S.S. PAPADOPULOS & ASSOCIATES, INC.
ENVIRONMENTAL & WATER-RESOURCE CONSULTANTS

April 7, 2016

Charles Hendrickson, Sparton Project Coordinator
U.S. Environmental Protection Agency
Region VI – Federal Facility Section (6PD-F)
1445 Ross Avenue
Dallas, TX 75202-2733

Dave Cobrain, Sparton Project Coordinator
New Mexico Environment Department
Environmental Health Division
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6313

Subject: **Sparton Technology, Inc. - Former Coors Road Plant Remedial Program Request for Approval of the Use of Passive Sampling Devices without Site-Specific Testing**

Gentlemen:

Reference is made to your letter of February 5, 2016 approving Sparton Technology Inc.'s (Sparton) request for discontinuing the submittal of semi-annual progress reports. On behalf of Sparton, S. S. Papadopulos & Associates, Inc. (SSP&A) thanks you for this approval. Your letter also approves Sparton's request for changes in sampling methodology, but it does so subject to certain conditions including the preparation of a Sampling and Analysis Plan (SAP) and the testing of these methodologies against the current sampling method within a tolerance limit of 10 percent.

As explained more fully below, we would suggest it is not necessary to undertake comparative sampling given the significant amount of testing and research that has been conducted to evaluate the performance of the sampling methodologies we propose to use, and the fact that the results of sampling using those methods will provide the data needed to meet the monitoring goals at the Sparton site.

As we indicated in our July 23, 2015 letter requesting changes in sampling methodology, the proposed passive sampling devices, namely the Passive Diffusion Bag (PDB) and the Snap Sampler (SS), have been widely used for sampling during the last 10 to 15 years. Field testing of PDBs was conducted by the U. S. Geological Survey (USGS) as early as 1998 at the Davis Global Communication site in Sacramento, CA (Vroblesky & others, 2000a),[1] at the Naval Air Station North Island in San Diego County, CA (Vroblesky & others, 2000b), and at the Naval Industrial Reserve Ordnance Plant, in Fridley, MN (Vroblesky & others, 2000c). A User's Guide for the use of PDBs for determining VOC concentrations in monitoring wells was

[1] All references cited in this letter are listed in Attachment A.

7944 WISCONSIN AVENUE, BETHESDA, MARYLAND 20814-3620 • TEL: (301) 718-8900 • FAX: (301) 718-8909
www.sspa.com • e-mail: stavros@sspa.com

published in 2001 by the USGS in cooperation with several other federal agencies (Vroblesky, 2001). PDBs are listed under approved sampling equipment in New Jersey Department of Environmental Protection's (NJDEP) 2005 manual for field procedures (NJDEP, 2005). References cited in our July 23, 2015 letter included two documents prepared by the Interstate Technology & Regulatory Council in the mid-2000s. One of these was a guidance document for the use of PDBs (ITRC, 2004); the document gave examples of sites where PDBs were used for sampling including a site in Florida and a site in New Hampshire where diffusion bags were used with the approval of the U.S. Environmental Protection Agency. The second document was a protocol for the use of five passive samplers which included PDBs and SSs (ITRC, 2007). In 2014, ASTM International issued a standard guide (Designation: D7929-14) for the selection of passive devices to sample monitoring wells (ASTM International, 2014).

Comparative studies of SSs, such as the one you are requesting Sparton to conduct, have been conducted by the U. S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory (ERDC/CRREL) at numerous sites including the former Louisiana Army Ammunition Plant, the Silresim Superfund Site, and the former Pease and McClellan Air Force Bases (Parker & others, 2007; 2008; 2009; 2011a; 2011b). These studies concluded that, except for some total metals, the SSs gave results that were comparable to the results from samples obtained after purging. For total chromium, iron and manganese ***both*** the SS and the purge samples had high variability between duplicate samples, and the SS samples had higher total iron and manganese concentrations than the purge samples; this high variability and higher concentrations for total metals was attributed to (a) leaching of metals from the well screen, (b) corroded well screens that allow fines to enter the well, and (c) agitation of the well by the sampling equipment. Variability in sampling results was also the subject of two recent studies funded by the U.S. Department of Defense as part of the *Environmental Security Technology Certification Program* (ESTCP) Project ER-201209 (Kulkarni & others, 2015; McHugh & others, 2016). While these latter two studies were primarily aimed at testing the HydraSleeve active no purge sampler (HydraSleeve, 2015), their comparative study included SSs and concluded that the variability of SS samples was the same as that of those collected by the purging method currently used at Sparton, and that the SSs provided adequate data for determining long term concentration trends.

The purpose of monitoring at Sparton's former Coors Road Plant site, other than to meet the requirements of the site's discharge permit, which will be dealt separately, is to provide 1) a means for detecting any expansion of the contaminant plume, and 2) data for evaluating progress in remediation and aquifer restoration. The contaminant plume is much smaller now than it was before the start of remedial operations and, at the current pumping rate of 300 gallons per minute, the capture zone of the offsite containment system extends well beyond the limits of the plume. Thus, besides the fact that the proposed passive systems are definitely capable of detecting contaminant migration to sentinel monitoring wells, the likelihood of the occurrence of such migration is virtually non-existent. The proposed passive systems will also provide

adequate data for determining concentration trends and for evaluating progress in remediation and aquifer restoration. When we reach the point where these data indicate that the aquifer has been restored, that is, concentrations in all monitoring wells and in the containment wells are below federal or state standards, and the agencies believe that further confirmation of these results is required, several rounds of data collection using purging methods could be conducted to assess whether this is indeed the case and whether remedial operations should continue or be terminated.

Given that there is sufficient evidence that the proposed passive sampling devices have been adequately tested, the above discussion of monitoring goals, and the fact that to provide an adequate concentration range for site-specific testing, the two rounds of testing requested by the agencies will have to be conducted during the November 2016 and 2017 annual sampling events, thus delaying the decision on the use of these devices. Perhaps more fundamentally, the comparative sampling, which does not appear to be necessary, will not be inexpensive. Sparton therefore requests that the use of the proposed devices be approved without the need for site-specific testing. An updated SAP will be prepared upon approval of this request.

If you have any questions concerning this request please contact the undersigned.

Sincerely,

S.S. PAPADOPULOS & ASSOCIATES, INC.

Stavros S. Papadopulos, PhD, PE, NAE
Founder & Senior Principal

Alex Spiliotopoulos, PhD
Senior Hydrogeologist

cc: Mr. Ernesto Martinez, EHS Corporate Manager
of Sparton Corporation
Mr. James B. Harris, Thompson & Knight LLP
Mr. Tony Hurst, Hurst Engineering Services
Mr. Charles M. Easterling, OCCAM|EC

ATTACHMENT A

LIST OF CITED REFERENCES

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