ORIGINAL

BEFORE THE POLLUTION CONTROL BOARD
OF THE STATE OF ILLINOIS

Pc#27

IN THE MATTER OF:	)	
	)	
REVISIONS TO RADIUM WATER	)	
QUALITY STANDARDS: PROPOSED	)	R04-21
NEW 35 ILL. ADMIN. CODE 302.307	)	Rulemaking - Water
AND AMENDMENTS TO 35 ILL. ADMIN.	)	
CODE 302.207 AND 302.525	)	

NOTICE OF FILING

To: See Attached Service List

Please take notice that on December 8, 2004, we filed with the Office of the Clerk of the Illinois Pollution Control Board an original and ten copies of the attached ***COMMENTS SUBMITTED ON BEHALF OF WATER REMEDIATION TECHNOLOGY, LLC,*** a copy of which is served upon you.

Respectfully submitted,

WATER REMEDIATION TECHNOLOGY, LLC

By: _____
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COMMENTS SUBMITTED ON BEHALF OF WATER REMEDIATION TECHNOLOGY, LLC ("WRT")

The Illinois Environmental Protection Agency's ('IEPA') proposal to eliminate the general water quality standard for radium should be rejected. The proposed removal of the existing 1 pCi/L of radium 226 standard is to accommodate the enforcement of the federal drinking water standard of 5 pCi/L combined radium 226 + radium 228. But IEPA did not address what it expects communities to do with the radium removed from the drinking water supply -- can the removed radium simply be flushed down the sewer, and into the waters and fields of Illinois? Or should this removed radium be disposed of safely by other means? This proposal thus raises two interrelated issues:

> (1) If the standard is to be changed, is there an alternate quality standard which is safe and is protective of the Illinois environment?; and
>
> (2) Will the Illinois Pollution Control Board (the 'Board') authorize the use of POTWs and public waterways as a disposal location for the radioactive materials that are removed from the groundwater supply to provide suitable drinking water?

The fundamental question for the Board in this proceeding is this: 'is dilution a solution to pollution for radioactive particles and materials?' We think not. Or should the question be answered, as Board Member Girard asked?:

> 'So just to clarify the clarification. You think it should be a public policy goal for the state of Illinois to remove radium from the environment when possible."
>
> The Witness: "Absolutely. Because as a radiation source wherever you put it, if it -- if any organism can come into contact with it, even for small periods of time, it increases risks of detrimental biological effects, it's just the nature of radiation." (Tr. October 21, 2004 p87 line 10-20.)

Not only does the testimony presented on behalf of WRT, the Environmental Law and Policy Center and the Sierra Club establish this to be a wise policy and environmental decision, it is clear that the General Assembly has established this to be the policy of the State of Illinois.

We respectfully submit that the Board does not have the authority to allow radioactive materials removed or formed by the treatment of groundwater to be released into the waters and lands of Illinois. Even if the General Assembly had not provided clear directions on this issue, under the Board's discretionary rulemaking under § 27(a) of the Environmental Protection Act (415 ILCS 5/27(a)(2004)), that action should not be taken.

I. THE GENERAL ASSEMBLY HAS CLEARLY PROHIBITED WHAT THE IEPA PROPOSAL WOULD ALLOW: THE INTENTIONAL RELEASE OF RADIOACTIVE PARTICLES INTO SEWERS AND HENCE WATERS AND LANDS OF THE STATE OF ILLINOIS.

The General Assembly has provided unambiguous instruction to prevent the intentional release of radioactive particles into sewers and waters of the State of Illinois. The Illinois Pollution Prevention Act; the Illinois Groundwater Protection Act; the Illinois Low Level Radioactive Waste Management Act, the Illinois Endangered Species Act and the Environmental Protection Act all evidence the legislature's clear intent: the Board should fulfill that intent and prohibit the release of radioactive particles, formed by the treatment of groundwater, into publicly owned treatment works ("POTWs") and the environment of Illinois.

These radioactive materials are far more potent and have tolerable levels dramatically lower than what most POTWs encounter. Instead of contaminants in the part per million range, picocuries are in the range of 1 in a trillion. Yet, just one of these particles, if it came into dermal contact with a worker, with a member of the public, or with a child, could duplicate a year's worth of allowable radiation exposure in a mere six hours. Two particles and the "safe exposure" would be exceeded. The issues are the same for any other community using a process such as an HMO, which generates these concentrated particles.

The Illinois Pollution Prevention Act was enacted to reduce the disposal and release of toxic or hazardous materials. (415 ILCS 115/5(c) (2004)). It unambiguously states that treatment in an environmentally sound manner should be utilized. The disposal and treatment of toxic or hazardous materials is allowed *only as a last resort*, when treatment of such materials is not possible. (415 ILCS 115/5(b) (2004)). Indeed, one of the Board's purposes is to stimulate pollution prevention strategies. Allowing radium residuals to be flushed down a sewer is contrary to that Act.

Similarly, the Illinois Groundwater Protection Act was adopted to protect the land and acknowledges the essential and pervasive role of groundwater in the social and economic well-being of Illinois citizens, as well as its crucial importance to the general public health, safety and welfare. Finding that contamination of Illinois groundwater will adversely impact the health and welfare of its citizens (415 ILCS 55/2(a) (2004)), the Groundwater Protection Act is a reflection of the State's policy to restore, protect, and enhance the groundwaters of Illinois as a natural and public resource. Consistent with this policy, the Board recognized the Illinois Groundwater Protection Act as the directive that the groundwater resources of the State are utilized for

beneficial and legitimate purposes and that waste and degradation of groundwater resources be prevented. See In the Matter of: Groundwater Quality Standards, 1991 WL 303600, *2 (Ill. Pol. Control Bd.). Allowing radium residuals to be discharged to streams and added to POTW sludge and spread on farmland conflicts with this directive.

The Illinois Low-Level Radioactive Waste Management Act was enacted by the General Assembly due to the finding that low-level radioactive waste produced in Illinois poses a significant risk to the public health, safety and welfare of the people of Illinois. (420 ILCS 20/2 (2004)). In the Act, the General Assembly recognizes the State's obligation to its citizens to provide for the safe management of the low-level radioactive wastes produced within its borders. The purpose of this Act is to establish a comprehensive program for the storage, treatment, and disposal of low-level radioactive waste in Illinois. Programs established under this Act must provide for the management of low-level radioactive waste in a manner that creates the *least* risk to human health and the environment. (420 ILCS 20/2(b) (2004)). Allowing the discharge of radium residuals down the sewer, an activity which would be prohibited for a radioactive materials licensee, conflicts with these legislative directives.

Moreover, the Illinois Endangered Species Act also precludes adoption of the proposed rule. This law prohibits the possession, taking, disposal, or transport of specimens or products of animals or plants of species in danger of extinction and statewide extirpation. (520 ILCS 10/1 (2004)). Here, the record demonstrates that several endangered species are downstream of the communities who will be treating their radium water supply. (See Hearing Exhibits 1, 2 and 14 Tab A & E.). All State and local government agencies are directed to enter into a consultation process with the Department of Natural Resources to evaluate whether actions authorized, funded, or carried out by the agencies are likely to jeopardize the continued existence of Illinois-listed endangered and threatened species or are likely to result in the destruction or adverse modification of the designated essential habitat of such species. (520 ILCS 10/11 (2004).) That consultation has not occurred. (See Hearing Exhibit 13.)

Finally, § 27(a) of the Act states that the Board shall consider certain specific factors. The lack of supporting information for the IEPA's proposal is detailed in the following section. Here, it is enough to note that the Board's broad rulemaking authority is not limited by the extent of hardship that a regulation may cause to the discharger. Granite City Division of National Steel Company, et al. v. The Illinois Pollution Control Board, 155 Ill. 2d 149, 182-83, 613 N.E.2d 719, 734-35 (1993).

In Monsanto Company v. The Pollution Control Board, the Court was faced with the applicability of a limitation on mercury. It stated that the Board need not conclude that compliance with a proposed regulation is "technically feasible and economically reasonable" before it can adopt such regulation. Monsanto Company v. The Pollution Control Board, 67 Ill. 2d 276, 292-93, 367 N.E.2d 684, 690-91 (1977). "The Board can promulgate standards which it has found to be technically infeasible. If the Board, in its discretion and based on its technical expertise, determines that a proposed regulation is necessary to carry out the purpose of the Act, it may adopt technology-forcing standards which are beyond the reach of existing technology. Further, [i]t is not necessarily arbitrary and capricious conduct for the Board to set a standard which a petitioner cannot adhere to at the present time or, if absolutely necessary to protect the public, set a standard with which there can be no foreseeable compliance by petitioner."

(Emphasis added.) Finally, "[i]t is well within the power of the Board, in safeguarding the public health, to determine what is the maximum pollution tolerable from any one source, and to refuse to permit deviations from that maximum even when faced with protestations of impossibility." 67 Ill. 2d at 292-93, 367 N.E.2d 684, 690-91. In this case, the undisputed testimony is that there are a number of alternative technologies which can achieve the required standard.

Thus, the General Assembly provides clear instruction to prevent the release of radioactive materials, and especially radioactive particles, into the sewers and waterways of the State of Illinois in the Illinois Pollution Prevention Act, the Illinois Groundwater Protection Act, the Illinois Low-Level Radioactive Waste Management Act, the Endangered Species Act and the Environmental Protection Act. Illinois courts have consistently struck down rules adopted by the Board where the Board has acted contrary to directives established by the General Assembly.

In Ashland Chemical Company v. The Pollution Control Board, the Illinois Appellate Court invalidated a regulation adopted by the Board where the Board failed to prepare an economic impact study of the regulation as required by an amendment to the Illinois Environmental Protection Act. 64 Ill. App. 3d 169, 381 N.E.2d 56 (3d Dist. 1978). The Court stated that "the more specific requirements concerning economic impact prescribed by the 1975 amendments were of substantial significance", 64 Ill. App. 3d at 175-76, 381 N.E.2d at 61, thus the Board's failure to comply with the amendment required that the regulation be vacated.

Likewise, the Court in Illinois State Chamber of Commerce v. The Pollution Control Board vacated the Board's readoption of regulations where the Board failed to consider an economic impact study as required by the 1975 amendments to the Illinois Environmental Protection Act. 67 Ill. App. 3d 839, 384 N.E.2d 922 (1st Dist. 1978). Adopting the Illinois Appellate Court's reasoning in Ashland Chemical, the court opined that the Board was required to follow existing procedural rules at the time the regulations were readopted, including the requirement under the Act that the Board prepare an economic impact study. 67 Ill. App. 3d at 845, 384 N.E.2d at 928.

Finally, the Illinois Supreme Court in Celotex Corporation v. The Pollution Control Board, invalidated part of a rule adopted by the Board due to its failure to consider the economic reasonableness of the rule as required under § 27 of the Environmental Protection Act. 94 Ill. 2d 107, 445 N.E.2d 752 (1983). Holding that invalidation of the entire rule was overly broad, the Court in Celotex remanded the matter to the Board in order to give the Board the opportunity to either validate the rule in accordance with the statutory requirements of §27 or to adopt a substitute rule.

Therefore, it is indisputable that the General Assembly has established the policy of the State of Illinois to prohibit the intentional release of radioactive particles in the public sewers and waterways. It also is clear from Illinois case law that to the extent that a State agency's regulations do not comply with the explicit directives of the General Assembly, those regulations will be invalidated.

This directive from the General Assembly is environmentally sound. Indeed, the circumstances relating to Northeastern Illinois present a unique environmental issue. The limited and decreasing amounts of Lake Michigan water supply available to Illinois communities are

well known. Moreover, the communities that are growing the fastest are those in Kane County and in the Joliet area, which communities depend upon deep groundwater well supplies -- the same supplies that are high in radium. The amount of radioactivity being pumped to the surface for use as drinking water will only increase in the future. Thus, more radioactivity will be released to the surface waters unless it is captured by the drinking water treatment plants and prevented from being re-released into the surface environment. That radioactivity is not now in the surface environment of Illinois -- it is buried deep underground.

II. IEPA'S PROPOSAL AND "EVIDENCE" SUBMITTED TO THE BOARD ARE FLAWED AND DO NOT JUSTIFY GRANTING THE RELIEF REQUESTED

The Environmental Protection Act provides that in rulemaking under § 27(a), such as this one, the Board shall consider various factors in making a decision. The factors that shall be considered are: (1) the existing physical conditions; and (2) the character of the areas involved including -- the character of the surrounding land uses, zoning classifications, the nature of the receiving body of water and the technical and economic reasonableness of measuring or reducing the particular type of pollution. Here, IEPA, as the proponent, has failed to do its job. Even when certain POTWs have joined in, the record still is missing necessary information.

A. IEPA HAS NOT PROVIDED CRITICAL INFORMATION ON THE EXISTING PHYSICAL CONDITIONS.

The proponent of a regulation is expected to present basic data on the need for the regulation and the existing physical conditions. IEPA did not present any quantitative information on either topic until the afternoon of October 22, 2004, for some specifics. IEPA has introduced as exhibits only two maps, and three other documents which were submitted without a sworn witness to sponsor the exhibits. What the record shows here is that the need for a regulatory change has not been demonstrated and it is very unclear who would benefit from the rule and why that benefit is justified.

The only category which allegedly has a "need" for revising the radium water quality standards consists of communities that have elevated radium levels in their water supply. If the maximum allowable drinking water level is 5 pCi/L combined for Radium 226 and 228, does this mean that the same communities cannot meet a discharge into a receiving stream of 1 pCi/L of Radium 226? That case has not been made. A community which barely meets the Federal Drinking Water Standard of 5 pCi/L likely has Radium 226 at levels ranging from 40% to 60% of that total. The evidence in the record indicates that, on average, 50% of the radium in wastewater finds its way into the sludge. Operation of these two very elemental processes reduces the radium levels in the potential POTW effluent down to approximately 1.25 pCi/L of Radium 226, at the point of discharge. Without any infiltration or inflow into the sanitary sewers, and before any mixing zone in the receiving stream, the discharger would be only slightly above the treatment standard. Thus, only those entities that discharge into low-flow streams likely would be in need of any adjustment. And even there, increases in the treatment efficiencies at the treatment plant still might attain the 1 pCi/L standard. Looking at the lists of receiving streams from the elevated radium communities, it is not clear which of these really

need regulatory relief. The existing conditions case has not been made that there is even a need for these communities.[1]

Lack of information on existing radium contamination. In September 1984, IEPA and IDNS entered into a Memorandum of Agreement ("MOA") "for the purpose of delineating certain responsibilities of IEPA and IDNS regarding the disposal of sludge resulting from treatment of water or sewage and contained in radium occurring naturally from groundwaters." (See Hearing Exhibit 5, Attachment 1, Attachment A, para. 4(B)(2).)

However, it appears that this MOA has not been observed and data on the practices followed has not been recorded. IEPA did not look at the impact of the sludge material from the treatment of the drinking water before applied to the crop land. (Tr. October 22, 2004 p 372, line. 12; p 374 line 24.) IEPA did not look at the impact of this sludge material on POTW workers or on the impact upon farmland. (Id., p 374, line 11-13.) It was only in March 2004 -- months after this petition was submitted -- that IEPA asked high-radium communities for information on their sludge. (Id., p 329, line 11-15.) IEPA had no explanation as to why they had not been following these sludge issues under the MOA. (Id., p 335, line 10; p 336, line 5.)

Neither IEPA nor a POTW has presented data on whether the criteria for soil conditioning established by the MOA (0.1 pCi/g) has been met. But a simple calculation suggests that the MOA has been violated for some time. (See T. Adams Comment, Attachments 4, 5.)

Moreover, it appears that the existing permits for sludge disposal do not even require the permittees to monitor their sludge for radium. Of the 59 communities for which IEPA sought radium information, only 25 have responded. Only two permits have been issued to require ongoing monitoring of sludge. Simply put, no one seems to how much radium has already been applied to the crop lands through the application of sludge from these high-radium communities. Indeed, the information provided by IEPA (Exhibit 11) and the City of Joliet (RSSI report submitted at Tab 3 on November 24, 2004) indicate that 0.2 Curies is unaccounted for. (See Comment of Ted Adams, Attachment 5 and 6.) That means that there are 200 billion picocuries of radium per year that are missing! A nuclear licensee would be required to account for ALL the radium. If IEPA or Joliet knows where they are they have not put that information in the record and instead propose to abolish any controls.[2]

Levels in croplands to which radium-containing sludge is and has been land-applied. Though the 1984 inter-agency agreement between IDNS and IEPA called for IEPA to monitor the application of radium-contaminated sludge to fields, no such information has been

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[1] The POTWs and IEPA appear to disagree on how great the need was for the rule change. According to Bob Mosher the affected facilities would be those that are "on small, zero or low 7 Q10 stream flow." (Id., p. 378, line 15-17.) But Mr. Duffield for Joliet insisted that it would be 100. (Id., p 226, line 15-22).

[2] The Joliet sewer ordinance allows the discharge of HMO waste to the sanitary sewer. (Tr. October 22, 2004 p 430 line. 12-14.) However, that ordinance would not be lawful under the rules of the IDNS/IEMA.

provided. Apparently, it was never collected. It appears that no one knows to what levels radium now exists in the croplands receiving sludge from high-radium containing waters. There was testimony that this practice of pumping from the deep qualifiers with elevated radium levels has been occurring for decades, and we believe so too have these sludges been applied. With a half-life of 1,600 years, even if the 0.1 pCi/g application rate specified by the MOA were observed, it is possible that these fields have already accumulated radium at levels that have been declared by EPA to require a Superfund clean-up. At the Reed Kepler Park in West Chicago, U.S. EPA determined (and IEPA concurred) that the clean-up level of 5 pCi/g over background was necessary and appropriate to protect public health. Though 50 years may seem like a long time, since Radium 226 has a half-life of 1,600 years, this is a critical issue that should have been addressed to the Board. IEPA was a signatory to the West Chicago clean-up. (See Attachment A hereto.)

Levels of Radium in sludge. Only in the afternoon of the fifth day of hearing (October 22, 2004), and under cross-examination, did IEPA admit (1) that before filing this petition, it had not looked at the levels in sludge from the communities with high radium levels in their drinking water supplies, (2) that although it had requested that information in March, it had not brought that information to the Board in this rulemaking, and (3) that about half of the POTWs with permits to dispose of sludge on cropland had not answered the request for information and that another 8-10 facilities had declined to answer on the grounds that they were going to stop land-applying their sludge and send it to local landfills. Only after a specific order from the Hearing Officer, and on November 24, did IEPA provide rudimentary lists that do not describe fully what radium levels have been applied, and over what period of time, by POTW sludge application. It is unclear why IEPA would not disclose this information, particularly when its whole justification for this proceeding is to allow the continued uncontrolled application of radium-contaminated sludge. Indeed, if filtrate from the drinking water treatment plants are allowed down the sewers, one would expect a much higher concentration of radium in the sludge in the future.

Presence of endangered species in the waterways for which the existing radium standard would be completely removed. One of the few exhibits the Agency did provide was a map of the streams showing drinking water intakes. Though IEPA did not make it clear, by combining their first two exhibits, one could piece together what streams would no longer have a radium water quality standard. (Hearing Exhibits Ex 1 and 2.) But IEPA did not disclose -- and apparently never considered -- whether these areas had particular endangered species. And clearly, IEPA did not consult with DNR about this condition.

B. IEPA PROVIDED VIRTUALLY NO INFORMATION ON THE NATURE OF THE RECEIVING STREAMS.

There is a statement in Bob Mosher's April 1, 2004 testimony that the levels of Radium in the Fox River are "below 1 pCi/L." While that statement certainly is generally consistent with WRT's view that the Board may have set the existing standard near or a few multiples above 'background level' (not surprising for a known carcinogen), it does not address any other of the relevant questions. No information is provided on flow, on the levels of radium in the sediments of Illinois streams and lakes, or on the indigenous biota.

The literature survey. IEPA's only justification for removing the radium water quality standard for Illinois was based on a literature search. Apparently, IEPA did not look at the radiological data bases, only the chemical data bases. Moreover, for a radiological material, one does not need to look at radium alone -- any of several radiological materials can yield results since it is the radiation that causes damage to living organisms, not a particular chemical mechanism. Allegedly, IEPA asked Region V -- but it apparently was also unaware of a toxicological profile of radium published by Agency for Toxic Substance and Disease Registry.(ATSDR) (Hearing Exhibit 16.) During the fifth day of hearing October 22, 2004, the IEPA representative said it would be helpful if U.S. EPA provided better guidance.

C. NEITHER IEPA NOR ITS POTW ALLIES HAVE PROVIDED ACCURATE INFORMATION ON THE TECHNICAL FEASIBILITY OF MEETING THE EXISTING STANDARD; AND NONE HAVE DISAGREED WITH THE TESTIMONY PRESENTED BY WRT HERE THAT SEVERAL TECHNOLOGIES ARE CAPABLE OF MEETING THE EXISTING STANDARD OR AN EQUIVALENT STANDARD IN TERMS OF ENVIRONMENTAL PROTECTION.

The existing standard has not been shown to be technically infeasible. The reason given for the need for this rulemaking -- that communities do not have a practical alternative to meet the 1 pCi/L standard -- is wrong. Not only can the WRT technology meet the standards, but all of the major water treatment technologies either currently prevent or can be designed to prevent the re-release of radioactive particles into the sewers and surface water.

WRT's system is capable of meeting the existing water quality standard as treated drinking water. Moreover, simply by taking into account the relative distribution between Radium 226 and 228, and the relative efficiencies in the POTW and infiltration into the sewer system, a drinking water supply on the order of 4 pCi/L likely would result in compliance with the water quality standard.

The WRT system is innovative and involves the application to public drinking water supplies of technology used in the mining industry. The WRT system involves a granular media that absorbs the radium from the drinking water, is simple to install and the radiation protection issues are addressed by WRT. (Attached as an Attachment B to this public comment is a DVD describing the WRT process.) At the August 25, 2004 hearing, testimony was presented, which has not been contradicted, that there are many technologies that can be adapted to avoid discharging radioactive materials down the sewer, to meet the 1 pCi/L limitation and to allow attainment of the existing water quality standard. (See C. Williams' Comment in Reply to RSSI Report for actual Joliet data and WRT performance.)

Neither the POTWs nor IEPA presented testimony on what technology they would use to meet the drinking water standard, and hence presented no information on the materials that would be put into the sewers. One technology favored by Joliet (HMO) would have radioactive particles containing 10,000 pCi/g or more in the filtrate. (Hearing Exhibit. 5, p. 10; see also Comment of T. Adams, Attachment 1.) Rather than remove that radioactive waste from the drinking water plant, it intended to flush the filters which would have collect the radioactive particles, and dump the radioactive particles back down the sewer.

The HMO process includes a chemical reaction that precipitates onto a particle, which is collected on a filter. One design -- apparently the one contemplated by Joliet -- is to send it down the sewer. (Tr. October 22, 2004 p 427, line. 2-7.) There is an option to do something else, including taking it to a landfill. (Id., line. 14-18.) But, rather than keeping the radioactive particles out of the environment, the HMO design considered by Joliet would flush them down the sewer and into the waters of Illinois and into the crop lands. Joliet tells the Board "don't tell me how to design my treatment plant." Joliet does not intend to get a license from the IDNS. (Tr. October 22, 2004 p. 431, line 1-4.) Joliet is resting on a loophole -- "it has always been my position that if you don't dewater that they don't occur as just solids, they occur as part of the slurry . . . so long as I don't separate them, I have not created that situation." (Tr. October 22, 2004 p 432, line 22; p 433 line 3). Joliet was not aware that there could be 10,000 pCi/g or more in these HMO particles. (Id., line. 20 to 434 ln. 1.) The Board shall give guidance to Joliet.

Moreover, U.S. EPA policy discourages the disposal of filtrate down the sewer, in favor of landfill disposal (EPA guidance). EPA does not recommend application, mixing or spreading of water treatment waste containing radionuclide at any concentration into open land (e.g., farmland, pasture land, woodland, construction sites, road beds, etc.). (Ex. 4, T. Adams' 1 at p. 19; Tr. August 25, 2004 p. 47). Indeed, EPA recommends radium-contaminated water treatment sludge at levels between 3 and 50 pCi/g (the range of almost all the municipal sludges identified in this proceeding) to be buried and isolated by depositing in a RCRA permitted hazardous waste landfill. (Id. at p. 20.)[3] EPA also expressed concern for the POTW workers who are exposed to radium from treatment of drinking water supplies. (Id. at pp. 11-13).

D. THE INFORMATION PROVIDED ON ECONOMIC REASONABLENESS DEMONSTRATES THAT ADOPTING THE PROPOSAL HERE LIKELY WILL COST MORE THAN RETAINING IT AND KEEPING RADIOACTIVE SOLIDS OUT OF THE SEWERS OF POTWS.

The only cost justification from IEPA relates to the cost of monitoring. IEPA's proposal will cost the State of Illinois more than any of the minor "savings" to the POTWs.

There is no evidence that designing a system to meet the existing standards costs any more than any of the other approaches. In fact, the WRT system is reported to be saving small communities hundreds of thousands of dollars. The secondary effects of IEPA proposal -- allowing radioactive particles to be discharged down the sewers -- exposes streams, POTWs, farm lands, workers and the public to costs that have not been recognized by IEPA's proposal. (See T. Adams' Comment, Attachment 2.)

Moreover, failing to consider the requirements for radium-sludge disposal now exposes communities to having to redesign their facilities if they do not take precautions now. Several different factors could require a retrofit to those water filtration designs that assumes the ability to flush the radioactive materials back into the environment.

[3] At levels over 2,000 pCi/g, disposal is recommended at a licensed low-level radioactive waste disposal site. (Id.)

- U.S. EPA policy discourages the discharge of radioactive solids. This policy may become applicable to POTWs through the U.S. EPA veto of NPDES-proposed permits by IEPA.

- The levels of radium in the filtrate is comparable to -- and even exceeds -- the quantity of radioactive materials that the NRC and the IEMA have prohibited from being discharged as particles into a POTW.

- There is a substantial history of significant costs being incurred by POTWs which receive radioactive particles into their system. These situations have been discovered by accident -- but they have caused significant costs to be borne by the POTWs. (See Hearing Exhibit 4 Tab B.)

- U.S. EPA and IEPA have created a cleanup level for radium-contaminated soils at 5 pCi/g over background. (See EPA Superfund Record of Decision: Kerr-McGee (Reed - Kepler Park) OU1 West Chicago, Illinois, 9/13/2002. EPA/ROD/RO5-02/072.)[Attachment A hereto] A release of over this amount may create CERCLA liability.

- The radioactive particles that can be formed are analogous to "fuel fleas." Fuel fleas are small "hot" radioactive particles found in nuclear power plants and great care is taken by nuclear power plants to prevent these small particles from being released from the confines of the controlled plant. The proposal before the Board would be to allow the creation and the uncontrolled disposal of radioactive particles into the Illinois environment. These particles may have enough radiation in that a single particle to cause a year's worth of allowable radiation exposure. (See T. Adams Comment, Attachment 1.)

- **If the radioactive particle is inhaled or ingested then the exposure could be significantly higher.** Id.

- These particles will end up in farms, in subdivisions, in backyards, and in streams and stream sediment. The radium in these particles will have a half-life of 1600 years.

- The proposed rule making would permit the ongoing discharge of these particles year after year.

- The exposure of POTW workers and others to radioactive particles discharged down the sewer creates occupational safety and health issues, including the potential need for monitoring, safety plans and other affirmative measures to safeguard workers' health.

- The radioactive particles that may be discharged down the sewers are at levels potentially exceeding 10,000 pCi/g (and could be up to 70,000 pCi/g). At that level, the material would qualify as a high-level radioactive waste. Diluting it to a lower level may not change that classification. Even at a low-level

radioactive waste, specific requirements for disposing of that material in a secure landfill are specified.

- The cost estimate submitted by the City of Joliet reflects significant costs increases if they cannot land apply their sewer sludge. If these hot radioactive particles are mixed with the ordinary sewage sludge land application may well become prohibited. Again, those costs are avoided, however, by separating those particles at the point they are generated -- and handling them separately. Those costs are very likely to be incurred if the design change suggested above is not included by any HMO vendor or buyer. The cost of disposal in a landfill is a very real risk, given the EPA guidance on sludge and on the very clear rules provided by the IEMA and the NRC on discharges to POTWs from licensed facilities.

- There will be costs if the Board or the communities disregard the hard lessons that other POTWs have experienced, when they received radioactive particles from NRC-licensed activities. Hundreds of thousands or millions of dollars of cleanup costs can be incurred by virtue of these materials. That is why the NRC specifically has amended its regulations (as did the IDNS) to preclude the discharge of these particles. (10 CFR 20.2003; 32 IAC 340.1030; see Exhibit 4, Attachment B.)

- The cleanup criteria adopted for the Kerr-McGee Superfund Site in West Chicago also should be considered here. The cleanup level established there is 5 pCi/g **for radium** over background. Even applying the 0.1 pCi/g standard for land applications established by the MOA, in a mere 50 years of land application, that level would be exceeded. With a half-life of 1,600 years, farms that receive 50 years of sludge application may be over the West Chicago cleanup criteria. We note that the cleanup criteria was established not for homes being built on those properties, but for occasional use as an athletic field or other recreational activities. Without knowing what the existing conditions are, there is a real potential cost of extraordinary cleanup measures.

- It seems quite possible that other costs may be incurred if sales of farmland or the crops grown, were halted or diminished due to radium levels.

- U.S. EPA guidance recommends that several precautionary measures be undertaken for POTW workers who may be exposed to wastewater from radium-contaminated drinking water treatment activities. These monitoring and other precautions are at costs that have not been taken into account in this proceeding.

- IEPA has not presented any evidence of the treatment costs, either on a unit basis or on any comparative basis, among the various treatment technologies. Only WRT has been willing to come forward into this proceeding and endure

examination and scrutiny. What are the economic costs of other technologies? That is the burden of the proponent -- whether IEPA or the communities with high radium levels who expect to install treatment.

E. IEPA'S PROPOSAL IGNORES THE POTENTIAL PUBLIC HEALTH RISKS.

- One of the disappointing aspects of this proceeding is the casual attitude expressed by IEPA and the POTWs concerning health safety issues relating to radium. IEPA admits that radium is a human carcinogen. But, it never addresses the clear implication to public health.

- IEPA recognizes that technically-enhanced natural occurring radioactive material ('TENORM') is different from natural occurring radioactive material ('NORM'). One IEPA witness stated that he just understood TENORM to be the residual from the treatment of NORM. (Tr. October 22, 2004 p 347 line 17-19.) IEPA's witnesses were not aware of whether the efficiency of a POTW would remain the same with treating TENORM or not. (Id., p 380, line. 3; p 381, line. 16.) IEPA was not aware whether the TENORM material would behave in the same manner as metals in regular municipal sludge. (Id., p 382, line. 18-23.) However, the ISCORS model, when applied to the Illinois situation, indicates that there could be excessive radiation exposure due to radium in the treated drinking water. Even at sludge levels approximating 25 pCi/g, POTW workers could be exposed to more than 100 milligrams per year -- above the allowable exposure before workplace conditions would trigger extra scrutiny, monitoring and protection. (Hearing Exhibit 4, pp. 9-10; Ex. 5 at 9-10, Table 3.) Indeed, plants with high solids removals could have exposure to workers who are in excess of exposure for workers in a nuclear plant. (Id., at 10). It is not surprising that U.S. EPA's guidance recommends that special training, shielding, personal protective equipment, (including respirators and protective clothing) monitoring of workers and following OSHA health and exposure regulations should be included.

Testimony from the City of Joliet indicated that there were lower levels of radium and radon exposure at the West Side treatment plant. (Tr. October 22, 2004 pp. 417, 416). Purportedly this study was done by a consultant to Joliet. Purportedly there was a report to be prepared (Trans. 419) and a report was to be provided relating to worker safety. (Id. ln. 14-17). But the only report that was provided was one related to the WRT process. (See Tab 3 to November 24 submission on behalf of the City of Joliet.) The testimony by Joliet appears to rely to the WRT process -- which Mr. Duffield described as 'near background' (Tr. October 22, 2004. 420, ln 4-6) not to the existing wastewater treatment plant -- which was the representation made to the Board by Mr. Duffield in his October 22, 2004 testimony. (See Trans. 393, ln. 1 -- 394 ln. 22.) It is not clear what happened -- is there another study that has not been produced, or did Mr.

Duffield and Dr. Port get confused on what was being monitored?[4] In any event, RSSI ignored any evaluation of the impact of putting TENORM particles down the sewers in Joliet.

With respect to the other study Joliet done by RRSI, that study dealt with the scenario of building homes on land areas that formerly had crop land with soil treated with radium sludge. (See Tab 4 to Joliet's submission.) However, that report is of virtually no use; it changes many common assumptions made in these models, without any explanation or supporting data. Of particular note, however, is the clear assumption that no one lives on any of these lands for more than seven years. While Mr. Duffield claimed that soil was always moved to build basements, hence the radon exposure would not occur, the accumulation of radium over time can pose significant threats. (The West Chicago cleanup makes this clear). Further discussion and commentary on the errors and omissions from this analysis are included in Mr. Adams' public comment.

F. IF THE BOARD IS TO ADOPT A REVISED WATER QUALITY STANDARD, WHAT IS IT?

The BDAC criteria is the only criteria that has been introduced in the proceeding, which provides any symmetric and applicable approach to determining "safe" levels for aquatic life and riparian mammals. At least in this proceeding, we have an agreement with IEPA that the riparian mammal is the appropriate species for protection. The protection here is obliteration of the species, not preservation of the individual endangered species plants.

Joliet and IEPA suggested at the October 22 hearing that the BDAC approach was "very conservative." That is plainly not so. As documented by the additional comment of Brian Anderson, the BDAC approach for aquatic animals does not assume ingestion, it is not based upon exposure to those waters. It does not include the alpha ray component of Radium 226 [VERIFY]. Indeed, it is not conservative, but maybe liberal in this context.

Indeed, having made this acknowledgement, one should consider the actual results of applying the BDAC criteria. If there is no sediment contamination with radium, the maximum allowable levels of combined Radium 226 and 228 is 3.75 pCi/L. Assuming a 50/50 split between Radium 226 and 288, this means an allowable level of only 1.87 for Radium 226 -- not much above the existing standard.

But considering the Florida criteria the sediment contribution can be extremely significant. The Florida study demonstrated that sediments can accumulate very high levels of radium. While IEPA attempted to criticize the replicability of Florida situation because it included a lake, they appear to agree that the sediments would be where the radium would accumulate. The Florida situation showed dramatic increases in radium levels at the surface of the sediment water interface. These conditions are very comparable to sedimentation processes and Illinois' rivers and streams.

[4] There are several other inaccuracies in this report in the West Side plant. These are addressed by Mr. Williams' comment.

When one applies these sediment levels the BDAC criteria shrinks further. The Florida situation documented sediment levels at 12 pCi/g. With this sediment input, the BDAC water quality criteria falls to 2.72 pCi/g. (Hearing Transcript 14 Tab). Now the Radium 226 component is roughly 1.36 -- even closer to the existing standard.

But, applying the Florida criteria, we have found that the stated purpose of the BDAC criteria -- to approximate the DOE ordered standard of 1 RAD per day of aquatic organisms, and 0.1 RAD per day for mammals, is not protected by the BDAC criteria. Ted Adams did a review of the actual data included in the Florida study. His findings agree with that of the authors of that study -- the actual exposure and dose exceeds 1 RAD per day.

It is of little solace that some part of the mussel population in the Florida lakes are still apparently alive. What other species that should be there are not? Are these species endangered in Florida? What we do know is that these mussels (with a radium concentration of 205 pCi/g -- once removed from the lake in question -- would have to be disposed of as a low-level radioactive waste.

The lack of understanding of the radioactive regulatory requirements evidenced by IEPA is disappointing. Moreover, the suggestion by one comment that the existing standard of 0.1 pCi/g for a sludge application rate is too low reflects a lack of awareness of federal and state cleanup criteria of 5 pCi/g over background. Radium is an extremely toxic material. It is a carcinogen and has a half life that is measured in centuries, not days.

Therefore, we believe that from a standpoint of protecting human health and environmental quality, that the existing standard is protective. Certainly, there is no convincing case that it should be changed.[5]

G. THE "TESTIMONY" PRESENTED BY IEPA, JOLIET AND MSD, SHOULD BE STRUCK FOR VIOLATION OF THE HEARING OFFICER ORDER THAT ALL TESTIMONY BE WRITTEN AND PRE-FILED BY OCTOBER 9.

WRT was prejudiced by IEPA, and the City of Joliet knowingly failing to follow the Board's Order to submit pre-filed testimony. The Hearing Officer's Order, dated September 21, 2004, explicitly states that "[p]ersons who plan to testify at the . . . hearing must pre-file testimony . . . no later than October 9, 2004." Therefore, the testimony presented during the October 22, 2004 hearing by IEPA, Joliet and MSD should have been pre-filed and was submitted in violation of the Board's directive to provide pre-filed testimony.

IEPA knew that the Board was interested in the BDAC approach, and knew from the August 25, 2004 hearing that the levels of radium in sludge were at issue. Indeed, WRT had

[5] While Bob Moser purportedly talked to a representative of the water quality branch within Region V, it is our understanding that several other offices with jurisdiction relating to this proceeding have not been consulted. It appears that there was inadequate consultation within IEPA and no consultation at all with IDNR -- as required by statute -- so to it appears to have been a one-step consultation with Region V of U.S. EPA.

asked IEPA in September for that information. Joliet was preparing information on their sludge disposal costs, as evidenced by the August 2004 report from Clark Dietz. A major reason for pre-filed testimony is to allow questions be asked to develop the record. The completeness, accuracy and relevancy of much of the testimony presented by these parties are very much at issue, as noted by these comments and those of Messers Adams, Anderson and Williams. Accordingly, the "evidence" presented by IEPA and the POTWs, during the October 22, 2004 hearing, should be stricken for violating the Hearing Officer Order. If principal participants like IEPA are excused from these requirements, why should anyone go through the effort and be subject to examination that has been prepared well in advance. Alternatively, if the Board does not exclude this testimony, it should be given minimal weight.

III. IF IEPA ABANDONS OR MODIFIES ITS PROPOSAL, OR IF THE BOARD DECIDES TO ATTEMPT ITS OWN SOLUTION, THEN WE URGE THE BOARD TO PROCEED CAUTIOUSLY AND RETURN TO FIRST NOTICE.

The Agency should withdraw its proposal. It is clear that it cannot be supported. It was not thought through - the Agency did not even do its homework on the radium levels in sludge being generated before more would be added by the treatment of radium to remove it from the groundwater. Only a piece meal review was given to USEPA. It was hardly a surprise that the POTWs would be in favor of avoiding monitoring costs and doing whatever they [or their design engineers wished]. And the proposal was not clear to even those who first read it - and even today it is not clear what will be the applicable requirements for Lake Michigan. And even when WRT offered a potential alternative approach - the DOE BDAC approach - the Agency first resisted, and then "investigated" it only by making a few phone calls. Even on the last day of hearing the Agency was so aloof from the proposal that it claimed it did not have the capability of running the model with different sets of assumptions. Instead, Bob Moshur said he wished U.S. EPA would provide guidance, instead of this issue proceeding one state at a time. (Tr. October 22, 2004 p 385 line 14-18.)

Or, maybe the Agency has another idea. We don't know, though we have asked.

However, some communities evidently think that the rule need to be changed. But we have yet to see a single comment which claims to have done any technical analysis. All they clamor for is to be relieved of responsibility. And they say they agree - this time - with the Agency.

As we have stated from WRT's first involvement in this matter, we do believe that many of the Illinois communities need guidance. While we first thought that particularly true of the smaller communities, even a larger town of Joliet appears not to understand the nature of TENORM and the environmental and health issues presented by radiation materials. Therefore, should the Agency change its proposal, or the Board decide to offer its own to provide relief to communities with elevated radium levels in their drinking water supply, we offer the following two sections.

A. THE BOARD SHOULD RECOGNIZE THE FOLLOWING AS UNCONTESTED FACTS AS DEMONSTRATED IN THIS PROCEEDING.

The following facts are uncontroverted in the record and should be taken into account by the Board to fulfill its statutory responsibilities, not only under section 27(a), but also the other applicable statutes.

- The existing general water quality standard effectively prohibits the reintroduction of radium from drinking water to the land and waterways of Illinois. (Tr. August 25, 2004 p. 47 lines 5-10; Hearing Exhibit 14 Tab A.)

- Under the existing rule, Illinois is among the national leaders in protecting its streams, rivers and lakes by preventing radioactive carcinogens from being discharged into the waterways. (Tr. August 25, 2004 p. 47 lines 10-13; Hearing Exhibit 14 Tab A.)

- The processes that discharge radium into the sewer, as currently allowed, are not environmentally sound, best practices. After going through the sanitary treatment process, the resulting sludge contains concentrated amounts of radium that is then spread on Illinois farmland and open lands, many in the fast-growing collar county areas of Northern Illinois. (Tr. August 25, 2004 p. 47 lines 14-18.)

- Radium and its by-products are known carcinogens to animals and humans. (Tr. August 25, 2004 p. 22 lines 15-16.)

- There is scientific literature available with respect to the adverse impacts of radium on aquatic and terrestrial biota. (Tr. August 25, 2004 Pg. 22 lines 16-18.)

- An unintended consequence of sewer disposal is that in the absence of testing, monitoring, and notice, sewer workers are not made aware of their exposure to radiation or trained or equipped to handle it. (Tr. August 25, 2004 Pg. 22 lines 18-21 see also Hearing Exhibit 4 Tab E.)

- Radioactive particles, disposed of in the sanitary sewer, have created significant economic and operations impacts to the POTWs. (See Hearing Exhibit 4 Tab B.; Tr. August 25, 2004 Pg. 12 lines 6-16 see also Hearing Exhibit 4 Table 1 page 7.)

- The removal of radium by HMO and certain other processes from the groundwater creates an 'insoluble waste' (i.e., particulates). NRC and IDNS regulations prohibit the disposal of 'insoluble waste' into the sanitary sewer. IEPA is allowing the disposal of insoluble radium waste to be disposed of in the sanitary sewer. This appears to be inconsistent with their sister agency's prohibition on insoluble waste being released into the sanitary sewer system. (Tr. August 25, 2004 p. 22 lines 20-24; p 23 lines 1-5.)

- Radium concentration (ISCORS data) in POTW influent and concentrated sludge has been shown to result in elevated potential POTW worker and public exposures. A POTW sludge loader is estimated to receive 420 mRem/yr dose (from radium/radon) at sludge concentrations of Radium-226 and Radium-228 of 13 and 5.1 pCi/g, respectively. (ISCORS dose modeling.) This is greater than 4 times the allowable limit to the general population (100 mRem/yr). (Tr. August 25, 2004 p. 14 -17 see also T. Adams August 11, 2004 Pre-filed testimony Table 5 page 16.)

- ISCORS did not model unique isolated instances in which higher levels of radium were released into sanitary sewers. (Tr. August 25, 2004 p 23 lines 13-20 see also Hearing Exhibit 4 Tab D & F.) WRT/ARS demonstrated, via their POTW operations data and dose modeling approach similar to ISCORS, that POTW operators' exposure could be greater than the 100 mRem/yr limit without the radon contribution. With the radon contribution included, the POTW worker dose would approach and could exceed that of a nuclear power plant radiation worker (5,000 mRem/yr). (Tr. August 25, 2004 Pg 23 lines 13-20 see also Hearing Exhibit 4 Tab J.)

- The As Low As Reasonably Achievable (ALARA) principle is a fundamental objective of all DOE, EPA, NRC and State radiation projects. Program procedures and engineering controls are used to maintain exposures to workers and public ALARA. Allowing the disposal of radium residue into the sanitary sewer resulting in unnecessary exposures to POTW workers, the public and the biota rather than requiring treatment (engineering control) and disposal (via permitted RCRA or licensed NORM or LLRW disposal facility procedure) is inconsistent with the ALARA philosophy. (Tr. August 25, 2004 p. 23 line 20; p. 24 line 6 see also Hearing Exhibit 4 Tab I.)

- The EPA recommends against land application of any sludge containing elevated radium levels. (Tr. August 24, 2004 p. 24 lines 7-8 see also Hearing Exhibit Tab I.)

- The EPA is investigating the issues associated with elevated levels of radium in filtrate and backwash from treatment of groundwater for drinking water consumption. (Tr. August 25, 2004 p. 24 lines 8-10 see also Hearing Exhibit Tab I.)

- The guidance from the EPA supports a prohibition on the discharge of filtrate and backwash with elevated levels of radium from a drinking water treatment plant. (Tr. August 25, 2004 p. 24 lines 11-12 see also Hearing Exhibit Tab I.)

- Not only are the absorptive media technologies, such as that of WRT, approved by the agency to provide a total removal in a cost-effective manner, but all of the competing technologies can be re-engineered to provide a similar total solution. (Tr. August 25, 2004 p. 47 lines 21 -24 & Pg 48 Line 1.)

- This total removal approach does not require a new bureaucracy to enforce the regulations governing the discharge of radium particulates into the sewer, the spreading of radioactive sludge on the farmland or the discharge of radioactive carcinogens into the streams and waterways. It does not require the discarding of longstanding state and federal environmental regulations: (Tr. August 25, 2004 p. 48 lines 1-7.)

    (a) Existing Radium Water Quality Standard – In force for 30 years.

    (b) No radioactive particles permitted to be discharged to sewer – In force for 11 years.

- The result of this proposed rule change will be to allow the unmonitored and unrestricted discharge of large quantities of carcinogenic radioactive material to Illinois streams and the environment. (Tr. August 25, 2004 p. 48 lines 8-11.)

- IEPA has no knowledge of HMO TENORM, its properties or radioactive concentration.

- Joliet has no knowledge of HMO TENORM, its properties or radioactive concentration:

    Question to Mr. Duffield: "Are you familiar with the concept of TENORM?'
    Answer: 'No sir." (Tr. October 22, 2004 p. 420).

    Question to Mr. Duffield: "You don't know what a TENORM radioactive particle really is?'
    Answer: 'No sir."
    Question to Mr. Duffield: 'Or its appearance?'
    Answer: "All I know is that I have radium; I have to take it out. That's what I understand . . . in an HMO process, it's part of a manganese block." (Tr. October 22, 3004 p. 421, line 8).

    Question to Mr. Duffield: 'Do you know the concentration of the radium in the HMO process on a dry weight basis?'
    Answer: 'No." (Tr. October 22, 2004 p. 424, lines 4)

- Mr. Duffield confirms that he does not have enough information of HMO facilities and what has happened to the sludge over the years, 'HMO is a relatively new process as well, and so I'm not sure how many facilities are really operating and what the impact is, anybody has ever looked at what happens in the treatment — wastewater plant or sludge." (Tr. October 22, 2004 p. 439)

B. THE BOARD SHOULD FOLLOW THE "PRECAUTIONARY PRINCIPLE" AND FOLLOW AN APPROACH THAT PROVIDES RELIEF ONLY TO THOSE WHO NEED RELIEF, AND THEN ONLY UNDER CONDITIONS THAT CAN BE MONITORED AND VERIFIED.

While IEPA initially proposed to deregulate any controls on radium for most of the waters of the State of Illinois, at the fifth day hearing, and at the last possible moment (November 24, 2004), IEPA finally identified the communities that might be affected, and what stream segments they discharge to. There are clearly other potential discharges, including runoff from uranium and thorium tailing sites, from former gypsum stacks and from other potential sources of radium releases in Illinois. There is also potential runoff from radium which has been land applied.

The Board should not allow disposal of other materials that are regulated as a low-level radioactive waste to be put into the public sewers and the waters of the State of Illinois. Illinois farmland should not become a disposal ground.

The DOE approach by the BDAC committee shows that there is not much room to relax the existing standard and still be protective. 2.7 pCi/L combined radium 226 and radium 228 is the total radium in the water allowable using the sediment levels in FL. There is no other information here. And in the Florida situation, though the BDAC formula would have said the conditions were acceptable, the total radiation dose accumulated by the mussels exceeded the acceptable DOE dose for aquatic life. The Florida example also indicates that the build up of radium occurs over time and may result in increasing concentrations at the surface of the sediment - and hence lowering the "safe" level in the waters.

The proposal before the Board is to remove all obstacles to the continuous ongoing discharge of radium, including radioactive particles, into Illinois streams and onto Illinois fields. Radium is bio-concentrating and bio-accumulating. The decision made by the Board will affect the Illinois environment forever.

Any approach should follow a process of providing an exception to the existing standard, with conditions that meet these criteria. The criteria should not allow communities to dump radium at levels that a licensed facility could not dump, and should not allow disposal into waters of materials that cannot be disposed of except in a licensed landfill [or at levels exceeding the CERCLA clean-up criteria in Illinois. A proposal that would fit these criteria is as follows.

Add a new subsection (c) to 302.207

(c) The standard for radium 226 contained in subsection (b) shall not be applied to a POTW who meets all of the following conditions in this subparagraph (c):

> (i) The POTW is a publicly owned treatment works which receives wastewater from one or more communities which extract, for drinking water use, groundwater which contains radium 226 at levels exceeding 1 pCi/l (a "High Radium Community"); and

(ii) The POTW requires, as a pretreatment requirement, that all of the High Radium Communities which provide treatment of their groundwater in order to comply with the federal drinking water standard of 5.0 pCi/l [total combined radium 226 and 228] only discharge radium removal residuals which would be in compliance with the sewer discharge limitations contained in 32 Ill. Admin. Code 340.1030(a) [identical to 10 CFR 20.2003(a)]; and

(iii) The POTW produces an effluent that does not exceed [2.72 - 3.75] pCi/l, measured as combined total radium 226 and 228.

The proposal is structured as an exception to the existing general water quality standard for radium. It provides relief **only** to municipalities operating a POTW which receives wastewater from communities which have radium over the existing standard. It does nor provide relief to medical waste facilities, other facilities licensed by IEMA, industrial sources with cooling water taken from groundwater supplies or used for smelting or other manufacturing activities such as gypsum. Nor does it provide relief to superfund clean-up sites, which often have contaminated surface and groundwater issues. Therefore, any action in this proceeding will not have any affect on other regulatory programs. And it will not reward anyone who has "laid low" during this proceeding, hoping to catch the benefits of the regulatory roll-back.

There are two straightforward and sound conditions to receive the exemption. (1) The POTW much require that any treatment activities necessary to meet the federal drinking water standard must also meet the sewer discharge conditions contained in the IEMA rules for sewer discharges. The condition cited is simple, and is the rule that "radioactive solids cannot be discharged down a municipal sewer." While there are many other conditions that could be imposed, including safety requirements for workers and further monitoring requirements, this is the rule that avoids the problems evidenced in other situations: clean-up costs to the POTW, exposing the POTW workers to the TENORM, as well as their associated costs. (2) The POTW effluent must be at a level that is safe for aquatic life. We expect others may have an opinion on this issue; the proposed language merely recites the two values that WRT has calculated using the BDAC approach - recognizing that these may not be protective in practice for specific situations for whole populations of biota. This issue may be one for consultation with IDNR, as the endangered species issue here clearly would affect the choice to be made.

These conditions keep highly radioactive particles out of streams, farms and future parks and subdivisions. It also protects POTW workers and the POTW facilities themselves. By doing all of these, it minimizes secondary liability issues. It can be met by many technologies, not just WRT. HMO will need to add a step to remove solids on the filter, rather than backflush down the sewer, but it can be done. We also expect ion exchange would qualify. So this is not a proposal that benefits WRT to the benefit of anyone else. It benefits the environment. And that has been the focus of all of WRT's testimony through these hearings.

CONCLUSION

WRT has appreciated the opportunity to go public with its technology and provide testimony to the Board. The opportunity to answer direct questions and provide technical information has been very worthwhile.

In response to a question from the attorney for Joliet on why WRT is participating, the President of WRT testified.

> 'It's a good question. Any why am I here is really what he's asking. And frankly, I'm here for a couple of reasons.
>
> First of all, Illinois is the first state in the nation to be actively enforcing the radionuclide rules. That puts you guys out at the forefront.
>
> For over two years we have been attempting to establish a dialogue with IEPA over these issues. And in all honesty, we have received: 'Hey, you guys are just trouble makers and you're trying to sell your equipment' response. And this is the first forum we have had to actually get in front of the public and the decision-makers that radium is a problem. It is not the radium itself but the radiation that comes off of it. And it was our opportunity to put before the public and the government our views, not just for Illinois, but for all the states that follow.
>
> Will WRT benefit if you keep the standard at one? Absolutely. However, I'll reiterate that in the event that you keep the standard at one -- and other treatment processes, they can be modified to do the same thing. We are not the only company. You mentioned Layne Christianson. They are certainly a direct competitor that does exactly what we do, and yet they're solid on this issue.
>
> I can understand why Tonka is solid on this issue because HMO going into the water treatment facility would be detrimental to their sales. But they do have the ability to refilter that backwash and keep it out of the POTW and out of the environment of Illinois. And I think that's important for everybody to hear. We weren't getting the message out." (Tr. October 22, 2004 pp. 179-81.)

This is a principled position. Illinois ought to welcome the innovation, even if it is not consistent with what someone at the Agency thought was a good idea at one time. One of the virtues of the Illinois system is that ALL the information that the public views as relevant can be considered and those issues are not compartmentalized; clearly, the relevant information is much broader than what the Agency thought at the time it started this proceeding.

We ask that the Board do "the right thing", based on the law and the facts.

Respectfully submitted,

WATER REMEDIATION TECHNOLOGY, LLC

By: _____

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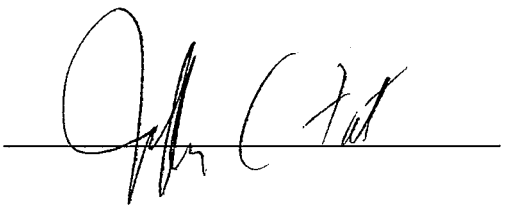
CERTIFICATE OF SERVICE

The undersigned, an attorney, certifies that he/she has served upon the individuals named on the attached Notice of Filing true and correct copies of ***COMMENTS SUBMITTED ON BEHALF OF WATER REMEDIATION TECHNOLOGY LLC*** by First Class Mail, postage prepaid, on December 8, 2004.



SERVICE LIST

R04-21

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Exhibit A

EPA/ROD/R05-02/072
2002

EPA Superfund
Record of Decision:

KERR-MCGEE (REED-KEPPLER PARK)
EPA ID: ILD980824007
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WEST CHICAGO, IL
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FIGURE 1.2 - SITE MAP

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Rev. 07/10/02

Reed-Keppler Park

Record of Decision

West Chicago, Illinois

United States
Environmental Protection Agency

Region 5

September 2002

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APPENDIX A - Letter of Concurrence from Illinois EPA

This Record of Decision (ROD) documents the remedy selected for the Reed-Keppler Park (RKP) site in West Chicago, DuPage County, Illinois. This ROD is organized in three sections: a Declaration, a Decision Summary, and a Responsiveness Summary.

1.0 DECLARATION

This section summarizes the information presented in the ROD and includes the authorizing signature page.

1.1 Site Name and Location

The RKP site is a 100-acre community park located in the northwestern portion of West Chicago, DuPage County, Illinois. West Chicago, Illinois, is located about 30 miles west of Chicago, Illinois. The RKP site is located north of National Street and west of Arbor Avenue. The majority of the RKP site is owned by the City of West Chicago, and is leased to and operated by the West Chicago Park District (Park District) for use as a public recreation area. The park is used for a variety of activities including tennis, swimming, volleyball, soccer, and baseball/softball. Land use within one mile of the site is primarily residential. The Park District's Family Aquatic Center is also located in the northeast section of the RKP site.

1.2 Basis and Purpose

This decision document presents the selected remedy for the RKP site in West Chicago, Illinois. The remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and to the extent practicable, the National Contingency Plan (NCP). Information used to select the remedy is contained in the Administrative Record file for the site. The file is available for review at the US EPA Region 5 Records Center, 77 West Jackson Boulevard, Chicago, Illinois, and at the West Chicago Public Library, located at 118 West Washington Street, West Chicago, Illinois.

The State of Illinois concurs with the selected remedy.

1.3 Description of Selected Remedy

The selected remedy for the RKP site is No Further Action, along with monitoring to insure that future concentrations of total uranium in the RKP site groundwater meet the Maximum Contaminant Level (MCL) drinking water standard of 30 micrograms per liter (ug/L), which is equivalent to 27 picoCuries per liter (pCi/L). This monitoring will continue in all nine existing site monitoring wells until it has been demonstrated that the MCLs have been achieved, and maintained, for three consecutive sampling events.

The expected cost to implement this selected remedy is $15,000 per sampling event, to pay for the collection and analysis of nine groundwater samples from the RKP site for total uranium. Groundwater sampling will be conducted semi-annually (twice per year) initially, resulting in an annual cost of $30,000. Sampling frequency may be increased, or decreased, based upon the results from future sampling events. Also, because this remedy results in contaminants remaining at the site above MCLs, US EPA will review this action no less often than every five years after the date of this Record of Decision.

The RKP site is being addressed as one operable unit under the CERCLA framework. This operable unit encompasses both soil and groundwater at the site. Therefore, the selected remedy specified in this Record of Decision will serve as the final action for the entire RKP site.

1.4 Statutory Determinations

US EPA has determined that no further remedial action is necessary at the RKP site. US EPA issued an Action Memorandum for the RKP site in 1996, which reported that the median level of soil contamination, based upon soil samples collected at RKP, was 286 picoCuries per gram (pCi/g) of total radium, with a maximum exceeding 15,000 pCi/g. The Action Memorandum concluded that contaminated soil should be removed until a cleanup criterion of 5 pCi/g of total radium (radium-226 + radium-228) over background was achieved. The background concentration for the RKP site was determined to be 2.2 pCi/g, thereby establishing the cleanup criterion for the RKP site at 7.2 pCi/g.

Kerr-McGee Chemical Limited Liability Company (Kerr-McGee) performed the excavation and restoration work of a time-critical removal action at the RKP site from April 1997 to November 2000. The soil contaminated above the cleanup criterion has been successfully removed from the site. Since exposure to the cleanup criterion of 7.2 pCi/g does not represent an unacceptable risk to human health, no further action is necessary to protect the public health or the environment at the RKP site. The sole remaining remediation objective is to insure that future concentrations of total dissolved uranium in RKP groundwater comply with the drinking water standard for total uranium promulgated on December 7, 2000, in 65 FR 76708, National Primary Drinking Water Regulations.

1.5 Authorizing Signatures

William E. Muno, Director
Superfund Division
United States Environmental Protection Agency, Region 5

9/13/02
Date

1.6 Support Agency Acceptance

The Illinois EPA has provided their formal concurrence with the selected remedy in a letter to US EPA, a copy of which is attached in Appendix A.

2.0 DECISION SUMMARY

2.1 Site Description

The RKP site is a 100-acre community park located in the northwestern portion of West Chicago, DuPage County, Illinois, as shown in Figure 1.1 on page 4. West Chicago, Illinois, is located about 30 miles west of Chicago, Illinois. The RKP site is located north of National Street and west of Arbor Avenue. The majority of the RKP site is owned by the City of West Chicago, and is leased to and operated by the West Chicago Park District (Park District) for use as a public recreation area. The park is used for a variety of activities including tennis, swimming, volleyball, soccer, and baseball/ softball. Land use within one mile of the site is primarily residential. The Park District's Family Aquatic Center is also located in the northeast section of the RKP site.

Much of the focus at the RKP site is on a 1-acre area within the park, which represented a historical sand and gravel quarry. In the early 1900's, the RKP site was mined as a quarry to provide rock and embankment material for construction of the Chicago, Wheaton and Western Railway (now the Illinois Prairie Path embankment owned by Commonwealth Edison). This Old Quarry Area was left as a topographic low area and was subsequently opened to solid waste (household and commercial garbage) disposal. Aerial photographs taken as early as 1939 show significant waste disposal activity occurring in five distinct areas in the Old Quarry Area. By 1954, the five dumping centers present in 1939 had been reduced to one landfill-like zone reached via a haul road off the main park road. The last aerial photograph that shows any dumping activity was taken in 1967, although US EPA obtained testimony that thorium tailings were dumped in Reed-Keppler Park in 1972 and 1973. A 1974 aerial photograph shows that all landfilling operations had ceased, and a maintenance building had been constructed to the west of the Old Quarry Area.

Among the solid wastes found at the RKP site were thorium mill tailings generated at the West Chicago Rare Earths Facility (REF), operated in West Chicago by Lindsay Light and Chemical Company, and its successors, from 1934 until 1973. The REF produced radioactive elements, such as thorium, radium and uranium, along with gas lantern mantles, for private entities and the United States government's use in Federal atomic energy programs. Production of these radioactive elements resulted in the generation of radioactive mill tailings. The REF produced these elements by extracting them from monazite ore sands, bastnasite, fluorspar and other ores using an acid leaching process. The processed sands, or "tailings," retained residual levels of thorium, radium and uranium, as well as, certain other insoluble metals. In the earlier years of operation, the potential hazards of these tailings were not generally recognized. Some of these tailings were apparently used as fill material at the RKP site. In 1967, Kerr-McGee purchased the REF and maintained operations until the facility was closed in 1973.

2.2 Site History and Enforcement Activities

Radioactivity surveys were performed at the RKP site by the Nuclear Regulatory Commission (NRC) and the US EPA, which resulted in the RKP site being placed on the National Priorities List (NPL) in 1990. Several supplemental investigations were conducted, and, in 1996, US EPA determined that the level of contamination in the surface soils at RKP warranted a time-critical removal action. The need for the time-critical removal of radioactively contaminated materials from the site is documented in an Action Memorandum. The Action Memorandum reported that the median level of soil contamination, based upon soil samples collected at RKP, was 286 picoCuries per gram (pCi/g) of total radium, with a maximum exceeding 15,000 pCi/g. The Action Memorandum concluded that contaminated soil should be removed until a cleanup criterion of 5 pCi/g of total radium (radium-226 + radium-228) over background was achieved. The background concentration for the RKP site was determined to be 2.2 pCi/g, thereby establishing the cleanup criterion for the RKP site at 7.2 pCi/g. The Action Memorandum, along with an Action Criteria Document that explained the radiation cleanup level, formed the basis for US EPA's Unilateral Administrative Order (UAO), which required Kerr-McGee and the City of West Chicago,

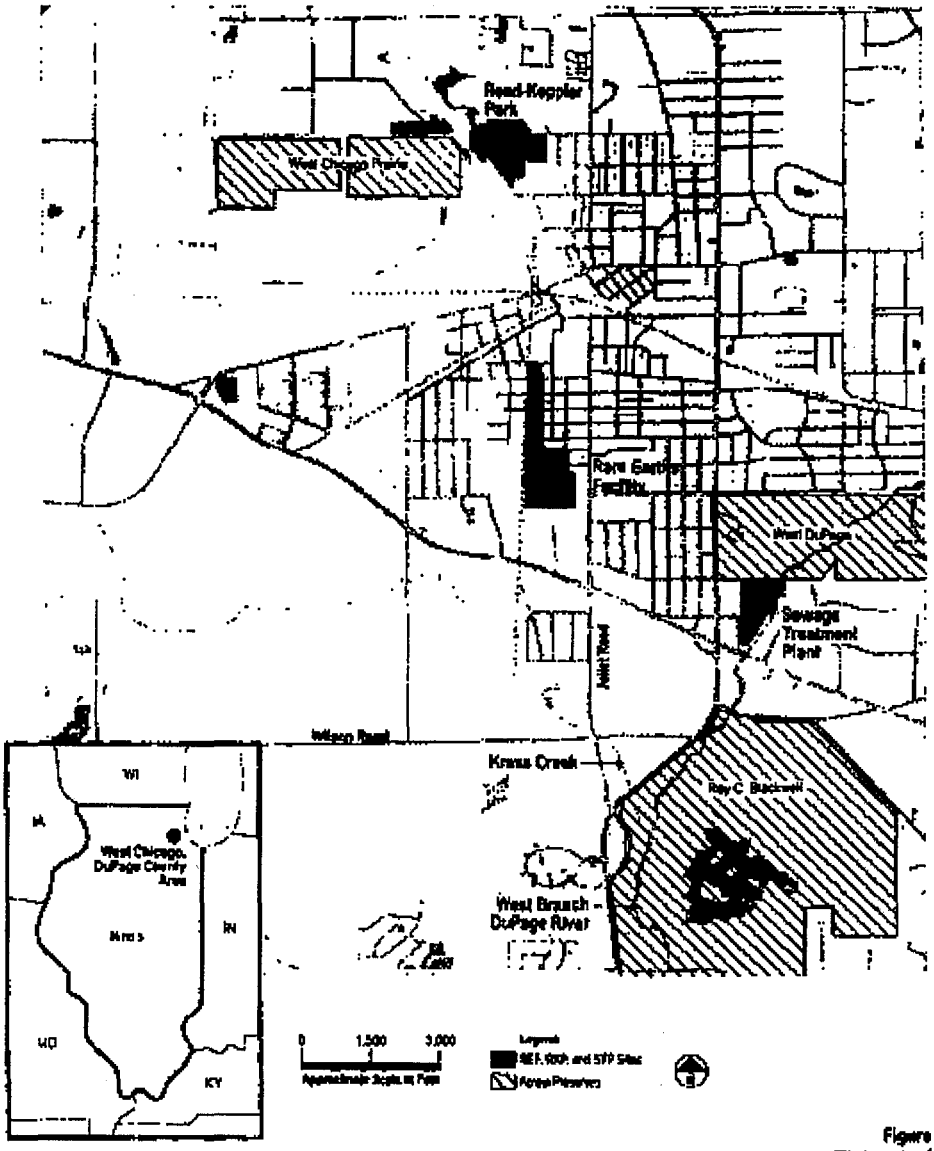


Figure 1.1
Site Location Map
Reed Keppler Park RI

Illinois, to conduct removal activities at the RKP site to address the radioactive contamination and protect human health and the environment.

The excavation of the RKP site was divided into several different excavation areas. Figure 1.2, on page 6, is a site map that shows the excavation areas of the RKP site. These excavation areas are described below, along with chronological initiation and completion dates:

- Excavation activities at the Band Shell, Old Pond and Tennis Courts were initiated in April 1997. These three excavations were completed in June 1997, and the interim restoration activities were completed by August 1997.

- Excavation activities at the Boy Scout parking lot were started in September 1997. This excavation was completed in October 1997, and interim restoration was completed in December 1997.

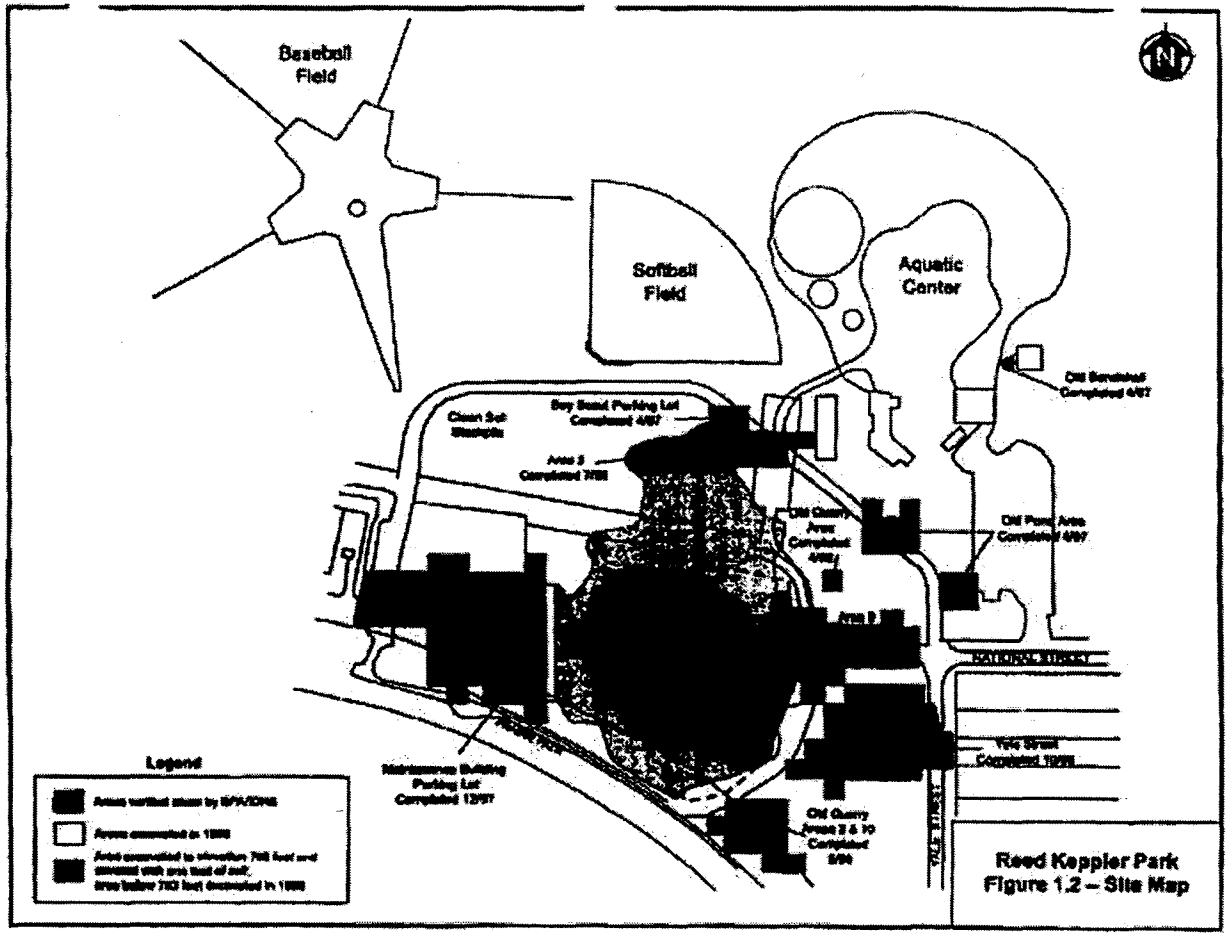
- Excavation at the Maintenance Building parking lot was initiated in September 1997. This excavation was completed in December 1997, and interim restoration was completed in January 1998.

- By far, the largest area excavated was the Old Quarry Area. The site preparation activities started there in January 1998. Excavation activities at the Old Quarry Area extended below the water table. Excavation of material above the water table began in 1998, and the removal of material below the water table began in July 1999. Verification below the water table consisted of ensuring that a predetermined depth (based on data collected previously through borehole gamma logging) had been reached using common land surveying techniques. The excavation below the water table was completed in August 1999. Backfilling of the Old Quarry Area excavation followed immediately behind the excavation, with the placement of rock below the water table and the placement of segregated clean soil cover above the rock. All segregated clean soil was placed a minimum of three feet below the final cover grades. Placement of imported backfill to within six inches of final grade was then completed in December 1999.

Final restoration activities for the RKP site were completed in November 2000. A total of 114,652 loose cubic yards of contaminated material were removed from the RKP site between April 1997 and October 1999. These materials were then shipped to the REF facility for separation of clean material from contaminated material, which was shipped to an NRC licensed disposal site. A Final Report for the RKP removal action was submitted to US EPA in April 2002, which confirms that the removal action met all of the requirements and cleanup criteria specified in the Action Memorandum and the Action Criterion Document for the RKP site.

2.3 Community Participation

The Proposed Plan for Reed-Keppler Park was made available to the public for comment on May 6, 2002. Copies were placed in the Administrative Record file, located at the US EPA Records Center, 77 West Jackson Boulevard, Chicago, Illinois, and at the local repository, located at the West Chicago Public Library, 118 West Washington Street, West Chicago, Illinois, before the start of the 30-day public comment period. Copies were also distributed to forum members participating at the Intergovernmental Forum meeting on April 26, 2002. The notice of the availability of the plan was published in the ***Daily Herald*** on May 5, 2002. A public comment period was held from May 6, 2002 to June 6, 2002. In addition, a public meeting was held on May 16, 2002, at the West Chicago City Hall, to present the Proposed Plan. The notice announcing the public meeting was published in the ***Daily Herald*** on May 15, 2002. Representatives of US EPA and the Illinois EPA were present at the public meeting to answer questions regarding the proposed remedy. Responses to comments received during the comment period and public meeting are included in the Responsiveness Summary, which is Section 3.0 of this ROD.


Baseball Field
Softball Field
Aquatic Center
Old Baseball Completed 4/97
Clean Soil Stockpile
Bay Bond Parking Lot Completed 4/97
Area 3 Completed 7/98
Old Quarry Areas Completed 4/98
Old Picnic Area Completed 4/97
Area 2
Maintenance Building Parking Lot Completed 12/97
Old Quarry Areas 2 & 10 Completed 5/98
Yolo Street Completed 7/98
Legend
Reed Keppler Park
Figure 1.2 – Site Map

2.4 Scope and Role of Operable Unit

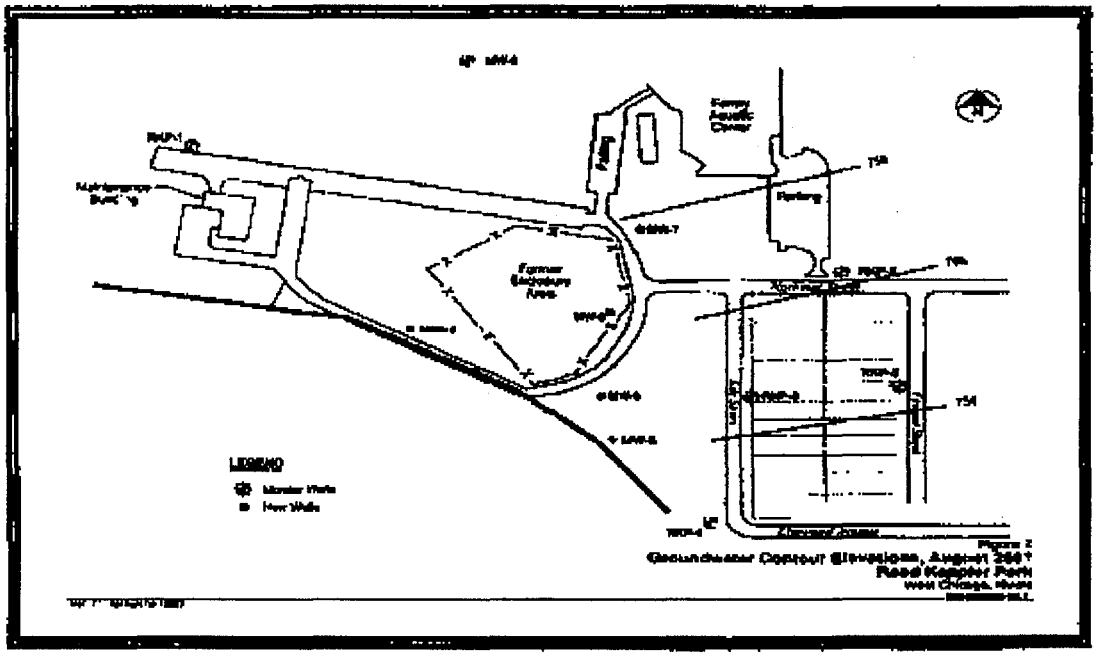
The RKP site is being addressed as one operable unit under the CERCLA framework. This operable unit encompasses both soil and groundwater at the site. Therefore, the selected remedy specified in this ROD will serve as the final action for the entire RKP site.

2.5 Site Characteristics

US EPA has determined that all action necessary to protect human health and the environment has been taken with respect to the soils at the RKP site. More information on the successful completion of the soil removal action at RKP can be found in Section 2.2 of this ROD and in the *Removal Report for the Reed-Keppler Park Site*, dated April 2002.

Groundwater data were collected in 1994 and 1997 at RKP as part of investigation efforts at the site. Figure 2, below, shows the current locations of RKP monitoring wells, along with the historical locations of Monitoring Well #4 (MW-4) and Monitoring Well #5 (MW-5). Concentrations of total dissolved uranium, elevated above background, were detected in MW-4 and MW-5 in October 1994. These wells are shown on the Figure below, but they were abandoned during site excavation and are no longer in existence. The total dissolved uranium concentrations at that time were 56.5 and 34.9 picoCuries per liter (pCi/L), respectively. MW-4 and MW-5 again showed elevated concentrations in 1997 with the dissolved concentrations of total uranium at 64.8 pCi/L in MW-4 and 32.6 pCi/L in MW-5. MW-4 and MW-5, along with MW-1, MW-2 and MW-3, were subsequently abandoned or removed from the site during excavation of contaminated soil.

Kerr-McGee installed five new monitoring wells (numbered RKP #1 to #5) at the RKP site in November 1997. Monitoring Wells #7-9 were also subsequently installed to replace some of the original site wells that had been removed as part of site excavation activities.



In August 2001, additional RKP groundwater samples were collected from the nine existing RKP wells (RKP#1-5 and MW #6-9) to determine if residual groundwater contamination levels achieved the remedial objective (drinking water standard) following completion of the removal action at the RKP site. One well (RKP-5) exhibited concentrations of total uranium in exceedance of the drinking water standard for total uranium in 40 CFR 141. This standard, also known as the Maximum Contaminant Level (MCL), is 30 micrograms per liter (ug/L) for total uranium. This corresponds to a radioactivity level of 27 picoCuries per liter (pCi/L). The concentration of uranium in RKP-5 in August 2001 was 37.1 pCi/L, in exceedance of the 27 pCi/L standard. All of the other RKP monitoring wells were in compliance with the MCL.

US EPA cleanups conducted under CERCLA are legally required to comply with all Applicable or Relevant and Appropriate Requirements (ARARs). The MCLs in the Safe Drinking Water Act are considered an ARAR for all CERCLA sites that overlie aquifers that are used, or may be reasonably anticipated to be used, as a drinking water source in the future. US EPA promulgated the MCL for total uranium in 65 FR 76708, National Primary Drinking Water Regulations, on December 7, 2000. The State of Illinois has designated the groundwater aquifer underlying RKP and the City of West Chicago as Class I - Potential Potable Groundwater Resource.

Due to the exceedance of the drinking water standard for uranium in monitoring well RKP-5, at the RKP site, US EPA intends to require monitoring of the nine site wells until sufficient data is collected to insure that all groundwater concentrations are decreasing and that the drinking water standard for uranium in 40 CFR Part 141 (30 ug/L or 27 pCi/L) has been attained in all site wells. US EPA does not expect that active treatment of the groundwater underlying the RKP site will be required for the following reasons:

1) The source of the uranium contamination (the radioactively contaminated surface and subsurface soils at the RKP site) has been removed as part of the removal action, conducted by Kerr-McGee from 1997 to 2000. Therefore, there is no continuing source of uranium in the soil to leach to groundwater and cause the concentrations in groundwater to increase.

2) Only one of the nine wells at the RKP site (RKP-5) exhibits groundwater contamination above the MCL drinking water standard for uranium (30 ug/L or 27 pCi/L). Six of the nine RKP monitoring wells are located in areas that are considered downgradient from the former quarry and landfill areas at the site. RKP- 5 was also sampled in January 1998, and the concentration of uranium in the well at that time was 7.43 pCi/L, which is below the MCL. Because RKP-5 was in compliance with the MCL when it was sampled in 1998, and because of the fact that the result in August 2001 is only marginally above the MCL, there is a high probability that the 37.1 pCi/L result is an isolated sample result that will diminish within a reasonable time. In fact, beginning in December 1997, a total of 15 samples have been collected from the nine RKP groundwater wells, and the 37.1 pCi/L result from RKP-5 in August 2001 is the only exceedance of the MCL in the data set.

3) Although the shallow aquifer underlying the RKP site is considered a potential drinking water source, there are currently City of West Chicago restrictions that prohibit use of the groundwater at the site. In addition, the City of West Chicago obtains its drinking water from a total of nine operational wells, two of which are in the vicinity of RKP. These wells are screened in a deep aquifer system, which is separated from the shallow aquifer by a Silurian dolomite and Maquoketa shale layer that inhibits the vertical flow of groundwater from the upper aquifer to the underlying formation. Therefore, it is extremely unlikely that surficial contaminants could migrate to the draw zones of the City wells. Shallow groundwater in the vicinity of the RKP site is not used as a drinking water source. Since there is no known conduit between aquifers, and since site related contaminants have not been detected in any of the nine City wells above background concentrations, there is no

reason to believe that a complete pathway to human receptors currently exists, nor is one expected to form given the City of West Chicago's ordinance prohibiting use of groundwater in the area.

2.6 Current and Potential Future Site and Resource Uses

The majority of the RKP site is owned by the City of West Chicago, and is leased to and operated by the West Chicago Park District (Park District) for use as a public recreation area. The park is used for a variety of activities including tennis, swimming, volleyball, soccer, and baseball/softball. Land use within one mile of the site includes residential housing. The Park District's Family Aquatic Center is also located in the northeast section of the RKP site. There are no restrictions being placed on the use of the property because the soil removal action conducted by Kerr McGee from 1997 to 2000 resulted in a concentration of radium in soil that is considered protective of human health and the environment.

Although the shallow aquifer underlying the RKP site is considered a potential drinking water source, there are currently City of West Chicago restrictions that prohibit use of the groundwater at the site. In addition, the City of West Chicago obtains its drinking water from a total of nine operational wells, two of which are in the vicinity of RKP. These wells are screened in a deep aquifer system, which is separated from the shallow aquifer by a physical layer composed of Silurian dolomite and Maquoketa shale. This layer inhibits the vertical flow of groundwater from the upper aquifer to the underlying formation. Therefore, it is extremely unlikely that surficial contaminants could migrate to the draw zones of the City wells. Shallow groundwater in the vicinity of the RKP site is not used as a drinking water source. Since there is no known conduit between aquifers, and since site-related contaminants have not been detected in any of the nine City wells above background concentrations, there is no reason to believe that a complete pathway to human receptors currently exists, nor is one expected to form given the City of West Chicago's ordinance prohibiting use of groundwater in the area.

2.7 Site Risks

In order to determine the need for a removal action to address contamination at the RKP site, US EPA conducted a baseline human health and screening level ecological risk assessment in 1996. Risks were quantified for both carcinogenic and non-carcinogenic contaminants. The risk associated with the intake of a known, or suspected, carcinogen is reported in terms of the incremental lifetime cancer risk presented by that contaminant of concern, as estimated using the appropriate slope factor, and the amount of material available for uptake. The acceptable risk range, as defined by CERCLA and the National Contingency Plan (NCP), is 1 x 10-4 to 1 x 10-6 (one human in ten thousand to one human in one million incremental cancer incidence). Potential human health hazards from exposure to non- carcinogenic contaminants are evaluated using a Hazard Quotient (HQ). The HQ is determined by the ratio of the intake of a contaminant of concern to a reference dose, or concentration for the contaminant of concern that is believed to represent a no observable effect level. The specific HQ for each contaminant of concern is then summed to provide an overall Hazard Index (HI). EPA guidance sets a limit of 1.0 for the comprehensive HI.

The conclusion from the 1996 baseline risk assessment was that, for all scenarios considered (construction worker, maintenance worker and recreational visitor), the risks associated with radionuclides in surface soil, subsurface soil, or sediments exceeded the limit of the acceptable CERCLA risk range of 1 x 10-4. Risks associated with surface soil in the enclosure area of the RKP site exceeded 1 x 10-2. More detailed information with respect to how this risk was calculated can be found in the *Remedial Investigation Report, Kerr-McGee Reed-Keppler Park Site, March 21, 2002.* This risk assessment led to the conclusion by US EPA that an immediate response was necessary to minimize potential exposures and risks to the population surrounding the RKP site and to park visitors. US EPA issued a UAO to Kerr-McGee and the City of West Chicago, Illinois, in March 1996 to require immediate removal of the radioactively contaminated surface and subsurface soils

at RKP. Since the removal action successfully achieved the cleanup standard of 7.2 pCi/g for total radium, exposure to RKP site soils is now considered protective for human health.

As part of the Remedial Investigation of the RKP site, a baseline screening ecological risk assessment was also conducted, in order to determine the need to address significant adverse ecological effects at the RKP site. The results of the ecological risk assessment showed slight exceedances of the target HQ of 1.0, in the 2 to 7 range, due to organic compounds and metals in site soil and sediments. More detailed information with respect to how the HQ was calculated, and how it was compared to the target HQ, can be found in the *Remedial Investigation Report, Kerr-McGee Reed-Keppler Park Site, March 21, 2002*. Due to the fact that the ecological screening assessment was considered to be extremely conservative, the exceedances were considered minor and did not warrant a more detailed analysis of ecological risks at RKP. In any event, the removal action, conducted by Kerr-McGee, resulted in these organic compounds and metals being removed from the site soil and sediment down to levels that are considered to be protective of the ecological environment.

2.8 Remediation Objectives

The removal action conducted at the RKP site has already achieved the cleanup objectives for soil, as specified in the Action Memorandum and Action Criteria Document for the site. The sole remaining remedial objective is to insure that future concentrations of total dissolved uranium in RKP groundwater comply with the drinking water standard for total uranium promulgated on December 7, 2000, in 65 FR 76708, *National Primary Drinking Water Regulations*. This rule established an MCL for total dissolved uranium at 30 ug/L. For the MCL rulemaking, US EPA assumed a typical conversion factor of 0.9 pCi/ug for the mix of uranium isotopes found in public water systems. This converts the mass concentration of uranium in groundwater to an equivalent "activity" level, which relates to the radioactive decay of uranium. The 0.9 pCi/ug conversion factor results in an activity-based drinking water standard of 27 pCi/L.

2.9 Description of Alternatives

Alternative #1: No Further Action

Estimated Capital Cost:	*$0*
Estimated Annual O&M Costs:	*$0*
Estimated Months to Construct:	*none*

Regulations governing the Superfund program require that the "No Action" alternative be evaluated at each site to establish a baseline for comparison. Under this alternative, no further action would be taken to address residual contamination levels in soil or groundwater at the RKP site.

Alternative #2: No Further Action with Associated Groundwater Monitoring

Estimated Capital Cost:	*$0*
Estimated Annual O&M Costs:	*$30,000*
Estimated Months to Construct:	*none, the wells required for monitoring are already in place at the RKP site*

Under this alternative, US EPA asserts that all action necessary to protect human health and the environment has been taken with respect to the soils at the RKP site. More information on the successful completion of the soil removal action at RKP can be found in the Final Removal Report for the Reed-Keppler Park Site, dated April 2002. However, due to an exceedance of the drinking water standard for uranium in one of the nine existing groundwater wells at the site, US EPA intends to require monitoring of the nine site wells until sufficient data is collected to insure that all groundwater concentrations are

decreasing and that the drinking water standard for uranium in 40 CFR Part 141 (30 ug/L or 27 pCi/L) has been attained in all site wells.

In the unlikely event that total uranium concentrations in RKP groundwater fail to decrease, or if they continue to increase, in the future, more active remediation methods will be considered for the groundwater at RKP.

2.10 Comparative Analysis of Alternatives

Nine criteria are used to evaluate the different remediation alternatives individually, and against each other, in order to select a remedy. The nine evaluation criteria are (1) overall protection of human health and the environment; (2) compliance with ARARs; (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility or volume of contaminants through treatment; (5) short-term effectiveness; (6) implementability; (7) cost; (8) State/support agency acceptance; and (9) community acceptance. This section of the ROD profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. A description of the nine evaluation criteria, and how they relate to the alternatives considered, follows:

2.10.1 Threshold Criteria: Must be met for an alternative to be eligible for selection

Criterion 1: Overall Protection of human health and the environment

This criterion addresses whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment. Alternatives #1 and #2 meet the criteria for protection of human health and the environment, as the unacceptable risks posed by the soil contamination at the RKP site were addressed during the time-critical removal action conducted by Kerr-McGee, pursuant to the UAO and Action Memorandum for the RKP site. All residual soil contamination concentrations meet the cleanup standard of 7.2 pCi/g for total radium (radium-226 and radium-228), which is considered to be protective of human health and the environment. There is no current pathway for exposure to groundwater at the RKP site for area residents, and a City of West Chicago ordinance prohibits the installation of wells in this vicinity. For these reasons, RKP groundwater is also protective from a potential risk standpoint.

Criterion 2: Compliance with applicable or relevant and appropriate requirements

Section 121(d) of CERCLA requires that remedial actions at CERCLA sites attain legally applicable, or relevant and appropriate, Federal and State requirements, standards, criteria, and limitations that are collectively referred to as "ARARs," unless such ARARs are waived under CERCLA Section 121(d)(4). Compliance with ARARs addresses whether a remedy will meet all of the applicable, or relevant and appropriate requirements, of Federal and State environmental statutes.

Applicable Requirements are those substantive environmental protection requirements, standards, criteria, or limitations promulgated under Federal or State law that specifically address hazardous substances, the remedial action to be implemented at the site, or other circumstances present at the site. Relevant and Appropriate Requirements are those substantive environmental protection requirements, standards, criteria, or limitations promulgated under Federal or State law which, while not applicable to the hazardous materials found at the site, the remedial action itself, the site location, or other circumstances at the site, nevertheless address problems or situations sufficiently similar to those encountered at the site that their use is well-suited to the site.

ARARs are of three types. They are chemical-specific, location-specific, and/or action-specific:

Chemical-specific ARARs are usually health or risk-based numerical values, or methodologies, which, when applied to site-specific conditions, result in the establishment of numerical values. These values establish the acceptable amount, or concentration, of a chemical that may be found in, or discharged to, the ambient environment. For the RKP site, "Maximum Contaminant Levels", or "MCLs", established under the Safe Drinking Water Act, constitute chemical- specific ARARs. They apply to the groundwater beneath the RKP site, as well as, areas downgradient of the site that may have been affected by site contamination. Both Alternative #1 and Alternative #2 will meet this ARAR, but US EPA prefers Alternative #2 because monitoring of the site groundwater is required to demonstrate that all of the RKP monitoring wells will meet the MCL drinking water standards in 40 CFR 141 in the future.

Location-specific ARARs are restrictions placed on the concentration of hazardous substances, or the conduct of activities, solely because they are located in specific locations, e.g. flood plains, wetlands, historic places, etc. For the RKP site, no location-specific ARARs have been identified that would affect the selected alternative.

Action-specific ARARs are usually technology or activity-based requirements, or limitations, on actions taken with respect to hazardous wastes. These requirements are triggered by the particular remedial activities that are selected to accomplish a remedy. In the case of the RKP site, no active remediation is being considered. Therefore there are no action-specific ARARs to consider with respect to the selected alternative.

2.10.2 Balancing Criteria: Used to weigh major trade-offs among alternatives

Criterion 3: Long-term effectiveness and permanence

Long-term effectiveness and permanence refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time. Only Alternative #2 provides some degree of long- term protectiveness. The implementation of groundwater monitoring at the RKP site is necessary to ensure that future concentrations of uranium in groundwater are decreasing until they are in compliance with the drinking water standard in 40 CFR 141.

Criterion 4: Reduction of toxicity, mobility or volume through treatment

Reduction of toxicity, mobility or volume through treatment refers to the anticipated performance of the treatment technologies in reducing the harmful effects of principal contaminants, reducing their ability to move in the environment, and reducing the amount of contamination present. Since neither of the alternatives includes treatment, this criterion does not require further evaluation. All necessary remediation at the RKP site was accomplished previously, as part of the removal action conducted by Kerr-McGee.

Criterion 5: Short-term effectiveness

Short-term effectiveness addresses the period of time needed to implement the remedy, and any adverse impacts that may be posed to workers and the community during construction and operation of the remedy until clean-up goals are achieved. Both of the alternatives included in this Proposed Plan demonstrate short-term effectiveness. There is no construction time, or preparation time, required to implement groundwater monitoring at the RKP site, as the wells that are required to monitor site groundwater conditions are already in place. The site is currently protective of human health and the environment because there is presently no pathway from the groundwater contamination at RKP to any surrounding receptors. The purpose of the proposed monitoring is to insure that the uranium concentrations in groundwater eventually meet the drinking water standards and the protection of human health of the environment is maintained at RKP.

Criterion 6: Implementability

Implementability addresses the technical and administrative feasibility of implementing the alternative from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered. Since Alternative #1 involves no action, there is no time or cost required for implementation. Alternative #2, no further action with monitoring, requires no time to implement other than the usual amount of time required for groundwater sampling in the field (2-3 days).

Criterion 7: Cost

The range of costs is zero dollars ($0) for Alternative #1, No Action, to approximately $15,000 per sampling event for Alternative # 2, the sampling and analysis of groundwater for total uranium from the nine RKP wells and comparison to the drinking water standard in 40 CFR 141. Groundwater sampling will be conducted semi-annually (twice per year) initially, resulting in an annual cost of $30,000. Sampling frequency may be increased, or decreased, based upon the results from future sampling events.

2.10.3 Modifying Criteria: To be considered after public comment is received on the Proposed Plan and of equal importance to the balancing criteria

Criterion 8: State/Support Agency Acceptance

US EPA, and the State of Illinois, believe that Alternative #1 , No Further Action, currently provides adequate protection of human health and the environment. However, it could result in *future* unacceptable risks, since it would result in leaving uranium, in RKP groundwater, above the levels allowed by the drinking water standard in 40 CFR 141. Therefore, both agencies support the selected remedy, Alternative #2, which calls for no further action with monitoring, to insure that uranium concentrations in the site groundwater meet the MCL in the future.

Criterion 9: Community Acceptance

This section considers whether the local community agrees with US EPA's analyses and Preferred Alternative. US EPA received seven comments on the Proposed Plan for the final remedy at RKP. Responses to these comments are included in the Responsiveness Summary, which is Section 3.0 of this ROD. None of the comments expressed disagreement with the selected remedy, and, in fact, several expressed support for the remedy US EPA is selecting in this ROD.

2.11 Selected Remedy

The Selected Remedy is Alternative #2, No Further Action, along with monitoring to insure that future concentrations of uranium in the RKP site groundwater meet the MCL drinking water standard of 30 ug/L, or 27 pCi/L. This monitoring will continue until it has been demonstrated that the MCLs have been achieved, and maintained, for three consecutive sampling events.

Expected cost to implement this selected remedy is $15,000 per sampling event, to pay for the collection and analysis of nine groundwater samples from the RKP site for total uranium. Groundwater sampling will be conducted semi-annually (twice per year) initially, resulting in an annual cost of $30,000. Sampling frequency may be increased, or decreased, based upon the results from future sampling events. Also, because this remedy results in contaminants remaining at the site above MCLs, US EPA will review this action no less often than every five years after the date of this Record of Decision.

In the unlikely event that total uranium concentrations in RKP groundwater fail to decrease, or if they continue to increase, in the future, more active remediation methods

will be considered for the groundwater at RKP.

2.12 Documentation of Significant Changes

Although this ROD will be signed and finalized, new information may be received or generated that could affect the selected remedy. US EPA, as the lead agency for this ROD, has the responsibility to evaluate the significance of any such new information. The type of documentation required for a post-ROD change depends on the nature of the change. Three categories of changes are recognized by the US EPA: non- significant, significant, and fundamental. Non-significant post-ROD changes may be documented using a memo to the Administrative Record file. Changes that significantly affect the ROD must be evaluated pursuant to CERCLA Section 117 and the NCP at 40 CFR 300.435(c)(2)(I). Fundamental changes typically require a revised Proposed Plan and an amendment to the ROD. Significant or fundamental changes to the ROD for RKP are not anticipated.

3.0 RESPONSIVENESS SUMMARY

This Section of the ROD presents stakeholder comments regarding the Proposed Plan for the RKP site and provides a response to the comments considered in selection of the final remedy at RKP. Five written comments were received during the 30-day public comment period from May 6, 2002, to June 6, 2002, and two formal comments were received during the public meeting on May 16, 2002. The comments and the responses to the comments are presented below:

Comment #1: In accordance with U. S. EPA, Region 5's instructions during the public meeting of May 16, 2002, the West Chicago Park District, operator of Reed-Keppler Park, is submitting its comment on the "Proposed Plan for Final Cleanup Action at Reed-Keppler Park Site" dated April, 2002. The Park District has now had the opportunity to review and consider that Proposed Plan which calls for No Further Action with periodic ground water monitoring until MCL's are reached for total uranium. It is the Park District's understanding that if the total uranium concentrations in the ground water beneath the Park increase or fail to meet MCL's after an appropriate period of monitoring, U. S. EPA may consider supplemental action as to ground water. With that understanding, the Park District supports the adoption of the Proposed Plan.

Response #1: This Record of Decision does indeed include language that stipulates that additional active remediation of groundwater at the RKP site may be necessary if total uranium concentrations fail to decrease, or if they increase, in the future. Section 2.11 - Selected Remedy, states "In the unlikely event that total uranium concentrations in RKP groundwater fail to decrease, or if they continue to increase, in the future, more active remediation methods will be considered for the groundwater at RKP."

US EPA considers it unlikely that concentrations of uranium will remain above the MCL of 30 micrograms per liter (ug/L), or 27 picoCuries per liter (pCi/L) in RKP-5, or any of the other wells at RKP, for several reasons: (1) the source of the contamination has been removed from the RKP site soils; (2) Only one of the nine wells at the RKP site (RKP-5) exhibited groundwater contamination above the MCL drinking water standard. RKP-5 was also sampled in January 1998, and the concentration of uranium in the well at that time was 7.43 pCi/L, which is below the MCL. Because RKP-5 was in compliance with the MCL when it was sampled in 1998, and because of the fact that the result in August 2001 is only marginally above the MCL, there is a high probability that the 37.1 pCi/L result is an isolated sample result that will diminish within a reasonable time. In fact, beginning in December 1997, a total of 15 samples have been collected from the nine RKP groundwater wells, and the 37.1 pCi/L result from RKP-5 in August 2001 is the only exceedance of the MCL in the data set, and finally; (3) groundwater velocity estimates at the RKP site range from 20 to 1,300 feet per year, with an average of 200 feet per year. The distance from the areas at RKP where the highest contamination were found to RKP-5 is between 400 and 500 feet. Even if it assumed that the groundwater has been flowing at the slowest possible velocity (20 feet per year) since the waste material was placed at Reed-Keppler Park in the 1940' s and 1950's, the contamination should have reached the RKP-5 location in 20 to 25 years (in the 1960' s or 1970s). If this were true, groundwater samples collected at RKP-5 from that time on would show radioactive contamination in the groundwater at the location of RKP-5. RKP-5 was not installed and sampled until January 1998, but if contamination from the RKP site had migrated to RKP-5 any earlier than 1998 (as it should have), then the contamination would still show up in the groundwater sampling results (which it did not). In fact, other site wells which are downgradient, and even closer to, the contamination source area, have never shown exceedances of the MCL, which would indicate that a contamination "plume" has never reached these wells. Groundwater sample results from RKP-5 and other RKP monitoring wells do not support the possibility that groundwater contamination has migrated from the contamination zones to offsite areas. Given that RKP-5 was in compliance with the MCL in 1998, it is likely that the exceedance seen in RKP-5 in 2001 is an isolated result, and not part of an overall site "plume". US EPA is requiring groundwater monitoring at RKP to verify the fact that the MCL exceedance was an isolated event, and that there is not a continuing source of contamination that

has not been identified.

Comment #2: In accordance with U. S. EPA, Region 5's instructions during the public meeting of May 16, 2002, the City of West Chicago, owner of Reed-Keppler Park, is submitting its comment on the "Proposed Plan for Final Cleanup Action at Reed-Keppler Park Site" dated April, 2002. The City has now had the opportunity to review and consider that Proposed Plan which calls for No Further Action with periodic ground water monitoring until MCL's are reached for total uranium. It is the City's understanding that if the total uranium concentrations in the ground water beneath the Park increase or fail to meet MCL's after an appropriate period of monitoring, U. S. EPA may consider supplemental action as to ground water. With that understanding, the City supports the adoption of the Proposed Plan.

Response #2: This Record of Decision does indeed include language that stipulates that additional active remediation of groundwater at the RKP site may be necessary if total uranium concentrations fail to decrease, or if they increase, in the future. Section 2.11 - Selected Remedy, states "In the unlikely event that total uranium concentrations in RKP groundwater fail to decrease, or if they continue to increase, in the future, more active remediation methods will be considered for the groundwater at RKP."

US EPA considers it unlikely that concentrations of uranium will remain above the MCL of 30 micrograms per liter (ug/L), or 27 picoCuries per liter (pCi/L) in RKP-5, or any of the other wells at RKP, for several reasons: (1) the source of the contamination has been removed from the RKP site soils; (2) Only one of the nine wells at the RKP site (RKP-5) exhibited groundwater contamination above the MCL drinking water standard. RKP-5 was also sampled in January 1998, and the concentration of uranium in the well at that time was 7.43 pCi/L, which is below the MCL. Because RKP-5 was in compliance with the MCL when it was sampled in 1998, and because of the fact that the result in August 2001 is only marginally above the MCL, there is a high probability that the 37.1 pCi/L result is an isolated sample result that will diminish within a reasonable time. In fact, beginning in December 1997, a total of 15 samples have been collected from the nine RKP groundwater wells, and the 37.1 pCi/L result from RKP-5 in August 2001 is the only exceedance of the MCL in the data set, and finally; (3) groundwater velocity estimates at the RKP site range from 20 to 1,300 feet per year, with an average of 200 feet per year. The distance from the areas at RKP where the highest contamination were found to RKP-5 is between 400 and 500 feet. Even if it assumed that the groundwater has been flowing at the slowest possible velocity (20 feet per year) since the waste material was placed at Reed-Keppler Park in the 1940' s and 1950's, the contamination should have reached the RKP-5 location in 20 to 25 years (in the 1960's or 1970's). If this were true, groundwater samples collected at RKP-5 from that time on would show radioactive contamination in the groundwater at the location of RKP-5. RKP-5 was not installed and sampled until January 1998, but if contamination from the RKP site had migrated to RKP-5 any earlier than 1998 (as it should have), then the contamination would still show up in the groundwater sampling results (which it did not). In fact, other site wells which are downgradient, and even closer to, the contamination source area, have never shown exceedances of the MCL, which would indicate that a contamination "plume" has never reached these wells. Groundwater sample results firm RKP-5 and other RKP monitoring wells do not support the possibility that groundwater contamination has migrated from the contamination zones to offsite areas. Given that RKP-5 was in compliance with the MCL in 1998, it is likely that the exceedance seen in RKP-5 in 2001 is an isolated result, and not part of an overall site "plume". US EPA is requiring groundwater monitoring at RKP to verify the fact that the MCL exceedance was an isolated event, and that there is not a continuing source of contamination that has not been identified.

Comment #3: No plan? My concern is that there are no action criteria for action whether uranium goes up or down. Seems to me if uranium goes above 50 pCi/L or goes up three period in a row, we blew and need to reevaluate. Maybe some boreholes upstream etc to see if much uranium around. Also if dips below 30 and stays for a while/ you decide how long/, stop monitoring and pack up and go home. Believe these should be defined in advance so everybody knows the rules.

Suggest that results be released by EPA for publications as soon as available and any action announced. You cannot force publication but can do press release, put a notice in library, and post on City Hall bulletin board. This has been a citizen driven remediation and suggest agency go out of its way to make the information available.

Would still like to see background papers and plan when available. Thanks.

Response #3: Section 2.11 - Selected Remedy states that "The Selected Remedy is Alternative #2, No Further Action, along with monitoring to insure that future concentrations of uranium in the RKP site groundwater meet the MCL drinking water standard of 30 ug/L, or 27 pCi/L. *This monitoring will continue until it has been demonstrated that the MCLs have been achieved, and maintained, for three consecutive sampling events."* US EPA is requiring compliance with the MCL for three consecutive sampling events to insure that uranium concentrations will not "rebound" after an acceptable concentration has been measured. Section 2.11 also states that "Sampling frequency may be increased, or decreased, based upon the results from future sampling events," and that "In the unlikely event that total uranium concentrations in RKP groundwater fail to decrease, or if they continue to increase, in the future, more active remediation methods will be considered for the groundwater at RKP." The source of any potential contamination in groundwater has been removed from the RKP soils, therefore, there is every expectation that, with time, the uranium concentration in RKP groundwater will decrease. US EPA may elect to increase the sampling frequency if concentrations increase to determine whether the results are "seasonal" in nature, or whether they vary with groundwater elevation changes caused by heavy rain or drought. US EPA may also, as you have suggested, collect further soil samples to try to determine whether there is a source area that was missed during the removal action at RKP. In any event, before US EPA could take more active measures for groundwater at RKP, a revised Proposed Plan and ROD amendment, along with the appropriate 30-day public comment period, would be required, as described in Section 2.12 of this ROD.

Any reports or publications generated as a result of future groundwater monitoring will be available for public review in the Administrative Record for the RKP site and the local repository at the West Chicago Public Library. In addition, US EPA routinely makes these reports available to individuals when requested. US EPA will announce when these reports are available for public inspection. US EPA appreciates the community involvement associated with the RKP site, and continues to encourage the submittal of any comments or questions regarding the RKP site.

Comment #4: This is in regard to your news letter dated April 2002, "US EPA issues Proposed Plan for Final Cleanup at Reed-Keppler Park site". My family and I live in unincorporated West Chicago and request EPA inspection of our well water. This seems only fair! If City water users have this inspection/monitoring, why not monitoring on wells? We pay taxes! Since when is cost a reason for this discrimination against home owners with wells? The gas and electric company read our meters. Why not the EPA getting samples from our sill corks and checking for uranium contamination? When a residence is sold the DuPage County Health Department checks water, but not for uranium contamination. Please protect all of the people under your jurisdiction, not just some of the people!

Response #4: As you mentioned, the City of West Chicago does perform testing on City drinking water for certain potential contaminants, as required by the Safe Drinking Water Act. The concentrations of uranium and/ or radium seen in drinking water in the City of West Chicago are a result of background conditions in the aquifer (not from the Kerr-McGee sites) from which the City draws its drinking water, and they do not represent an unacceptable health risk to residents of the City. US EPA typically only performs testing of private wells as part of ongoing remedial efforts, and not on a routine basis, as routine testing of residential drinking water is usually performed on a local government level or by property owners themselves. In the past, the Illinois Department of Nuclear Safety (IDNS) has performed testing on private wells in unincorporated West Chicago at the request of the property owner, at no cost to the owner. US EPA has verified that this program still exists, and that IDNS would be willing to test your private well at your

request. To request that your well be sampled by IDNS, please contact:

Tim Runyon
Illinois Department of Nuclear Safety
1301 Knotts Street
Springfield, IL 62703
(217)786-6365

IDNS will collect a sample of the water from your well and provide results to you.

Comment #5: I don't believe there should be any question as to which one to choose. Alternative #2 offers some sort of limited safeguard to the community. It is certainly better than none. I also feel the City or powers to be consider the probability of securing Lake Michigan water - as a back-up source of water.

Ultimately - I, like the rest of my fellow neighbors and citizens, would like to believe that our government and the agencies funded by our taxes - will continue the process begun and work to protect us and our generations of children to come, from the invisible toxins once buried in our community.

Response #5: US EPA understands that you support the Selected Remedy and appreciates your comment.

Comment #6: (From the public meeting of May 16, 2002) - I want to say I want to thank everybody here for all the work they have done on this, and this has been a great effort to get our park to this point. But having said that, the second alternative, I think it goes without saying, that it is in the best interest of the people of West Chicago, my neighbors, and constituents.

Response #6: US EPA understands that you support the Selected Remedy and appreciates your comment.

Comment #7: (From the public meeting of May 16, 2002) - If there is no monitoring between the source and the well and you cut off your monitoring before that contamination has a chance to travel to that well, you could be missing a potential problem. It would seem to be in the interest of protecting the environment to - before you reach a cutoff date, to figure out the groundwater rate and how far it is from the well and then you would do your three consecutive tests because I understand and support and realize what level the cleanup was at the park.... But if there is something in the groundwater that is already contaminated and you cut it off before it would reach a monitoring well, you could be missing an opportunity. I also support the monitoring compared to no monitoring....

Response # 7: *The Remedial Investigation Report for the Kerr-McGee Reed-Keppler Park Site,* dated March 21, 2002, states that "Groundwater pore velocity estimates ranged between 20 feet per year and 1,300 feet per year, with an average probable velocity of 200 feet per year." This velocity is in a south south-easterly direction from the contamination areas to the area of monitoring wells RKP-2, RKP-3, RKP-4, and RKP-5 and MW-7, MW-8 and MW-9. The only well that has shown an exceedance of the MCL for uranium is RKP- 5, which is located about 400 feet east of the former enclosure area, where high contamination levels were observed in RKP soil. Even if it assumed that the groundwater has been flowing at the slowest possible velocity (20 feet per year) since the waste material was placed at Reed-Keppler Park in the 1940's and 1950's, the contamination should have reached the RKP-5 location in 20 to 25 years (in the 1960's or 1970's). If this were true, groundwater samples collected at RKP-5 from that time on would show radioactive contamination in the groundwater at the location of RKP-5. RKP-5 was not installed and sampled until January 1998, but if contamination from the RKP site had migrated to RKP-5 any earlier than 1998 (as it should have), then the contamination would still show up in the groundwater sampling results (which it did not). It should be noted that monitoring wells MW-7, MW-8 and MW-9 are located in the immediate vicinity (within 100 feet) of the area where the

highest soil contaminant concentrations were located, and these wells do not contain uranium in exceedance of the MCL. Given that RKP-5 was in compliance with the MCL in 1998, it is likely that the exceedance seen in RKP-5 in 2001 is an isolated result, and not part of an overall site "plume". US EPA is requiring groundwater monitoring at RKP to verify the fact that the MCL exceedance was an isolated event, and that there is not a continuing source of contamination that has not been identified. US EPA also understands that you support the Selected Remedy and appreciates your comment.

Appendix A

Letter of Concurrence from Illinois EPA

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Kerr-McGee Reed-Kepler Park National Priorities List Site
West Chicago, Illinois

STATEMENT OF BASIS AND PURPOSE

This decision document represents concurrence by the State of Illinois on the selected Final Remedial Action for the Kerr-McGee Reed-Kepler Park National Priorities List Site ("Site") in West Chicago, Illinois. This action was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended ("CERCLA" or "Superfund") and to the extent practicable, with the National Oil and Hazardous Substances Contingency Plan ("NCP", 40 Code of Federal Regulations ("CFR") 300). The decisions contained herein are based on information contained in the administrative record for this site.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the Site were addressed by a time critical removal action required by a United States Environmental Protection Agency ("U.S. EPA") Unilateral Administrative Order ("UAO"). The time critical removal action removed 114,652 cubic yards of contaminated soil between April 1997 and October 1999 to a radiological cleanup level of 7.2 picocurios per gram (pCi/g). Excavated areas were then backfilled with a minimum of three feet of clean fill.

DESCRIPTION OF THE REMEDY

The response action selected in this Record of Decision ("ROD") is No Further Action with groundwater monitoring. The groundwater monitoring portion of the selected remedy is to insure that concentrations of uranium in groundwater meet the maximum contaminant level ("MCL") drinking water standard for uranium of 30 micrograms per liter (ug/l). Groundwater monitoring will continue until it has been demonstrated that the MCLs have been achieved and maintained for three consecutive sampling events. Selection of this remedy was based upon groundwater sampling results that revealed one well with a concentration of 33 ug/l for uranium. Sampling will initially be performed twice a year and will be reassessed annually, depending upon the results. The frequency of sampling may have to be reevaluated if the groundwater standard continues to be exceeded.

STATUTORY DETERMINATIONS

The removal action performed in accordance with the UAO and the ROD meets all the nine threshold criteria established by the NCP and CERCLA. U. S. EPA, with the assistance of Illinois EPA, will evaluate any new information identified to ensure that the selected remedy remains protective. Significant changes will be evaluated pursuant to Section 117 of CERCLA and 40 CFR 300.435(c)(2)(I). Any change to the ROD necessitated by new information will be conducted through an Explanation of Significant Differences ("ESD") or a ROD Amendment.

Renee Cipriano
Director
Illinois Environmental Protection Agency

9/11/02
Date

Exhibit B