

ILLINOIS POLLUTION CONTROL BOARD
February 20, 1997

IN THE MATTER OF:)
)
LANDFILLS, WASTE TREATMENT AND) R94-34
TRANSFER FACILITIES LOCATED) (Inquiry Hearing)
WITHIN 100-YEAR FLOODPLAINS)

ORDER OF THE BOARD (by G.T. Girard, C.A. Manning, and M. McFawn):

This matter is before the Board on the Illinois Environmental Protection Agency's (Agency) motion, filed on December 2, 1994, requesting that the Board hold an inquiry hearing on whether "landfills and other waste treatment and transfer facilities should be located within a 100-year floodplain." Specifically, the Agency requested an inquiry hearing because of the expressed concern that "public health and [the] environment could be threatened during a 100-year flood from flooding" of facilities such as landfills and other waste treatment and transfer facilities. (Ag. Mot. at 2.) The Agency suggested that public comment should be requested on the following four issues:

1. What type of facilities need to be regulated or prohibited from location within the floodplain?
2. Should the entire floodplain be regulated or just the floodway?
3. Should just the 100-year floodplain be regulated or also the 500-year floodplain?
4. If the Board decides that facilities should be regulated or prohibited from location within the floodplain, then should the new regulation affect currently permitted facilities or just new facilities and expansions?

In response to the Agency's motion, the Board opened this docket on December 14, 1994 and sent this matter to hearing.¹ Hearing was held before Board Hearing Officer Musette

¹ The Board's authority to conduct an inquiry hearing in this matter and other statutory provisions pertaining to landfill siting are contained in Sections 4, 5, 27, 39, and 39.2 of the Environmental Protection Act. (415 ILCS 5/4, 5, 27, 39, 39.2 (1994).) The Office of Water Resources in the Illinois Department of Natural Resources (IDNR/OWR) is authorized to grant State permits for construction within the floodway portion of the 100-year floodplain. (See 615 ILCS 5/5 (1994).) IDNR/OWR also regulates construction in floodways of rivers, lakes, and streams of the State. (See 92 Ill. Adm. Code 700.) Additionally, Executive Order No. 4, issued by Governor James R. Thompson in 1979, provides information regarding appropriate development in Illinois floodplains to agencies of the executive office. Regulations derived from the Environmental Protection Act also condition the location of landfills in the 100-year floodplain. (See. 35 Ill. Adm. Code 703.184, 724.118, 810.815, 811, 811.102(b), 812.109.)

Vogel, in Collinsville, Madison County, Illinois on June 28, 1995. At the hearing the deadline for filing written public comments with the Board was extended to August 15, 1995. The deadline for public comments was further extended to September 1, 1995 by hearing officer order on August 15, 1995. On February 7, 1996 the hearing officer issued an order directing that responsive comments to the public comments would be accepted by the Board if received no later than April 1, 1996.

Twenty-three public comments (PC) were received by the April 1, 1996 deadline. On April 25, 1996 Waste Management of Illinois (WMI) requested leave to file a response to PC 23, which was received by WMI after the close of the comment period. The Board will accept the comment from WMI, numbered PC 24. The Board notes that the purpose of the inquiry hearing was to seek public comment to determine whether landfills and other waste treatment and transfer facilities should be located within a 100-year floodplain. Because the comment may help answer one of the four issues sought to be addressed by this inquiry, the Board will accept the comment to obtain a complete record.

BOARD HEARING

As previously stated, the Board hearing was held in Collinsville on June 28, 1995 and transcribed for the record.² The following is a summary of the testimony received at the hearing.

Testimony of Mr. Jerry Kuhn, Employee of the Agency

Mr. Kuhn, manager of the Resources Conservation Recovery Act Unit of the Permit Section, Division of Pollution Land Control, Bureau of Land of the Agency, testified about the current permitting requirements, which are found at 35 Ill. Adm. Code 703.184 and 724, for locating a hazardous waste landfill. (Tr. at 17.) Mr. Kuhn specifically cited Section 703.184(c) which requires that owners and operators of hazardous wastes facilities identify whether the facility is located within a 100-year floodplain. (Tr. at 17.) He stated that the regulations do not address facilities within the 500-year floodplain. (Tr. at 17.) Mr. Kuhn also noted that the definitions pertaining to floodplain location standards for hazardous waste facilities can be found in Section 724.118(b)(2). Mr. Kuhn then quoted the definitions for 100-year floodplain, washout, and 100-year flood. (Tr. at 17-18.)

Next, Mr. Kuhn summarized Section 703.184(d) which dictates the minimum technical information that owners and operators must provide for hazardous waste facilities located in the 100-year floodplain. (Tr. at 18.) The information required includes: (1) an engineering analysis, indicating hydrodynamic and hydrostatic forces expected in a 100-year flood; (2) engineering design studies to show how washout will be prevented in a 100-year flood; or (3)

Landfills are also required to meet all requirements under the Wild and Scenic Rivers Act (20 ILCS 855/0.01 *et seq.* (1994)) and Section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.* (1992)), pertaining to wetlands.

² For purposes of citation herein, hearing transcripts will be cited according to page number (e.g. Tr. at ___), and Exhibits will be cited to by number (Ex.).

if applicable, a detailed description of procedures to remove hazardous waste to avoid a 100-year flood. (Tr. at 18-19.) Mr. Kuhn also noted that additional location standards for hazardous waste treatment, storage, and disposal facilities located in the 100-year floodplain can be found at Section 724.118(b). These standards require that hazardous waste facilities be designed, constructed, and operated to prevent washout in 100-year floods, or in the case of existing facilities, such as landfills, that a washout of hazardous material would not result in adverse effects on human health in the environment if washout occurred. (Tr. at 19.)

Mr. Kuhn further testified that currently there are only three active hazardous waste landfills in Illinois, none of which are located in the 100-year floodplain. The three active hazardous waste landfills are CID II in Cook County, Northwestern Steel and Wire in Whiteside County, and Peoria Disposal in Peoria County. (Tr. at 20.) Mr. Kuhn also testified that the flooding in 1993 caused no impacts to the three above-mentioned hazardous waste facilities and that there were no hazardous waste landfill applications presently under review by the Agency that would be located in either the 100-year or 500-year floodplains. (Tr. at 20.)

Testimony of Mr. Kenneth Smith, Employee of the Agency

Mr. Smith, lead worker in the Solid Waste/UIC Unit, Permit Section within the Division of Land Pollution Control, Bureau of Land of the Agency, testified about the Agency's permitting of non-hazardous waste landfills in Illinois. (Tr. at 20.) Mr. Smith noted that the term "100-year floodplain" is defined as "any land area which is subject to a one percent or greater chance of flooding in a given year from any source." (See 35 Ill. Adm. Code 810.103; Tr. at 21.) Before discussing Agency permitting responsibilities in relation to waste facilities located in 100-year floodplains, Mr. Smith distinguished the permitting responsibilities that the Illinois Department of Transportation (IDOT)³ has in regulating development in floodplains. (Tr. at 21-22.)

Mr. Smith referred to IDOT's publication, "Floodplain Management: Local Floodplain Administrations Manual" (hereinafter "Floodplain Management Manual," see PC 1, Exh. A) which defines floodplain as land areas subject to flooding. (Tr. at 21.) The Floodplain Management Manual defines floodway as the channel of a river and a portion of the floodplain that carries most of the flood. (Tr. at 21.) IDOT regulations require that development in floodways not obstruct or divert flood flows onto other properties. (Tr. at 21.) IDOT requires a State permit for most floodway development. (Tr. at 22; PC 1, Exh. A at 13, 20.) Mr. Smith testified that the Board's landfill regulations do not contain a comparable definition of floodway (Tr. at 21), and "[t]he [IEPA] does not regulate landfill development within a floodway." (Tr. at 22.)

³ Effective July 1, 1995, the Division of Water Resources in the Illinois Department of Transportation was renamed the Office of Water Resources within the Illinois Department of Natural Resources through a consolidation of several State agencies. The short form IDNR/OWR reflects the current name and bureaucratic address of the agency. Therefore, Mr. Smith's testimony refers to regulatory duties and publications of IDOT, which are currently the responsibility of IDNR/OWR.

Mr. Smith further testified that all new and existing landfills operating under permits issued pursuant to 35 Ill. Adm. Code 810-814 are required by Section 812.109(b) to determine whether the facility is located within the 100-year floodplain. (Tr. at 22.) Mr. Smith reported that any portion of a waste facility that lies within the 100-year floodplain must demonstrate compliance with Section 811.102(b) “which prohibits restricting the flow of a 100-year flood, operating in a manner that results in washout of solid waste from the 100-year flood or reducing the temporary water storage capacity of the 100-year floodplain, unless resources are undertaken to provide alternative storage capacities or for provision of drainage around structures at the facility.” (Tr. at 22.)

Mr. Smith testified that the Agency has issued 30 permits for new landfills, expansions of existing landfills, or initial significant modifications of permits, since adoption of the new landfill regulations in September 1990. Mr. Smith reported that in all 30 cases, the applicants were required to determine whether a portion of the facility was in the 100-year floodplain (see 35 Ill. Adm. Code 812.109(b)), and if so, the applicants were required to demonstrate compliance with the requirement of Section 811.102(b). (Tr. at 23.)

Mr. Smith also reported that only five of the thirty landfills that received permits under the new landfill regulations had a portion of the facility within the 100-year floodplain. (Tr. at 23.) Of those five, only one had a portion of the disposal area within the 100-year floodplain. (Tr. at 23-24.) According to Mr. Smith, all five facilities having a portion of the facility within the 100-year floodplain had complied with the 100-year floodplain requirements in Section 811.102(b). (Tr. at 24.)

Mr. Smith additionally testified that Section 39.2(a)(4) of the Act (415 ILCS 5/39.2(a)(4) (1994)) requires that an applicant applying for local siting approval must demonstrate that the facility is outside the 100-year floodplain, or that the site was flood-proofed. (Tr. at 24.) He further noted that federal regulations (see 40 CFR 258.11) also regulate waste facilities in 100-year floodplains.

Moreover, Mr. Smith stated that most of the landfills in Illinois initially permitted prior to September 1990, under the old landfill regulations (see 35 Ill. Adm. Code 807) and earlier regulations had ceased accepting waste and are closed. (Tr. at 24-25.) Mr. Smith reported that the previous regulations, did not contain any provisions concerning landfill development within the 100-year floodplain. (Tr. at 24.) Mr. Smith further maintained that the Agency did not have an accurate count of the number of these older landfills located in the 100-year floodplain. (Tr. at 25.) Mr. Smith also testified that approximately 56 landfills currently permitted under the old regulations were awaiting repermitting under the new regulations (Tr. at 25) that require compliance with Sections 812.109(b) (floodplain determination) and 811.102(b) (floodplain requirements). Mr. Smith concluded his testimony by noting that the only operating landfill affected in the great flood of 1993 was the Waste Management facility at Chain of Rocks on Chouteau Island in Madison County.⁴ (Tr. at 25.)

⁴ Officially known as the Chain of Rocks Recycling and Disposal Facility, which is owned by Waste Management of Illinois (hereinafter “Chouteau Island landfill”).

Questions for the Agency and IDNR/OWR Personnel

Following the Agency's presentation by Mr. Kuhn and Mr. Smith, representatives of the Agency responded to questions from citizens attending the hearing. (Tr. at 26.) Initially, Ms. Jean Bowers questioned Mr. Kuhn about regulations that might allow waste to be moved from a 100-year floodplain to escape a flood. (Tr. at 27-28.) Mr. Kuhn responded that he had no knowledge of landfill waste being moved in Illinois to avoid a flood. (Tr. at 27-28.)

Ms. Kathy Andria then asked the Agency a series of questions concerning the distinction between special wastes and hazardous wastes in relation to the Chouteau Island landfill. (Tr. at 28-30.) Mr. Smith testified that the Chouteau Island landfill was permitted to accept municipal solid waste and non-hazardous special waste. (Tr. at 29.) Mr. Kuhn testified that special wastes that are hazardous must go to a hazardous waste landfill unless they are exempted, such as household hazardous waste. (Tr. at 28.) Mr. Smith also noted that a hazardous waste determination is based on both constituents and concentration. Waste generators are required to determine whether their waste is hazardous or non-hazardous, and the receiving facility is responsible for determining that the facility has a permit for the type of waste being accepted. (Tr. at 29-30.) Concerned that harmful materials could leach into the river and drinking water, Ms. Andria also questioned whether landfills located in 100-year floodplains had different legal requirements for accepting special wastes than landfills outside 100-year floodplains which accepted special waste. (Tr. at 30-31.) Mr. Smith answered that there is no legal difference between acceptance of waste at landfills. (Tr. at 30.)

Next, Ms. Andria raised a series of questions about how and when the 100-year floodplain was delineated. (Tr. at 31-33.) Mr. Paul Osman, who represented IDOT at the hearing, answered most of Mrs. Andria's questions. Ms. Andria specifically questioned whether the flooding at the Chouteau Island landfill, which occurred two out of the last three years, was an indication that the site was experiencing floods at greater than a one-percent chance. (Tr. at 31.) Mr. Osman responded that the term "100-year flood" was a misnomer and likened the yearly chance of flooding to a coin toss. (Tr. at 32.) Mr. Osman also testified that the floodplain determination in the area of the Chouteau Island landfill was made in the late 1970's. (Tr. at 32.) Ms. Andria then asked if, in Mr. Osman's estimation, there should be a new determination of the 100-year floodplain. (Tr. at 33.) Mr. Osman replied that although some people believe there should be a new determination, he observed that when the existing floodplain maps were overlain with air photos of the 100-year flood, "they were very accurate, they were right on the line." (Tr. at 33.)

Ms. Kathleen O'Keefe, representing the Land of Lincoln Legal Assistance Foundation in East St. Louis, then asked Mr. Osman if there had been an overlay of the 1995 Flood with the floodplain map. (Tr. at 33.) When Mr. Osman replied that he was not aware of such an overlay, Ms. O'Keefe observed that areas in East St. Louis were flooded in 1995 that did not flood in 1993. (Tr. at 33.)

Ms. Andria next directed a series of questions concerning compensatory flood storage to Mr. Osman and Mr. Smith. (Tr. at 33-36.) Mr. Smith testified that when a structure is built in a 100-year floodplain, compensation must be provided in the vicinity of the structure

which is in the floodplain. (Tr. at 34.) Mr. Smith further testified that the theory is to “provide some sort of compensatory storage of an equal volume which causes that water elevation to return back to what it would otherwise be if the structure hadn’t been built.” (Tr. at 35.) In response to Ms. Andria’s specific questions about compensatory flood storage calculations for the Chouteau Island landfill (Tr. at 36), Mr. John Kim of the Agency reported that the Agency permit reviewer with specific knowledge of the Chouteau Island landfill was not present at the hearing because these specific questions were not anticipated. (Tr. at 36-37.)

Mr. Jack Norman then asked Mr. Smith to clarify the prohibitions referred to in Section 811.102(b) (Tr. at 37) and stated that he disagreed with Mr. Smith’s interpretation. (Tr. at 54-55.) Ms. Andria next asked a series of questions concerning the regulation that specifies that washout of solid waste from a solid waste facility is prohibited. (Tr. at 38-41.) Ms. Andria’s questions particularly concerned the penalties for violating that regulation (Tr. at 38) and the procedures for bringing such a matter to the attention of the Agency or the Board. (Tr. at 39-40.) Mr. Kim explained that the Agency’s response would depend on the case-specific situation surrounding the facility involved. (Tr. at 39.) Mr. Kim then explained a number of ways that such a complaint could be brought to the attention of the Agency and ways that the Agency would handle such a complaint. (Tr. at 40.) Mr. Kim further noted that the ultimate legal determination about whether an existing facility complied with specific regulations is made by the Board or the circuit court. (Tr. at 40-41.)

Ms. Andria also asked Mr. Kuhn if the hazardous waste regulations were adequate to address concerns regarding hazardous waste facilities being located in 100-year floodplains. (Tr. at 41.) Mr. Kuhn replied that there have been no applications to site hazardous waste landfills in 100-year floodplains, that he does not anticipate any such applications, and “as things stand now, I would say yes, they [the regulations] would be adequate.” (Tr. at 41-42.)

Ms. Andria and Dr. George Arnold then asked a series of questions concerning whether the current siting regulations and procedures are adequate for siting landfills in floodplains. (Tr. at 42-48.) Specifically, Ms. Andria asked if any landfills that have been approved by local siting have then been denied permits by the Agency. (Tr. at 42.) Mr. Smith replied that landfills had been denied initial construction or expansion permits because they did not comply with the regulations. (Tr. at 43-44.) Ms. Andria stated she asked the question because once the landfill siting was approved and not challenged, “citizens are pretty much shut out at that point” and that “the permitting is a very mutually-cooperative venture.” (Tr. at 44.) Mr. Ed Bakowski, Agency Manager of the Permit Section, who supervises both Mr. Kim and Mr. Kuhn, elaborated on the siting permit requirements, stating that the Agency frequently held public hearings to gather public input during the permit decision process. (Tr. at 45.) Dr. Arnold then questioned the time spent by Agency permit writers in meetings with landfill applicant personnel versus citizen opponents. (Tr. at 46-48.) Mr. Bakowski replied that for applications where there has been a hearing, there have been meetings with citizens before the hearing which have probably been “a third to a half” of the time spent with applicant personnel. (Tr. at 48.)

Dr. Tanner Girard, a member of the Board, asked Mr. Kuhn a series of questions about hazardous waste landfills (Tr. at 48-49) and asked Mr. Smith about landfill washouts in 1993 and 1995. (Tr. at 51.) Mr. Kuhn stated that there were three active hazardous waste landfills, but none were in the 100-year floodplain. He also testified that there were other permitted hazardous waste landfills in Illinois, but they were inactive. (Tr. at 48.) Mr. Kuhn also stated that none of the three active hazardous waste landfills were affected by the 1993 or 1995 Floods. (Tr. at 49.) Mr. Smith added that he was not aware of any solid waste washed out of any landfill in Illinois in the Floods of 1993 or 1995. (Tr. at 51.)

Board technical staff member, Mr. Anand Rao, next asked questions of Mr. Smith concerning existing solid waste units scheduled to close by October 9, 1996 if they did not meet the location restrictions pertaining to floodplains specified in Section 814.302(a) and (c). (Tr. at 50-51.) Mr. Smith explained that municipal solid waste landfills that had a portion of the facility in the 100-year floodplain had to meet the location standards in Sections 814.302(a) and (c), or shut down by the specific October 1996 date. (Tr. at 50-51.)

Next, Mr. Smith, Mr. Kuhn, Mr. Bakowski, and Mr. Kim addressed a variety of questions from various people. (Tr. at 53-69.) While many of the questions and answers clarified or elaborated on previously discussed topics, there were some new facts and issues. Mr. Kuhn testified that a closed hazardous waste facility on the Mississippi River owned by Amoco was flooded in 1993 (Tr. at 53), and there was no knowledge of a wash-out from the facility. (Tr. at 54.) Mr. Smith and Mr. Bakowski answered a series of questions about the landfill design features necessary to keep liquid wastes in the landfill from moving outside the landfill (liner systems and flood protection berms) and how these features may be affected by a major flood. (Tr. at 55-60.) Generally, Mr. Smith and Mr. Bakowski pointed to engineering requirements in the Board's regulations and expressed confidence that landfills could be properly designed to withstand a 100-year flood event. Mr. Bakowski did, however, speculate on some possible system failures that could lead to flood waters entering a landfill. (Tr. at 59.) Ms. Livingston, a public citizen, and Mr. Rao also asked a series of questions about how leachate would be collected and treated in both the engineering and regulatory contexts if a landfill was breached by floodwaters. (Tr. at 65-69.)

Finally, Ms. Kay Kendall asserted in her statements and questioning that the Chouteau Island landfill was improperly located (Tr. at 60-61) and was using improper soil for daily cover. (Tr. at 63-65.) Board Chairman Claire Manning reminded the hearing participants that this inquiry hearing was directed at the adequacy of the Board's landfill siting regulations and should not be turned into an enforcement hearing on the Chouteau Island landfill. (Tr. at 61-62.)

Testimony of Mr. Jim Morfew

Mr. Morfew, who represented the Illinois Chapter of the Solid Waste Management Association, testified that this association has 90 members who are involved in all aspects of solid waste disposal including landfill ownership and operation. (Tr. at 71.) According to Mr. Morfew, the industry believed that the laws and regulations currently in effect "effectively deal with the issue of location of landfills in the floodplains" and that the regulations "have

been effectively implemented by the agency responsive to do so.” (Tr. at 71.) Mr. Morfew noted that Section 39.2 of the Environmental Protection Act (Act) regulates the entire floodplain through the siting process. Specifically, IDOT had jurisdiction over construction of facilities in floodways and additional Agency regulations stipulated requirements for waste management facilities in floodplains. (Tr. at 71-72.) Mr. Morfew questioned whether there was sufficient risk to justify the resources, time, and additional funds that would be required to further regulate the 100-year floodplain and extend regulations to the 500-year floodplain. (Tr. at 73.) Mr. Morfew asserted that the 500-year floodplain was only a “very small percentage larger” than the 100-year floodplain, and for many areas of the State, the 500-year floodplain had not been designated. (Tr. at 72-73.) In summary, the industry’s position was that the current regulations should not be changed. (Tr. at 73-74.)

Testimony of Ms. Kathy Andria

Ms. Andria from the Madison County Conservation Alliance and Stop Polluting Illinois (SPILL), next made a presentation accompanied by slides (Tr. at 77-94). Most slides showed the Chouteau Island landfill and environs during the 1993 Flood. Ms. Andria first expressed disappointment that the notice of the public hearing was not more widely distributed. (Tr. at 78-79.) Chairman Manning responded that the Board welcomed public participation and that the public notice was legally and procedurally correct. (Tr. at 79-80.)

Most of Ms. Andria’s positions were summarized in the introduction to her first slide:

Chouteau Island was flooded in 1993 to a depth of 20 feet. Flood water entered the active area of the landfill and permeated the closed areas. Large quantities of methane gas were released. The liner tore, pumps failed, levees were breached, leachate was released into the river, treating it, so to speak, merely by aeration, spraying it into the air and letting it fall back into the water. This is a landfill that accepts special wastes, including lead and other hazardous heavy metals, a landfill that has permits to use industrial sludge as daily cover. But one year later IEPA granted them a permit for a lateral expansion. And last month, two years later, that same island flooded again. Only this time the 48 families who resided on the island had been bought out by FEMA.⁵ But the landfill is still there; flooded again, including the very area IEPA permitted. This time, again, they released leachate into the flood water. Solid waste was seen in the water by a group I escorted to the island, which included people from the U.S. EPA, the Corps of Engineers, the IEPA, and the Illinois Department of Conservation.⁶

They are in compliance, I am told. If that is the case, then the law needs to be changed before Waste Management buys up the whole island and we have one giant landfill centrally located between Illinois and Missouri.

⁵ Federal Emergency Management Agency.

⁶ Effective July 1, 1995, the Illinois Department of Conservation became the Illinois Department of Natural Resources after consolidation with several other state agencies.

(Tr. at 81.)

Ms. Andria further stated that waste-hauling trucks ruined the bridge to Chouteau Island. (Tr. at 82.) Ms. Andria also observed that one slide showed solid waste in the landfill touching the flood waters, while other slides showed Waste Management of Illinois Inc.'s (WMI) pipes discharging water from the landfill into a ditch. (Tr. at 84, 85, 87.) She also claimed that WMI's activities were affecting endangered species (Tr. at 88) and wetlands (Tr. at 93-94).

Several participants from the Agency and WMI questioned Ms. Andria. (Tr. at 88-93.) Additionally, WMI employees, Mr. William Schubert and Mr. Glen O'Brien, clarified some of the pictures. (Tr. at 89-93.) Mr. Schubert reported that some slides showed collect down drains which collect clean water from vinyl-covered areas on top of the landfill and carry the water without making gullies in the side slope. (Tr. at 89-90.) Mr. Schubert also testified that the white material in one slide was geotextile material used in landfill construction, not solid waste. (Tr. at 90.) Moreover, Mr. Schubert noted that a breached levee in one slide was put there by the Chouteau Island Levee District and was not constructed by WMI. (Tr. at 90.) Mr. O'Brien testified that one slide showed a wetland where an old levee under the jurisdiction of the Chouteau Island Levee District had failed and was not a slide of the WMI borrow pit. (Tr. at 91-92.) Ms. Andria countered that she had slides of bulldozers in action and that someone was bulldozing a wetland. (Tr. at 93-94.)

Testimony of Mr. Raj Janarathanan

Mr. Janarathanan, who works as a Geographical Information System (GIS) specialist with the Illinois State Water Survey, Division of Surface Water Resources Systems and Information and GIS,⁷ presented the results from his Master's thesis, entitled "Assessing the Impact of Flooded Landfills on Ground Water Using GIS and Computer-Based Pollution Models," performed under the supervision of Mr. Varkki George of the Department of Urban and Regional Planning at the University of Illinois. (Tr. at 95-96.) Mr. Janarathanan used the Illinois GIS and computer-based pollution models to study the impact of flooded landfills on groundwater. (Tr. at 96.) Madison County was chosen for the study because it had the highest number of land disposal sites in the 100-year floodplain that were actually flooded in 1993. (Tr. at 97.) Ten land disposal sites were identified within the 100-year floodplain in Madison County from a variety of GIS databases. (Tr. at 96-97.) Three of those sites flooded in 1993. (Tr. at 97.) From those three sites, two landfill sites were chosen for the study: Landfill A (200 acres), and Landfill B (25 acres). (Tr. at 97.)

To estimate leachate produced by the two landfills, Mr. Janarathanan used a model entitled, "Hydrologic Evaluation of Landfill Performance" (HELP), that was developed by the

⁷ In PC 7, WMI stated that recent conversations with the Illinois Water Survey indicated that Mr. Janarathanan was not authorized to speak on behalf of the Illinois Water Survey in testimony before the Board on June 28, 1995. (PC 7 at 11.) In PC 20, Mr. Janarathanan countered that the Illinois State Water Survey did authorize him to participate in the Board hearing on June 28, 1995 as an Illinois State Water Survey representative. (PC 20 at 1.)

Army Corps of Engineers, Waterways Experiment Station at Vicksburgh, Mississippi. (Tr. at 98.) The HELP model (Version 3.01, see Tr. at 107) used water balance equations to calculate leachate produced for various landfill designs under different climatological and geologic variables. (Tr. at 98.) Since specific design data were not available for the two subject landfills, general landfill design was assumed as recommended by the HELP model. (Tr. at 98, 107.) Default soil and water balance values were defaulted by the HELP model for the East St. Louis area. (Tr. at 98-99.) The HELP model also determined the daily rainfall, temperature, and solar radiation based on data from St. Louis, Missouri. (Tr. at 99.)

According to the HELP model results, Landfill A produced 105,736 cubic feet of leachate under normal conditions and 4,356,753 cubic feet of leachate “after it was flooded.” (Tr. at 99.) Landfill B, according to the HELP model, produced 1,004 cubic feet of leachate under normal conditions and 51,230 cubic feet of leachate under post-flood conditions. (Tr. at 99.)

Next, Mr. Janarthanan used ground water models to estimate the rate and area of the leachate plume based on the leachate numbers generated by the HELP model. (Tr. at 99.) Mr. Janarthanan then used values from several hydrogeologic parameters in a dispersion flow model to determine velocity field and head field of the leachate. (Tr. at 100.) The output from the dispersion model was analyzed with landfill position in the Particle Tracking Model to derive plume dispersion contours. (Tr. at 100.) Groundwater levels and hydraulic conductivity specific to the area were obtained from reports of the Illinois State Water Survey published in 1993. (Tr. at 100.) The Particle Tracking Model generated numbers using both low hydraulic conductivity and high hydraulic conductivity values for each site. (Tr. at 100-101.) Several assumptions were necessary to run the model. (Tr. at 100-101.) Finally, leachate plume contours were overlaid on a land use map using GIS software. (Tr. at 102-103.) Mr. Janarthanan asserted that the results from the GIS software and computer-based pollution models could aid decisionmakers in seeing the impact of ground water contamination on surrounding areas. (Tr. at 103.)

Mr. Janarthanan concluded his presentation by noting that his “findings [were] not accurate predictions, but rough estimates. Groundwater Systems are very complex and cannot be completely simulated. Furthermore, we had to make many assumptions in applying the pollution models.” (Tr. at 103.) Mr. Janarthanan next fielded various questions, which primarily clarified his presentation. (Tr. at 103-107.) Mr. Janarthanan stated that there has been no field testing to verify the numbers generated by the computer models. (Tr. at 106-107.)

Testimony of Dr. George Arnold

Dr. Arnold testified as a member of the Madison County Conservation Alliance. (Tr. at 109.) Dr. Arnold stated emphatically that there needed to be an absolute prohibition against landfills operating in the 100-year floodplain. (Tr. at 110.) According to Dr. Arnold, the USEPA, the Agency, and the Madison County Environmental Department were too permissive by allowing the Chouteau Island landfill to operate during the 1993 and 1995 Floods. (Tr. at 110.) He asserted that the landfill was against common sense and was despicable because it

used up flood space, interfered with flood flow, polluted flood waters, jeopardized neighborhood wells, degraded wetlands, chased away endangered aquatic birds, and polluted waters used by millions of people downstream. (Tr. at 110-111.)

Dr. Arnold asserted that “[w]e are guilty of the same environmental irresponsibility as the Communists” in eastern Europe and that shuffling environmental management responsibility from USEPA to the state and the county was part of the general environmental problem. (Tr. at 111.) He further maintained that citizens were puzzled by the array and deficiencies of delegated authorities. (Tr. at 111.) He called on the Board to “close this abominable landfill [(Chouteau Island)]” by decree. (Tr. at 111.) Dr. Arnold also noted that there was a “hodgepodge” of authorities concerned with flooding and wetlands, there were better alternatives for landfills than Chouteau Island and, finally, that the Chouteau Island landfill reminded him of the Wilsonville toxic dump. (Tr. at 112-113.) Moreover, he asserted that the Chouteau Island landfill would be able to expand because nearby residents have been bought out by FEMA. (Tr. at 113-114.)

Dr. Girard asked Dr. Arnold how the Board could pass a regulation with an absolute prohibition against landfills in 100-year floodplains when Section 39.2(a)(4) of the Act specifically specified that a waste facility could either be located outside the boundary of the 100-year floodplain or inside the 100-year floodplain, if the site was flood-proofed. (Tr. at 115.) Dr. Arnold responded that flood-proof was a misnomer because the Chouteau Island landfill flooded and that the word “flood-proof” in the regulations was a “weasel word.” (Tr. at 115-116.) Dr. Girard then asked Dr. Arnold whether his campaign to shut down the Chouteau Island landfill should be directed at the Illinois General Assembly, which passes laws that tell the Board and the Agency how to operate and what to do. (Tr. at 116.) Dr. Girard added that if the phrase “or the site is flood-proofed” was removed from the current law, it would be easier for the Board to prohibit landfills in 100-year floodplains. (Tr. at 116.) Dr. Arnold responded by harkening back to “an earlier courageous Pollution Control Board” and invited the current Board to “take on more courage.” (Tr. at 117.) Board Member Marili McFawn remarked that citizens’ voices are often louder than the Board’s voice when legislative changes are necessary and noted that the earlier Board’s efforts were struck down by the legislature when it overstepped its limited statutory authority, e.g. adopted regulations which in effect amended or created laws. (Tr. at 118.)

Testimony of Mr. Jim Bensman

Mr. Bensman, who represented the Piasa Palisades Chapter of the Sierra Club, respectfully suggested that the Board could try press releases to give notice of public meetings. (Tr. at 119-120.) Mr. Bensman asserted that the demarcations of 100-year floodplain and 500-year floodplain should be changed based on the 1973, 1993, and 1995 Floods. (Tr. at 120.) He also asserted that the definition of floodplain should be changed because levees fail, and therefore, leveed property was not out of the floodplain. (Tr. at 120-121.) Finally, he acknowledged the idea that resolution of this issue depended on the Illinois General Assembly. (Tr. at 121.) Ms. Andria then asked Mr. Bensman a series of questions about his visit to the Chouteau Island landfill in 1994. (Tr. at 122-123.)

Testimony of Ms. Jean Bowers

Ms. Bowers asserted that when landfills are placed in 100-year floodplains, surface waters and aquifers are contaminated. (Tr. at 125.) She maintained that Mr. Janarthanan's study showed that the contamination was almost impossible to fix. (Tr. at 125.) She made three suggestions to solve the problem: (1) do not put a landfill in a known floodplain; (2) do not grant an extension to that particular landfill, once a landfill has flooded and produced a washout; and (3) be absolutely sure that all regulations applying to landfills are enforced. (Tr. at 125-126.) Ms. Bowers finally asserted that "[t]o do otherwise [was] playing Russian roulette with our precious water supply." (Tr. at 126.)

Testimony of Ms. Patty Riggins

Ms. Riggins stated that after the 1993 Flood, the Board should not "accept the engineers' word anymore that something [was] flood-proof." (Tr. at 127.) She also claimed that in 1995, land was flooded that had not been flooded in 1993. (Tr. at 127.) She opined that the Chouteau Island landfill was restricting the flow of the water and reducing the water storage capacity of the floodplain, so the land remained flooded longer. (Tr. at 127-128.) Finally, she stated that if the Chouteau Island landfill is not in violation of existing regulations, then those regulations need to be changed. (Tr. at 128.)

Testimony of Mr. John Bossert

Mr. Bossert spoke on behalf of Andrews Environmental Engineering. (Tr. at 129, 132.) Mr. Bossert observed that the hearing up to this point had focused on three landfills located next to the Mississippi River, one of the largest rivers in the world. He stated that not all landfills in Illinois have a similar situation and that location next to the Mississippi River may be a special condition for a landfill. Thus, he asserted that a change in the landfill regulations was not warranted for all landfills in the State. (Tr. at 130-131.)

Mr. Bossert was then asked a series of questions that elaborated on his statement that landfills next to large rivers may need a rule change, but there were many other landfills in Illinois, and if the regulations work for them, the corresponding regulations should not be changed. (Tr. at 131-140.) Additionally, Mr. Osman clarified the IDNR/OWR jurisdictional limits and definitions of floodways and floodplains. (Tr. at 134-135.) Jurisdictional floodplains in urban areas must have a drainage area of one square mile, while floodplains in rural areas must have a drainage area of 10 square miles. (Tr. at 134.) Most of those streams were shown on FEMA floodplain maps. (Tr. at 134.) Every stream has a floodway, but not every floodway was mapped. (Tr. at 134.) Later in the hearing, Mr. Osman further clarified that the floodway was determined by the levee line on the lower Mississippi and Illinois Rivers. (Tr. at 160.) In relation to Chouteau Island, the floodway would be the levee that surrounds the island, while inside the levee would probably be designated as a floodplain. (Tr. at 160.)

Statement of Mr. Harry Parker

Mr. Parker raised several issues about the engineering of landfills. He stated that plastic liners for landfills are thin and become brittle, then shrink, and crack with age. He asserted that the leachate collection systems become clogged. Finally, he maintained that the “engineering has never been proven over the long haul” and that incorporated landfill owners can walk away leaving taxpayers with the problem. (Tr. at 143.)

Statement of Ms. Whitney Rosen

Ms. Rosen, legal counsel for the Illinois Environmental Regulatory Group (IERG), a trade organization representing 58 members of industry in Illinois, stated that some of IERG’s members had interests in landfills, and others could possibly be affected by changes in landfill regulations. (Tr. at 144, 146.) Ms. Rosen supported the statement of Mr. Morfew and noted “that it’s unfortunate that much of today’s proceedings have focused on one very emotional situation within the state.” (Tr. at 144.) She encouraged the Board to focus on the four questions at issue and the technical record when deciding whether the landfill regulations needed to be changed. (Tr. at 144.)

PUBLIC COMMENTS

PC 1 and 5, Illinois Department of Transportation (IDOT)

IDOT provided the Board with copies of its regulations concerning construction in floodplains and floodways, found at 92 Ill. Adm. Code 700 and 706. (PC 1.) IDOT also provided a copy of a booklet entitled Report on the Executive Order (Report). (PC 5.) This Report discussed the rationale for and impact of the Governor’s Executive Order No. 4 (Order) signed by Governor James Thompson on May 4, 1979. In summary, the Order was signed to encourage regulation of construction and development in floodplains and to ensure the State’s eligibility for federal aid for flood prone buildings. (PC 5 at 2.) The Order provided that construction by State agencies of buildings and roads, landfills and similar activities in identified “Special Flood Hazard Areas” must be built according to the standards in IDOT’s regulations, which provide that new buildings be protected from damage by the 100-year flood and that construction activities do not cause or increase flood damage to other properties. (PC 5 at 2.)

The Report indicated that the traditional methods of dealing with flood damage such as building levees, reservoirs, and other structures have proved to have several shortcomings. (PC 5 at 3.) In order to counterbalance these shortcomings, a complementary approach was developed in the 1940’s. (*Id.*) This approach was to control flood damage by controlling the development of floodplains through government ownership or regulation. (*Id.*) A complete flood management program included measures to protect existing development and ownership measures to prevent future development from being subject to flood damage. (*Id.*)

The four objectives of the Order were:

1. To bring state-owned properties under floodplain regulation. This was recommended in 1975 by the Governor’s Task Force and is now

required as a condition of federal aid. This also brings state-owned properties under the same rules the state and the NFIP [National Flood Insurance Program] require for private property.

2. To provide for a better investment of State funds. Studies have shown that the additional construction costs required by floodplain regulations are not as great as the costs of flood damages. NFIP insurance policies are required only for insurable buildings receiving federal aid. Because most state-owned floodplain construction will continue to be self-insured, floodplain regulation will result in a direct savings to the State treasury and wiser use of state grant and loan money.
3. To bring other construction projects under floodplain regulation. By including grant and loan programs and other existing regulatory programs in the order, the state can assist in expanding the number and type of projects subject to floodplain regulations. This would include projects statutorily exempt from local ordinances and projects in those cities and counties not in the NFIP. The order is worded to ensure that duplicate regulation need not occur.
4. Where floodplain regulation is not appropriate, to notify those affected by state planning activities of the flood hazards and encourage wise construction and land development.

(PC 5 at 8.)

PC 2, Suzanne Wilkins, Executive Director, Mississippi River Basin Alliance (Alliance)

The Alliance commended Illinois for “looking at its floodplain policies.” However, the Alliance believed that the floodplain regulations in Illinois were not strict enough and needed better enforcement. (PC 2 at 2.) The Alliance also did not believe that landfills, either sanitary or hazardous waste, should be sited within the 100-year or 500-year floodplain. (*Id.*) The Alliance conceded that it may not be possible to move all facilities out of the 500-year floodplain and asserted that expansion of any facility in a high to medium hazard flood area was “ludicrous.” (*Id.*) Finally, the Alliance believed that Illinois should examine the entire State and determine where the best locations for landfills were. (*Id.*)

PC 3, Beverly Herzog, Senior Hydrogeologist and Head Groundwater Resources and Protection, Illinois State Geological Survey (ISGS)

The ISGS position was that Illinois has more suitable areas than floodplains for locating landfills. (PC 3.) The ISGS also indicated that many floodplain areas should be omitted from consideration for other geological considerations such as “shallow aquifers or slope instability.” (PC 3.) The ISGS pointed out that the potential for inundation, which increases

the probability of surface and groundwater contamination, has been demonstrated several times over the past few years. (*Id.*)

PC 4, David Schein

Mr. Schein's comment urged the Board to adopt regulations prohibiting placement of landfills and other waste management facilities in flood hazard areas. Mr. Schein commented that landfills fill floodplains and reduce the flood carrying capacity of the watercourse and its floodplain areas. Mr. Schein further noted that both the Order and Presidential Executive Order 11988 establish policies for the State and federal government in developing floodplains. Mr. Schein maintained that compliance with the executive orders was "poor." Thus, Mr. Schein urged the Board to take a proactive step in "protecting the people of Illinois from the many problems caused by siting waste management facilities in flood hazard areas." (PC 4 at 2.)

PC 6 and 20, Raj Janarthanan, Illinois State Water Survey

Mr. Janarthanan commented to correct errors in the transcript regarding his testimony. Mr. Janarthanan also commented to "reply to the incorrect impression provided by Waste Management of Illinois regarding" Mr. Janarthanan's testimony. (PC 20 at 1.) Mr. Janarthanan stated that he was "an academic hourly employee for the Illinois State Water Survey" and the Illinois State Water Survey "authorized" Mr. Janarthanan's participation at the public hearing as a representative of the Illinois State Water Survey. (*Id.*)

PC 7, 12 and 24, Waste Management of Illinois, Inc. (WMI)⁸

WMI stated that it was uncertain why the Agency posed its first question regarding what types of facilities needed to be regulated or prohibited from location within the floodplain when solid waste disposal facilities were already among the most stringently regulated type of facility within the 100-year floodplain. (PC 7 at 2.) WMI pointed to statutory and regulatory requirements of IDOT which regulate construction in floodplains. WMI first noted that it was statutorily required that every entity prove a given structure was not located within the floodway portion of the floodplain. If a structure was located in the floodway, a permit was required, and IDOT would not issue a permit until it was certain that a structure would not increase flood damage. (PC 7 at 3.) Before IDOT would issue such a permit, the applicant has to demonstrate either (1) that a flood easement has been obtained by purchasing all structures that would be affected by increased flood flows, or (2) that structures have been designed and constructed so there would be no increase in flood levels during a flood event. (*Id.*)

WMI also pointed to the Board's regulations in 35 Ill. Adm. Code.Subtitle G which require that if a facility was located in a floodplain, the facility must document that the landfill

⁸ It appears that PC 7 and 12, submitted by WMI, are identical and were incorrectly numbered twice.

would not restrict the flow of a 100-year flood, the landfill would not result in washout of solid waste during a 100-year flood, and the landfill would not reduce the storage capacity of the 100-year floodplain. (PC 7 at 4.) WMI indicated that groundwater monitoring was also required for facilities and that Section 39.2 of the Act added additional requirements. (PC 7 at 4-5.) WMI asserted that these regulatory and statutory provisions have worked effectively in Illinois. (PC 7 at 5.)

WMI also maintained that in addition to regulatory and statutory limitations on floodplain development, engineering techniques help ensure the protection of the environment. (PC 7 at 5.) Techniques such as leachate control systems and advanced liners all help to safeguard the environment. (PC 7 at 5-6.) Further, WMI asserts that there are other types of industrial facilities constructed in floodplains that pose a far greater environmental risk than landfills. (PC 7 at 5.) Facilities such as refineries, fertilizer plants, and wastewater treatment plants pose an equal or greater risk, according to WMI. (*Id.*)

WMI also addressed questions and statements regarding its facility on Chouteau Island known as the Chouteau Island landfill. WMI stated that during both the 1993 and 1995 Floods, “plans were put into place and environmental protection and containment mechanisms worked as designed.” (PC 7 at 7.) WMI asserted that no washout of waste occurred, adequate storage for floodwaters in borrow pits was available, and no restriction of the 100-year flow was experienced. (PC 7 at 7-8.) WMI also maintained that leachate collection and groundwater monitoring were successful in helping to avoid contamination. (PC 7 at 8-9.)

Additionally, WMI took issue with the testimony of Mr. Janarthanan. WMI pointed to several insufficiencies in the modeling done by Mr. Janarthanan including the fact that Mr. Janarthanan’s paper did not deal with site-specific information regarding containment and leachate handling systems. (PC 7 at 9.) WMI stated that the groundwater monitoring that was actually conducted at a solid waste disposal facility was more detailed than the techniques described by Mr. Janarthanan. (*Id.*) Finally, WMI asserted that Mr. Janarthanan was not a representative of the Illinois Water Survey. (PC 7 at 11.)

PC 8, Susan Grans, Vice-President, Winnebago Reclamation Service, Inc.

Winnebago Reclamation Service, Inc. commented that it “strongly believe[s] that current regulations **do** ensure environmental protection.” (PC 8.) Winnebago Reclamation Service does not believe any additional regulations are necessary.

PC 9, Illinois Environmental Regulatory Group (IERG)

IERG opposed the prohibition of landfill siting in floodplains and further argued that any effort to prohibit such siting was contrary to the intent of the legislature. (PC 9 at 2.) IERG pointed to the plain language of the Act that provides that a facility shall either be outside the 100-year floodplain or shall be floodproofed. (*Id.*) IERG maintained that the plain language of the statute indicates that the legislature intended that pollution control facilities

could be sited within the 100-year floodplain. (PC 9 at 2-3.) Thus, IERG argued that absent a statutory change, the Board cannot act to prohibit siting of a floodproofed pollution control facility. (PC 9 at 3.)

PC 10, John McDonnell, American Disposal Services, Inc. (ADS)

ADS filed this comment in response to the IDOT public comments (see PC 1 and PC 5). ADS believed that a statewide ban on landfills in floodplains was not sound public policy for three reasons. First, the events of 1993 were unique for many reasons, but specifically in terms of the size of the watershed impacted. ADS believed that this represented a “worst case” and to develop public policy based on “worst case analysis” ignored important factors such as geologic setting and public need. (PC 10 at 1.) Second, ADS maintained that many Illinois landfills currently operating, or proposed to be operated, in a floodplain were in watersheds with significantly smaller dimensions. (PC 10 at 2.) Third, established hydrologic procedures and programs exist for predicting flood potential within these smaller watersheds. ADS maintained that the technical community can safely and conservatively estimate floods and landfill owners could construct necessary flood proofing. (*Id.*)

PC 11, Andrew Rathsack, President, Andrews Environmental Engineering, Inc. (Andrews)

Andrews has been a provider of consulting engineering services to landfill owners and operators for over 21 years. Andrews opined that no additional legislation or regulations concerning the location of landfills in floodplains was necessary. Andrew maintained that the provisions of Section 39.2(a)(4) of the Act and 35 Ill. Adm. Code 811.102(b)⁹ were sufficient to protect floodwaters from contamination by landfills.

PC 13, James Douglas Andrews, P. E.

Mr. Andrews commented that the restrictions imposed by the General Assembly in Section 39.2(a)(4) of the Act have been “extremely effective” at protecting floodwaters from contamination by landfills. Mr. Andrews also stated that the General Assembly “wisely allowed local governmental units to balance the need for waste management facilities . . . against any potential for contamination of floodwaters.” (PC 13.)

PC 14, Illinois Department of Agriculture (IDOA)

IDOA stated that due to the potential for leachate from floodplain landfills entering surface and subsurface waters, the practice of siting landfills in floodplains was “questionable.” (PC 14 at 2.) IDOA indicated that current regulations should be examined and revised “if necessary” to ensure that measures are taken to prevent migration of leachate

⁹ Section 39.2(a)(4) of the Act requires that a facility either be located outside a floodplain or be floodproofed. Section 811.102(b) provides that the “facility shall not restrict the flow of a 100-year flood, result in washout of solid waste from the 100-year flood, or reduce the temporary water storage capacity of the 100-year floodplain.”

into surface and subsurface waters. (*Id.*) IDOA also urged that all feasible alternatives be examined to avoid siting of landfills on land classified as “Prime Farmland.” (*Id.*)

PC 15, Jean Furlan, Manager, Midwest Region, National Solid Wastes Management Association (NSWMA)

NSWMA addressed each of the four questions posed by the Agency at the outset of this proceeding. In response to the first question, NSWMA stated that it opposed a change in the regulation of landfills in the 100-year floodplain including any ban on landfills in the 100-year floodplain. (PC 15 at 2.) NSWMA believed that the current statutory and regulatory limits on floodplains effectively limit placement of landfills and other pollution control facilities in the 100-year floodplain. (*Id.*) NSWMA pointed out that even if a landfill was approved for siting in the floodplain, the Board's regulations at 35 Ill. Adm. Code 810-815 regulated landfills to ensure the landfill's structural and environmental integrity. (PC at 3.)

NSWMA also discussed IDOT regulations requiring a permit prior to construction in a floodplain. Before IDOT would issue such a permit, the applicant must demonstrate either (1) that a flood easement has been obtained by purchasing all structures that would be affected by increased flood flows, or (2) that the structure has been designed and constructed so there will be no increase in flood levels during a flood event. (PC 15 at 3-4.) NSWMA also reviewed the Board's regulations that require a letter from IDOT to be submitted to the Agency indicating the landfills proximity to a 100-year floodplain during the Agency permitting process. (PC at 4.) The Board's regulations also prohibited operation of a facility that would restrict the flow of a 100-year flood or result in washout of solid waste during a 100-year flood event. (PC at 5.) Finally, in support of NSWMA's position that there should be no change regarding placement of landfills in the 100-year floodplain, NSWMA noted the testimony in this proceeding by Mr. Jerry Kuhn and Mr. Kenneth Smith. (PC 15 at 5-6.)

In response to the remaining three questions posed by the Agency, NSWMA reiterated that the statutory and regulatory provisions should not be changed. Thus, NSWMA opposed expansion of regulation to the 500-year floodplain. (PC 15 at 8.) NSWMA also stated that, if the Board does propose a change, the change should only be prospective. (PC 15 at 9.) A retroactive application of any change would impose an undue burden on the solid waste industry. (*Id.*)

PC 17, Roderic S. Stipe, Manager of Environmental Compliance, John Sexton Sand & Gravel Corporation (Sexton Companies).

Mr. Stipe stated that the Sexton Companies were opposed to a ban on siting of solid waste landfills within the 100-year floodplain. Mr. Stipe listed three main reasons why the Sexton Companies believed that a wholesale ban on siting landfills in floodplains was unwarranted. First, he pointed out that floods like the 1993 Flood occur globally every year and other regions of the United States have laws that “are enacted to promote better design of physical structures to protect the population and minimize property damage from such disasters.” (PC 17.) Second, Mr. Stipe maintained that past flooding was responsible for

depositing silt which forms thick natural clay barriers which provides significant protection to the environment, thus making these areas advantageous for siting a landfill. (*Id.*) Finally, Mr. Stipe noted that construction technology is available to protect communities from the impacts of flooding while mitigating impacts of flooding on the local watershed. (*Id.*)

PC 19, John H. Turner, Vice-President State Governmental Affairs, Browning-Ferris Industries (BFI)

BFI stated that it strongly opposed promulgation of any regulation concerning municipal solid waste landfills which exceeds the federal criteria. (PC 19 at 1.) BFI maintained that absolute “distance” requirements and siting restriction frequently lack any rational basis or reasonable support in fact. BFI then argued that such requirements “[were] tenuous, speculative, and contrary to the weight of scientific and engineering opinion.” (PC 19 at 2.) BFI also quoted USEPA regarding operation of a landfill in floodplains. (*Id.*) USEPA believed that such an across-the-board ban is not necessary for municipal solid waste landfills to protect human health and the environment. Second, USEPA believed that the banning of landfills in floodplains could affect large portions of the United States straining the regulated community’s ability to provide adequate disposal capacity. (PC at 3, citing 56 FR 51044.)

PC 21, R. Varkki George, Assistant Professor, University of Illinois at Urbana-Champaign

Professor George filed a comment supporting the testimony of Mr. Janarthanan and noting that the work was done under Professor George’s supervision. Professor George stated that the work done by Mr. Janarthanan had significant implications for the subject under review by the Board.

PC 16, 22 and 23, Dr. George Arnold, Madison County Alliance, and Kathy Andria, Madison County Conservation Alliance and Stop Polluting Illinois (SPILL)

PC 16 detailed the history of the Chouteau Island landfill from 1969 when Chouteau Island Citizens’ Association (Citizens) wrote a letter complaining about the “garbage dump” in 1969 to the present day. (PC 16 at 1.) Citizens also stated that the neighbors have repeatedly fought against the intrusions and that at the local level, Madison County Board of Supervisors tried to close down the landfill in 1972. (*Id.*) Citizens further asserted that the landfill has flooded six times, and most recently in 1993 and 1995. (PC 16 at 2-3.) Citizens additionally claimed that leachate was released during the 1993 and 1995 Floods and the landfill has led to the degradation of the Chouteau Island. (*Id.*) Citizens argued that the total landfill acreage was over 400 acres and that public participation had been stymied during the permitting process. (PC 16 at 3.)

Citizens also stated that it believed that the flood modeling for Chouteau Island was “an exercise in frustration” and that the flood-proofing at the site was insufficient. (PC 16 at 4.) Citizens pointed out that the landfill was constructed over an aquifer and asserted that several

violations have occurred at the facility. (PC 16 4-6.) Citizens argued that the facility should be closed now. (PC 16 at 7.)

On April 4, 1996 the Board received a comment from SPILL which addressed some of the general issues of this proceeding. SPILL maintained that the regulations were not at all stringent because the regulations have not prevented facilities from being flooded nor have the regulations prevented pollutants from entering floodwaters. (PC 23 at 1.) SPILL pointed to the fact that Chouteau Island was allowed to expand in 1994 after the 1993 flood as evidence that the regulations are not stringent enough. (*Id.*) SPILL alleged that landfills in floodplains are allowed to accept special waste, including many hazardous wastes, which proves that the laws are not stringent enough to protect human health. (PC 23 at 2.) SPILL expressed concern that most floodplains are situated above aquifers and that a breached liner at a landfill could lead to groundwater contamination. (PC 23 at 1.)

SPILL also maintained that the testimony and slide show at hearing were accurate, and SPILL stands behind that testimony. (PC 23 a 2.)

PC 18, Illinois Environmental Protection Agency (Agency)

The Agency filed its comment to answer questions posed at the hearing that the Agency was unable to answer at that time. Additionally, the Agency asked that the Board give “appropriate weight” to the testimony of Mr. Janarthanan. The Agency pointed out that Mr. Janarthanan did not “take into account current lan[d]fill technologies when performing his modeling on the spread of leachate contamination plumes.” (PC 18 at 1.) The Agency also stated that it agreed that a legislative change in the Act would be necessary to give the Board the authority to change the regulations. (PC 18 at 1-2.)

The Agency also provided answers to questions concerning guarantees by manufacturers of liner materials, what is flood-proofed, what maps and the age of the maps used in establishing the floodplain, and finally the effect of the 1993 and 1995 Floods on landfills. With regard to the liners, the Agency indicated that warranties for liners vary. Most manufacturers provide a limited warranty of 1 to 20 years depending on liner application and project location, liner thickness and liner area. (PC 18 Attach 1 at 1.) A facility is flood-proofed if “the owner/operator constructs a system of berms, dikes, levees, ditches, or similar engineered structures, or takes some other measure(s) which prevents the flood waters from inundating waste treatment, storage or disposal area.” (PC 18 Attach 2 at 1.) Further, if a levee is constructed to withstand a 100-year flood, the facility is not in a floodplain and would not have to be flood-proofed. (*Id.*)

The Agency relied on “Flood Insurance Rate Maps” to assist in verifying that a facility was in a floodplain. (PC 18 Attach. 2 at 3.) However, it was up to the operator to determine whether the facility was in the floodplain. (*Id.*) The age of these maps range from four years to more than ten years old. (*Id.*)

The Agency indicated that there were approximately six landfill sites in the Madison, St. Clair, and Monroe counties area which were effected by the floods in 1993 and 1995. (PC 18 Attach 2 at 2.) In the flooding of 1995, two groundwater monitor well sample sheets noted high water in a swampy area for the Granite City Steel site. However, sampling was accomplished. (*Id.*) In the flooding of 1993, the South Chouteau Island landfill had damage to a liner in a new, unused portion of the facility. The liner was repaired and recertified in December 1993. (*Id.*) Also at that facility, trapped flood water remaining on site had to be aerated and discharged back to the river. (*Id.*) The Milam Recycling and Disposal Facility indicated that during the 1995 Flood, overflow from creeks delayed sampling of two groundwater monitoring wells and a leachate monitoring well. (*Id.*) At Monsanto Industrial Chemicals, the landfill was surrounded by water and about one-third of the site was covered with water at the time of the highest crest. (*Id.*) The Sauget Monsanto Landfill, which is inactive, was covered by flood water in 1993. A post flood inspection revealed that approximately 12 deteriorated drums were exposed and in 1995 USEPA cleaned the site. (PC 18 Attach. 2 at 3.) Amoco Oil Company has three landfills on sites impacted by the floods. Damage to the facility included erosion and leachate seepage from the caps and damage to the liner system. (*Id.*) Also, some groundwater monitoring wells were damaged. (*Id.*)

DISCUSSION

Before discussing the issues the Agency has asked us to address in this inquiry proceeding, the Board would like to thank all the participants for the time expended in attending the hearing and writing comments. Damage from the record floods within the past 25 years, particularly along our major rivers in 1973, 1993, and 1995, have shown that we must reevaluate all human activities in floodplains. The Board hopes that this process will continue and that this inquiry hearing has aided in the discussion and reevaluation of the appropriate public policy regarding landfill siting in floodplains.

To properly address the issues raised by the inquiry hearing, we begin by setting forth the specific requirements for pollution control facilities in Illinois, and the activities of government agencies, and limits thereupon, that execute those requirements. The Act contains the major laws governing environmental regulation in Illinois. Within that Act, the authority and duties of agencies, such as the Board and the Agency, are set forth. The Act also establishes the legal framework for the promulgation of rules and regulations passed by the Board and the Agency to carry out their respective duties.

Section 39.2 of the Act (415 ILCS 5/39.2) lists nine criteria to be used by local governments when considering local siting approval¹⁰ for pollution control facilities,¹¹ which is

¹⁰ As previously mentioned, Section 39(c) of the Act (415 ILCS 5/39(c)) “grandfathers” pollution control facilities which were issued development permits before November 12, 1981 and operating permits before August 31, 1989 so that such facilities do not need to submit proof of local siting approval when applying to the Agency for permit renewals.

¹¹ A pollution control facility is defined as “any waste storage site, sanitary landfill, waste disposal site, waste transfer station, waste treatment facility or waste incinerator that accepts waste from or that serves an area that exceeds or extends over the boundaries of any local

the first step in locating such facilities in Illinois. Section 39.2(a)(iv) establishes the criterion to be met in order to obtain local siting approval. This section requires that “the facility is located outside the boundary of the 100-year flood plain or the site is floodproofed.” After receiving local siting approval, the developer of a pollution control facility must receive appropriate development and operational permits from the Agency. In pursuing those permits, the applicant must comply with regulations that mandate that a landfill not be located in the 100-year floodplain (35 Ill. Adm. Code 812.109), or that if so located, it will not restrict the flow, or result in washout of solid waste in a 100-year flood, or reduce the temporary water storage capacity of the 100-year floodplain. (35 Ill. Adm. Code 811.102(b).) In summary, the Illinois General Assembly has established that landfills can be located in 100-year floodplains, provided they are flood-proofed. Both the Board and the Agency have been created by the Illinois General Assembly through the Act with specific authorities and duties. Therefore, both agencies are creatures of statute and cannot legally go beyond the statutes in carrying out their duties.

The purpose of the Board inquiry hearing was to determine whether additional landfill regulations were necessary in Illinois to govern landfills and other waste treatment and transfer facilities in 100-year floodplains. The opinions expressed in this proceeding generally dealt with landfills and could be classified into two categories: some participants maintained that landfills should be banned from the 100-year floodplain, while other participants argued that the current regulations that allow landfills to be located in the 100-year floodplain are stringent enough to protect human health and the environment.

Most of the testimony and comment in this proceeding did not directly address the four questions that were supposed to frame the discussion. Therefore, it is virtually impossible to adequately address those questions. Based on the record, the Board can, however, address the underlying issue of this inquiry, that issue being whether landfills should be located within the 100-year floodplain. Thus, the proceeding discussion will be framed by reviewing the evidence and arguments proposed to show that landfills should be banned from the 100-year floodplain. Moreover, to properly understand the opposition to locating landfills within the 100-year landfill, we need to review the 25-year history of citizen opposition to the Chouteau Island landfill. Hence, we begin our discussion by reviewing the testimony presented at the hearing concerning opposition to the Chouteau Island landfill.

Questions and testimony at the Board hearing showed that the Chouteau Island landfill in Madison County, which is owned by WMI, was the major focus of citizen opposition to locating landfills in the 100-year floodplain. (Tr. at 28, 32, 36, 81, 94, 110, 115, 116, 122, 123, 127, 128, 130, 131, 144, 160.) Dr. Arnold outlined the history of the opposition to the Chouteau Island landfill in PC 16. The first written record of local opposition to the Chouteau Island landfill was a 1969 letter from the Chouteau Island Citizens’ Association to various officials which voiced concerns about landfill operations and location in an area prone to

general purpose unit of government. This includes sewers, sewage treatment plants, and other facilities owned or operated by sanitary districts organized under ‘An Act to create sanitary districts and to remove obstructions in the Des Plaines and Illinois rivers’, approved May 29, 1889, as now or hereafter amended.” (415 ILCS 5/3.32.)

flooding. (PC 16 at Appendix F1.) Various local groups have appealed landfill permitting decisions at Chouteau Island from 1972 to the present. (PC 16 at 6.) In the most recent challenge, the Board found that pursuant to Sections 3.32(b) and 39(c) of the Act, the Chouteau Island facility was not a new pollution control facility and an Agency permit to expand was within the boundaries permitted in 1972 and, therefore, was not subject to local siting review under Section 39.2 of the Act (see PCB 95-1, May 18, 1995). Dr. Arnold maintained that the Chouteau Island landfill has been flooded six times since 1943. (PC 16 at 3.) He argued that 12 federal and State agencies have sufficient authority to close the landfill, but these agencies have “no guts to take action.” (PC 16 at 6.)

Initially, we will respond to Dr. Arnold’s assertion that the Board has sufficient authority to close the Chouteau Island landfill. First, as an administrative agency, the Board is “a creature of statute,” and any power or authority claimed by it must find its source within the provisions of the statute by which it is created. (Granite City Division of National Steel Co. v. Pollution Control Board, 155 Ill. 2d 149, 171, 613 N.E 2d 719, 729 (1993).) The Illinois General Assembly has specifically authorized the placement of landfills in the 100-year floodplain in Illinois, provided they are flood-proofed. (415 ILCS 5/39.2(a)(4).) Although Dr. Arnold contended at the hearing that “flood-proof” was a “weasel-word,” no evidence has been shown at the hearing to dispute the engineering practices that are currently used to flood-proof landfills. Absent specific, demonstrable proof that flood-proofing a landfill is impossible, the Board does not have authority to keep landfills out of the 100-year floodplain in Illinois. Such a proscription would require the Illinois General Assembly to amend Section 39.2(a)(iv) of the Act to remove the words, “or the site is flood-proofed.”

The major arguments advanced to support prohibiting landfills in the 100-year floodplain include: 1) flood-proofing is not possible; 2) compensatory flood storage is not calculated correctly; 3) leachate discharge threatens health and the environment; and 4) washout of landfilled waste will occur. We will discuss each of these topics below.

Several people made statements at hearing or submitted public comments that disputed the implication that landfills in 100-year floodplains could be engineered to be flood-proof. The fact that the 1993 and 1995 Floods breached the levees in Chouteau Island and inundated the Chouteau Island landfill was cited as evidence that flood-proofing a landfill was not possible. (Tr. at 81, 115-116, 120-121, 127, 143; PC 16 at 2-4.) One person cited Mr. Janarthanan’s study as evidence that flooded landfills release contaminants to surface waters and aquifers. (Tr. at 125.) WMI maintained that engineering techniques help ensure protection of the environment, including such techniques as leachate control systems and advanced liners. (PC 7 at 5-6.) WMI also pointed to several insufficiencies in the modeling done by Mr. Janarthanan including the fact that Mr. Janarthanan’s study did not deal with site-specific engineering systems such as liners and leachate handling systems. (PC 7 at 9.) WMI asserted that the pumping records and photos presented at the hearings indicated that excess leachate produced by floodwaters was not left to accumulate on the liner system, but was routed to treatment. WMI indicated that in the most recent Significant Modification Permit for the Chouteau Island landfill, the Agency approved WMI’s modeling of the leachate removal and treatment systems. (PC 7 at 9.) Based on the information in this record, the Board cannot conclude at this time that landfills cannot be engineered to withstand 100-year floods.

Dr. Arnold and Ms. Bowers asserted at hearing that landfills in the floodplain, and the Chouteau Island landfill in particular, restrict the flow of floodwaters and reduce water storage capacity of the floodplain. (Tr. at 110-111, 127-128.) In PC 4, Mr. Schein commented that landfills fill floodplains and reduce the flood carrying capacity of the water course and its floodplain areas. (PC 4 at 2.) In PC 16, Dr. Arnold and Ms. Andria assert that the flood modeling for Chouteau Island was “an exercise in frustration.” (PC 16 at 4.) In Appendix F8 of PC 16, an illustration was presented showing a landfill schematic, flood level, and borrow pits, as support for “rejecting” the concept of “compensation space.” The purpose of the schematic was to bolster the assertion that borrow pits could not legitimately be used as space to compensate for the floodwaters diverted by the landfill bulk in the floodplain. However, the schematic included no numbers to challenge the numeric calculations which would be used by a landfill owner, such as WMI, in demonstrating to permitting authorities that the landfill will not increase flood height during floods (pursuant to Section 700.60). WMI noted in PC 7 at 3 that before IDOT would issue a permit to construct in the floodway, the applicant must either hold a flood easement, or show that structures will not increase flood levels during a flood event. WMI also pointed out that the Board’s regulations in 35 Ill. Adm. Code.Subtitle G required documentation that the landfill will not reduce storage capacity of the 100-year floodplain. (PC 7 at 4.) WMI asserted that at the Chouteau Island landfill, no restriction of the 100-year flow was experienced. (PC 7 at 7-8.) The Board finds that testimony presented at the hearing does not convince us at this time that the methods of calculating flood compensatory storage are improper, either as a general concept or as specifically applied to the Chouteau Island landfill.

The issue that leachate discharge threatens health and the environment was also raised in this proceeding. However, the support for this argument relied on the study by Mr. Janarthanan and assertions from witnesses that leachate was released from the Chouteau Island landfill during flooding. (Tr. at 81.) As pointed out above, the study by Mr. Janarthanan did not deal with site-specific engineering systems such as liners and leachate handling systems. Thus, the usefulness of that study is limited for Board purposes. With regard to leachate leakage, WMI asserts that leachate was routed to treatment at the Chouteau Island landfill during the floods. The Agency indicated that six landfill sites in the Madison, St. Clair, and Monroe counties were affected by floods in 1993 and 1995. (PC 18 Attach 2 at 2.) Although some problems did occur, the only leachate seepage occurred from caps at a closed disposal facility. (*Id.*) Based on the information in this record, the Board cannot conclude that leachate emissions from flooded landfills operating under current regulations (including liner requirements and leachate collection systems) during flooding poses a threat to health or the environment at this time.

Regarding washout from landfills, Ms. Andrea testified that solid waste was seen in flood waters by a group she escorted to Chouteau Island. (Tr. at 81.) Additionally, Ms. Bowers testified that once washout occurred, an extension of the landfill should not be granted. (Tr. at 125.) However, WMI indicated that no washout occurred at Chouteau Island during the 1993 and 1995 floods. (PC 7 at 7-8.) Thus, the record is not clear that washout occurred. As Mr. Kuhn testified, the Board’s regulations require landfills to be designed to prevent washout. (Tr. at 19.) Existing landfills must demonstrate that washout will not result in adverse effects on human health. (*Id.*) Thus, the Board already has stringent regulations in

place prohibiting washout. Based on the record before the Board and the existing statutory regulations that authorize the existence of landfills in floodplains, we do not believe additional regulations are warranted at this time.

CONCLUSION

As previously noted, the Board is without authority to prohibit landfills from being located in the 100-year floodplain unless section 39.2(a)(4) was amended by the legislature to remove the words, “or the site is flood-proofed.” Moreover, sufficient evidence at the hearing was not obtained to specifically address the four issues outlined by the Agency. Instead, the majority of the testimony went directly to the underlying issue of whether landfills should be located in the 100-year floodplain. In summary, the evidence against locating landfills in the 100-year floodplain, presented at the hearing, did not sufficiently rebut the evidence that landfills can be engineered to withstand 100-year floods. Further, we have concluded that the record of the hearing does not convince us at this time that the methods of calculating flood compensatory storage are improper or that washout of waste or leachate from landfills in Illinois caused by major floods in 1993 or 1995 had more than a *de minimis* effect on human health or the environment thus warranting additional regulations at this time.

Most of the testimony in opposition to siting landfills in the 100-year floodplain was generated by long standing citizen opposition to the placement of the Chouteau Island landfill, which was re-ignited recently by an expansion of the landfill within the area originally permitted in 1972. Citizens were denied the opportunity for local siting approval of this expansion because of language in Sections 3.32(b) and 39(c) of the Act. While the Board empathizes and understands the citizens’ position, the Board does not have the authority to change those provisions of the Act; only the legislature can change the law to require landfills permitted before 1981 to obtain local siting approval for expansions within the originally permitted landfill area. Therefore, a statutory change is necessary to require local siting approval for expansion of the Chouteau Island landfill within the area boundaries originally permitted in 1972 (see PCB 95-1, May 18, 1995).

Based on the record before us, the Board cannot find that additional regulations on landfills located in the 100-year floodplain are warranted at this time or that an outright ban on these landfills is needed. However, common sense and the good use of natural resources indicate that these measures may be necessary in the future. Landfills in Illinois are one of the most highly regulated activities in the State, and the Board considers these regulations to be as stringent as possible to make landfills in the 100-year floodplain flood-proof. However, we also appreciate the comments of those, like Dr. Arnold, that recognize that the potential for harm remains present even for those landfills that are deemed “flood-proofed.” Moreover, other State agencies interested in this issue have stated that “it appears that when flood waters inundate a landfill site, there is no method to ensure that those wasters are not contaminated by potentially hazardous leachates” and advocate that current regulations be strengthened. (PC 5.) Because of the differences of opinion on this and other issues regarding locating landfills in the 100-year floodplain, the Board believes it is necessary to continue to evaluate the current regulations and public policy surrounding the existence of landfills in the 100-year floodplain. Therefore, the recommendation of the Board is that Chairman Manning request the Natural

Resources Coordinating Council (NRCC)¹² to designate a committee to study the issue of the propriety of locating landfills in the 100-year floodplain. Further, the Board believes that resolution of these issues requires more technical evidence than can be produced at a public hearing. Thus, the Board concludes that additional public hearings in this docket are not warranted and that referring the matter to the NRCC is the appropriate course of action to take in this matter.

This constitutes the Board's order in this inquiry hearing. This docket is hereby closed.

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above order was adopted on the ____ day of _____, 1997, by a vote of _____.

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board

¹² The NRCC was created to provide a forum for agency directors and key staff to debate and develop short and long-term environmental policies that are multi-agency in scope. The members of this council are the Department of Natural Resources, the Department of Agriculture, the Agency, the Department of Commerce and Community Affairs, the Illinois Historic Preservation Agency, the Illinois Commerce Commission, the Department of Nuclear Safety, the Department of Public Health, and the Board.