The Dow Chemical Company
Midland, Michigan 48674

October 22, 1999

Mr. Sam Nalluswami
U.S. Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, MD 20852

Dear Mr. Nalluswami:

Subject: Proposed Amendment to NRC License STB-527

The proposed amendment is for your consideration to remove $^{230}Th$ from the remediation plan and apply Option 1 of the Branch Technical Position (BTP) entitled *Disposal or Onsite Storage of Thorium or Uranium Wastes From Past Operations* (46FR 52601, October 23, 1981). In the BTP Option 1 (unrestricted use) remediation criterion for natural thorium ($^{232}Th$ + $^{228}Th$) is 0.37 Bq (10pCi/g). The Dow Chemical Company's NRC License was for $^{232}Th$ metal, for use in the production of magnesium-thorium alloying process, and at no time was Uranium or $^{230}Th$ ever used in this process.

Thank you for your consideration of this request. If you have any questions regarding the proposed amendment, please contact Ben Baker at (517) 636-0787.

Sincerely,

Ben Baker

Ben Baker
Project Manager
The Dow Chemical Company
2020 Dow Center
Midland, MI 48674

Enclosure (1)

cc: Dr. Peter Lee, USNRC – Region III

*Proposed Amendment to The Dow Chemical Company's U.S. Nuclear Regulatory Commission (NRC) Source Material License STB-527*
*Relating to the Decommissioning of Thorium-232 ($^{232}Th$) Contaminated Slag Storage Area in Bay City, Michigan*

## 1. INTRODUCTION

The Dow Chemical Company (Dow) submitted its proposed release criteria plan to the NRC by letter dated March 11, 1996. This plan was subsequently approved by the NRC and remediation activities began at the Midland and Bay City Sites in 1996. The $^{232}Th$ contaminated material was removed through standard industrial excavation practices and transported to the railhead on the Bay City site for shipment to Envirocare of Utah, Incorporated for burial.

## 2. FACILITY DESCRIPTION HISTORY

Dow began using $^{232}Th$ metal and magnesium compounds for the production of magnesium-thorium alloys at Bay City, Michigan, in 1956. The radioactive waste slag from the alloying process was disposed of on Dow's property in Bay City.

## 3. RADIOLOGICAL STATUS OF THE FACILITIES

The Midland Site is located within Dow's plant in Midland, Michigan. This site was fully remediated and was closed under the NRC's Environmental Assessment (EA), July 19,1996.

The Bay City Site is located about 1 mile south of the Saginaw Bay on Dow property. The majority of the high specific activity $^{232}Th$ material was stored above ground within a fenced area and to a greater extent buried at select locations on Dow owned controlled property. Approximately 39-acres have been released for unrestricted use through independent verification surveys by NRC Region III. The remaining 8 acres is currently under evaluation for further excavation and remediation.

## 4. SOIL RELEASE CRITERIA UNDER JULY 1996 RULING

The NRC EA, July 19,1996, stated that the radioactive contamination on the Dow sites is a mixture of three thorium isotopes: $^{232}Th$, $^{228}Th$, and $^{230}Th$. By activity the $^{232}Th$ and $^{228}Th$ are in equal concentration and they are both part of the $^{232}Th$ decay chain. Thorium-230 is one of the natural decay products of $^{238}U$ decay chain; therefore its

concentration is independent of the $^{232}Th$ or $^{228}Th$ concentration. In 1996, numerous soil samples were analyzed for total thorium content and the average ratios of $^{232}Th$: $^{230}Th$ ranged from 1:3 to 1:1. The licensee made calculations to verify potential radiation doses from the residual contaminated soil. The licensee determined that a concentration of purely $^{230}Th$ at 21 pCi/g would give a dose equivalent to 10 pCi/g of $^{232}Th + ^{228}Th$.

## 5. PROPOSED SOIL RELEASE CRITERIA UNDER OPTION 1, BTP, *Disposal or Onsite Storage of Thorium or Uranium Wastes From Past Operations (46FR 52601, October 23, 1981)*

Under Option I, the concentration of natural thorium is set sufficiently low that no member of the public is expected to receive a radiation dose commitment from disposed materials in excess of 1 millirad per year to the lung or 3 millirad per year to the bone from inhalation and ingestion.

The concentration specific in Table 1 is believed appropriate to apply to the remaining Bay City Site.

**Table 1. Option I, Natural Concentration in Soil***

| Kind of Material | Concentration (pCi/g) |
|---|---|
| Natural thorium ($^{232}Th$ plus $^{228}Th$) if all daughters are present and in equilibrium..... | 10 |

*Federal Register/Vol 46: No. 205/Option I/October 23, 1981.

Numerous soil samples of thorium material were taken to verify the ratio of $^{232}Th/^{228}Th$ as 1.032, indicating the equilibrium state of the daughter isotopes. This was verified through high-resolution gamma spectroscopy using an "n" type high purity germanium detector and gamma vision software.

# VERIFICATION SAMPLES

## Bay City

**# Samples 103**

| Sample Name | $^{232}$Th (pCi/G) | Error (2s) | $^{230}$Th (pCi/g) | Error (2s) | $^{228}$Th (pCi/g) | Error (2s) | 230/232 ratio | 232/228 ratio |
|---|---|---|---|---|---|---|---|---|
| BCS-A5-4v1-R | 0.27 | 0.18 | 0.41 | 0.40 | 0.27 | 0.28 | 1.50 | 1.00 |
| BCS-A6-8v1 | 0.51 | 0.19 | 0.47 | 0.32 | 0.49 | 0.33 | 0.92 | 1.04 |
| BCS-A7-8v1 | 0.39 | 0.15 | 0.36 | 0.23 | 0.42 | 0.26 | 0.91 | 0.94 |
| BCS-A7-9v1-R | 0.50 | 0.18 | 0.66 | 0.43 | 0.48 | 0.33 | 1.32 | 1.04 |
| BCS-B11-2v2-R | 0.84 | 0.32 | 0.94 | 0.54 | 0.77 | 0.46 | 1.12 | 1.08 |
| BCS-B11-3v1-R | 0.38 | 0.19 | 0.38 | 0.43 | 0.29 | 0.34 | 1.00 | 1.33 |
| BCS-B1-9v1 | 0.14 | 0.12 | 0.17 | 0.15 | 0.11 | 0.10 | 1.19 | 1.29 |
| BCS-B2-1v1 | 0.10 | 0.12 | 0.12 | 0.15 | 0.07 | 0.09 | 1.21 | 1.35 |
| BCS-B2-2v1 | 0.32 | 0.20 | 0.36 | 0.24 | 0.29 | 0.20 | 1.13 | 1.09 |
| BCS-B2-8v1 | 0.31 | 0.14 | 0.41 | 0.23 | 0.23 | 0.14 | 1.30 | 1.35 |
| BCS-C11-1v1 | 0.82 | 0.41 | 1.14 | 0.74 | 0.82 | 0.55 | 1.40 | 1.00 |
| BCS-C11-4v1 | 0.31 | 0.16 | 0.36 | 0.21 | 0.33 | 0.19 | 1.17 | 0.95 |
| BCS-C13-3v1 | 0.19 | 0.11 | 0.21 | 0.16 | 0.16 | 0.12 | 1.16 | 1.15 |
| BCS-C13-3v1-R | 0.13 | 0.12 | 0.13 | 0.29 | 0.13 | 0.29 | 1.00 | 1.00 |
| BCS-C13-5v1 | 0.63 | 0.26 | 0.57 | 0.38 | 0.57 | 0.38 | 0.90 | 1.11 |
| BCS-C1-3v1 | 0.41 | 0.19 | 0.62 | 0.32 | 0.42 | 0.22 | 1.53 | 0.98 |
| BCS-C14-1v1 | 0.21 | 0.13 | 0.19 | 0.14 | 0.19 | 0.14 | 0.92 | 1.09 |
| BCS-C2-2v1 | 0.50 | 0.23 | 0.65 | 0.34 | 0.51 | 0.27 | 1.29 | 0.98 |
| BCS-C2-3v1 | 0.28 | 0.17 | 0.28 | 0.18 | 0.27 | 0.17 | 1.00 | 1.05 |
| BCS-C2-8v1 | 0.21 | 0.12 | 0.20 | 0.14 | 0.20 | 0.13 | 0.97 | 1.05 |
| BCS-C3-4v1 | 0.63 | 0.21 | 0.66 | 0.30 | 0.54 | 0.25 | 1.04 | 1.18 |
| BCS-C3-6v1 | 0.39 | 0.17 | 0.37 | 0.26 | 0.36 | 0.25 | 0.97 | 1.07 |
| BCS-C3-6v1-R | 0.26 | 0.16 | 0.43 | 0.31 | 0.28 | 0.21 | 1.64 | 0.93 |
| BCS-C3-7v1-R | 0.21 | 0.13 | 0.24 | 0.16 | 0.19 | 0.13 | 1.12 | 1.13 |
| BCS-D11-6v1 | 0.27 | 0.17 | 0.27 | 0.33 | 0.23 | 0.29 | 1.00 | 1.17 |
| BCS-D12-4v1 | 0.23 | 0.18 | 0.23 | 0.19 | 0.19 | 0.17 | 1.00 | 1.18 |
| BCS-D12-6v1 | 0.40 | 0.16 | 0.41 | 0.28 | 0.33 | 0.23 | 1.04 | 1.22 |
| BCS-D14-1v1 | 0.37 | 0.16 | 0.41 | 0.32 | 0.35 | 0.28 | 1.11 | 1.06 |
| BCS-D14-5v1 | 0.14 | 0.11 | 0.17 | 0.14 | 0.15 | 0.12 | 1.18 | 0.96 |
| BCS-D2-3v1 | 0.34 | 0.18 | 0.30 | 0.23 | 0.30 | 0.23 | 0.90 | 1.11 |
| BCS-D2-4v1 | 0.33 | 0.11 | 0.44 | 0.19 | 0.36 | 0.16 | 1.30 | 0.92 |
| BCS-E11-5v2 | 0.43 | 0.16 | 0.57 | 0.41 | 0.38 | 0.30 | 1.33 | 1.13 |
| BCS-E12-1v1-R | 0.82 | 0.25 | 1.04 | 0.44 | 0.86 | 0.37 | 1.27 | 0.95 |
| BCS-E12-6v1 | 0.90 | 0.29 | 1.46 | 1.39 | 0.79 | 0.85 | 1.63 | 1.14 |
| BCS-E12-7v1-R | 1.12 | 0.35 | 1.41 | 0.64 | 0.97 | 0.46 | 1.26 | 1.16 |
| BCS-E12-8v1 | 0.65 | 0.22 | 0.85 | 0.36 | 0.58 | 0.26 | 1.30 | 1.13 |
| BCS-E13-6v1 | 0.82 | 0.25 | 0.92 | 0.48 | 0.70 | 0.38 | 1.12 | 1.17 |
| BCS-E14-4v1 | 0.51 | 0.19 | 0.61 | 0.38 | 0.48 | 0.31 | 1.20 | 1.07 |
| BCS-E14-5v1 | 0.46 | 0.31 | 0.46 | 0.72 | 0.34 | 0.57 | 1.00 | 1.33 |
| BCS-E14-6v1 | 0.22 | 0.14 | 0.30 | 0.22 | 0.22 | 0.16 | 1.36 | 1.00 |
| BCS-E2-7v1-R | 0.20 | 0.14 | 0.20 | 0.14 | 0.22 | 0.16 | 0.96 | 0.91 |
| BCS-F11-2v1 | 0.37 | 0.13 | 0.49 | 0.33 | 0.33 | 0.24 | 1.33 | 1.11 |
| BCS-F11-4v1 | 0.51 | 0.14 | 0.47 | 0.26 | 0.48 | 0.27 | 0.92 | 1.06 |
| BCS-F1-3v1 | 0.41 | 0.26 | 0.50 | 0.42 | 0.44 | 0.37 | 1.23 | 0.93 |
| BCS-F14-1v1-R | 0.46 | 0.17 | 0.44 | 0.32 | 0.42 | 0.31 | 0.95 | 1.11 |
| BCS-F2-3v1 | 0.29 | 0.16 | 0.30 | 0.20 | 0.23 | 0.16 | 1.02 | 1.24 |
| BCS-G11-8v1 | 0.39 | 0.18 | 0.60 | 0.46 | 0.41 | 0.33 | 1.56 | 0.95 |
| BCS-G14-8v1 | 0.51 | 0.15 | 0.68 | 0.43 | 0.42 | 0.29 | 1.32 | 1.22 |
| BCS-G15-4v1 | 0.36 | 0.18 | 0.33 | 0.19 | 0.32 | 0.19 | 0.91 | 1.13 |
| BCS-G2-6v1 | 0.44 | 0.20 | 0.50 | 0.32 | 0.44 | 0.29 | 1.14 | 1.00 |
| BCS-G2-7v1 | 0.12 | 0.18 | 0.14 | 0.21 | 0.13 | 0.20 | 1.17 | 0.92 |
| BCS-G3-1v1 | 0.23 | 0.22 | 0.24 | 0.25 | 0.18 | 0.19 | 1.02 | 1.27 |
| BCS-G3-2v1 | 0.18 | 0.10 | 0.17 | 0.12 | 0.18 | 0.13 | 0.93 | 0.98 |
| BCS-G3-4v1 | 0.17 | 0.18 | 0.22 | 0.25 | 0.18 | 0.21 | 1.26 | 0.94 |
| BCS-G3-5v1 | 0.14 | 0.15 | 0.17 | 0.21 | 0.12 | 0.14 | 1.29 | 1.17 |

Thorium Analysis Data

| # Samples 103 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Name | $^{232}$Th (pCi/G) | Error (2s) | $^{230}$Th (pCi/g) | Error (2s) | $^{228}$Th (pCi/g) | Error (2s) | 230/232 ratio | 232/228 ratio |
| BCS-H10-7v1 | 0.74 | 0.19 | 1.23 | 0.49 | 0.62 | 0.27 | 1.67 | 1.18 |
| BCS-H13-6v1 | 0.17 | 0.11 | 0.17 | 0.17 | 0.13 | 0.14 | 1.00 | 1.25 |
| BCS-H2-6v1-R | 0.37 | 0.14 | 0.34 | 0.19 | 0.36 | 0.20 | 0.92 | 1.02 |
| BCS-H3-3v1 | 0.11 | 0.14 | 0.16 | 0.21 | 0.10 | 0.13 | 1.44 | 1.10 |
| BCS-H3-6v1 | 0.21 | 0.13 | 0.37 | 0.27 | 0.21 | 0.16 | 1.74 | 1.02 |
| BCS-H9-5v1 | 0.61 | 0.16 | 0.77 | 0.31 | 0.55 | 0.23 | 1.26 | 1.12 |
| BCS-I12-2v1 | 0.16 | 0.12 | 0.16 | 0.18 | 0.13 | 0.15 | 1.00 | 1.20 |
| BCS-K3-3Bv1 | 0.51 | 0.16 | 0.89 | 0.31 | 0.47 | 0.17 | 1.73 | 1.09 |
| BCS-K3-6Av1 | 1.71 | 0.27 | 2.95 | 0.80 | 1.72 | 0.50 | 1.73 | 0.99 |
| BCS-K3-6Bv1 | 1.09 | 0.21 | 1.78 | 0.41 | 1.00 | 0.24 | 1.63 | 1.09 |
| BCS-K3-8v1 | 1.07 | 0.30 | 1.46 | 0.69 | 0.93 | 0.48 | 1.36 | 1.15 |
| BCS-K4-4Av1 | 6.13 | 0.51 | 5.52 | 0.97 | 5.26 | 0.94 | 0.90 | 1.17 |
| BCS-K4-4v2 | 0.53 | 0.27 | 0.78 | 0.51 | 0.41 | 0.29 | 1.48 | 1.29 |
| BCS-K6-5Bv1 | 0.23 | 0.20 | 0.26 | 0.26 | 0.21 | 0.21 | 1.13 | 1.10 |
| BCS-K6-5v2 | 0.29 | 0.19 | 0.44 | 0.35 | 0.32 | 0.26 | 1.50 | 0.91 |
| BCS-L5-9Bv1 | 0.40 | 0.19 | 0.67 | 0.36 | 0.36 | 0.20 | 1.69 | 1.09 |
| BCS-L7-3Av1 | 0.39 | 0.17 | 0.68 | 0.33 | 0.37 | 0.19 | 1.73 | 1.05 |
| BCS-M5-1Bv1 | 1.05 | 0.31 | 2.19 | 0.77 | 0.86 | 0.33 | 2.08 | 1.22 |
| BCS-M5-5Bv1 | 0.19 | 0.15 | 0.18 | 0.17 | 0.16 | 0.15 | 0.97 | 1.15 |
| BCS-N4-5Bv1 | 0.13 | 0.14 | 0.22 | 0.25 | 0.12 | 0.14 | 1.72 | 1.05 |
| BCS-O2-2Av1 | 0.52 | 0.79 | 0.68 | 1.07 | 0.43 | 0.69 | 1.31 | 1.20 |
| BCS-O2-2Bv1 | 0.09 | 0.11 | 0.10 | 0.13 | 0.10 | 0.12 | 1.09 | 0.98 |
| BCS-O2-5Av1 | 0.29 | 0.11 | 0.38 | 0.28 | 0.26 | 0.21 | 1.28 | 1.13 |
| BCS-O2-5Bv1 | 0.22 | 0.10 | 0.27 | 0.15 | 0.18 | 0.11 | 1.20 | 1.20 |
| BCS-O3-5Bv1 | 0.34 | 0.14 | 0.47 | 0.28 | 0.32 | 0.20 | 1.38 | 1.06 |
| BCS-O7-6v1 | 0.54 | 0.16 | 0.65 | 0.59 | 0.49 | 0.47 | 1.20 | 1.11 |
| BCS-O8-5v1 | 0.27 | 0.09 | 0.37 | 0.19 | 0.23 | 0.13 | 1.39 | 1.15 |
| BCS-O9-2v1 | 0.16 | 0.14 | 0.21 | 0.22 | 0.18 | 0.19 | 1.28 | 0.89 |
| BCS-P13-3v1 | 0.16 | 0.15 | 0.20 | 0.23 | 0.16 | 0.18 | 1.30 | 1.00 |
| BCS-P13-6v1 | 0.23 | 0.15 | 0.34 | 0.29 | 0.22 | 0.20 | 1.45 | 1.05 |
| BCS-P1-6v1 | 0.47 | 0.15 | 0.47 | 0.29 | 0.40 | 0.25 | 1.00 | 1.20 |
| BCS-P6-3v1 | 0.33 | 0.28 | 0.39 | 0.39 | 0.31 | 0.32 | 1.20 | 1.04 |
| BCS-P7-3v1 | 0.34 | 0.14 | 0.58 | 0.38 | 0.28 | 0.20 | 1.72 | 1.19 |
| BCS-P7-4v1 | 0.47 | 0.18 | 0.53 | 0.33 | 0.41 | 0.27 | 1.13 | 1.15 |
| BCS-P8-5v1 | 0.19 | 0.10 | 0.36 | 0.25 | 0.21 | 0.15 | 1.93 | 0.90 |
| BCS-P9-4v1-R | 0.33 | 0.17 | 0.33 | 0.28 | 0.31 | 0.27 | 1.00 | 1.06 |
| BCS-P9-9v1 | 0.22 | 0.08 | 0.22 | 0.45 | 0.22 | 0.45 | 1.00 | 1.00 |
| BCS-Q2-1v1 | 0.28 | 0.12 | 0.31 | 0.24 | 0.26 | 0.21 | 1.12 | 1.06 |
| BCS-Q7-3v1-R | 0.45 | 0.15 | 0.84 | 0.56 | 0.40 | 0.30 | 1.89 | 1.12 |
| BCS-Q8-5v1 | 0.53 | 0.40 | 0.80 | 0.79 | 0.50 | 0.52 | 1.50 | 1.07 |
| BCS-Q8-8v1 | 0.22 | 0.12 | 0.30 | 0.30 | 0.22 | 0.23 | 1.40 | 1.00 |
| BCS-R12-3v1 | 0.27 | 0.11 | 0.36 | 0.26 | 0.24 | 0.19 | 1.35 | 1.11 |
| BCS-R12-5v1 | 0.24 | 0.11 | 0.30 | 0.21 | 0.22 | 0.16 | 1.29 | 1.08 |
| BCS-R13-2v1 | 0.13 | 0.11 | 0.22 | 0.22 | 0.12 | 0.13 | 1.76 | 1.05 |
| BCS-R13-3v1 | 0.27 | 0.22 | 0.26 | 0.28 | 0.26 | 0.28 | 0.94 | 1.07 |
| BCS-R13-9v1 | 0.16 | 0.12 | 0.26 | 0.25 | 0.15 | 0.15 | 1.67 | 1.05 |
| BCS-S11-8v1-R | 0.52 | 0.26 | 0.64 | 0.44 | 0.51 | 0.35 | 1.24 | 1.03 |
| BCS-S11-9v1 | 0.47 | 0.25 | 0.82 | 0.58 | 0.44 | 0.33 | 1.76 | 1.07 |
| **Average** | **0.45** | | **0.57** | | **0.41** | | **1.26** | **1.09** |
| **STDEV** | **0.62** | | **0.66** | | **0.54** | | **0.28** | **0.11** |
| **Median** | **0.34** | | **0.39** | | **0.32** | | **1.23** | **1.08** |
| **Max** | **6.13** | | **5.52** | | **5.26** | | **2.08** | **1.35** |
| **Min** | **0.09** | | **0.10** | | **0.06** | | **0.90** | **0.89** |

# BACKGROUND SAMPLES

## Bay City THORAD Site

**# Background Samples Collected: 26**

**# Background Samples Required: 23** *(NUREG/CR-5849)*

| Sample Name | $^{232}$Th (pCi/g) | Error (2σ) | $^{230}$Th (pCi/g) | Error (2σ) | $^{228}$Th (pCi/g) | Error (2σ) | 230/232 ratio | 232/228 Ratio |
|---|---|---|---|---|---|---|---|---|
| BCBKG02 | 0.36 | 0.07 | 0.46 | 0.34 | 0.41 | 0.31 | 1.29 | 0.88 |
| BCBKG03 | 0.28 | 0.08 | 0.38 | 0.31 | 0.35 | 0.29 | 1.33 | 0.80 |
| BCBKG04 | 0.32 | 0.09 | 0.57 | 0.66 | 0.45 | 0.54 | 1.80 | 0.71 |
| BCBKG05 | 0.43 | 0.10 | 0.70 | 0.51 | 0.52 | 0.40 | 1.64 | 0.82 |
| BCBKG06 | 0.51 | 0.18 | 0.68 | 0.47 | 0.48 | 0.35 | 1.35 | 1.05 |
| BCBKG09 | 0.13 | 0.07 | 0.21 | 0.25 | 0.09 | 0.12 | 1.67 | 1.50 |
| BCBKG10 | 0.26 | 0.09 | 0.38 | 0.39 | 0.23 | 0.26 | 1.43 | 1.17 |
| BCBKG12 | 0.18 | 0.08 | 0.18 | 0.14 | 0.11 | 0.09 | 1.00 | 1.67 |
| BCBKG13 | 0.18 | 0.08 | 0.21 | 0.12 | 0.19 | 0.11 | 1.18 | 0.92 |
| BCBKG15 | 0.23 | 0.07 | 0.12 | 0.15 | 0.32 | 0.31 | 0.50 | 0.73 |
| BCBKG16 | 0.56 | 0.12 | 0.76 | 0.51 | 0.66 | 0.46 | 1.35 | 0.85 |
| BCBKG17 | 0.41 | 0.10 | 0.30 | 0.47 | 0.30 | 0.47 | 0.75 | 1.33 |
| BCBKG18 | 0.10 | 0.08 | 0.18 | 0.21 | 0.16 | 0.19 | 1.88 | 0.62 |
| BCBKG19 | 0.12 | 0.06 | 0.15 | 0.14 | 0.06 | 0.07 | 1.31 | 1.86 |
| BCBKG21 | 0.19 | 0.07 | 0.23 | 0.17 | 0.13 | 0.11 | 1.24 | 1.42 |
| BCBKG22 | 0.20 | 0.07 | 0.36 | 0.39 | 0.13 | 0.18 | 1.83 | 1.50 |
| BCBKG23 | 0.15 | 0.06 | 0.24 | 0.24 | 0.30 | 0.29 | 1.63 | 0.50 |
| BCBKG27 | 0.56 | 0.20 | 0.93 | 0.69 | 0.90 | 0.67 | 1.67 | 0.63 |
| BCBKG29 | 0.43 | 0.19 | 0.65 | 1.22 | 0.43 | 0.89 | 1.50 | 1.00 |
| BCBKG31 | 0.34 | 0.09 | 0.45 | 0.37 | 0.37 | 0.31 | 1.33 | 0.92 |
| BCBKG32 | 0.53 | 0.10 | 0.82 | 0.44 | 0.35 | 0.23 | 1.54 | 1.53 |
| BCBKG34 | 0.52 | 0.10 | 0.64 | 0.43 | 0.52 | 0.36 | 1.22 | 1.00 |
| BCBKG35 | 0.30 | 0.07 | 0.48 | 0.29 | 0.29 | 0.19 | 1.59 | 1.05 |
| BCBKG36 | 0.29 | 0.08 | 0.14 | 0.25 | 0.22 | 0.33 | 0.50 | 1.33 |
| BCBKG39 | 0.41 | 0.08 | 0.41 | 1.16 | 0.41 | 1.16 | 1.00 | 1.00 |
| **Average** | **0.32** | | **Average** | **0.43** | | **Average** | **1.34** | **1.07** |
| **STDEV** | **0.15** | | **STDEV** | **0.24** | | **STDEV** | **0.37** | **0.36** |
| **Median** | **0.30** | | **Median** | **0.38** | | **Median** | **1.35** | **1.00** |
| **Max** | **0.56** | | **Max** | **0.93** | | **Max** | **1.88** | **1.86** |
| **Min** | **0.10** | | **Min** | **0.12** | | **Min** | **0.50** | **0.50** |