1st Dist. 1995). As a result of the improper analysis of the nighttime noise measurements, the Board cannot find that LTD violated the nighttime numeric noise limits at 35 Ill. Adm. Code 901.102(b).

### Nighttime Impulsive Noise Limits

The Board's impulsive noise limits are at Section 901.104 which provides:

Except as elsewhere in this Part provided, no person shall cause or allow the emission of impulsive sound from any property-line-noise-source located on any Class A, B, or C land to any receiving Class A or B land which exceeds the allowable A-weighted sound levels, measured with fast dynamic characteristic, specified in the following table when measured at any point within such receiving Class A or B land, provided, however, that no measurement of sound levels shall be made less than 25 feet from such property-line-noise-source.

Classification of Land on which Property-Line Noise-Source is Located	Allowable A-weighted Sound Levels in Decibels of Impulsive Sound Emitted to Receiving Class A or B Land		
	Class B Land	Class A Land	
		Daytime	Nighttime
Class A Land	50	50	45
Class B Land	57	50	45
Class C Land	61	56	46

Thunder measured impulsive sound and included these measurements in the January 8 Report. The impulse noise nighttime limit is 46 A-weighted decibels (dB(A)) for Class C land sources, and 45 dB(A) for Class B land sources. Figure 4 of the January 8 Report shows that LTD exceeded 46 dB(A) several times. Thunder measured the impulse noise limit using the fast dynamic characteristic method. Thunder said that he and Zak discussed the January 8 Report after its release. Thunder testified that he told Zak that the proper way to measure impulse sound was to use the one-hour Leq averaging method, not the fast dynamic characteristic method. At hearing, Zak testified that the fast dynamic characteristic method was the outdated method to measure impulse noise and that one-hour Leq averaging was the appropriate method. Thunder testified that he reanalyzed his impulse noise measurements using the one-hour Leq averaging method. He said that the reanalysis showed that the impulsive noise coming from LTD did not violate the state impulsive noise limits. However, Zak testified that Thunder did not use the one-hour Leq averaging method for measuring impulsive noise. Tr. at 388-91, 1528-32; Comp. Exh. 19; Resp. Exh. 97 at Figures 3 and 4; Resp. Br. at 11.

"Fast dynamic characteristic" was the old method of measuring impulsive noise and should have been deleted from the Board's rules in 1987. See 11 Ill. Reg. 3136-3139 (January 27, 1987); General Motors Corp. Proposed Amendments (January 22, 1987), R83-7. However, the phrase was left in the rules and today can be found in the Board's official copy of the rules and on the Board's Web site. The fast dynamic characteristic method directly

conflicts with a provision in Section 900.103(b) which states that all Section 901 noise measurements (including the measurements for impulsive noise at Section 901.104) should use the one-hour Leq averaging method. Since there is a conflict in the rules, the Board will look to its opinion in docket R83-7 where it held that the one-hour Leq averaging method “is the most comprehensive measurement of community response to noise because it best combines consideration of both steady state and time-variant noise”. The Board also held that fast dynamic characteristic was not in conformance with American National Standards Institute (ANSI) requirements. *Id.* at 17. Thus, the Board will recognize that impulse noise should be measured according to the one-hour Leq averaging method.

The First District Appellate Court examined the issue of one-hour Leq averaging in Discovery Group South. In that case, the Board found that the appellants were in violation of the Board’s nuisance noise regulations and, as part of the remedy, ordered the appellants to monitor noise from their site using a stricter Leq averaging time of not more than five minutes. The appellate court upheld the remedy stating that it was within the scope of the Board’s powers, was not a new rulemaking, and did not violate the appellant’s constitutional rights. The appellate court stressed that the one-hour Leq averaging method was necessary to determine a violation of the Board’s numeric noise standards, but the Board did not need to follow it in fashioning a remedy. Discovery Group South, 275 Ill. App. 3d. at 557-60, 656 N.E.2d at 59-61.

An examination of the impulsive noise measurements reveals that Thunder did not measure the impulse noise from LTD using one-hour Leq averaging. As previously stated, Thunder measured A-weighted noise levels using 5-second Leq averaging, Leq averaging over 54 minutes, and the fast dynamic characteristic method. As the impulsive noise measurements were not analyzed according to the one-hour Leq averaging method, the Board cannot find that LTD violated the Board’s impulsive noise limits at 35 Ill. Adm. Code 901.104.

#### Exceptions to Numeric Noise Regulations

Although the Board finds that LTD has not violated any of the Board’s numeric noise regulations, the Board chooses to address arguments regarding exceptions to the Board’s numeric noise regulations.

LTD claimed that its trucking operations are exempt from the Board’s numeric noise regulations. 35 Ill. Adm. Code 901.107(f) provides that “Sections 901.102 through 901.106 inclusive shall not apply to the operation of any vehicle registered for highway use while such vehicle is being operated within any land used as specified by Section 901.101 in the course of ingress to or egress from a highway.” All trucks arrive at LTD from Route 22 and Lakeside Drive. The definition of highway at Section 900.101 includes any public road including Lakeside Drive and Route 22. Voigt testified that all trucks except the yard tractor in LTD’s parking lot are licensed. Tr. at 1154.

The Board finds Section 901.107(f) exempts noise from trucks as they enter or leave Lakeside Drive. However, Section 901.107(f) does not exempt the trucks from complying

with the Board's noise regulations while they are at LTD's loading docks and in the staging area. Complainants did not strongly object to the noise of the trucks on Lakeside Drive; they primarily objected to the noise of the trucks at the LTD docks and in the LTD staging area. Complainants also correctly point out that 35 Ill. Adm. Code 901.107(f) only exempts trucks from compliance with Board's numeric noise regulations but not the nuisance noise provisions. Reply Br. at 7-8.

LTD also raised the provision at 35 Ill. Adm. Code 901.107(b) that exempts "emergency warning devices" and "unregulated safety valves" from the Board's numeric noise regulations. Respondent's attorney wrote that the exemption for emergency warning devices applies to backup warning devices and air horns, and the exemption for unregulated safety valves could apply to the release of air from air brakes. Comp. Exh. 66 at 4. The Board has held that backup warning devices such as the ones at issue herein are not exempt from the Board's numeric noise regulations because they are used routinely. Hoffman v. City of Columbia, (October 17, 1996), 94-146, slip op. at 15 (Meyer concurring); Noise Pollution Control Regulations, R72-2 slip op. at 30. The Board finds that the backup warning devices and air horns (which are also used routinely) are not exempt from the Board's numeric noise regulations.

#### Nuisance Violation

The Board first discusses applicable law for nuisance noise. Second, the Board determines whether noise from the trucking terminal has interfered with the residents' enjoyment of life. Third, the Board determines whether any such interference was unreasonable. Finally, the Board determines whether respondents have violated the prohibitions on nuisance noise.

In summary, complainants allege that, as a result of the continuing noise from LTD, they have been unable to sleep and enjoy quiet activities around the home. LTD alleges that it is not the sole cause of the noise and that other noise sources, such as the tollway and the garbage trucks at Corporate 100, are to blame. LTD claims that it has been responsive to complainants' concerns and points to its good neighbor program as an example.

#### Applicable Law

Complainants allege that respondents have violated Section 24 of the Act and 35 Ill. Adm. Code 900.102. Section 24 provides:

No person shall emit beyond the boundaries of his property any noise that unreasonably interferes with the enjoyment of life or with any lawful business or activity, so as to violate any regulation or standard adopted by the Board under this Act. 415 ILCS 5/24 (1998).

Section 900.102 of the Board's regulations provides, in relevant part, that no person shall cause or allow the emission of sound beyond the boundaries of his property "so as to cause noise pollution in Illinois . . ." 35 Ill. Adm. Code 900.102. Noise pollution is defined as "the

emission of sound that unreasonably interferes with the enjoyment of life or with any lawful business or activity.” 35 Ill. Adm. Code 900.101.

Section 24 of the Act and Section 900.102 of the Board’s regulations constitute a prohibition against nuisance noise. Zivoli v. Prospect Dive and Sport Shop, Ltd. (March 14, 1991), PCB 89-205, slip op. at 8. The Board considers Section 33(c) of the Act to determine if noise rises to the level of a nuisance or an unreasonable interference with the enjoyment of life. See Hoffman v. City of Columbia, Illinois (October 17, 1996), PCB 94-146, slip op. at 2.

Section 33(c) of the Act provides:

In making its orders and determinations, the Board shall take into consideration all the facts and circumstances bearing upon the reasonableness of the emissions, discharges or deposits involved including, but not limited to:

- (i) the character and degree of injury to, or interference with the protection of the health, general welfare and physical property of the people;
- (ii) the social and economic value of the pollution source;
- (iii) the suitability or unsuitability of the pollution source to the area in which it is located, including the question of priority of location in the area involved;
- (iv) the technical practicability and economic reasonableness of reducing or eliminating the emissions, discharges or deposits resulting from such pollution source; and
- (v) any subsequent compliance.

#### Interference with the Enjoyment of Life

In any nuisance noise enforcement proceeding, the Board must address the threshold issue of whether or not the noise from respondent’s property has interfered with complainants’ enjoyment of life. See Furlan v. University of Illinois School of Medicine (October 3, 1996), PCB 93-15, slip op. at 4. The noise must objectively affect enjoyment of life if the noise is to be considered interference. See Hoffman, PCB 94-146, slip op. at 15-16; Zivoli, PCB 89-205, slip op. at 9. The noise from LTD made it difficult for complainants to fall asleep and awoke them from sleep. It disrupted the complainants while they read, studied, and worked. It also disrupted complainants from enjoying quiet activities in the home. Complainants could not open windows, and the Webers could not enjoy their outdoor deck during the late summer and fall. Some of the complainants’ children were disturbed by the noise. The Board has held that such disruptions from noise are an interference with the enjoyment of life.

The Board finds that the noise from LTD's facility has interfered with complainants' enjoyment of life. See Charter Hall Homeowner's Association v. Overland Transportation System, Inc. (October 1, 1998), PCB 98-81, slip op. at 20 (trucking operations interfered with sleep, complainants could not open windows); Thomas v. Carry Companies of Illinois (August 5, 1993), PCB 91-195, slip op. at 13, 15 (trucking operations interfering with sleep); Hoffman, PCB 94-146, slip op. at 5-6, 17 (noise interfering with sleep and use of yard); Curtis v. Material Service Corporation (April 18, 1993) PCB 91-30, slip op. at 13-14 (noise interfered with sleeping, studying, and had an adverse affect on children).

There is some evidence in the record that complainants are bothered by ambient noise. Some of the complainants have heard trucks picking up garbage at Corporate 100, but the trucks only come once per day and take five minutes to make the stop. Reply Br. at 10-11.

Voigt testified that LTD disconnected the backup warning device on the yard tractor from 3:00 a.m. on Nov 2, 1999, until 6:00 a.m. on November 4, 1999. Tr. at 1153. Rosenstock testified that he heard the backup warning device at LTD on the morning of November 3 at about 7:00 a.m. Karen Roti testified that she heard beeping noises "faintly" during the night of November 2-November 3 but did not hear it on the morning of November 3. Tr. at 622-23, 649-50 741-42. Respondents point out that this is evidence that complainants could not distinguish between noise from backup warning devices at LTD and backup warning devices at Corporate 100. Resp. Br. at 8-9. The complainants alleged that respondents were trying to trick them. Tr. at 636-49. Complainants also pointed out that although the yard tractor backup warning device was disconnected, overland trucks in the staging area might have been sounding their backup warning devices. Tr. at 1096-1100; Reply Br. at 9.

The Board finds that ambient noise interfered somewhat in complainant's lives. However, the ambient noise interference does not diminish the fact that the noise from LTD interfered with complainant's lives. The Board finds that the interference from the LTD noise is much more substantial than the interference from ambient sources.

Unreasonable Interference with the Enjoyment of Life. The Board must also address whether noise from LTD has unreasonably interfered with complainants' enjoyment of life. The Board examines the criteria at Section 33(c) of the Act to determine if the interference is unreasonable. In proving the unreasonableness of the interference, complainants are not required to introduce evidence on each of the Section 33(c) factors and the Board may still find the interference unreasonable even if it does not find against respondents on every factor. See Wells Manufacturing Company v. Pollution Control Board, 73 Ill. 2d 226, 233, 383 N.E.2d 148, 151 (1978); Processing and Books, Inc. v. Pollution Control Board, 64 Ill. 2d 68, 75-77, 351 N.E.2d 865, 869 (1976). The Board will now analyze the 33(c) factors.

The Character and Degree of Injury to, or Interference with the Protection of the Health, General Welfare and Physical Property of the People. To assess the character and degree of interference that LTD has caused, the Board must determine if the noise "substantially and frequently interferes" with the enjoyment of life "beyond minor or trifling



annoyance or discomfort.” Kvatsak v. St. Michael’s Lutheran Church (August 30, 1990), PCB 89-182, slip op. at 9.

Complainants testified that the nighttime noise from LTD’s operations disrupted their lives every year from 1996 through 1999 starting in early autumn and continuing through mid-December. Complainants were disturbed by the noise every night from Monday through Friday during those months. Complainants testified that the noise would sometimes continue late into the night and continue until 3:00 a.m. LTD officials testified that the second shift sometimes lasted until 2:30 a.m. Rosenstock claimed that he heard noises 24 hours a day, but LTD officials claimed that they never operated around the clock. Rosenstock also testified that his house often shook as a result of the loud noises from operations at LTD. LTD officials did not rebut the testimony regarding shaking.

During those months complainants testified that they were irritable from lack of sleep and that their children had problems such as waking up for school on time. Karen Roti testified that she had to use prescription drugs or alcohol on certain nights in order to get to sleep.

Rosenstock kept a log for a week of the noises from LTD and the times when his house shook. Entries in the log demonstrate that the noise from LTD lasted through the early evening hours into the late evening and early morning hours. Although Rosenstock kept the log for only a week, he testified that it was representative of the noise coming from LTD during the autumn each year.

In his deposition, Schomer discussed low frequency noise that may not rise to the level of violating the Board’s noise regulations but causes window rattling and objects to move in a home. The level of annoyance from such noise is equivalent to a higher pitched noise that is 10 to 20 dBs louder. Comp. Exh. 65 at 61-62, 83-84. The Board has recognized that noise which causes residential vibrations is a relevant factor in determining substantial interference with a complainant’s life. Pawlowski v. Johansen (April 6, 2000), PCB 99-82, slip op. at 4, 8; Tex v. Coggeshall (October 23, 1992), PCB 90-82, slip op. at 13, 15.

The Board has found that Acoustic Associates’ noise measurements and analysis may not be used to prove a violation of the Board’s numeric noise limits. However, it is necessary to strictly follow the measurement procedures at 35 Ill. Adm. Code 900.103 only when proving an allegation of a numeric noise violation. Discovery South Group, 275 Ill. App. 3d at 559, 656 N.E.2d at 59. The Board may take note of these measurements in order to substantiate alleged violations of the Board’s nuisance noise standards. Dettlaff v. Boado (July 1, 1993), PCB 92-26, slip op. at 7-9. The measurements that Harmon took on September 23 and 24, 1997, demonstrated that noises from LTD were frequent and extended well into the early morning hours. See Resp. Exh. 97. Voigt testified that the evening / early morning of September 23-24, 1997, was typical. Thus, the noise that Harmon recorded that night would indicate that such noises were common on many other nights during the autumns of 1996 through 1999.

The Rotis listed their house with realtors on two occasions, once in 1995 and once in 1996. The Board might find this as a factor in the analysis of the unreasonableness of the interference from LTD. However, it is not clear from the record if moving away from the LTD noise was a factor in the Rotis' decision to list their house.

The Board recognizes that there are variations among complainants' versions of the interference that they attributed to the operations at LTD. Zak testified that reasonable people would complain about the LTD noise, but that each person in complainants' various residences might be disturbed differently. Tr. at 346, 371. The Board may find an unreasonable interference even though there are variations in the way that each complainant is affected by the noise. Discovery South Group, 275 Ill. App. 3d at 554-55, 656 N.E.2d at 57; Hoffman, PCB 94-146, slip op. at 17.

The Board finds that the character and degree of interference from the noise LTD's operations has been substantial and frequent. It weighs this factor against LTD.

The Social and Economic Value of the Pollution Source. The Illinois Supreme Court has determined that the number of persons that respondent employs and respondent's prominence in a particular market are relevant to the analysis of this factor. Wells Manufacturing Company, 73 Ill. 2d at 235-36, 383 N.E.2d at 152. The Board has determined that the numbers of employees and the total wages and taxes paid are relevant. Arendovich v. Koppers Company, Inc. (February 8, 1990), PCB 88-127, slip op. at 6.

LTD normally employs 600 people at its Bannockburn facility, and during the late August to mid-December period it employs between 1,200 and 1,300 people. In 1999, LTD paid just over \$300,000 in real estate taxes. Also, Kracower estimates that 60% to 70% of that total goes local schools, including Deerfield High School and the Bannockburn Elementary School District. Furthermore, LTD, like other businesses, may not add any pupils to those school districts. Tr. at 1419-20, 1423.

There was no information in the record about the prominence of LTD in the toy or clothing market. Nevertheless, the Board finds that the LTD facility has social and economic value and weighs this factor in favor of LTD.

The Suitability or Unsuitability of the Pollution Source to the Area in which it is Located, Including the Question of Priority of Location in the Area Involved. Priority of location is one aspect of suitability, but it is not the sole factor that the Board examines in making a finding for this factor. Oltman v. Cowan (November 21, 1996), PCB 96-185, slip op. at 3, 5.

The Board notes that FMC built the first section of the current LTD warehouse facility in 1976 or 1977 and that LTD has been the owner of the property since 1986. The Board also notes that complainants all moved into their homes between August 1990 and January of 1992. LTD clearly has priority of location.

Alan Kracower described the land use zoning adjacent to the tollway in Bannockburn as nonresidential. He described Bannockburn as having a buffer of commercial land uses between the tollway and residential areas to the east. Tr. at 1402-03. Kracower noted that there is no buffer between the residential area of Lake Forest where complainants live, the tollway, and the commercial area of Bannockburn where LTD is. Tr. at 1406-07. Kracower also said that LTD is well suited to the intersection of Route 22 and the tollway because the intersection provides “reasonable and rapid access to major arterial roads or highways” without cutting through residential areas. Tr. at 1404. Zak also testified that LTD is well suited for its location because it is next to the tollway, making it easy to move merchandise. Tr. at 432, 449. The Board recognizes that LTD is in a commercially zoned district. LTD’s trucking operation is well suited to its location at the intersection of the tollway and Route 22.

In addressing this factor, the Illinois Supreme Court has found that

industry cannot, of course, substantially increase its...emissions and simultaneously rely on its priority of location in the area as a mitigating factor. This sort of changed circumstance would...undermine the industry’s priority-of-location argument. Wells Manufacturing Company, 73 Ill. 2d at 237, 383 N.E.2d at 152.

LTD doubled the size of its facility and added offices during 1994 and 1995. Karen Roti testified that she heard noise from LTD prior to 1995 but that it was not disruptive. Complainants’ were not disturbed by nighttime noise from LTD until one to two years after the expansion.

The Board finds that complainants knew about LTD’s facility when they moved into their homes. However, the Board finds that LTD substantially increased its activities after complainants had moved into their nearby homes. LTD cannot rely on priority of location as a mitigating factor. The Board finds that LTD’s facility, as it is currently operated, is unsuitable to the area involved and weighs this factor against LTD.

*The Technical Practicability and Economic Reasonableness of Reducing or Eliminating the Emissions, Discharges or Deposits Resulting from Such Pollution Source.* The Board must examine the record to determine if LTD could have employed readily available, practical, and reasonable means to reduce or eliminate noise emissions. Incinerator, Inc. v. Pollution Control Board, 59 Ill. 2d 290, 298-299, 319 N.E.2d 794, 798 (1974); Scarpino v. Henry Pratt Company (April 3, 1997), PCB 96-110, slip op. at 20.

There was no evidence presented at hearing regarding the value of LTD’s sales or LTD’s profits. However the Board takes note of the fact that LTD paid \$6.6 million for the Bannockburn facility in the 1980s, between \$1.5 and \$2 million for its first warehouse expansion, and a total of \$9.9 million for acquiring property and constructing its second expansion.

*Noise Wall.* A great deal of testimony was presented on the construction of a noise wall. LTD hired consultants and conducted an in-depth study of constructing a noise wall along the northern boundary of its staging area and just south of LTD's north parking lot. In its final proposal, Huff submitted a proposal to LTD for a \$300,000 steel noise wall that would run 682 feet in length and stand 14 feet high. Huff also submitted proposals for a slightly shorter (both in height and length) wall at slightly discounted prices, but no evidence was submitted regarding any reduced effectiveness of such options.

Mitchell claims that the Huff noise wall will reduce migration of noise from LTD's truck staging area to the complainants' homes. Tr. at 1145. Thunder admitted to complainants' counsel that the proposed wall, if constructed well, would reduce noise from the staging area to complainants' homes. Thunder also admitted that he had recommended similar walls to block noises from other trucking operations. Tr. at 1543-45, 1604-05.

Thunder, Mitchell, and Zak point testified the proposed wall would have no affect on ambient noise. Tr. at 243-45, 247, 397, 411, 1536-37, 1540-43. However, the Board finds that the interference from ambient noise sources is slight compared to the interference from LTD, so the proposed noise wall need not block ambient noises to be effective.

Mitchell testified that he has installed noise walls in the past. These walls have satisfied "EPA limits", but people still objected to the noise. Tr. at 248-49. Thunder could not guarantee that the proposed noise wall would work, and he cited the trucks in the staging area, trees, and landmarks that might cause reverberations of sound to unexpected areas. Tr. at 1591, 1605. In his deposition, Schomer said that a well-built noise wall just north of LTD's dock area would prevent noise from reaching complainants' homes, but he could not guarantee that the wall would stop complaints about the noise from trucking operations at LTD. Comp. Exh. 65 at 72, 78, 132, 134-35, 145. Likewise, Zak could not guarantee that the proposed noise wall would work. Tr. at 414.

Mitchell said that a wood wall could be cheaper but would not work. Wood does not have the same transmission loss as steel and does not absorb sound as well. He also said that it is more difficult to guarantee good results with wood. Tr. at 236-37.

Based on "Thunder's report", Zak testified that the noise wall proposed by Huff would "largely solve" the nuisance problem, provided that LTD conducted its activities so as to reduce noise. (It is not clear if Zak is referring to the January 8 Report.) Tr. at 346-47, 402. Zak testified that it is technologically feasible and economically reasonable for LTD to build the proposed \$300,000 noise reduction wall. Tr. at 14, 347-48, 432. Zak states that a wood wall would work as well as the \$300,000 steel wall as long as the wood wall had acoustically absorptive material on the LTD side such as fiberglass. Wood walls require periodic maintenance, but steel walls last well over 20 years. Tr. at 349-50.

Schomer, in a March 16, 1998 letter to Lothspeich, said that the "simplest means to reduce the noise impact is to install noise mitigating structures like barriers and to install sound absorbing materials and/or to eliminate nighttime operations..." Tr. at 135-36, 1132; Comp.

Exh. 30. In his deposition, Schomer said that the Huff Company has a very good reputation and that paying \$42 per square foot would enable LTD to purchase “the Cadillac of walls.” Comp. Exh. 65 at 78.

In the past, the Board has ordered the noise walls and acoustical barriers be built on a case-by-case basis. The Board looks to the facts in each case to determine if a noise wall is a necessary remedy. The Board ordered the construction of an \$18,000 sound barrier as a third option if two other options did not produce the desired results. The Board subsequently dropped its demand for the sound barrier once other noise control measures were proposed. Zarlenga v. Partnership Concepts (February 27, 1992), PCB 89-169, slip op. at 8-9; Zarlenga (July 30, 1992), PCB 89-169. A few months later, the Board considered an option to require a respondent to construct a ten to twenty-foot tall by 200-foot long barrier wall with a cost of \$20,000. The Board noted that the respondent would incur considerable costs for this option and instead required that that the respondent undertake other noise reduction measures. Madoux v. Straders Logging and Lumber Mill (November 19, 1992), PCB 90-149, slip op. at 2, 6. In another case, the Board found that the construction of two barrier walls at a cost of \$20,000 was the most economically reasonable and technically feasible of several proposed noise reduction remedies. Tex (June 17, 1993), PCB 90-182, slip op. at 4, 6-7. About a year later, the Board found that construction of a barrier fence (estimated cost between \$16,000 and \$55,000) was the most economically reasonable and technically feasible of all the noise control options presented. Thomas (May 19, 1994), PCB 91-195, slip op. at 2-3. In Hoffman the Board found that construction of an acoustical barrier (estimated cost between \$12,000 and \$57,000) was unwarranted because it found that respondent had not violated any of the Board’s numerical noise standards. Hoffman, PCB 94-146, slip op. at 20-21. More recently, the Board ordered a respondent trucking terminal to construct an airtight, one-inch thick, 22-foot tall wooden or brick barrier around the entire northern, western, and southern perimeter of its facility. Charter Hall, (May 6, 1999), PCB 98-81, slip op. at 5-6, 9. At the hearing in Charter Hall, Zak estimated that a noise barrier would cost the respondent anywhere from \$50 to \$100 per linear foot. The Board found that construction of the barrier was technically feasible and economically reasonable. Charter Hall (October 1, 1998), PCB 98-81, slip op. at 14, 24-25. Furthermore, the Board ordered the barrier built even though it found no violation of the numeric noise limits.

The Board recognizes that the \$300,000 estimate for the noise wall herein is a significant sum. In Hoffman, the Board held that the \$150,000 cost of relocating the respondent’s municipal maintenance facility was not “economically reasonable considering the type of interference and the alternative control options.” Hoffman, PCB 94-146, slip op. at 19.

The Board recognizes that there is no guarantee that a noise wall would prevent noise to the extent that complainants would be completely free of unreasonable interference from LTD’s operations. The Board finds that the proposed noise wall would likely prevent much of the migration of noise from LTD’s docks and staging area to complainants’ homes. However, the Board is hesitant to find that the noise wall proposed by Huff is economically reasonable if

another less expensive noise wall would be just as effective, such as the wood / fiberglass wall that Zak mentioned.

Thunder suggested that LTD could construct a dome and or parking garage as noise barriers, but these options would be more expensive than a wall.

*Other Measures.* Schomer suggested construction of a berm as a noise control measure, but it does not appear that there is enough space for a berm between the LTD parking lot and complainants properties.

Complainants suggested that LTD limit its operations to daytime hours. However, Hara stated that restricting business during nighttime hours would eliminate half the jobs at LTD, and would “destroy” LTD because the company would not have the capacity to ship its orders prior to and during the Christmas season.

Rosenstock suggested that LTD could have halted the practice of backing trucks directly against the bumpers along the north wall of the staging area. Rosenstock cited the noise and vibrations from the contact of the trucks and the bumpers as a major source of irritation. Other experts said that the bumpers along the north wall should be improved to minimize noise, but Zak testified that the bumpers are well designed. Tr. at 367.

Thunder also suggested that LTD could have hired a dock pilot to patrol the docks and staging areas to ensure that LTD employees and truckers were being as quiet as possible.

*Finding.* The Board finds that eliminating LTD’s nighttime operations would not be economically reasonable, and that building a berm would not be technically feasible. The Board will not, at this point, determine if constructing the proposed noise wall would have been economically reasonable. However, the Board finds that it would have been technically practicable and economically reasonable for LTD to hire a dock pilot or more than one dock pilot. The dock pilot could have patrolled the docks and staging area to ensure that truckers and LTD employees were as quiet as possible. The dock pilot also could have guided trucks in the staging area in order to prevent those trucks from contacting the north wall bumpers at high rates of speed. The Board weighs this factor against LTD.

*Any Subsequent Compliance.* Under this factor, the Board determines if LTD has subsequently come into compliance with any provisions of the Act or the Board’s regulations that it allegedly violated. See Manarchy v. JJJ Associates, Inc. d/b/a The Gotham Nightclub (July 18, 1996), PCB 95-73, slip op. at 13.

The Board finds that LTD has employed several measures in an effort to reduce noise. LTD’s “Good Neighbor Policy” is a program to encourage truckers on LTD’s property to keep noise to a minimum. LTD officials also stationed security guards to prevent trucks from entering the parking lot near complainants homes, required truck doors to be hitched in an open position to prevent swinging and banging, repaired dock levelers to prevent them from clanging against truck dock walls, and secured a quieter yard tractor. LTD repaired its dock levelers in order to reduce the noise that they make when trucks pull away. LTD also switched

some of its operations to its new Aurora facility, but is not clear if they did this for business reasons or to reduce noise from the Bannockburn facility. Voigt testified that LTD requested that truckers raise the legs on trailers in order to reduce the distance that trailer would be raised/dropped during uncoupling/coupling procedures, but there were concerns about improper connections that could have resulted in more noise. LTD also disconnected the backup warning device on the yard tractor for a short time. However, concerns about a lack of safety and resulting liability in the event of an accident led LTD to reconnect them. The backup warning device on the yard tractor was also disconnected for a brief period during the November 1999 hearings but was soon reconnected.

LTD's efforts, especially securing the quieter yard tractor, diminished complainants' concerns about the noise somewhat. However, despite LTD's efforts, the noise problem was ongoing as of the time of hearing. The Board weighs this factor against LTD.

#### Determination of Violation

After examining the Section 33(c) factors, the Board can only weigh the factor on social and economic value in favor of LTD. The Board finds that the degree of interference in complainants' lives as a result of the noise from LTD is substantial and frequent, that LTD's current operations are unsuitable to its location, that there are technically reasonable and economically feasible means of reducing the noise which LTD has not yet implemented, and that LTD continues its noncompliance with the Act and the Board's regulations. The Board finds that the interference is caused by trucks and the yard tractor engaging and disengaging with trailers, trailers backing into the bumpers along the north wall, and air horns on trucks, among other activities. These noise sources all occur in the dock and staging areas at LTD. The Board finds that LTD has violated the Section 24 of the Act and 35 Ill. Adm. Code 900.102.

#### REMEDIES

Although the record contains testimony and exhibits on remedies for the noise coming from LTD, the Board will order the parties back to hearing in order to further discuss remedies.

#### Backup Warning Devices

Thunder testified that LTD could have employed observers for guiding trucks around the staging area as opposed to using backup warning devices. Tr. at 1535-36. Zak testified that OSHA regulations require that vehicles with obstructed rear views use either backup warning devices or an observer. Tr. at 276-277. The Board acknowledges Zak's testimony on this point and finds that it is based on OSHA regulations at 29 C.F.R. § 1926.601(b)(4) which provide that:

- (4) No employer shall use any motor vehicle equipment having an obstructed view to the rear unless:

- (i) The vehicle has a reverse signal alarm audible above the surrounding noise level or:
- (ii) The vehicle is backed up only when an observer signals that it is safe to do so.

The Board has found that a hiring a dock pilot would be a technically feasible and economically reasonable means of ensuring that the activities in the docks and staging area are quiet and that collisions between trucks and bumpers along the north wall of the staging area are minimized. Dock pilots could also supervise the backing up of trucks in the docks and staging area. However, the Board is concerned about the safety of the dock pilot(s) if it were to order that the backup warning device on the yard tractor be disconnected. The Board orders that both parties further address this issue at hearing, including related safety issues such as adequate lighting in the docks and staging area.

#### Noise Wall

The Board wants more information on any type of noise walls that are less expensive but would be just as effective as the noise wall that Huff proposed. For example, it is not clear if a wood and fiberglass noise wall will provide the same amount of relief.

The Board notes that there is ambivalence on the part of several of the experts regarding the effectiveness of noise walls in reducing noise. The Board will not order the construction of a noise wall if it would not be effective.

#### Acoustically Absorptive Materials

Thunder and Schomer suggested LTD install acoustically absorptive materials on LTD's north walls, and possibly even the staging area walls, to reduce the reflection of sound towards complainants' properties. The Board has previously found that this option is technically practicable and economically reasonable. See Charter Hall (October 1, 1998), PCB 98-81, slip op. at 14, 24-25.

The Board finds that the record in this matter lacks sufficient information on this remedy. For example, there is no information on what type of acoustically absorptive material would be most effective, and there is no information on the cost of materials and installation. It is also unclear if it is sufficient for LTD to install the material on the north wall of its facility or if the material should also be installed on the walls of the staging area.

#### Other Remedies

The Board will not limit the hearing solely to backup warning devices, a noise wall, and acoustically absorptive materials. For example, Thunder suggested installing rubber in the trucking docks but then said that this requires a great deal of maintenance.



The parties are encouraged to introduce evidence on remedies that have not yet been discussed and introduce new testimony on remedies that have been discussed. The parties may also address civil penalties.

### CONCLUSION

The Board finds that LTD has violated the nuisance noise provisions of the Act and the Board's regulations. 415 ILCS 5/24 (1998); 35 Ill. Adm. Code 900.102. The Board finds that LTD has not violated the Board's numeric noise limits at 35 Ill. Adm. Code 901.102(a), 901.102(b), and 901.104. In order to further address appropriate remedies, the Board orders this matter to hearing on an expedited basis, consistent with the Board's resources. The Board notes that LTD's busy season will likely begin again in August 2001. The parties are encouraged to conduct the hearing well in advance of August 2001.

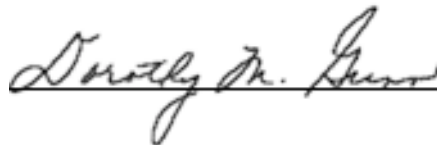
This interim opinion constitutes the Board's findings of fact and conclusions of law in this matter.

### ORDER

1. The Board finds that LTD has violated the nuisance noise prohibitions of the Act at 415 ILCS 5/24 (1998) and the nuisance noise regulations of the Board's regulations at 35 Ill. Adm. Code 900.102.
2. The Board finds that LTD has not violated the Board's numeric noise limits at 35 Ill. Adm. Code 901.102(a), 901.102(b), and 901.104.
3. The Board orders this matter to hearing on an expedited basis, consistent with the Board's resources, to further address appropriate remedies.

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above interim opinion and order was adopted on the 15th day of February 2001 by a vote of 7-0.



Dorothy M. Gunn, Clerk  
Illinois Pollution Control Board