

Item # 4-1B

**City of Carson City  
Agenda Report**

**Date Submitted:** October 28, 2008

**Agenda Date Requested:** November 6, 2008

**Time Requested:** Consent

**To:** Mayor and Supervisors  
**From:** Purchasing & Contracts

**Subject Title:** Action to determine that Kleen Industrial Services is the lowest responsive and responsible bidder pursuant to N.R.S. Chapter 332 and pursuant to the Board's finding that it is in the public's best interest to accept the bid exceptions and to award Contract No. 0809-064 to Kleen Industrial Services for a not to exceed cost of \$41,227.00 to be funded from the WWTP Upgrade Phase 1A Fund as provided in FY 2007/2008.

**Staff Summary:** The Carson City Waste Water Reclamation Plant has a final process "Sand Filters", that polishes the effluent from the treatment plant and insures a discharge that meets the permit standards that are required by the Nevada Division of Environmental Protection. The sand in these filters has become worn out and is in need of replacement. This sand must meet very strict specification to provide maximum life and fulfill the needs of the process.

**Type of Action Requested:** (check one)  
 Resolution                       Ordinance  
 Formal Action/Motion               Other (Specify)

**Does This Action Require A Business Impact Statement:**  Yes  No

**Recommended Board Action:** I move to determine that Kleen Industrial Services is the lowest responsive and responsible bidder pursuant to N.R.S. Chapter 332 and pursuant to the Board's finding that it is in the public's best interest to accept the bid exceptions and to award Contract No. 0809-064 to Kleen Industrial Services for a not to exceed cost of \$41,227.00 to be funded from the WWTP Upgrade Phase 1A Fund as provided in FY 2007/2008.

**Explanation for Recommended Board Action:** *NOTICE TO BIDDERS* were mailed out the first time on June 23, 2008 and the *NOTICE TO BIDDERS* was published in the Nevada Appeal on June 29, 2008. Due to nonconformance to the bid specification the project was re-bid and the *NOTICE TO BIDDERS* were mailed out On October 5, 2008 and the *NOTICE TO BIDDERS* was published in the Nevada Appeal on October 7, 2008

The bids were opened at approximately 1:10 p.m. on October 16, 2008 at 201 North Carson Street, Carson City, Nevada 89701. Present during the bid opening were: Jeff McGoodwin, and Sandy Scott, Purchasing & Contracts Coordinator.

Proposals were received from two bidders:

Proposals were received from two bidders:

Kleen Industrial Services \$41,227.00  
Carmeuse Industrial Sands \$85,613.76

Proposals were reviewed for price and conformance to the specifications. Neither bidder was within 100% of the bid specifications; Kleen Industrial Services provided a Roundness of 0.5, the specification require greater than 0.6, Carmeuse Industrial Sands provided a Porosity of 33.5%, the specifications require greater than 45%. The sand samples were mailed to Timothy Cornelison, Water Services, Inc., for evaluation and stated in the attached letter that "Both sand bid samples are close enough to specification and should perform well."

Staff recommends award to Kleen Industrial Services as the lowest responsive and responsible bidder pursuant to N.R.S. Chapter 332.

**Applicable Statue, Code, Policy, Rule or Regulation:** N.R.S. Chapter 332 Purchasing: Local Governments.

**Fiscal Impact:** \$41,227.00

**Explanation of Impact:** \$41,227.00 to purchase 288 tons of this product.


**Funding Source:** 515-0000-434-7984 WWTP Upgrade Phase 1A as provided in FY2007/2008.

**Alternatives:** Determine another bidder is the lowest and most responsible and responsive bidder pursuant to N.R.S. Chapter 332 or do not award contract.

**Supporting Material:** Bid Response from Kleen Industrial Sands, Analysis from Water Services, Inc.

**Prepared By:** Sandy Scott, Purchasing & Contracts Management Assistant

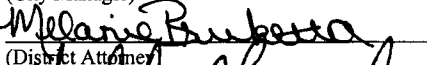
**Reviewed By:**

  
\_\_\_\_\_  
(Public Works Department)

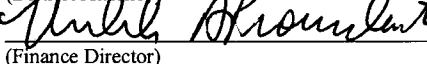
Date: 10-28-08

  
\_\_\_\_\_  
(City Manager)

Date: 10-28-08

  
\_\_\_\_\_  
(District Attorney)

Date: 10-28-08

  
\_\_\_\_\_  
(Finance Director)

Date: 10/28/08

**Board Action Taken:**

Motion: \_\_\_\_\_

1) \_\_\_\_\_

2) \_\_\_\_\_

Aye/Nay

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(Vote Recorded By)

**CARSON CITY PURCHASING & CONTRACTS  
BID RESPONSE**

Bidder's initials & date JL D. D. 08

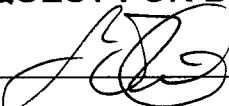
**BIDDER INFORMATION:**

1080  
1081  
1082 Company Name: KLEEN INDUSTRIAL SERVICES  
1083 Federal ID No.: 68-0340965  
1084 Mailing Address: 2600 OLD CROW CANYON RD SUITE 200  
1085 City, State, Zip Code: SAN RAMON CA 94583-1616  
1086 Complete Telephone Number: 925-831-9800  
1087 Complete Fax Number: 925-831-9183  
1088  
1089 Contact Person/Title: FIONN O'NEILL / DIRECTOR OF OPERATIONS  
1090 Mailing Address: 2600 OLD CROW CANYON RD SUITE 200  
1091 City, State, Zip Code: SAN RAMON CA 94583-1616  
1092 Complete Telephone Number: 925-831-9800  
1093 Complete Fax Number: 925-831-9183  
1094 E-mail Address: FIONN@KLEENBLAST.COM  
1095

1096 Carson City Municipal Code Section 4.04.010 requires that any business operating within  
1097 Carson City is required to be in possession of a valid Carson City business license. Be  
1098 advised that upon award of a contract by Carson City, you must either have a current  
1099 business license or an exemption letter from the Carson City Development Services  
1100 Department before commencing business. However, possession of said license is not a  
1101 prerequisite for bidding.  
1102

1103 If Bidder has a valid Carson City Business License, please provide number:  
1104 \_\_\_\_\_  
1105

1106 Bidder does not have a valid Carson City Business License. Bidder contacted a  
1107 representative of the Carson City Development Services Department at 775-887-2105 and  
1108 has been informed that Bidder does need a Carson City Business License for this  
1109 **REQUEST FOR BID**. Bidder certifies that he will obtain a Carson City Business License  
1110 if awarded this **REQUEST FOR BID**.  
1111

1112 Signature  Date 10.10.08  
1113

1114 Bidder does not have a valid Carson City Business License. Bidder certifies that he has  
1115 spoken to \_\_\_\_\_ a representative of the  
1116 Carson City Development Services Department at 775-887-2105 and has been informed  
1117 that Bidder does not need a Carson City Business License for this **REQUEST FOR**  
1118 **BID**.  
1119

1120 Signature \_\_\_\_\_ Date \_\_\_\_\_

**CARSON CITY PURCHASING & CONTRACTS  
BID RESPONSE**

Bidder's initials & date JS 10.10.08

1121 **DISCLOSURE OF PRINCIPALS:**

1122  
1123  
1124

**Individual and/or Partnership:**

1125 Owner 1) Name: \_\_\_\_\_  
1126 Address: \_\_\_\_\_  
1127 City, State, Zip Code: \_\_\_\_\_  
1128 Complete Telephone Number: \_\_\_\_\_

1129  
1130 Owner 2) Name: \_\_\_\_\_  
1131 Address: \_\_\_\_\_  
1132 City, State, Zip Code: \_\_\_\_\_  
1133 Complete Telephone Number: \_\_\_\_\_

1134  
1135 Other 1) Title: \_\_\_\_\_  
1136 Name: \_\_\_\_\_

1137  
1138 Other 2) Title: \_\_\_\_\_  
1139 Name: \_\_\_\_\_

1140

**Corporation:**

1141  
1142  
1143 State in which Company is incorporated: CALIFORNIA  
1144 Date Incorporated: SEPT. 16 1994  
1145 Name of Corporation: KLEEN INDUSTRIAL SERVICES  
1146 Address: 2600 CRODROW CANYON RD SUITE 200  
1147 City, State, Zip Code: SAN RAMON CA 94583-1616  
1148 Complete Telephone Number: 925-831-9800

1149  
1150 President's Name: TIM SPURGEON

1151  
1152 Vice-President's Name: STEVE HAGMAN

1153  
1154 Other 1) Name: \_\_\_\_\_  
1155 Title: \_\_\_\_\_

1156  
1157 Other 2) Name: \_\_\_\_\_  
1158 Title: \_\_\_\_\_

**CARSON CITY PURCHASING & CONTRACTS  
BID RESPONSE**

Bidder's initials & date

*[Handwritten initials and date]*

1159 If Bidder responds NO to any of the following questions, Bidder must use the  
1160 EXCEPTION SUMMARY document to record any deviations, modifications, and/or  
1161 alternates proposed to this REQUEST FOR BID. Failure to do so may be justification  
1162 for rejection of the BID RESPONSE. Bidder must indicate the title of document from  
1163 the top of the page, the page number from the bottom of the page, the item number  
1164 corresponding to the item, and a detailed description of the deviation, modification,  
1165 and/or alternate. Failure to note deviations, modifications, and/or alternates on the  
1166 EXCEPTION SUMMARY shall be interpreted to convey that Bidder will perform in the  
1167 manner described and/or specified in this REQUEST FOR BID.  
1168

1169 Bidder has read the SPECIFICATIONS and certifies that the product(s) and/or service(s)  
1170 proposed meets or exceeds the requirements of this **REQUEST FOR BID**.

1171  
1172  Yes  No  
1173

1174 Bidder has provided "Exhibit A" – Proof from a qualified testing laboratory that Bidder's  
1175 material meets these minimum specifications. Failure to do so may be justification for  
1176 rejection.

1177  
1178  Yes  No  
1179

1180 Bidder agrees that the filter material consists of coarse aggregate in which a high  
1181 proportion of the particles are rounded and tend toward a generally spherical shape.

1182  
1183  Yes  No  
1184

1185 Bidder agrees that the filter media (silica sand) shall consist of hard, durable, and dense  
1186 grains of predominately siliceous material and shall possess sufficient strength and  
1187 hardness to resist degradation during handling and use meeting the following  
1188 specifications:

- 1189 A. Hardness (Moh) 6.5-7.0
- 1190 B. Silica Content >90% (using XRF Method)
- 1191 C. Acid Solubility (15% HCl) < 5%
- 1192 D. Specific Gravity > 2.6 (using ASTM C127, C128 Methods)
- 1193 E. Porosity > 45% (using ASTM C29, C127, C128 Methods)
- 1194 F. Roundness (API) >0.6
- 1195 G. Sphericity (API) > 0.6
- 1196 H. Effective size of 1.2 mm to 1.4 mm
- 1197 I. Uniformity Coefficient of 1.4 mm or less

1198  
1199  
1200  
1201  Yes  No  
1202

**CARSON CITY PURCHASING & CONTRACTS  
BID RESPONSE**

Bidder's initials & date *[Signature]* 10.10.08

1203 Bidder agrees that the silica sand shall be free of clay, dust, and miscellaneous and organic  
1204 matter.

1205  
1206  Yes  No

1208 Bidder agrees that delivery shall be in 3000 lb – 4000 lb super sacks

1209  
1210  Yes  No

1212 Bidder agrees to provide delivery **F.O.B. Carson City Waster Water Reclamation Plant,**  
1213 **3320 East Fifth Street, Carson City, Nevada 89701 C/O Dennis Maple, Operations**  
1214 **Manager or Jeff McGoodwin, Senior Plant Mechanic** within (90) calendar days after bid /  
1215 contract award by the Carson City Board of Supervisors.

1216  
1217  Yes  No

1219 Bidder agrees that all prices shall be **F.O.B. Carson City.** No additional charges for freight,  
1220 packaging, handling, insurance, etc., shall be allowed. Bidder shall be responsible for all  
1221 shipping charges for items returned due to error and/or unacceptable condition.

1222  
1223  Yes  No

1225 Bidder agrees that should he fail to deliver the product(s) and/or perform the service(s) bid  
1226 in accordance with this **REQUEST FOR BID**, Carson City may declare Bidder in default  
1227 of contract and recover all damages, costs and fees (including Attorney's fees) allowable by  
1228 law.

1229  
1230  Yes  No

1232 Bidder agrees that in the event of default by Bidder, Carson City may, at its option, pursue  
1233 one or all of the following alternatives including: procure the product(s) and/or service(s)  
1234 from another source and hold the defaulting Bidder responsible for an excess cost  
1235 occasioned thereby, assess a penalty of 5% of the total awarded bid amount, commence  
1236 with Surety and/or Performance Bond proceedings, debar the defaulting Bidder for not less  
1237 than one year, or pursue other applicable legal remedies.

1238  
1239  Yes  No

1240 Bidder agrees that if necessity requires the use of materials or supplies not conforming to  
1241 the **SPECIFICATIONS**, they may be accepted and payment shall be made at a proper  
1242 adjustment in price.

1243  
1244  Yes  No

1245

**CARSON CITY PURCHASING & CONTRACTS  
BID RESPONSE**

Bidder's initials & date AB 10.10.08

1246 Bidder has read and agrees to abide by the TERMS AND CONDITIONS of this  
1247 **REQUEST FOR BID.**

1248  Yes  No

1249 Bidder has provided "**Exhibit B**" - All addenda must be signed and placed in date and time  
1250 order.

1251  Yes  No  Not Applicable

1252 Bidder has provided "**Exhibit C**" - BID RESPONSE additional space on company  
1253 letterhead.

1254  Yes  No  Not Applicable

1255 Bidder has provided "**Exhibit D**"- Supplemental materials.

1256  Yes  No  Not Applicable

1257 Bidder agrees that all billings for dates of service prior to July 1 must be submitted to  
1258 Carson City no later than the first Friday in August of the same year; that a billing submitted  
1259 after the first Friday in August will subject Bidder to an administrative fee not to exceed  
1260 \$100.00; and that this amount will be deducted from the stale claim payment due to Bidder.

1261  Yes  No

1262 **CASH DISCOUNT** of 2 % may be taken in addition to the price(s) stated for the  
1263 terms of 2 calendar days. Prompt payment discounts will be considered in award  
1264 recommendation only if discount period is fifteen (15) or more calendar days. Discount  
1265 period will be computed from the date Carson City acknowledges that the delivery and/or  
1266 performance meets the requirements of this **REQUEST FOR BID** or from the date the  
1267 correct invoice is received by the appropriate Carson City department/division accounts  
1268 payable clerk, whichever is the latter date. Payment is deemed to be made on the date  
1269 payment is mailed to Bidder.

1270 Bidder has read and agrees to abide by the INSURANCE REQUIREMENTS for  
1271 Commercial General Liability Insurance, Business Automobile Liability Insurance,  
1272 Professional Liability Insurance, and Workers' Compensation and Employer's Liability  
1273 Insurance for this **REQUEST FOR BID.**

1274  Yes  No

1275 Bidder has provided "**Exhibit E**" - **EXCEPTION SUMMARY** additional space on company  
1276 letterhead.

1277  Yes  No  Not Applicable

1278 **MASTERCARD ACCEPTANCE.** Bidder agrees to accept MasterCard as a form of  
1279 payment under this Contract at no additional cost to Carson City.

1280  Yes  No



# CARSON CITY PURCHASING & CONTRACTS BID RESPONSE

Bidder's initials & date

*JB* 10.10.08

1290  
1291  
1292  
1293

## PRICING SUMMARY

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
Replacement Silica Sand for Parson Corporation "Dyna-sand" sand filters	288	Tons	143.15	41,227 -
<b>Total Bid Price</b>				

1294  
1295  
1296  
1297  
1298

Total Bid Price written in words:

FORTY ONE THOUSAND TWO HUNDRED TWENTY SEVEN & NO/10

CARSON CITY PURCHASING & CONTRACTS  
BID RESPONSE

Bidder's initials & date JO 10.10.08

1299 ACKNOWLEDGMENT AND EXECUTION:  
1300

1301 STATE OF CALIFORNIA )  
1302 ) SS  
1303 COUNTY OF CONTRA COSTA )  
1304

1305 I, FIONN O'NEILL (Name of party signing this **BID**  
1306 **RESPONSE**), do depose and say: That I am the Bidder or authorized agent of the Bidder;  
1307 and that I have read and agree to abide by this **REQUEST FOR BID** which includes the  
1308 following documents: **NOTICE TO BIDDERS, SPECIFICATIONS, TERMS AND**  
1309 **CONDITIONS, and BID RESPONSE.**  
1310

1311 **BIDDER:**

1312  
1313 PRINTED NAME OF BIDDER: FIONN O'NEILL  
1314 TITLE: DIRECTOR OF OPERATIONS  
1315 FIRM: KLEEN INDUSTRIAL SERVICES  
1316 Address: 2000 OLD CROW CANYON RD SUITE 2000  
1317 City: SAN RAMON  
1318 State / Zip Code: CA 94583-1616  
1319 Telephone Number: 925-831-9800  
1320 Fax Number: 925-831-9183  
1321 E-mail address: FIONN@KLEENBLAST.COM  
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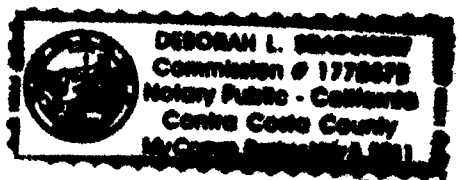
1323 [Signature]  
1324 (Signature of Bidder)

1325 DATED 10.14.08  
1326

1327  
1328 Signed and sworn (or affirmed) before me on this 14<sup>TH</sup> day of OCTOBER, 2008,  
1329 by FIONN O'NEILL  
1330 PROVED TO  
1331 ME ON THE BASIS OF SATISFACTORY EVIDENCE TO BE THE  
1332 PERSON WHO APPEARED BEFORE ME.

1333 [Signature]  
1334 (Signature of Notary)  
1335

1336 (Notary Stamp)  
1337



**CARSON CITY PURCHASING & CONTRACTS  
BID RESPONSE**

Bidder's initials & date

*[Handwritten signature]* 10.10.08

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**EXCEPTION SUMMARY INSTRUCTIONS:**

Use this document to record any deviations, modifications, and/or alternates proposed to this **REQUEST FOR BID**. Failure to do so may be justification for rejection of the **BID RESPONSE**. Bidder must indicate the line number corresponding to the item and a detailed description of the deviation, modification, and/or alternate. Failure to note deviations, modifications, and/or alternates on the **EXCEPTION SUMMARY** shall be interpreted to convey that Bidder will perform in the manner described and/or specified in this **REQUEST FOR BID**.

If additional space is required, use company letterhead and mark as "Exhibit E".

If there are no deviations, modifications, and/or alternates proposed to this **REQUEST FOR BID**, write "None".

LINE NUMBER 123: ROUNDNESS (API) > 0.6 IS SPECIFIED. THE

MATERIAL WE SUPPLY WILL HAVE ROUNDNESS OF 0.5.

**\*\*\* END OF BID RESPONSE \*\*\***

"EXHIBIT A"

CARSON CITY BID RESPONSE

BID # 0809-06A

KLEEN INDUSTRIAL SERVICES

925.831.9800 FAX 925.831.9183

FIONN@KLEENBLAST.COM

**FILTER MEDIA ANALYSIS**

**Project:** Filter Media

**Report Prepared for:**  
BCJ Sand & Rock, Inc.  
5510 Skylane Blvd., Suite 202  
Santa Rosa, Ca 95403

**September 11, 2008**

**Micro-Chem Laboratories Job No. C-5101-08**

# MICRO-CHEM LABORATORIES

635 Bret Harte Drive • P.O. Box 485 • Murphys, CA • 95247 • (209) 728-8200 • FAX 209-728-8251 • www.micro-chem.com

September 11, 2008

BCJ Sand & Rock, Inc.  
5510 Skylane Blvd., Suite 202  
Santa Rosa, CA 95403

Job No. C-5101-08

**Attn:** Mr. Steven R. Card  
Mr. Bryan Morgan

**Re:** Filter Media Analysis  
**Project:** Filter Media

In response to your request, one sample of filter sand was received for laboratory testing. The sample was tested for gradation, voids content, effective size, uniformity coefficient, apparent specific gravity, absorption, acid solubility, and sphericity and roundness. The sample was also chemically analyzed and examined by petrographic methods to determine the composition of the sand.

## Test Methods

The sand sample was tested for effective size, uniformity coefficient, and acid solubility according to AWWA B100-01, "AWWA Standard for Filtering Material." Apparent specific gravity and absorption were determined according to ASTM C128-01, "Standard Test Method for Specific Gravity and Absorption of Fine Aggregate." The sample was tested for gradation according to ASTM C136-06, "Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates" and for voids content per ASTM C29-03, "Standard Test Method for Bulk Density and Voids in Aggregates."

The sand sample was examined according to ASTM C295-03, "Standard Guide for Petrographic Examination of Aggregates for Concrete." Thin sections were prepared and examined with a petrographic microscope. Approximately 150 particles from sieve fractions were identified and tallied with a stereomicroscope and petrographic microscope.

Moh's hardness of the mineral constituents was obtained from "Dana's Textbook of Mineralogy", 4th Edition. Sphericity and roundness were determined according to ANSI/API Recommended Practice 19C-08.

A representative sample of the filter sand was crushed and pulverized and submitted to Technology of Materials, Wildomar, CA for x-ray fluorescence (XRF) analysis. A copy of their report is attached.

BCJ Sand & Rock, Inc.  
Job No. C-5101-08  
September 11, 2008  
Page 2

### Sample Description

The following filter sand was received.

<u>Micro-Chem Sample No.</u>	<u>Mass kg</u>	<u>Description</u>
8	4.8	Filter Media Sand No. 8

### Test Results

The results of the sieve analysis, voids content, uniformity coefficient, effective size, acid solubility, apparent specific gravity, absorption, and sphericity and roundness tests are presented in Table I. The probability plot for uniformity coefficient and effective size is presented in the attached chart. The results of the petrographic examination and Moh's hardness are presented in Table II.

### Summary of Tests Results

1. The results of the voids content, acid solubility, effective size, uniformity coefficient, apparent specific gravity, and absorption tests are as follows.

	<u>Sample No. 8</u>
Voids, % (Porosity, %)	63.0
Acid Solubility, %	0.4
Effective Size, mm	1.3
* Uniformity Coefficient	1.3
Apparent Specific Gravity	2.66
Absorption, %	1.5

2. Sample No. 8 consists of igneous, metamorphic, and sedimentary rocks and minerals. The sand is composed primarily of quartz and chert, which have a Moh's hardness value of 7. The aggregate contains 93.2% good, 3.1% fair, and 0.6% poor particles composed of shale with respect to the physical properties of the material.

BCJ Sand & Rock, Inc.  
Job No. C-5101-08  
September 11, 2008  
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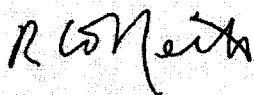
3. The determined sphericity and roundness values of the sand are 0.7 and 0.5, respectively.
4. The chemical analysis indicated the silica dioxide ( $\text{SiO}_2$ ) content of Sample No. 8 is 95.4%, by mass.

### Conclusions

1. The filter media as represented by Sample No. 8 meets the AWWA B100-01 requirements for acid solubility (<5%) and specific gravity (>2.5).
2. The filter sand meets the AWWA standard requiring hard, durable, dense grains, and greater than 85% siliceous materials.
3. The filter sand is visibly free of clay, dust, and micaceous and organic matter per the AWWA standard.

Should any questions arise concerning the findings of this report, please contact the undersigned.

Respectfully submitted,  
**MICRO-CHEM LABORATORIES**



Robert C. O'Neill, P.G.  
Senior Petrographer

RCON/jamc  
C510108  
Attachments

**Sample Disposition:** The sample will be stored for a period of one month and thereafter discarded. Charges for additional sample storage time and/or shipping of the sample will be billed to the client.

TABLE I

JOB NO. C-5101-08

SAMPLE NO. 8

FILTER MEDIA TEST RESULTS

Sieve Analysis:

<u>Sieve Size</u>	<u>Sieve Size in <math>\mu\text{m}</math></u>	<u>Individual Weight Retained, %</u>	<u>Cumulative % Retained</u>	<u>Cumulative % Passing</u>
No. 4	4750	0.0	0.0	100
No. 7	2800	0.4	0.4	99.6
No. 8	2360	6.0	6.3	93.7
No. 10	2000	19.4	25.7	74.3
No. 12	1700	30.3	56.0	44.0
No. 16	1180	39.8	95.8	4.2
No. 18	1000	2.3	98.1	1.9
No. 20	850	0.5	98.6	1.4
No. 25	710	0.3	98.9	1.1
No. 30	600	0.3	99.1	0.9

Voids, % (Porosity, %)

63.0

Acid Solubility:

Loss, 0.4%

Apparent Specific Gravity:

2.66

Absorption, %

1.5

Uniformity Coefficient:

1.3

Effective Size, mm:

1.3

Sphericity:

0.7

Roundness:

0.5



TABLE II

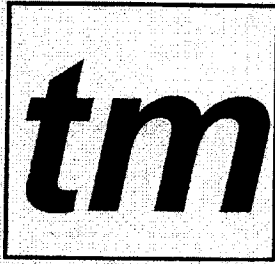
JOB NO. C-5101-08

SAMPLE NO. 8

PETROGRAPHIC EXAMINATION OF FILTER MEDIA  
ASTM C295-03

<u>Rock Type</u>	Weighted Average of Sieve Fractions					<u>Total</u>	<u>Physical Quality</u>	<u>Moh's Hardness</u>
	<u>No. 18-16</u>	<u>No. 16-12</u>	<u>No. 12-10</u>	<u>No. 10-8</u>	<u>No. 8-7</u>			
Quartz	1.7	29.2	24.8	15.0	3.9	74.6	G	7.0
Chert	0.3	5.6	2.8	1.8	0.6	11.2	G	7.0
Aplite	0.1	1.6	0.6	1.3	0.2	3.8	G	----
Ironstone	0.1	1.1	0.4	0.4	0.1	2.1	F	----
Feldspars	T	0.5	0.6	0.1	T	1.3	G	6.0-6.5
Metabasalt	T	0.5	0.0	0.1	0.1	0.7	G	----
Shale	T	0.3	0.2	0.1	T	0.6	P	----
Hematite	T	0.5	0.0	0.0	0.0	0.6	G	5.5-6.5
Sandstone	0.0	0.3	0.2	0.0	0.0	0.5	F	----
Felsite	T	0.0	0.2	0.1	0.0	0.4	G	----
Gneiss	0.0	0.0	0.0	0.2	0.1	0.3	G	----
Serpentine	0.0	0.0	0.2	0.1	0.0	0.3	F	2.5-4
W. Chert	T	0.0	0.2	0.0	T	0.3	F	----
Metagranite	0.0	0.3	0.0	0.0	0.0	0.3	G	----
Total	2.3	39.8	30.3	19.4	5.1	96.9		

G = Good F = Fair P = Poor T = Trace W = Weathered



## TECHNOLOGY OF MATERIALS

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21090 Cielo Vista Way  
Wildomar, CA 92595

Sam Iyengar Ph.D.  
Technical Director

Mr. Robert C. O'Neill  
Micro-Chem Laboratories  
635 Bret Harte Dr.  
P. O. Box 485  
Murphys, CA. 95247

September 04, 2008

**Dear Robert:**

Enclosed please find a report on the elemental analysis of a sample.  
Please call me if you have any questions or concerns.

Sincerely,

Sam Iyengar

Phone: (951) 471-8194

[www.xraydiffrac.com](http://www.xraydiffrac.com)

Fax: (951) 471-8193

## Elemental Analysis of a Powder Sample

### Introduction:

A powder samples were received at the laboratory for analysis. It was requested that the elemental compositions be determined. Powders were analyzed by x-ray fluorescence (XRF) to determine the elemental make-up. The following report summarizes the analytical results.

### Materials and Method:

#### C5101-08 Sample 8

#### X-ray Fluorescence analysis (XRF):

A representative portion of each sample was ground to approximately -400 mesh in a steel swing mill and then analyzed by our standard XRF procedure for 31 major, minor and trace elements. The relative precision/accuracy for this procedure is ~5-10% for major-minor elements and ~10-15% for trace elements (those elements listed in ppm) at levels greater than twice the detection limit in samples of average geologic composition.

### Results and Discussion:

Elemental composition is shown in Table 1.

**Table 1: Elemental composition of a Powder Sample**

Elements (wt. %)	Sample 8
Na <sub>2</sub> O	0.17
MgO	0.05
Al <sub>2</sub> O <sub>3</sub>	1.37
SiO <sub>2</sub>	95.4
P <sub>2</sub> O <sub>5</sub>	<0.05
S	<0.05
K <sub>2</sub> O	0.11
CaO	0.18
TiO <sub>2</sub>	0.08
MnO	0.07
Fe <sub>2</sub> O <sub>3</sub>	3.46
BaO	0.02

**Table 2: Trace Elements of a Powder Sample**

Elements (ppm)	Sample 8
V	44
Cr	872
Co	24
Ni	67
Cu	33
Zn	<10
Mo	15
Sr	<10
Zr	14

W, As, Sn, Pb, U, Rb, Y, Th and Nb are less than 10-50 ppm



# **WATER SERVICES, INC.**

**34 Beaver Road, Saugerties, NY 12477**

**Ph (518) 965-3818 fax (845) 246-8953**

October 27, 2008

Jeff McGoodwin  
Wastewater Operations  
3320 East 5<sup>th</sup> Street  
Carson City, NV 89701

Re: Parkson Dynasand Filter Sand Bid

Dear Mr. McGoodwin:

I have reviewed the two filter sand samples and the laboratory reports. Nether of the two bids are 100% within the bid specifications. The Carmeuse Industrial Sands bid sample is low on Porosity %. (33.5% sample , 45% spec.) The Kleen sample is low on roundness. (0.5 sample, 0.6 spec.)

Parkson Corp., the filter manufacturer uses the Carmeuse sand in the installation of new filters and was the provider of your original sand. The Carmeuse sand will hold its size and shape for many years (15-20). The Kleen sand is more of a sub-angular sand. In the Northeast this type of sand is provided out of New Jersey. While it filters well there has been a break in period for the sand. That means that the filter will perform better after 12-36 months of run time. The Dynasand filter is an active filter that continually backwashes. The sand is always moving. While the sand is moving the sharper edges on the sand break off or wear down and the sand becomes rounder. For this reason a larger sand size is usually specified and after the break in period the sand size has been reduced.

## Summary

Both sand bid samples are close enough to specifications and should perform well. The roundness of the Carmeuse sand and its reproducible water quality results in the filter makes it the sand of choice. If the Kleen sand were used, I would recommend using a larger sand (1.4mm -1.6mm) so that after the angular edges are worn off and the sand is round it will be a 1.2mm -1.4mm particle size.

Call me anytime with any questions.

With Kind Regards,

Timothy J. Cornelison  
Operator Support Services