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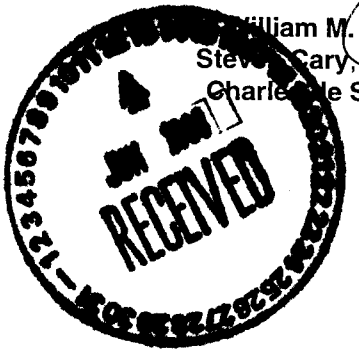

June 10, 1996

Vincent Malott, Project Manager
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Dear Vince:

Below are ONRT's comments on Sparton's Draft Final Corrective Measures Study Report (DFCMS), which we received on Tuesday, May 14, 1996. If you have any questions after reading our comments, please do not hesitate to call me at (505) 827-1035.

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I. Sparton's Recommended Alternative

Sparton's recommended alternative remains focussed on the existing Interim Measure (IM) and is as follows:

> " . . . corrective action in the form of operation of an enhanced IM groundwater recovery and treatment system, coupled with the installation of five new groundwater monitoring wells and a phased approach to soil vapor extraction, is recommended" (p. VIII-2).

This recommendation takes steps in the right direction - away from Sparton's previous recommendation in the draft CMS Report and toward the alternatives preferred by ONRT

Sparton's new recommendation is conceptually useful because it addresses all three subject areas that need attention. Sparton recommends:

(1) additional monitor wells for plume characterization,
(2) groundwater pump & treat for plume containment and remediation, and
(3) soil vapor extraction (SVE) for source control.

EPA should interpret Sparton's new recommendation as the company's stamp of approval for these technologies. Sparton now should have a more difficult time challenging any final EPA remedy that uses these same technologies.

In detail, however, Sparton's recommendation does not go nearly far enough. Primarily, the bulk of Sparton's contaminant plume is off-site, while Sparton's recommendation ignores the significant off-site problem even though it can be addressed using the same technologies that Sparton recommends for the on-site part of the problem. EPA should select a remedy that applies Sparton's recommended technologies, but at a scale that is appropriate for the magnitude of the

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problem.

Specifically, EPA's remedy should include sufficient additional monitor wells to characterize the plume in three dimensions, whether it takes 5 wells or 105, installed in a phased manner. EPA's remedy should include a well-designed SVE system, phased as appropriate, to remove and treat as much solvent at the source as possible in order to keep it out of ground water, where removal becomes much more difficult. EPA also should include air sparging (or in situ air stripping) as a cost-effective means to enhance the efficiency of the SVE system. Finally, EPA's remedy should include a ground water pump & treat (P&T) system that contains and remediates the entire contaminant plume, not just the fraction of the plume that remains on-site.

II. Sparton's Recommendation vis-a-vis EPA's Corrective Action Objectives

EPA's Corrective Action Objectives are given in the DFCMS (p. IV-3):

- Objective 1: prevent further migration of the contaminant plume;
- Objective 2: restore the contaminated aquifer to the more stringent of federal or state standards; and
- Objective 3: reduce the quantity of source material in the soil and groundwater to the extent practicable to minimize further releases of contaminants to the surrounding groundwater and ensure that no further contaminant migrates to the groundwater above the existing cleanup goals established for groundwater.

EPA cannot concur with the details of Sparton's recommended alternative for remedial action because that alternative has no chance of achieving corrective action objectives. The IM has demonstrated its inability either to prevent migration of the contaminant plume (Objective 1) or to restore the contaminated aquifer (Objective 2). The IM has removed some contaminants, which may be arguably source material, but such removal certainly has not progressed "to the extent practicable." Sparton's proposed enhancement of the IM by adding one more on-site extraction well will not achieve Objectives 1 and 2 because the leading edge of the plume is already more than 2000 feet downgradient beyond that well.

Phased SVE also is proposed as part of Sparton's recommendation and will contribute to meeting Objective 3. Apparently Sparton has finally seen the light on this matter; their proposal is only conceptual, but it makes sense on that level. EPA should include a well-thought-out SVE system, phased as appropriate, in EPA's selected alternative.

Further plume characterization is needed to ensure that Objectives 1, 2 and 3 are being met. Installation of additional monitoring wells is therefore necessary, but Sparton's proposal for five such wells is inadequate except as the first phase. Monitor well installation should proceed in a

phased manner until adequate plume characterization in three dimensions is achieved. Additional wells also will be needed for performance monitoring of the large scale P&T system that is needed for this site.

III. Flawed Basis for Sparton's Recommendation

Sparton's justification and recommendation of enhanced IM is seriously flawed. It does however, get Sparton moving in the right direction of P&T plus SVE. EPA simply has to select the proper scale for this endeavor. Will it be limited to "on-site" as Sparton recommends, or will it address the entire problem?

Sparton's listed reasons (p. VIII-1) for recommending this alternative do not stand up to close examination. For example, Sparton cites "[l]ack of risk from current conditions considering both current and potential receptors and exposure pathways identified at the site." There clearly is risk to the environment. Ground water is part of the environment, and there is no question that the IM, even if enhanced by adding one more on-site extraction well, would continue to allow large scale migration of contaminants off-site, and contamination of currently clean ground water. Moreover, that ground water will be needed for Albuquerque-area domestic water supply in the foreseeable future.

"Lack of impact on use of the affected groundwater considering potential use of that resource." To the contrary, there is considerable potential for use of the ground water resource in this area. Contamination at the Sparton facility would impact this use by either (a) requiring that this water be avoided, or (b) requiring significant pre-treatment to meet drinking water standards. Either approach results in a cost to local residents. Moreover, placement of supply wells in nearby, yet uncontaminated areas could draw in the contaminated water. This means that the volume of unavailable water is much larger than the volume of contaminated water.

"Inability of available technologies to restore groundwater quality to Maximum Contaminant Levels (MCLs) within any reasonable time period or at a reasonable cost." If ground water P&T is ineffective, then why is Sparton proposing to continue use of this technology in an enhanced IM? Sparton states that the "IM has achieved a reduction in VOC concentration in groundwater and has limited, if not prevented, further migration from on-site" (p. VII-16). If this much can be achieved by pumping less than 1 gpm (p. VIII-8), then a similar system scaled for the entire plume should be able to accomplish a great deal more. Even if complete remediation to MCLs cannot be accomplished via this approach, every molecule of contaminant so removed is a benefit to the local citizens who someday will have to use that water.

The issue of a "reasonable time period" is a matter of perspective. Forever is a long time, and certainly an unreasonable period of time for EPA, the State and its citizens to simply accept

contamination of this aquifer. Thirty years may seem like a long time to Sparton, but relatively speaking, the few decades necessary for complete cleanup, is a much more "reasonable time period" than forever. Similarly, Sparton's definition of "reasonable cost" seems only to apply to Sparton's costs. If EPA considers costs to Sparton, then EPA also must consider costs that will be incurred by the community if Sparton fails to address the problem. I would speculate that the value of this water to the community, as well as potential costs to the community for its loss, far exceed costs of cleanup for Sparton.

"Constituent concentrations in much of the plume area have already dropped below technology application levels." There is no basis for this statement provided in the DFCMS. Citing an EPA report, Sparton states that order-of-magnitude concentration reductions can be expected from most pump and treat systems (p. VII-18). This implies no concentration-based limitations to the technology; rather, it suggests that a 90% reduction can be expected regardless of the starting concentration. Sparton states that this "technology is therefore most appropriate for reducing high concentrations of contaminants in an expedited manner . . ." (p. VII-18). We agree it is appropriate at such times, and this is such a time.

Sparton then concludes that "[a]chievement of low contaminant concentration in groundwater may be inordinately difficult, if not impossible." There is no evidence that moderate starting concentrations (e.g., 50 μg/l) cannot also be reduced by one order of magnitude (e.g., to 5 μg/l, coincidentally the MCL). This would suggest that MCLs are achievable through this technology in those large parts of the contaminant plume where concentrations are only about 10 times the MCLs. Moreover, a 90% reduction in areas of higher concentrations, while perhaps not achieving the ultimate cleanup goal, would be a welcome improvement on the current situation. We accept Sparton's arguments as good reasons to apply the technology on a large scale at this site.

Technical impracticability is an issue that EPA should be willing to contemplate, but only after Sparton has worked diligently and then arrived at a concentration plateau below which further meaningful declines seem unlikely. The possibility that such an asymptote above MCLs may ultimately be reached is not a legitimate reason for Sparton to seek alternate concentration limits ahead of time, or to not remediate what they can.

"Effectiveness of previous corrective actions (i.e., closure and capping of the ponds/sump)." It certainly is not clear to what Sparton is referring here. The relative effectiveness of the actions referred to are irrelevant as regards the issue of full cleanup. Direct recharge of ground water through the pond/sump area has been curtailed. No active hazardous waste discharges are ongoing as far as is known. Now EPA and Sparton have to address the consequences of Sparton's past disposal practices.

"Effectiveness of the currently operating IM system to prevent migration off-site." It is likely that the existing IM system is causing a small reduction in off-site migration rates. There is no evidence that all off-site migration is being "prevented" by the IM system, nor is there any reason to believe that a total ground water extraction rate of 1 gpm would achieve such prevention. Moreover, the site boundary should be of no consequence to EPA's remedy selection process. The place to prevent migration is at the leading edge of the ground water contaminant plume, now at least 2100 feet beyond the property boundary (p. III-37) and still moving in a manner that is not measurably deterred by the IM. Therefore, the migration-prevention effectiveness of the current IM is vanishingly close to zero.

"Cost effectiveness of the IM system relative to other alternatives retained from the Initial Screening." Cost effectiveness only enters the discussion when two or more alternatives are identified that meet the remedial action objectives. Sparton's recommended alternative does not meet those objectives, so its cost effectiveness is not relevant. Past reliance on the IM probably contributed to complacency with what is now known to be an inadequate IM. The IM created the comforting illusion that containment was achieved, but meanwhile the plume was racing 2000 feet west, probably increasing cleanup costs by a factor of 10. Further reliance on the IM, even with Sparton's proposed enhancement, would unquestionably result in further cost increases to address the whole problem. The "cost-effectiveness" of this alternative is not one of its strong points.

The IM has not cost Sparton a lot of money, so Sparton views it as cost effective from the perspective of its own bank account. EPA must take a different perspective, however, one that considers costs to the public, not just to Sparton.

In summary, the reasons given by Sparton for recommending enhancement of the IM (p. VIII-1) are inadequate. They misrepresent site circumstances, misrepresent technological capabilities, and can all be refuted. EPA has no basis on which to select Sparton's recommended alternative.

IV. Technical Evaluation Criteria

With specific regard to the Technical Evaluation Criteria, Sparton's recommended alternative does not stand up to scrutiny. Neither the IM nor the enhanced IM will be effective "with respect to accomplishing containment, source control and/or restoration of groundwater quality" (p. VII-2). Past performance of the IM demonstrates that it has not accomplished containment and has not restored ground water quality. As long as "enhancement" is limited to "on-site" as proposed by Sparton, there will be no hope of containing or remediating that part of the plume that is 2000 feet down-gradient.

The issue of "useful life" (p. VII-2) is essentially moot for Sparton's recommendation. It may very well have a long life, but it will be a useless life, so this criterion is not met either. Similarly, the

"reliability" of an ineffective system is a non-issue. Sparton has demonstrated that it can reliably operate its essentially useless system for several years, but this misses the point. The issue of "implementability" cuts two ways. Sparton's recommended alternative can clearly be implemented and operated, but it has zero likelihood of achieving Corrective Action Objectives.

In sum, Sparton's recommended alternative is not supported by the facts or by reasonable inferences from the facts. Most of Sparton's arguments are hypocritical, internally contradictory, or factually incorrect. Sparton's underlying motivation is simply to save itself the expense of funding this cleanup. This is understandable, but it is not one of the criteria to be used in Sparton's development of the CMS or in EPA's selection of the remedy.

V. Sparton's Contradictory Statements about Pump & Treat Technology

Sparton contradicts itself regarding the feasibility of a P&T remedy. These contradictions stem from Sparton's selective use of information to support preconceived objectives, as well as Sparton arguing opposite sides of an issue depending on the circumstances.

On one hand Sparton touts the effectiveness of the IM, which is a P&T system, albeit located only on-site and only in the upper flow zone (p. III-62).

* "Operation of the IM continues to reduce the source of contamination to the groundwater."
* "Over 3.56 million gallons of groundwater have been recovered, treated and used beneficially in the Sparton facility to the present date."
* "The IM treatment has reduced effluent constituent concentrations to less than one microgram per liter (ug/l) from an influent concentration exceeding 1000 ug/l."

The praise continues (pp. VII-15 to 17):

* "Since start-up in December 1988, the IM system has successfully treated over 3.56 million gallons of recovered groundwater with a treatment efficiency of over ninety-nine percent."
* "Reliability has been demonstrated by almost seven and one-half years of successful operation."
* "Groundwater extraction combined with PTA treatment is considered a best demonstrated available technology (BDAT) for volatile organic constituents (VOC) such as TCE and TCA" (draft CMS report, 1992, p. 122)."

and continues (pp. VIII-10 to 11):

* " . . . over 7-1/2 years successful experience with the current IM consisting of groundwater extraction and PTA treatment confirms the applicability of this technology to the Sparton site".

* "The ability of this system to achieve significant reduction in contaminant concentration coupled with the location in the area of maximum constituent concentration should provide an effective source removal/groundwater remediation tool."
* " . . . the IM has been operated for over 7-1/2 years without any significant difficulty or breakdown. There has been no evidence of any decrease in system performance."

Yet Sparton offers mostly negative comments about the same technology when it is applied on a larger scale. This can only be done weakly, however:

* "This technology is more suitable in high permeability materials such as the subsurface gravelly sands and less effective in the clays and silts at the Sparton site" (p. VII-17).
* " . . . groundwater extraction and treatment is limited in its ability to reduce groundwater contamination to low levels approaching groundwater protection standards" (pp. VII-17 to 18).

The two preceding statements by Sparton are trivial observations. All ground water remediation technologies, including P&T, are more effective in more permeable materials. This truism does not facilitate the remedy selection process. Moreover, Sparton claims its IM has worked well at this site, subsurface permeabilities notwithstanding. Sparton offers no reason that large scale P&T cannot be made to work just as well at this site, whatever the permeabilities.

Similarly, all ground water remediation technologies, including P&T, are limited in their abilities to reduce groundwater contamination to groundwater protection standards. If it was easy, everybody would be doing it. The fact that it will be difficult is not sufficient reason to give up before starting. No technology is a panacea for the contamination at this site, and we are not so naive as to think that large scale P&T is guaranteed to bring all polluted ground water back to pre-release conditions. What we do expect is the best possible attempt to achieve that goal. Sparton is welcome to propose other technologies that might do the cleanup faster, better and cheaper than large scale P&T. The apparent absence of any better technologies, however, is not an acceptable reason to not implement the best available technology, which is large scale P&T. Such technology can make significant improvements in water quality, achieve significnt reductions in contaminant concentrations, and prevent further spread of the plume into currently uncontaminated areas.

Despite its best efforts to undermine pump & treat technology, Sparton cannot avoid offering language that supports EPA selection of a large scale P&T alternative. Sparton states that (pp. VII-22 to 24) the "groundwater extraction and treatment alternative is conventional in concept", "could be fully operational in approximately one year", and that with such a system a significant

reduction in groundwater VOC concentrations can be expected in "two to three years of operation".

VI. Proper Consideration of Cost

The real issue for Sparton and the source of the above contradictions, is revealed in a statement on p. VII-16:

> " . . . the IM would continue to be operated to obtain the maximum *practical* [emphasis added] limitation of off-site migration and removal and reduction of VOC on-site in areas most heavily impacted."

The contradiction centers around what Sparton thinks is practical. It is clear that pump & treat technology is effective enough for Sparton to undertake it on a small scale and brag about its performance. Costs apparently are within the range that Sparton is willing to bear. What Sparton thinks is practical or affordable is not an issue for the CMS, however. The purpose of the CMS is to select an appropriate remedy.

The difference between small scale and large scale P&T is essentially a cost issue because most technology issues are identical. Cost should not be given much weight except when choosing between two approaches that each get the job done equally well. Cost and cost-effectiveness of an enhanced IM are irrelevant because this approach does not accomplish the Corrective Action Objectives. EPA should reject Sparton's attempts to inject cost as an issue in this manner. The impropriety of this approach is manifest in the blatant contradictions that follow from the attempt.

Similarly, on p. VII-18 Sparton requests adoption of more lenient ACLs that might make the remediation less costly to Sparton. Because Sparton's contamination is so severe, and because "achievement of low contaminant concentration in groundwater may be inordinately difficult", Sparton seeks ACLs that "provide attainable goals in an efficient and timely manner." We disagree that this problem is "inordinately" more difficult to address than other similar problems, of which there are several in New Mexico that are being successfully addressed. We agree that limitations of existing technology may eventually result in development of ACLs, but there is no way of knowing today what the technological limit might be for this site. To set ACLs today would be to preempt the cleanup with no justification. The approach used at all other sites is to design the system as carefully as possible and get started. If technological limits are reached, then EPA can consider ACLs. Sparton is responsible for cleanup to MCLs and there is no reason not to make the best possible attempt to reach them.

Figure 25 (p. VII-19) tabulates all of the site-specific reasons that Sparton believes it will have a difficult time remediating the contamination to MCLs. Sparton is absolutely right; it will be difficult, but difficulty is not an acceptable reason to avoid responsibility. It also may be expensive, but that also is not EPA's problem. Sparton is asking to be relieved of cleanup

responsibilities because the problem that Sparton themsleves created will be expensive and difficult to cleanup. It is EPA's job to enforce RCRA, reject Sparton's crybaby arguments, and force Sparton to remediate its contamination.

ONRT is concerned that DNAPLs are not discussed in the DFCMS. It is understandable that Sparton wants to avoid this subject because of the serious implications for remediation costs. EPA cannot ignore DNAPLs in its remedy selection process, however, because hidden DNAPL bodies could sabotage a P&T system that is designed without considering DNAPLs. The most important steps that EPA can take in the remedy selection process regarding DNAPLs are: (1) to require expansion of the ground water monitoring network so the dissolved plume is adequately bounded by monitor wells in three dimensions, and (2) to require installation of aggressive SVE plus air sparging in the source area to volatilize DNAPL bodies before they reach ground water.

In situations with suspected DNAPLs, EPA headquarters strongly recommends a phased approach to site remediation. "Early actions to control plume migration and remove contaminant sources are encouraged" (October 3, 1995, guidance transmittal memorandum from Richard J. Guimond, Acting Assistant Administrator, to relevant Division Directors of all EPA regions). "Such actions . . . can not only reduce risks posed by contaminated ground water, but also provide information useful in evaluating the restoration potential of the site" (ibid.). Accordingly, ONRT encourages EPA to give serious consideration to a phased approach in the remedy selection and remedy implementation phases of this case.

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That concludes ONRT's comments. Thank you for the opportunity to review Sparton's Draft Final CMS report. Please continue to keep me apprised of all developments in this case.

Sincerely,

Steven J. Cary
Deputy Director

cc: Norman Gaume
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