BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
PROPOSED AMENDMENTS TO	)	
CLEAN CONSTRUCTION OR DEMOLITION	)	R2012-009
FILL OPERATIONS	)	(Rulemaking-Land)
(35 ILL. ADM. CODE 1100	)	

NOTICE OF FILING

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Please take notice that I have today filed electronically with the Office of the Clerk of the Illinois Pollution Control Board the attached Pre-Filed Testimony of James E. Huff, P.E. and Dr. Fabián G. Fernández, accompanying Attachments, a copy of which is served upon you.

HUFF & HUFF, INC.

By: James E Huff
Senior Vice President

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PRE-FILED SUPPLEMENTAL TESTIMONY OF JAMES E. HUFF, P.E.

Introduction

My name is James E. Huff, and I represent a range of governmental organizations responsible for a significant portion of the road building projects in northern Illinois, herein referred to as the Illinois Transportation Coalition. Specifically, my clients include the Illinois Tollway; Kane County Division of Transportation, Lake County Division of Transportation, DuPage County Division of Transportation, McHenry County Division of Transportation, and Will County Department of Highways; the Cities of Geneva and St. Charles, and the Villages of Hinsdale, Libertyville, New Lenox, Villa Park, and Woodridge. I testified previously on this matter, and my comments today are directed to the *First Notice* proposed regulations issued by the Illinois Pollution Control Board (Board) on February 2, 2012.

We support the Board's removal of the proposed groundwater monitoring requirement for Clean Construction or Demolition Debris (CCDD) Fill Operations. This will be a significant relief to the CCDD fill industry, and will result in this remaining an active industry in Illinois. However, the Board elected that with the elimination of the groundwater monitoring requirement, a *conservative* approach was necessary, and maintained the minimum pH range as proposed by the Illinois EPA (pH range 4.5 to 4.74) in setting Maximum Allowable Concentrations (MACs) for inorganics and ionizing organics. This soil pH range used in setting the MACs is the most critical remaining issue, and as I will present herein, has devastating economic implications. While the CCDD fill operations will remain in operation, they will feel like the service repairman in the *Maytag* commercials, where there is a lack of business.

Today, I will focus my testimony on the following items:

- Economic implications of the pH range used to set MACs
- Review the justification for the pH range proposed for MACs
- Due diligence requirement
- Grab sampling requirement

The transportation sector in northeast Illinois manages over $2 billion dollars per year of construction work and encounters CCDD issues on a significant number of projects. Developing a workable CCDD program is critical to maintaining the current level of construction and also to the commitment to sustainable transportation practices.

Economic Implications of the pH range used to set MACs

In 2011, a slow year from an economic perspective, CCDD fill operations accepted 3,400,000 cubic yards of CCDD and uncontaminated soil.[1] Tipping fees vary at CCDD fill operations, but $3.50 per cu yd is a reasonable estimated average. So the revenue generated statewide by these CCDD fill operations in 2011 was on the order of $12,000,000.

Landfilling costs in northern Illinois are currently on the order of $28.75 per cu yd. Trucking costs are higher on average for landfilling, as there are fewer locations, so the average distance traveled is longer. Not only does this result in higher transportation fees, but also creates greater carbon dioxide emissions when soils need to be transported to landfills.

The only documentation in the record on the percentage of uncontaminated soil that will meet the MACs for metals alone was provided by John Hock. Mr. Hock testified that 82 percent of the material currently placed in CCDD fill operations FAILED the MACs for metals based on the soil pH range of 4.5 to 4.74.[2] If we take 82 percent of the 3,400,000 cubic yards and divert this to a landfill, this amounts to 2,800,000 cubic yards at a total of $80,000,000 per year, or an

[1] Liebman, Chris, IEPA, email February 9, 2012.

[2] Hock, John, Pre-filed Testimony, page 4, October 2011. Transcript, page 47, October 25, 2011.

incremental cost of **$71,000,000 per year** in just tipping fees. Adding in the additional trucking costs and analytical costs will bring this number closer to **$100,000,000 per year,** or $1 billion over ten years. This is money that could be used for beneficial infrastructure projects, generating 21,600 man years of jobs over ten years.[3] The economic loss is significant and should be an important factor in the Board's decision making. In addition, highway construction in northern Illinois will be increasing dramatically as the Tollway's $13 billion program enters the construction phase later this year. The Board's First Notice ignored the testimony on the economic impact, and relied solely on the Agency's broad brush statement that "the economic impact of the proposal on the regulated community will not be detrimental as the proposal is a 'continuation of the interim standards required by P.A. 96-1416.'" There is no supporting basis for the Agency's statement and it is not factual. Since the law was passed, the standard practice had been using site specific pH data to determine if the soil achieved the remedial objectives. It was only the last two months of 2011 that the regulated community understood that the Agency expected the use of a pH range from 4.5 to 4.74 in determining if soils were *uncontaminated.* Previously, the industry practice was to measure the pH and compare the inorganic results to the TACO values based on the actual pH of the soil.

The Board should consider the economic impact this soil pH range is having on users of CCDD facilities who are an important element to the Illinois economy. It is a very significant cost burden on the taxpayers of Illinois, as well as another cost factor to discourage expansion within the private sector of Illinois.

Review of the Record Regarding the use of pH Range 4.5 to 4.74 for Establishing MACs

The Board found the Agency's proposed pH range appropriate for statewide standards, while noting that the pH 4.5 to 4.74 only occurs in the southern part of the State. Exhibit A depicts the soil types across Illinois, the Ultisols are the lowest pH soils and these do indeed occur predominantly in the swamps of southern Illinois[4] (See Exhibit B). This type of material would

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[3] Record of Decision: Elgin O'Hare-West Bypass Cook and DuPage Counties, Illinois, page ES-9, May 2010, and signed June 2010. See Exhibit E for Executive Summary. Employment extrapolated from the $1 billion in construction cost, the same as ten years of added cost due to the MAC based on the low pH.

[4] Grunwald, Sabrine. "Ultisols." *Soil and Water Science Department.* University of Florida, 2010. Accessed 02 Mar. 2012. <http://soils.ifas.ufl.edu/faculty/grunwald/teaching/eSoilScience/ultisols.shtml>.

never be expected to be transported to a CCDD or uncontaminated soil facility as these are classified as *protective* wetlands. Furthermore, ultisols comprise less than 1% of overall soil coverage in Illinois (Exhibit A). Low pH soils are limited to soils that essentially exist in a constant water saturated condition with elevated organic content, such as bogs. Bogs occur in the northeastern corner of Illinois, primarily within the Volo Bog Nature Preserve. Soils from these areas would not be excavated and their properties should not be used as the basis for a standard for state-wide disposal. It should be noted that the vast majority of organic soils in northeast Illinois are classified as "sapric" and formed in highly decomposed plant material. The pH values of organic soils in Illinois are typically in the 6.5 to 7.0 range. The low pH in bogs or peat is attributed to nutrient leaching and the production of volatile organic acids from the anaerobic decomposition of organic detritus that has exceeded the buffering capacity of the soils. The generation of any uncontaminated soil from swamps and peat bogs associated with construction is virtually non-existent. Any such construction would require a permit from the U. S. Army Corps of Engineers. Any swamp or bog area, where these low pH soil are most common, would be considered irreplaceable by the Corps of Engineers and therefore a permit to construct (and generate uncontaminated soil for offsite disposal) would not be issued. Avoidance is the preferred alternative and only as an option of last resort would construction be approved. In summary, while low pH soils exist in Illinois, mostly in southern Illinois and protected areas of northern Illinois, removal of this type of soil is heavily regulated because of the wetlands restrictions, and the volume of soil for removal that would be generated would be de minimis compared to the other fill brought into a CCDD facility.

Soil pH tends to increase below three feet from the surface, due to the increasing carbonate content, as Dr. Fernández's testimony describes. Most construction projects excavate deeper than three feet below ground surface, and the soil would be mixed as it is excavated. By the time the soil is placed in the truck would have a higher pH than what was measured in the surficial samples, which were the source of the Agency's database.

The Board noted that pH data provided by other participants were limited to northern Illinois, and by inference not geographically representative. CCDD and uncontaminated fill operations are primarily located in northeast Illinois, because that is the population center and the most optimum geology. Quarries are used for mining sand and stone, and are typically located in (alkaline) dolomitic formations. Quarries are located near their market and the market demand to accept CCDD and uncontaminated fill is also in northeast Illinois. In the more rural areas, there is sufficient open area to balance the sites and eliminate the need to take soil offsite at construction jobs. Exhibit C includes a map of Illinois with the CCDD and uncontaminated soil fill operations plotted. Only one facility is located in southern Illinois, with all the remaining facilities in the northern half of the state, primarily concentrated around northeastern Illinois. Clearly, the pH data presented in the previous hearings is representative of what has been and will be generated in the future for placement in CCDD and uncontaminated soil.

pH is a measure of the acidity or basicity of an aqueous solution. The pH reading approximates the negative logarithm (base 10) of the molar concentration of the hydrogen ion. pH zero is set at 1 molar concentration of hydrogen ions, pH 1 is a 0.1 molar concentration, pH 2 is a 0.01 molar concentration, etc. Because this is a logarithmic scale, even if some loads of low pH soil were to be introduced into a fill operation, the groundwater pH would be rapidly neutralized to the alkaline side due to the pH of the other material as well as the buffering capacity of the groundwater itself. This is why the soil pH testing reported by John Hock was all found to be on the alkaline side (pH 7.3 to pH 11.0)[5] and reported by Vulcan (pH 7.48 to 8.20)[6]. Fill material is placed in discrete layers. So even if some low pH material were accepted at a CCDD facility, and the groundwater buffering capacity were somehow consumed by the acid soil, any mobilized metals within the low pH soils would simple precipitate again as it migrated into the surrounding alkaline fill material within the fill material, as Dr. Fernández describes in his testimony. The Agency rejected using the NPDES pH results for establishing the appropriate pH for establishing Maximum Allowable Concentrations,[7] which is unfortunate, as these data would be the most representative of the impact the fill is having on the groundwater pH, which is exactly what we are trying to project.

The First Notice regulations for placement of uncontaminated soil is more restrictive for CCDD and uncontaminated fill sites than it is for the backyards of residential homes, as illustrated below:

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[5] Pre-filed Testimony of John Hock, page 4, October 7, 2011.

[6] Public Comment #14, Vulcan, Page 3.

[7] Transcript September 26, 2011, Mr. Les Morrow, page 45.

Metal	MAC at pH 4.5 to 4.74, mg/kg	MAC at pH 6.25 to 6.64, mg/kg
Cadmium	1.0	5.2
Lead	23	107
Mercury	0.01	0.89

My October 2011 testimony presented data from a commercial laboratory that found that over 97% of all soils it tested had a pH value above 6.25.[8] If the soil pH in your backyard is between 6.25 and 6.64, you can safely have cadmium at a concentration of 5.2 mg/kg. To place this same soil in a quarry requires the cadmium concentration to be at 1.0 mg/kg to be deemed "safe". For mercury, the MAC limit is so restrictive at the pH 4.5 to 4.74 that the background number is utilized for the MAC instead of the computed 0.01 mg/kg computed at the low pH, while your backyard can have levels of mercury 89 times higher than what the level deemed protective if placed in a CCDD facility, before applying the background value. The background value is still 15-fold more restrictive than what is considered safe for your background. Lead levels in your backyard at the 6.25 to 6.64 pH are 4.6 times more liberal than what the risk-based value at the pH used in determining the MAC concentrations. I have a difficult time understanding the technical basis for allowing higher levels of metal content in residential backyards than what we allow to be placed inside of quarries in industrial areas, some of which are located where community-wide groundwater restrictions apply. It is safe enough to be on the surface of your backyard, but is not safe enough to be buried in a quarry. The Board's proposed regulation is based on the soil pH of less than 1 percent of the soils in Illinois that will not be disturbed which places a tremendous economic burden on the 99 percent of the uncontaminated soils generated annually for offsite placement. The assumption of this one-size-fits-all soil pH based on bogs and swamps for all uncontaminated soil is the source of this difficulty.

[8] Pre-filed Testimony, James E. Huff, page 12, October 2011.

Unlike arsenic, the background levels for the other inorganics in 35 Ill. Adm. Code 742, Appendix A Table G are not all set at the 95th percentile of the mean. Mercury is a case in point, where the Agency's report,[9] used to establish background in TACO, indicates that the **median** concentration of mercury within metropolitan statistical areas is 0.06 mg/kg. This suggests that 50 percent of all uncontaminated soil generated will **fail** the background established for just mercury. This 50 percent is included within the 82 percent of all uncontaminated soil generated annually that are predicted to fail due to elevated metals. A partial copy of Dr. Tom Hornshaw's testimony in R97-12 which includes the Agency's Background Report is included as Exhibit D for the Board's reference. There is clearly a problem where we are relying on *background* values set at the median for an area to define *uncontaminated.*

Recommendation: I would urge the Board to review again the technical basis behind the use of the pH range 4.5 to 4.74 to set MACs for the inorganics. The economic impact from this determination is significant and real, as presented in the previous section. In the pre-first notice comments I submitted on behalf of the Illinois Transportation Coalition I suggested that the MACs for inorganics be based on a conservative pH range of 6.25 to 6.64, noting that 97.35% of 8,500 soil samples collected by one Illinois laboratory were above this pH range. Based on the **minimum** pH of 7.3 Mr. Hock found in testing fill material already placed in quarries this suggested pH range is conservative. The Board noted that Vulcan's facility during all of 2011 received soil that ranged from a pH of 7.48 to 8.20, all on the alkaline side.[10] The Board discounted these data noting that the data are biased to northern Illinois.[11] However, as noted earlier in my testimony, northern Illinois is where the CCDD and uncontaminated soil fill operations are predominantly located, because that is where the market exists.

A simple solution to the Board's concern is to require pH testing of soil brought into these facilities, both under the 663 and 662 Forms. This is a simple test that could even be conducted at the receiving facilities as Vulcan does on as it places the material.[12] This would provide the

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[9] Illinois EPA, Office of Chemical Safety, Technical Report *A Summary of Selected Background Conditions for Inorganics in Soils,* August 1994.

[10] Page 66 of Board's First Notice

[11] Page 69 of the Board's First Notice

[12] Public Comment 14, Vulcan, page 3.

protection for groundwater that the Agency and Board are seeking without creating onerous costs that reflect no benefit to the environment.

Specifically, I recommend Section 1100.605(a)(3)(A) be changed as follows:

*The ~~lowest~~ **pH range 6.25 to 6.64** chemical-specific pH-dependent values in Appendix B, Table C **and all uncontaminated soil accepted at CCDD and uncontaminated soil facilities shall have a pH greater than pH 6.25**; or*

Due Diligence Requirement

The Board adopted the ASTM standards in the Certification Section, 1100.205. For individual industrial properties that will undergo demolition, generating CCDD and uncontaminated soil fill, the requirement for a full Phase I Environmental Site Assessment (ESA) may be appropriate. However, for linear projects, such as roadways and pipelines, the project corridor can literally extend across hundreds of properties. The typical due diligence includes both a records search (which includes historical research) and a site reconnaissance, two of four components of the ASTM Standard E1527-05. Interviews with the existing property owners and interior building inspections are typically not conducted as property is not being acquired and these agencies do not have authority to require owners to supply these elements. The specific report format used for linear corridor projects does not follow the ASTM 1527-05 format, but does include pertinent information. Transportation agencies have developed unique report formats appropriate for linear corridor projects. When land is purchased as part of these linear corridor projects, these agencies conduct appropriate due diligence for the strip of land being acquired. To require full Phase I ESAs on adjoining properties and when only a limited strips of property acquired would be a hardship on all linear projects, resulting in delays and significant expenses.

Recommendation: I would suggest that Section 1100.205 (a) (1) (B) be clarified that as follows:

> *...based on a site evaluation conducted in accordance with ASTM E1527-05 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, **Sections 7.2.1 Records Review and 7.2.2 Site Reconnaissance**, incorporated by*

reference at Section 1100.10 ***or with policies developed by the Illinois Department of Transportation[13] and Illinois Tollway[14] consistent with ASTM 1527-05.***

This recommendation would also extend to 1100.205(a)(1)(A), where the Board has referenced the Transaction Screening Process. The process followed for linear corridor projects are the same whether commercial, industrial, or residential, and the same citation above should be incorporated into this section. ASTM Transaction Screens requires a questionnaire and inspection of the interior of the buildings, which does not occur on roadway, sewer, and water main projects.

In addition, the Certification language in Section 1100.205(a)(1)(C) should be changed accordingly.

Grab versus Composite Samples

The Board found in the First Notice that only grab samples should be collected when showing compliance with the MACs.[15] This simple requirement assures a 5 percent rejection rate for arsenic alone, due to naturally occurring arsenic levels in Illinois,[16] while under 35 Ill. Adm. Code 742, achieving the 13 mg/kg remedial objective for arsenic is routinely done by averaging and compositing.[17] Earlier, I testified that the CCDD and uncontaminated soil generated represents 3,400,000 cu yd annually. A 5% rejection rate equates to rejecting 170,000 cu yd of NATURALLY OCCURRING ARSENIC on an annual basis. The economic impact of the blanket grab sampling requirement as applied to just arsenic equates to $4,300,000 per year,[18] with no benefit to the environment. This soil exists naturally in our backyards, yet is not deemed safe for filling in industrial quarries?

[13] IDOT, *Bureau of Design and Environment Manual*, Part III Environmental Procedures, Chapter 27 Environmental Surveys and IDOT Local Roads and Streets Manual, Chapter 20.

[14] Illinois Tollway, *Environmental Studies Manual,* July 2001.

[15] Page 64 of the Board's First Notice.

[16] The 13 mg/kg background value is set at the 95th percentile of the upper confidence level of the mean State-wide value, approximately 5% of the naturally occurring arsenic levels are above 13 mg/kg.

[17] Recall the 13 mg/kg background value for arsenic replaces the ingestion remedial objective, the soil migration to groundwater at the proposed MAC is 25 mg/kg.

[18] Landfill cost $28.75 less the CCDD cost of $3.50, or incremental cost of $25.25

There are a number of CCDD and uncontaminated soil fill operations that require soil testing, even when no Potentially Impacted Properties are present.[19] Public works department typically bring back spoils from water main breaks in residential areas to their maintenance yards. Typically 5 to 10 cu yd might be generated at each repair job. It is common practice to then sample this pile when ready to ship offsite. Historically ten or more grab samples were collected for analysis and composited for all constituents except for volatile organic compounds (VOCs), where the sample with the highest photoionization detector reading is typically analyzed. So where one full analysis was typically completed on a composite sample, the generator will have to determine the number of analyses that is appropriate if no compositing is allowed. So are we really protecting the environment more effectively from collecting one grab sample versus one composite sample from a pile? The answer is clearly no. Dr. Fernández's testimony explains that the grab samples, even for soil pH, is *technically questionable* from a representative nature, and my previous testimony also described how this approach leads to unrepresentative samples.[20] For linear corridor projects, where perhaps eight borings would typically be completed and composited by depth for analysis, the costs become prohibitive to analyze all samples. So fewer samples will be collected and analyzed, increasing the probability of missing an area of contamination. The Board notes; *"The Board finds that the prohibition is reasonable since the rules require soil testing only for soil from sites determined to PIP in accordance with ASTM."*[21] The issue is really more about where no Potentially Impacted Property has been identified, but testing is conducted.

Recommendation: I would suggest that Section 1100.610(d) be amended to read:

Samples must not be composited for analysis if collected from Potentially Impacted Properties, and analytical results from samples must not be averaged. ***For samples collected outside PIPs compositing of samples is acceptable.***

Summary

[19] See Vulcan's Public Comment, PC#14, page 5.

[20] Prefiled Testimony of James E. Huff, page 10.

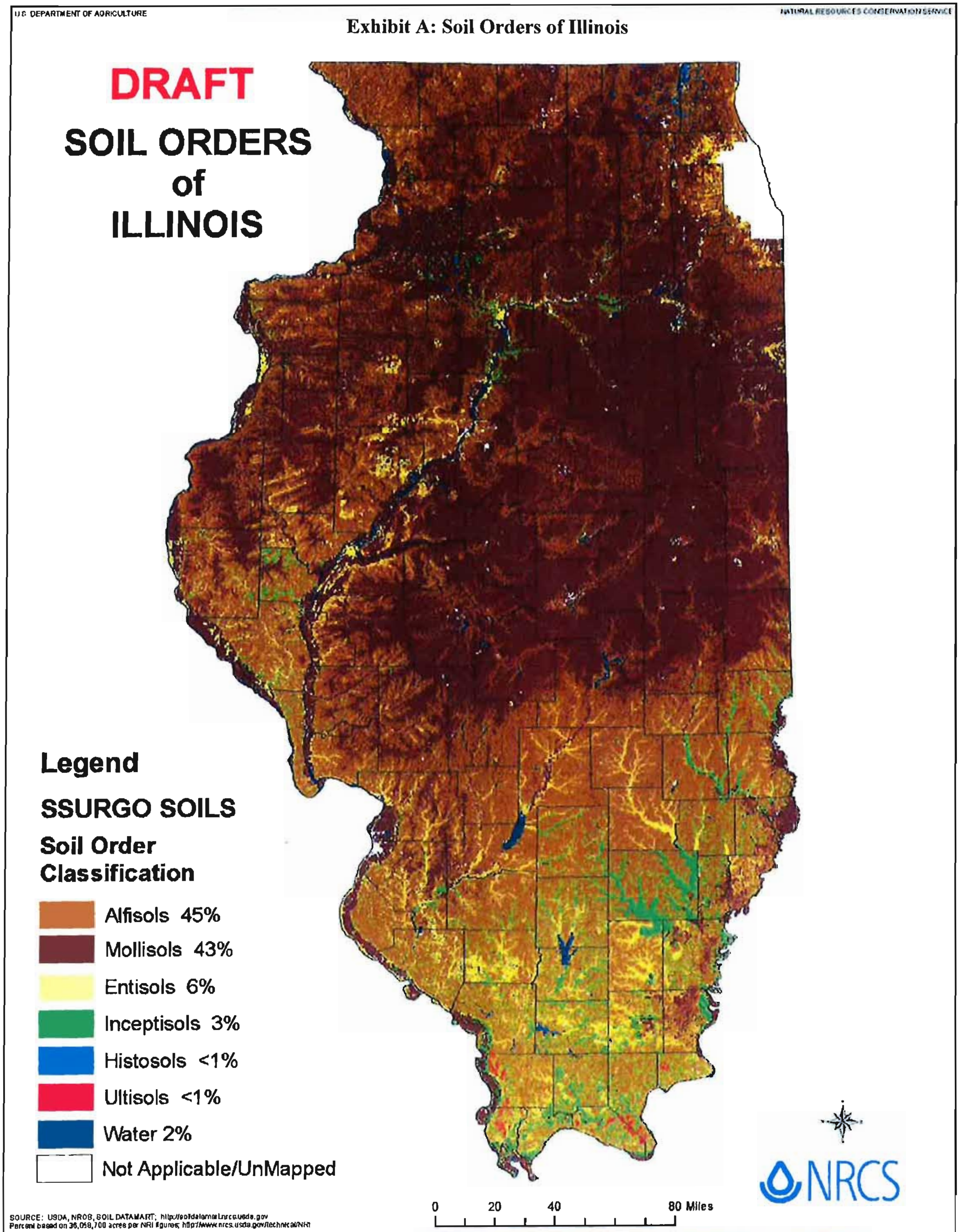
[21] Page 64 of the First Notice

The elimination of the monitoring well requirement in the First Notice will assure an outlet for CCDD and uncontaminated soil, and we support the Board's decision in this regard. The record developed in these proceedings supports this elimination of monitoring wells, as no groundwater impacts have been identified.

The use of the minimum soil pH in development of Maximum Allowable Concentrations remains the most significant issue from an economic impact perspective. The record is clear that 82 percent of what has historically gone to these facilities will no longer be accepted simply due to the overly restrictive MAC established metal values, and the economic impact on the citizens of Illinois will be on the order of $100,000,000 per year due to this one item. This is a real economic burden to the taxpayers, is not a sustainable practice, and results in no benefits from an environmental perspective. Additionally, the loss of jobs and reduction in infrastructure improvements are detrimental to the economy of the State of Illinois. No problem has been identified with the CCDD industry to justify such onerous regulations. We urge the Board to review the record on the scientific basis behind the use of such a low pH.

Thank you, this concludes my pre-filed testimony.

James E. Huff, March 5, 2012



Gary, Struben. "Illinois Suite of Maps." Soils. National Resources Conservation Service, 1 Mar. 2012. 05 Mar. 2012. <http://www.il.nrcs.usda.gov/technical/soils/Suite_Maps.html>.

Exhibit A

Soil Orders of Illinois

- **Mollisols** occupy about 45 percent of the state's land area and are most extensive in central and northern Illinois. Parent materials include virtually all kinds, although they are **less likely to be associated with very acidic parent materials because of the base saturation requirements.**

- **Alfisols** are generally the light-colored soils that formed under forest. The Alfisols predominate in southern Illinois. They occupy about 45 percent of the state. Parent materials include virtually anything except for volcanic ash or organic. Most commonly formed in glacial till, outwash, loess, or on bedrock. **Extremely acidic parent materials are rare.**

- **Entisols** include most of the light-colored, recently deposited alluvial soils in southern and western Illinois. These soils have not been in place long enough to develop recognizable horizons. They occupy about 7 percent of the state. The properties of these soils are determined mainly by the properties of the parent materials because so few changes have taken place.

- **Inceptisols** include soils that have weakly developed horizons. Inceptisols occupy about 2 percent of the state. Commonly used for agriculture and forestry. In temperate climates, they often make some of the best agricultural soils because they have **undergone very little leaching and loss of bases, etc.**

- **Histosols** include the organic soils, or mucks and peats. They occur in bogs and marshes mostly in western Illinois. They occupy less than 1 percent of the state. Histosols are often used for agriculture when drained because of their (often) high native fertility, good physical characteristics, and the easy availability of water. **Problems arise from low pH,** the presence of sulfidic materials, and subsidence after drainage.

- **Ultisols** are the "old soils" located in southern Illinois. They occupy less than 1 percent of the state. **They are typically quite acidic, often having a pH of less than 5.**

In the World Reference Base (WRB) soil classification system acid soils (as agricultural problem soils) may mainly occur in the following Reference Soil Groups: Acrisols, Arenosols, Cambisols, Histosols, Ferralsols, Luvisols, Planosols, Podzols and Fluvisols. **However, the Reference Soil Groups with the widest distribution of acid soils are Acrisols, Ferralsols and Podzols (which do not occur in the state of Illinois).**

Exhibit A

References

McDaniel, Paul. "Ultisols." *Soil Taxonomy*. University of Idaho, 2 Feb. 2012. Web. 05 Mar. 2012. <http://soils.cals.uidaho.edu/soilorders/ultisols.htm>.

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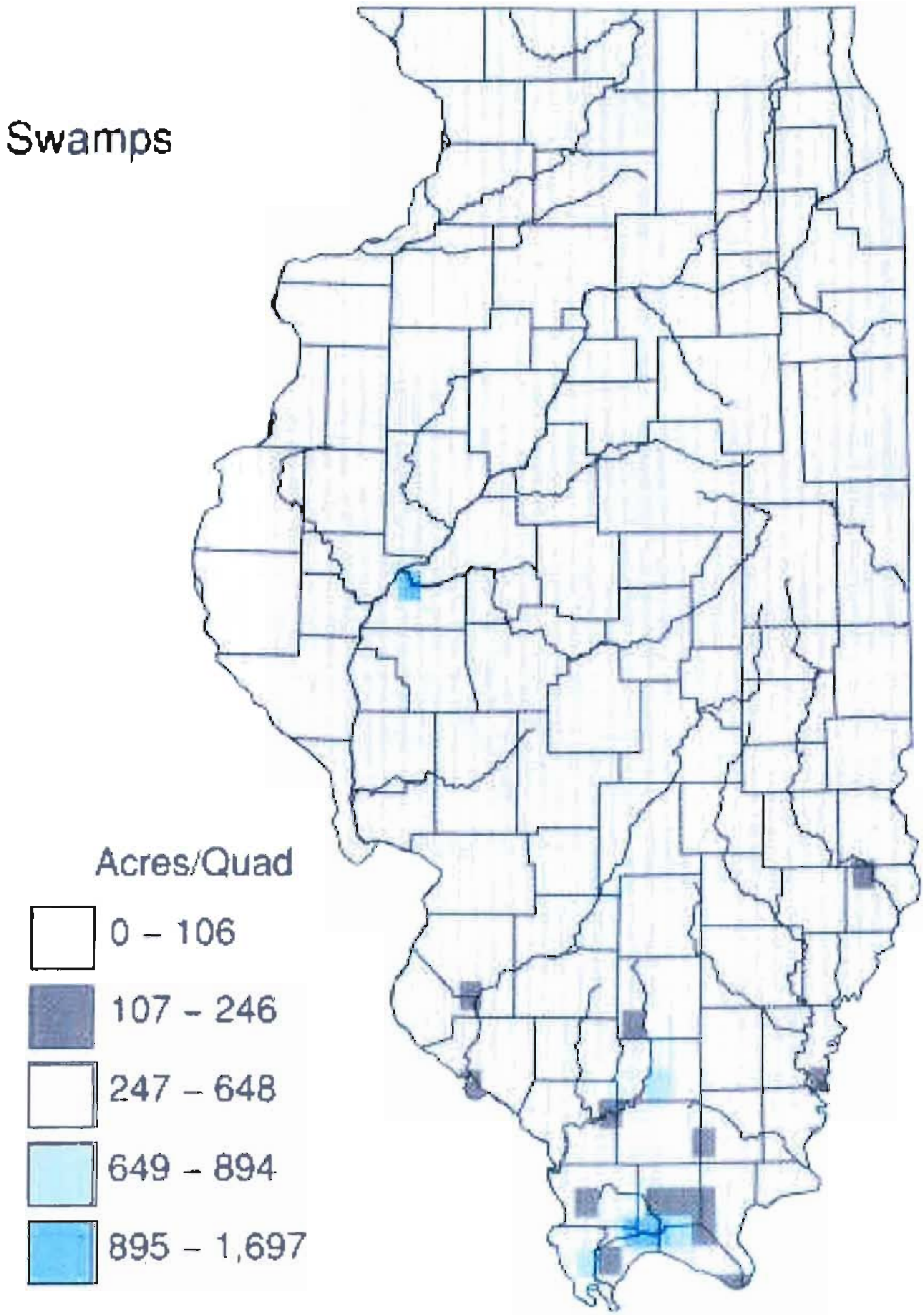
Exhibit B: Distribution of Swamps in Illinois



Suloway, L., and M. Hubbell, 1994. Wetland resources of Illinois: an analysis and atlas. IL Natural History Survey, Special Publication 15. 88pp.

Exhibit C: CCDD Facility Locations

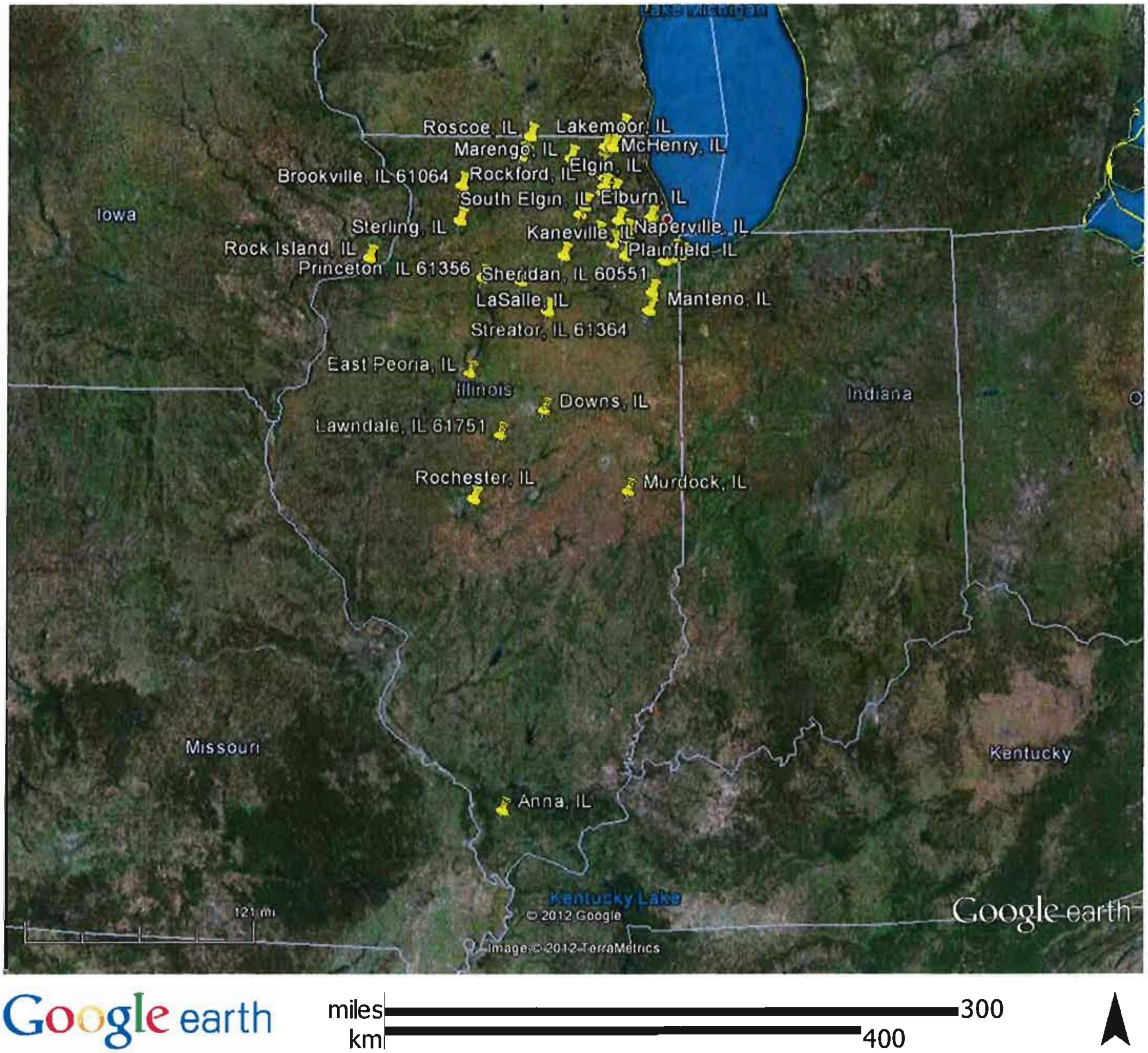


Exhibit C: CCDD Facility Locations

Name	Site Number	Site Address	City	Zip	Phone	Contact
Anna Quarries Inc	1810050003	1000 Quarry Road	Anna	62906	618-833-5121	Pyatt, William
Midwest Aggregates	970055126	28435 W Rte 173	Antioch	60002	847-395-2595	Mertes, Jim
Thelen Sand & Gravel	1114200001	28955 E IL Rt 173	Antioch	60002	847-395-3313	Steve, Thelen
47 Acres/Southwind Business Park	894125007	2250 Southwind Blvd	Bartlett	60103	630-497-8700	Haworth, William
Blue Heron Business Park-Bartlett	898075002	23108 W Bartlett Rd	Bartlett	60103		Haworth, William
Elmhurst Chicago Stone Co-Barbers Corners	1978030002	351 Royce Road	Bolingbrook	60490	630-832-4000	Peter, Stamatopoulos
Brookville Quarry CCDD	158200001	US Rt 52/ IL Rt 84	Brookville	61064	815-626-5192	Arnold, Robert
Fitzmar Landfill Inc	310450011	28th St and East End Ave	Chicago Heights	60411		Orr, Kathleen
Rowe Construction Co-Downs	1138120003	700 North & 2000 East	Downs	61736	309-830-5060	Luker, Phil
Downs CCDD Facility	1138123002	West of Co Rd 200 E; South of Co Rd 750N	Downs	61736		Bottens, Joseph Shane
Prairie Material Sales Yd 92	890255034	1151 Penney Rd	East Dundee	60118	847-844-8257	Plummer, David
Beverly Materials CCDD	894250020	32W007 Route 72	East Dundee	60118	847-695-9300	Zumbrunn, David
Palumbo Management CCDD	898065017	32W638 E Main St/E of Higgins Rd	East Dundee	60118	312-455-1181	Palumbo, Joseph
Farmdale Pit	1798065010	22493 Farmdale Rd	East Peoria	61611	309-699-0961	Moore, Steve
Prairie Material Sales Yd 91	890305044	1 South 396 Lorang Rd	Elburn	60119	630-557-2396	Plummer, David
Gifford East-CCDD	314125046	1395 Gifford Rd	Elgin	60120		Haworth, William
Lambrecht Property-CCDD	311055032	Glenwood Dyer Rd & Frontage Rd	Glenwood	60425	815-726-7722	Klingberg, Daniel
Chicago Street CCDD, LLC	1970455178	1127 S Chicago St	Joliet	60436	815-723-3000	Sandeno, Kenneth
Richards St CCDD	1974450034	800 S Richards St	Joliet	60432	815-726-6284	Hess Jr, Phil
DeBe Land Dev Inc Quarry	1978095150	1450 South Brandon Road	Joliet	60436-8532	708-460-1725	Koty, John
FJV Development	1978175017	3210 Mound Rd	Joliet	60436	773-847-1900	Koty, John
Lakeview Estates CCDD	898105004	NE Harter Rd @ Lorang Rd	Kaneville	60144		Koty, John
EF Heil LLC Site 2	918000002	2405 Waldron Road	Kankakee	60901	815-436-3500	Grande, Patrick
Lake in the Hills CCDD	1110405067	Pingree Rd/VirginiaRd	Lake in the Hills	60156	630-497-8700	Vondra, Michael
Petersen Sand & Gravel CCDD	1110600018	914 W Rte 120	Lakemoor	60050	847-395-3313	Thelen, Steve
Cannon Pit	990305107	I-80 & Rte178	LaSalle	61301	815-664-2341	Hoxsey, Bruce
Twoomey Pit CCDD	1078120003	2000th Ave & 2050th St	Lawndale	61751		Reichle, Joe
Speedway Quarry	2010506331	9572 Forest Hills Road	Loves Park	61111	815-633-1500	Sockness, Dave
Village of Lynwood CCDD Fill	311685020		Lynwood	60411	708-758-6101	Myers, Robert
Reliable Lyons CCDD	311715020	4226 S Lawndale Ave	Lyons	60534		Haworth, William
North Shore-CCDD	2010175083	9034 N Second St	Machesney Park	61115	815-654-4700	Kutz, Troy
Prairie Material Sales Yd 95	918065001	8215-C N Route 45/52	Manteno	60950	815-468-8700	Plummer, David
Prairie Material Sales Yd 90	1110655054	8293 S Route 23	Marengo	60152	815-588-5554	Plummer, David
Hanson Material Service Yd 585	311745012	9101 W 47th St	McCook	60525	708-485-8211	Hall, Bret
Vulcan Construction Materials LP McCook Quarry	311745029	5500 E Joliet Rd	McCook	60525	708-485-6602	Van Kovering, Kelly
Reliable Sand and Gravel Co Inc	1118115015	2121 S River Road	McHenry	60051	815-385-5020	Roberts, Don
Little, Willis-CCDD	418055004	CR 2100 E	Murdock	61941	217-832-9511	Little, Myron
Vulcan-Bolingbrook Quarry A&B	1978200006	22700 111th St	Naperville	60564	630-904-1110	Van Kovering, Kelly
Fox Ridge Stone LLC	930155067	Route 71 & Minkler Road	Oswego	60543	630-554-9101	Hamman, Donald
E F Heil LLC Site 1	1970605144	12152 S Npville/Plainfield Rd	Plainfield	60585	815-436-7465	Heil, Edward
City of Princeton CCDD Facility	118193005	1600N Rd., R.R.6	Princeton	61356	815-875-2631	Wright, Steve
Richton Park-CCDD	311800001	22100 Central Rd	Richton Park	60471	708-449-1250	Butler, James
Buckhart Sand & Gravel Co Inc	1670755002	10499 Buckhart Rd	Rochester	62563	217-525-1752	Ealey, Charles
McAdam & Associates CCDD	1610656079	340 34th Ave	Rock Island	61201	309-786-6027	McAdam, David
Pierpont Quarry	2010306479	So Pierpont Ave	Rockford	61102	815-654-4700	Kutz, Troy
Cooling CCDD Site	2010306480	5815 Kilburn Ave	Rockford	61101	815-654-4700	Kutz, Troy
Sandy Hollow Quarry	2010306481	3801 Sandy Hollow Rd	Rockford	61109	815-654-4700	Kutz, Troy
Northern IL Svc Auburn CCDD	2010306610	1901 Harrison Rd	Rockford	61101	815-874-4422	Klinger, Wayne
Auburn CCDD Facility	2010306685	7301 Auburn St	Rockford	61104		Cassaro, Gregory
Hanson Material Service Yd 588	1970900001	Route 53	Romeoville	60446	815-838-6200	Hall, Bret
Orange Crush LLC-Romeoville	1970905104	1001 Independence Ave	Romeoville	60446	708-544-9440	Ehlert, Clifford
Land & Lakes Clean Fill Site	1970905141	1371 N Joliet Rd	Romeoville	60446	847-825-5000	Cowhey Jr, James
Northern Illinois Svc Co	2010405051	4950 Rockton Rd	Roscoe	61073	815-874-4422	Klinger, Wayne
Stenstrom Sand & Gravel CCDD	2010405066	5200 Rhodes St	Roscoe	61104	815-398-3478	Sockness, Dave
Roscoe Rock & Sand CCDD	2018105003	5029 McCurry Road	Roscoe	61073	815-389-1858	Bauch, Margaret
Sheridan Sand & Gravel-Wiensland	991105008	105 S Wiensland	Sheridan	60551	815-496-2826	Vardijan, Branko
Sheridan Sand & Gravel-N 4201 Rd	998215024	2679 N 4201 Rd	Sheridan	60551	815-496-2421	Vardijan, Branko
Central Blacktop Co Inc	890805023	Bowes Road	South Elgin	60177		Vondra, Michael
Fox River Stone Co	890805051	1300 South Route 31	South Elgin	60177	847-742-6060	Wallace, Sarah
Raymond Street-CCDD	890805066	1400 Route 25	South Elgin	60177	630-497-8700	Haworth, William
Middle St CCDD	894125006	1155 W Middle St	South Elgin	60177	630-497-8700	Haworth, William
Galt Road CCDD Facility	1958095004	13237 Galt Road	Sterling	61081	815-626-5192	Arnold, Robert
Quality Ready Mix Concrete Co	1958105001	13134 Galt Rd	Sterling	61081	815-772-7181	Holesinger, Randy
Hedrick Property CCDD Site	994905104	800 W Second St	Streator	61364	815-257-0649	Koty, John

"Permitted CCDD Fill Applications " *Bureau of Land* Bureau of Land Database by the Illinois Environmental Protection Agency, 2012 Accessed 02 Mar 2012
<http://epadata epa state.il us/land/ccdd/index.asp>

EXHIBIT D

PARTIAL TESTIMONY OF Dr. Thomas Hornshaw in R97-12 and the Report

A Summary of Selected Background Conditions for Inorganics in Soils, August 1994, Submitted as Exhibit B to Dr. Hornshaw's Testimony

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
TIERED APPROACH TO	)	R97-12
CORRECTIVE ACTION OBJECTIVES	)	(Rulemaking-Land)
35 ILL. ADM. CODE 742	)	
(Pursuant to P.A. 89-443)	)	

TESTIMONY OF DR. THOMAS C. HORNSHAW ON PROPOSED SUBPARTS D, E, F, AND H

Qualifications

My name is Thomas C. Hornshaw. I am a Senior Public Service Administrator and the Manager of the Toxicity Assessment Unit within the Office of Chemical Safety of the Illinois Environmental Protection Agency (Agency). I have been employed at the Agency since August of 1985, providing expertise to the Agency in the area of environmental toxicology. Major duties of my position include development and use of procedures for toxicity and risk assessments, review of toxicology and hazard information in support of Agency programs and actions, and critical review of risk assessments submitted to the Agency for various cleanup and permitting activities.

I was a member of the Agency's Cleanup Objectives Team until February of 1993, when that Team's responsibilities were assumed mainly by the Toxicity Assessment Unit. I was also a member of the Groundwater Standards Technical Team during the development of the Groundwater Quality Standards. I was one of the Agency's participants in the City of Chicago's Brownfields Forum, which investigated approaches to cleaning up and re-using closed or abandoned industrial properties, and the Agency's representative on a committee co-sponsored by the Association of State and Territorial Solid Waste Management Officials (ASTSWMO) and USEPA that worked with USEPA in the development of Soil Screening Levels for the Superfund program. These four teams have looked in depth at the problems involved with determining acceptable residual concentrations of chemicals in soil and/or groundwater.

I received Bachelor of Science (with honors) and Master of Science degrees in Fisheries Biology from Michigan State University, East Lansing, Michigan. I also received a dual Doctor of Philosophy degree from Michigan State University, in Animal Science and Environmental Toxicology. My graduate programs concentrated on using mink as research animals -- my Master of Science program used mink to determine if Great Lakes fish species were suitable for use as animal feed, while my Doctor of Philosophy program developed protocols to use mink as representative wildlife carnivores in dietary toxicity and reproduction studies.

I am a member of the Society of Environmental Toxicology and Chemistry and Sigma Xi, the Scientific Research Society. I have authored or co-authored six papers published in peer-reviewed scientific journals, one report issued through the U.S. Environmental Protection Agency, and have written or co-written six articles which have appeared in trade journals. I have also presented twelve posters and/or talks describing facets of my graduate work and my work at the Agency at various regional and national meetings. A more descriptive account of my work and educational background and a list of publications, posters, and talks is included in a Curriculum Vitae presented as Exhibit A to this testimony.

Testimonial Statement

My testimony today concerns the information presented in Subpart D: Determining Area Background, and portions of the information presented in Subparts E: Tier 1 Evaluation, F: Tier

2 General Evaluation, and H: Tier 2 Groundwater Evaluation. I will describe the development of the proposed methodologies for determining and using Area Background concentrations for chemicals in soil and groundwater, present an overview of the derivation of the Tier 1 cleanup objectives listed in Appendix B for groundwater and soil, explain why and how cumulative effects of noncarcinogens must be addressed, discuss the recommended values for the physical/chemical parameters presented in Appendix C, and describe the rationale and requirements for allowing chemical concentrations in groundwater in excess of the Tier 1 values.

I. SUBPART D

In the overall process of determining "how clean is clean," the General Assembly reserved a place for area background as one of the alternatives in HB 901 in Section 58.5(b). That Section states that ". . . remediation objectives established under this Section shall not require remediation of regulated substances to levels that are less than area background." Furthermore, the language in Section 58.5(c)(3) directing the establishment of remediation objectives by the Board states specifically that "The regulations shall provide procedures for determining area background contaminant levels." Thus, the Agency has included Subpart D: Determining Area Background in its proposal for Part 742.

A. Background for Background

It was with good reason that the General Assembly included consideration of background concentrations of chemicals in a risk-based remediation program. Due to the conservative assumptions built into determining risk-based cleanup goals and to the inherent variability in the distribution of most naturally-occurring chemicals, it is possible that the native concentration of a chemical may exceed the calculated cleanup goal for that chemical. It is also possible that an upgradient source of a chemical has resulted in concentrations of that chemical at a downgradient site which exceed its risk-based goal, even though that chemical was never handled at the downgradient site. And it is also possible that area-wide or even global human activities can result in man-made chemicals being deposited in appreciable concentrations around, and sometimes even distant from, such activities. Thus, recognition of background levels of chemicals is necessary in a risk-based remediation program in order to address these situations.

The Agency could have simply (and easily) adopted the language of Section 58.5(b) directly into Part 742, leaving the details of determining and using background concentrations to be defined for each site as necessary. There are several textbooks and guidance documents available on determination of background, and multiple statistical procedures for this task. However, the Agency's experience in several programs suggested the potential for confusion, debate, and possibly appeals if the determination and use of background concentrations was left to a case-by-case approach. What follows is a description of how the Agency arrived at proposed Subpart D.

B. Section 742.405 - Soil Background

Once the Agency decided that specific procedures for determining background concentrations were needed, we tried to identify at least one procedure for soil and one for groundwater which, if performed correctly, would routinely generate results which could be accepted by the Agency without question. Agency staff who are confronted with the task of determining and using background data in their programmatic duties were consulted, and several statistical methodologies were reviewed. As a result, the Agency originally selected two "no questions" approaches for determining soil area background in the draft Part 742 circulated to the Advisory Committee in April.

The first approach, called the "Prescriptive Approach," was adapted from a routine approach specified by USEPA for determining groundwater background concentrations at RCRA sites (Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities. Interim Final Guidance. USEPA Office of Solid Waste. EPA/530-SW-89-026. April 1989). This approach is also often used for determining soil background concentrations at a variety of sites. In the Agency's adaptation, a minimum of ten samples would be required, which would also have to be demonstrated to be normally distributed as shown by a Coefficient of Variation test. The Agency chose ten as the minimum number of samples as a compromise between the statistical power of the approach and the burden on the site owner/responsible party for sampling and analysis costs, and also for consistency with the requirements or preferences of some Agency programs. The requirement for a normal distribution was in recognition of the often unrealistically high upper limits calculated as "background" concentrations when non-normal data sets are subjected to some of the statistical approaches for determining background. If the background data set met these minimum requirements, the 95% Upper Tolerance Limit of the data set for a chemical would be the upper limit of the Area Background Concentration.

The second approach, called the "Statewide Background Approach," relied on the Agency publication A Summary of Selected Background Conditions for Inorganics in Soil (IEPA/ENV/94-161; included as Exhibit B to this testimony) to determine if an inorganic chemical could be considered to be present at a site at background levels. The Agency's Office of Chemical Safety had previously compiled into a database all samples which had been reported to the Agency as background data for a site, and we decided to take advantage of this relatively large database to help with the determination of background at remediation sites. This database has some shortfalls in that the data used in developing the database were not generated as part of a planned survey of background conditions across the state, the Quality Assurance/Quality Control procedures and analytical methodologies were not consistent across the many individual sites/projects from which the data were drawn, and the same level of rigor in selecting sample points not affected by activities at the site (or adjacent to the site) was most likely not applied at the various locations in the data set. Nevertheless, we felt confident that this database could at least be used to the extent that if the concentration of a chemical at a site fell within the range reported for that chemical in the Agency's survey, then the chemical was likely present at background levels.

In addition to these two "no questions" approaches, the Agency also included language allowing another approach acceptable to the Agency as a third option, which was intended to address situations in which the minimum requirements of the Prescriptive Approach were not met. Since there was minimal comment from the Advisory Committee, the Agency felt that its approaches for determining soil background were acceptable.

As the deadline for submitting this proposal approached, certain problems with the Prescriptive Approach surfaced. An update to the above-mentioned RCRA guidance, which is an Appendix to a separate document (Statistical Training Course for Ground-Water Monitoring Data Analysis. USEPA Office of Solid Waste and Emergency Response. EPA/530-R-93-003. 1992), was obtained by the Agency and reviewed for additional guidance. In contrast to the earlier guidance, the update asserted that most naturally-occurring chemicals will have a log-normal distribution rather than normal, and this distribution should thus be shown not to be the case rather than assuming normality. The update also specified a number of tests for normality in distribution, ranking several in preference to the Coefficient of Variation test specified in the

Agency's Prescriptive Approach. Aside from the apparent problems arising from USEPA's update, the Agency also became aware that, due to the inherent variability in the naturally occurring levels of chemicals in soils, statistical methods which are appropriate for background groundwater data may not necessarily be appropriate for background soil data.

The Agency asked for advice from the Advisory Committee, and also contacted personnel from USEPA who had experience in determining background concentrations. Mr. Rapps of the Advisory Committee provided excerpts from two statistical texts, neither of which identified a single preferred methodology that would provide a "no questions" approach as a substitute for the Prescriptive Approach. The same response was echoed by the USEPA personnel, with the common advice being that since there are multiple distributions possible and specific methodologies and tests are available for these distributions, the statistical methodology should be appropriate for the nature and distribution of the data set. As a result, the Agency has removed the Prescriptive Approach from the proposal before the Board, and the Statewide Background Approach is now the only "no questions" approach for soil.

C. Section 742.410 - Groundwater Background

Much of what I have described for soil background determinations applies to groundwater background determinations as well, since the soil approach was adapted from groundwater methodologies. The main difference is that the Prescriptive Approach described above, but subsequently dropped, for soils is still proposed for groundwater, since the deficiencies of the Prescriptive Approach for soils do not usually manifest themselves for groundwater. Also, the Agency has not developed a database for groundwater background samples, therefore there is no Statewide Background Approach for groundwater. The Prescriptive Approach for groundwater is essentially as described for soil in the April draft of Part 742, with the exception that the statistical test for normality has been changed to the Shapiro-Wilk Test from the Coefficient of Variation Test, in keeping with the updated guidance from USEPA. If the minimum conditions of ten samples having a normal distribution are met, then the Agency will accept the 95% Upper Tolerance Limit of the data set as the upper limit of background concentrations without question. As with the soil background determination, another statistical method appropriate for the characteristics of the data set may be approved by the Agency to address data which do not meet the minimum requirements or for which the Prescriptive Approach is not appropriate.

D. Section 742.415 - Use of Background

Any of the procedures described above may be used to demonstrate that a chemical is present at a site as a result of background conditions, and should therefore be eliminated as a chemical of concern for that site. With the exception of the Statewide Background Approach for soil, any of the procedures may also be used to determine the remedial objective for a chemical in lieu of the other procedures of Part 742. Since the Statewide Background Approach has shortfalls, as described above, the Agency believes this approach is inappropriate for establishing remedial objectives for soil for a site.

Finally, the Agency has included two specific restrictions on the use of background concentrations which derive from the language of HB 901. First, Section 58.5(b)(2) of the Act specifies that if the background concentration of a chemical of concern at a site exceeds its residential use remediation objective, then the site may not be converted to residential use unless the residential use remediation objective for that chemical is first achieved. Therefore, the Agency is requiring the use of institutional controls at sites where background concentrations exceed the

Illinois
Environmental
Protection Agency

Office of Chemical Safety
2200 Churchill Road
Springfield, IL 62794-9276

August 1994

IEPA/ENV/94-161

A Summary of Selected Background Conditions for Inorganics in Soil

EXHIBIT

B

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ACKNOWLEDGEMENTS

The Illinois EPA wishes to acknowledge the individual contributions that were essential for the successful completion of this technical report. Roger Kanerva, Environmental Policy Advisor to the Director, was instrumental in ensuring support for the project and provided project management and technical review. Gary King, Deputy Director of the Bureau of Land, provided important initial support of the project and provided the Office of Chemical Safety with access to Bureau of Land files. Tom Crause and the Preliminary Assessment/Site Investigation Unit routinely provided background data from ongoing site investigations. James Patrick O'Brien, Manager of the Office of Chemical Safety, provided project management and technical review. Tom Hornshaw, Manager of the Toxicity Assessment Unit, provided ideas and technical review. Connie Sullinger, Environmental Toxicologist, was responsible for reviewing BOL files, creating a database for the information collected, conducting the summary statistics, and preparing the final report. Peggy Ford, Office Coordinator for the Office of Chemical Safety, typed the final report.

A special thanks to the following individuals who collected additional background soil samples for this report: From the Office of Chemical Safety's Emergency Response Unit--Dennis Ahlberg, Ralph Foster, Scott Owens, Chuck Brutlag, David Hertzing, Mark Johnson, Ed Osowski, and Tom Powell. From the Bureau of Water's Marion Regional Office--David Brown.

TECHNICAL REPORT

A SUMMARY OF SELECTED BACKGROUND CONDITIONS FOR INORGANICS IN SOIL

Office of Chemical Safety
Illinois Environmental Protection Agency
August 1994

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Introduction

The Office of Chemical Safety has completed a summary of selected background conditions for inorganic chemicals in surface soils in Illinois. The objectives of this project were as follows:

(1) to ascertain a reasonable indication of statewide background concentrations in soil of selected inorganic chemicals of public health and ecological interest;

(2) to support the Agency's efforts in determining the presence of elevated levels of lead in soil by determining the levels of lead present in selected background soils across the state; and

(3) to utilize, to the extent possible, existing site-specific studies and background data which represents a major data resource already existing within Agency files.

Technical Approach

The first step of this project involved the review of existing Agency files in order to obtain data on background concentrations in soil. The results were obtained from samples taken in areas, judged by the field staff taking the samples, to be undisturbed and unimpacted by site-related activities. No efforts were made to investigate these results relative to the potential for past sources of atmospheric deposition (e.g., smelter, leaded gasoline, etc.) or previous site activities at the background sample location. Certain areas of the state have likely been impacted by anthropogenic sources and therefore represent conditions that may vary from naturally occurring levels. Sample results were obtained from Preliminary Assessment/Site Investigations performed since 1986 plus sample results from State and Federal Superfund site investigations in Illinois.

The second step in the process of generating this technical report involved the collection of additional samples. Surface soil samples were obtained by Agency staff from those counties in the State for which data were lacking. These samples were specifically taken from areas expected to represent naturally occurring background.

The current database includes 275 data points from sample locations in all 102 counties in Illinois. Since some of these sites required varying degrees of investigation, certain samples do not include the complete list of analytical parameters. As a result, each inorganic may have a different number of data points. The minimum concentrations, maximum concentrations, mean concentrations, and median concentrations were calculated for each of the inorganic parameters. Values which were reported as less than the detection limit were included in the summary statistics by using one-half of the detection limit. If upon analysis of these data, it could be concluded that the background sample had been impacted by site-related activities then the sample was not used in the summary data.

Data used in this report are laboratory analytical values for total metals determined by USEPA SW-846 methods. These methods convert all of each metal tested to a soluble ion that can be detected. Since the original ionic speciation of the metals are not known, conclusions regarding mobility, exposure, assimilations, and toxicity cannot be directly inferred.

It should be noted that uncertainties inherent in a report of this type include those due to variation in sampling procedures, variation in sampling depth, the use of one-half the detection limit for non-detects, differences in analytical techniques between laboratories, and the impact of anthropogenic sources on the concentrations existing at the sample location. Furthermore, we wish to emphasize that the samples were not collected randomly nor in accordance with an a priori experimental design. Due to resource constraints, the majority of data used pre-existed this study. Consequently, this study is not and should not be characterized as having a totally unbiased scientific basis.

Results

Figure 1 shows the survey locations across the State. Table 1, 2, and 3 include an overall summary of the ranges, means, and medians calculated for the inorganic parameters. This overall data set includes samples from urban and rural locations.

Statewide Data -- Table 1 includes a summary of data obtained for the entire state. It should be noted that the statewide summary statistics should be used in conjunction with Tables 2 and 3. These breakouts of urban vs. rural counties indicate that certain inorganic parameters such as lead, zinc, and cadmium are generally higher in the urban environment.

Urban Data -- Table 2 includes data for counties within metropolitan statistical areas (MSAs) and Table 3 includes data for counties outside MSAs. MSAs are geographic areas consisting of a large population nucleus - a census-defined "urbanized area" - together with adjacent communities that have a high degree of economic and social integration with that nucleus. In MSAs with a population of one million or more, primary metropolitan statistical areas (PMSAs) may be identified. When PMSAs are defined, the MSA of which they are component part is redesignated a consolidated metropolitan statistical area (CMSA). Figure 2 shows the MSAs, PMSAs, and CMSA for Illinois.

The following inorganic constituents were detected in certain locations in the state at levels above the ranges for natural soils from the scientific literature: cadmium, lead, barium, mercury, thallium, and zinc.

Cadmium -- Those locations in the state where there is the greatest diversion from background levels published in the scientific literature for cadmium were in the counties of St. Clair and Lake. In St. Clair County, the levels of cadmium detected were highest in Sauget and Fairmont City where the levels detected were 7.3 mg/kg and 8.2 mg/kg, respectively. In Lake County, the highest level of cadmium was 7.4 mg/kg which was obtained from a background site in Waukegan.

Lead -- The highest levels of total lead identified during the survey were found in the counties of Cook and Lake. Two of the three highest detections for lead were in Chicago where the concentrations reported were 346 mg/kg and 647 mg/kg. The second highest concentration of lead detected was 384 mg/kg and was obtained in the City of Waukegan in Lake County.

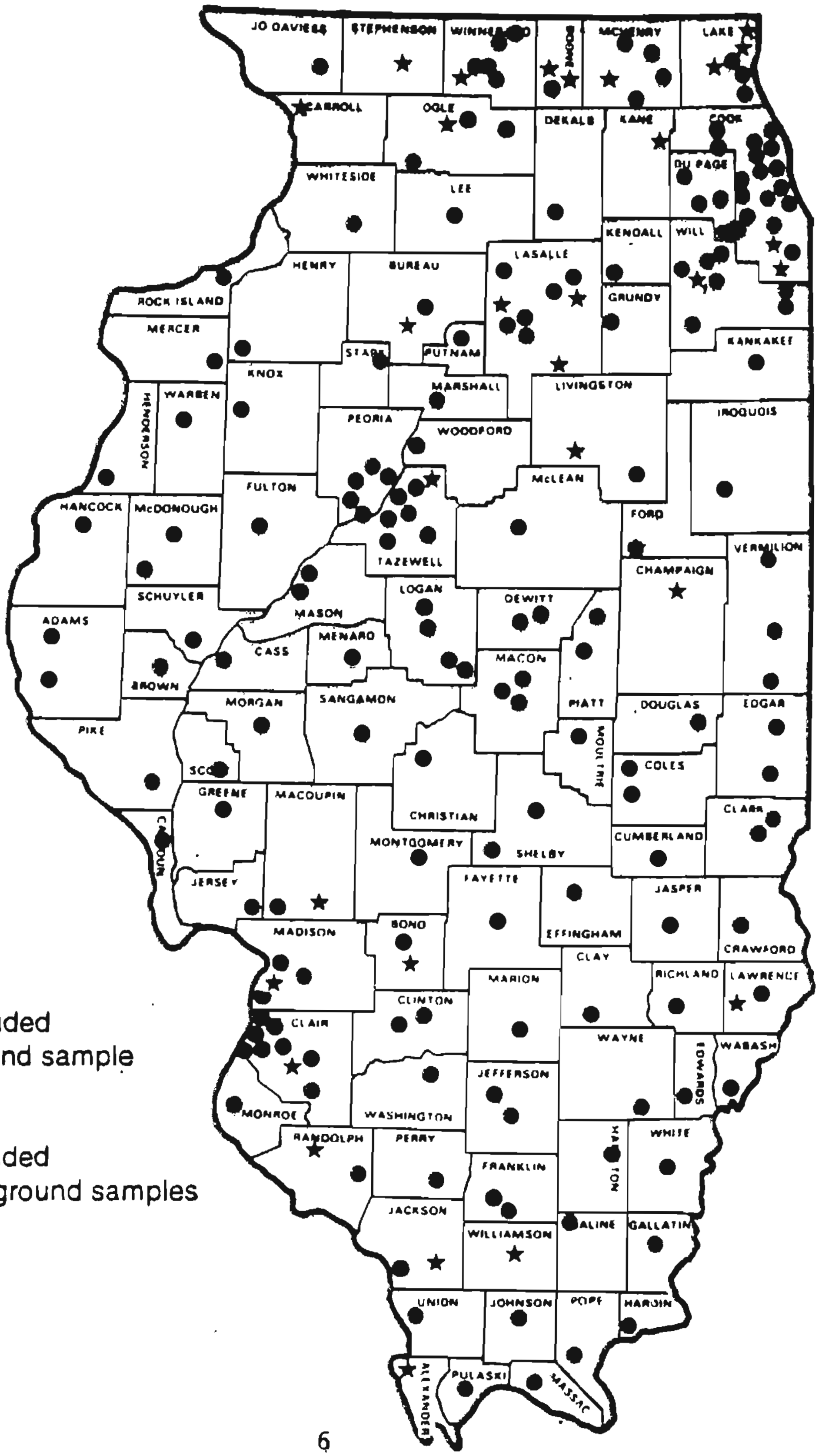
Data Utilization

These data can be used by programs in the Agency to evaluate the plausible validity of any site-specific background data collected for various cleanup sites across the state. These data, however, are not meant to replace the collection of site-specific background data for sites.

A second use for these data is as a general screening check for determining the potential presence of inorganic contamination at a site. These data appear to present a reasonable indication of background conditions in Illinois and can be used to compare with site data. Doing so could identify any inorganic contaminants which may be present in concentrations above what could be viewed as the "normal" range.

Figure 1

Sample Locations for Selected Background Samples for Inorganics in Soil

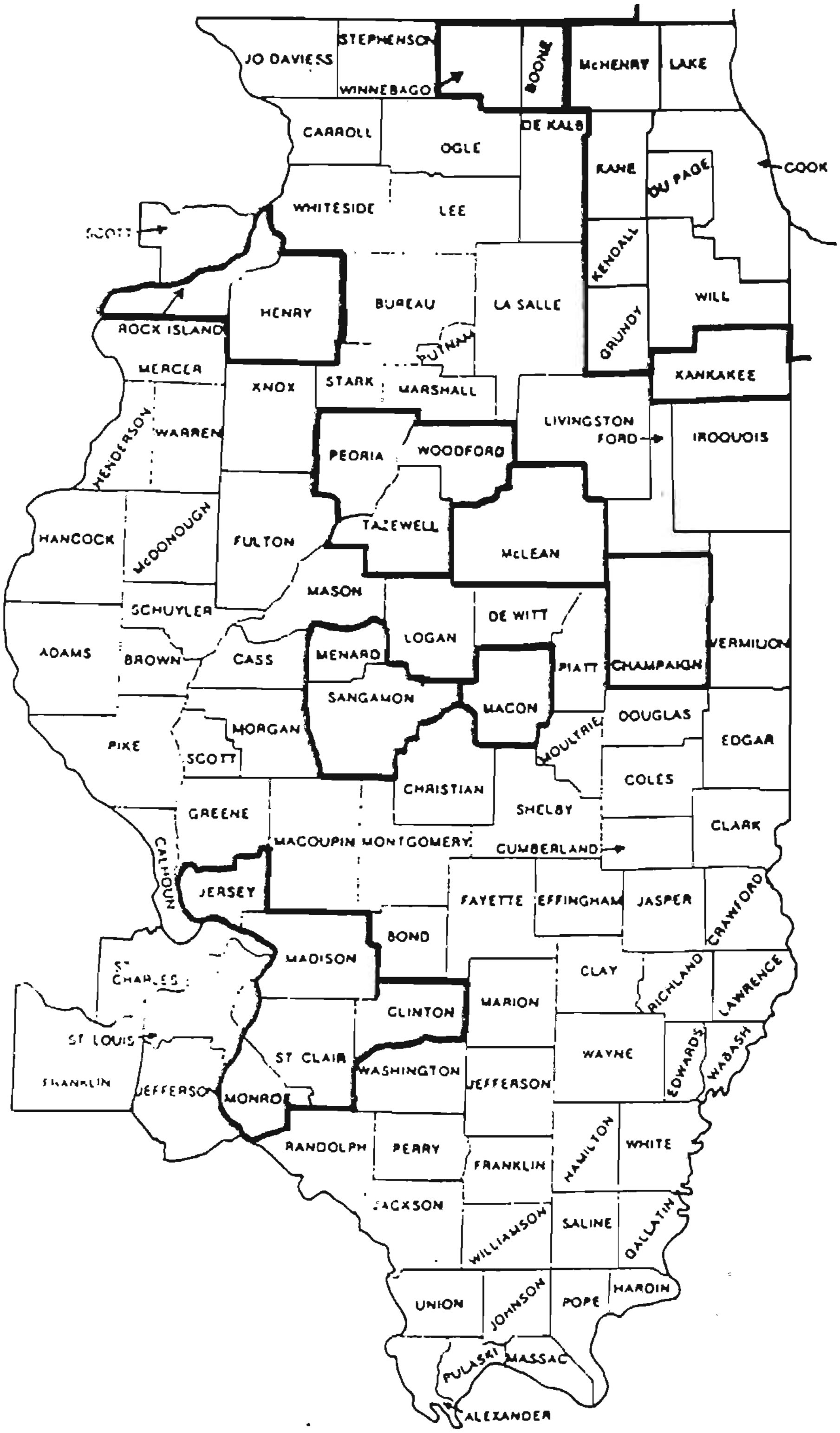


● Location included one background sample *(175 sites)*

★ Location included multiple background samples *(29 sites)*

FIGURE 2

Illinois Consolidated Metropolitan Statistical Areas, Primary Metropolitan Statistical Areas, Metropolitan Statistical Areas, and Counties



Aurora-Elgin, IL PMSA
Kane & Kendall Counties, IL
Bloomington-Normal, IL MSA
McLean County, IL
Champaign-Urbana-Rantoul, IL MSA
Champaign County, IL
Chicago, IL PMSA
Cook, DuPage, & McHenry Counties, IL
Chicago-Gary-Lake Cnty, IL-IN-WI CMSA
Aurora-Elgin, IL PMSA
Chicago, IL PMSA
Gary-Hammond, IN PMSA (Lake & Porter Cntys., IN)
Joliet, IL PMSA
Kenosha, WI PMSA (Kenosha Cnty., WI)
Lake County, IL PMSA
Davenport-Rock Island-Moline, IA-IL MSA
Henry & Rock Island Counties, IL (Scott Cnty, IA)
Decatur, IL MSA
Macon County, IL
Joliet, IL PMSA
Grundy & Will Counties, IL
Kankakee, IL MSA
Kankakee County, IL
Lake County, IL PMSA
Lake County, IL
Peoria, IL MSA
Peoria, Tazewell, & Woodford Counties, IL
Rockford, IL MSA
Boone & Winnebago Counties, IL
St. Louis, MO-IL MSA
Clinton, Jersey, Madison, Monroe, & St. Clair Counties, IL
Franklin, Jefferson, St. Charles, & St. Louis Cntys., MO;
St. Louis City, MO)
Springfield, IL MSA
Menard & Sangamon Counties, IL

Source: Illinois Statistical Abstract. 1991.

TABLE 1.

Summary Information for Total Concentrations of
Inorganic Chemicals in Background Soils in Illinois (mg/kg)

STATEWIDE DATA

Parameter	Number of Data Points	Range	Mean	Median
Aluminum	213	1388 - 37200	10126	9270
Antimony	142	0.18 - 8.6	3.7	3.6
Arsenic	234	0.35 - 24	6.7	5.9
Barium	251	ND (<5) - 1720	130	119
Beryllium	213	ND (<0.02) - 9.9	0.69	0.58
Cadmium	243	ND (<0.2) - 8.2	0.97	0.5
Calcium	213	630 - 184000	16443	6340
Chromium	261	ND (<2.14) - 151	17.3	14.0
Cobalt	214	0.9 - 32	8.9	8.8
Copper	254	1.0 - 156	19.7	14.0
Cyanide*	163	ND (<0.06) - 2.7	0.58	0.5
Iron	246	3200 - 80000	16190	15200
Lead	267	4.7 - 647	49.2	25.0
Magnesium	214	476 - 74500	7231	3410

TABLE 1. - CONTINUED

Parameter	Number of Data Points	Range	Mean	Median
Manganese	244	61.5 - 5590	767	631
Mercury	200	ND (<0.01) - 1.67	0.11	0.06
Nickel	252	ND (<3.1) - 135	16.8	14.1
Potassium	240	270 - 5820	1363	1120
Selenium	200	ND (<0.1) - 2.6	0.50	0.39
Silver	233	ND (<0.06) - 5.9	0.84	0.50
Sodium	205	14.1 - 7600	216	130
Sulfate	28	10 - 260	93.8	88.9
Sulfide	18	ND (<1.00) - 10.1	3.7	3.0
Thallium*	191	0.02 - 2.8	0.57	0.39
Vanadium	214	ND (<2.5) - 80	25.0	25.0
Zinc	246	ND (<5.5) - 798	102.9	67.4

* The total number of data points for cyanide (163) and thallium (191) are higher for the statewide data vs. the combined total from Tables 2 and 3 (158 and 183 respectively). This difference is due to the omission of certain data points in the MSA vs. non-MSA breakouts due to elevated detection limits (1/2 detection limit was higher than the highest detected concentration).

TABLE 2.

Summary Information for Total Concentrations of
Inorganic Chemicals in Background Soils in Illinois (mg/kg)

Counties **WITHIN** Metropolitan Statistical Areas

Parameter	Number of Data Points	Range	Mean	Median
Aluminum	103	1388 - 37200	10148	9500
Antimony	67	0.24 - 8	4.2	4.0
Arsenic	114	1.1 - 24	7.4	7.2
Barium	109	ND (<5) - 1720	133	110
Beryllium	99	0.05 - 9.9	0.73	0.59
Cadmium	104	ND (<2.5) - 8.2	1.3	0.6
Calcium	103	813 - 130000	20783	9300
Chromium	114	ND (<2.14) - 151	21.2	16.2
Cobalt	103	2.1 - 23	8.8	8.9
Copper	107	ND (<2.93) - 156	28.9	19.6
Cyanide	81	ND (<0.07) - 2.7	0.64	0.51
Iron	105	5000 - 80000	17607	15900
Lead	119	4.7 - 647	71.1	36.0
Magnesium	103	541 - 74500	10872	4820

TABLE 2. - CONTINUED

Parameter	Number of Data Points	Range	Mean	Median
Manganese	105	155 - 5590	742	636
Mercury	87	0.02 - 0.99	0.12	0.06
Nickel	105	ND (<3.1) - 135	20.9	18.0
Potassium	105	270 - 5820	1560	1268
Selenium	85	ND (<0.12) - 2.6	0.58	0.48
Silver	91	ND (<0.32) - 5.6	0.97	0.55
Sodium	97	20.2 - 1290	208	130
Sulfate	15	17.6 - 240	85.8	85.5
Sulfide	11	ND (<1.00) - 10.1	3.9	3.1
Thallium	78	0.02 - 1.6	0.46	0.32
Vanadium	103	ND (<2.5) - 80	25.0	25.2
Zinc	106	23 - 798	137.9	95.0

TABLE 3.

Summary Information for Total Concentrations of
Inorganic Chemicals in Background Soils in Illinois (mg/kg)

Counties **OUTSIDE** Metropolitan Statistical Areas

Parameter	Number of Data Points	Range	Mean	Median
Aluminum	110	2640 - 23300	10105	9200
Antimony	75	0.18 - 8.6	3.2	3.3
Arsenic	120	0.35 - 22.4	5.9	5.2
Barium	142	22.4 - 253	127	122
Beryllium	114	ND (<0.02) - 8.8	0.65	0.56
Cadmium	139	ND (<0.2) - 5.2	0.73	0.50
Calcium	110	630 - 184000	12379	5525
Chromium	147	4.3 - 37	14.3	13.0
Cobalt	111	0.9 - 32	8.9	8.4
Copper	147	1 - 42	13.0	12.0
Cyanide	77	ND (<0.06) - 1.2	0.46	0.50
Iron	141	3200 - 29100	15134	15000
Lead	148	ND (<7.44) - 270	31.5	20.9
Magnesium	111	476 - 24100	3853	2700

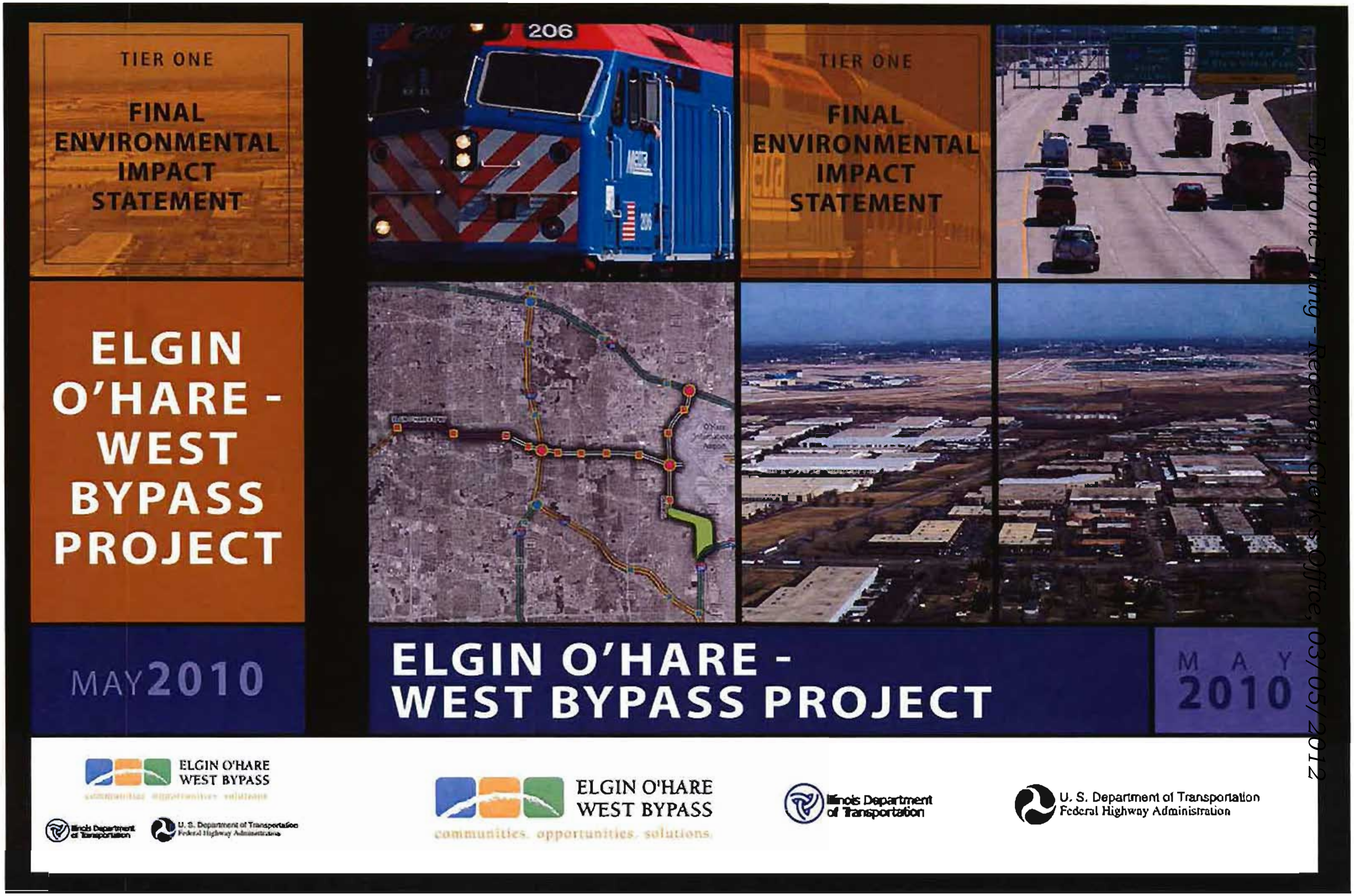
TABLE 3. - CONTINUED

Parameter	Number of Data Points	Range	Mean	Median
Manganese	139	61.5 - 3710	784	630
Mercury	113	ND (<0.01) - 1.67	0.10	0.05
Nickel	147	ND (<5) - 34.6	13.9	13.0
Potassium	135	280 - 5600	1210	1100
Selenium	115	ND (<0.1) - 1.7	0.44	0.37
Silver	142	ND (<0.06) - 5.9	0.76	0.50
Sodium	108	14.1 - 7600	222.8	130.0
Sulfate	13	10 - 260	103	110
Sulfide	7	ND (<1) - 8.8	3.4	2.9
Thallium	105	0.05 - 2.8	0.50	0.42
Vanadium	111	6 - 47	25.0	25.0
Zinc	140	ND (<5.5) - 400	76.3	60.2

EXHIBIT E

ELGIN O'HARE-WEST BYPASS PROJECT

EXECUTIVE SUMMARY


TIER ONE
FINAL ENVIRONMENTAL IMPACT STATEMENT
ELGIN O'HARE - WEST BYPASS PROJECT
MAY 2010
ELGIN O'HARE WEST BYPASS
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U. S. Department of Transportation Federal Highway Administration
206
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U. S. Department of Transportation
Federal Highway Administration

Executive Summary

Introduction

The Federal Highway Administration (FHWA) and Illinois Department of Transportation (IDOT) have identified a preferred alternative for the Elgin O'Hare – West Bypass (EO-WB) project as described in this Final Environmental Impact Statement (Final EIS). The Preferred Alternative emerged after an evaluation and screening process of many alternatives that considered their ability to satisfy the project's purpose and need, provide measured improvement in travel, limit adverse effects on the area's environmental and socioeconomic resources, and address critical needs of communities most affected by the project.

Study Area

The EO-WB study area is bounded roughly by I-90 on the north, I-294 on the east, I-290 on the south, and the Elgin O'Hare Expressway on the west. This area is characterized as a transportation crossroads that includes O'Hare International Airport, a network of freeways and tollways, transit facilities (including Metra rail lines and Pace bus service), freight rail service, and multimodal transfer facilities. It also contains the second largest employment base in the Chicago metropolitan area. Given its geographic position as a transportation and employment hub, 18 percent of all vehicle trips in the region occur in the EO-WB study area. This sizeable travel demand, however, has been outpacing the capacity of the transportation infrastructure resulting in severe traffic congestion, traffic delays, and reduced travel efficiency. In fact, as part of the 2005 *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA–LU) Federal Transportation Bill, the U.S. Congress identified the EO-WB as a project of regional and national significance, one of only a dozen such projects nationwide.

Highway transportation planning has long focused on providing travel mobility in the study area. The Elgin O'Hare Corridor was first introduced as a proposed highway facility in 1967. Following environmental studies and engineering plans by IDOT in the late 1980's and 1990's, the first phase of the Elgin-O'Hare Expressway between Hanover Park and Itasca was completed in 1993. The Illinois State Toll Highway Authority (ISTHA) first studied the O'Hare West Bypass in 1987, and again in 1996. More recently, a proposal for western access to the O'Hare International Airport was adopted as part of O'Hare's Future Airport Layout Plan in 2005. In conjunction with the airport's plan, DuPage County prepared a long-term vision study for the West O'Hare Corridor examining both land development potential and transportation needs including the extension of the Elgin O'Hare Expressway and the development of the O'Hare West Bypass. As mentioned above, funding was included in the 2005 SAFETEA-LU for this project to initiate project development. IDOT's Highway Improvement Program for fiscal years 2010 to 2015 reflects allocations for planning, engineering and land acquisition monies to support the development of the EO-WB. Long-term transportation investments in the region are also identified in the Chicago Metropolitan Agency for Planning's (CMAP) Regional Transportation Plan (RTP) for 2030. The EO-WB has been included in the 2030 RTP for the region, and will be included in the 2040 plan as the preferred alternative identified in this document. Overall, a long history of local, regional, state and federal involvement has occurred in an effort to advance the EO-WB toward implementation.

The EO-WB study was launched to identify an innovative solution to the transportation problems experienced in the study area. IDOT and FHWA identified several key objectives for the study:

- Provide for extensive stakeholder outreach to seek input to solutions that fit into and reflect their surroundings
- Identify the major transportation problems and issues
- Evaluate a broad-range of multimodal transportation solutions that lead to a preferred transportation system concept for the study area

A technical analysis of the transportation issues resulted in the following findings (see the EO-WB's *Transportation System Performance Report* [FHWA and IDOT, 2009] for details):

2030 Baseline Congestion

- Eighteen percent of all travel in the region enters, leaves, or passes through the study area. By 2030, that amount will grow to 19 percent.
- Roughly 86 percent of the area's interstate highways and major arterials are congested. That will grow to 91 percent by 2030.
- Congestion on major roads will spill over to secondary roads, with 92 percent of primary arterials and 90 percent of minor arterials congested by 2030.
- Travel times to interstate connections are longest in 40 percent of the study area, and much of the area consists of densely developed commercial and industrial uses that rely upon superior access to major transportation facilities.

- Travel times from the proposed O'Hare West Terminal to locations west and northwest are among the longest in the study area. Future travel demand with the construction of the new west terminal will warrant improved access compatible with a world class airport.
- Approximately four percent of all trips in the study area are made by transit, estimated to increase to five percent by 2030. More is needed to reduce dependence upon the automobile in the study area.

These findings, coupled with input obtained from stakeholders (see *Stakeholder Problem Definition* [FHWA and IDOT, 2008] for details), resulted in the development of the project's purpose and need, as follows:

- Improve regional and local travel by reducing congestion
- Improve travel efficiency
- Improve access to O'Hare Airport from the west
- Improve modal opportunities and connections

These four basic needs served as the foundation upon which the range of reasonable transportation alternatives were developed and the measures by which to comparatively evaluate their performance and identify a preferred alternative.

Process Leading to the Preferred Alternative

The Preferred Alternative emerged out of an alternatives development and evaluation process that was both comprehensive and structured. A broad range of alternatives was screened using appropriate technical data and stakeholder perspectives to distinguish alternatives that warranted further consideration. The process began with stakeholders identifying the transportation problems and locations where physical improvements were needed. Using that information, the project team assembled working concepts for roadway and transit system alternatives. Both roadway and transit concepts were screened in several cycles of evaluation using travel performance, environmental and social critieria, and costs. Existing and available geographical information systems (GIS) data was used to evaluate the alternatives' impacts to socioeconomic and environmental features in Tier One with detailed field studies to be conducted during Tier Two as agreed to by FHWA, IDOT, and regulatory resource agency groups early in the study process. (See Section 5.2.1 for a summary of the agency scoping meetings at which this topic was discussed).

The initial roadway analysis began with 15 concepts that were screened to 10 based on whether they satisfied purpose and need. A subsequent screening step examined the environmental and socioeconomic effects of the remaining alternatives and determined that three additional alternatives should be dismissed because of high socioeconomic impacts, leaving seven remaining roadway alternatives under consideration. The seven remaining roadway alternatives were refined in terms of roadway layout, footprint or right-of-way requirements, access requirements, and incorporation of transit improvements into corridors shared by roadways and transit. The criteria used to compare the alternatives were expanded to include travel performance, design feasibility, construction and right-of-way costs, and environmental and socioeconomic impacts. The measured effects of each alternative (travel efficiency, travel times, acres affected, number of resources affected, residential and businesses displaced, and tax revenue loss) were analyzed using both quantitative and qualitative analyses supported by stakeholder input. The combination of these evaluation methodologies yielded justification to drop five of the seven alternatives, leaving only Alternatives 203 and 402 as the build alternatives to be considered in the Draft EIS. Parallel to this process was an analysis of options for connecting the O'Hare West Bypass element of the project to I-90 on the north and I-294 on the south. After completing this evaluation, North Bypass Connection Option D was selected as the preferred corridor for the northern portion of the O'Hare West Bypass alignment, and South Bypass Connection Options A and D were selected as corridors for the southern portion of the O'Hare West Bypass alignment warranting further consideration in the Draft EIS.

The evaluation of transit alternatives followed a path similar as the roadway alternative evaluation process, with more than 20 transit improvement corridors proposed initially, screened to 15 at the end of the process. The final transit corridors were refined in length and location, type of service, station locations, transit center locations, parking requirements, etc. The set of transit improvements associated with either roadway alternative is similar except for the STAR Line extending from I-90 to the proposed O'Hare West Terminal. Under Alternative 203, the north leg of the O'Hare West Bypass is freeway and the STAR Line would share the corridor. However, Alternative 402 provides an arterial improvement north of Thorndale Avenue but it cannot accommodate the STAR Line as well because of the limited width of the improvements. As such, the transit agency would have to implement an alignment for the STAR Line separately.

The roadway and transit improvements are supported by a common set of bicycle and pedestrian improvements. These improvements focus on filling the gaps in bicycle trail and pedestrian paths to provide better non-motorized connections to transit stations, park and ride facilities, community activity centers, regional trail systems, and employment areas.

The Draft EIS, completed in August 2009, presented a side-by-side comparison of Alternatives 203 and 402, South Bypass Connection Options A and D, and the No-Action (Baseline) Alternative to assist decision-makers in selecting a preferred system transportation concept for the study area. The document was available for public comment through October 26, 2009. A public hearing was held during the public comment period on October 8, 2009 to present the build alternatives to the public, obtain input on the alternatives, and answer questions. During the comment period, over 70 comments were received, most of which expressed a preference for Alternative 203 and/or Option D. In addition, four local governmental entities submitted resolutions passed in favor of either Alternative 203 or Option D.

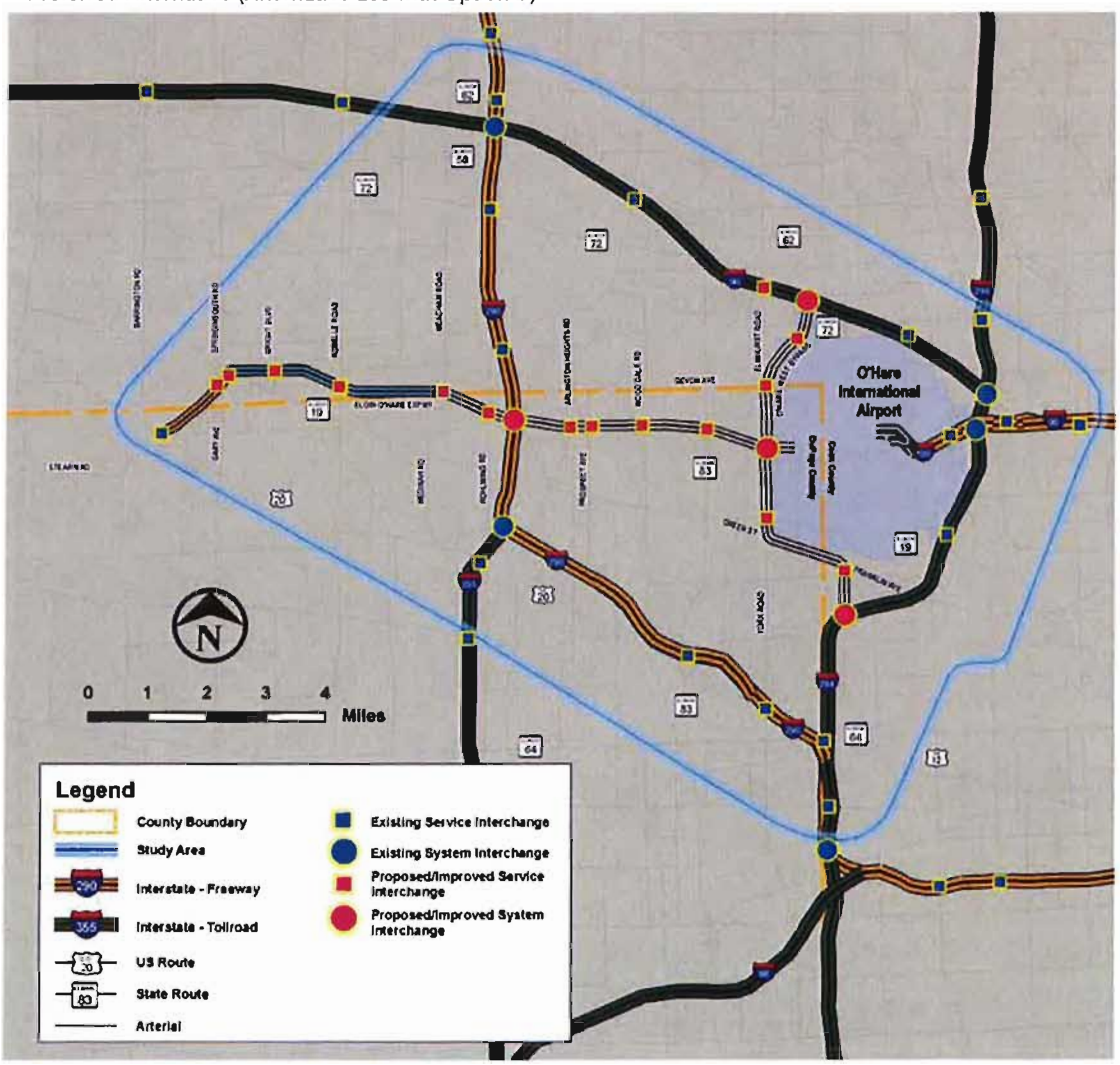
After considering each alternative's transportation benefits and reviewing input received from area residents, communities and stakeholders, IDOT and FHWA identified Alternative 203 with Option D as the Preferred Alternative. Alternative 203 offers slightly better travel performance, whereas Alternative 402 has less socio-economic impacts; both alternatives were comparable in terms of environmental impacts. An examination of economic benefit showed that Alternative 203 provides an additional one billion dollars in value added, and a greater potential for job creation in the region. The clear distinction between the alternatives was found in the overwhelming public and regulatory/resource agency support for

Alternative 203 and Option D. Five municipal entities passed resolutions supporting Alternative 203 and/or Option D and two-thirds of the comments from individuals received during the Draft EIS supported Alternative 203 and/or Option D. Further, regulatory/resource agencies unanimously concurred with Alternative 203 with Option D as the Preferred Alternative.

Description of the Preferred Alternative (Alternative 203 with Option D)

Alternative 203 consists of upgrading and extending the Elgin O'Hare Expressway between IL 19/Gary Avenue to the O'Hare West Bypass for about 10 miles. Between IL 19/Gary Avenue and I-290, the expressway would be widened and upgraded along the existing alignment. East of I-290, extending to the West Bypass and the proposed O'Hare West Terminal, Thorndale Road would be upgraded to a new full-access control freeway. The mainline facility would be three to four basic lanes in each direction, with additional

Preferred Alternative (Alternative 203 with Option D)



auxiliary lanes between high volume interchanges. A 70-foot median would accommodate potential dedicated transit service in the future. To accommodate local traffic circulation, frontage roads would be provided extensively throughout the corridor. Service interchanges would provide access at IL 19, Springinsguth Road, Wright Boulevard, Roselle Road, Meacham Road, Rohlwing Road, Park Boulevard, Arlington Heights Road/Prospect Avenue, Wood Dale Road, and IL 83. Access to other intersecting roadways would be provided by a frontage road system. A full-access system interchange would be provided at I-290. In many cases, crossroad improvements at interchange locations would extend several hundred feet north and south to accommodate increased traffic movements.

Alternative 203 also includes the O'Hare West Bypass, a freeway section that would extend from I-90 at the current location of the Des Plaines Oasis, south along the western edge of O'Hare Airport to the Bensenville Yard. The bypass would then tunnel under and extend east along the north side of Green Street/Franklin Avenue before turning south to connect with I-294.

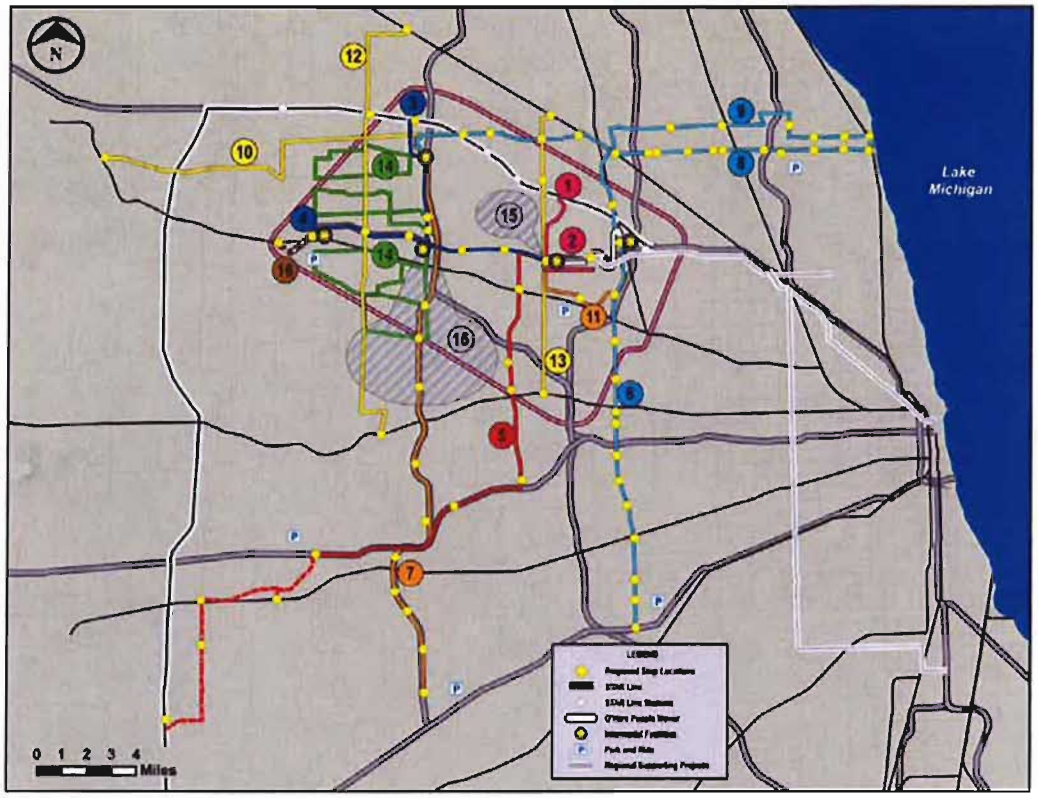
South Bypass Connection Option D was identified as the preferred alignment for connecting to I-294 beginning at the tunnel under the Bensenville Yard. The freeway generally would extend southeast along the north edge of Green Street, then cross the Union Pacific Railroad (UPRR) and proceed south, paralleling the east side of the railroad, to a new system connection with I-294 near Grand Avenue. A new bridge that reconnects Taft Road across the Bensenville Yard, linking Franklin Avenue and IL 19 would be constructed, and a full-access system interchange would be provided at I-294. Part of I-294, extending roughly from Grand Avenue south to North Avenue, would be improved to accommodate system ramp connections and lane balance requirements.

The overall length of the O'Hare West Bypass is 6.2 miles. The freeway would consist of four basic lanes in each direction with additional auxiliary lanes at interchanges, and a 70-foot median would accommodate transit service north of Thorndale Avenue. System interchanges are proposed at I-90, the Elgin O'Hare Expressway, and I-294. Service interchanges are proposed at IL 72, Devon/Pratt, the proposed O'Hare West Terminal, IL 19, and Green Street/Franklin Street.

Transit Improvements

New transit opportunities and connections in the study area are regarded an important objective, and consequently are a component of the project purpose and need. The set of proposed transit improvements has 16 elements (see figure). These elements consist of corridors providing commuter rail service, rail or bus rapid transit (BRT), express bus, local bus, and shuttles (to be built by others). Other facets include new stations, intermodal facilities or transit centers, and park and ride facilities. Improvements include a transit corridor along the J-Line west corridor from the proposed O'Hare West Terminal station to the Schaumburg Metra Milwaukee District West (MDW) station. This transit improvement would be either BRT or rail, and would be located in the median of the proposed roadway improvement. This particular improvement would link residents to jobs in the study area and to downtown Chicago.

Transit Improvements



Corridor Name (Mode)

- Star Line Spur (Commuter Rail)
- Blue Line Extension to West Terminal (Heavy Rail)
- J-Line Northwest to Woodfield (Rail or Bus Rapid Transit)
- J-Line West to Schaumburg MD-W Metra (Rail or Bus Rapid Transit)
- J-Line South to Naperville and Aurora (Bus Rapid Transit to Naperville; Link Service From Naperville to Aurora)
- Mannheim (Arterial Rapid Transit)
- I-355 (Express Bus)
- Dempster (Arterial Rapid Transit)
- Golf East (Arterial Rapid Transit)
- 10 Golf West (Local Bus)
- 11 Irving Park (Express Shuttle Bus)
- 12 Roselle Road (Local Bus)
- 13 York Road Shuttle (Local Bus)
- Circulators (Local Circulators)
- Employment Shuttle Zones
- Shuttle Bus Service** (between Schaumburg Metra Station and Hanover Park Metra Station)

**As part of Tier Two Studies, an evaluation to extend the "J-Line West Transit Corridor" west to the Hanover Park Metra Station will be conducted.

Another proposed transit improvement is the J-Line northwest that would extend from the Elgin O'Hare corridor north along IL 53 to the Woodfield Mall area. An element of the J-Line would be an express bus service extending south along IL 83 and then in a westerly direction to a terminus at the proposed STAR Line station in Aurora. Other elements of the transit plan include extending the Chicago Transit Authority (CTA) Blue Line service from O'Hare's terminal core to the proposed O'Hare West Terminal, and the STAR Line rail service from the O'Hare West Terminal to the I-90 corridor where the service would be extended west. Express bus service is proposed on I-355, Golf Road, Dempster Street, Irving Park Road, and Mannheim Road. Shuttle bus service is proposed between the Schaumburg Metra Station and Hanover Park Metra Station. Extending the J-Line as a higher capacity transit service to the Hanover Park Metra Station will be evaluated in Tier Two. Circulator bus routes and shuttles are planned to develop better connections to stations and employment and activity centers. Rail and BRT stations have been added at key locations, as well as park and ride facilities to provide convenience to the system. The sum of these improvements is aimed at providing an alternative to the automobile for area residents and workers.

Supporting Improvements

Other supporting transportation improvements were considered in the development of a comprehensive transportation solution for the study area. In particular, non-motorized transportation is an important aspect of the plan that would benefit home to work trips, recreational opportunities, and linkages to transit facilities, activity centers, and employment centers. Each of these improvements would be common to the Preferred Alternative. The types of recommended strategies include bicycle and pedestrian improvements, including new bicycle trails and pedestrian paths that would provide better connections to transit stations, transportation centers, park and ride facilities, community activity centers, regional trail systems, and employment areas.

Effects of the Preferred Alternative

Travel Performance

The Preferred Alternative would improve travel in and through the study area in terms of improving regional travel, decreasing congestion on secondary roads, improving average speed throughout the system, and improving travel times to freeway connections and various destinations (see Table S-1).

TABLE S-1
Systemwide Travel Performance for Alternative 203

Percent Increase in Regional Travel Efficiency in Study Area	10%	Manages a higher number of vehicles more efficiently on the system
Percent Decrease in Congested VMT on Secondary Roadways (P.M. Peak)	15.2%	Keeps longer trips on major roads, thus relieves minor roads
Percent Increase in Network Speeds on Principal Arterials (P.M. Peak)	8%	Improves efficiency of local travel
Improve O'Hare West Access—Travel Time Savings from the Study Area West to O'Hare	49%	Enhances access to planned O'Hare West Terminal
Improve Accessibility—Percent Increase in Trips within Five Minutes to Interstate/Freeway facilities	50%	Improves access to freeway connection
Percent Increase in Transit Trips	37%	Addresses top stakeholder priority of increasing public transit facilities

Economic Effects

Alternative 203 is expected to stimulate the local and regional economies (see Table S-2). Transportation investment would flow through all areas of the economy that would provide stimulus far exceeding the original investment, which is known as the multiplier effect.

The "multiplier effect" is the phenomenon that the initial project costs, or investment, lead to the re-spending of those dollars in the region. Jobs would be created not only in the transportation construction industry, but also in service sectors that support construction workers, such as medical facilities, laundries, restaurants, and other services. Investments in transportation infrastructure are expected to spur private investment in the redevelopment of older or obsolete structures and the modernization of industrial parks, which would sustain long-term employment opportunities.

TABLE S-2
Economic Impacts from Construction of Alternative 203

Construction costs total	$3.0 B
Construction costs per year[a]	$1.0 B
Total value added per year[b]	$1.6 B
Total value added[b]	**$4.8 B**
Direct jobs created per year[c]	9,200
Total jobs created per year[d]	**21,600**

[a] Assumes a three-year construction schedule.
[b] This value is the measure of the contribution of economic activity by an industry to the region using the IMPLAN model.
[c] These are jobs related to construction of the transportation improvement.
[d] Includes all jobs created by the means of direct, indirect, and induced employment.

The annual construction cost during the three-year construction period is $1.0 billion. This expenditure would result in 9,200 jobs created for the duration of construction and 21,600 jobs created when considering the multiplier effects in other industries. The value added to the regional economy from the construction of Alternative 203 is estimated to be $1.6 billion per year, or almost $5 billion over the construction period.

Environmental and Social Effects

The study is highly developed and urbanized; therefore, most environmental resources have been disturbed and are of relatively lower quality. Commercial and industrial development is abundant, thus total avoidance of these resources is not possible. However, with the use of existing public rights-of-way, airport property, and avoidance and minimization practices, resource impacts are reduced to the greatest extent possible based upon the current level of design and characterization of those resources. Further analysis and reduction of impacts are expected to occur in the Tier Two EIS process. The environmental and social effects of Alternative 203 with Option D are shown in Table S-3.

TABLE S-3
Summary of Environmental and Social Effects of Alternative 203 with Option D

Resource	Effect
Natural Resources	
Wetland impacts (acre)[a]	39.1
Stream crossings (total number)	22
Surface waters impacts (acre)[a]	18.1
Floodplain encroachments (acre)	24.7
Threatened and endangered species impacted	0
Noise	
Noise-sensitive residential areas	47

TABLE S-3
Summary of Environmental and Social Effects of Alternative 203 with Option D

Resource	Effect
Noise-sensitive, non-residential receptors (churches, schools, parks)	29
Cultural Resources and Section 4(f) Resources	
Cultural resources impacted	0
Acres of Section 4(f) resources impacted (number)[b]	0.95 (3)
Acres of non-Section 4(f) special lands impacted (number)	2.0 (1)
Socioeconomics	
Residential displacements	11
Commercial structure displacements	12
Industrial structure displacements	28
Employees displaced	1,277
Tax revenue loss	$4.47M

[a] Totals include impacts to potentially jurisdictional areas, such as stormwater facilities. Subject to regulatory review, several manmade stormwater facilities may be exempt from regulation.
[b] One property purchased with OSLAD funds may be affected.

Public Involvement

Public involvement has been a cornerstone of the study process, and has been critical for developing consensus on a Preferred Alternative. The extensive stakeholder and public outreach framework, consistent with IDOT's Context Sensitive Solution (CSS) policy, has accompanied the technical work over the course of the planning process (see the *Stakeholder Involvement Plan (SIP)* [FHWA and IDOT, 2009] for details). The object of CSS is an interdisciplinary approach that seeks effective, multimodal transportation solutions by working with stakeholders to develop cost-effective solutions that fit into and reflect the project's surroundings. During the course of the study, dozens of meetings were held with communities, transportation providers, special districts, state and federal agencies, and the general public. Input was requested about transportation problems, the improvements needed, valued community resources that should be considered, the criteria and data that should be used to evaluate alternatives, the alternatives considered, and the process for evaluating alternatives. The alternative that emerged as the preferred set of improvements for the EO-WB study directly reflect the application of the CSS process and the valued input of the many stakeholders involved.

The public outreach program included the following major elements:

- Project working groups that essentially met monthly. A key element was the "workshop" format, which involved stakeholders literally drawing on study area maps to define the transportation issues and to facilitate development and evaluation of alternatives.
- Open house public meetings in November 2007 (transportation needs), September 2008 (initial alternatives), March 2009 (refined alternatives and expanded study area), and October 2009 (Draft EIS) yielded invaluable insights regarding stakeholder issues and priorities. Regular newsletters (six issues distributed prior to of the Draft EIS) provided detailed information on project activities and progress, and an opportunity for public comment (approximately 1,000 newsletters distributed).
- A Web site (www.elginohare-westbypass.org) provided study information, summaries of meeting minutes, reports, and an opportunity for the public to send comments and feedback to the project team. The website remains active and current.
- Speakers bureau events, based on the requests from individuals and groups, as a venue for putting the project message and information to the public.
- Extensive media coverage.

Stakeholder involvement helped develop the foundation upon which the study rests—the purpose of and need for the transportation improvements proposed within the study area. Stakeholders identified transportation problems and provided suggestions regarding potential types and locations of improvements, information that served as a starting point for developing the initial roadway and transit alternatives. Later stakeholders assisted in developing criteria used to evaluate and compare alternatives.

Transportation providers and other agencies provided valuable input regarding the development and evaluation of roadway, transit proposals, and refinements in the transportation concept that would avoid conflicts with their respective plans and operations. Planning and regulatory/resource agencies also have been integral to the process. The regulatory and resource agencies partnered with the project sponsors from the beginning to guide the project through the NEPA/404 Merger process, and the analysis techniques used to measure natural and socioeconomic impacts. For additional details regarding the EO-WB public involvement activities, refer to Section 5, *Coordination.*

Financing Strategies

Historically, transportation infrastructure projects have been funded with a combination of federal and state monies. In an era of increasing infrastructure needs across the country and constrained public funding, other funding mechanisms are being considered. With an estimated cost of $3.6 billion, the preferred alternative for the EO-WB may likely be a candidate for a combination of funding strategies including federal and state monies, tolls, grants, bonds, and public-private partnerships. An important part of the work in the Tier Two process will be to develop a financial plan. This plan will identify reliable sources of funding and required and anticipated cash flow based on project sequencing. Ultimately, the financial plan will be linked to the development of a detailed implementation plan, per

Section 6002 guidance, establishing the proposed sequence for implementing highway projects with operational independence based on funding and schedules.

Summary

This Final EIS identifies the Preferred Alternative that is the outcome of Tier One of the EO-WB study. The selection of Alternative 203 with South Connection Option D was based upon a rigorous evaluation of many alternatives considering travel performance and cost, impacts and benefits to environmental and social resources, and considerable public input.

The Preferred Alternative best suits the needs of the communities and stakeholders most affected by the proposed action as demonstrated by its ability to:

- Best satisfy the objectives of the project's purpose and need.
- Limit impacts on natural and social resources in the area.
- Provide improved travel efficiency for local and long distance trips in ways that are most compatible with existing and planned community land use patterns.

The Final EIS is organized in the traditional format as described in the FHWA *Technical Advisory T6640.8A* (October 30, 1987). It builds on the Draft EIS text with modifications that identify the selection of the Preferred Alternative, update the information presented in the Draft EIS, and describe activities that have occurred since publication of the Draft EIS.

A 30-day waiting period will begin when the Notice of Availability for this Final EIS is published in the Federal Register. After the 30-day waiting period has concluded and all comments on the Final EIS have been satisfactorily resolved, FHWA will issue a Record of Decision (ROD) to identify the Selected Alternative. IDOT will make the ROD publicly available after it is issued by FHWA.

Following the ROD, the FHWA and IDOT will commence with Tier Two of the process, which will advance detailed engineering and environmental studies for the selected alternative. Coordination with affected communities, agencies and other stakeholders will continue throughout this phase of project development. There will be a focus on roadway design and design considerations that further minimize environmental and social effects, and mitigation measures for those unavoidable social and environmental effects.

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
PROPOSED AMENDMENTS TO	)	
CLEAN CONSTRUCTION OR DEMOLITION	)	R2012-009
FILL OPERATIONS	)	(Rulemaking-Land)
(35 ILL. ADM. CODE 1100	)	

PRE-FILED TESTIMONY OF Dr. Fabián G. Fernández

Introduction

My name is Fabián G. Fernández, and I am Assistant Professor of Soil Fertility at the University of Illinois at Urbana-Champaign. I received a Bachelor of Science in Horticulture in 2000 and a Masters of Science in Agronomy in 2002 from Brigham Young University, and a Doctor of Philosophy in Soil Fertility and Plant Nutrition in 2006 from Purdue University. A copy of my Curriculum Vita is included in Attachment 1.

I have been retained by Huff & Huff, Inc., to provide expert testimony regarding the regulation of clean construction and demolition debris (CCDD) that is placed in old quarries. Specifically my testimony today focuses on the impact of the pH of such materials upon placement on these quarries and the appropriateness of grab samples versus composite samples.

Comments

pH Range to set Maximum Allowable Concentrations: I question the validity of the Illinois Environmental Protection Agency (Agency) using the lowest soil pH range of 4.5 to 4.74 found in Illinois in order to protect ground water near CCDD sites for two major reasons: **1)** the likelihood of encountering soil with pH 4.74 or lower are very limited. In a recent study[1] in which 567 randomly selected commercial agriculture fields in 51 counties in Illinois were sampled to a soil depth of 7 inches, the lowest pH was 4.74 in only one sample. The random approach to the sampling would indicate these data are representative of the more than 23 million acres of agricultural land in Illinois. The only sample found within the 4.5 to 4.74 range used by the Agency would represent only a 0.18% of the agricultural land in Illinois. In the survey, the next two lowest pH values were 4.96 and 5.14. The mean pH value was 6.72 and the median value was 6.71. Further, the values from the survey would represent worst case scenarios as soil pH in most soils of Illinois increase with depth since carbonate content normally increases below 3 feet from the soil surface. Also, the Illinois State Water Survey has indicated that strongly acidic (5.2-5.5) soils are present in extreme southern Illinois where soils are

[1] Fernández, F.G., B.S. Farmaha, and E.D. Nafziger. 2012. Soil fertility status of soils in Illinois. Commun. Soil Sci. and Plant Anal. (Accepted for publication).

considerably older than the rest of the state (http://www.isws.illinois.edu/data/altcrops/gisoils.asp).

2) CCDD sites have a large neutralizing potential (pH buffering capacity). Calcium carbonate and calcium-magnesium carbonate (dolomite) are regularly removed from active quarries as an amendment to correct soil pH. Because of the natural buffering capacity present in CCDD sites, if soils with a pH of 4.74 were placed in the site, it is unlikely that the pH of the groundwater would be lowered. In agricultural soils, for example, to increase soil pH by 0.1 units, it takes only approximately 0.8 tons of agricultural limestone per 1,100 tons of soil. Lighter soils with less organic matter and clay would require smaller amounts of limestone to achieve similar results. While there might be some ionized organic and inorganic compound solubility in localized low pH soil, there is no reason to expect those compounds would stay soluble. As these ionized organic and inorganic compounds react with higher pH solution surrounding the microsite with low pH material, they would readily precipitate.

Setting a minimum pH standard for materials being transported to CCDD sites makes little sense as this approach negates the naturally occurring buffering capacity of CCDD sites and the buffering capacity likely present from materials already placed in the CCDD site. Since the focus is to protect groundwater, the logical approach would be to measure the outcome of the practices used in the CCDD site by measuring the pH of the groundwater rather than being concerned about the potential for ionized organic and inorganic compound to be soluble within the confines of a microsite. Further, since the chance to encounter soil with pH 4.74 or lower is very small, if a more conservative approach is desired, it would be more practical to remediate soils based on the pH specific limits of the material in question, than to restrict it to the lowest pH range found anywhere within Illinois.

Grab versus Composite Samples: The proposed changed by the Agency to analyze only grab samples is technically questionable. From an agricultural perspective, it has been well documented that in order to represent a site (for pH or other chemical parameters), it is better to collect fewer samples with more cores in the composite than to collect more samples with fewer cores. This is because fewer cores in a composite lead to greater variability and lower confidence that the values are truly representative. The same principle would apply here. The main focus should not be to identify the specific pH of various portions of a load of soil, but rather the pH of the load as a whole. This is so because the interest is to protect groundwater in the CCDD site as a whole not in specific microsites within the CCDD site. As mentioned above, while a microsite might have low pH, the soluble ionized organic and inorganic compounds would precipitate readily as they migrate into a zone of higher soil pH.

Thank you, this concludes my pre-filed testimony.

Fabián G. Fernández, March 5, 2012

CERTIFICATE OF SERVICE

I, the undersigned, certify that on this 6th day of October, 2011, I have served electronically the attached Pre-Filed Testimony of James E. Huff, P.E., accompanying Attachments, and Notice of Filing upon the following person(s):

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