

DEPARTMENT OF THE AIR FORCE 377TH AIR BASE WING (AFGSC)



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Mr. John Kieling Hazardous Waste Bureau Chief New Mexico Environment Department (NMED) 2905 Rodeo Park Drive East, Building 1 Santa Fe NM 87505-6303



JUL 1 5 2017

Dear Mr. Kieling

Please find attached the *Risk Assessment Report, Bulk Fuels Facility Spill; Solid Waste Management Unit ST-106/SS-111*, Kirtland Air Force Base, New Mexico, dated July 2017. This report is submitted in response to NMED's Notice of Deficiency dated May 24, 2017 and approval of extension request dated July 5, 2017.

If you have any questions or concerns, please contact Mrs. Holly O'Grady at (505) 853-3484 or at holly.ogrady@us.af.mil or Mr. Scott Clark at (505) 846-9017 or at scott.clark@us.af.mil.

Sincerely

chard W. Dil

RICHARD W. GIBBS, Colonel, USAF Commander

Attachment:

Risk Assessment Report, July 2017, Bulk Fuels Facility Spill, Solid Waste Management Unit ST-106/SS-111.

cc:

NMED, Deputy Secretary (Borrego), letter NMED-GWQB (Agnew, Hunter), letter EPA Region 6 (Ellinger, King), letter SAF-IEE (Lynnes), electronic only AFCEC/CZ (Bodour, Clark, O'Grady), electronic only USACE-ABQ District Office (Dreeland, Phaneuf, Salazar, Sanchez, Simpler), electronic only Public Info Repository, Administrative Record/Information Repository (AR/IR) and File



KIRTLAND AIR FORCE BASE ALBUQUERQUE, NEW MEXICO

RISK ASSESSMENT BULK FUELS FACILITY RELEASE SOLID WASTE MANAGEMENT UNIT ST-106/SS-111 KIRTLAND AIR FORCE BASE, NEW MEXICO

July 2017





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KIRTLAND AIR FORCE BASE ALBUQUERQUE, NEW MEXICO

Risk Assessment Bulk Fuels Facility Release Solid Waste Management Unit ST-106/SS-111

July 2017

Prepared for

U.S. Army Corps of Engineers Albuquerque District Albuquerque, New Mexico 87109

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Prepared by

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with support from

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NOTICE

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RICHARD W. GIBBS, Colonel, U.S. Air Force Commander, 377th Air Base Wing

<u>16 Jul 17</u> Date

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KIRTLAND AIR FORCE BASE 377th Air Base Wing Public Affairs

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PREFACE

This Risk Assessment (RA) Report was prepared by Sundance, Consulting, Inc. (Sundance) for the U.S. Army Corps of Engineers (USACE) under contract number W912PP-16-C-0002. It pertains to the Kirtland Air Force Base (AFB) Bulk Fuels Facility Site at Solid Waste Management Unit (SWMU) ST-106/SS-111, located in Albuquerque, New Mexico. This RA Report was prepared in accordance with the permit issued to Kirtland AFB under the Resource Conservation and Recovery Act (RCRA) and applicable federal, state, and local laws and regulations.

This RA Report presents and describes data from the RCRA Facility Investigation performed at SWMU ST-106/SS-111, which has been used to characterize risks to human and ecological receptors. Ms. Amy Sanchez is the Contracting Officer's Representative for the USACE Albuquerque District, and Mr. Trent Simpler, Professional Engineer, is the Project Manager. Mr. Scott Clark is the Kirtland AFB Restoration Interim Section Chief. This Report was prepared by Rachel Hobbs, Professional Geologist (P.G.) the Sundance Project Manager, and Ryan Wortman, Sundance project geologist with assistance from Cynthia Cheatwood and Dan Hinckley of EA Engineering, Science, and Technology, Inc., PBC.

achel Hobbs

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ACRONYMS AND ABBREVIATIONS

| % | percent |
|-----------|--|
| 1,2-DCA | 1,2-dichloroethane |
| 1,2,4-TMB | 1,2,4-trimethylbenzene |
| 95UCL | 95th percentile upper confidence limit of the mean |
| AFB | Air Force Base |
| AOC | area of concern |
| AvGas | aviation gas |
| BFF | Bulk Fuels Facility |
| bgs | below ground surface |
| CARB | California Air Resources Board |
| COPC | contaminant of potential concern |
| CSEM | conceptual site exposure model |
| CSM | conceptual site model |
| DL | detection limit |
| DQO | data quality objective |
| DTIC | Defense Technical Information Center |
| EDB | ethylene dibromide |
| e.g. | for example |
| EPA | United States Environmental Protection Agency |
| EPC | exposure point concentration |
| ERA | Ecological Risk Assessment |
| ERP | Environmental Restoration Program |
| ESL | ecological screening level |
| etc. | etcetera |
| FFOR | Former Fuel Offloading Rack |
| GWM | groundwater monitoring |
| HC | hydrocarbon |
| HHRA | Human Health Risk Assessment |
| HI | hazard index |
| HQ | hazard quotient |
| HWB | Hazardous Waste Bureau |

ACRONYMS AND ABBREVIATIONS (CONTINUED)

| i.e. INRMP | in other words Integrated Natural Resources Management Plan |
|-------------------|--|
| JP-4 | jet propellant 4 |
| JP-8 | jet propellant 8 |
| KAFB | Kirtland Air Force Base |
| LANL | Los Alamos National Laboratory |
| LNAPL | light non-aqueous phase liquid |
| LUC | land use control |
| MEK | methyl ethyl ketone |
| $\mu g/m^3$ | microgram per cubic meter |
| μg/L | microgram per Liter |
| mg/kg | milligram per kilogram |
| NM | New Mexico |
| NMED | New Mexico Environment Department |
| No. | number |
| NOAA | National Oceanic and Atmospheric Administration |
| NOAEL | no observed adverse effect level |
| Permit | Permit identification number NM9570024423 (NMED, 2010) |
| P.G. | Professional Geologist |
| PVC | polyvinyl chloride |
| 0 | Ouarter |
| QAPjP | Quality Assurance Project Plan |
| | |
| RA | Risk Assessment |
| RCKA | Resource Conservation and Recovery Act |
| KFI Bidgeorest | RCRA Facility investigation |
| Riugeciest | reporting limit |
| RSL | Regional Screening Level |
| ROL | |
| SDWA | Safe Drinking Water Act |
| Site | SWMU ST-106/SS-111 |
| SL | screening level |
| SLERA | screening level ecological risk assessment |
| SLRA | screening level risk assessment |
| SSL | soil screening level |
| Sundance | Sundance Consulting, Inc. |
| SVE | son vapor extraction |

ACRONYMS AND ABBREVIATIONS (CONCLUDED)

| SVM | soil vapor monitoring |
|-----------------|---|
| SVMP | soil vapor monitoring point |
| SWMU | solid waste management unit |
| TSL | tapwater screening level |
| UCL | upper confidence limit |
| USACE | United States Army Corps of Engineers |
| USGS | United States Geological Survey |
| VA | Veterans Affairs |
| VISL | Vapor Intrusion Screening Level |
| VOC | volatile organic compounds |
| Water Authority | Albuquerque Bernalillo County Water Utility Authority |

EXECUTIVE SUMMARY

This Risk Assessment (RA) was prepared by Kirtland Air Force Base (AFB) to evaluate the potential for human and ecological exposure to, and potential risks from such exposures to, contaminants of potential concern (COPCs) related to the historical fuel leak at the Bulk Fuels Facility (BFF) site (Site). Kirtland AFB, which is located in Albuquerque, New Mexico, discovered the fuel release in November 1999 at the Former Fuel Offloading Rack at the BFF and determined through environmental investigations that subsurface fuel releases occurred over a period of decades. Site investigations and interim measures have been ongoing since 1999. This RA uses Site data for soil, soil gas, and groundwater from the Resource Conservation and Recovery Act (RCReA) Facility Investigation (RFI) Report (United States Army Corps of Engineers [USACE], 2017a) to evaluate the potential for exposure and associated risk to identified COPCs.

The investigation and remediation activities at the Site and this RA are being implemented pursuant to the RCRA corrective action provisions in Part 6 of Kirtland AFB's Hazardous Waste Treatment Facility Operating Permit (Permit Number NM9570024423—"Permit"). The Permit identified two BFF-related solid waste management units (SWMUs): ST-106 and SS-111. These SWMUs are comprised of the source area at the Site (ST-106) and the light non-aqueous phase liquid that was identified in the groundwater (SS-111), which are discussed in greater detail in the RFI Report.

The RCRA Permit requires the performance of a RA using the current version of New Mexico Environment Department (NMED) Risk Assessment Guidance for Site Investigations and Remediation (NMED, 2017). This guidance, which was developed by NMED, provides generic screening levels for soil, tapwater, and vapor intrusion for chemicals commonly found at contaminated sites based upon conservative default exposure assumptions for both residential and non-residential land use scenarios. The objective of this RA is to evaluate the potential human health and ecological risks associated with COPCs detected in environmental samples related to the Site.

There are two parts to this RA, the Human Health Risk Assessment (HHRA), and the Ecological Risk Assessment (ERA). The HHRA investigates whether there is any risk to human receptors from contamination at the Site, and the ERA examines whether there is any risk to ecological receptors, such as plants, birds, or mammals, from Site contaminants. For the purposes of the RFI Report, a list of fuel-related analytes was developed for soil, soil gas, and groundwater which are referred to in this RA as COPCs. In total, there are 20 COPCs across all three media. The list of COPCs differs slightly for soil, soil gas, and groundwater; however, ethylene dibromide; benzene, toluene, ethylbenzene, and xylenes constituents; naphthalene; 1,2,4-trimethylbenzene; and 1,2-dichloroethane are common to all three media.

Both the HHRA and the ERA ask two questions to determine whether unacceptable risk exists. The first question is whether there is an exposure pathway for contaminated media to come in contact with human or ecological receptors. For example, if subsurface soil is contaminated, and construction workers disturb the soil while performing their work, they could be exposed to contaminated soil by skin contact, accidental ingestion, or inhalation while they are working.

In this RA, existing land use controls (LUCs) are incorporated in the conceptual site exposure model for current receptors, in that ongoing institutional, engineering, and administrative practices may prevent exposure to current human receptors. However, future exposure scenarios are also considered in the RA, in the case that land use may change, or LUCs may change or be removed in the future. For example, current land use at the BFF is industrial, and is expected to remain industrial for the foreseeable future.

However, in the absence of LUCs, if land use were to change in the future, the BFF could become a residential area. Hypothetical future on-Site residential receptors are evaluated in the RA to inform risk management decisions, and assess unrestricted site use.

Once the complete and potentially complete exposure pathways are identified, the next question is whether the contamination is present at levels that could cause an unacceptable risk to human or ecological receptors, thus not protecting human health and the environment.

To evaluate potential risk to human receptors, both carcinogenic and non-carcinogenic COPCs are evaluated in the HHRA. NMED Guidance (2017) sets the target level for carcinogenic risk equal to or less than 1×10^{-5} , meaning that the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a potential carcinogen at the BFF is less than one in 100,000. For non-carcinogenic contaminants, NMED sets a hazard quotient (HQ) target of 1.0, below which, it is unlikely sensitive populations would experience adverse health effects (NMED, 2017).

To evaluate potential risk to ecological receptors, maximum concentrations of COPCs are evaluated in comparison to ecological screening levels (SLs). Similar to the HHRA, NMED sets a HQ target of 1.0, below which, it is unlikely sensitive populations would experience adverse ecological effects (NMED, 2017). If the HQ exceeds 1, additional evaluation is warranted.

ES-1 Human Health Risk Assessment Results

The HHRA concludes there are no estimated unacceptable risks to current human receptors from contaminated soil, soil gas, or groundwater either on-Site (in other words, within the area of investigation on-Site) or off-Base as summarized in Table ES-1.

The HHRA identified potential unacceptable risks for exposure to groundwater under a future domestic use scenario both on-Site and off-Base, and for on-Site soil gas via vapor intrusion to indoor air under a future hypothetical on-Site residential scenario. However, current interim measures prevent exposure to impacted groundwater, and residential use is prevented on-Site. As a result, no additional interim measures are recommended. Consideration of a LUC in any final remedy may be warranted to prevent residential use on-Site until soil gas concentrations have reached acceptable levels.

ES-1.1 Soil

Complete and potentially complete soil exposure pathways were identified for the on-Site current/future commercial/industrial workers at the BFF, future construction workers at the BFF, and future hypothetical residents at the BFF. No contaminated surface or mixed zone soil is present off-Base, therefore, there are no complete or potentially complete exposure pathways for impacted soil for off-Base receptors. Maximum detected concentrations in soil from 0 to 10 feet below ground surface (bgs) were below NMED soil screening levels (SSLs) for commercial/industrial, construction worker, and residential receptors. Total soil risks based on the maximum detected concentrations were at or below NMED target risk levels. No unacceptable risk was identified based on exposure to on-Site surface or mixed zone soil within the BFF. The maximum detected concentration of lead in soil (0 to 10 feet bgs) was below the NMED SSL. No additional interim measures for soils (0 to 10 feet bgs) are recommended to address human health risks.

ES-1.2 Soil Gas

Fuel contaminants can volatilize from contaminated soil into soil gas, which may migrate into indoor air spaces if buildings are present, or may be released to ambient air. The migration of vapors from subsurface sources to indoor air within buildings is defined as vapor intrusion. NMED has developed Vapor Intrusion Screening Levels (VISLs) for areas where buildings currently exist or may be built in the future above contaminated soil gas.

On-Site Soil Gas

The soil gas exposure pathway via vapor intrusion is potentially complete for current/future commercial/industrial workers at the BFF. Although unlikely, a future hypothetical on-Site residential scenario was evaluated to inform risk management decisions. Only four buildings (Buildings 1044, 1049, 2426, and 1055) at, or adjacent to, the BFF are regularly occupied during business hours. Results of the risk characterization based on exposure point concentrations indicate that no unacceptable risk exists for current/future commercial/industrial workers at the BFF via the vapor intrusion pathway. Under the hypothetical future on-Site resident scenario, the total carcinogenic risk slightly exceeded NMED's target cancer risk level of 1x10⁻⁵.

Off-Base Soil Gas

There are currently no buildings in the area where soil gas has been detected off-Base, and as a result the exposure pathway to current receptors is incomplete. However, because COPCs in soil gas have been detected in the off-Base area within and adjacent to Bullhead Park, vapor intrusion was considered a potentially complete pathway under a future hypothetical off-Base residential scenario in the park area. Evaluating a future hypothetical residential receptor in Bullhead Park provides a conservative assessment of any current/future recreational visitors to the park, current/future commercial/industrial workers at the Veterans Affairs complex, or current/future residents beyond Ridgecrest Drive. Maximum detected concentrations in off-Base soil gas were below NMED residential soil gas VISLs. Total risks based on maximum detected concentrations in soil gas were below NMED target levels for the off-Base resident via the vapor intrusion pathway. No interim measures for off-Base soil gas are recommended.

Soil Gas to Ambient (Outdoor) Air

In addition to the vapor intrusion pathway, the HHRA also looked at potential risks from releases of soil gas to ambient air and potential uptake of soil gas by plants off-Base. Any release of soil gas COPCs into the atmosphere would be immediately diluted by ambient outdoor air movement. In addition, there is no risk to receptors from uptake by plants (gardening). The amount of soil gas at the shallow depths where garden plant roots would be found is negligible, therefore uptake of COPCs in soil gas via plant was considered an incomplete pathway.

ES-1.3 Groundwater

Impacted groundwater at the BFF is not currently used as a drinking water source and LUCs are in place to prevent exposure. Therefore, there are currently no complete exposure pathways for groundwater on-Site or off-Base. In order to inform risk management decisions and evaluate an unrestricted use scenario, domestic use of groundwater was evaluated on-Site and off-Base. Total risks calculated using NMED tapwater regional screening levels exceeded NMED target levels.

The New Mexico Office of the State Engineer issued a well drilling moratorium associated with BFF corrective action activities on February 9, 2017. The intent of this moratorium is to protect human health and prevent interference with ongoing corrective action activities by restricting the drilling of new wells and the transfer of water rights within the boundaries specified by NMED. COPCs have not been detected in off-Base water supply sentinel wells at concentrations exceeding drinking water standards. In addition, Kirtland AFB drinking water supply wells are sampled monthly and no COPCs exceeding SLs have been detected.

Based on the results of the HHRA, the interim measures and LUCs are needed to prevent direct contact with groundwater.

ES-2 Ecological Risk Assessment Results

The ERA concluded there is no risk to ecological receptors from soil, soil gas, or groundwater at the Site. There is no exposure pathway to ecological receptors from contaminated groundwater because groundwater is approximately 480 feet bgs. The potential exposure pathways to ecological receptors are through surface soil (0 to 1 foot bgs), mixed zone soil (0 to 10 feet bgs), and soil gas.

Plants and animals at the Site may be exposed to COPCs in surface soil through direct contact, accidental ingestion of soil, or ingestion of food items contaminated through bioaccumulation. Burrowing animals, such as prairie dogs and burrowing owls, could also contact mixed zone soil. Contaminants released to soil could volatilize into air voids in the soil column such as animal burrows created by burrowing mammals, birds, and reptiles. Soil gas is evaluated as a complete exposure pathway through burrow air; specifically, for the burrowing owl, which is listed as a federal species of concern.

Review of concentrations in the contaminated soil remaining on-Site indicates only lead concentrations exceeded ecological SSLs in soil. Although maximum concentrations of lead exceeded no-effects-based SLs, evaluation of other parameters such as mean and median concentrations within the Site suggest exceedances are limited in extent, or within background concentrations. In addition, the maintenance of the BFF for Site operations limits the amount and quality of ecological habitat present, and ecological exposures are expected to be minimal for this reason. The mean and median concentrations at the Site are at background concentrations, indicating the lead concentrations are naturally occurring. Given the limited extent of concentrations exceeding no-effects SLs and the limited ecological exposure potential, no unacceptable ecological risk exists at the Site due to COPCs in soils.

The ERA concluded there is no unacceptable ecological risk from soil gas when burrowing owls are considered as ecological receptors. Concentrations of COPCs in on-Site soil gas were less than available ecological SLs. Maximum HQs for the eight volatile organic compounds with SLs were less than 0.3, indicating concentrations are low compared to effect levels. In addition, evaluating soil gas concentrations at the 15 to 25 feet bgs depth interval is conservative when compared to the typical maximum burrow depth of the burrowing owl (3 feet bgs). Soil gas concentrations at typical shallow burrow depths are expected to be less due to attenuation. Therefore, no further action is proposed for soil gas concentrations in on-Site soils for protection of ecological receptors.

1 INTRODUCTION

This Risk Assessment (RA) was prepared by Kirtland Air Force Base (AFB) to evaluate the potential for human and ecological exposure to contaminants of potential concern (COPC) and any associated potential human health effects and ecological risks related to fuel releases at the Bulk Fuels Facility (BFF) site (Site). Kirtland AFB, located in Albuquerque, New Mexico, discovered the release in November 1999 at the Former Fuel Offloading Rack (FFOR) at the BFF and determined through environmental investigations that subsurface fuel releases occurred over a period of decades, as described in Section 2 of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Report (United States Army Corps of Engineers [USACE], 2017a). Resulting from these investigations, two solid waste management units (SWMU) identified as ST-106 and SS-111 were created. These SWMUs are comprised of the source area at the Site (ST-106) and the light non-aqueous phase liquid (LNAPL) identified in the groundwater (SS-111), and are discussed in greater detail in the RFI Report (USACE, 2017a). Site investigations and interim measures have been ongoing since 1999. This RA uses Site data for soil, soil gas, and groundwater collected between 2014 and 2016 to evaluate the potential for exposure and associated risk to COPCs.

Part 6.2.4.5 of Kirtland AFB's Hazardous Waste Treatment Facility Operating Permit (Permit Number [No.] NM9570024423—"Permit") allows the Permittee to submit a RA report during the investigation stage or with the Corrective Measures Evaluation Report. Kirtland AFB chose to submit this RA at the investigation stage to identify any potential human health or ecological risks at this phase of the Site cleanup (that is, near the end of the investigation stage and while interim measures are being implemented).

1.1 Risk Assessment Objectives

As stated above, the objectives of this RA are to evaluate the potential human health and ecological risks associated with COPCs detected in environmental samples related to the Site. It is noted that the Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA) represent a site-specific RA for the BFF and only evaluate chemicals associated with the BFF. This site-specific RA includes samples collected on-Site (in other words [i.e.], within the area of investigation on-Site) and off-Base. The results of the RA will inform regulators and the public regarding present-day exposures and potential risks, and will guide future corrective action activities at the Site, if necessary, to reduce risks.

1.2 Regulatory Context

The investigation and remediation of the Site are being implemented pursuant to the RCRA corrective action provisions in Part 6 of Kirtland AFB's Permit. The Permit is enforced by the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB), which is authorized to administer RCRA by the United States Environmental Protection Agency (EPA). Part 6 of the Permit provides requirements for investigating the nature and extent of contamination from SWMUs and areas of concern (AOC), establishes cleanup criteria, provides for the implementation of interim measures, details RA requirements, and establishes procedures for identifying and implementing any necessary corrective measures.

The RFI Report covers activities conducted under Part 6.2.2.1 of the Permit, which sets forth requirements for site investigations. The RFI Report provides the results from 16 years of investigation activities into the nature and extent of environmental media contaminated by the Site releases and

describes the interim measures that have been implemented to-date at the Site. The RFI Report was submitted to the NMED HWB on January 31, 2017 (USACE, 2017a). This RA uses data collected in support of the RFI and the interim measures, and demonstrates sufficient data have been collected to assess potential risk to human health and the environment.

This RA follows NMED's *Risk Assessment Guidance for Site Investigations and Remediation* (NMED, 2017). Typically, RAs are performed to determine risks under "baseline" or non-remediated conditions. However, appreciable removal of contamination and contaminated media has already occurred and is ongoing in the form of interim measures. Part 6.2.2.2.12 of the Permit explains that interim measures can be implemented if it is determined "such measures are necessary to reduce or prevent migration of hazardous wastes or hazardous constituents that have, or may result in, an unacceptable human or ecological receptor exposure to hazardous waste or hazardous constituents while long-term corrective action remedies are being evaluated and implemented." An interim measure is an important tool for protecting human health and the environment while other parts of the RCRA process are ongoing.

The following three community water systems, which are near the footprint of the Site groundwater plumes shown in Figure 1-1, are regulated under the Safe Drinking Water Act (SDWA):

- The Albuquerque Bernalillo County Water Utility Authority (Water Authority) provides drinking water to Bernalillo County and residential housing on-Site. The Water Authority operates the Ridgecrest Drive (Ridgecrest) well field, the closest municipal drinking water supply wells to the Site.
- The Veterans Affairs (VA) Medical Center owns and operates a drinking water supply well that serves the Medical Center and associated buildings. This well is located to the east of the Site.
- Kirtland AFB provides drinking water for on-Site industrial and office uses, the off-Base Maxwell housing complex, and the Child Development Center.

New Mexico (NM) sought and was granted primary authority for public water systems and has adopted state drinking water rules (NM Code R. §§ 20.7.10.1 - 2017.10.704). These rules are enforced by the NMED Drinking Water Bureau. All three community water systems are subject to SDWA requirements. Current and future water use is discussed in more detail in the RFI Report (USACE, 2017a; Section 7).

1.3 Summary of Site Contamination and Contaminant Transport

The RFI Report provides a detailed account of the past and current nature and extent of contamination and a Conceptual Site Model (CSM) detailing the movement of contaminants (USACE, 2017a). The following summary of the source of Site contamination and subsequent contaminant transport provides important context for the RA.

The source of contamination for the Site is historical fuel releases from the Kirtland AFB FFOR delivery infrastructure, specifically underground pipelines. These below-grade releases at the Site moved downwards through the soil until reaching groundwater located approximately 480 feet below ground surface (bgs). As discussed in RFI Report Section 7, and illustrated in the RFI Report as well as Figure 1-2 of this report, LNAPL migrated downward via a tortuous pathway, with lateral spreading occurring when less-permeable strata were reached (USACE, 2017a).

Fuel that leaked from the underground pipeline included aviation gasoline (AvGas), jet propellant 4 (JP-4), and jet propellant 8 (JP-8; USACE, 2017a). As outlined in the RFI Report, AvGas was the primary fuel stored and used at Kirtland AFB until 1975. Ethylene dibromide (EDB) was an additive used only in AvGas, so its presence is limited to before 1975 (USACE, 2017a). After 1975, Kirtland AFB transitioned to jet propellant fuels. Collectively, these types of fuel are referred to as LNAPL because they have a lower density than water and are comprised of compounds that are largely insoluble in water. In other words, if LNAPL infiltrates into the ground and reaches the water table, it will form a layer on top of the water table while the more soluble constituents dissolve into the groundwater. In addition, the volatile constituents of LNAPL can exist in vapor form in the air-filled pore space of soil (referred to as soil vapor in the RFI Report). The term "soil gas" is used by NMED in reference to this pore space in defining risk-based screening level concentrations, and the term is used in this report.

The releases of LNAPL from the fuel delivery infrastructure resulted in fuel-related contamination of environmental media in the vadose zone (the area from the ground surface to the water table) and in groundwater. Once released into this environment, fuel and constituents of fuel may exist in four phases:

- 1. Adsorbed (fuel constituents attached to soil particles)
- 2. LNAPL residual fuel (free product)
- 3. Soil gas (volatile fuel constituents as vapor in soil air pockets)
- 4. Dissolved (fuel constituents in groundwater and pore water in the vadose zone).

Dispersion, diffusion, and other transport mechanisms discussed in the RFI Report have been the factors responsible for the migration of fuel and its constituents (including EDB, benzene, and other fuel constituents) through the vadose zone and subsequently off-Base (USACE, 2017a). A distinct layer of floating LNAPL on the water table has not been consistently measured at the Site since 2012. Interim measures (for example [e.g.], soil removal at the source in 1999, and skimmer system and bioslurping from about 2008 through 2011) were implemented early on and reduced the amount of free product contributing to contamination in the environment. A significant factor impeding measurement of LNAPL has been a rising water table that has been documented from the early 20th century to the end of 2015 (USACE, 2017a; Section 5). Thus, present-day contamination is limited to dissolved constituents in groundwater (e.g., EDB, benzene, and other dissolved fuel constituents; see Figure 1-1), LNAPL that has moved into soil at the boundary of the water table, and soil gas generated from LNAPL, soil, and groundwater which exists at a depth of approximately 500 feet bgs.

The RFI Report describes the nature and extent of each form of contamination in the vadose zone and groundwater (USACE, 2017a). Table 1-1 summarizes the results of the RFI Report (USACE, 2017a) and describes the types of contamination present at the Site, both on-Site and off-Base.

Describing the nature and extent of contamination at the Site requires an understanding of possible chemical and biological transformations of LNAPL constituents, and of the relevant transport processes related to constituent migration. That is, it is important to understand the degradation of organic contaminant(s) through inorganic and biological chemical processes in the environment, and the processes by which contaminant(s) move away from the source area. For example, volatile hydrocarbon (HC) components of LNAPL are biologically degraded in soil pore spaces by indigenous bacteria under both aerobic and anaerobic conditions. This is especially true at the Site, where results of quarterly soil gas monitoring events and the rebound and respiration testing (USACE, 2017a; Section 4) indicate that

aerobic biodegradation is active in many areas of the vadose zone. Biodegradation has played a substantial role in remediating fuel constituents at the Site before, during, and after soil vapor extraction (SVE) operation. The SVE systems generally have the effect of oxygenating areas of high soil vapor concentrations to promote aerobic biodegradation. However, the SVE system has also had a drying effect on the vadose zone that might have limited biodegradation in certain areas (USACE, 2017a; Section 4). Microbial analyses performed on groundwater samples at the Site in 2013 and 2015 (USACE, 2017a; Section 6) indicate that microbial-remediated reductive debromination of EDB is occurring in-situ in groundwater, and that benzene is also being microbially degraded in groundwater.

Additionally, as some fuel HCs are metabolized, enzymes are produced that can facilitate the degradation of halogenated HC additives, such as EDB, that are commonly more resistant to biodegradation. This process is known as co-metabolism. The agreement between independent measures of anaerobic EDB degradation (excess bromide and ethene/ethane) at the Site suggest that large quantities of EDB may have degraded at the Site, possibly aided by the co-metabolism of benzene while microorganisms degraded fuel HCs within the source area and just downgradient of the benzene plume. The fate and transport properties of LNAPL and the specific constituents of LNAPL are discussed in more detail in Sections 5 and 7 of the RFI Report (USACE, 2017a).

1.4 Interim Measures

As mentioned earlier and discussed in detail in the RFI Report, Kirtland AFB has completed a number of interim measures in the source area and is continuing to implement interim measures to address COPCs in soil, soil gas, and groundwater (USACE, 2017a). Interim measures as defined in the Permit include, "actions necessary to minimize or prevent the further migration of contaminants and limit actual or potential human and environmental exposure to contaminants while long-term corrective action remedies are evaluated." These measures are important for the RA because of their role in reducing or eliminating exposure to some of the contaminated media. The following interim measures have been implemented:

- Soil Removal: Three separate excavation events removed a total of 4,822 tons (3,027 cubic yards) of contaminated soil to achieve NMED's residential screening levels (SL; USACE, 2017a; Section 4).
- **Removal of Source Infrastructure:** Removal of the source area pipelines and replacement of fueling infrastructure eliminated the source of the release (USACE, 2017a; Section 2).
- Soil Vapor Extraction: SVE systems operated at the Site from 2003 through 2015. These systems disrupted the transport pathway for soil gas by reducing the mass of volatile contaminants. These SVE systems removed approximately 775,000 equivalent-gallons of jet fuel. Subsequent to deactivation of the SVE system in Quarter (Q) 2 2015, vadose zone soil gas HC concentrations have been returning to spatial patterns reflecting non-flow conditions (USACE, 2017a; Section 4).
- LNAPL Skimmer System and Bioslurping: The LNAPL skimmer system and bioslurping removed most of the floating LNAPL from the water table. This removal limited LNAPL constituents from volatilizing into soil gas or dissolving into groundwater (USACE, 2017a; Section 5). The skimmer system, used from 2007 to 2008, removed approximately 280-gallons of LNAPL. Bioslurping, used from early 2008 until late 2011, removed 225,000 equivalent-gallons of fuel (this number is included in the total amount removed by SVE).

- **Groundwater Treatment System:** The only interim measure operating at the time of this RA is the groundwater treatment system. This system currently includes three off-Base extraction wells which pump groundwater from the dissolved-phase EDB plume to an on-Site treatment facility. This interim measure is designed to collapse, treat, and hydraulically-control the downgradient dissolved-phase EDB plume (USACE, 2017a: Section 6).
- **Groundwater Monitoring:** Continual monitoring of on-Site and off-Base groundwater monitoring wells, and drinking water supply wells prevents exposure to current receptors. This monitoring includes several different types of wells listed below:
 - Groundwater Monitoring Program: One-hundred thirty four groundwater monitoring wells are monitored regulary to delineate the nature and extent of contaminants in groundwater as described in the RFI Report (USACE, 2017a). Shallow and deep sentinel groundwater monitoring wells on-Site and off-Base are sampled quarterly to ensure early detection of potential dissolved COPCs prior to reaching drinking water supply wells. The majority of off-Base public drinking water supply wells are operated by the Water Authority. The two Water Authority wells closest to the dissolved-phase EDB plume are Ridgecrest-3 and Ridgecrest-5 (Figure 1-1). In addition, the United States Geological Survey (USGS) performs monitoring of sentinel wells on a quarterly basis (Figure 1-1).
 - *Kirtland AFB Water Supply Wells:* There are three Kirtland AFB drinking water supply wells AFB (KAFB-003, KAFB-015, and KAFB-016) near the EDB plume, which are monitored monthly when operational to ensure COPCs have not reached the on-Site drinking water supply system (Figure 1-1). All analytical results have been below project SLs. In addition, sentinel groundwater monitoring wells are located between the groundwater contaminant plume and the Kirtland AFB supply wells to provide early detection of contaminants.
 - VA Medical Center Supply Well: The VA Medical Center abuts Kirtland AFB to the north and has one drinking water supply well, which is sampled monthly (Figure 1-1). Analytical results at this location have historically been nondetect or below project SLs for project COPCs. Additionally, there are sentinel groundwater monitoring wells located between the groundwater contaminant plume and the VA Medical center supply well to provide early detection of contaminants.
 - *Privately-owned Irrigation Wells:* There are two privately-owned water supply wells in the vicinity of the plume, which are used primarily for irrigation (Figure 1-1). One of these is sampled quarterly, and results are reported to NMED. All analytical results have been below project SLs. In addition, groundwater monitoring wells are located between these irrigation wells and the EDB plume to provide early detection of contaminants.
- Land Use Controls: Current land use controls (LUC) include general access restrictions for Kirtland AFB and the BFF, and restrictions on intrusive activities within the Site in accordance with the Air Force Work Clearance Request review process. At the direction of NMED, the Office of the State Engineer has restricted the installation of private water supply wells within a 500-foot buffer around the footprint of the dissolved-phase EDB plume. LUCs considered in this RA are discussed in more detail in Section 4.2.

1.5 Organization of this Document

The remainder of this document includes the following:

- Section 2 Overview of the Risk Assessment Process A description of NMED's HHRA and ERA methodologies, including information related to the human health and ecological SLs applied in the RA.
- Section 3 Environmental Data and Data Quality A description of the environmental sampling by which the soil, soil gas, and groundwater data used in the RA were acquired, and how the data were incorporated in the RA.
- Section 4 Human Health Risk Assessment Exposure Assessment This section provides includes identification of potentially complete exposure pathways for soil, soil gas, and groundwater for on-Site and off-Base locations.
- Section 5 Human Health Risk Assessment Risk Characterization This section includes a detailed risk characterization and uncertainty analysis, and presents the conclusions and recommendations of the HHRA.
- Section 6 Ecological Risk Assessment

This section provides the results of the ERA, consisting of Phase I, Phase II Tier 1, and Phase II Tier 2 assessments.

2 OVERVIEW OF THE RISK ASSESSMENT PROCESS

The HHRA and ERA are conducted in accordance with NMED's *Risk Assessment Guidance for Site Investigations and Remediation* (NMED, 2017). NMED's Guidance incorporates readily obtainable Site data and utilizes methods from various EPA RA Guidances. The NMED Guidance is divided into two volumes:

- "Volume 1—Tier I Soil Screening Guidance Technical Background Document" discusses the methodology used to derive chemical-specific soil SLs (SSLs), tapwater SLs (TSLs), and vapor intrusion SLs (VISLs). In addition, guidance is provided to assist in identifying and evaluating appropriate exposure pathways and human or ecological receptors. Finally, it provides generic SSLs, TSLs, and VISLs for chemicals commonly found at contaminated sites based on default exposure parameters under residential and non-residential land use scenarios.
- "Volume 2—Screening Level Ecological Risk Assessments" describes NMED's procedure for the evaluation of ecological risk.

This RA is a screening level RA (SLRA) for both human and ecological receptors. As such, the focus of this SLRA is to evaluate whether 1) potentially complete exposure pathways could exist now or in the future for human or ecological receptors, and 2) to determine whether concentrations of analytes measured in environmental media present a risk to those receptors by comparison to NMED SLs and target risk values (NMED, 2017). SLs are media-specific and scenario-specific contaminant concentrations at or below which exposure would not be expected to result in an unacceptable risk. This SLRA answers the following questions:

- What are the sources, distribution, and concentrations of contaminants in soil, soil gas, and groundwater?
- Who could potentially come in contact with the contaminated soil, water, or air?
- Are the contaminant concentrations high enough to potentially cause an unacceptable risk to humans or ecological receptors (e.g., plants and wildlife)?
- Is further action needed to prevent exposure or cleanup the contamination?

As stated previously, this SLRA has been performed near the end of the investigation stage and while interim measures are being implemented. The objective of a SLRA is simply to indicate whether further evaluation, sampling, or other actions may be necessary (e.g., use of institutional or engineering controls to prevent exposure).

The Permit cites NMED Guidance, which specifies the steps that must be followed to perform a SLRA for both human and ecological receptors. These steps and their location in this RA include:

- Data quality assessment for SLRA (see Section 3)
- Development of human and ecological Conceptual Site Exposure Models (CSEM) to determine complete and incomplete exposure pathways (see Sections 4 and 6)

- Comparison of Site data with SLs and calculation of cumulative risk estimates to determine whether an unacceptable risk to human or ecological receptors from complete or potentially complete exposure pathways exists (see Sections 5 and 6)
- Assessment of uncertainties (see Sections 5.2 and 6.4).

NMED SLs incorporate a number of assumptions. Therefore, it is important to understand how the SLs are used in the SLRA, how they were developed, and why they are protective of human health and the environment. These topics are discussed in the following sections.

2.1 Human Health Risk Assessment

NMED uses a two-step approach for a HHRA. Step 1 involves comparing maximum COPC concentrations to the appropriate NMED-developed SLs. NMED SLs for soil, soil gas, and groundwater have been developed using conservative exposure assumptions. The exposure assumptions used in SL development are more likely to overestimate than underestimate potential risk (NMED, 2017). NMED SLs were derived from equations combining exposure assumptions with toxicity criteria following EPA's preferred hierarchy of toxicological data. NMED also considered different exposure scenarios, such as residential and commercial/industrial, and developed receptor-specific SLs for the different exposure scenarios. Figure 2-1 summarizes NMED's overall HHRA process. Step 1 of the NMED HHRA process uses maximum COPC concentrations and the appropriate media- and receptor-specific SL to calculate cumulative risks to human receptors. These cumulative risk estimates are compared to NMED target risk levels for carcinogenic and non-carcinogenic risks.

If the risk calculations performed using maximum concentrations of each COPC exceed NMED's target risk levels, the next step (Step 2) in the risk evaluation involves development of statistical estimates of average exposure point concentrations (EPCs). Section 3 includes a detailed analysis of the Site data to support calculation of EPCs.

The chemical-specific NMED SLs are based on a 1×10^{-5} target risk for carcinogens (risk of cancer occurrence is 1 in 100,000), or a hazard quotient (HQ) of 1.0 for non-carcinogens. A HQ is the ratio between an estimated exposure concentration (based on site data and exposure assumptions) and a concentration that is not expected to result in an adverse health effect.

2.1.1 Summary of NMED Human Health Screening Levels

NMED SLs are developed for residential, commercial/industrial, and construction exposure scenarios. Routes of exposure include dermal (absorption through skin contact with contaminants in soil or water), inhalation (absorption through the lungs from breathing), and ingestion (absorption through the gastrointestinal tract) exposures as appropriate to the exposure scenario (NMED, 2017). The assumptions NMED used to develop SLs for various exposure scenarios are described below. Section 2 in NMED's Guidance (NMED, 2017) has more detailed descriptions of the methods used to develop NMED SLs. NMED has also developed SSLs related to protection of groundwater from residual contamination in soil. Because near-surface soil remediation is complete and groundwater protection SLs are not employed in the HHRA.

2.1.1.1 Soil Screening Levels for Residential Exposure Scenarios

Residential exposures are assessed with SSLs based on child and adult human receptors. The child receptor is used as the basis for calculating SSLs for non-carcinogenic effects, and both child and adult exposures are used to assess cancer risk over an individual's lifetime. Residential exposure includes three soil exposure pathways: direct ingestion, dermal absorption, and inhalation of volatiles and dust at soil depths ranging from ground surface to 10 feet bgs. A resident is assumed to occupy a home at a site 24 hours per day for 350 days per year for 26 years (NMED, 2017; Section 2). Residential SSLs are incorporated in this HHRA to evaluate exposure to future hypothetical on-site residents and assess the unrestricted use scenario.

2.1.1.2 Soil Screening Levels for Commercial/Industrial and Construction Exposure Scenarios

Non-residential land use exposures include all industrial and commercial land uses and focuses on two types of human receptors: a commercial/industrial worker and a construction worker. These types of workers are representative of on-Site workers. These SSLs are based on adult exposure only. The commercial/industrial worker is assumed to be a long-term (i.e., 25 years) receptor exposed to surface soil (0 to 1 foot bgs) on a regular basis during the work week. The construction worker is assumed to perform instrusive operations (i.e., excavation, trenching, etcetera [etc.]) and be exposed to surface and subsurface soil (i.e., 0 to 10 feet bgs) during the entire workday for a single project of one year's duration (NMED, 2017; Section 2). The application of commercial/industrial and construction scenarios allows for appropriate screening of potential soil exposures for both surface and subsurface soils, respectively, consistent with NMED's Guidance (NMED, 2017).

2.1.1.3 Tapwater Screening Levels

NMED TSLs are used in this HHRA to evaluate risk from exposure to contaminated groundwater. The TSLs are for domestic use (as tapwater) and assume ingestion and dermal contact with contaminants in domestic/household water and inhalation of volatiles through showering or dish washing (NMED, 2017; Section 2). TSLs are used in this HHRA because the fuel contamination is in an aquifer that is currently used by public drinking water systems, although any public supply wells and privately-owned irrigation wells are located outside the impacted area of the aquifer.

2.1.1.4 Vapor Intrusion Screening Levels

Vapor intrusion occurs when soil gas migrates from subsurface media (i.e., soil and/or groundwater) through pore spaces in the vadose zone and building foundations into indoor air, potentially exposing residential and commercial/industrial receptors to volatile COPCs. VISLs have been developed by NMED to address areas where buildings may exist above contaminated soil gas. The VISLs were developed for both soil gas (when the vapor is still in the ground beneath a building) and indoor air (vapor in a building). VISLs are evaluated if 1) there are compounds present in subsurface media that are sufficiently volatile and toxic, and 2) there are existing or planned buildings where exposure could occur. A chemical is considered to be sufficiently volatile if its Henry's Law Constant is 1 x 10⁻⁵ units of moles per cubic meter for air to moles per cubic meter for water or greater and its molecular weight is approximately 200 grams per mole or less. Section 7 of the RFI Report lists the physical properties of contaminants evaluated in the RFI Report and shows that most of the COPCs evaluated in this HHRA are sufficiently volatile (USACE, 2017a). Commercial/industrial and residential soil gas VISLs are used in this HHRA to evaluate exposure to COPCs in soil gas.

2.1.2 Ecological Risk Assessment

Part 6.2.3.7 of the RCRA Permit requires the evaluation of potential ecological risk for any SWMU or AOC where there has been a release of contaminants. As required by the Permit, the ERA follows Volume 2 of NMED's Guidance (NMED, 2017), with additional documents as cited in Section 6. The purpose of the ERA is to evaluate the potential adverse effects that chemical contamination could have on plants and animals on or near the site. Furthermore, it provides a means to organize and present scientific information in a logical format for risk managers (NMED, 2017).

NMED's ERA process includes a Phase I Qualitative Assessment, and a Phase II Quantitative Assessment. Phase II consists of Tier 1 and Tier 2 screening level ERA (SLERA). The Tier 1 SLERA determines whether the site needs to have the toxicity data and risk characterization assessed in more detail. The Tier 2 SLERA findings are used to determine whether the site requires a Quantitative Site-specific Risk Assessment (NMED, 2017).

The Phase I Qualitative Assessment begins with a scoping assessment that reviews the biological and physical properties of the site, including environmental setting, land use, contaminant fate and transport mechanisms, and the area's habitats, ecological receptors, and exposure pathways. This information is used to support development of a preliminary CSEM to determine if ecological risk is possible. If it is, then a Phase II, Tier 1 SLERA is implemented by selecting representative screening ecological receptors and exposure pathways to determine exposure estimates for effects assessment and risk characterization. If warranted, a Phase II, Tier 2 SLERA is implemented, which refines the toxicity assessment using more realistic estimates of exposure, such as maximum, mean and median concentration values, as well as using area use factors to provide a refined risk characterization.

3 ENVIRONMENTAL DATA AND DATA QUALITY

The foundation for any RA is the quality and quantity of data available to determine potential risk. The specific analytes evaluated in this RA are identified in Section 3.1. The data used in the RA include soil data collected on-Site and groundwater and soil gas data collected both on-Site and off-Base; these data are discussed in Section 3.2. Data quality attributes are discussed in Section 3.3, Data Evaluation.

3.1 Selection of Contaminants of Potential Concern

Section 3 of the RFI Report examined the list of sampled analytes throughout the history of Site investigations. NMED's RA Guidance states, "...*identification of contaminants of potential concern should begin with existing knowledge of the process, product, or waste from which the release originated*" (NMED, 2017). Since the sources of contamination at the Site are AvGas, JP-4, and JP-8; the list of fuel-related constituents is known. For the purposes of the RFI Report, a list of fuel-related analytes was developed for soil, soil gas, and groundwater, and referred to in this RA as COPCs (see Table 3-1). It should be noted that not all COPCs were sampled in every medium (e.g., lead is not volatile within the expected temperature and pressure ranges at the Site, and was not analyzed in soil gas samples). In total, there are 20 COPCs across all three media. The list of COPCs differs slightly for soil, soil gas, and groundwater; however, EDB; benzene, toluene, ethylbenzene, and xylenes; naphthalene; 1,2,4-trimethylbenzene (1,2,4-TMB); and 1,2-dichloroethane (1,2-DCA) are common to all three media. Analytes previously removed from sampling suites during optimization of the groundwater monitoring program were not included as COPCs (e.g., the 97 analytes removed from the groundwater monitoring program in 2015 [USACE, 2017a]).These analytes were nondetect and/or below SLs for the previous eight quarters of analysis.

3.2 Environmental Data Evaluated in the Risk Assessment

The following sections describes the environmental data in each media that were evaluated as part of this RA.

3.2.1 Soil

Several separate on-Site soil investigations have been conducted between 2000 and 2014, as described in Section 4 of the RFI Report (USACE, 2017a). Of the different soil samples acquired during this period, two sets of soil data are relevant for assessing potential risk from present-day exposure to soil on-Site: 1) soil data from unexcavated (non-removal) areas proximal to the release area, and 2) post-excavation soil confirmation data collected after the 2014 soil removal (USACE, 2017a). The 2014 post-excavation soil data are particularly relevant to the RA because they provide the most recent shallow soil data within 20 feet of the ground surface. Soil samples collected as part of well installation were not included in this RA because they were collected from soil at depths not relevant for RA, or were part of earlier sample events and represent soil that has been removed.

The soil dataset includes samples from 14 soil boring locations that contained exceedances of the NMED 2012 SSLs, but were not excavated or were only partially excavated during the 2014 excavation activities (USACE, 2017a) and post-excavation confirmation samples collected between 0 to 10 feet bgs. Figures 3-1 and 3-2 illustrate the 14 soil sample locations where excavation was not possible due to existing underground utilities and infrastructure. Sixty-three samples were collected from the sidewalls and floor of the excavation. Twelve additional step-out confirmation samples were collected for semi-volatile organic compounds, 2-methylnaphthalene and naphthalene, when

concentrations exceeded the NMED 2012 SSLs (75 samples total were analyzed for 2-methylnaphthalene and naphthalene). 1-Methylnaphthalene was not included in the analysis for the original 63 confirmation samples, but was included in the method used to analyze the step-out confirmation samples (12 samples total analyzed for 1-methylnaphthalene). The post-excavation sample locations are presented in Figures 3-1 and 3-2 and sample results are summarized in Table 3-4.

Concentrations of COPCs in surface soil collected from 0 to 1 foot bgs are summarized in Table 3-2 and are compared to commercial/industrial worker SSLs in Section 5 per NMED RA Guidance (NMED, 2017).

Concentrations of COPCs in mixed zone soil (i.e., 0 to 10 feet bgs) are summarized in Table 3-3 and were compared to the residential or construction worker SSLs in Section 5 per NMED RA Guidance (NMED, 2017).

3.2.2 Soil Gas

Soil gas data from Q1 through Q3 2016 were used to evaluate the potential risk on-Site and off-Base from exposure to COPCs in soil gas. Soil gas data from three quarters were used in this RA to minimize the effect of the vadose zone stabilizing to natural flow conditions after the shutdown of the approximately 1,800 standard cubic feet per minute catalytic oxidizer SVE system, which occurred in Q2 2015 (USACE, 2017a). Analytical data for Q1 through Q3 2016 is included in the Q4 2016 monitoring report (USACE, 2017b).

Currently, there are 51 soil vapor monitoring (SVM) locations on-Site and five off-Base, as illustrated in Figure 3-3. Sample depth intervals at each location commonly range from a shallow interval with a well screen at 15 to 25 feet bgs to intervals at a depth of approximately 450 feet bgs. Soil gas data from all depth intervals are presented in the RFI Report (USACE, 2017a). However, for the RA, the most relevant data are the on-Site and off-Base shallow soil gas data collected at 15 to 25 feet bgs because these data best represent a potential source term for vapor intrusion into a building.

Of the 56 total locations, 35 have sample intervals at the 15 to 25-foot interval, 31 on-Site and four off-Base. Table 3-4 summarizes on-Site samples evaluated from Q1 through Q3 2016 (93 samples). Table 3-5 summarizes off-Base samples collected from Q1 through Q3 2016 (12 samples). Note that the RFI Report presents soil gas data with units of parts per million by volume, while the RA employs the units used by NMED for VISLs (i.e., micrograms per cubic meter $[\mu g/m^3]$). Soil gas data were converted to $\mu g/m^3$ from parts per billion by volume using the molecular weight of each chemical and a conversion factor of 24.45, which assumes a standard atmospheric pressure of 1 atmosphere and a standard temperature of 25 degrees Celsius. This conversion was performed to facilitate the HHRA by matching NMED soil gas VISL units.

3.2.3 Groundwater

Groundwater data from Q3 and Q4 2015, as presented in the RFI Report, were used to evaluate potential on-Site and off-Base risks from exposure to groundwater (USACE, 2017a). Section 6 of the RFI Report presents the details of the groundwater monitoring program along with the results from the beginning of monitoring in 2000 to the end of 2015 (USACE, 2017a). Tables 3-6 and 3-7 summarize the on-Base and off-Base groundwater datasets used in the HHRA. Thirty-four on-Site wells were sampled in Q3 and Q4 2015 (68 samples). Ninety-seven off-Base wells were sampled in Q3 and Q4 2015 with an additional three off-Site wells installed and sampled in Q4 2015 (197 samples; Figure 1-1).

3.3 Data Quality Evaluation

Data validation reports for soil data collected between Q1 2011 and Q4 2015, soil gas data collected from Q3 2015 through Q3 2016, and groundwater data collected from Q3 through Q4 2015 were completed in accordance with the *Quality Assurance Project Plan (QAPjP) for the Vadose Zone Investigation and Groundwater Investigation Work Plans* (USACE, 2011), and the *Soil Vapor and Drinking Water Monitoring Work Plan* (USACE, 2016), and have been presented in the associated Quarterly Pre-remedy Monitoring Reports. The requirements for data quality, quantity, and usability for the analytical data used in the RFI Report and this RA were specified in the QAPjP associated with each Work Plan. Therefore, these data have been determined to meet the data quality objectives (DQO) requirements in NMED's RA Guidance (NMED, 2017). The foundation for any RA is the quality of data available to determine potential risk. The RFI Report, which was submitted to NMED on January 31, 2017, summarizes all investigation activities and interim measures performed between November 11, 1999 and December 31, 2015. These data were collected during the multiple project investigations, which were performed in accordance with Site-specific Work Plans for each separate sampling event.

This RA uses validated data for the identified COPCs that was collected to support the RFI. Laboratory data flags are included in the project database, and no rejected data were used to evaluate the nature and extent of fuel-related contamination in the RFI Report or in this RA. The inclusion or exclusion of data within the RA, on the basis of analytical qualifiers, was performed in accordance with NMED Guidance (NMED, 2017). Data without qualifiers were retained at the reported concentration. The following procedures were followed if qualifiers were present:

- Analytical results bearing the U-qualifier (indicating that the analyte was not detected at the given reporting limit [RL]) were retained in the dataset and considered nondetects at the given RL.
- Analytical results bearing the J-qualifier (indicating that the reported value was estimated because the analyte was detected at a concentration below the RL or for other reasons), "+" qualifiers (indicating the inorganic reported value may be biased high), and "-" qualifier indicating the reported value may be biased low) were retained at the reported concentration.

If duplicate samples were collected, the following guidelines were employed to select the appropriate sample measurement:

- If both samples show that the analyte was present, the two results were averaged.
- If both samples show nondetect values, the two nondetect RLs were averaged.
- If only one sample indicated that the analyte was present, it was retained in the dataset and the nondetect value was discarded.

If all results for a COPC were nondetect, the COPC was not carried forward for risk characterization in Sections 5 or 6 (See Tables 3-2 through 3-7).

3.3.1 Soil Gas Data Quality Evaluation

The following issues were identified for soil gas data collected from the SVM locations:

- EDB was measured by two analytical methods (EPA method TO-15 and method California Air Resources Board [CARB] 422) and the results were not in agreement.
- Elevated concentrations of acetone and methyl ethyl ketone (MEK) were found in a number of samples.

To ensure the soil gas data used to assess risk met DQOs, each of these potential issues was evaluated further and the results of this evaluation are provided below. Detailed data evaluation reports are included in quarterly data quality evaluation reports. As summarized below and detailed in Attachment 1, these issues were evaluated and the analytical data were determined to be acceptable relative to the data quality indicators.

3.3.1.1 Evaluation of Soil Gas Analytical Methods for EDB

EDB in soil gas was measured in samples collected during SVM by two analytical methods: EPA method TO-15, which is a mass spectrometry detection method, and method CARB 422, which is an electron capture detection method. The TO-15 method has been used for SVM since 2010. The CARB 422 method was added in 2014 with the goal of having a method with a lower EDB detection limit in soil gas than the TO-15 method. However, a detailed assessment of soil gas data by both methods indicates the CARB 422 EDB results are not accurate; therefore, only TO-15 EDB results are used in this RA.

An investigation into the two soil gas methods for EDB is described in Attachment 1. Comparisons of the detection limits for EDB in soil gas by TO-15 and by CARB 422 are documented in a summary memo submitted to NMED in April 2017 (Kirtland AFB [KAFB], 2017). Level IV soil gas data packages and data analyses for EDB revealed a systematic difference in the magnitude of the detected values between the two methods, as well as an increase in the analytical detection limit by CARB 422 method. The following lines of evidence provide the basis for using the TO-15 EDB data in the RA rather than the CARB 422 EDB data:

- Comparison of 408 sample pairs of detected EDB results by CARB 422 and TO-15 showed a very consistent pattern of CARB 422 results two to five times higher than TO-15 results.
- Based on two laboratory control sample analyses performed by the laboratory, it appears the CARB 422 EDB results are biased approximately 1.7 times higher than the TO-15 results.
- Results of an investigation by the analytical laboratory indicate that this bias is at least partly due to improper preparation of the CARB 422 calibration standard prepared in March 2015 and used through November 2016.
- Review of 16 TO-15 analytical data packages confirms the ability of the TO-15 method to detect EDB in the presence of high concentration of other COPCs. TO-15 mass spectra with straight-chain HC mass up to 1,000 times larger than EDB mass were reviewed and determined not to impact EDB identification and quantitation.

- Mass spectrometry (i.e., TO-15) is considered a more definitive identification technique than electron capture detection (i.e., CARB 422) because the generally unique mass fragmentation patterns evaluated by mass spectrometry greatly reduce the chances for misidentification of an analyte and TO-15 is not affected by interference from other halogenated compounds.
- Review of detection limits for EDB in soil gas by TO-15 and CARB 422 indicate that approximately 70 percent (%) of the time, the detection limit (DL) for EDB by TO-15 is lower than that of CARB 422, demonstrating that for most sample locations, TO-15 is the more effective method (KAFB, 2017).

3.3.1.2 Evaluation of Acetone and MEK in Soil Gas

High levels of acetone and MEK were observed in some of the soil gas samples. The presence of these analytes is believed to be related to two sources 1) the polyvinyl chloride (PVC) glue (i.e., Oatey low volatile organic compound [VOC] purple primer) that was used to seal the SVM ports during Q1 2015 and 2) as a byproduct of biodegradation of fuel-related constituents. Acetone and MEK were not evaluated in the RA due to their relationship with these sources.

In the source area (e.g., SVMW-10-250), acetone, and MEK concentrations are similar in pattern to COPCs such as EDB and benzene. Transient production of acetone is generally correlative to sub-oxic, methanogenic environments. It is assumed that acetone production happens before the system becomes fully anaerobic (Mueller, 2011). The Q4 2016 Report (USACE, 2017b), indicates that this process may be occurring in groundwater. Thus, the report concludes persistence of the compound would indicate an active, continuing bioremediation signature. Concentrations of acetone and MEK in anaerobic areas of the vadose zone indicate this process may also be ongoing in the source area of the vadose zone.

In locations outside of the source area (e.g., KAFB-106141-250), the presence of acetone is consistent with the use of a PVC glue used to seal the sample ports in Q1 2015. This conclusion is supported by the presence of acetone and MEK in the primer and the temporal patterns of these constituents in the soil vapor monitoring points (SVMPs) data from this period. The highest concentrations of acetone and MEK were detected in the Q3 2015 soil gas data, which was the first quarter of data collected after the SVM locations were sealed. Review of chromatograms provided by the analytical laboratory demonstrates identification and quantification of the COPCs by EPA Method TO-15 was not otherwise affected by high concentrations of acetone and MEK. Soil gas data from Q1 through Q3 2016 were used in this RA.
4 HUMAN HEALTH EXPOSURE ASSESSMENT

The exposure assessment evaluates the magnitude, frequency, and duration of exposure of human receptors to contaminated media affected by site activities. A key component of the exposure assessment is the CSEM, which is based on the CSM (Section 7) described in the RFI Report (USACE, 2017a). The HHRA CSEM illustrates the potential exposure pathways by which humans could be exposed to contaminants at a site. As discussed in Section 3.1, this exposure assessment focuses on COPCs identified in the RFI Report that are related to the fuel released at the Site (USACE, 2017a).

Exposure pathways begin at source areas and progress through the environment via various fate and transport processes to potential human receptors. Schematic renderings of the on-Site and off-Base human health CSEMs are shown in Figures 4-1 and 4-2, respectively. The RFI CSM (USACE, 2017a; Section 7) sets forth the potential source areas and contaminant migration pathways. The following section details the site exposure setting and potential human receptors. A completed exposure pathway requires the following four components:

- Source and mechanism of chemical release to the environment
- Environmental transport medium for the released chemical
- Point of potential human contact with the contaminated medium
- Human uptake route at the point of exposure.

All four components must exist for an exposure pathway to be complete (or potentially complete in the future) and for exposure to occur. Incomplete exposure pathways do not result in actual exposure and are not evaluated in the risk characterization. If the exposure pathway is incomplete, there is no risk to human receptors. Complete and potentially complete exposure pathways are carried forward and evaluated in the HHRA (Section 5, Human Health Risk Characterization) to determine whether there is a potential unacceptable risk to human health.

4.1 Land Use

NMED Guidance (NMED, 2017) requires plausible exposure under both current and future land use be evaluated in the HHRA. Therefore, an understanding of current and future land use is important to accurately determine the human receptors that may be present at the Site currently or in the future. Both on-Site and off-Base land use are evaluated in the vicinity of the BFF. Human receptors are discussed in Sections 4.3 and 4.4.

4.1.1 On-Site Land Use

Kirtland AFB is an active military installation, and is expected to remain active for the foreseeable future. According to the current Kirtland AFB's Installation Development Plan, the Site is located within the "Flightline District." The Flightline District is primarily industrial, with facilities and land use dedicated to the support of airfield operations. This includes the BFF, which is where the Site source area is located on-Site. As a result, current and anticipated future land use is primarily industrial for the Site, with limited, restricted administrative use (KAFB, 2016). No transfer of military property to the public is anticipated near the Site. Twelve buildings have been identified within and adjacent to the BFF (Table 4-1). Of these 12, only four are occupied on a regular basis. Only three of those four (Buildings 1044, 1049, and 1055) are occupied full time, and consistent with the NMED commercial/industrial exposure scenario, which assumes exposure to workers eight hours a day, five days a week, 45 weeks a year for 25 years (NMED, 2017).

4.1.2 Off-Base Land Use

Figure 1-1 shows the delineation of the benzene and EDB groundwater plumes off-Base. Current land use and expected future land use above the impacted groundwater plume north of the Kirtland AFB property line (Figure 1-1) is zoned majority residential with limited commercial zoning (City of Albuquerque, 2017a).

Off-Base soil gas contamination has been measured in a smaller area than the footprint of the off-Base groundwater plume, and includes the area of Bullhead Park, the VA Medical Center parking lot, and the Air Force-owned open space. Land use in the off-Base area adjacent to the Site and overlying the vapor plume is not expected to change in the future. Land use above the area of the off-Base soil gas plume includes areas zoned as residential. It is important to note there are currently no residential or industrial buildings in the area of the off-Base soil gas plume; the majority of the area is comprised of Bullhead Park. Since the area adjacent to Bullhead Park is already established and densely developed, it is unlikely land use will change significantly in the foreseeable future. Per the City of Albuquerque, the area is zoned RA-1, which requires a minimum of 20,000 square feet of open space per dwelling unit (City of Albuquerque, 2017a). In addition, although the City of Albuquerque websites show plans for redevelopment of commercial areas north of Bullhead Park, there are no planned changes to Bullhead Park or to the residential areas (City of Albuquerque, 2017b). The large open area to the northeast, between Bullhead Park and the residential areas (Figure 3-3), is owned by the Air Force and the Air National Guard.

4.1.3 Groundwater Use

Groundwater used by on-Site workers, and on-Site residents originates from two sources as discussed in the RFI Reprt (USACE, 2017). Kirtland AFB groundwater drinking water supply wells are used for offices, irrigation, and industrial purposes, and 2) the Water Authority supplies potable water for on-Site residential housing (USACE, 2017a). There are seven Kirtland AFB drinking water supply wells in the Albuquerque Basin screened at depths of 450 to 1,000 feet bgs. The three Kirtland AFB drinking water supply wells (KAFB-003, KAFB-015, and KAFB-016) closest to the groundwater plume are monitored monthly for potential groundwater contamination. KAFB-016 has not been operational for the last few years due to ongoing repairs; however, it is scheduled to resume operation in the summer of 2017. All analytical results have been below project SLs. In addition, sentinel groundwater monitoring wells are located between the groundwater contaminant plume and the Kirtland AFB supply wells to provide early detection of contaminants.

Off-Base groundwater in the vicinity of the Site originates from three sources: Water Authority supply wells, one VA Medical Center water supply well, and two privately-owned irrigation wells. The majority of off-Base public drinking water supply wells are operated by the Water Authority. The two Water Authority wells closest to the dissolved-phase EDB plume are Ridgecrest-3 and Ridgecrest-5 (Figure 1-1). Drinking water wells used by the Water Authority for its customers are screened at a depth of approximately 1,000 feet, which is significantly deeper in the aquifer than the contaminant plume. Shallow and deep sentinel groundwater monitoring wells on-Site and off-Base, and USGS sentinel wells are sampled quarterly to ensure early detection of potential dissolved COPCs prior to reaching drinking water supply wells (Figure 1-1).

The VA Medical Center drinking water well, located approximately 750 feet west of the estimated plume boundary, is also screened at a depth of approximately 1,000 feet bgs. This VA Medical Center drinking water well has not had any contaminant detections above SLs to-date and is sampled monthly. Additionally, there are sentinel groundwater monitoring wells located between the groundwater contaminant plume and the VA Medical Center supply well to provide early detection of contaminants.

The two privately-owned water supply wells in the vicinity of the plume are used primarily for irrigation (Figure 1-1). One of these wells is sampled quarterly, and concentrations of all analytes have been below SLs since sampling began in 2008. Results of the sampling events are reported quarterly to NMED.

4.2 Land Use Controls

Knowledge of the existing LUCs is important to develop the CSEM because LUCs can limit exposure of current human receptors to contamination. LUCs include physical, legal, or administrative mechanisms restricting the use of, or limiting access to, real property to prevent or reduce risks to human health and the environment. This HHRA incorporates current LUCs to evaluate current/future industrial exposure; however future residential scenarios assume an unrestricted scenario, to include the removal of all LUCs.

Access to Kirtland AFB (and the Site) is restricted by control gates manned by security forces 24 hours per day. All qualifying unescorted personnel are required to be registered in the defense identification system using REAL ID (REAL ID Act of 2005) criteria. In addition, the BFF itself has limited access and egress. The Kirtland AFB BFF enclosure includes a fenced area with signage and an automated gate, which limits access to authorized personnel with an appropriate code. Personnel must have approval from the Base Wing Commander to work inside the BFF. Additionally, there is on-Site signage, and utilities in the BFF are marked to prevent potential damage during digging and subsurface access is limited.

Administrative procedures are in place to manage activities to prevent exposure to contaminants. All work performed on-Site, including within the BFF, must have prior approval on an Air Force Form 332. If the proposed work requires digging or other land disturbance, it must be further reviewed through the Air Force Form 103, Base Civil Engineering Work Clearance Request. As part of this land disturbance review process, the location of buried utility lines and areas of contamination are identified and steps are outlined to control the disturbance of contaminated soils.

Off-Base institutional controls include City of Albuquerque zoning as discussed in Section 4.1. In addition, at the direction of NMED, the Office of the State Engineer has restricted the installation of private water supply wells within a 500-foot buffer around the footprint of the dissolved-phase EDB plume. This restriction ensures contaminated groundwater exposure pathways to private well owners remain incomplete.

4.3 On-Site CSEM

The on-Site CSEM is shown in Figure 4-1. The LUCs discussed in Section 4.2 are incorporated in the CSEM to determine whether exposure pathways are complete or potentially complete under the current/future commercial/industrial and construction worker scenarios. The future hypothetical residential scenario, although unlikely, assumes no action (to include any LUCs) will be performed to reduce exposure.

4.3.1 On-Site Human Receptors

Based on the Kirtland AFB land uses discussed in Section 4.1, the following receptors were identified on-Site who may be exposed to contaminated media:

- Current/future commercial/industrial workers who support daily activities at the BFF. Since the replacement and automation of the fueling infrastructure in 2011, operational activities at the BFF are greatly reduced.
- Future construction workers who may engage in intrusive construction or excavation activities at the BFF. Although there is no current active construction at the BFF, construction may occur in the future to repair or replace existing infrastructure.
- Future hypothetical residents within the BFF. Although unlikely, this scenario addresses changes in on-Site land use at the BFF to include future on-Site housing. This scenario informs risk management decisions for consideration of unrestricted use and assumes no actions (to include LUCs) will be taken to reduce exposure.

4.3.2 On-Site Exposure Pathways

The following sections describe the complete, potentially complete, and incomplete exposure pathways to contaminated media on-Site for receptors evaluated quantitatively in the HHRA. As illustrated in Figure 4-1, exposure pathways to both current and future human receptors are evaluated. The current LUCs in place on-Site restrict or reduce exposure to contaminated media in some cases.

4.3.2.1 On-Site Soil Exposure Pathways

As discussed in Section 3, contaminated soil was removed to 20 feet bgs during the 2014 excavation event. Contaminated soil deeper than 20 feet bgs is considered inaccessible to human receptors. However, contaminated soil at 14 locations in the BFF was not removed due to existing infrastructure and utilities.

Runoff and erosion from contaminated surface soil to surface water is not expected to result in any complete exposure pathways for human receptors. It is highly unlikely surface water is introducing appreciable amounts of contaminated surface soil into the storm water system because 1) topography at the Site is relatively flat and 2) the majority of surface water at the Site either evaporates or infiltrates into the soil (USACE, 2017a). The amount of unexcavated surface soil (approximately 700 square feet) would have a negligible contribution to surface water runoff at the BFF.

Current/Future Commercial/Industrial Worker – Surface Soil (0 to 1 foot bgs): A complete exposure pathway exists for surface soil and dust to both current and future commercial/industrial workers at the BFF (Figure 4-1). As discussed in Section 2, the commercial/industrial worker is assumed to be a long-term receptor exposed to surface soil (0 to 1 feet bgs) on a regular basis during the work week. A limited amount of impacted surface soil was left in place following the 2014 excavation. The commercial/industrial worker is not expected to perform intrusive activities in these areas but may visit these areas during regular work activities. Currently, there are no LUCs in place to prevent commercial/industrial workers from encountering contaminated surface soil, or dust blown from surface soil by wind, therefore, direct contact with surface soil for the commercial/industrial worker is considered a complete exposure pathway. The current/future commercial/industrial worker was evaluated for exposure to surface soil via ingestion, dermal contact, and inhalation of volatiles and particulates in dust.

Future Construction Worker – **Mixed Zone Soil (0 to 10 feet bgs):** The construction worker is assumed to be exposed to mixed zone soil (0 to 10 feet bgs) during the entire workday for a single project of one year's duration (NMED, 2017; Section 2). As described in Section 4.2, LUCs at Kirtland AFB currently prevent intrusive work without prior review and approval. However, under a future unrestricted use scenario, construction activities may be performed to repair or replace existing infrastructure or for redevelopment. Therefore, exposure pathways from mixed zone soil and dust to future construction workers are potentially complete. The future construction worker was evaluated for exposure to mixed zone soil via ingestion, dermal contact, and inhalation of volatiles and particulates in dust.

Future Hypothetical Residents – Mixed Zone Soil (0 to 10 feet bgs): There are currently no residential homes on-Site. However, the future on-Site residential scenario is evaluated to inform risk management decisions and assumes unrestricted use. The future residents are assumed to be adults and children in contact with soil at depths from 0 to 10 feet bgs. A resident is assumed to occupy a home on-Site 24 hours per day for 350 days per year for 26 years (Section 2). Under this scenario, exposure pathways from mixed zone soil and dust to future residential homeowners are potentially complete (Figure 4-1). The future hypothetical resident was evaluated for exposure to mixed zone soil via ingestion, dermal contact, and inhalation of volatiles and particulates in dust.

Concentrations of COPCs in on-Site soil are evaluated in Section 5 to determine whether there is an unacceptable risk to current or future receptors at the BFF from complete or potentially complete exposure pathways.

4.3.2.2 On-Site Soil Gas (Vapor Intrusion) Exposure Pathways

COPCs can volatilize from on-Site contaminated soil or groundwater into soil gas, which can migrate into indoor air spaces if buildings are present. The migration of vapors from subsurface sources to indoor air within buildings is defined as vapor intrusion. As shown in Figure 4-1, COPCs could

volatilize from contaminated groundwater or subsurface soil. However, the water table is located at 480 feet bgs and vapors from groundwater are not expected to migrate from the top of the water table upwards to ground surface (EPA, 2012). The primary soil gas exposure pathway is the volatilization of COPCs in impacted subsurface soil to indoor air vai vapor intrusion.

Inhalation of VOCs released from soil gas to ambient (outdoor) air was considered a potentially complete but insignificant exposure pathway for all human receptors. It is unlikely appreciable amounts of contaminated soil gas are being released into the ambient air from subsurface soil on-Site because 1) almost no contaminated soil remains near the ground surface (i.e., within 20 feet of ground surface) to provide a continual source and 2) any such releases would be immediately diluted. The leaking underground pipes were decommissioned in 1999 and removed in 2010; the majority of the impacted soil has been excavated to 20 feet bgs. Volatile COPCs in soil at 0 to 10 feet were addressed as a soil exposure pathway as described in Section 4.3.2.1.

Soil gas exposure pathways for human receptors evaluated in the RA are discussed below.

Current/Future Commercial/Industrial Worker: A potentially complete vapor intrusion exposure pathway exists from soil gas to indoor air within existing buildings for current/future commercial/industrial workers at the BFF. Although there is a limited number of occupied buildings at and adjacent to the BFF (Section 4.1), there are currently no actions or LUCs in place addressing vapor intrusion specifically. The current/future commercial/industrial worker was evaluated for exposure via inhalation to COPCs in soil gas, which could be present in indoor air due to vapor intrusion.

Future Construction Worker: Because construction workers are assumed to perform all work outside, no complete exposure pathway exists for future construction workers for indoor air via vapor intrusion. Construction workers are assumed to be outdoor workers. A potentially complete exposure pathway may exist for soil gas to outdoor air within a trench. Concerns about construction worker exposure to soil gas within a trench will be captured qualitatively through the evaluation of the vapor intrusion to indoor air pathway for the current/future commercial/industrial workers in Section 5.

Future Hypothetical Resident: There are no current on-Site residential receptors within the BFF. However, should land use change in the future, residential homes could be constructed on-Site. Therefore, a potentially complete vapor intrusion exposure pathway exists from soil gas to indoor air within future residential buildings at the BFF (Figure 4-1). The future hypothetical on-Site resident was evaluated for exposure via inhalation to COPCs in soil gas, which could be present in indoor air due to vapor intrusion.

Concentrations of COPCs in on-Site soil gas are evaluated in Section 5 to determine whether there is an unacceptable risk to current or future receptors at the BFF from complete or potentially complete exposure pathways.

4.3.2.3 On-Site Groundwater Exposure Pathways

As shown in Figure 4-1, released LNAPL migrated through contaminated soil to groundwater underlying the Site. As discussed in Section 1.4, and Section 4.1.3, the active interim measures in place cause the exposure pathway to current groundwater receptors to be incomplete.

Future Users of Groundwater On-Site: To inform risk management decisions the HHRA assumed that a drinking water supply well could be installed within the on-Site portion of the contaminant plume. Therefore, direct contact pathways for groundwater were considered potentially complete, to include ingestion, dermal contact, and inhalation of volatiles during household use (such as showering or dishwashing). A second hypothetical future scenario is a future industrial worker. However, the NMED TSLs are developed to evaluate residential receptors, and assume higher exposure than that of a worker. Thus the TSLs are sufficiently protective of workers.

Concentrations of COPCs in groundwater are evaluated in Section 5 to determine whether there is an unacceptable risk to future receptors should water supply wells be installed in the contaminated portion of the aquifer based on complete or potentially complete exposure pathways.

4.4 Off-Base CSEM

The off-Base CSEM is shown in Figure 4-2. The land use and LUCs discussed in Sections 4.1 and 4.2 are incorporated in the CSEM to determine where exposure pathways are complete, potentially complete, or incomplete for the identified human receptors.

4.4.1 Off-Base Human Receptors

Based on the off-Base land uses discussed in Section 4.1, there are three types of human receptors that may be exposed to contaminated media:

- 1. Current/future recreational users at Bullhead Park or the Air Force-owned open space.
- 2. Future hypothetical off-Base residents in the footprint of Bullhead Park or the Air Force-owned open space, should land use change in the future. The City of Albuquerque has no plans to change the use of Bullhead Park, and there are currently no residential buildings present, however consideration of a future residential scenario provides information for consideration of unrestricted use.
- 3. Future users of groundwater Off-Base: Although interim measures are in place to prevent exposure to contaminated groundwater, the HHRA assumed a a drinking water supply well could be installed within the off-Base portion of the contaminant plume. Therefore, direct contact pathways for groundwater were considered potentially complete, to include ingestion, dermal contact, and inhalation of volatiles during household use (such as showering or dishwashing).

Although current/future residents north of Ridgecrest and current/future commercial/industrial workers (i.e., VA complex) were not evaluated quantitatively in the RA, consideration of the future hypothetical residents at Bullhead Park conservatively assesses these scenarios. Bullhead Park is located nearest to the contamination and is expected to have higher concentrations compared to the Ridgecrest area or the VA complex, thus estimated exposure is maximized with consideration of the future hypothetical resident at Bullhead Park.

4.4.2 Off-Base Exposure Pathways

The following sections describe the complete, potentially complete, and incomplete exposure pathways to contaminated media off-Base for receptors evaluated quantitatively in the HHRA. As illustrated in Figure 4-2, the exposure media present off-Base are limited in comparison to the on-Site exposure media. There is no contaminated surface (0 to 1 feet bgs) or mixed zone (0 to 10 feet bgs) soil off-Base. All soil exposure pathways were considered incomplete for off-Base receptors.

4.4.2.1 Off-Base Soil Gas (Vapor Intrusion) Exposure Pathways

Contaminated groundwater has migrated off-B. COPCs in groundwater could volatilize and migrate upward through the subsurface to indoor air if buildings are present. However, the water table is located at 480 feet bgs, therefore vapors from groundwater are not expected to migrate from the top of the water table upwards to the ground surface over this distance (EPA, 2012). The primary vapor intrusion exposure pathway is the volatilization of COPCs from impacted subsurface soil remaining on-Site in the area adjacent to the Base (i.e., Bullhead Park).

Current/Future Recreational Users: There are no occupied buildings in Bullhead Park or in the Air Force-owned open space. The vapor intrusion pathway from soil gas to indoor air is incomplete for current/future recreational users.

Future Hypothetical Off-Base Residents: While the City of Albuquerque has no plans to change the use of Bullhead Park, it is possible that this area could become residential in the future. If Bullhead Park was converted to residential use in the future, the exposure pathway from soil gas to indoor air could be potentially complete due to horizontal soil gas migration. The future hypothetical resident at Bullhead Park was evaluated for exposure via inhalation to COPCs in soil gas, which could be present in indoor air due to vapor intrusion. The amount of soil gas at the shallow depths where garden plant roots would be found is negligible, therefore uptake of COPCs in soil gas via plant was considered an incomplete pathway.

The concentrations of COPCs in off-Base soil gas are evaluated in Section 5 to determine whether there is an unacceptable risk to future residents from this potentially complete exposure pathway.

4.4.2.2 Off-Base Groundwater Exposure Pathways

As shown in Figure 1-1, contaminated groundwater has migrated off-Base in the direction of groundwater flow resulting in a plume that extends off-Base. Figure 4-2 illustrates the complete, potentially complete, and incomplete exposure pathways for groundwater for each human receptor.

Current/Future Recreational Users: The depth to groundwater is approximately 480 feet bgs, therefore, there is no potential for contact with groundwater at Bullhead Park. Water for drinking fountains and landscape irrigation at the park is provided by the Water Authority (City of Albuquerque, 2015). As a result, the exposure pathways for a current/future recreational user at Bullhead Park is considered incomplete for groundwater.

Future Users of Groundwater Off-Base: Although interim measures are in place to prevent exposure to contaminated groundwater, the HHRA assumed a a drinking water supply well could be installed within the off-Base portion of the contaminant plume. Therefore, direct contact pathways for groundwater were considered potentially complete, to include ingestion, dermal contact, and inhalation of volatiles during household use (such as showering or dishwashing).

There are no Water Authority drinking water supply wells installed in the impacted portion of the off-Base groundwater plume. Therefore, groundwater exposure pathways are incomplete for current off-Base receptors.

Concentrations of COPCs in groundwater are evaluated in Section 5 to determine whether there is an unacceptable risk to future receptors should water supply wells be installed in the contaminated portion of the aquifer based on complete or potentially complete exposure pathways.

5 HUMAN HEALTH RISK CHARACTERIZATION

Risk characterization evaluates information pertaining to potential exposures of human receptors to contamination and the health effects for the COPCs identified in soil, soil gas, and groundwater (Section 3.1). Exposure pathways for these media are described in Section 4; complete or potentially complete exposure pathways for current and future human receptors were evaluated quantitatively. The risk characterization for the complete and potentially complete exposure pathways is provided in Section 5.1. Key uncertainties related to the risk characterization are discussed in Section 5.2. Conclusions of the human health risk characterization are discussed in Section 5.3.

5.1 Human Health Risk Assessment

Human health risks were estimated for the receptors and exposure pathways identified as complete or potentially complete in Section 4. Risk characterization was performed using the following steps:

- 1. Appropriate NMED SLs based on exposure media (e.g., soil, soil gas, groundwater) and appropriate receptor (e.g., residential, commercial/industrial, or construction worker) were identified:
 - On-site soil concentrations for COPCs were compared to commercial/industrial, construction worker, and residential SSLs.
 - On-Site soil gas concentrations for COPCs were compared to commercial/industrial and residential soil gas VISLs.
 - Off-Base soil gas concentrations were compared to residential soil gas VISLs.
 - Both On-Site and Off-Base groundwater concentrations were compared to residential TSLs.

If NMED screening levels were not available, EPA regional screening levels (RSLs; EPA, 2016) were used. Carcinogenic RSLs were adjusted to NMED's target cancer risk of one in 100,000 (10⁻⁵). As noted in Section 2, NMED SLs represent environmental concentrations at or below which further action is not warranted under the indicated land use.

Maximum detected concentrations in each media were screened against the appropriate COPCs.

- 2. COPC-specific and cumulative cancer risks and hazard indices (HI) were calculated using the maximum concentration of each COPC as described in NMED, 2017.
 - For carcinogenic COPCs, the maximum concentration was divided by the appropriate SL and multiplied by 1×10^{-5} to derive a COPC-specific cancer risk. The cancer risks for each COPC in an exposure media were then summed for each receptor to provide the total estimated cancer risk. The sum was compared to the NMED target cancer risk level of 1×10^{-5} (NMED, 2017).

- For a non-carcinogenic COPC, a COPC-specific HQ was calculated by dividing the maximum concentration by the appropriate SL. The HQs for each COPC in an exposure media were summed for each receptor to obtain a total estimated HI. The HI was compared with the NMED target HI of 1 (NMED, 2017).
- If a COPC had both carcinogenic and non-carcinogenic effects, it was included in both the carcinogenic and non-carcinogenic risk calculations.
- 3. If the total cancer risk estimate or the total HI calculated using the maximum concentrations in an exposure medium the NMED target values, then further risk characterization was performed. In accordance with NMED Guidance (2017), EPCs were calculated in these cases. The total cancer risk and the total HI were then recalculated using the EPCs in place of the maximum concentration as described in Step 2 above.

Statistic-based EPCs were derived to quantify concentrations of COPCs in media. For the HHRA, the EPC represents the COPC concentration in a media that a potential receptor is expected to contact over a designated exposure period (NMED, 2017). COPCs concentrations, as discussed in Section 3.3, were used to calculate the 95th percentile upper confidence limit of the mean (95UCL) when the total cancer risk and HI for an exposure medium exceeded the NMED target levels.

In accordance with NMED Guidance (2017) EPCs were only calculated if the dataset for a COPC contained at least eight results with at least five detections. If a dataset contained nondetects, each nondetect was assigned a numerical value equal to its reporting limit. If an analyte was not detected in any samples, then it was not carried forward in the risk calculations. 95UCLs were calculated using the EPA's ProUCL 5.1 software. ProUCL performs distributional tests on the dataset for each COPC and calculates the most appropriate UCL based on the distribution of the dataset. The ProUCL program recommends a distribution and a value for the 95UCL, or the 99UCL as appropriate. The input and output data files for ProUCL calculations for each site are provided as Attachment 2.

5.1.1 Soil

Complete or potentially complete soil exposure pathways were identified in Section 4 for current/future on-Site industrial workers, future construction workers, and future hypothetical on-Site residents. No complete or potentially complete exposure pathways were identified for off-Base receptors for soil, as no contaminated soil exists off-Base at 0 to 10 feet bgs.

5.1.1.1 On-Site Soil Risks

As discussed in Section 3, both surface (0 to 1 foot bgs) and mixed zone soil (0 to 10 feet bgs) datasets were evaluated in this RA. The maximum detected concentrations of COPCs in surface soil and subsurface soil did not exceed NMED commercial/industrial, construction worker, or residential SSLs. Benzene and ethylbenzene were the only carcinogenic COPCs detected in soil samples collected from 0 to 10 feet bgs.

The maximum detected concentration of lead in soil at 0 to 10 feet bgs was 71 milligrams per kilogram (mg/kg), which is below the NMED SSL of 400 mg/kg.

Current/Future Commercial/Industrial Worker - Surface Soil (0 to 1 foot bgs): The total cancer risk and HI was calculated using the maximum concentrations for each COPC as shown in Tables 5-1 and 5-2, respectively. The total cancer risk was 2×10^{-10} , which is below NMED's target cancer risk level of 1×10^{-5} (Table 5-1). The total non-carcinogenic HI was 4×10^{-5} , which is below NMED's target HI of 1 (Table 5-2). The risk estimates indicate there is no unacceptable risk to current/future commercial/industrial workers at the BFF based on exposure to surface soil. No further risk evaluation was performed.

Future Hypothetical On-Site Resident – Mixed Zone Soil (0 to 10 feet bgs): Currently no residential homes exist at the BFF, and there are no plans to change land use from industrial to residential. However, should land use change in the future, a residential scenario was considered to inform the risk management process (Section 4). The total cancer risk and HI was calculated using the maximum concentrations for each COPC as shown in Tables 5-3 and Table 5-4, respectively. The total cancer risk was 8 x 10^{-8} , which is below NMED's target cancer risk level of 1 x 10^{-5} (Table 5-3). The total non-carcinogenic HI was 0.2, which is below NMED's target HI of 1 (Table 5-4). The risk estimates indicate there is no unacceptable risk to future hypothetical on-Site residents at the BFF based on exposure to mixed zone soil at 0 to 10 feet bgs. No further risk evaluation was performed.

Future Construction Worker – Mixed Zone Soil (0 to 10 feet bgs): Current LUCs prevent intrusive work at the BFF without prior review and approval. The future construction worker scenario evaluates the case where the existing LUCs are removed. The total cancer risk and HI was calculated using the maximum concentrations for each COPC as shown in Tables 5-5 and Table 5-6, respectively. The total cancer risk was 3 x 10^{-9} , which is below NMED's target cancer risk level of 1 x 10^{-5} (Table 5-5). The total non-carcinogenic HI was 0.04, which is below NMED's target HI of 1 (Table 5-6). The risk estimates indicate there is no unacceptable risk to future construction workers at the BFF based on exposure to mixed zone soil at 0 to 10 feet bgs. No further risk evaluation was performed.

5.1.1.2 Off-Base Soil Risk

No contaminated soil is present off-Base at depths of 0 to 10 feet bgs. Contaminated soil is confimed to the on-Site portion of the BFF. There are no complete exposure pathways for soil for any off-Base receptor.

5.1.2 Soil Gas

Complete and potentially complete soil gas exposure pathways via vapor intrusion to indoor air were identified in Section 4 for current/future on-Site commercial/industrial workers and future hypothetical on-Site residents - via vapor intrusion to indoor air.

No occupied buildings exist off-Base in the area of soil gas contamination, therefore there are currently no complete exposure pathways for soil gas. Although no residences are located in the area of soil gas contamination, in order to address potential changes in land use in the future, vapor intrusion to indoor air was considered a potentially complete pathway for a future hypothetical off-Base resident at Bullhead Park.

5.1.2.1 On-Site Soil Gas

Maximum detected concentrations in soil gas were compared to the NMED commercial/industrial or residential soil gas VISLs as appropriate. The cancer risk and noncancer HI were calculated using maximum detected concentrations and EPCs based on 95UCLs for the current/future commercial/industrial worker and the future hypothetical on-Site resident as described below.

Current/Future Commercial/Industrial Worker: The total cancer risk was calculated using the maximum detected concentrations for each COPC as shown in Table 5-7. The calculated total cancer risk was 6×10^{-5} , which exceeds NMED's target cancer risk level of 1×10^{-5} . Primary contributors to the total cancer risk were EDB and naphthalene, which had maximum detected concentrations that exceeded the commercial/industrial soil gas VISLs. Based on the exceedance of the NMED target cancer risk level, total cancer risk was further evaluated using EPCs based on the 95UCL. As shown in Table 5-8, the calculated total cancer risk based on the EPCs is 4×10^{-6} , which is below NMED's target cancer risk level of 1×10^{-5} .

The EPC represents the COPC concentration in a media that a potential receptor is expected to contact over a designated exposure period (NMED, 2017). To ensure that the calculated EPC was appropriately conservative, concentrations of EDB and naphthalene were evaluated in comparison to the commercial/industrial soil gas VISLs and occupied buildings. Figure 5-1 illustrates EDB concentrations in soil gas at 25 feet bgs in 2016. Only one detection from Q1 through Q3 2016 exceeded the EDB commercial/industrial soil gas VISL of 7.65 μ g/m³. This was a detection of 24 μ g/m³ at KAFB-106119-25 in Q2 2016. All other detected concentrations were below the SL. Figure 5-2 illustrates naphthalene concentrations in soil gas at 25 feet bgs in 2016 exceeded the commercial/industrial soil gas VISL of 135 μ g/m³. This was a detection of 257 μ g/m³ at KAFB-106128-25 in Q2 2016. Neither of the detections exceeding screening criteria were located within 100 feet of occupied buildings. The soil gas results indicate that employing the EPCs is appropriately conservative to evaluate potential risk from on-Site soil gas.

As shown on Table 5-9, the calculated HI based on the maximum detected COPC concentrations was 0.2, which is below NMED's target HI of 1.

Based on the total cancer risk estimate and HI, there is no unacceptable risk for current/future on-Site commercial/industrial workers due to exposure to soil gas via vapor intrusion to indoor air.

Future Hypothetical On-Site Resident: The total cancer risk was calculated using the maximum detected concentrations for each COPC as shown in Table 5-10. The calculated total cancer risk was 3×10^{-4} , which exceeds NMED's target cancer risk of 1×10^{-5} . Primary contributors to the total cancer risk were EDB, benzene, and naphthalene, which had maximum detected concentrations that exceeded the residental soil gas VISLs. Based on the exceedance of the NMED target cancer risk level, total cancer risk was further evaluated using EPCs based on the 95UCL. As shown in Table 5-11, the calculated total cancer risk based on the EPC is 2×10^{-5} , which slightly exceeds NMED's target cancer risk level of 1×10^{-5} .

As shown in Table 5-12, the calculated HI based on the maxium detected COPC concentrations was 0.9, which is below NMED's target HI of 1.

No residents are located on-Site at the BFF and land use is not expected to change from industrial in the foreseeable future. Estimated cancer risks for a future hypothetical resident exceed the NMED cancer risk target level.

5.1.2.2 Off-Base Soil Gas

Currently no residences are located near the off-Base soil gas contamination, which mainly underlies Bullhead Park, the VA Medical Center parking lot, and the Air Force-owned open space. However, if future land use were to change, consideration of a residential scenario provides information for risk management decisions and unrestricted use considerations. Maximum detected concentrations of COPCs in off-Base soil gas were compared to residential soil gas VISLs. The maximum detected concentrations of COPCs in off-Base soil gas did not exceed residential soil gas VISLs.

Future Hypothetical Off-Base Resident (Bullhead Park): The total cancer risk and HI was calculated using the maximum concentrations for each COPC as shown in Tables 5-13 and 5-14, respectively. The calculated total cancer risk based on the maximum detected concentrations was 2×10^{-6} , which is below NMED's target cancer risk level of 1×10^{-5} . The calculated total HI from the maximum COPC concentrations was 0.04, which is below NMED's target HI of 1.

Therefore, there is no unacceptable risk to a future hypothetical off-Base resident at Bullhead Park from the vapor intrusion pathway (soil gas to indoor air). Consideration of a residential scenario is conservative and protective of current receptors located farther from the areas of contamination, such as residents north of Ridgecrest, and visitors and workers at the VA Complex. Under the residential scenario, exposure is assumed to be 24 hours per day at the site, 350 days per year, for 26 years.

5.1.3 Groundwater

As discussed in Section 4, there are no current complete exposure pathways for contaminated groundwater. The Kirtland AFB water supply wells, Water Authority wells, VA Complex well, and private irrigation wells are located in areas outside the affected portion of the aquifer. LUCs are in place to prevent installation of new wells within the affected portion of the aquifer. However, in order to inform risk management decisions, a future on-Site and off-Base residential scenario was evaluated which assumes a drinking water well was installed in the affected portion of the aquifer.

Maximum detected concentrations in groundwater were compared to the NMED TSLs for residential use. The cancer risk and noncancer HI were calculated using maximum detected concentrations and EPCs based on 95UCLs for the future hypothetical on-Site and off-Base residents as described below.

The maximum detected concentration of lead in groundwater was 5.3 micrograms per Liter (μ g/L), which is below the EPA non-carcinogenic residential RSL of 15 μ g/L.

5.1.3.1 On-Site Groundwater

The total cancer risk was calculated using the maximum detected concentrations in on-Site groundwater for each carcinogenic COPC as shown in Table 5-15. The calculated total cancer risk was 5×10^{-2} , which exceeds NMED's target cancer risk level of 1×10^{-5} . Based on the exceedance of the NMED target cancer risk level, total cancer risk was further evaluated using EPCs based on the 95UCL. As shown in Table 5-16, the calculated total cancer risk based on the EPC is 5×10^{-3} , which exceeds NMED's target cancer risk level of 1×10^{-5} . Primary contributors to the cancer risk were EDB, benzene, ethylbenzene, and naphthalene.

The total HI was calculated using the maximum detected concentrations for each non-carcinogenic COPC as shown on Table 5-17. The calculated total HI was 600, which exceeds NMED's target HI of 1. Based on the exceedance of the NMED target HI, the total HI was further evaluated using EPCs based on the 95UCL. As shown in Table 5-18, the calculated total cancer risk based on the EPC is 60, which exceeds NMED's target HI of 1. The primary contributors to the HI were benzene, naphthalene, toluene, and xylenes, which each had HQs exceeding 1.

Based on the calculated total cancer risk and HI, exposure to on-Site groundwater for domestic purposes under the hypothetical future residential scenario results in an unacceptable risk.

5.1.3.2 Off-Base Groundwater

The total cancer risk was calculated using the maximum detected concentrations in off-Base groundwater for each carcinogenic COPC as shown in Table 5-19. The calculated total cancer risk was 8×10^{-3} , which exceeds NMED's target cancer risk level of 1×10^{-5} . Based on the exceedance of the NMED target cancer risk level, total cancer risk was futher evaluated using EPCs based on the 95UCL. As shown in Table 5-20, the calculated total cancer risk based on the EPC is 1×10^{-4} , which exceeds NMED's target cancer risk level. Primary contributors to the cancer risk were EDB and ethylbenzene.

The total HI was calculated using the maximum detected concentrations for each non-carcinogenic COPCs as shown on Table 5-21. The calculated total HI was 80, which exceeds NMED's target HI of 1. Primary contributors to the total HI were benzene, naphthalene, toluene, xylenes, and 1,2,4-TMB. Based on the exceedance of the NMED target HI of 1, the total HI was further evaluated using EPCs based on the 95UCL. As shown in Table 5-22 the calculated total HI based on the EPC is 0.8, which is less than the NMED target HI of 1.

Based on the calculated total cancer risk, exposure to off-Base groundwater for domestic purposes under the hypothetical future residential scenario results in an unacceptable risk.

5.2 Uncertainty Analysis

The human health risk-screening assessments are subject to varying degrees and types of uncertainty.

Aspects of data evaluation and COPC identification, exposure assessment, toxicity assessment, and the additive approach for risk characterization contribute to uncertainties in the RA process. Each or all of these uncertainties may affect the evaluation results. Specific uncertainties related to this RA are discussed in the following sections.

5.2.1 Uncertainty Related to Analytical Data Quality

The analytical data quality was evaluated for uncertainties related to the quantitation limits and it was determined that the sensitivity of DLs for COPCs in all environmental media with a low or no detection frequency (majority of samples were nondetect) were less than the analyte-specific SLs, except for three analytes in groundwater (1-methylnaphthalene; 2-methylnaphthalene; and 1,2-DCA) and one analyte in soil gas (EDB). For the three groundwater analytes (as compared to the TSL) and for EDB in soil gas

(as compared to commercial/industrial soil gas VISL), the majority (over 80%) of the nondetect samples had DLs lower than the analyte-specific SLs. With respect to DLs for EDB in soil gas compared to the residential soil gas VISL of $1.56 \,\mu g/m^3$, the DLs ranged from $1.23 \text{ to } 10.76 \,\mu g/m^3$).

However, all four of the analytes were identified as COPCs, and were included in the RA with risk estimated using maximum detected concentrations. There is a low potential for underestimation of risk for these analytes.

Other uncertainties in analytical data quality may include errors in sampling, laboratory analysis, and data analysis. However, using both maximum detected concentrations and statisticallybased EPCs is intended to provide upper-bound estimates of exposure and risks.

5.2.2 Uncertainty in Risks Related to Soil Gas Exposure

An uncertainty related to soil gas exposure was identified in the RA. NMED soil gas VISLs were developed to screen soil gas samples collected at shallow depths below a building slab. In this RA, the NMED soil gas VISLs were applied to soil gas data measured from SVMPs at 15 to 25 feet bgs. Even in cases where a COPC is detected above the soil gas VISL at a SVMP located at 15 to 25 feet bgs below a building slab, there is uncertainty whether the COPC will be detected from a shallow sub-slab sample. Fick's First Law of diffusion states that diffusive flux from a source at 25 feet bgs below a building slab will be 15 to 25 times lower than if the source were present at 1 foot from the slab. In principle, concentration gradients are affected by the presence of a slab (EPA, 2012). However, the accumulation of VOCs below a slab based on diffusion from a deep vapor source, as shown by EPA, is only possible if soil gas advection into the building is negligible. The application of soil gas VISLs to the soil gas data collected at 15 to 25 feet bgs most likely results in an overestimation of risks.

5.3 Human Health Risk Assessment Conclusions

The HHRA concludes there are no estimated unacceptable risks to current human receptors from contaminated soil, soil gas, or groundwater either on-Site or off-Base.

The HHRA identified potential unacceptable risks for exposure to on-Site soil gas under a future hypothetical residential scenario, and exposure to groundwater under a future domestic use scenario. However, there are no current complete exposure pathways for groundwater.

Interim measures are in place to prevent exposure to impacted groundwater. An additional LUC may be warranted as part of a final remedy to prevent residential use at the BFF until concentrations of COPCs in soil gas have a level that do not present an unacceptable risk.

5.3.1 Soil

Maximum detected concentations of COPCs in soil at 0 to 10 feet bgs were below NMED SSLs. The total cancer risk and HI based on maximum detected concentrations were below NMED target levels for all receptors. No impacted soil is located off-Base. No unacceptable risk was identified based on exposure to surface or mixed zone soil for any receptor on-Site at the BFF.

Recommendation: No additional interim measures are recommended for soils at 0 to 10 feet bgs.

5.3.2 Soil Gas

Twelve industrial/administrative buildings are located at the BFF or in close proximity; three of these buildings are continuously occupied. For the current/future on-Site commercial/industrial worker at the BFF, although the total cancer risk based on maximum detected concentrations in soil gas exceeded the

NMED target cancer risk level, the total cancer risk calculated using the EPCs was below 1 x 10⁻⁵. The total HI based on the maximum detected concentration was below the NMED target HI of 1. No unacceptable risks were identified for the current/future on-Site commercial/industrial worker at the BFF based on exposure to soil gas via vapor intrusion to indoor air.

No residential buildings are located at the BFF and residential use is not planned for the foreable future. However, in order to evaluated an unrestricted use scenario, risk for a hypothetical future on-Site resident was evaluated. Total cancer risks exceeded NMED's target cancer risk level. The total HI based on the maximum detected soil gas concentration was below the NMED target HI of 1.

No occupied buildings are currently located within the area of the off-Base soil gas plume. However, should land use change in the future, a hypothetical future off-Base resident scenario at Bullhead Park was evaluated. Based on the maximum detected concentrations in soil gas, the total cancer risk and HI were below NMED target levels. No unacceptable risk was identified based on exposure to soil gas via vapor intrusion to indoor air. Consideration of a future hypothetical off-Base resident at Bullhead Park is conservative and protective for current/future recreational uses at Bullhead Park. This scenario is also protective for residents north of Ridgecrest and visitors to the VA Complex, which are located farther from the impacted off-Base soil gas area.

Recommendation: Current interim measures prevent residential use at the BFF. A LUC may be needed in a future final remedy to prevent residential reuse in the BFF until concentrations of COPCs in soil gas allow unrestricted use and unlimited exposure. No additional interim measures for off-Base soil gas are recommended.

5.3.3 Groundwater

The calculated total cancer risks and HI for domestic use of on-Site and off-Base groundwater exceed NMED's target cancer risk level of 1×10^{-5} and target HI of 1. However, interim measures are in place to prevent exposure to impacted groundwater on and off-Base. There are no current complete exposure pathways to impacted groundwater.

Recommendation: No additional interim measures are recommended to prevent exposure to impacted groundwater on-Site or off-Base.

6 ECOLOGICAL RISK ASSESSMENT

This ERA follows the NMED ERA process described in Section 2.1.2 (NMED, 2017). This process determines whether unacceptable adverse risks are present or might accrue to ecological receptors as a result of hazardous substances released at the Site.

6.1 Phase I Qualitative Assessment

The primary objective of the Phase I Qualitative Assessment is to assess whether enough information is available to determine the potential for unacceptable risks to ecological receptors as a result of hazardous substance releases. Characterizing the ecological communities in the vicinity of the Site (Sections 6.1.1 to 6.1.5), assessing the particular hazardous substances released and likelihood of potential unacceptable risk to identified ecological receptors (Section 6.1.6), identifying potential exposure pathways for ecological receptors (Section 6.1.7), and developing ecological assessment endpoints (Section 6.1.8) meet this objective.

6.1.1 General Site Characteristics

The Site is located in the Arizona/New Mexico Plateau Ecoregion (Omernik, 1986). Based on information contained in the Integrated Natural Resources Management Plan (INRMP) for Kirtland AFB (2007 and 2012 update), no designated or identified critical habitats exist at Kirtland AFB. Surveys and literature indicate important habitats on Kirtland AFB include wetlands that provide water to wildlife in an otherwise arid environment, and are rare in the region. None of these wetlands are near the Site. Other important habitats on Kirtland AFB include prairie dog towns, which provide nesting habitats for the burrowing owl, and open juniper woodlands between 5,900 and 6,600 feet in elevation, which are nesting habitat for the gray vireo. The Site lies between 5,314 and 5,364 feet in elevation. Nesting habitat for gray vireo is primarily on the far eastern side of Kirtland AFB in the foothills of the Manzano Mountains and does not currently exist on the Site. Prairie dog burrows and burrowing owls have been observed on-Site inside the BFF.

6.1.2 Surface Water, Sediment, and Wetlands

No surface water, sediment, or wetlands are located at the Site. Groundwater at the Site is approximately 480 feet bgs, and would not be expressed as surface water.

6.1.3 Vegetative Communities

Vegetation of the Arizona/New Mexico Plateau Ecoregion includes grama/galleta steppe, Great Basin sagebrush, and saltbush/greasewood plants (Omernik, 1986). Before the acquisition of land for what is now Kirtland AFB, the area was rangeland used for livestock grazing and typical ranching as well as mining operations. These operations ceased, for the most part, when Kirtland AFB occupied the land in the mid-1940s. Since then, some of the vegetation has been cleared for operational developments, while the eastern half of the Base has remained primarily undisturbed.

Vegetation on-Site is sparse as shown in on-Site photographs presented in Section 2 of the RFI and in Figure 6-1 (USACE, 2017a). This is primarily due to the generally disturbed nature of the on-Site area, which is largely an industrial area that is kept clear for vehicles and equipment, and characterized by poor soils and low precipitation. From January 2010 to December 2016, the average yearly precipitation ranged from 4.7 to 11.5 inches, with an average of 7.86 inches (National Oceanic and Atmospheric

Administration [NOAA], 2017). Snowfall is not uncommon in winter months, but seldom exceeds 3 inches. The summer monsoon season from July through September accounts for one-half of the annual rainfall.

The following four plant communities on Kirtland AFB constitute the major types of vegetation:

- Grassland (includes sagebrush steppe and juniper woodlands)
- Pinyon-Juniper Woodlands
- Ponderosa Pine Woodlands
- Riparian/Wetland/Arroyo.

The BFF area is industrial, and has been disturbed during construction activities, such as the updates to the fueling infrastructure. However, based on the recorded soil types at the Site (Latene sandy loam and Wink fine sandy loam; USDA, 2013), native vegetation would typically include mesa dropseed, blue grama, broom snakeweed, and sands dropseed (Kirtland AFB, 2007 and 2012 update). These two soil types have poor to very poor potential for supporting habitat elements including grain and seed crops, domestic grasses and legumes, wild herbaceous plants, shrubs, and wetland plants (USDA, 1977). As the on-Site area is primarily industrial, vegetation consists mostly of open sandy and gravel areas with sparsely distributed grasses. The habitat surrounding the on-Site area is also sparsely vegetated with shrub/scrub, grasses, and small trees, which is typical of the Albuquerque, New Mexico area. The very low productivity of the soil is also supported by the finding that the average organic carbon in surface soil is 0.49 mg/kg (based on detected results in soil samples collected on-Site ST105 SB0524 [7]; ST105-SB0525 [7]; and ST105-SB0524 [2]).

6.1.4 Wildlife

The INRMP (Kirtland AFB, 2012) lists 55 species of mammals, 141 species of birds, 34 species of reptiles and amphibians, and three species of fish that may occur on the 52,287-acre Base. Based on the industrial nature and sparse vegetative communities on-Site (Section 6.1.3), few of these bird, mammal, and reptile species would be expected to occur on-Site. However, rabbits, coyotes, and birds, as well as evidence of prairie dogs, have been observed on-Site. No amphibians or fish would be present due to the lack of surface water at on-Site.

6.1.5 Threatened, Rare, and Endangered Species

Threatened, rare, or endangered species in the general area of Kirtland AFB include the following:

- Gray vireo state-threatened species
- Western burrowing owl federal species of concern
- Loggerhead shrike federal species of concern
- Mountain plover federal species of concern
- Texas-horned lizard federal species of concern.

Except for the Western burrowing owl, none of these species are expected on-Site. Gray vireo territories have been documented on-Site throughout the juniper woodland community between 5,850 and 6,600 feet elevation on the far eastern side of Kirtland AFB. These species occupy areas with an open canopy (i.e., less than 25%). The Loggerhead shrike has been observed on Base in grassland, pinyon-juniper woodlands, and riparian habitats. Mountain plovers are not known to occur on-Site; however, limited sightings have been documented just south of the Base on the Isleta Pueblo Indian Reservation. Appropriate nesting habitat for the Mountain plover is limited on-Site; however, the southern grasslands on-Site may potentially be used as brood-rearing habitat or during migration. The Texas-horned lizard has not been documented on-Site.

The Western burrowing owl, a federal species of concern, is a common resident at Kirtland AFB and has been monitored on-Site for more than 10 years. The Kirtland AFB INRMP (KAFB, 2012) includes a Burrowing Owl Management Plan (Appendix O). Figure 6-2 illustrates locations of Western burrowing owl nests documented in 2015. Western burrowing owls are very closely associated with the prairie dog colonies on-Site, as they use abandoned prairie dog burrows for nesting. As of 2015 there are no active nests in the vicinity of the BFF; however, prairie dog burrows are present in the BFF, and a burrowing owl was documented at a burrow in the BFF in May of 2017. Thus, the Western burrowing owl is evaluated as an ecological receptor in this RA.

In summary, there are multiple threatened, rare, or endangered species in the general area of Kirtland AFB; however, except for the Western burrowing owl, none of these species are expected on-Site.

6.1.6 Ecological Problem Formulation

The ecological problem formulation for the Site starts with the same list of analytes as the HHRA and compares those analytes to ecological screening values. This formulation process then identifies the exposure pathways, the ecological values (or receptors) to be protected, and the measures of effect used to quantify potential risk to ecological receptors at the Site.

The list of chemicals evaluated in the ERA are listed in Table 3-1 for soil and soil gas. Groundwater was not evaluated as part of the SLERA due to lack of exposure pathways to groundwater.

6.1.7 Conceptual Site Exposure Model

The CSEM identifies complete and potentially complete exposure pathways between physical media affected by Site-related contamination and potential ecological receptors. Identifying relevant exposure pathways is a critical element of the CSEM. Only exposure pathways that are complete or potentially complete are quantitatively evaluated in a Phase II Quantitative Assessment. If, under current and expected future land use scenarios, there are no potential exposure pathways for ecological receptors at the Site, there is no potential for risk, and the exposure pathway is not evaluated in Phase II. A CSEM for ecological receptors is presented in Figure 6-3.

The primary exposure medium on Base for ecological receptors is considered to be surface soil. Mixed zone soil (0 to 10 feet bgs) was considered an exposure medium for the burrowing owl and prairie dogs. NMED Guidance (NMED, 2017) states that, "For all non-burrowing ecological receptors and for shallow-rooted plants, the soil exposure intervals typical of surface conditions and is considered to be between 0 and 1 foot bgs). For all burrowing ecological receptors (and receptors that may use burrows) and deep rooted plants, the soil interval to be evaluated is 0 to 10 feet bgs."

Plants and animals on-Site may be exposed to COPCs in surface soil through direct contact, incidental ingestion of soil, or ingestion of food items that have become contaminated through bioaccumulation. Burrowing animals (i.e., burrowing owls and prairie dogs) may be exposed to mixed zone soil (0 to 10 feet bgs) via these same exposure pathways. Direct contact exposure pathways are considered complete for plants, terrestrial invertebrates, and terrestrial vertebrates, while bioaccumulation exposure pathways are complete for terrestrial invertebrates and vertebrates.

COPCs released to surface soil or mixed zone soil could volatilize into air voids in the soil column such as animal burrows created by burrowing mammals and reptiles. Because several VOCs are listed as COPCs at the Site, inhalation of soil gas in soil burrows is considered a complete exposure pathway for burrowing animals on-Site.

Exposure pathways to surface water and sediment are incomplete for all ecological receptors because there are no permanent surface water features on the Site. In addition, ecological receptors at the Site are not exposed to Site groundwater because groundwater does not reach the surface via any seeps or wetlands. Therefore, groundwater exposure pathways are considered incomplete.

6.1.8 Assessment Endpoints

Assessment endpoints identify the particular ecological resources (e.g., plants and animals, habitats, etc.) to be protected at a site. At the Site, terrestrial fauna potentially includes invertebrates, reptiles, birds, small mammals (e.g., rodents), and larger carnivorous, omnivorous, and/or browsing mammals (e.g., mule deer). The assessment endpoints used for screening are:

- 1. Protection of terrestrial plant populations and communities
- 2. Protection of soil invertebrate populations and communities
- 3. Protection of populations of herbivorous birds
- 4. Protection of populations of omnivorous birds
- 5. Protection of populations of insectivorous birds
- 6. Protection of populations of carnivorous birds
- 7. Protection of populations of herbivorous mammals
- 8. Protection of populations of omnivorous mammals
- 9. Protection of populations of insectivorous mammals
- 10. Protection of populations of carnivorous mammals.

In addition, because exposure to volatile chemicals in soil burrows is potentially a complete exposure pathway, the following is an assessment endpoint based on the inhalation exposure pathway:

1. Protection of populations of burrowing mammals.

A lack of toxicity data for Site COPCs precludes adequate quantitative evaluation of risks to reptiles at the Site; therefore, they were not included as ecological receptors for the Phase II Quantitative Assessment. The uncertainties associated with eliminating ecological receptors from quantitative evaluation because of a lack of toxicity (or other) data is considered in the uncertainty discussion in Section 6.4.

6.2 Phase II, Tier 1 Quantitative Assessment

Based on this Phase I Qualitative Assessment, it was determined that a Phase II Quantitative Assessment was warranted because ecological receptors are potentially present at the Site, and Site-related chemicals have been documented in soil and soil gas.

NMED's Phase II Quantitative Assessment starts with a Tier 1 SLERA. The Tier 1 SLERA uses conservative SLs based on concentrations demonstrated to cause no adverse effects in ecological receptors and conservative exposure assumptions based on maximum detected concentrations. The Tier 1 utilizes the initial ecological problem formulation and ecological CSEM, and identifies COPCs for further evaluation in the Tier 2 Quantitative Assessment.

6.2.1 Assessment Endpoints and Measures of Effect

Potential adverse effects to assessment endpoints listed in Section 6.1.8 are inferred from one or more measurement endpoints. The measurement endpoint is a measurable response to a stressor, in this case chemical concentration in soil, that is related to the valued attribute of the chosen assessment endpoint, in this case protection of populations of plants, invertebrates, mammals, and birds. The measurement endpoint serves as a surrogate that can be used to draw a predictive conclusion about the potential for effects of the COPC to the assessment endpoint. For the Tier 1 SLERA, the measurement endpoint for all identified assessment endpoints is comparison of chemical concentrations in soil and soil gas to conservative toxicological benchmarks based on no-observed-adverse-effect levels (NOAEL).

NOAEL toxicity values were obtained from literature sources as indicated below. SLs were obtained for as many of the assessment endpoint ecological receptor categories as possible, and the screening comparisons were conducted using the most sensitive ecological receptor category, i.e., the ecological receptor category with the lowest SL.

For inorganic constituents in soil, ecological screening levels (ESL) derived by NMED (NMED, 2017) were used preferentially over other sources of information for organics. If no SLs were available from NMED, other sources of SLs such as the Los Alamos National Laboratory (LANL; LANL, 2014) ESLs and the National Oceanic and Atmospheric Administration Screening Quick Reference Tables (Buchman, 2008) were used to identify appropriate SLs.

Screening values of soil gas concentrations of COPCs were obtained from the LANL EcoRisk Database V 3.3 (LANL, 2014). If no soil gas SL was available for a constituent in the LANL database, soil gas SLs were obtained from MWH Americas, Inc. (2011).

6.2.2 Exposure Estimation

The Tier 1 SLERA exposure estimation utilizes conservative assumptions, including use of maximum detected values and assumption of 100% bioavailability of COPCs.

The initial screening of COPCs in soil and soil gas was conducted using the maximum measured concentration in the media of interest. For surface soil, the maximum concentration in soil samples collected from 0 to 1 foot bgs were used as the screening EPC for all assessment endpoints. For mixed zone soil, the maximum concentration in soil samples collected from 0 to 10 feet bgs were used as the screening EPC for all assessment endpoints. For soil gas, the maximum measured concentration in the shallowest depth interval (15 to 25 feet bgs) of all on-Site soil gas samples from sampling conducted between Q1 2016 and Q3 2016 were used as the EPC for burrowing mammals. Use of the measured soil gas concentration at 15 to 25 feet bgs is a conservative exposure estimate, because burrowing mammals do not burrow that deeply (typically less than 3 feet bgs), and soil gas concentrations would be lower at 3 feet bgs then 15 to 25 feet bgs.

6.2.3 Ecological Risk Characterization

The Tier 1 SLERA ecological risk characterization compares conservative measures of effect with exposure estimates based on maximum detected concentrations.

6.2.3.1 Surface Soil

Eight of the 12 COPCs analyzed in the surface soil were detected in surface soil (0 to 1 foot bgs). Results of the initial screening of surface soil concentrations are presented in Table 6-1. Maximum detected concentrations of lead exceeded SLs, and therefore the analyte is retained for further evaluation in the Phase II, Tier 2 Quantitative Assessment for surface soil in the suface soil on-Site. In addition to calculating HQs for individual chemical constituents, NMED Guidance requires that the ecological screening assessment calculate a HI for each of the screening ecological receptors evaluated (NMED, 2017). The HI represents the sum of the HQ values across chemical constituents for each ecological receptor, and is intended to account for additive toxicological effects that might be missed if looking solely at individual HQs. The HI calculations for surface soil on-Site are presented in Table 6-2. Three of the 10 ecological receptors had total HIs greater than 1. Table 6-2 shows how each COPC contributes to the total HI for each ecological receptor. Lead was the only COPC that contributed significantly to HI values greater than one.

6.2.3.2 Mixed Zone Soil from Confirmation Samples

Ten of the 13 COPCs analyzed in the mixed zone soil were detected in mixed zone soil (0 to 10 feet bgs). Results of the initial screening of mixed zone soil concentrations on-Site are presented in Table 6-3. Complete exposure pathways exist for mixed zone soil to two ecological receptors evaluated in Table 6-3, prairie dogs and burrowing owls. Maximum detected concentrations of lead in confirmation samples exceeded SLs, and therefore the analyte is retained for further evaluation in the Phase II, Tier 2 Quantitative Assessment for mixed zone soil in the confirmation samples. The HI represents the sum of the HQ values across COPCs for each ecological receptor, and is intended to account for additive toxicological effects that might be missed if looking solely at individual HQs. The HI calculations for mixed zone soil on-Site are presented in Table 6-4. Both ecological receptors had total HIs greater than 1. Table 6-4 shows how each COPC contributes to the total HI for each ecological receptor. Lead was the only constituent that contributed significantly to HI values greater than 1.

6.2.3.3 Soil Gas

Twelve of the 14 potential soil gas COPCs were detected in the shallowest soil gas sampling interval of 15 to 25 feet bgs. Soil gas ESLs were available for eight of the 12 detected constituents. HQs for all eight of these constituents were less than 0.3, indicating no potential unacceptable ecological risk from soil gas concentrations for these COPCs in mammal burrows. Soil gas SLs were not available for 1,2-dibromoethane, cyclohexane, n-heptane, or n-hexane, therefore a quantitative evaluation of risk from these COPCs is not possible. Results of the soil gas are screening are presented in Table 6-5. Potential risk from COPCs without soil gas SLs is discussed further in the uncertainty analysis in Section 6.4.

6.3 Phase II, Tier 2 Quantitative Assessment

A Tier 2 SLERA includes a re-evaluation of the conservative assumptions used in the Tier 1 SLERA. Results of the Tier 2 SLERA indicate that although some detections of lead exceeded the most conservative SLs for a limited number of ecological receptors, no unacceptable risk is posed by any fuel-related constituents at the Site.

For the on-Site surface soil dataset, only lead was carried forward to the Tier 2 assessment. The maximum lead concentration (39.1 mg/kg) exceeded SLs for insectivorous birds, omnivorous birds, and herbivorous birds. Insectivorous, omnivorous, and herbivorous birds forage over defined ranges, and are not exposed to single point concentrations in the way that sessile organisms such as plants are exposed, thus use of an estimator of central tendency exposure is relevant for calculating risk to mammals and birds. Table 6-6 presents summary statistics for lead at the 0 to 1 foot bgs depth. Lead background concentrations at Kirtland AFB are 21.4 mg/kg in surface soil, and 11.8 mg/kg in subsurface soil (NMED, 2007). The lead surface soil background concentration also exceeds the SLs for insectivorous, omnivorous, and herbivorous birds. Mean and median lead concentrations of the on-Site surface soil dataset are 11 mg/kg and 8 mg/kg respectively and the dection frequency is 100%. The mean, median, and detection frequency of lead concentrations support that on-Site surface soils are within the range of background conditions at Kirtland AFB. Thus, potential risk to ecological receptors from lead cannot be differentiated from background conditions.

For mixed zone soil (0 to 10 feet bgs) only lead, based on detections in confirmation samples, was carried forward to the Tier 2 assessment for burrowing owls. The maximum lead concentration in confirmation samples (71 mg/kg) exceed SLs for small omnivorous mammals and carnivorous birds. These receptors forage over defined ranges, and are not exposed to single point concentrations in the way that sessile organisms such as plants are exposed, thus similar to surface soil an estimator of central tendency exposure is relevant to calculating risk to mammals and birds. Table 6-6 present the summary statistics for lead in the confirmation samples from 0 to 10 feet bgs. Mean and median lead concentrations of the on-Site surface soil data are 9.6 mg/kg and 4.1 mg/kg respectively, which is below the SLs for omnivorous mammals and carnivorous birds and the dection frequency is 100%. The mean, median, and detection frequency of lead concentrations support that on-Site mixed zone soils are within the range of background conditions at Kirtland AFB. Thus, potential risk to ecological receptors from lead cannot be differentiated from background conditions in mixed zone soil from 0 to 10 feet bgs.

6.4 Uncertainty Discussion

One uncertainty, which indicates the soil gas evaluation may be overly conservative, is the depth of the soil gas sample intervals. It is important to note that soil gas samples were collected between 15 and 25 feet bgs. Screening soil gas concentrations at these depths is overly conservative when applied to the typical maximum burrowing owl burrow depth of 3 feet (Cornell Lab of Ornithology, 2017). All of the detected chemicals for which soil gas SLs were available had HQ values less than 0.3, suggesting chemical concentrations in the 15 to 25 feet bgs depth interval are relatively low compared to risk levels, and those concentrations are expected to be even lower in the shallower depth interval occupied by burrowing animals.

The ERA is designed to err on the side of conservatism by utilizing NOAEL-based toxicity information and conservative assumptions such as 100% Site use, 100% bioavailability of COPCs, and uptake of COPCs in the Tier 1 SLERA. A key area of uncertainty in the Site is the lack of toxicity information for a number of ecological receptors and chemicals. This is particularly evident in the lack of ecological soil gas SLs for four of the detected chemicals in subsurface soil gas samples. This makes a quantitative evaluation of risk from these chemicals impossible for these ecological receptors.

Another example of the lack of toxicity information is the lack of ESLs for birds for many of the chemicals evaluated in soil (e.g., most polyaromatic HC compounds). Without adequate avian toxicity information, one is left to infer that levels protective of mammals are also protective of birds, which may overestimate or underestimate actual risk to birds.

The lack of available toxicity information also precluded the quantitative evaluation of reptiles at the Site. Therefore, the SLERA presumes that concentrations that are adequately protective of birds and mammals are also adequately protective of reptiles, but the accuracy of that presumption is unknown. However, for the SLERA, this uncertainty is likely not significant in the overall conclusions because of the limited extent of exceedances and the marginal ecological habitat at the Site, which both serve to limit potential ecological exposures.

6.5 Conclusions and Recommendations

This ERA follows the NMED ERA process (NMED, 2017). This process determined there are no unacceptable adverse risks present to ecological receptors as a result of COPCs present at the Site.

Given the limited extent of concentrations exceeding no-effects SLs and the limited ecological exposure potential, no unacceptable ecological risk exists at the Site due to lead in surface or mixed zone soils in the on-Site area. Although maximum detected concentrations of lead exceeded no-effects based SLs, evaluation of other parameters such as mean, median concentrations, and frequency of detects within the on-Site soil datasets suggest exceedances are limited in extent. In addition, the maintenance of the BFF for Site operations limits the amount and quality of ecological habitat present, and ecological exposures are expected to be minimal for this reason.

This ERA concludes that there is no unacceptable ecological risk present when burrowing owls are considered as possible ecological receptors. Concentrations in soil from 0 to 10 feet bgs are below the SLs or are at background concentrations and pose no unacceptable ecological risk. Concentrations of all on-Site soil gas VOCs in the 15 to 25 feet bgs interval were less than available ESLs. Though no SLs were available for four of the detected VOCs, maximum HQs for the eight VOCs with SLs were less than 0.3, indicating that concentrations are low compared to risk levels. In addition, screening soil gas

concentrations at the 15 to 25 feet bgs depth interval is overly conservative when compared to the typical maximum burrow depth of the burrowing owl (3 feet bgs). Soil gas concentrations are expected to be even lower at typical burrow depths. Therefore, no further action is proposed for soil gas concentrations in on-Site soils for protection of ecological receptors.

7 REFERENCES

- Buchman, M.F., 2008. National Oceanic and Atmospheric Administration Screening Quick Reference Tables. NOAA OR&R Report 08-1. Seattle, WA, Office of Response and Restoration Division, National Oceanic and Atmospheric Administration. 34 pages.
- City of Albuquerque, 2015. City of Albuquerque Standard Specifications and Drawings Update No. 9 for Revisions and Additions to ABCWUA Sections 18, 100, 125, 131, 170, 900, 901, 905, 910, 915, 920, 921, 925, 2000, 2100, 2200, 2300, and 2400. Landscaping Sections: 1001, 1005, 1010, 1011, 1012, and 2700.
- City of Albuquerque, 2017a. Plans and Publications. https://www.cabq.gov/planning/urban-design-development/publications. Accessed January 25.
- City of Albuquerque, 2017b. Comprehensive City Zoning. https://www.cabq.gov/planning/codeenforcement/comprehensive-city-zoning-code. Accessed May 16.
- Cornell Lab of Ornithology, 2017. All about Birds: Burrowing Owl. https://www.allaboutbirds.org/guide/Burrowing_Owl/lifehistory
- EPA, 2012. Conceptual Model Scenarios of the Vapor Intrusion Pathway, EPA 530-R-10-003, OSWER 9285.7-02EP, Office of Solid Waste and Emergency Response, Washington, D.C., February.
- EPA. 2016. Regional Screening Levels Master Table. Available on-line at </www.epa.gov/...table/...Tables/...master_sl_table_run. May.
- KAFB, Integrated Natural Resources Management Plan. 2007. 2012 Update, prepared for 377th Air Base Wing, Air Force Materiel Command, April, 2007 and November, 2012.
- KAFB, 2016. August 24, 2016 correspondence between Mr. Eric H. Froehlich, Colonel, USAF, Commander, 377 ABW/CC, Kirtland AFB, NM and Mr. John Kieling, Bureau Chief, Hazardous Waste Bureau, NMED, 2905 Rodeo Park Dr. E, Santa Fe, NM, re: KAFB variance from NMED Residential Soil Screening Levels (SSLs) and Vapor Intrusion Screening Levels (VISLs) to NMED Industrial and Construction worker SSLs and Industrial VISLs.
- KAFB, 2017. April 6, 2017 correspondence between Mr. Eric H. Froehlich, Colonel, USAF, Commander, 377 ABW/CC, Kirtland AFB, NM and Mr. John Kieling, Bureau Chief, Hazardous Waste Bureau re: Request for Modification to the Work Plan for Soil Vapor Monitoring and Drinking Water Monitoring.
- LANL, 2014. ECORISK Database Release 3.3. Risk Reduction and Environmental Stewardship Remediation Service Program, Los Alamos National Laboratory, Los Alamos, NM. Available at http://www.lanl.gov/environment/cleanup/ecorisk.shtml.

- MWH Americas, Inc., 2011. Inhalation Toxicity Reference Value Updates for Use in Ecological Risk Assessments at the Santa Susana Field Laboratory, Ventura County, California, Technical Memorandum, January 7, Final. Prepared for California Department of Toxic Substance Control.
- Mueller, J. 2011. The Generation of Acetones and Ketones A Positive Process? Pollution Engineering. September.
- New Mexico Water Quality Control Commission, 2011. NMAC 20.6.2.4103, Abatement Standards and Requirements. January.
- NMED, 2007. Background Concentrations of Constituents of Concern to the Sandia National Laboratories New Mexico Environmental Restoration Project and the Kirtland Air Force Base Installation Restoration Program. March.
- NMED, 2010. Hazardous Waste Treatment Facility Operating Permit, EPA ID No. NM9570024423, Issued to U.S. Air Force for the Open Detonation Unit Located at Kirtland Air Force Base, Bernalillo County, New Mexico, by the NMED Hazardous Waste Bureau. July.
- NMED, 2017. Risk Assessment Guidance for Site Investigations and Remediation, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program, New Mexico Environment Department, Santa Fe, NM.
- NOAA.gov. 2017. Albuquerque, New Mexico Monthly Mean Precipitation: https://www.ncdc.noaa.gov/
- Omernik, J.M, 1986. Ecoregions of the United States, Corvallis Environmental Research Laboratory, U.S. EPA.
- Real ID Act of 2005. Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Tsunami Relief, 2005. Pub. L. 109-13, 119 Stat. 302.
- USACE, 2011. Quality Assurance Project Plan, Bulk Fuels Facility (BFF) Spill, Solid Waste Management Units ST-106 and SS-111, Kirtland Air Force Base, Albuquerque, New Mexico. Prepared by Shaw Environmental & Infrastructure, Inc. for the USACE Albuquerque District under USACE Contract No. W912DY-10-D-0014, Delivery Order 0002. April.
- USACE, 2016. Work Plan for Soil Vapor Monitoring and Drinking Water Monitoring, Solid Waste Management Unit ST-106/SS-111. Prepared by Sundance Consulting, Inc. for USACE– Albuquerque District. August 16.
- USACE, 2017a. RCRA Facility Investigation Report Solid Waste Management Unit ST-106/SS-111 Kirtland Air Force Base, New Mexico. Prepared by Sundance Consulting, Inc., for the USACE Albuquerque District under Contract No. W912PP-16-C-0002. January

- USACE, 2017b. Quarterly Monitoring Report October December 2016 and Annual Report for 2016 Bulk Fuels Facility Solid Waste Management Unit ST-106/SS-111 Kirtland Air Force Base, New Mexico. Prepared by EA Engineering, Science, and Technology, Inc., PBC., for the USACE Albuquerque District under Contract No. W912DR-12-D-0006 Delivery Order DM01. March.
- USDA, 1977. Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico, June.
- USDA, 2013. Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico, Web Soil Survey, Survey Area Data: Version 10, December 17, http://websoilssurvey.ncrs.usda.gov.

FIGURES





| Figure 1-1 EDB and Benzene Plumes Q4 2015 Risk Assessment Bulk Fuels Facility Kirtland Air Force Base, New Mexico | Legend Inferred EDB Contour EDB Concentrations (µg/L) 0.05 0.1 1 10 10 Benzene Concentration (µg/L) 0 - 5 5 - 10 10 - 100 100 - 1000 1000 - 10000 | Kirtland Air Force Base Installation Area Bulk Fuels Facility Area City of Albuquerque Parks Former Buried Fuel Transfer Lines Former Aboveground Fuel Transfer Lines Former Aboveground Storage Tanks Water Authority Drinking Water Supply Well VA Drinking Water Supply Well KAFB Drinking Water Supply Well USGS Sentinel Wells Groundwater Monitoring Well Location Approximate Location of Private Irrigation Well | Acronyms: EDB = Ethylene Dibromide KAFB = Kirtland Air Force Base µg/L = micrograms per liter Q = Quarter USGS = United States Geologic VA = Veteran Affairs 0 500 1,000 2,000 3,00 1 centimeter = 200 meters 1:20 Coordinate System: NAD 1983 StatePlane New Mexico Central FIF Credits: City of Albuquerque, KAFB, ESRI Bas |
|---|--|---|--|
|---|--|---|--|

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cal Survey

00 Feet 0,000



PS 3002 Feet se Map





Figure 2-1. NMED Screening Level HHRA Process





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Notes:

- 1. Surface soil is considered to be soil between 0 and 1 feet bgs.
- 2. Subsurface soil is considered to be soil between 1 and 10 feet bgs.
- 3. Institutional controls prevent exposure pathways from being complete. Kirtland AFB administrative controls prevent intrusive work without prior review and approval. Groundwater monitoring prevents exposure to contaminated groundwater.
- 4. Commercial/industrial receptors are defined as only encountering surface soil.
- 5. There is no pathway for Kirtland AFB water consumers to come in contact with contaminated soil or air at the BFF.
- 6. Although current institutional controls prevent exposure to construction workers from soil and soil gas, institutional controls could change in the future. Therefore, this pathway is evaluated as complete.
- 7. Exposure pathway is only complete if BFF land use were to change to residential in the future.
- 8. Inhalation of COPCs from ambient outdoor air is an incomplete exposure pathway for these receptors as discussed in Section 4.3.
- 9. This complete exposure pathway represents inhalation of COPCs by construction workers working in a trench. This pathway is complete but insignificant, and any concerns for construction worker will be captured in the evaluation of industrial exposure to indoor air.
- 10. There is no pathway for commercial/industrial or construction workers to come in contact with contaminated groundwater at the BFF.
- 11. NMED requires that groundwater pollution at any place of withdrawal for the present or reasonably foreseeable future use, where the TDS concentration is 10,000 mg/L or less, shall be abated to conform to the NMWQCC standards (NMWQCC, 2011). Because of this requirement, the exposure pathways to future Kirtland AFB water consumers are assessed as complete.

Key:

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Acronyms and Abbreviations:

AFB = Air Force Base AvGas = aviation gasoline BFF = Bulk Fuels Facility bgs = below ground surface COPC = contaminant of potential concern FFOR = Former Fuel Offloading Rack JP-4 = jet propellant 4

Figure 4-1. On-Site Conceptual Site Exposure Model

| FUTURE | | | | | | | |
|------------------------------|-------------------------------|---|---------------|--|--|--|--|
| F ercial strial ker | BFF Construction Worker | BFF BFF nstruction Residential Worker Homeowner | | | | | |
| | | | | | | | |
| | • (6) | ●(7) | O(5) | | | | |
| | • (6) | ●(7) | O(5) | | | | |
| | | | | | | | |
| | • (6) | ●(7) | O(5) | | | | |
| | • (6) | ● (7) | O(5) | | | | |
| | | | | | | | |
| 4) | • (6) | ●(7) | O(5) | | | | |
| 4) | • (6) | ● (7) | O(5) | | | | |
| | | | | | | | |
| | 0 | •(7) | O(5) | | | | |
| | | | | | | | |
| 3) | • (9) | O(8) | O(5) | | | | |
| | | | | | | | |
| 0) | O(10) | O(10) | ● (11) | | | | |
| 0) | O(10) | O(10) | ● (11) | | | | |
| 0) | O(10) | O(10) | •(11) | | | | |
| | | | | | | | |

Incomplete Pathway Complete Pathway

JP-8 = jet propellant 8 KAFB = Kirtland Air Force Base mg/L = milligram per Liter NMED = New Mexico Environment Department NMWQCC = New Mexico Water Quality Control Commission TDS = total dissolved solids

Figure 4-2. Off-Base Conceptual Site Exposure Model



Notes:

- 1. No pathway exists for current or future Bullhead Park users to be exposed to contaminated air or groundwater.
- 2. There is no exposure pathway from contaminated air off-Base to current or future drinking water supply well water consumers or private well owners.
- 3. Exposure pathway is only complete if Bullhead Park land use were to change to residential in the future.
- 4. Inhalation of COPCs from outdoor air is an incomplete exposure pathway for all receptors as discussed in Section 4.4.
- 5. Exposure to receptors while gardening due to uptake from plants or biota is incomplete. The amount of soil gas is insignificant at plant root depths. In addition, there is no contaminated soil, and plants will not uptake contaminated soil gas.
- 6. Institutional controls prevent exposure pathways from being complete. See Sections 4.2 and 4.4.
- 7. There is no exposure pathway from contaminated groundwater off-Base to current or future recreational Bullhead Park users.
- 8. NMED requires that groundwater pollution at any place of withdrawal for the present or reasonably foreseeable future use, where the TDS concentration is 10,000 mg/L or less, shall be abated to conform to the NMWQCC standards (NMWQCC, 2011). Because of this requirement, the exposure pathways to future water consumers are assessed as complete.

Key:

| AN RECEPTORS | | | | | | | |
|-------------------------------------|--|--|-----------------------|--|--|--|--|
| | FUT | URE | | | | | |
| ecreational Ilhead Park Users | Residential Homeowners in Bullhead Park | Water Authority Drinking Water Supply Well Consumer | Private Well Owner | | | | |
| | | | | | | | |
| O (1) | • (3) | O(2) | O(2) | | | | |
| | | | | | | | |
| O(4) | O(4) | O(4) | O(4) | | | | |
| | | | | | | | |
| O(5) | O(5) | O(5) | O(5) | | | | |
| | | | | | | | |
| O(1) | O(7) | •(8) | •(8) | | | | |
| O(1) | O(7) | •(8) | •(8) | | | | |
| O(1) | O(7) | •(8) | •(8) | | | | |

0 •

Incomplete Pathway

Complete Pathway

Acronyms and Abbreviations:

COPC = contaminant of potential concern

mg/L = milligram per Liter

NMED = New Mexico Environment Department

NMWQCC = New Mexico Water Quality Control Commission

TDS = total dissolved solids



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Legend

Kirtland Air Force Base Installation Area

Bulk Fuels Facility Area

Buildings

Roads

Existing Aboveground Fuel Transfer Lines

Current Aboveground Tanks





Building 1032

Trees west of Bulk Fuels Facility



Prairie Dog burrows on-Site



Projection NAD 1927 StatePlane New Mexico Central FIPS 3002 Feet

Figure 6-1

Current Bulk Fuels Facility Infrastructure

Risk Assessment

Bulk Fuels Facility Kirtland Air Force Base, New Mexico



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Notes:

- 1. Surface soil is considered to be soil between 0 and 1 feet bgs.
- 2. Subsurface soil is considered to be soil between 1 and 10 feet bgs.
- 3. No aquatic plants or invertebrates are present at the Site.
- 4. There is no pathway for terrestrial plants, invertebrates, and animals to encounter subsurface soil or subsurface water/sediment.
- 5. There is no pathway for terrestrial plants, invertebrates, and surface dwelling animals to come in contact with burrow air.
- 6. Bioaccumulation to biotic tissue does not occur in plants.
- 7. Groundwater is approximately 480 feet bgs at the Site. There is no pathway for ecological receptors to come in contact with groundwater.

Key:

 O
 Incomplete Pathway

 •
 Complete Pathway

Acronyms and Abbreviations:

bgs = below ground surface KAFB = Kirtland Air Force Base SWMU = solid waste management unit

TABLES

Table ES-1. Human Health Risk Assessment Results Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| | HHRA Results | | | | | | | | |
|---|----------------------------------|---------------------------------|---|-----------------------------|--|---|--|--|--|
| Receptor | Complete Exposure Pathways | Cumulative Carcinogenic Risk | Cumulative Non- Carcinogenic Hazard Index | EPC Carcinogenic Risk | EPC Non- Carcinogenic Hazard Index | Current Risk to Human Health? | | | |
| | | | On-Site | | | | | | |
| Current and Future | Surface Soil | 2x10 ⁻¹⁰ | 0.00004 | N/A | N/A | No: concentrations do not exceed target risk levels | | | |
| Worker | Soil Gas (Indoor) | 6x10⁻⁵ | 0.2 | 4x10 ⁻⁶ | N/A | No: concentrations do not exceed target risk levels | | | |
| Future BFF Construction Worker | Mixed Zone Soil | 3x10 ⁻⁹ | 0.04 | N/A | N/A | No: concentrations do not exceed target risk levels | | | |
| Future Residential | Mixed Zone Soil | 8x10 ⁻⁸ | 0.2 | N/A | N/A | No: concentrations do not exceed target risk levels | | | |
| BFF | Soil Gas (Indoor) | 3x10 ⁻⁴ | 0.9 | 2x10 ⁻⁵ | N/A | No: No current exposure pathway | | | |
| Future KAFB Water Consumer | Groundwater | 5x10 ⁻² | 600 | 5x10 ⁻³ | 70 | No: No current exposure pathway | | | |
| | | | Off-Base | | | | | | |
| Current Bullhead Park Recreational User | None | N/A | N/A | N/A | N/A | No: No current exposure pathway | | | |
| Future Residential Homeowner in Bullhead Park | Soil Gas (Indoor) | 2x10 ⁻⁶ | 0.04 | N/A | N/A | No: No current pathway, calculated risk highly protective | | | |
| Future Water Authority Drinking Water Supply Well Consumer/Private Well Owner | Groundwater | 8x10 ⁻³ | 80 | 1x10 ⁻⁴ | 0.8 | No: No current exposure pathway | | | |

Acronyms and Abbreviations:

BFF = Bulk Fuels Facility

EPC = exposure point concentration

HHRA = Human Health Risk Assessment

KAFB = Kirtland Air Force Base

N/A = not applicable

SWMU = solid waste management unit

Bold = Bolded numbers exceed NMED target risk level (NMED, 2017).

Table 1-1. Current Nature and Extent of Site Contaminationas Presented in the RFI ReportRisk Assessment ReportBulk Fuels Facility, SWMU ST-106/SS-111Kirtland Air Force Base, New Mexico

| Type of Contamination | Present On-Site | Present Off-Base |
|--|---|--|
| Shallow soil | Yes : Removed to 20 feet bgs in the area of releases to NMED 2012 residential soil SLs, except for a small unexcavated soil area around infrastructure (1/3 acre) | No |
| Deep soil to top of water table | Yes : Residual fuel along LNAPL migration pathway from the source area to the water table approximately 500 feet east of the source area | No, with exception of soil directly above water table |
| Soil Gas | Yes : Highest concentrations in area of releases directly below underground pipelines from 50 to 300 feet bgs | Yes : Low intermittent concentrations detectible 25 to 450 feet bgs |
| Free-phase LNAPL floating on groundwater | Unknown : Only intermittent sheens of LNAPL measured since Q1 2012 due to LNAPL interim measures, degradation, and rising water levels; the RFI Report identified vertical extent of smearing of residual LNAPL as a data gap and recommended further investigation. Rising water table could encounter trapped LNAPL in vadose zone | No: No free-phase LNAPL measured since Q1 2012 due to LNAPL interim measures, degradation, and rising water levels. |
| Groundwater | Yes: LNAPL reached groundwater approximately 500 feet east of the area of releases; the soluble fuel constituents dissolved into groundwater and transported off-Base in the direction of groundwater flow (north-northeast direction) | Yes: Dissolved-phase contamination (benzene and EDB) transported downgradient |

Acronyms and Abbreviations:

bgs = below ground surface EDB = ethylene dibromide LNAPL = light non-aqueous phase liquid NMED = New Mexico Environment Department Q = Quarter RFI = Resource Conservation Recovery Act (RCRA) Facility Investigation SL = screening level SWMU = Solid Waste Management Unit

Table 3-1. RCRA Facility Investigation Report List of COPCs Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| COPC | Soil | Soil Gas | Groundwater |
|---------------------------|--------------|--------------|--------------|
| 1,2,4-Trimethylbenzene | ✓ | ✓ | ✓ |
| 1,2-Dibromoethane (EDB) | ✓ | ✓ | ✓ |
| 1,2-Dichloroethane | ✓ | ✓ | ✓ |
| 1-Methylnaphthalene | ✓ | | ✓ |
| 2-Methylnaphthalene | ✓ | | ✓ |
| Acetophenone | | | ✓ |
| Benzene | ✓ | ~ | ✓ |
| Cyclohexane | | ✓ | |
| Ethylbenzene | ✓ | \checkmark | ✓ |
| Hexadecane | ✓ | | |
| Isopropylbenzene (cumene) | ✓ | | |
| Lead | ✓ | | ✓ |
| m & p-Xylenes | | \checkmark | |
| МТВЕ | ✓ | ~ | |
| n-Heptane | | ✓ | |
| n-Hexane | | ~ | |
| Naphthalene | ✓ | ~ | ✓ |
| o-Xylene | | ✓ | |
| Toluene | ✓ | ✓ | ✓ |
| Xylenes (total) | \checkmark | \checkmark | \checkmark |

Acronyms and Abbreviations:

COPC = contaminant of potential concern

MTBE = methyl tert-butyl ether

RCRA = Resource Conservation and Recovery Act

SWMU = solid waste management unit

Table 3-2. On-Site Surface Soil (0 to 1 foot bgs) Summary Statistics Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| COPC | Total Number of Samples | Number of Detects | Percent Nondetect (%) | Maximum Detect (mg/kg) | Minimum Detect (mg/kg) | Distribution | EPC ^a (mg/kg) | EPC Method |
|-------------------------|-------------------------------|----------------------|-----------------------------|------------------------------|------------------------------|---------------|--------------------------|------------------------|
| 1,2,4-Trimethylbenzene | 14 | 1 | 93 | 0.00038 | 0.00038 | N/A | 0.00038 ^c | Maximum Detection |
| 1,2-Dibromoethane (EDB) | 14 | 0 | 100 | N/A | N/A | N/A | N/A ^b | N/A |
| 1,2-Dichloroethane | 14 | 0 | 100 | N/A | N/A | N/A | N/A ^b | N/A |
| 2-Methylnaphthalene | 14 | 3 | 79 | 0.14 | 0.012 | N/A | 0.14 ^c | Maximum Detection |
| Benzene | 14 | 11 | 21 | 0.0013 | 0.00020 | Nonparametric | 0.00074 | 95% KM (t) UCL |
| Ethylbenzene | 14 | 1 | 93 | 0.00030 | 0.00030 | N/A | 0.00030 ^c | Maximum Detection |
| Isopropylbenzene | 14 | 0 | 100 | N/A | N/A | N/A | N/A ^b | N/A |
| Lead | 14 | 14 | 0 | 39 | 3.6 | Gamma | 16 | 95% Adjusted Gamma UCL |
| MTBE | 14 | 0 | 100 | N/A | N/A | N/A | N/A ^b | N/A |
| Naphthalene | 14 | 1 | 93 | 0.0064 | 0.0064 | N/A | 0.0064 ^c | Maximum Detection |
| Toluene | 14 | 10 | 29 | 0.0013 | 0.00022 | Nonparametric | 0.00071 | 95% KM (t) UCL |
| Xylenes (total) | 14 | 1 | 93 | 0.00063 | 0.00063 | N/A | 0.00063 ^c | Maximum Detection |

^a EPCs were calculated using EPA's ProUCL 5.1 (Attachment 2); All nondetects were given the value of the MDL.

^bNo detections. COPC will not be carried through the risk screening as discussed in Section 3.3, any uncertainty with detection limits will be discussed in Section 5.2

^c Four or fewer detections. Maximum detection was used as EPC.

Note: Field duplicate samples are averaged with their corresponding normal samples. Note: The COPCs 1-methylnaphthalene and hexadecane were not analyzed in this sample set.

Acronyms and Abbreviations:

% = percent bgs = below ground surface COPC = contaminant of potential concern EPA = United States Environmental Protection Agency EPC = exposure point concentration KM = Kaplan-Meier Statistics MDL = method detection limit MTBE = methyl tert-butyl ether mg/kg = milligram per kilogram N/A = not applicable, chemical not detected SWMU = solid waste management unit UCL = upper confidence limit

Table 3-3. On-Site Mixed Zone Soil (0 to 10 feet bgs) Summary Statistics Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| COPC | Total Number of Samples ^a | Number of Detects | Percent Nondetect (%) | Maximum Detect (mg/kg) | Minimum Detect (mg/kg) | Distribution | EPC ^b (mg/kg) | EPC Method |
|-------------------------|--|----------------------|-----------------------------|------------------------------|---------------------------|---------------|--------------------------|------------------------------|
| 1,2,4-Trimethylbenzene | 105 | 18 | 83 | 20 | 0.00018 | Nonparametric | 2.7 | 99% KM (Chebyshev) UCL |
| 1,2-Dibromoethane (EDB) | 105 | 0 | 100 | N/A | N/A | N/A | N/A ^c | N/A |
| 1,2-Dichloroethane | 105 | 0 | 100 | N/A | N/A | N/A | N/A ^c | N/A |
| 1-Methylnaphthalene | 12 | 1 | 92 | 0.33 | 0.33 | N/A | 0.33 ^d | Maximum Detection |
| 2-Methylnaphthalene | 117 | 9 | 92 | 16 | 0.012 | Gamma | 1.2 | 95% KM Approximate Gamma UCL |
| Benzene | 105 | 41 | 61 | 0.0033 | 0.00013 | Gamma | 0.0077 | 95% Gamma Approximate UCL |
| Ethylbenzene | 105 | 12 | 89 | 0.47 | 0.00021 | Nonparametric | 0.030 | 95% KM (Chebyshev) UCL |
| Isopropylbenzene | 105 | 1 | 99 | 0.29 | 0.29 | N/A | 0.29 ^d | Maximum Detection |
| Lead | 105 | 105 | 0 | 71 | 1.1 | Nonparametric | 14 | 95% Chebyshev (Mean, Sd) UCL |
| МТВЕ | 105 | 0 | 100 | N/A | N/A | N/A | N/A ^c | N/A |
| Naphthalene | 117 | 15 | 87 | 16 | 0.00021 | Gamma | 1.3 | 95% KM Approximate Gamma UCL |
| Toluene | 105 | 37 | 65 | 0.0045 | 0.00022 | Lognormal | 0.00088 | KM H-UCL (KM-Log) |
| Xylenes (total) | 105 | 16 | 85 | 3.8 | 0.00049 | Nonparametric | 0.22 | 95% KM (Chebyshev) UCL |

^a Initially, 42 unexcavated soil samples were collected between 0 and 10 feet for all COPCs listed except 1-methylnaphthalene. Then, 63 confirmation samples were collected between 0 to 10 feet depth interval for all COPCs listed except for 1-methylnaphthalene. Twelve step out confirmation samples were collected over the same depth interval for only 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene.

^b EPCs were calculated using EPA's ProUCL 5.1 (Attachment 2); All nondetects were given the value of the MDL.

^c No detections. COPC will not be carried through the risk screening as discussed in Section 3.3, any uncertainty with detection limits will be discussed in Section 5.2

^d Four or fewer detections. Maximum detection was used as EPC.

Note: Field duplicate samples are averaged with their corresponding regular samples. Note: The COPC hexadecane not analyzed for in this sample set.

Acronyms and Abbreviations:

% = percent bgs = below ground surface COPC = contaminant of potential concern EPA = United States Environmental Protection Agency EPC = exposure point concentration KM = Kaplan-Meier Statistics MDL = method detection limit MTBE = methyl tert-butyl ether mg/kg = milligram per kilogram N/A = not applicable, chemical not detected SWMU = solid waste management unit UCL = upper confidence limit Sd = standard deviation Section 3

Table 3-4. On-Site Soil Gas Summary Statistics, 25-foot Depth (µg/m³) Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| СОРС | Total Number of Samples | Number of Detects | Percent Nondetect (%) | Maximum Detect (µg/m ³) | Minimum Detect (µg/m³) | Distribution | EPC ^a (µg/m ³) | EPC Method |
|-------------------------|----------------------------|----------------------|-----------------------------|---|------------------------------|---------------|--|------------------------|
| 1,2,4-Trimethlbenzene | 93 | 72 | 23 | 640 | 1.2 | Nonparametric | 58 | 95% KM (Chebyshev) UCL |
| 1,2-Dibromoethane (EDB) | 93 | 17 | 82 | 24 | 1.3 | Lognormal | 1.5 | 95% H-UCL (KM-Log) |
| 1,2-Dichloroethane | 93 | 0 | 100 | N/A | N/A | N/A | N/A ^b | N/A |
| Benzene | 93 | 58 | 38 | 480 | 1.3 | Lognormal | 10 | 95% H-UCL (KM-Log) |
| Cyclohexane | 93 | 26 | 72 | 380 | 3.4 | Nonparametric | 39 | 95% KM Chebyshev UCL |
| Ethylbenzene | 93 | 61 | 34 | 240 | 1.3 | Nonparametric | 24 | 95% KM Chebyshev UCL |
| m & p-Xylenes | 93 | 79 | 15 | 610 | 3.1 | Nonparametric | 86 | 95% KM Chebyshev UCL |
| MTBE | 93 | 0 | 100 | N/A | N/A | N/A | N/A ^b | N/A |
| Naphthalene | 93 | 67 | 28 | 260 | 1.4 | Nonparametric | 24 | 95% KM Chebyshev UCL |
| n-Heptane | 93 | 38 | 59 | 490 | 1.5 | Nonparametric | 43 | 95% KM Chebyshev UCL |
| n-Hexane | 93 | 27 | 71 | 600 | 1.3 | Nonparametric | 44 | 95% KM Chebyshev UCL |
| o-Xylene | 93 | 76 | 18 | 280 | 1.3 | Nonparametric | 35 | 95% KM Chebyshev UCL |
| Toluene | 93 | 89 | 4 | 900 | 1.9 | Lognormal | 63 | 95% H-UCL (KM-Log) |
| Xylenes (total) | 93 | 79 | 15 | 910 | 3.1 | Nonparametric | 120 | 95% KM Chebyshev UCL |

^a EPCs were calculated using EPA's ProUCL 5.1 (Attachment 2); All nondetects were given the value of the MDL.

^b No detections. COPC will not be carried through the risk screening as discussed in Section 3.3, any uncertainty with detection limits will be discussed in Section 5.2

Note: Field duplicate samples are averaged with their corresponding normal samples.

Acronyms and Abbreviations:

% = percent COPC = contaminant of potential concern

EPA = United States Environmental Protection Agency

EPC = exposure point concentration

KM = Kaplan-Meier Statistics

- MDL = method detection limit
- MTBE = methyl tert-butyl ether
- $\mu g/m^3 = microgram per cubic meter$

N/A = not applicable, chemical not detected

SWMU = solid waste management unit

UCL = upper confidence limit

Kirtland AFB Risk Assessment Bulk Fuels Facility, SWMU ST-106/SS-111 Section 3

Table 3-5. Off-Base Soil Gas Summary Statistics, 25-foot Depth (μg/m³) Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| COPC | Total Number of Samples | Number of Detects | Percent Nondetect (%) | Maximum Detect (µg/m³) | Minimum Detect (µg/m³) | Distribution | EPC ^a (µg/m ³) | EPC Method |
|-------------------------|----------------------------|----------------------|-----------------------------|------------------------------|---------------------------|---------------|--|------------------------|
| 1,2,4-Trimethylbenzene | 12 | 10 | 17 | 9.3 | 1.3 | Nonparametric | 4.2 | 95% KM Chebyshev UCL |
| 1,2-Dibromoethane (EDB) | 12 | 0 | 100 | N/A | N/A | N/A | N/A ^b | N/A |
| 1,2-Dichloroethane | 12 | 0 | 100 | N/A | N/A | N/A | N/A ^b | N/A |
| Benzene | 12 | 8 | 33 | 6.1 | 1.5 | Lognormal | 2.7 | 95% H-UCL (KM-Log) |
| Cyclohexane | 12 | 2 | 83 | 6.5 | 4.5 | N/A | 6.5 [°] | Maximum Detection |
| Ethylbenzene | 12 | 8 | 33 | 4.8 | 1.3 | Nonparametric | 2.6 | 95% KM (t) UCL |
| m & p-Xylenes | 12 | 12 | 0 | 40 | 2.9 | Gamma | 20 | 95% Gamma Adjusted UCL |
| MTBE | 12 | 0 | 100 | N/A | N/A | N/A | N/A ^b | N/A |
| Naphthalene | 12 | 6 | 50 | 4.3 | 2.0 | Nonparametric | 2.7 | 95% KM (t) UCL |
| n-Heptane | 12 | 2 | 83 | 2.5 | 2.2 | N/A | 2.5 [°] | Maximum Detection |
| n-Hexane | 12 | 3 | 75 | 6.0 | 2.2 | N/A | 6.0 ^c | Maximum Detection |
| o-Xylene | 12 | 11 | 8 | 17 | 1.4 | Gamma | 10 | 95% Gamma Adjusted UCL |
| Toluene | 12 | 12 | 0 | 16 | 3.0 | Normal | 12 | 95% Student's-t UCL |
| Xylenes (total) | 12 | 12 | 0 | 56 | 2.9 | Gamma | 28 | 95% Gamma Adjusted UCL |

^a EPCs were calculated using EPA's ProUCL 5.1 (Attachment 2); All nondetects were given the value of the MDL.

^b No detections. COPC will not be carried through the risk screening as discussed in Section 3.3, any uncertainty with detection limits will be discussed in Section 5.2

^c Four or fewer detections. Maximum detection was used as EPC.

Note: Field duplicate samples are averaged with their corresponding normal samples.

Acronyms and Abbreviations:

% = percent

- COPC = contaminant of potential concern
- EPA = United States Environmental Protection Agency
- EPC = exposure point concentration
- KM = Kaplan-Meier Statistics
- MDL = method detection limit
- $MTBE = methyl \ tert-butyl \ ether$
- $\mu g/m^3 = microgram per cubic meter$
- N/A = not applicable, chemical not detected
- SWMU = solid waste management unit
- UCL = upper confidence limit

Table 3-6. On-Site Groundwater Summary Statistics (µg/L) Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| COPC | Total Number of Samples | Number of Detects | Percent Nondetect (%) | Maximum Detect (μg/L) | Minimum Detect (µg/L) | Distribution | EPC ^a (µg/L) | EPC Method |
|-------------------------|----------------------------|----------------------|-----------------------------|-----------------------------|--------------------------|---------------|----------------------------|------------------------------|
| 1,2,4-Trimethylbenzene | 68 | 20 | 71 | 490 | 1 | Gamma | 73 | 95% KM Approximate Gamma UCL |
| 1,2-Dibromoethane (EDB) | 68 | 21 | 69 | 93 | 0.037 | Gamma | 9.2 | 95% KM Approximate Gamma UCL |
| 1,2-Dichloroethane | 68 | 7 | 90 | 5.5 | 1.1 | Nonparametric | 0.96 | 95% KM (t) UCL |
| 1-Methylnaphthalene | 68 | 14 | 79 | 99 | 1.8 | Nonparametric | 12 | 95% KM (t) UCL |
| 2-Methylnaphthalene | 68 | 9 | 87 | 110 | 8.4 | Nonparametric | 12 | 95% KM (t) UCL |
| Acetophenone | 68 | 16 | 76 | 4,500 | 77 | Nonparametric | 510 | 95% KM (t) UCL |
| Benzene | 68 | 22 | 68 | 16,000 | 0.28 | Gamma | 1700 | 95% KM Approximate Gamma UCL |
| Ethylbenzene | 68 | 20 | 71 | 1,600 | 0.58 | Gamma | 230 | 95% KM Approximate Gamma UCL |
| Lead | 68 | 5 | 93 | 3.4 | 1.6 | Nonparametric | 1.7 | 95% KM (t) UCL |
| Naphthalene | 68 | 20 | 71 | 230 | 0.64 | Gamma | 32 | 95% KM Approximate Gamma UCL |
| Toluene | 68 | 19 | 72 | 21,000 | 1.4 | Gamma | 2600 | 95% KM Approximate Gamma UCL |
| Xylenes (total) | 68 | 20 | 71 | 5,100 | 1.9 | Gamma | 650 | 95% KM Approximate Gamma UCL |

^a EPCs were calculated using EPA's ProUCL 5.1 (Attachment 2); All nondetects were given the value of the MDL.

Note: Field duplicate samples are averaged with their corresponding normal samples.

Acronyms and Abbreviations:

% = percent

- COPC = contaminant of potential concern
- EPA = United States Environmental Protection Agency
- EPC = exposure point concentration
- KM = Kaplan-Meier Statistics
- MDL = method detection limit
- $\mu g/L = microgram per Liter$
- SWMU = solid waste management unit
- UCL = upper confidence limit

Table 3-7. Off-Base Groundwater Summary Statistics (µg/L) Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| COPC | Total Number of Samples | Number of Detects | Percent Nondetect (%) | Maximum Detect (µg/L) | Minimum Detect (μg/L) | Distribution | EPC ^a (µg/L) | EPC Method |
|-------------------------|----------------------------|----------------------|-----------------------------|-----------------------------|--------------------------|---------------|----------------------------|------------------------------|
| 1,2,4-Trimethylbenzene | 197 | 6 | 97 | 120 | 1.0 | Gamma | 4.4 | 95% KM Approximate Gamma UCL |
| 1,2-Dibromoethane (EDB) | 197 | 69 | 65 | 12 | 0.011 | Nonparametric | 0.62 | 95% KM Chebyshev UCL |
| 1,2-Dichloroethane | 197 | 36 | 82 | 5.5 | 0.30 | Lognormal | 0.45 | 95% H-UCL (KM-Log) |
| 1-Methylnaphthalene | 197 | 7 | 96 | 20 | 5.6 | Nonparametric | 1.3 | 95% KM (t) UCL |
| 2-Methylnaphthalene | 197 | 2 | 99 | 9.9 | 1.6 | N/A | 9.9 ^b | Maximimum Detection |
| Acetophenone | 197 | 7 | 96 | 900 | 1.7 | Gamma | 35 | 95% KM Approximate Gamma UCL |
| Benzene | 197 | 12 | 94 | 2,200 | 0.54 | Lognormal | 0.90 | 95% H-UCL (KM-Log) |
| Ethylbenzene | 197 | 10 | 95 | 900 | 2.7 | Gamma | 33 | 95% KM Approximate Gamma UCL |
| Lead | 197 | 7 | 96 | 5.3 | 1.5 | Nonparametric | 1.6 | 95% KM (t) UCL |
| Naphthalene | 197 | 9 | 95 | 35 | 0.94 | Nonparametric | 1.1 | 95% KM (t) UCL |
| Toluene | 197 | 5 | 97 | 2,900 | 0.31 | Nonparametric | 74 | 95% KM (t) UCL |
| Xylenes (total) | 197 | 5 | 97 | 540 | 16 | Nonparametric | 15 | 95% KM (t) UCL |

^a EPCs were calculated using EPA's ProUCL 5.1 (Attachment 2); All nondetects were given the value of the MDL.

^bFour or fewer detections. Maximum detection was used as EPC.

Note: Field duplicate samples are averaged with their corresponding normal samples.

Acronyms and Abbreviations:

- % = percent COPC = contaminant of potential concern EPA = United States Environmental Protection Agency EPC = exposure point concentration KM = Kaplan-Meier Statistics MDL = method detection limit µg/L = microgram per Liter N/A = not applicable, chemical not detected SWMU = solid waste management unit
- UCL = upper confidence limit

Table 4-1. On-Site Occupied Buildings Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| On-Site Building Survey Results | | | | | | | |
|---------------------------------|---|------------------------|--|--|--|--|--|
| Building Number | Description of Use | Regularly Occupied? | | | | | |
| 1026 | Helium gas storage | No | | | | | |
| 1027 | Fuel transfer area, roof but no walls | No | | | | | |
| 1032 | Offices, occupied 5 to 8 hours per week | No | | | | | |
| 1033 | Pump House | No | | | | | |
| 1036 | Storage area | No | | | | | |
| 1041 | Fuel station, roof but no walls | No | | | | | |
| 1044 | Air Guard office, always occupied during business hours | Yes | | | | | |
| 1049 | Navy Surveillance, always occupied during business hours | Yes | | | | | |
| 1055 | Air Guard office, always occupied during business hours | Yes | | | | | |
| 2403 | Fuel station, roof but no walls | No | | | | | |
| 2404 | Fuel station, roof but no walls | No | | | | | |
| 2426 | BFF Contractor's office, occupied 20 to 23 hours per week | Yes | | | | | |

Acronyms and Abbreviations:

BFF = Bulk Fuels Facility SWMU = solid waste management unit

Table 5-1. Current/Future On-Site Commercial/Industrial Worker, Surface Soil (0 to 1 foot bgs), Cancer Risk Estimate Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | СОРС | Maximum Detected Concentration | NMED SSL ^a | Units | Cumulative Cancer Risk |
|--------|--------------|--------------------------------------|-----------------------|-------|---------------------------|
| Soil | Benzene | 0.0013 | 86.5 | mg/kg | 2E-10 |
| depth | Ethylbenzene | 0.00030 | 365 | mg/kg | 8E-12 |
| Sum | | | | | 2E-10 |

^a NMED carcinogenic Commercial/Industrial SSLs (NMED, 2017).

Note: Sum may not add up exactly due to significant figures and rounding.

Acronyms and Abbreviations:

bgs = below ground surface COPC = contaminant of potential concern mg/kg = milligram per kilogram NMED = New Mexico Environment Department SSL = soil screening level SWMU = solid waste management unit

Table 5-2. Current/Future On-Site Commercial/Industrial Worker, Surface Soil (0 to 1 foot bgs), Noncancer Hazard Index Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | COPC | Maximum Detected Concentration | NMED SSL ^a | Units | Cumulative Hazard Quotient |
|-------------|------------------------|--------------------------------------|--------------------------|-------|----------------------------------|
| | 1,2,4-Trimethylbenzene | 0.00038 | 1,800 ^b | mg/kg | 0.0000002 |
| Soil | 2-Methylnaphthalene | 0.14 | 3,370 | mg/kg | 0.00004 |
| | Benzene | 0.0013 | 724 | mg/kg | 0.000002 |
| 0 to 1 foot | Ethylbenzene | 0.0003 | 28,800 | mg/kg | 0.0000001 |
| depth | Naphthalene | 0.0064 | 16,800 | mg/kg | 0.0000004 |
| | Toluene | 0.0013 | 61,100 | mg/kg | 0.0000002 |
| | Xylenes (total) | 0.00063 | 4,240 | mg/kg | 0.0000001 |
| HI | | | | | 0.00004 |

^a NMED non-carcinogenic Commercial/Industrial SSLs are used except where noted (NMED, 2017). ^b EPA non-carcinogenic Composite Worker Regional SSL (EPA, 2017).

LIA non-carchiogenie Composite Worker Regional SSE (EFA, 2017).

Note: Sum may not add up exactly due to significant figures and rounding.

Acronyms and Abbreviations:

bgs = below ground surface COPC = contaminant of potential concern EPA = United States Environmental Protection Agency HI = hazard index mg/kg = milligram per kilogram NMED = New Mexico Environment Department SSL = soil screening level SWMU = solid waste management unit

Table 5-3. Future Hypothetical On-Site Resident, Mixed Zone Soil (0 to 10 feet bgs), Cancer Risk Estimate Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | СОРС | Maximum Detected Concentration | NMED SSL ^a | Units | Cumulative Cancer Risk |
|--------------|---------------------|--------------------------------------|-----------------------|-------|---------------------------|
| Soil | Benzene | 0.0033 | 17.7 | mg/kg | 2E-09 |
| 0 to 10 foot | Ethylbenzene | 0.47 | 74.5 | mg/kg | 6E-08 |
| depth | 1-Methylnaphthalene | 0.33 | 172 | mg/kg | 2E-08 |
| Sum | | | | | 8E-08 |

^a NMED non-carcinogenic Residential SSLs (NMED, 2017).

Note: Sum may not add up exactly due to significant figures and rounding.

Acronyms and Abbreviations:

bgs = below ground surface COPC = contaminant of potential concern mg/kg = milligram per kilogram NMED = New Mexico Environment Department SSL = soil screening level SWMU = solid waste management unit

Table 5-4. Future Hypothetical On-Site Resident, Mixed Zone Soil (0 to 10 feet bgs), Noncancer Hazard Index Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | COPC | Maximum Detected Concentration | NMED SSL ^a | Units | Cumulative Hazard Quotient |
|--------------|------------------------|--------------------------------------|--------------------------|-------|-------------------------------|
| | 1,2,4-Trimethylbenzene | 20 | 300 ^b | mg/kg | 0.07 |
| | 1-Methylnaphthalene | 0.33 | 4,060 | mg/kg | 0.00008 |
| | 2-Methylnaphthalene | 16 | 232 | mg/kg | 0.07 |
| Soil | Benzene | 0.0033 | 114 | mg/kg | 0.00003 |
| 0 to 10 foot | Ethylbenzene | 0.47 | 3,920 | mg/kg | 0.0001 |
| depth | Isopropylbenzene | 0.29 | 2,350 | mg/kg | 0.0001 |
| | Naphthalene | 16 | 1,160 | mg/kg | 0.01 |
| | Toluene | 0.0045 | 5,220 | mg/kg | 0.000009 |
| | Xylenes (total) | 3.8 | 863 | mg/kg | 0.004 |
| HI | | | | | 0.2 |

^a NMED non-carcinogenic Residential SSLs are used except where noted (NMED, 2017).

^b EPA non-carcinogenic Resident Regional SSL (EPA, 2017).

Note: Sum may not add up exactly due to significant figures and rounding.

Acronyms and Abbreviations:

bgs = below ground surface COPC = contaminant of potential concern EPA = United States Environmental Protection Agency HI = hazard index mg/kg = milligram per kilogram NMED = New Mexico Environment Department SSL = soil screening level SWMU = solid waste management unit

Table 5-5. Future On-Site Construction Worker, Mixed Zone Soil (0 to 10 feet bgs), Cancer Risk Estimate Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | СОРС | Maximum Detected Concentration | NMED SSL ^a | Units | Cumulative Cancer Risk |
|--------------|---------------------|--------------------------------------|-----------------------|-------|------------------------------|
| Soil | Benzene | 0.0033 | 420 | mg/kg | 8E-11 |
| 0 to 10 foot | Ethylbenzene | 0.47 | 1,760 | mg/kg | 3E-09 |
| depth | 1-Methylnaphthalene | 0.33 | 6,060 | mg/kg | 5E-10 |
| Sum | | | | | 3E-09 |

^a The NMED carcinogenic Construction Worker SSLs (NMED, 2017).

Note: Sum may not add up exactly due to significant figures and rounding.

Acronyms and Abbreviations:

bgs = below ground surface COPC = contaminant of potential concern mg/kg = milligram per kilogram NMED = New Mexico Environment Department SSL = soil screening level SWMU = solid waste management unit

Table 5-6. Future On-Site Construction Worker, Mixed Zone Soil (0 to 10 feet bgs), Noncancer Hazard Index Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | СОРС | Maximum Detected Concentration | NMED Soil Screening Level ^a | Units | Cumulative Hazard Quotient |
|--------|----------------------------|--------------------------------------|--|-------|-------------------------------|
| | 1,2,4- Trimethylbenzene | 20 | 1,800 ^b | mg/kg | 0.01 |
| | 1-Methylnaphthalene | 0.33 | 17,600 | mg/kg | 0.00002 |
| Cail | 2-Methylnaphthalene | 16 | 1,000 | mg/kg | 0.02 |
| | Benzene | 0.0033 | 141 | mg/kg | 0.00002 |
| depth | Ethylbenzene | 0.47 | 5,750 | mg/kg | 0.00008 |
| deptil | Isopropylbenzene | 0.29 | 2,710 | mg/kg | 0.0001 |
| | Naphthalene | 16 | 5,020 | mg/kg | 0.003 |
| | Toluene | 0.0045 | 14,000 | mg/kg | 0.000003 |
| | Xylenes (total) | 3.8 | 791 | mg/kg | 0.005 |
| HI | | | | | 0.04 |

^a NMED non-carcinogenic Construction Worker SSLs are used except where noted (NMED, 2017).

^b EPA non-carcinogenic Composite Worker Regional SSL (EPA, 2017).

Note: Sum may not add up exactly due to significant figures and rounding.

Acronyms and Abbreviations:

bgs = below ground surface COPC = contaminant of potential concern EPA = United States Environmental Protection Agency HI = hazard index mg/kg = milligram per kilogram NMED = New Mexico Environment Department SSL = soil screening level SWMU = solid waste management unit

Table 5-7. Current/Future On-Site Commercial/Industrial Worker, Soil Gas Maximum Concentrations, Cancer Risk Estimate Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | СОРС | Maximum Detected Concentration* | NMED VISL ^a | Units | Cumulative Cancer Risk |
|------------|--|---------------------------------------|---------------------------|-------|---------------------------|
| Soil Gas, | 1,2-Dibromoethane (ethylene dibromide; EDB) | 24 | 7.65 | µg/m³ | 3E-05 |
| 25-foot | Benzene | 480 | 588 | µg/m³ | 8E-06 |
| depth, all | Ethylbenzene | 240 | 1,840 | µg/m³ | 1E-06 |
| locations | Naphthalene | 260 | 135 | µg/m³ | 2E-05 |
| Sum | | | | | 6E-05 ^b |

* Based on data from Q1 through Q3 2016.

^a NMED carcinogenic Commercial/Industrial Soil Gas VISLs are used (NMED, 2017).

^b Total cancer risk for soil gas exceeds the 1x10⁻⁵ target cancer risk level (NMED, 2017) and is further evaluated using statistic-based exposure point concentration (See Table 5-8).

Note: Sum may not add up exactly due to significant figures and rounding.

Bold = Bolded numbers exceed NMED target cancer risk level (NMED, 2017).

Acronyms and Abbreviations:

COPC = contaminant of potential concern $\mu g/m^3$ = microgram per cubic meter NMED = New Mexico Environment Department Q = Quarter SWMU = solid waste management unit VISL = vapor intrusion screening level

Table 5-8. Current/Future On-Site Commercial/Industrial Worker, Soil Gas EPC Concentrations, Cancer Risk Estimate Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | COPC | EPC* | NMED VISL ^a | Units | Cancer Risk |
|-----------------------|--|------|---------------------------|-------|-------------|
| Soil Gas, on-Site, | 1,2-Dibromoethane (ethylene dibromide; EDB) | 1.5 | 7.65 | µg/m³ | 2E-06 |
| 25-foot | Benzene | 10 | 588 | µg/m³ | 2E-07 |
| depth, all | Ethylbenzene | 24 | 1,840 | µg/m³ | 1E-07 |
| locations | Naphthalene | 24 | 135 | µg/m³ | 2E-06 |
| Sum | | | | | 4E-06 |

* Based on data from Q1 through Q3 2016. EPCs were calculated using EPA's ProUCL 5.1.

^a NMED carcinogenic Commercial/Industrial VISLs are used (NMED, 2017).

Note: Sum may not add up exactly due to significant figures and rounding.

Acronyms and Abbreviations:

COPC = contaminant of potential concern EPA = United States Environmental Protection Agency EPC = exposure point concentration $\mu g/m^3$ = microgram per cubic meter NMED = New Mexico Environment Department Q = Quarter SWMU = Solid Waste Management Unit VISL = vapor intrusion screening level

Table 5-9. Current/Future On-Site Commercial/Industrial Worker, Soil Gas Maximum Concentration, Noncancer Hazard Index Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | COPC | Maximum Detected Concentration* | NMED VISL ^a | Units | Cumulative Hazard Quotient |
|---------------|------------------------|---------------------------------------|---------------------------|-------|----------------------------------|
| | 1,2,4-trimethylbenzene | 640 | 8,670 ^b | µg/m³ | 0.07 |
| | Cyclohexane | 380 | 867,000 ^b | µg/m³ | 0.0004 |
| Soil Gas, | n-heptane | 490 | 60,000 ^b | µg/m³ | 0.008 |
| on-Site, | n-hexane | 600 | 115,000 | µg/m³ | 0.005 |
| all locations | Toluene | 900 | 918,000 | µg/m³ | 0.001 |
| | m- and p-xylenes | 610 | 16,400 | µg/m³ | 0.04 |
| | o-xylene | 280 | 16,400 | µg/m³ | 0.02 |
| | Xylenes (total) | 910 | 16,400 | µg/m³ | 0.06 |
| HI | | | | | 0.2 |

* Based on data from Q1 through Q3 2016.

^a NMED non-carcinogenic Commercial/Industrial Soil Gas VISLs are used except where noted (NMED, 2017).

^b No NMED VISL is available. NMED VISLs for soil gas are calculated by applying an attenuation factor (alpha) of 0.03 to an indoor air screening level (NMED, 2017), where alpha is the ratio of the presumed indoor air concentration to the concentration in soil gas immediately below a building foundation. An equivalent VISL was calculated by dividing the June 2017 EPA non-carcinogenic Composite Worker Air Regional SL (EPA, 2017) by 0.03.

Note: Sum may not add up exactly due to significant figures and rounding.

Acronyms and Abbreviations:

COPC = contaminant of potential concern EPA = United States Environmental Protection Agency HI = hazard index $\mu g/m^3$ = microgram per cubic meter NMED = New Mexico Environment Department Q = Quarter SL = screening level SWMU = solid waste management unit VISL = vapor intrusion screening level

Table 5-10. Future Hypothetical On-Site Resident, Soil Gas Maximum Concentrations, Cancer Risk Estimate Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | СОРС | Maximum Detected Concentration* | NMED VISL ^a | Units | Cumulative Cancer Risk |
|---------------------------|--|---------------------------------------|---------------------------|-------|---------------------------|
| Soil Gas, | 1,2-Dibromoethane (ethylene dibromide; EDB) | 24 | 1.56 | µg/m³ | 2E-04 |
| on-Site, 25-foot depth | Benzene | 480 | 120 | µg/m³ | 4E-05 |
| all locations | Ethylbenzene | 240 | 374 | µg/m³ | 6E-06 |
| | Naphthalene | 260 | 27.5 | µg/m³ | 9E-05 |
| Sum | | | | | 3E-04 ^b |

* Based on data from Q1 through Q3 2016.

^a NMED carcinogenic Residential Soil Gas VISLs are used (NMED, 2017).

^b Total cancer risk for soil gas exceeds the 1x10⁻⁵ target cancer risk level (NMED, 2017) and is further evaluated using statistic-based exposure point concentration (See Table 5-11).

Note: Sum may not add up exactly due to significant figures and rounding.

Bold = Bolded numbers exceed NMED target cancer risk level (NMED, 2017).

Acronyms and Abbreviations:

COPC = contaminant of potential concern $\mu g/m^3$ = microgram per cubic meter NMED = New Mexico Environment Department Q = Quarter SWMU = solid waste management unit VISL = vapor intrusion screening level

Table 5-11. Future Hypothetical On-Site Resident, Soil Gas EPCs, Cancer Risk Estimate Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | COPC | EPC* | NMED VISL ^a | Units | Cancer Risk |
|-----------------------|--|------|----------------------------------|-------|----------------|
| Soil Gas, on-Site, | 1,2-Dibromoethane (ethylene dibromide; EDB) | 1.5 | 1.56 | µg/m³ | 1E-05 |
| 25-foot | Benzene | 10 | 120 | µg/m³ | 8E-07 |
| depth, all | Ethylbenzene | 24 | 374 | µg/m³ | 6E-07 |
| locations | Naphthalene | 24 | 27.5 | µg/m³ | 9E-06 |
| Sum | | | | | 2E-05 |

* Based on data from Q1 through Q3 2016. EPCs were calculated using EPA's ProUCL 5.1.

^a NMED carcinogenic Residential VISLs are used (NMED, 2017).

Note: Sum may not add up exactly due to significant figures and rounding.

Bold = Bolded numbers exceed NMED target cancer risk level (NMED, 2017).

Acronyms and Abbreviations:

COPC = contaminant of potential concern EPA = United States Environmental Protection Agency EPC = exposure point concentration $\mu g/m^3$ = microgram per cubic meter NMED = New Mexico Environment Department Q = Quarter SWMU = solid waste management unit VISL = vapor intrusion screening level

Table 5-12. Future Hypothetical On-Site Resident, Soil Gas Maximum Concentrations, Noncancer Hazard Index Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | СОРС | Maximum Detected Concentration* | NMED Residential VISL ^a | Units | Cumulative Hazard Quotient |
|---------------------------|----------------------------|---------------------------------------|--|-------|----------------------------------|
| | 1,2,4- Trimethylbenzene | 640 | 2,100 ^b | µg/m³ | 0.3 |
| | Cyclohexane | 380 | 210,000 ^b | µg/m³ | 0.002 |
| Soil Gas, | n-Heptane | 490 | 14,000 ^b | µg/m³ | 0.04 |
| on-Site, 25-foot depth | n-Hexane | 600 | 24,300 | µg/m³ | 0.02 |
| all locations | Toluene | 900 | 174,000 | µg/m³ | 0.005 |
| | m- and p-Xylenes | 610 | 3,480 | µg/m³ | 0.2 |
| | o-Xylene | 280 | 3,480 | µg/m³ | 0.08 |
| | Xylenes (total) | 910 | 3,480 | µg/m³ | 0.3 |
| HI | | | | | 0.9 |

* Based on data from Q1 through Q3 2016.

^a NMED non-carcinogenic Residential Soil Gas VISLs are used unless not available (NMED, 2017).

^b No NMED Soil Gas VISL is available. NMED Soil Gas VISLs are calculated by applying an attenuation factor (alpha) of 0.03 to an indoor air screening level (NMED, 2017), where alpha is the ratio of the presumed indoor air concentration to the concentration in soil gas immediately below a building foundation. An equivalent soil gas VISL was calculated by dividing the June 2017 EPA Resident Regional Air SL (EPA, 2017) by 0.03.

Note: Sum may not add up exactly due to significant figures and rounding.

Acronyms and Abbreviations:

COPC = contaminant of potential concern EPA = United States Environmental Protection Agency HI = hazard index $\mu g/m^3$ = microgram per cubic meter NMED = New Mexico Environment Department Q = Quarter SL = screening level SWMU = solid waste management unit VISL = vapor intrusion screening level

Table 5-13. Future Hypothetical Off-Base Resident, Soil Gas Maximum Concentrations, Cancer Risk Estimate Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | СОРС | Maximum Detected Concentration* | NMED Residential VISL ^a | Units | Cumulative Cancer Risk |
|--|--------------|---------------------------------------|--|-------|------------------------------|
| Soil Gas, off-Base, 25-foot depth, all locations | Benzene | 6.1 | 120 | µg/m³ | 5E-07 |
| | Ethylbenzene | 4.8 | 374 | µg/m³ | 1E-07 |
| | Naphthalene | 4.3 | 27.5 | µg/m³ | 2E-06 |
| Sum | | | | | 2E-06 |

* Based on data from Q1 through Q3 2016.

^a NMED carcinogenic Residential Soil Gas VISLs are used (NMED, 2017).

Note: Sum may not add up exactly due to significant figures and rounding.

Acronyms and Abbreviations:

COPC = contaminant of potential concern $\mu g/m^3$ = microgram per cubic meter NMED = New Mexico Environment Department Q = Quarter SWMU = solid waste management unit VISL = vapor intrusion screening level

Table 5-14. Future Hypothetical Off-Base Resident, Soil Gas Maximum Concentrations, Noncancer Hazard Index Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | СОРС | Maximum Detected Concentration* | NMED Residential VISL ^a | Units | Cumulative Hazard Quotient |
|---|----------------------------|---------------------------------------|--|-------|----------------------------------|
| Soil Gas, off-Base, 25-foot depth, all locations | 1,2,4- Trimethylbenzene | 9.3 | 2,100 ^b | µg/m³ | 0.004 |
| | Cyclohexane | 6.5 | 210,000 ^b | µg/m³ | 0.00003 |
| | n-Heptane | 2.5 | 14,000 ^b | µg/m³ | 0.0002 |
| | n-Hexane | 6.0 | 24,300 | µg/m³ | 0.0002 |
| | Toluene | 16 | 174,000 | µg/m³ | 0.00009 |
| | m- and p-Xylenes | 40 | 3,480 | µg/m³ | 0.01 |
| | o-Xylene | 17 | 3,480 | µg/m³ | 0.005 |
| | Xylenes (total) | 56 | 3,480 | µg/m³ | 0.02 |
| HI | | | | | 0.04 |

* Based on data from Q1 through Q3 2016.

^a NMED non-carcinogenic Residential Soil Gas VISLs are used except where noted (NMED, 2017).

^b No NMED Soil Gas VISL is available. NMED Soil Gas VISLs are calculated by applying an attenuation factor (alpha) of 0.03 to an indoor air screening level (NMED, 2017), where alpha is the ratio of the presumed indoor air concentration to the concentration in soil gas immediately below a building foundation. An equivalent soil gas VISL was calculated by dividing the June 2017 EPA non-carcinogenic Resident Air Regional SL (EPA, 2017) by 0.03.

Note: Sum may not add up exactly due to significant figures and rounding.

Acronyms and Abbreviations:

COPC = contaminant of potential concern EPA = United States Environmental Protection Agency HI = hazard index $\mu g/m^3$ = microgram per cubic meter NMED = New Mexico Environment Department Q = Quarter SL = screening level SWMU = solid waste management unit VISL = vapor intrusion screening level

Table 5-15. Future On-Site Domestic Water User, Groundwater Maximum Concentrations, Cancer Risk Estimate Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | COPC | Maximum Detected Concentration* | NMED Residential Tapwater Screening Level ^a | Units | Cumulative Cancer Risk |
|---|--|---------------------------------------|--|-------|------------------------------|
| On-Site Groundwater (as Tapwater) | 1,2-Dibromoethane (ethylene dibromide; EDB) | 93 | 0.0747 | µg/L | 1E-02 |
| | 1,2-Dichloroethane | 5.5 | 1.71 | µg/L | 3E-05 |
| | 1-Methylnaphthalene | 99 | 11.4 | µg/L | 9E-05 |
| | Benzene | 16,000 | 4.55 | µg/L | 4E-02 |
| | Ethylbenzene | 1,600 | 15.0 | µg/L | 1E-03 |
| | Naphthalene | 230 | 1.65 | µg/L | 1E-03 |
| Sum | | | | | 5E-02 ^b |

* Based on data from Q3 and Q4 2015.

^a NMED carcinogenic Residential Tapwater SLs are used (NMED, 2017).

^b Total cancer risk for soil gas exceeds the 1×10^{-5} target cancer risk level (NMED, 2017) and is further evaluated using statistic-based exposure point concentration (See Table 5-16).

Note: Sum may not add up exactly due to significant figures and rounding.

Bold = Bolded numbers exceed NMED target cancer risk level (NMED, 2017).

Acronyms and Abbreviations:

COPC = contaminant of potential concern $\mu g/L = microgram per Liter$ NMED = New Mexico Environment Department Q = Quarter SL = screening levelSWMU = solid waste management unit

Table 5-16. Future On-Site Domestic Water User, Groundwater EPCs, Cancer Risk Estimate Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | COPC | EPC* | NMED Residential Tapwater Screening Level ^a | Units | Cancer Risk |
|---|--|-------|--|-------|----------------|
| On-Site Groundwater (as Tapwater) | 1,2-Dibromoethane (ethylene dibromide; EDB) | 9.2 | 0.0747 | µg/L | 1E-03 |
| | 1,2-Dichloroethane | 0.96 | 1.71 | µg/L | 6E-06 |
| | 1-Methylnaphthalene | 12 | 11.4 | µg/L | 1E-05 |
| | Benzene | 1,700 | 4.55 | µg/L | 4E-03 |
| | Ethylbenzene | 230 | 15.0 | µg/L | 2E-04 |
| | Naphthalene | 32 | 1.65 | μg/L | 2E-04 |
| Sum | | | | | 5E-03 |

* Based on data from Q3 and Q4 2015. EPCs were calculated using EPA's ProUCL 5.1.

^a NMED carcinogenic Residential Tapwater SLs are used (NMED, 2017).

Note: Sum may not add up exactly due to significant figures and rounding.

Bold = Bolded numbers exceed NMED target cancer risk level (NMED, 2017).

Acronyms and Abbreviations:

COPC = contaminant of potential concern EPA = United States Environmental Protection Agency EPC = exposure point concentration $\mu g/L$ = microgram per Liter NMED = New Mexico Environment Department Q = Quarter SL = screening level SWMU = solid waste management unit

Table 5-17. Future On-Site Domestic Water User, Groundwater Maximum Concentrations, Noncancer Hazard Index Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | СОРС | Maximum Detected Concentration* | NMED Residential Tapwater Screening Level ^a | Units | Cumulative Hazard Quotient |
|---|--|---------------------------------------|--|-------|----------------------------------|
| | 1,2-Dibromoethane (ethylene dibromide; EDB) | 93 | 16.9 | µg/L | 6 |
| | 1,2-Dichloroethane | 5.5 | 13.0 | µg/L | 0.4 |
| | 1,2,4-Trimethylbenzene | 490 | 56 ^b | µg/L | 9 |
| | 1-Methylnaphthalene | 99 | 611 | µg/L | 0.2 |
| On-Site Groundwater (as Tapwater) | 2-Methylnaphthalene | 110 | 35.1 | µg/L | 3 |
| | Acetophenone | 4,500 | 1,920 | µg/L | 2 |
| | Benzene | 16,000 | 33.2 | µg/L | 500 |
| | Ethylbenzene | 1,600 | 800 | µg/L | 2 |
| | Naphthalene | 230 | 6.11 | µg/L | 40 |
| | Toluene | 21,000 | 1,090 | µg/L | 20 |
| | Xylenes (total) | 5,100 | 193 | µg/L | 30 |
| HI | | | | | 600 ^c |

* Based on data from Q3 and Q4 2015.

^a NMED non-carcinogenic Residential Tapwater SLs are used except where noted (NMED, 2017).

^b EPA non-carcinogenic Resident Regional Tapwater SL (EPA, 2017).

^c Hazard index sum exceeds NMED target hazard index of 1 (NMED, 2017) and is further evaluated using statistic-based exposure point concentration (see Table 5-18).

Note: Sum may not add up exactly due to significant figures and rounding.

Bold = Bolded numbers exceed NMED target HI of 1 (NMED, 2017).

Acronyms and Abbreviations:

COPC = contaminant of potential concern EPA = United States Environmental Protection Agency HI = hazard index $\mu g/L$ = microgram per Liter NMED = New Mexico Environment Department Q = Quarter SL = screening level SWMU = solid waste management unit

Table 5-18. Future On-Site Domestic Water User, Groundwater EPCs, Noncancer Hazard Index Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | СОРС | EPC* | NMED Residential Tapwater Screening Level ^a | Units | Hazard Quotient |
|------------------------|--|-------|--|-------|--------------------|
| | 1,2-Dibromoethane (ethylene dibromide; EDB) | 9.2 | 16.9 | µg/L | 0.5 |
| | 1,2-Dichloroethane | 0.96 | 13.0 | µg/L | 0.07 |
| | 1,2,4-Trimethylbenzene | 73 | 56 ^b | µg/L | 1 |
| | 1-Methylnaphthalene | 12 | 611 | µg/L | 0.02 |
| On-Site Croundwater | 2-Methylnaphthalene | 12 | 35.1 | µg/L | 0.3 |
| (as Tapwater) | Acetophenone | 510 | 1,920 | µg/L | 0.3 |
| | Benzene | 1700 | 33.2 | µg/L | 50 |
| | Ethylbenzene | 230 | 800 | µg/L | 0.3 |
| | Naphthalene | 32 | 6.11 | µg/L | 5 |
| | Toluene | 2,600 | 1,090 | µg/L | 2 |
| | Xylenes (total) | 650 | 193 | µg/L | 3 |
| HI | | | | | 70 |

* Based on data from Q3 and Q4 2015. EPCs were calculated using EPA's ProUCL 5.1.

^a NMED non-carcinogenic Residential Tapwater SLs are used except where noted (NMED, 2017).

^b EPA non-carcinogenic Resident Regional Tapwater SL (EPA, 2017).

Note: Sum may not add up exactly due to significant figures and rounding.

Bold = Bolded numbers exceed NMED target HI of 1 (NMED, 2017).

Acronyms and Abbreviations:

COPC = contaminant of potential concern EPA = United States Environmental Protection Agency EPC = exposure point calculation HI = hazard index $\mu g/m^3$ = microgram per cubic meter NMED = New Mexico Environment Department Q = Quarter SL = screening level SWMU = solid waste management unit
Table 5-19. Future Off-Base Domestic Water User, Groundwater Maximum Concentrations, Cancer Risk Estimate Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | COPC | Maximum Detected Concentration* | NMED Residential Tapwater Screening Level ^a | Units | Cumulative Cancer Risk |
|---------------|--|---------------------------------------|--|-------|------------------------------|
| | 1,2-Dibromoethane (ethylene dibromide; EDB) | 12 | 0.0747 | µg/L | 2E-03 |
| Off-Base | 1,2-Dichloroethane | 5.5 | 1.71 | µg/L | 3E-05 |
| Groundwater | 1-Methylnaphthalene | 20 | 11.4 | µg/L | 2E-05 |
| (as Tapwater) | Benzene | 2,200 | 4.55 | µg/L | 5E-03 |
| | Ethylbenzene | 900 | 15.0 | µg/L | 6E-04 |
| | Naphthalene | 35 | 1.65 | µg/L | 2E-04 |
| Sum | | | | | 8E-03 ^b |

* Based on data from Q3 and Q4 2015.

^a NMED carcinogenic Residential Tapwater SLs are used (NMED, 2017).

^b Total cancer risk exceeds the 1x10⁻⁵ target cancer risk level (NMED, 2017) and is further evaluated using statistic-based exposure point concentration (see Table 5-20).

Note: Sum may not add up exactly due to significant figures and rounding.

Bold = Bolded numbers exceed NMED target cancer risk level (NMED, 2017).

Acronyms and Abbreviations:

COPC = contaminant of potential concern $\mu g/L = microgram per Liter$ NMED = New Mexico Environment Department Q = Quarter SL = screening levelSWMU = solid waste management unit

Table 5-20. Future Off-Base Domestic Water User, Groundwater EPCs, Cancer Risk Estimate Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | COPC | EPC* | NMED Residential Tapwater Screening Level ^a | Units | Cancer Risk |
|---------------|--|------|--|-------|----------------|
| | 1,2-Dibromoethane (ethylene dibromide; EDB) | 0.62 | 0.0747 | µg/L | 8E-05 |
| Off-Base | 1,2-Dichloroethane | 0.45 | 1.71 | µg/L | 3E-06 |
| Groundwater | 1-Methylnaphthalene | 1.3 | 11.4 | µg/L | 1E-06 |
| (as Tapwater) | Benzene | 0.90 | 4.55 | µg/L | 2E-06 |
| | Ethylbenzene | 33 | 15.0 | µg/L | 2E-05 |
| | Naphthalene | 1.1 | 1.65 | μg/L | 7E-06 |
| Sum | | | | | 1E-04 |

* Based on data from Q3 and Q4 2015. EPCs were calculated using EPA's ProUCL 5.1.

^a NMED carcinogenic Residential Tapwater SLs are used (NMED, 2017).

Note: Sum may not add up exactly due to significant figures and rounding.

Bold = Bolded numbers exceed NMED target cancer risk level (NMED, 2017).

Acronyms and Abbreviations:

COPC = contaminant of potential concern EPA = United States Environmental Protection Agency EPC = exposure point concentration $\mu g/L$ = microgram per Liter NMED = New Mexico Environment Department Q = Quarter SL = screening level SWMU = solid waste management unit

Table 5-21. Future Off-Base Domestic Water User, Groundwater Maximum Concentrations, Noncancer Hazard Index Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | COPC | Maximum Detected Concentration* | NMED Residential Tapwater Screening Level ^a | Units | Cumulative Hazard Quotient |
|-------------------------|--|---------------------------------------|--|-------|----------------------------------|
| | 1,2-Dibromoethane (ethylene dibromide; EDB) | 12 | 16.9 | µg/L | 0.7 |
| | 1,2-Dichloroethane | 5.5 | 13.0 | µg/L | 0.4 |
| | 1,2,4-Trimethylbenzene | 120 | 56 ^b | µg/L | 2 |
| 011 Date | 1-Methylnaphthalene | 20 | 611 | µg/L | 0.03 |
| Off-Base Croundwater | 2-Methylnaphthalene | 9.9 | 35.1 | µg/L | 0.3 |
| (as Tapwater) | Acetophenone | 900 | 1,920 | µg/L | 0.5 |
| (as rapwater) | Benzene | 2,200 | 33.2 | µg/L | 70 |
| | Ethylbenzene | 900 | 800 | µg/L | 1 |
| | Naphthalene | 35 | 6.11 | µg/L | 6 |
| | Toluene | 2,900 | 1,090 | µg/L | 3 |
| | Xylenes (total) | 540 | 193 | µg/L | 3 |
| HI | | | | | 80 ^c |

* Based on data from Q3 and Q4 2015.

^a NMED non-carcinogenic Residential Tapwater SLs are used except where noted (NMED, 2017).

^b EPA non-carcinogenic Resident Regional Tapwater SL (EPA, 2017).

^c Hazard index exceeds NMED target hazard index of 1 (NMED, 2017) and is further evaluated using statistic-based exposure point concentration (see Table 5-22).

Note: Sum may not add up exactly due to significant figures and rounding.

Bold = Bolded numbers exceed NMED target risk values (NMED, 2017).

Acronyms and Abbreviations:

COPC = contaminant of potential concern EPA = United States Environmental Protection Agency HI = hazard index $\mu g/L$ = microgram per Liter NMED = New Mexico Environment Department Q = Quarter SL = screening level SWMU = solid waste management unit

Table 5-22. Future Off-Base Domestic Water User, Groundwater EPCs, Noncancer Hazard Index Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Medium | COPC | EPC* | NMED Residential Tapwater Screening Level ^a | Units | Hazard Quotient |
|-------------------------|--|------|--|-------|--------------------|
| | 1,2-Dibromoethane (ethylene dibromide; EDB) | 0.62 | 16.9 | µg/L | 0.04 |
| | 1,2-Dichloroethane | 0.45 | 13.0 | µg/L | 0.03 |
| | 1,2,4-Trimethylbenzene | 4.4 | 56 ^b | µg/L | 0.08 |
| 011 Date | 1-Methylnaphthalene | 1.3 | 611 | µg/L | 0.002 |
| Off-Base Croundwater | 2-Methylnaphthalene | 9.9 | 35.1 | µg/L | 0.3 |
| Groundwater | Acetophenone | 35 | 1,920 | µg/L | 0.02 |
| (as rapwater) | Benzene | 0.90 | 33.2 | µg/L | 0.03 |
| | Ethylbenzene | 33 | 800 | µg/L | 0.04 |
| | Naphthalene | 1.1 | 6.11 | µg/L | 0.2 |
| | Toluene | 74 | 1,090 | µg/L | 0.07 |
| | Xylenes (total) | 15 | 193 | µg/L | 0.08 |
| HI | | | | | 0.8 |

* Based on data from Q3 and Q4 2015. EPCs were calculated using EPA's ProUCL 5.1.

^a NMED non-carcinogenic Residential Tapwater SLs are used except where noted (NMED, 2017).

^b EPA non-carcinogenic Resident Regional Tapwater SL (EPA, 2017).

Note: Sum may not add up exactly due to significant figures and rounding.

Acronyms and Abbreviations:

COPC = contaminant of potential concern EPA = United States Environmental Protection Agency EPC = exposure point calculation HI = hazard index $\mu g/L$ = microgram per Liter NMED = New Mexico Environment Department Q = Quarter SL = screening level SWMU = solid waste management unit

Table 6-1. Ecological Screening of On-Site Surface Soil (0 to 1-foot depth interval) Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| | | Ecological Soil Screening Level ^a mg/kg | | | | | | | | | | |
|---|------------------|--|------------------------------------|-----------------------------------|-----------------------------|---------------------------|--------------------------|------------------------|---------------------------|-------------------------|-------------------------------------|------------|
| COPC | Plant ESL | Soil Invertebrate ESL | Small Herbivorous Mammal ESL | Small Omnivorous Mammal ESL | Insectivorous Mammal ESL | Carnivorous Mammal ESL | Herbivorous Bird ESL | Omnivorous Bird ESL | Insectivorous Bird ESL | Carnivorous Bird ESL | Maximum Concentration (mg/kg) | Maximum HQ |
| 1,2,4- Trimethylbenzene | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 0.00038 | N/A |
| 1,2- Dibromoethane (Ethylene Dibromide, EDB) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | ND | N/A |
| 1,2-Dichloroethane | N/A | N/A | 32 ^b | 452 | 89 ^b | 2010 | 0.85 ^b | 21.8 | 4.6 ^b | 167 | ND | N/A |
| 2- Methylnaphthalene | N/A | N/A | 95 ^b | 24 ^b | 16 ^b | 4200 ^b | N/A | N/A | N/A | N/A | 0.14 | 8.8E-03 |
| Benzene | N/A | N/A | 31 ^b | 240 | 47 ^b | 1070 | N/A | N/A | N/A | N/A | 0.0013 | 4.2E-05 |
| Ethylbenzene | N/A | N/A | N/A | 5.16 ° | N/A | N/A | N/A | N/A | N/A | N/A | 0.00030 | 5.8E-05 |
| Isopropylbenzene | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | ND | N/A |
| Lead | 120 ^b | 1700 ^b | 330 ^b | 42.7 | 72 ^b | 190 | 21 ^b | 7.7 | 14 ^b | 59.3 | 39 | 5.1 |
| MTBE (Methyl tert- butyl ether) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | ND | N/A |
| Naphthalene | 1 b | N/A | 11 ^b | 130 | 27 ^b | 578 | 3.4 ^b | 71 | 16 ^b | 546 | 0.0064 | 6.4E-03 |
| Toluene | 200 ^b | N/A | 54 ^b | 236 | 23 b | 1050 | N/A | N/A | N/A | N/A | 0.0013 | 5.7E-05 |
| Xylenes (total) | 100 ^b | N/A | 6.2 ^b | 19.1 | 1.4 ^b | 84.8 | 90 ^b | 506 | 41 ^b | 3890 | 0.00063 | 4.5E-4 |

Table 6-1. Ecological Screening of On-Site Surface Soil (0 to 1-foot depth interval) (CONCLUDED) Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

Bolded values indicate lowest ESL. Shaded values indicate hazard quotients greater than 1.

^a Unless otherwise noted, all ESLs are from NMED's Risk Assessment Guidance for Investigation and Remediation (NMED, 2017).

^b When ESLs from NMED were not promulgated, ESLs from LANL EcoRisk Database V 3.3 (LANL, 2014) were used.

^c Region 5 screening level for shrew or vole, obtained from National Oceanic and Atmospheric Administration Screening Quick Reference Table (Buchman, 2008).

Note: COPCs 1-methylnaphthalene and hexadecane were not analyzed for in this sample set.

Acronyms and Abbreviations:

COPC = contaminant of potential concern ESL = Ecological Screening Level HQ = hazard quotient LANL = Los Alamos National Laboratory mg/kg = milligram per kilogram N/A = not available NMED = New Mexico Environment Department SWMU = solid waste management unit

Table 6-2. Hazard Index Calculations for On-Site Surface Soil (0 to 1-foot depth interval)

Risk Assessment Report

Bulk Fuels Facility, SWMU ST-106/SS-111

Kirtland Air Force Base, New Mexico

| COPC | Plant HQ | Soil Invert HQ | Herbivorous Mammal HQ | Small Omnivorous Mammal HQ | Insectivorous. Mammal HQ | Carnivorous Mammal HQ | Herbivorous. Bird HQ | Omnivorous Bird HQ | Insectivorous Bird HQ | Carnivorous Bird HQ |
|---|----------|----------------|--------------------------|----------------------------------|-----------------------------|--------------------------|-------------------------|-----------------------|--------------------------|------------------------|
| 1,2,4- Trimethylbenzene | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 1,2-Dibromoethane (Ethylene Dibromide, EDB) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 1,2-Dichloroethane | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 2-Methylnaphthalene | N/A | N/A | 0.0015 | 0.0058 | 0.0088 | 3.3E-05 | N/A | N/A | N/A | N/A |
| Benzene | N/A | N/A | 4.2E-05 | 5.4E-06 | 2.8E-05 | 1.2E-06 | N/A | N/A | N/A | N/A |
| Ethylbenzene | N/A | N/A | N/A | 5.8E-05 | N/A | N/A | N/A | N/A | N/A | N/A |
| Isopropylbenzene | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Lead | 0.33 | 0.023 | 0.12 | 0.91 | 0.54 | 0.21 | 1.9 | 5.1 | 2.8 | 0.66 |
| MTBE (Methyl tert- butyl ether) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Naphthalene | 0.0064 | N/A | 0.00058 | 4.9E-05 | 0.00024 | 1.1E-05 | 0.0019 | 9.0E-05 | 0.00040 | 1.2E-05 |
| Toluene | 6.5E-6 | N/A | 2.4E-05 | 5.5E-06 | 5.7E-05 | 1.2E-06 | N/A | N/A | N/A | N/A |
| Xylenes (total) | 6.3E-6 | N/A | 0.00010 | 3.3E-05 | 0.00045 | 7.4E-06 | 7.0E-06 | 1.2E-06 | 1.5E-05 | 1.6E-07 |
| Hazard Index | 0.33 | 0.023 | 0.12 | 0.92 | 0.55 | 0.21 | 1.9 | 5.1 | 2.8 | 0.66 |

Shaded values indicate HQs or HIs greater than 1.

Note: COPCs 1-methylnaphthalene and hexadecane were not analyzed for in this sample set.

Acronyms and Abbreviations:

COPC = contaminant of potential concern HI = hazard index HQ = hazard quotient N/A = not available SWMU = solid waste management unit Kirtland AFB Risk Assessment Bulk Fuels Facility SWMU ST-106/SS-111

Table 6-3. Ecological Screening of Mixed Zone Soil (0 to 10 feet bgs) Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| | Ecological Soil Screening Level ^a (mg/kg) | | | | | | |
|---|--|-------------------------|-------------------------------------|------------|--|--|--|
| COPC | Small Omnivorous Mammal ESL | Carnivorous Bird ESL | Maximum Concentration (mg/kg) | Maximum HQ | | | |
| 1,2,4- Trimethylbenzene | N/A | N/A | 20 | N/A | | | |
| 1,2-Dibromoethane (Ethylene Dibromide, EDB) | N/A | N/A | ND | N/A | | | |
| 1,2-Dichloroethane | 452 | 167 | ND | N/A | | | |
| 1-Methylnaphthalene | N/A | N/A | 0.33 | N/A | | | |
| 2-Methylnaphthalene | 24 ^b | N/A | 16 | 0.67 | | | |
| Benzene | 240 | N/A | 0.0033 | 0.000014 | | | |
| Ethylbenzene | 5.16 ^c | N/A | 0.47 | 0.091 | | | |
| lsopropylbenzene | N/A | N/A | 0.29 | N/A | | | |
| Lead | 42.7 | 59.3 | 71 | 1.7 | | | |
| MTBE (Methyl tert- butyl ether) | N/A | N/A | ND | N/A | | | |
| Naphthalene | 130 | 546 | 16 | 0.12 | | | |
| Toluene | 236 | N/A | 0.0045 | 0.000019 | | | |
| Xylenes (total) | 19.1 | 3,890 | 3.8 | 0.20 | | | |

Table 6-3. Ecological Screening of Mixed Zone Soil (0 to 10 feet bgs) (CONCLUDED) Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

Bolded values indicate lowest Ecological Screening Level Shaded values indicate hazard quotients greater than 1

^a Unless otherwise noted, all ecological screening levels are from NMED's Risk Assessment Guidance for Investigation and Remediation (NMED 2017).

^b Ecological screening levels are from LANL EcoRisk Database V 3.3 (LANL 2014).

^c Region 5 screening level for shrew or vole, obtained from NOAA Screening Quick Reference Table (SQuiRT) (Buchman 2008).

Note: COPC Hexadecane were not analyzed for in this sample set.

Acronyms and Abbreviations:

COPC = contaminant of potential concern HQ = hazard quotient LANL = Los Alamos National Laboratory mg/kg = milligram per kilogram NOAA = National Oceanic and Atmospheric Administration N/A = not available ND = nondetect SWMU = Solid Waste Management Unit

Table 6-4. Hazard Calculations of Mixed Zone Soil (0 to 10 feet bgs) Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| COPC | Small Omnivorous Mammal HQ | Carnivorous Bird HQ |
|---|----------------------------------|------------------------|
| 1,2,4- Trimethylbenzene | N/A | N/A |
| 1,2-Dibromoethane (Ethylene Dibromide, EDB) | N/A | N/A |
| 1,2-Dichloroethane | N/A | N/A |
| 1-Methylnaphthalene | N/A | N/A |
| 2-Methylnaphthalene | 0.67 | N/A |
| Benzene | 0.000014 | N/A |
| Ethylbenzene | 0.091 | N/A |
| Isopropylbenzene | N/A | N/A |
| Lead | 1.7 | 1.2 |
| MTBE (Methyl tert- butyl ether) | N/A | N/A |
| Naphthalene | 0.12 | 0.029 |
| Toluene | 0.000019 | N/A |
| Xylenes (total) | 0.20 | 0.00098 |
| Hazard Index | 2.7 | 1.2 |

Shaded values indicate HIs and HQs greater than 1.

Note: COPC Hexadecane were not analyzed for in this sample set.

Acronyms and Abbreviations:

COPC = contaminant of potential concern HI = hazard index HQ = hazard quotient N/A = not available ND = nondetect SWMU = solid waste management unit

Table 6-5. Ecological Screening of Soil Gas Concentrations On-Site (15 to 25-foot depth interval) Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| COPC | Maximum Detected Concentration | Soil Gas (Burrowing Mammal) ESL | Units | Source | Does COPC Exceed ESL? ^a |
|---|--------------------------------------|--|-------------------|--------|---|
| 1,2-Dibromoethane (Ethylene Dibromide [EDB]) | 0.024 | N/A | mg/m ³ | N/A | N/A |
| 1,2-Dichloroethane | ND | 41 | mg/m³ | LANL | Ν |
| 1,2,4-Trimethylbenzene | 0.64 | 7.8 | mg/m³ | MWH | Ν |
| Benzene | 0.48 | 25 | mg/m³ | LANL | Ν |
| Cyclohexane | 0.38 | N/A | mg/m³ | N/A | N/A |
| Ethylbenzene | 0.24 | 23 | mg/m³ | MWH | Ν |
| n-Heptane | 0.49 | N/A | mg/m³ | N/A | N/A |
| n-Hexane | 0.60 | N/A | mg/m³ | N/A | N/A |
| Methyl tert-butyl ether (MTBE) | ND | N/A | mg/m³ | N/A | Ν |
| Naphthalene | 0.26 | 1.9 | mg/m³ | MWH | Ν |
| Toluene | 0.90 | 60 | mg/m³ | LANL | Ν |
| Xylenes (total) | 0.91 | 87 | mg/m³ | LANL | Ν |
| m- and p-Xylenes | 0.61 | 7.8 | mg/m ³ | MWH | N |
| o-Xylene | 0.28 | 7.8 | mg/m³ | MWH | Ν |

Acronyms and Abbreviations:

COPC = contaminant of potential concern ESL = Ecological Screening Level LANL = Los Alamos National Laboratory EcoRisk Database v3.3 (2014) mg/m³ = milligram per cubic meter MWH = MWH Americas (2011) N = no N/A = not available ND = nondetect SWMU = solid waste management unit

Table 6-6. Summary Statistics for Tier 2 Ecological COPCs Risk Assessment Report Bulk Fuels Facility, SWMU ST-106/SS-111 Kirtland Air Force Base, New Mexico

| Сорс | COPC Number De of Free Samples | | Maximum (mg/kg) | Mean (mg/kg) | Median (mg/kg) | Screening Level ^a (mg/kg) |
|------------------------------|--------------------------------------|------|--------------------|-----------------|-------------------|--|
| Surface Soil 0 to 1-foot | | | | | | |
| Lead | 14 | 100% | 39 | 11 | 8.1 | 7.7ª |
| Mixed Zone Soil 0 to 10 feet | | | | | | |
| Lead | 105 | 100% | 71 | 9.3 | 5.5 | 59.3 ^b |

^a NMED's Risk Assessment Guidance for Investigation and Remediation for omnivorous birds (NMED, 2017).

^b NMED's Risk Assessment Guidance for Investigation and Remediation for carnivorous birds (NMED, 2017).

Acronyms and Abbreviations:

% = percent

COPC = contaminant of potential concern

mg/kg = milligram per kilogram

NMED = New Mexico Environmental Department

SWMU = solid waste management unit

Attachment 1.

Investigation of Bias in EDB Analytical Results by Soil Gas Method CARB 422

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ACRONYMS AND ABBREVIATIONS

| % | percent |
|-----------------------------|--|
| ± | plus or minus |
| × | times |
| ALS | ALS Environmental |
| CARB 422 CCV | California Air Resources Board Method 422 continuing calibration verification |
| ECD EDB e.g. EPA | electron capture detector ethylene dibromide for example United States Environmental Protection Agency |
| GC | gas chromatograph |
| ICV | initial calibration verification |
| i.e. | in other words |
| LCS | laboratory control sample |
| MS | mass spectrometer |
| ppbv | parts per billion by volume |
| Q | Quarter |
| RA | Risk Assessment |
| Site SOP SVMP SWMU | SWMU ST-106/SS-111 standard operating procedure soil vapor monitoring point solid waste management unit |
| TO-15 | EPA Compendium Method TO-15 |
| VOC | volatile organic compound |

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1 INTRODUCTION

This Attachment provides information supporting the data evaluation presented in Section 3.3 of the solid waste management unit (SWMU) ST-106/SS-111 (Site) Risk Assessment (RA). As discussed in Section 3.3 of the Site RA, review of summary statistics and data plots identified that the analytical results for ethylene dibromide (EDB), which was measured in soil gas by two separate methods, are biased higher in one method than the other (Figures A1-1 and A1-2). This issue warranted an investigation of the EDB soil gas data. Results of this investigation indicate that the bias is due to problems with the laboratory standard operating procedure (SOP) for preparation of calibration standards for California Air Resources Board Method 422 (CARB 422) analysis. It is recommended that soil gas EDB data by United States Environmental Protection Agency (EPA) Compendium Method TO-15 (TO-15) be used for analysis in this RA.

EDB was measured in soil gas by two separate analytical methods, CARB 422 and TO-15. A comparison of 408 EDB soil gas concentration results by CARB 422 and TO-15 shows a very consistent pattern of higher values for CARB 422. Quarter (Q) 3 2015 through Q3 2016 soil gas data was used for this evaluation (USACE, 2017a; USACE, 2017b). Figure A1-1 is a histogram showing the frequency of ratios when comparing EDB soil gas concentration ratios for CARB 422 to TO-15. These EDB soil gas results demonstrate that in 99 percent (%) of detected samples, CARB 422 EDB concentrations were higher than the TO-15 EDB concentrations. Additionally, 92% of the EDB soil gas concentration results showed one to five times higher EDB concentrations by the CARB-422 method. Figure A1-2 is a log-scale scatterplot of soil gas EDB results by the two methods. The EDB soil gas concentrations are tightly clumped along a line indicating EDB concentration ranges had precision and a high degree of consistency by the two methods. However, the line is skewed above the one-to-one ratio, confirming that the EDB soil gas concentrations are higher when analyzed by the CARB 422 method.

To understand what caused this bias the following investigation steps were performed:

- 1. Laboratory data packages with results of both methods were reviewed to determine if:
 - a. an interferent could be responsible for the elevated EDB soil gas concentration results by CARB 422, or
 - b. high concentrations of other volatile organic compounds (VOC) could be affecting TO-15 EDB soil gas concentration results; and
- 2. Laboratory SOPs and calibration standards used in the CARB 422 and TO-15 methods were reviewed by ALS Environmental (ALS).

2 ANALYTICAL METHOD COMPARISON

EDB concentrations in soil gas samples were analyzed by ALS using two different methods: CARB 422 and TO-15. EDB was the only VOC analyzed by CARB 422. EDB and 60 other VOCs were analyzed by TO-15. To evaluate these methods for the bias observed by CARB 422, laboratory data packages were requested. Four data packages were obtained from Q3 2015 and 11 data packages from Q1 2016. Section 2.1 describes a review of CARB 422 chromatograms focusing on identification of EDB and the possibility that an interferent could be responsible for elevated EDB results by this method. Section 2.2 describes the results of a review of laboratory data packages focusing on the ability of TO-15 to identify and quantitate EDB soil gas concentrations in the presence of high VOC concentrations such as methyl ethyl ketone and acetone that were observed after using glue to seal soil vapor monitoring points (SVMPs) in Q1 2015.

CARB 422 was developed to measure hazardous air pollutants in stack gases from stationary sources (in other words [i.e.], fixed emitters of air pollutants) and the air sample is collected on sorbent traps, or by a stainless-steel vessel or vacuum bottle. The method utilizes a gas chromatograph (GC) with an electron capture detector (ECD). The GC separates the VOCs of interest by temperature over a time range and the ECD detects the VOCs. ECDs only respond to VOCs with electronegative components and are restricted to halogenated VOCs such as fluorine, chlorine, bromine, and iodine. The resulting chromatogram is a series of peaks, each of which indicates a detected halogenated VOC.

TO-15 was developed to measure VOCs in ambient air and the air sample is collected on sorbent traps, or by a stainless-steel vessel or vacuum bottle. Like CARB 422, it also uses a GC to separate the VOCs by temperature over a time range, but the detector is a mass spectrometer (MS) rather than an ECD. A mass spectrum collects a chromatogram for each peak and compares the sample spectrum to a reference spectra which are collected under similar instrument conditions. Identification of specific VOCs is based on three factors: 1) retention time (identified in the ALS TO-15 SOP as ± 0.1 minutes), 2) the mass fragmentation pattern, and 3) the relative intensity of the target ions (masses). Mass spectrometry is considered a more definitive identification technique than ECD because of the unique mass fragmentation patterns obtained by the GC MS and the reduced chance of misidentification of a VOC.

2.1 Investigation of Possible Interferants in CARB 422 Chromatograms

CARB 422 EDB soil gas concentrations are consistently elevated relative to TO-15 values in samples collected from Q3 2015 through Q3 2016 at 284 SVMPs with varying depth intervals (USACE, 2017a; USACE, 2017b), and EDB concentrations ranging over orders of magnitude (Figure A1-1 and A1-2). The consistency of this bias suggests no plausible basis for suspecting another interferent could be present when analyzing for EDB soil gas concentrations by CARB 422. However, to confirm whether this conclusion was accurate, EDB soil gas concentration results from 16 laboratory data packages were evaluated to determine if interferent was creating the high bias observed by the CARB 422.

It is important to note that the ECD responds equally to all halogenated VOCs, and the peaks are identified based on the time at which they elute from the GC column and are detected (retention time). In ALS's SOP for CARB 422, retention time windows are defined as ± 0.1 minutes of the retention time of the daily continuing calibration verification (CCV) standard. Therefore, for ALS's CARB 422 EDB analyses, any peak appearing within the retention time window defined by the CCV is automatically identified as EDB by the instrument software and quantitated.

After the entire analytical sequence has been completed, the ALS analyst reviews the instrument identifications. Using professional judgment, the analyst may remove a detection that indicated a

positive detection. Often this occurs when the analyst has reason to believe the peak is actually an interfering compound. When reviewing the laboratory data packages, peaks identified as EDB by the software were manually edited by the analyst and approved by the supervisor to be removed as an EDB detection. The ALS analyst overlaid each sample chromatogram with the chromatogram of the bracketing CCVs to determine which peak should be identified as EDB detection.

Example chromatograms illustrating this process were provided by ALS and are shown in Figures A1-3 and A1-4. In Figure A1-3, the chromatogram shows that the instrument software identified the 2.779 minute peak as EDB; however, as shown in Figure A1-4, when the sample chromatogram was overlaid with the bracketing CCVs, it was clear that the retention time of the sample peak did not match that of EDB in the CCV chromatogram. The identification of the 2.779 minute peak as EDB was then manually deleted. Once discarded as a valid EDB detect, no further consideration was given to this peak.

The review of the laboratory data packages found that ALS was adhering closely to the laboratory SOP when identifying EDB by CARB 422. There is no indication that ALS was incorrectly identifying other closely eluting halogenated VOCs as EDB. It is unlikely that interference was causing the high EDB soil gas concentration bias observed by CARB 422. In addition, there is no evidence that an interferent exists based on review of the halogenated VOCs measured by TO-15.

2.2 Investigation of the Effect of High Concentrations of VOCs on EDB Detections by TO-15

The potential interfering effect of high VOC concentrations on the accuracy of analytical results for EDB by TO-15 was assessed. Sixteen laboratory data packages were evaluated to determine if EDB soil gas concentrations were detected in the presence of high VOC concentrations.

Figures A1-5 through A1-7 depict TO-15 mass spectra from Site samples collected in Q1 2016 with varying mass ratios (i.e., approximately 10, 100, and 1000 times [×]) of fuel to EDB. In Figure A1-5, the mass of fuels exceeded the mass of EDB by $10\times$ and the EDB ions (i.e., 107 and 109) were visible in the spectrum along with fuel ions such as 57 and 71. When the mass of fuels are about $100\times$ (Figure A1-6) or $1000\times$ (Figure A1-7) than the mass of EDB, the EDB ions were not visible in the spectra because EDB detections were dwarfed by the underlying fuel ions. However, the EDB ions (i.e., 107 and 109) were detected by the instrument despite the high fuel concentrations such as n-hexane, decane, heptane, etcetera in soil gas samples.

In addition, all EDB soil gas total ion chromatographs from the data packages accurately depicted the EDB identification in the samples evaluated. This can be observed in Figures A1-5 through A1-7 in the bottom-right corner of each figure where the EDB sample chromatographs in blue were overlaid with the laboratory chromatograph in black. The identification and quantification of EDB results were not affected by high concentrations of other VOCs.

3 INVESTIGATION OF ANALYTICAL BIAS

The consistent, unidirectional bias in EDB soil gas concentrations were determined not to be due to an interferent in the CARB 422 analysis (Section 2.1) or high VOC concentrations invalidating identification of EDB soil gas concentrations by TO-15 (Section 2.2). To further investigate why EDB soil gas results were biased high by CARB 422; the Air Force reviewed the ALS SOPs for both CARB 422 and TO-15. It was determined that TO-15 and CARB 422 used laboratory control samples (LCSs; i.e., working standards) made from different concentrated stock standards purchased from commercial vendors; however, these stock standards were each prepared differently when creating the standards for each method. For TO-15, the stock standard was diluted into individual standards using an automated dispensing system; whereas, for CARB 422 the stock standards were diluted by hand dispensing into low and high calibration standards, which were diluted again by hand into individual standards. Although there were differences in preparation of the LCSs, it was hypothesized that the LCS from each method could be analyzed by the other method to provide information on the CARB 422 bias.

The Air Force requested ALS to analyze the CARB 422 LCS on the GC MS instrument that was used for TO-15 for this project and determined the EDB recovery was 58%. The TO-15 LCS was analyzed on the GC ECD instrument (i.e., GC21) that was used for CARB 422 for this project, but the LCS overwhelmed the instrument and provided no useful information. ALS then calibrated a different GC ECD instrument for CARB 422 and analyzed the "old" CARB 422 LCS (the same LCS used on GC MS and on GC21) and the EDB recovery was 60%.

These low EDB recoveries demonstrates a problem with the preparation of the CARB 422 LCS(s) and the calibration curve used on the GC ECD instrument which returns too high EDB soil gas concentrations. For instance, if the "old" CARB 422 LCS was 10 parts per billion by volume (ppbv) and was previously verified as 10 ppbv by the project GC ECD instrument (i.e., GC21), but when analyzed by two other instruments yielded only 6 ppbv. Working in the opposite direction, a sample known to contain 6 ppbv of EDB would give a result of 10 ppbv on the project GC ECD (i.e., GC21) and will bias EDB soil gas concentrations higher.

When questioned as to the root cause of this discrepancy, ALS theorized that the two initial calibration standards (i.e., the hand-dispensed low and high standards, which were diluted by hand into working standards) and the initial calibration verification (ICV) standard were not allowed to sufficiently equilibrate prior to dilution and analysis. Both standards were made on July 21, 2015. Per the ALS SOP, the equilibration time is 15 to 20 minutes. It was determined all EDB soil gas samples analyzed by CARB 422 were on one instrument (i.e., GC21) using one of two stored calibrations curves on the instrument dated July 21, 2015 and July 29, 2015. Both of the stored calibration curves were performed using the two initial calibration standards which were diluted and the ICV standard made on July 21, 2015. Additionally, ALS did not explain why an automated dispensing system was not used for CARB 422 were affected by improper standard preparations. It is not possible to determine if the equilibrium time and/or hand dispensing contributed more to the improper standard preparations (for example [e.g.], all LCSs and ICV). ALS released a Non-Conformance Corrective Action Report outlining the discrepancy (KAFB, 2017).

The primary information available about the bias between the TO-15 and CARB 422 methods comes from the ALS Non-Conformance Corrective Action Report (KAFB, 2017), and 58% and 60% EDB recovery when analyzing LCS on GC MS and on the different GC ECD instruments, respectively. These two LCS analyses indicate that the CARB 422 EDB soil gas results are biased on average about 1.7

times higher than the TO-15 results. Although the 1.7 times higher is a smaller bias for CARB 422 than that observed one to five higher EDB soil gas concentration results (Figure A1-1); it is still within the range and casts doubt on the reliability of all CARB 422 EDB soil gas concentration results.

4 SUMMARY

The results of these investigations recommend TO-15 EDB soil gas concentration results be used in this RA for the following reasons:

- CARB 422 EDB soil gas concentration results were consistently biased high in relation to TO-15 EDB soil gas results.
- Investigation of laboratory SOPs indicates that preparation of calibration standards is responsible for the bias in CARB 422 concentrations.
- The identification and quantification of EDB soil gas concentrations by TO-15 was not affected by high VOC concentrations such as fuel-related analytes from the Site.

The future use of CARB 422 may be considered where it is important to evaluate EDB soil gas concentrations in the presence of high VOC concentrations, such as monitoring the effectiveness of bioventing or air-lifting interim measures in the source area (KAFB, 2017; NMED 2017). However, this method will only be used if ALS SOP issues for the CARB 422 method are resolved.

5 REFERENCES

- KAFB, 2017. Correspondence from Eric H. Froehlich, Base Commander, Kirtland AFB, NM to Mr. John Kieling, Bureau Chief, Hazardous Waste Bureau, New Mexico Environment Department, regarding Requesting a Modification to the Work Plan for Soil Vapor Monitoring and Drinking Water Monitoring, August 2016, Solid Waste Management Unit ST-106/SS-111, Bulk Fuels Facility Solid Waste Management Unit ST-106/SS-111, Kirtland Air Force Base, EPA ID# NM9570024423, HWB-KAFB-13-MISC. 03 April.
- NMED, 2017. Correspondence from Juan Carlos Borrego, Deputy Secretary, New Mexico Environment Department to Colonel E. Froehlich, Base Commander and Lt. Colonel W. Acosta, Civil Engineer Office, Kirtland AFB, NM, regarding Modification Request to the Work Plan for Soil Vapor and Drinking Water Monitoring, August 2016, 27 April.
- USACE, 2017a. RCRA Facility Investigation Report Solid Waste Management Unit ST-106/SS-111 Kirtland Air Force Base, New Mexico. Prepared by Sundance Consulting, Inc., for the USACE Albuquerque District under Contract No. W912PP-16-C-0002. January
- USACE, 2017b. Quarterly Monitoring Report October December 2016 and Annual Report for 2016 Bulk Fuels Facility Solid Waste Management Unit ST-106/SS-111 Kirtland Air Force Base, New Mexico. Prepared by EA Engineering, Science, and Technology, Inc., PBC., for the USACE Albuquerque District under Contract No. W912DR-12-D-0006 Delivery Order DM01. March.

FIGURES



Figure A1-1. Ratio of CARB 422 and TO-15 EDB Soil Gas Results; Detected Values Only¹

¹Four outlier paired samples were removed from the graphic to facilitate the visualization.

*Q3 2015 through Q3 2016 soil gas data was used for this evaluation (USACE, 2017a; USACE, 2017b).



Figure A1-2. Scatterplot of CARB 422 and TO-15 EDB Soil Gas Results; Detected Values Only

*Q3 2015 through Q3 2016 soil gas data was used for this evaluation (USACE, 2017a; USACE, 2017b).



Figure A1-3. Overlaid Sample Chromatograms

Each colored trace is a Site sample chromatogram. The y-axis is the relative intensity of the peak and the x-axis is the retention time, with the leftmost hash mark at 1.50 minutes and the rightmost hash mark at 4.00 minutes. The instrument files used to construct this overlay are identified at the top of the figure. The peak identified as ethylene dibromide by the instrument software is denoted by its retention time of 2.779 minutes.



Figure A1-4. Overlaid Sample Chromatograms with Continuing Calibration Verification (CCV)

As the CCV peak did not overlap with the peak identified as ethylene dibromide (EDB) by the instrument, the analyst manually eliminated the EDB detect. Each colored trace is a Site sample chromatogram. The y-axis is the relative intensity of the peak and the x-axis is the retention time, with the leftmost hashmark at 1.50 minutes and the rightmost hashmark at 4.00 minutes. The instrument files used to construct this overlay are identified at the top of the window. The CCV is the large peak appearing underneath the files names and the smaller peak to the right of the CCV is the peak identified by the instrument as EDB. The elution times of the smaller peaks are identified above the peak maxima.



Figure A1-5. EDB TO-15 Mass Spectrum with Fuel to EDB Ratio of Approximately 10

For each spectrum on the left, the y-axis is the percent abundance of the mass detected and the x-axis is the detected mass. The total ion chromatogram in the bottom-right corner is the abundance of the target ion on the y-axis and the retention time on the x-axis. The top block of text in the upper right details sample specific items such as amount of EDB detected, retention time, retention time difference from the expected retention time, file name, and date of analysis. The lower block of text lists the target and secondary ions, the total peak area, the ratio of the secondary ion (109) to the primary ion (107), and the expected ratio range.



Figure A1-6. EDB TO-15 Mass Spectrum with Fuel to EDB Ratio of Approximately 100

For each spectrum on the left, the y-axis is the percent abundance of the mass detected and the x-axis is the detected mass. The top spectra (Ref) is a reference spectrum from a reference sample under similar conditions. The middle spectrum (Raw) is the spectrum collected from the sample at the maxima of the ethylene dibromide (EDB) peak. The bottom spectrum (Sub) is the result of subtracting the reference from the sample spectrum. The total ion chromatogram in the bottom-right corner is the abundance of the target ion on the y-axis and the retention time on the x-axis. The top block of text in the upper right details sample specific items such as amount of EDB detected, retention time, retention time difference from the expected retention time, file name, and date of analysis. The lower block of text lists the target and secondary ions, the total peak area, the ratio of the secondary ion (109) to the primary ion (107), and the expected ratio range.



Figure A1-7. EDB TO-15 Mass Spectrum with Fuel to EDB Ratio of Approximately 1000

For each spectrum on the left, the y-axis is the percent abundance of the mass detected and the x-axis is the detected mass. The total ion chromatogram in the bottom-right corner is the abundance of the target ion on the y-axis and the retention time on the x-axis. The top block of text in the upper right details sample specific items such as amount of ethylene dibromide (EDB) detected, retention time, retention time difference from the expected retention time, file name, and date of analysis. The lower block of text lists the target and secondary ions, the total peak area, the ratio of the secondary ion (109) to the primary ion (107), and the expected ratio range.

Attachment 2.

ProUCL Input and Output Data Files

Attachment 2 (Continued)

Unexcavated Soil Samples from 0 to 1 foot Depth (Input)

| | A | В | С | D | E | F |
|----|------------------------|--------------------------|---|-------------------|---------------------|---|
| 1 | 1,2,4-Trimethylbenzene | d_1,2,4-Trimethylbenzene | | 1,2-Dibromoethane | d_1,2-Dibromoethane | |
| 2 | 0.000109 | 0 | | 0.000491 | 0 | |
| 3 | 0.000147 | 0 | | 0.000502 | 0 | |
| 4 | 0.000101 | 0 | | 0.000675 | 0 | |
| 5 | 0.000099 | 0 | | 0.000466 | 0 | |
| 6 | 0.000134 | 0 | | 0.000454 | 0 | |
| 7 | 0.000097 | 0 | | 0.000615 | 0 | |
| 8 | 0.000105 | 0 | | 0.000446 | 0 | |
| 9 | 0.000159 | 0 | | 0.000484 | 0 | |
| 10 | 0.0002965 | 0 | | 0.000733 | 0 | |
| 11 | 0.000157 | 0 | | 0.001365 | 0 | |
| 12 | 0.000119 | 0 | | 0.000722 | 0 | |
| 13 | 0.000112 | 0 | | 0.000547 | 0 | |
| 14 | 0.000154 | 0 | | 0.000518 | 0 | |
| 15 | 0.000375 | 1 | | 0.000707 | 0 | |

| | G | Н | J | K | L | М | Ν |
|----|--------------------|----------------------|-----------|-----------|---|--------------|----------------|
| 1 | 1,2-Dichloroethane | d_1,2-Dichloroethane | Benzene | d_Benzene | | Ethylbenzene | d_Ethylbenzene |
| 2 | 0.000163 | 0 | 0.000142 | 0 | | 0.000196 | 0 |
| 3 | 0.000167 | 0 | 0.000106 | 0 | | 0.0002 | 0 |
| 4 | 0.000224 | 0 | 0.0001 | 0 | | 0.00027 | 0 |
| 5 | 0.000155 | 0 | 0.00115 | 1 | | 0.000186 | 0 |
| 6 | 0.000151 | 0 | 0.00107 | 1 | | 0.000181 | 0 |
| 7 | 0.000204 | 0 | 0.000581 | 1 | | 0.000246 | 0 |
| 8 | 0.000148 | 0 | 0.000866 | 1 | | 0.000178 | 0 |
| 9 | 0.000161 | 0 | 0.000345 | 1 | | 0.000193 | 0 |
| 10 | 0.000244 | 0 | 0.0002805 | 1 | | 0.000293 | 0 |
| 11 | 0.0004535 | 0 | 0.0002035 | 1 | | 0.0005465 | 0 |
| 12 | 0.00024 | 0 | 0.0002205 | 1 | | 0.000219 | 0 |
| 13 | 0.000182 | 0 | 0.001312 | 1 | | 0.000207 | 0 |
| 14 | 0.000172 | 0 | 0.000752 | 1 | | 0.000283 | 0 |
| 15 | 0.000235 | 0 | 0.000485 | 1 | | 0.000297 | 1 |

| | 0 | Р | Q | R | S |
|----|---|------------------|--------------------|---|--------------------------------|
| 1 | | Isopropylbenzene | d_lsopropylbenzene | | MTBE (Methyl tert-butyl ether) |
| 2 | | 0.000083 | 0 | | 0.000214 |
| 3 | | 0.000085 | 0 | | 0.000219 |
| 4 | | 0.000115 | 0 | | 0.000294 |
| 5 | | 0.000079 | 0 | | 0.000203 |
| 6 | | 0.000077 | 0 | | 0.000198 |
| 7 | | 0.000105 | 0 | | 0.000268 |
| 8 | | 0.000076 | 0 | | 0.000194 |
| 9 | | 0.000082 | 0 | | 0.000211 |
| 10 | | 0.000125 | 0 | | 0.00032 |
| 11 | | 0.0002325 | 0 | | 0.000596 |
| 12 | | 0.000123 | 0 | | 0.000315 |
| 13 | | 0.000093 | 0 | | 0.000239 |
| 14 | | 0.000088 | 0 | | 0.000226 |
| 15 | | 0.00012 | 0 | | 0.000308 |
| | Т | U | V | W | Х | Y | Z | AA |
|----|----------------------------------|---|-------------|---------------|---|-----------|-----------|----|
| 1 | d_MTBE (Methyl tert-butyl ether) | | Naphthalene | d_Naphthalene | | Toluene | d_Toluene | |
| 2 | 0 | | 0.000157 | 0 | | 0.000219 | 0 | |
| 3 | 0 | | 0.00016 | 0 | | 0.000353 | 0 | |
| 4 | 0 | | 0.000216 | 0 | | 0.0006585 | 0 | |
| 5 | 0 | | 0.000149 | 0 | | 0.000249 | 0 | |
| 6 | 0 | | 0.000145 | 0 | | 0.000224 | 1 | |
| 7 | 0 | | 0.000196 | 0 | | 0.000719 | 1 | |
| 8 | 0 | | 0.000142 | 0 | | 0.000873 | 1 | |
| 9 | 0 | | 0.000155 | 0 | | 0.000253 | 1 | |
| 10 | 0 | | 0.000234 | 0 | | 0.0006 | 1 | |
| 11 | 0 | | 0.0004365 | 0 | | 0.000745 | 1 | |
| 12 | 0 | | 0.000175 | 0 | | 0.0002205 | 1 | |
| 13 | 0 | | 0.000165 | 0 | | 0.001315 | 1 | |
| 14 | 0 | | 0.000226 | 0 | | 0.001 | 1 | |
| 15 | 0 | | 0.00638 | 1 | | 0.000587 | 1 | |

| | AB | AC |
|----|-----------------|-------------------|
| 1 | Xylenes (total) | d_Xylenes (total) |
| 2 | 0.000392 | 0 |
| 3 | 0.000527 | 0 |
| 4 | 0.000364 | 0 |
| 5 | 0.000355 | 0 |
| 6 | 0.00048 | 0 |
| 7 | 0.000348 | 0 |
| 8 | 0.000378 | 0 |
| 9 | 0.000573 | 0 |
| 10 | 0.0010695 | 0 |
| 11 | 0.000564 | 0 |
| 12 | 0.000427 | 0 |
| 13 | 0.000404 | 0 |
| 14 | 0.000552 | 0 |
| 15 | 0.000633 | 1 |

| | А | В | С | D | E |
|----|---------------------|-----------------------|---|-------|--------|
| 1 | 2-Methylnaphthalene | d_2-Methylnaphthalene | | Lead | d_Lead |
| 2 | 0.0519 | 1 | | 17.2 | 1 |
| 3 | 0.00952 | 0 | | 3.63 | 1 |
| 4 | 0.00995 | 0 | | 4.66 | 1 |
| 5 | 0.00989 | 0 | | 4.49 | 1 |
| 6 | 0.009535 | 0 | | 7.335 | 1 |
| 7 | 0.00945 | 0 | | 6.45 | 1 |
| 8 | 0.139 | 1 | | 7.42 | 1 |
| 9 | 0.00949 | 0 | | 11.9 | 1 |
| 10 | 0.012 | 1 | | 9.01 | 1 |
| 11 | 0.00958 | 0 | | 9.5 | 1 |
| 12 | 0.00931 | 0 | | 8.16 | 1 |
| 13 | 0.00941 | 0 | | 39.1 | 1 |
| 14 | 0.00906 | 0 | | 18.2 | 1 |
| 15 | 0.00953 | 0 | | 5.46 | 1 |

Attachment 2 (Continued)

Unexcavated Soil Samples from 0 to 1 foot Depth (Output)

| | A | В | С | D | E | F | G | Н | I | J | K | | L |
|----------|---|----------------|----------------|---------------|-----------------|---------------|-----------------|---------------|---------------|------------------|-------------|-----|----|
| 1 | | | | | UCL Statis | tics for Data | Sets with No | on-Detects | | | | | |
| 2 | | | | 1 | | | | | | | | | |
| 3 | | User Sele | cted Options | | | | | | | | | | |
| 4 | Da | ate/Time of Co | omputation | ProUCL 5.14 | 4/5/2017 3:4 | 8:56 PM | | | | | | | |
| 5 | | | From File | WorkSheet_ | a.xls | | | | | | | | |
| 6 | | Ful | II Precision | OFF | | | | | | | | | |
| 7 | | Confidence | Coefficient | 95% | | | | | | | | | |
| 8 | Number | of Bootstrap | Operations | 2000 | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | 1,2,4-Trime | ethylbenzene | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | General | Statistics | | | | | | |
| 13 | | | Total | Number of C | bservations | 14 | | | Numbe | r of Distinct O | bservations | s 1 | 14 |
| 14 | | | | Numbe | er of Detects | 1 | | | | Number of N | Non-Detects | s 1 | 13 |
| 15 | | | N | umber of Dist | inct Detects | 1 | | | Numbe | er of Distinct N | Non-Detects | s 1 | 13 |
| 16 | | | | | | | | | | | | | |
| 17 | Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set! | | | | | | | | | | | | |
| 18 | It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | |
| 20 | | | | The data s | et for variab | le 1,2,4-Trim | nethylbenzen | ie was not pr | ocessed! | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | |
| 23 | 1,2-Dibrom | oethane | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |
| 25 | | | | | | General | Statistics | | | | | | |
| 26 | | | Total | Number of C | bservations | 14 | | | Numbe | r of Distinct O | bservations | s 1 | 14 |
| 27 | | | | Numbe | er of Detects | 0 | | | | Number of N | Non-Detects | s 1 | 14 |
| 28 | | | N | umber of Dist | inct Detects | 0 | | | Numb | er of Distinct N | Non-Detects | s 1 | 14 |
| 29 | | | | | | | | | | | | | |
| 30 | | Warr | ning: All obse | ervations are | Non-Detects | (NDs), there | efore all stati | stics and est | imates shou | ld also be ND | s! | | |
| 31 | | Specifi | cally, sample | e mean, UCLs | s, UPLs, and | other statist | tics are also | NDs lying be | low the large | est detection l | imit! | | |
| 32 | • | The Project T | eam may de | cide to use a | Iternative sit | e specific va | lues to estim | ate environn | nental paran | neters (e.g., E | PC, BTV). | | |
| 33 | | | | | | | | | | | | | |
| 34 | | | | The data | a set for varia | able 1,2-Dib | romoethane | was not proc | essed! | | | | |
| 35 | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | |
| 37 | 1,2-Dichlor | oethane | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | |
| 39 | | | | | | General | Statistics | | | | | | |
| 40 | | | Total | Number of C | bservations | 14 | | | Numbe | r of Distinct O | bservations | s 1 | 14 |
| 41 | | | | Numbe | er of Detects | 0 | | | | Number of N | Non-Detects | s 1 | 14 |
| 42 | | | N | umber of Dist | inct Detects | 0 | | | Numb | er of Distinct N | Non-Detects | s 1 | 14 |
| 43 | | | | | | | 1 | | | | | | |
| 41 | | Warr | ning: All obse | ervations are | Non-Detects | (NDs), there | efore all stati | stics and est | imates shou | ld also be ND | s! | | |
| 14 | | Specifi | cally, sample | e mean, UCLs | s, UPLs, and | other statist | tics are also | NDs lying be | low the large | est detection I | imit! | | |
| 46 | · | The Project T | eam may de | cide to use a | Iternative sit | e specific va | lues to estim | ate environn | nental paran | neters (e.g., E | PC, BTV). | | |
| 17 | | | | | | | | | | | · · | | |
| +/ /0 | l | | | The data | a set for vari | able 1,2-Dic | hloroethane | was not proc | essed! | | | | |
| 40 40 | l | | | | | | | • | | | | | |
| 49 50 | | | | | | | | | | | | | |
| 50 E1 | Benzene | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | |
| 52 | | | | | | | | | | | | | |

| | A B C D E | F | G H I J K L | | | | | | | | |
|-----|---|---------------|--|--|--|--|--|--|--|--|--|
| 53 | | General | Statistics | | | | | | | | |
| 54 | Total Number of Observations | 14 | Number of Distinct Observations 14 | | | | | | | | |
| 55 | Number of Detects | 11 | Number of Non-Detects 3 | | | | | | | | |
| 56 | Number of Distinct Detects | 11 | Number of Distinct Non-Detects 3 | | | | | | | | |
| 57 | Minimum Detect | 2.0350E-4 | Minimum Non-Detect 1.0000E-4 | | | | | | | | |
| 58 | | | Maximum Non-Detect 1.4200E-4 | | | | | | | | |
| 59 | Variance Detects | 1.5659E-7 | Percent Non-Detects 21.43% | | | | | | | | |
| 60 | Median Detects | 5.0000E-4 | SD Detects 3.957 IE-4 | | | | | | | | |
| 61 | | 0.202 | Kuttorio Detecto 1222 | | | | | | | | |
| 62 | Moon of Longod Detects | 0.393 | SD of Lagged Detects 0.675 | | | | | | | | |
| 63 | | -7.515 | SD 01 Logged Delects 0.075 | | | | | | | | |
| 64 | Norn | nal GOF Tes | st on Detects Only | | | | | | | | |
| 65 | Shaniro Wilk Test Statistic | 0.92 | Shapiro Wilk GOF Test | | | | | | | | |
| 66 | 5% Shapiro Wilk Critical Value | 0.85 | Detected Data appear Normal at 5% Significance Level | | | | | | | | |
| 67 | Lilliefors Test Statistic | 0.151 | Lilliefors GOF Test | | | | | | | | |
| 68 | 5% Lilliefors Critical Value | 0.251 | Detected Data appear Normal at 5% Significance Level | | | | | | | | |
| 69 | Detected Data | appear Norm | nal at 5% Significance Level | | | | | | | | |
| 70 | | | | | | | | | | | |
| 71 | Kaplan-Meier (KM) Statistics usin | ig Normal Cr | ritical Values and other Nonparametric UCLs | | | | | | | | |
| 72 | KM Mean | 5.4039E-4 | KM Standard Error of Mean 1.1377E-4 | | | | | | | | |
| 73 | KM SD | 4.0588E-4 | 95% KM (BCA) UCL 7.1946E-4 | | | | | | | | |
| 74 | 95% KM (t) UCL | 7.4187E-4 | 95% KM (Percentile Bootstrap) UCL 7.1704E-4 | | | | | | | | |
| 76 | 95% KM (z) UCL | 7.2753E-4 | 95% KM Bootstrap t UCL 7.6333E-4 | | | | | | | | |
| 77 | 90% KM Chebyshev UCL | 8.8171E-4 | 95% KM Chebyshev UCL 0.00104 | | | | | | | | |
| 78 | 97.5% KM Chebyshev UCL | 0.00125 | 99% KM Chebyshev UCL 0.00167 | | | | | | | | |
| 79 | | 4 | | | | | | | | | |
| 80 | Gamma GOF | Tests on De | etected Observations Only | | | | | | | | |
| 81 | A-D Test Statistic | 0.313 | Anderson-Darling GOF Test | | | | | | | | |
| 82 | 5% A-D Critical Value | 0.735 | Detected data appear Gamma Distributed at 5% Significance Level | | | | | | | | |
| 83 | K-S Test Statistic | 0.142 | Kolmogorov-Smirnov GOF | | | | | | | | |
| 84 | 5% K-S Critical Value | 0.257 | Detected data appear Gamma Distributed at 5% Significance Level | | | | | | | | |
| 85 | Detected data appear | r Gamma Dis | stributed at 5% Significance Level | | | | | | | | |
| 86 | | | | | | | | | | | |
| 87 | Gamma | Statistics on | n Detected Data Only | | | | | | | | |
| 88 | k hat (MLE) | 2.783 | k star (bias corrected MLE) 2.084 | | | | | | | | |
| 89 | Theta hat (MLE) | 2.3737E-4 | Theta star (bias corrected MLE) 3.1689E-4 | | | | | | | | |
| 90 | nu hat (MLE) | 61.22 | nu star (bias corrected) 45.85 | | | | | | | | |
| 91 | Mean (detects) | 6.6050E-4 | | | | | | | | | |
| 92 | | 0 | | | | | | | | | |
| 93 | Gamma ROS | Statistics us | | | | | | | | | |
| 94 | GROS may not be used when data s | set has > 50% | % NDS with many tied observations at multiple DLs | | | | | | | | |
| 95 | Ear such situations CROS | mothod mov | as <1.0, especially when the sample size is small (e.g., <15-20) | | | | | | | | |
| 96 | | inleutou may | y yield incorrect values of OCLS and BTVS | | | | | | | | |
| 97 | Eor gamma distributed detected data. BTVs | | en ure sample size is small. | | | | | | | | |
| 98 | Ninimum | | | | | | | | | | |
| 99 | | 0.01 | | | | | | | | | |
| 100 | | 0.01 | | | | | | | | | |
| 101 | k hat (MI F) | 0.637 | k star (bias corrected MLE) 0.548 | | | | | | | | |
| 102 | | 0.00418 | Theta star (bias corrected MLE) 0.040 | | | | | | | | |
| 103 | nu hat (MLE) | 17.84 | nu star (bias corrected) 15.35 | | | | | | | | |
| 104 | | | | | | | | | | | |

| | A B C D E | F | G | Н | | I | J | K | L |
|-----|--|-----------------|---------------|---------------|--------------|------------|-------------|----------------------|-----------|
| 105 | Adjusted Level of Significance (β) | 0.0312 | | | • | | | (15.05.0) | 0 700 |
| 106 | Approximate Chi Square Value (15.35, α) | 7.508 | | 05% | Adjus | Adjustor | Square Va | ue (15.35, β) | 6.792 |
| 107 | 95% Gamma Approximate OCL (use when th>-30) | 0.00544 | | 95% | Gamma | Aujustet | | ; when h<50) | 0.00602 |
| 108 | Estimates of G | amma Parar | neters using | NKM Estim | ates | | | | |
| 109 | Mean (KM) | 5.4039E-4 | | | 4100 | | | SD (KM) | 4.0588E-4 |
| 110 | Variance (KM) | 1.6474E-7 | | | | | SE | of Mean (KM) | 1.1377E-4 |
| 112 | k hat (KM) | 1.773 | | | | | | k star (KM) | 1.44 |
| 112 | nu hat (KM) | 49.63 | | | | | | nu star (KM) | 40.33 |
| 114 | theta hat (KM) | 3.0486E-4 | | | | | th | eta star (KM) | 3.7517E-4 |
| 115 | 80% gamma percentile (KM) | 8.3979E-4 | | | | 90% (| gamma pe | rcentile (KM) | 0.00114 |
| 116 | 95% gamma percentile (KM) | 0.00143 | | | | 99% (| gamma pe | rcentile (KM) | 0.00208 |
| 117 | | 1 | J | | | | | | |
| 118 | Gamm | na Kaplan-Mo | eier (KM) St | atistics | | | | | |
| 119 | Approximate Chi Square Value (40.33, α) | 26.78 | | | Adjus | ted Chi S | Square Va | ue (40.33, β) | 25.32 |
| 120 | 95% Gamma Approximate KM-UCL (use when n>=50) | 8.1386E-4 | | 95% Garr | nma Adji | usted KN | 1-UCL (use | • when n<50) | 8.6075E-4 |
| 121 | | | atastad Obs | |)mh <i>i</i> | | | | |
| 122 | Shaniro Wilk Test Statistic | | | | Shar | niro Wilk | GOE Test | | |
| 123 | 5% Shapiro Wilk Critical Value | 0.327 | De | tected Data | annear | | nal at 5% | Significance | evel |
| 124 | Lilliefors Test Statistic | 0.137 | | | | liefors G | OF Test | | |
| 125 | 5% Lilliefors Critical Value | 0.251 | De | tected Data | a appear | Loanorr | nal at 5% | Significance | Level |
| 126 | Detected Data ap | pear Lognor | mal at 5% \$ | Significance | Level | - 3 - | | | |
| 127 | · · · · · · | | | • | | | | | |
| 120 | Lognormal ROS | S Statistics L | Jsing Impute | ed Non-Det | tects | | | | |
| 130 | Mean in Original Scale | 5.4308E-4 | | | | | Mean | in Log Scale | -7.851 |
| 131 | SD in Original Scale | 4.1820E-4 | | | | | SD | in Log Scale | 0.896 |
| 132 | 95% t UCL (assumes normality of ROS data) | 7.4102E-4 | | | | 95% Pe | ercentile B | ootstrap UCL | 7.1786E-4 |
| 133 | 95% BCA Bootstrap UCL | 7.4261E-4 | | | | | 95% Bo | otstrap t UCL | 7.6008E-4 |
| 134 | 95% H-UCL (Log ROS) | 0.00112 | | | | | | | |
| 135 | | | | | | | | | |
| 136 | Statistics using KM estimates of | on Logged D | ata and Ass | suming Log | normal [| Distributi | on | | |
| 137 | KM Mean (logged) | -7.877 | | | | 050/ 0 | K | M Geo Mean | 3.7953E-4 |
| 138 | KM SD (logged) | 0.9 | | | | 95% Cr | itical H Va | lue (KM-Log) | 2.632 |
| 139 | KM Standard Error of Mean (logged) | 0.252 | | | | 050/ 0- | 95% H-U | | 0.0011 |
| 140 | KM Standard Error of Mean (logged) | 0.9 | | | | 95% CI | | | 2.032 |
| 141 | | 0.202 | | | | | | | |
| 142 | | DL /2 S | tatistics | | | | | | |
| 143 | DL/2 Normal | | | | DL/2 | Log-Tra | Insformed | | |
| 144 | Mean in Original Scale | 5.3139E-4 | | | | | Mean | in Log Scale | -7.996 |
| 140 | SD in Original Scale | 4.3161E-4 | | | | | SD | in Log Scale | 1.13 |
| 140 | 95% t UCL (Assumes normality) | 7.3568E-4 | | | | | 95% | 6 H-Stat UCL | 0.00164 |
| 148 | DL/2 is not a recommended me | ethod, provid | ed for comp | arisons and | d historie | cal reaso | ons | | |
| 149 | | | | | | | | | |
| 150 | Nonparame | etric Distribut | tion Free UC | CL Statistics | S | | | | |
| 151 | Detected Data appea | r Normal Dis | tributed at 5 | 5% Significa | ance Lev | /el | | | |
| 152 | | | | | | | | | |
| 153 | | Suggested | UCL to Use | • | | | | | |
| 154 | 95% KM (t) UCL | 7.4187E-4 | | | | | | | |
| 155 | | | | | | | | | |
| 156 | Note: Suggestions regarding the selection of a 95% | 6 UCL are pr | rovided to h | elp the use | r to sele | ct the mo | ost approp | riate 95% UC | L. |

| | A | В | С | D | E | F | G | Н | 1 | J | K | | L |
|------------|---|----------------|----------------|---------------|-----------------|---------------|--------------------|---------------|---------------|----------------------|----------------|-----------|--------|
| 157 | | These reco | F | Recommenda | ations are bas | sed upon da | ta size, data o | distribution, | and skewne | ess. h Maichle ar | nd I ee (2006) |) | |
| 158 | Lla | | | | | | | | | | |). Non | |
| 159 | | Jwever, sint | | | | | | | | | | Jan. | |
| 160 | Ethylbenze | ne | | | | | | | | | | | |
| 161 | | | | | | | | | | | | | |
| 162 | | | | | | General | Statistics | | | | | | |
| 163 | | | Total | Number of (| hearvations | 1/ | Otatistica | | Numb | ar of Distinct | Observations | 1 | Λ |
| 164 | | | 10141 | Number of C | or of Detects | 1 | | | Numbe | Number of | | 1 | 7 7 |
| 165 | | | N | | tinct Detects | 1 | | | Numh | er of Distinct | Non-Detects | 1 | 3 |
| 166 | 3 Number of Distinct Detects I Number of Distinct Non-De | | | | | | | | | | Non-Delecto | | 5 |
| 167 | Warning: Only and distinct data value was detected! Drel (OL (or any other software) should get be used or such a data and | | | | | | | | | | | | |
| 168 | It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g. EPC, BTV) | | | | | | | | | | | | |
| 169 | | | | | | | | | | | | | |
| 170 | The data set for variable Ethylbenzene was not processed! | | | | | | | | | | | | |
| 171 | | | | | | | | | | | | | |
| 172 | | | | | | | | | | | | | |
| 173 | Isopropylbenzene | | | | | | | | | | | | |
| 174 | | | | | | | | | | | | | |
| 175 | | | | | | General | Statistics | | | | | | |
| 1/6 | | | Total | Number of C | Observations | 14 | | | Numbe | er of Distinct | Observations | 1. | 4 |
| 177 | | | | Numbe | er of Detects | 0 | | | | Number of | Non-Detects | 1 | 4 |
| 1/8 | | | N | umber of Dis | tinct Detects | 0 | | | Numh | er of Distinct | Non-Detects | 1 | 4 |
| 1/9 | | | | | | | | | | | | | |
| 180 | | War | nina: All obse | ervations are | Non-Detects | (NDs), there | efore all statis | stics and es | timates sho | uld also be N | Dsl | | |
| 181 | varming: All observations are non-petects (NDS), therefore all statistics and estimates should also be NDS! Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit! | | | | | | | | | | | | |
| 182 | - | The Project 1 | Team may de | cide to use a | Iternative site | e specific va | lues to estima | ate environ | mental para | meters (e.a., | EPC. BTV). | | |
| 183 | | , | , , | | | | | | | | | | |
| 104 | | | | The da | ta set for var | iable Isopror | oylbenzene w | as not proc | essed! | | | | |
| 185 | | | | | | | | • | | | | | |
| 100 | | | | | | | | | | | | | |
| 107 | MTBE (Met | hyl tert-butyl | l ether) | | | | | | | | | | |
| 100 | • | | | | | | | | | | | | |
| 109 | | | | | | General | Statistics | | | | | | |
| 101 | | | Total | Number of C | Observations | 14 | | | Numbe | er of Distinct | Observations | 1. | 4 |
| 102 | | | | Numbe | er of Detects | 0 | | | | Number of | Non-Detects | 1 | 4 |
| 102 | | | N | umber of Dis | tinct Detects | 0 | | | Numb | er of Distinct | Non-Detects | 1 | 4 |
| 19/ | | | | | | <u> </u> | <u> </u> | | | | | 1 | |
| 194 | | War | ning: All obse | ervations are | Non-Detects | (NDs), there | efore all statis | stics and es | timates sho | uld also be N | Ds! | | |
| 196 | | Specifi | ically, sample | mean, UCL | s, UPLs, and | other statist | ics are also N | NDs lying b | elow the larg | est detection | limit! | | |
| 107 | | The Project 7 | Team may de | cide to use a | Iternative sit | e specific va | lues to estimation | ate environ | mental para | meters (e.g., | EPC, BTV). | | |
| 108 | | | | | | | | | | | | | |
| 100 | | | | The data set | for variable N | ITBE (Methy | /l tert-butyl et | her) was no | ot processed | ! | | | |
| 200 | | | | | | | | | | | | | |
| 201 | | | | | | | | | | | | | |
| 202 | Naphthalen | e | | | | | | | | | | | |
| 202 | <u> </u> | | | | | | | | | | | | |
| 203 | | | | | | General | Statistics | | | | | | |
| 204 | | | Total | Number of C | Observations | 14 | | | Numbe | er of Distinct | Observations | 1. | 4 |
| 205 | | | | Numbe | er of Detects | 1 | | | | Number of | Non-Detects | 1 | 3 |
| 200 | | | N | umber of Dis | tinct Detects | 1 | | | Numb | er of Distinct | Non-Detects | 1 | 3 |
| 207 20₽ | | | | | | <u> </u> | <u> </u> | | | | | | |
| ∠∪0 | | | | | | | | | | | | | |

| | A | B | C | D | E | F F | G | H H | | J | K | L | L | |
|-----|---------------------------------|----------------|-----------------|----------------|----------------|---|---|---------------|-----------------|-----------------|-------------------|-------------|-------|--|
| 209 | lt is suga | ested to use a | iy one distinct | ata value | was detecte | a! Prouce | (or any other s | to estimate | environmenta | l narameter | | BTV | | |
| 210 | 11.10 00.99 | | | | | | | | | in puramotor. | 5 (0.g., <u> </u> | | ,. | |
| 211 | | | | The | data set for | variable Na | phthalene was | s not proces | sed! | | | | | |
| 212 | | | | | | | | | | | | | | |
| 213 | | | | | | | | | | | | | | |
| 214 | Toluene | | | | | | | | | | | | | |
| 215 | | | | | | | | | | | | | | |
| 217 | General Statistics | | | | | | | | | | | | | |
| 218 | | | Total I | Number of C | bservations | 14 | | | Number | of Distinct C |)bservations | 14 | 1 | |
| 219 | | | | Numbe | er of Detects | 10 | | | | Number of I | Non-Detects | 4 | | |
| 220 | | | Nu | mber of Dist | tinct Detects | 10 | | | Number | r of Distinct I | Non-Detects | 4 | | |
| 221 | | | | Mini | mum Detect | 2.2050E-4 | ŀ | | | Minimum | Non-Detect | 2.190 | 00E-4 | |
| 222 | | | | Maxi | mum Detect | 0.00132 | 2 | | | Maximum | Non-Detect | 6.585 | 50E-4 | |
| 223 | | | | Varia | nce Detects | 1.2868E-7 | 1 | | | Percent I | Non-Detects | 28 | 3.57% | |
| 224 | | | | М | ean Detects | 6.5365E-4 | ŀ | | | | SD Detects | 3.587 | 72E-4 | |
| 225 | | | | Med | dian Detects | 6.5950E-4 | ŀ | | | | CV Detects | 0 | .549 | |
| 226 | | | | Skewn | ess Detects | 0.352 | | | | Kurt | osis Detects | -0. | .343 | |
| 227 | | | ľ | Mean of Log | ged Detects | -7.499 | | | | SD of Log | ged Detects | 0 | .646 | |
| 228 | | | | | | | | | | | | | | |
| 229 | Normal GOF Test on Detects Only | | | | | | | | | | | | | |
| 230 | | | Sh | apiro Wilk T | est Statistic | 0.935 | | | Shapiro Will | GOF Test | | | | |
| 231 | | | 5% Sh | apiro Wilk C | critical Value | 0.842 | De | etected Data | appear Norm | nal at 5% Sig | inificance Le | vel | | |
| 232 | Lilliefors Test Statis | | | | | 0.168 | 8 Lilliefors GOF Test | | | | | | | |
| 233 | | | 5% | 6 Lilliefors C | ritical Value | 0.262 | De | etected Data | appear Norm | nal at 5% Sig | jnificance Le | vel | | |
| 234 | | | | Det | | appear No | mai at 5% Sigi | nificance Le | vei | | | | | |
| 235 | | | Konlon M | loior (KM) S | totiotico unir | a Normal (| Critical Values | and other N | opporomotrio | | | | | |
| 236 | | | rapian-iv | | KM Mean | | | | | Standard F | rror of Mean | 0 70r | 515-5 | |
| 237 | | | | | | 3 1173E- | r | | IXIVI | | | n 9.7951E-5 | | |
| 238 | | | | 95% | | 7 1084E-4 | r L | | 95% KM (Pe | ercentile Bor | otstran) UCI | 6.892 | 23E-4 | |
| 239 | | | | 95% | KM (z) UCI | 6.9849E-4 | L | | | 5% KM Boo | otstrap t UCI | 7.346 | 58F-4 | |
| 240 | | | 9(| 0% KM Che | bvshev UCL | 8.3123E-4 | | | 9 | 5% KM Che | bvshev UCL | 9.643 | 33E-4 | |
| 241 | | | 97.5 | 5% KM Che | byshev UCL | 0.0011 | 5 | | 9 | 9% KM Che | byshev UCL | 0.0 | 00151 | |
| 242 | | | | | - | | | | | | - | [| | |
| 243 | | | | G | iamma GOF | Tests on [| Detected Obse | rvations Onl | у | | | | | |
| 244 | | | | A-D T | est Statistic | 0.465 | | A | nderson-Darl | ing GOF Te | st | | | |
| 246 | | | | 5% A-D C | ritical Value | 0.732 | Detected | d data appea | ar Gamma Dis | stributed at 5 | 5% Significar | ice Le | evel | |
| 247 | | | | K-S T | est Statistic | 0.201 | | I | Kolmogorov-S | Smirnov GOF | - | | | |
| 248 | | | | 5% K-S C | ritical Value | 0.268 | Detected | d data appea | ar Gamma Dis | stributed at 5 | 5% Significar | ice Le | evel | |
| 249 | | | | Detected | data appea | r Gamma D | istributed at 5° | % Significan | ce Level | | | | | |
| 250 | | | | | | | | | | | | | | |
| 251 | | | | | Gamma | Statistics | on Detected Da | ata Only | | | | | | |
| 252 | | | | | k hat (MLE) | 3.168 | | | k s | tar (bias cor | rected MLE) | 2 | .285 | |
| 253 | | | | The | ta hat (MLE) | 2.0630E-4 | | | Theta s | tar (bias cor | rected MLE) | 2.861 | 12E-4 | |
| 254 | | | | n | u hat (MLE) | 63.37 | | | | nu star (bia | s corrected) | 45 | 5.69 | |
| 255 | 5 Mean (detects | | | | | | | | | | | | | |
| 256 | | | | | | | | | | | | | | |
| 257 | | | | G | amma ROS | Statistics | using Imputed | Non-Detects | S | | | | | |
| 258 | | | GROS may | not be used | when data s | set has > 5 | 0% NDs with m | nany tied obs | servations at r | multiple DLs | | | | |
| 259 | | GROS may | / not be used | when kstar o | of detects is | is is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | | | | | | |
| 260 | | | For | such situati | ons, GROS | method ma | may yield incorrect values of UCLs and BTVs | | | | | | | |

| | | ally true whe | n the comple cize is small | - |
|-----|---|--------------------|---|--------------------|
| 261 | For gamma distributed detected data. BTVs a | and UCLs ma | n the sample size is small. | |
| 262 | Minimum | 2 2050E-4 | Mean | 0.00332 |
| 263 | Maximum | 0.01 | Median | 8.000052 |
| 264 | SD | 0.01 | (V) | 0.0000E-4 1 321 |
| 265 | sb k bat (MLE) | 0.00433 | k star (bias corrected MLE) | 0.546 |
| 266 | Theta bat (MLE) | 0.00524 | Theta star (bias corrected MLE) | 0.040 |
| 267 | nu bat (MLE) | 17 77 | | 15.3 |
| 268 | Adjusted Lovel of Significance (R) | 0.0312 | | 15.5 |
| 269 | Aujusted Level of Significance (p) | 7 /69 | Adjusted Chi Square Value (15.20. 8) | 6 754 |
| 270 | Approximate Chi Square Value (15.50, d) | 0.00681 | Adjusted Chi Square Value (15.50, p) | 0.754 |
| 271 | | 0.00081 | | 0.00755 |
| 272 | Estimates of G | amma Daran | notors using KM Estimatos | |
| 273 | Loundles of G | 5 3737E / | | 3 11735 1 |
| 274 | | 1 100/E 7 | SE of Moon (KM) | 0.7051E 5 |
| 275 | | 2 /2 | SE of Mean (KM) | 1.057 |
| 276 | K lidt (KM) | 68.04 | k star (KM) | F4 70 |
| 277 | that hat (KM) | 00.04 | thata star (KM) | 04.79 2 7462E 4 |
| 278 | 200% gamma paraantila (KM) | | 00% gamma paraentila (KM) | 0.00105 |
| 279 | | 0.0000L-4 | | 0.00103 |
| 280 | 95% gamma percentile (KW) | 0.00126 | 99% gamma percentile (KM) | 0.0016 |
| 281 | Comm | o Konlon Ma | ion ///A). Statistica | |
| 282 | Approximete Chi Square Volue (54.70, s) | 20 70 | Her (NM) Statistics | 27 |
| 283 | Approximate Chi Square Value (54.79, d) | 30.70 7 50205 4 | Adjusted Chi Square Value (54.79, p) | 37 7 05765 4 |
| 284 | 95% Gamma Approximate KM-OCE (use when h>=50) | 7.5920E-4 | 95% Gamma Aujusted KM-OCE (use when h<50) | 7.9570⊑-4 |
| 285 | | E Test on De | stacted Observations Only | |
| 286 | Shapira Wilk Tast Statistic | | Shaniro Wilk GOE Test | |
| 287 | 5% Shapiro Wilk Critical Value | 0.002 | Detected Data appear Lognormal at 5% Significance L | ovol |
| 288 | | 0.042 | | |
| 289 | 5% Lilliofors Critical Value | 0.250 | Detected Data appear Lognormal at 5% Significance L | ovol |
| 290 | 5% Einerors Critical Value | | mal at 5% Significance Loval | |
| 291 | | pear Lognon | | |
| 292 | L ognormal PO | S Statistics I I | sing Imputed Non-Detects | |
| 293 | Mean in Original Scale | 5 25/2E_/ | Mean in Log Scale | -7 797 |
| 294 | | 3.6662E-4 | SD in Log Scale | 0.748 |
| 295 | 95% t LICL (assumes normality of ROS data) | 6.0801E-1 | 95% Percentile Bootstran LICI | 6.8302E-4 |
| 296 | 95% RCA Rootetran LICI | 6.9425E-4 | 95% Rootstrap t LICI | 7.3550E-4 |
| 297 | | 8.9522F-4 | | , |
| 298 | | 5.00LLL-T | | |
| 299 | Statistics using KM estimates of | on Loaged Da | ata and Assuming Lognormal Distribution | |
| 300 | KM Mean (logged) | -7.741 | KM Geo Mean | 4.3469E-4 |
| 301 | KM SD (logged) | 0.656 | 95% Critical H Value (KM-Log) | 2.288 |
| 302 | KM Standard Error of Mean (logged) | 0.188 | 95% H-UCL (KM -Log) | 8.1757E-4 |
| 303 | KM SD (logged) | 0.656 | 95% Critical H Value (KM-Log) | 2.288 |
| 304 | KM Standard Error of Mean (logged) | 0.188 | | 00 |
| 305 | | 5.100 | | |
| 306 | | DL/2 St | atistics | |
| 307 | DL/2 Normal | 552 00 | DL/2 Log-Transformed | |
| 308 | Mean in Original Scale | 5 1973E-4 | Mean in Log Scale | -7 84 |
| 309 | SD in Original Scale | 3.7376F-4 | SD in Log Scale | 0.811 |
| 310 | 95% t UCL (Assumes normality) | 6.9663F-4 | 95% H-Stat LCI | 9.5883F-4 |
| 311 | DI /2 is not a recommended me | ethod. provide | ed for comparisons and historical reasons | 5.000L-7 |
| 312 | | anda, provide | | |

| | А | В | С | D | E | F | G | Н | I | J | K | L |
|-----|---|---------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------|-----------------|---------------|-------|
| 313 | | | | | | | | | | | | |
| 314 | | | | | Nonparame | tric Distribut | ion Free UCI | L Statistics | | | | |
| 315 | | | | Detected | Data appea | r Normal Dis | tributed at 5% | % Significanc | æ Level | | | |
| 316 | | | | | | | | | | | | |
| 317 | Suggested UCL to Use | | | | | | | | | | | |
| 318 | 95% KM (t) UCL 7.1084E-4 | | | | | | | | | | | |
| 319 | | | | | | | | | | | | |
| 320 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 321 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 322 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 323 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 324 | | | | | | | | | | | | |
| 325 | Xylenes (tot | al) | | | | | | | | | | |
| 326 | | | | | | | | | | | | |
| 327 | | | | | | General | Statistics | | | | | |
| 328 | | | Total | Number of C | bservations) | 14 | | | Numbe | r of Distinct C | Observations | 14 |
| 329 | | | | Numbe | er of Detects | 1 | | | | Number of | Non-Detects | 13 |
| 330 | | | N | umber of Dist | inct Detects | 1 | | | Numbe | er of Distinct | Non-Detects | 13 |
| 331 | | | | | | | | | | | | |
| 332 | ١ | Varning: On | ly one distind | t data value | was detected | d! ProUCL (o | r any other s | oftware) sho | uld not be u | sed on such | a data set! | |
| 333 | It is sugge | sted to use a | alternative si | te specific va | lues determi | ned by the F | Project Team | to estimate e | environment | al parameter | s (e.g., EPC, | BTV). |
| 334 | | | | | | | | | | | | |
| 335 | | | | The d | ata set for va | ariable Xylen | es (total) wa | s not proces | sed! | | | |
| 336 | | | | | | | | | | | | |
| 337 | | | | | | | | | | | | |

| | A B C | D E | F | G | П | I | | J | ĸ | | | L |
|----------|-------------------------------|-------------------------------|----------------|--|---------------|-------------|----------|------------|-------------|---------|----------|-------|
| 1 | | UCL Statis | tics for Data | Sets with No | n-Detects | | | | | | | |
| 2 | User Selected Optic | ons | | | | | | | | | | |
| 3 | Date/Time of Computatio | n ProUCL 5.14/6/2017 10: | 22:44 AM | | | | | | | | | |
| 4 | From Fil | e WorkSheet.xls | | | | | | | | | | |
| 6 | Full Precisio | n OFF | | | | | | | | | | |
| 7 | Confidence Coefficier | nt 95% | | | | | | | | | | |
| 8 | Number of Bootstrap Operation | s 2000 | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | - | |
| 11 | Lead | | | | | | | | | | | |
| 12 | 2 | | | | | | | | | | | |
| 13 | | | General | Statistics | | | | | | | | - |
| 14 | Тс | tal Number of Observations | 14 | | | Numb | ber of E | Distinct | Observa | itions | | 4 |
| 15 | | | 0.00 | | | Numb | er of N | lissing | Observa | tions | |) |
| 16 | | Minimum | 3.63 | | | | | | M | Vlean | | 0.89 |
| 17 | | Maximum | 39.1 | | | | | <u>C+d</u> | | edian | <u> </u> | 7.79 |
| 18 | | Coefficient of Variation | 9.230 0.818 | | | | | 3.0. | Skow | ness | | 2.409 |
| 19 | | | 0.040 | | | | | | UKEW | 1033 | | L.70J |
| 20 | | | Normal (| GOF Test | | | | | | | | |
| 21 | | Shapiro Wilk Test Statistic | 0.704 | | | Shapiro V | Nilk G | OF Tes | t | | | |
| 22 | 5% | Shapiro Wilk Critical Value | 0.874 | | Data Not | Normal a | at 5% S | Significa | ance Lev | el | | |
| 23 | | Lilliefors Test Statistic | 0.274 | | | Lilliefor | rs GOF | Test | | | | |
| 24 25 | | 5% Lilliefors Critical Value | 0.226 | 6 Data Not Normal at 5% Significance Level | | | | | | | | |
| 25 | | Data Not | Normal at 5 | % Significanc | e Level | | | | | | | |
| 27 | | | | | | | | | | | | |
| 28 | | As | suming Norr | nal Distributio | on | | | | | | | |
| 29 | 95% | Normal UCL | | | 95% | UCLs (Ad | justed | for Ske | wness) | | - | |
| 30 | | 95% Student's-t UCL | 15.27 | | ç | 95% Adjus | sted-C | LT UCI | _ (Chen-1 | 1995) | 1 | 6.71 |
| 31 | | | | | | 95% Mod | lified-t | UCL (J | ohnson-1 | 1978) | 1 | 5.54 |
| 32 | | | | | | | | | | | | |
| 33 | | | Gamma | GOF Test | | | | | | | | |
| 34 | | A-D Test Statistic | 0.635 | Datasta | Anders | son-Darlin | ig Gam | ima GC | | | | |
| 35 | | 5% A-D Critical Value | 0.745 | Detected | | r Gamma | | | 20E Tool | incar | | .evei |
| 36 | | 5% K-S Critical Value | 0.21 | Detected | data anneai | r Gamma | Distrik | | t 5% Sigr | nificar | | مريما |
| 37 | | Detected data appear | Gamma Dis | tributed at 59 | 6 Significanc | | Distrib | | . 0 /0 Olgi | inical | | |
| 38 | | | | | e eignitearie | 0 2010 | | | | | | |
| 39 | | | Gamma | Statistics | | | | | | | | |
| 40 | | k hat (MLE) | 2.405 | | | | k star | (bias co | orrected I | MLE) | - | 1.938 |
| 41 | | Theta hat (MLE) | 4.529 | | | Thet | a star | (bias co | orrected I | MLE) | Ę | 5.623 |
| 43 | | nu hat (MLE) | 67.35 | | | | nu | star (b | ias corre | cted) | 5 | 4.25 |
| 44 | | MLE Mean (bias corrected) | 10.89 | 0.89 MLE Sd (bias corrected | | | | | | cted) | - | 7.826 |
| 45 | | | I | | A | Approxima | ate Chi | Squar | e Value (| 0.05) | 3 | 8.33 |
| 46 | Ac | ljusted Level of Significance | 0.0312 | | | | Adjust | ed Chi | Square \ | /alue | 3 | 6.56 |
| 47 | | | | | | | | | | | | |
| 48 | | Ase | suming Gam | ma Distributio | on | | | | | | | |
| 49 | 95% Approximate Gan | 15.42 | | 95% Adj | usted Ga | mma L | JCL (us | e when r | า<50) | 1 | 6.17 | |
| 50 | | | | | | | | | | | | |
| 51 | | | Lognorma | GOF Test | | | | | | | | |
| 52 | | Shapiro Wilk Test Statistic | 0.941 | | Shapi | iro Wilk Lo | ognorn | nal GO | F Test | | | |

| | A B C D E | F | G H I J K | L | | | | | | | |
|-----|--|----------------|---|---------|--|--|--|--|--|--|--|
| 53 | 5% Shapiro Wilk Critical Value | 0.874 | Data appear Lognormal at 5% Significance Level | | | | | | | | |
| 54 | Lilliefors Test Statistic | 0.161 | Lilliefors Lognormal GOF Test | | | | | | | | |
| 55 | 5% Lilliefors Critical Value | 0.226 | Data appear Lognormal at 5% Significance Level | | | | | | | | |
| 56 | Data appear | Lognormal a | at 5% Significance Level | | | | | | | | |
| 57 | | | | | | | | | | | |
| 58 | | Lognorma | I Statistics | | | | | | | | |
| 59 | Minimum of Logged Data | 1.289 | Mean of logged Data | 2.166 | | | | | | | |
| 60 | Maximum of Logged Data | 3.666 | SD of logged Data | 0.64 | | | | | | | |
| 61 | | | | | | | | | | | |
| 62 | Assu | Iming Logno | rmal Distribution | | | | | | | | |
| 63 | 95% H-UCL | 16.02 | 90% Chebyshev (MVUE) UCL | 16.17 | | | | | | | |
| 64 | 95% Chebyshev (MVUE) UCL | 18.73 | 97.5% Chebyshev (MVUE) UCL | 22.27 | | | | | | | |
| 65 | 99% Chebyshev (MVUE) UCL | 29.24 | | | | | | | | | |
| 66 | | | | | | | | | | | |
| 67 | 7 Nonparametric Distribution Free UCL Statistics | | | | | | | | | | |
| 68 | Data appear to follow a Discernible Distribution at 5% Significance Level | | | | | | | | | | |
| 69 | | | | | | | | | | | |
| 70 | Nonpar | ametric Dist | ribution Free UCLs | | | | | | | | |
| 71 | 95% CLT UCL | 14.95 | 95% Jackknife UCL | 15.27 | | | | | | | |
| 72 | 95% Standard Bootstrap UCL | 14.85 | 95% Bootstrap-t UCL | 20.07 | | | | | | | |
| 73 | 95% Hall's Bootstrap UCL | 29.71 | 95% Percentile Bootstrap UCL | 15.09 | | | | | | | |
| 74 | 95% BCA Bootstrap UCL | 1/ | | | | | | | | | |
| 75 | 90% Chebyshev(Mean, Sd) UCL | 18.3 | 95% Chebyshev(Mean, Sd) UCL | 21.66 | | | | | | | |
| 76 | 97.5% Chebyshev(Mean, Sd) UCL | 26.31 | 99% Chebyshev(Mean, Sd) UCL | 35.46 | | | | | | | |
| 77 | | 0 | | | | | | | | | |
| 78 | | | | | | | | | | | |
| 79 | 95% Adjusted Gamma UCL | 16.17 | | | | | | | | | |
| 80 | Note: Our set is a set of the set | | | | | | | | | | |
| 81 | Note: Suggestions regarding the selection of a 95% | o UCL are pr | ovided to help the user to select the most appropriate 95% OCL. | | | | | | | | |
| 82 | These recommendations are based upon the requ | lte of the cir | a size, data distribution, and skewness. | | | | | | | | |
| 83 | However, simulations results will not cover all Pool M | | te: for additional incident the upper may want to consult a statisticie | n | | | | | | | |
| 84 | | | | | | | | | | | |
| 85 | 2-Methylnanhthalene | | | | | | | | | | |
| 86 | | | | | | | | | | | |
| 87 | | General | Statistics | | | | | | | | |
| 88 | Total Number of Observations | 14 | Number of Distinct Observations | 14 | | | | | | | |
| 89 | Number of Detects | 3 | Number of Non-Detects | 11 | | | | | | | |
| 90 | Number of Distinct Detects | 3 | Number of Distinct Non-Detects | 11 | | | | | | | |
| 91 | Minimum Detect | 0.012 | Minimum Non-Detect | 0.00906 | | | | | | | |
| 92 | Maximum Detect | 0.139 | Maximum Non-Detect | 0.00995 | | | | | | | |
| 93 | Variance Detects | 0.00422 | Percent Non-Detects | 78.57% | | | | | | | |
| 94 | Mean Detects | 0.0676 | SD Detects | 0.0649 | | | | | | | |
| 95 | Median Detects | 0.0519 | CV Detects | 0.96 | | | | | | | |
| 96 | Skewness Detects | 1.026 | Kurtosis Detects | N/A | | | | | | | |
| 9/ | Mean of Logged Detects | -3.118 | SD of Logged Detects | 1.233 | | | | | | | |
| 98 | | - | | - | | | | | | | |
| 39 | Warnina: Da | ata set has o | only 3 Detected Values. | | | | | | | | |
| 100 | This is not enough to comp | ute meaning | ful or reliable statistics and estimates. | | | | | | | | |
| 101 | | | | | | | | | | | |
| 102 | | | | | | | | | | | |
| 103 | Norm | al GOF Test | t on Detects Only | | | | | | | | |
| 104 | | | • | | | | | | | | |

| 105 | Shapiro Wilk Test Statistic | 0.956 | Shapiro Wilk GOF Test | L |
|-----|---|---------------|---|--------|
| 105 | 5% Shapiro Wilk Critical Value | 0.767 | Detected Data appear Normal at 5% Significance Leve | əl |
| 106 | Lilliefors Test Statistic | 0.262 | Lilliefors GOF Test | |
| 107 | 5% Lilliefors Critical Value | 0.425 | Detected Data appear Normal at 5% Significance Leve | əl |
| 108 | Detected Data a | ppear Norm | al at 5% Significance Level | - |
| 109 | | | | |
| 110 | Kaplan-Meier (KM) Statistics using | a Normal Cri | itical Values and other Nonparametric UCLs | |
| 111 | KM Mean | 0.0216 | KM Standard Error of Mean | 0.0112 |
| 112 | KM SD | 0.0344 | 95% KM (BCA) UCL | N/A |
| 113 | 95% KM (t) UCL | 0.0415 | 95% KM (Percentile Bootstrap) UCL | N/A |
| 114 | 95% KM (z) UCL | 0.0401 | 95% KM Bootstrap t UCL | N/A |
| 110 | 90% KM Chebyshev UCL | 0.0553 | 95% KM Chebyshev UCL | 0.0706 |
| 110 | 97.5% KM Chebyshev UCL | 0.0918 | 99% KM Chebyshev UCL | 0.133 |
| 117 | | | | |
| 110 | Gamma GOF | Tests on De | tected Observations Only | |
| 119 | Not Enc | ough Data to | Perform GOF Test | |
| 120 | | - | | |
| 121 | Gamma | Statistics on | Detected Data Only | |
| 122 | k hat (MLE) | 1.32 | k star (bias corrected MLE) | N/A |
| 123 | Theta hat (MLE) | 0.0513 | Theta star (bias corrected MLE) | N/A |
| 124 | nu hat (MLE) | 7.917 | nu star (bias corrected) | N/A |
| 126 | Mean (detects) | 0.0676 | | |
| 120 | | | | |
| 127 | Gamma ROS | Statistics us | ing Imputed Non-Detects | |
| 129 | GROS may not be used when data so | et has > 50% | 6 NDs with many tied observations at multiple DLs | |
| 130 | GROS may not be used when kstar of detects is a | small such a | s <1.0, especially when the sample size is small (e.g., <15-20) | |
| 131 | For such situations, GROS r | nethod may | yield incorrect values of UCLs and BTVs | |
| 132 | This is especia | ally true whe | n the sample size is small. | |
| 133 | For gamma distributed detected data, BTVs a | nd UCLs ma | ay be computed using gamma distribution on KM estimates | |
| 134 | Minimum | 0.01 | Mean | 0.0224 |
| 135 | Maximum | 0.139 | Median | 0.01 |
| 136 | SD | 0.0354 | CV | 1.583 |
| 137 | k hat (MLE) | 1.168 | k star (bias corrected MLE) | 0.965 |
| 138 | Theta hat (MLE) | 0.0191 | Theta star (bias corrected MLE) | 0.0232 |
| 139 | nu hat (MLE) | 32.71 | nu star (bias corrected) | 27.03 |
| 140 | Adjusted Level of Significance (β) | 0.0312 | | |
| 141 | Approximate Chi Square Value (27.03, α) | 16.18 | Adjusted Chi Square Value (27.03, β) | 15.07 |
| 142 | 95% Gamma Approximate UCL (use when n>=50) | 0.0373 | 95% Gamma Adjusted UCL (use when n<50) | N/A |
| 143 | | | | |
| 144 | Estimates of Ga | amma Paran | neters using KM Estimates | |
| 145 | Mean (KM) | 0.0216 | SD (KM) | 0.0344 |
| 146 | Variance (KM) | 0.00118 | SE of Mean (KM) | 0.0112 |
| 147 | k hat (KM) | 0.396 | k star (KM) | 0.359 |
| 148 | nu hat (KM) | 0.0540 | nu star (KM) | 10.04 |
| 149 | theta hat (KM) | 0.0546 | theta star (KM) | 0.0603 |
| 150 | 80% gamma percentile (KM) | 0.0344 | 90% gamma percentile (KM) | 0.0622 |
| 151 | 95% gamma percentile (KM) | 0.0932 | 99% gamma percentile (KM) | 0.172 |
| 152 | 0 | o Konlan M | sion ///M/ Statiation | |
| 153 | Gamm | a napian-Me | | 2 475 |
| 154 | Approximate Cni Square value (10.04, α) | 3.90/ | Adjusted Chi Square Value (10.04, β) | 3.475 |
| 155 | 95% Gamma Approximate KM-UCL (use when n>=50) | 0.0547 | 95% Gamma Adjusted KM-UCL (use when n<50) | 0.0624 |
| | | | | |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|-----|----|-------------|----------------|----------------|----------------|----------------|-----------------|-----------------|---------------|----------------|------------------|--------|
| 157 | | | | Lo | ognormal GO | F Test on De | etected Obse | ervations Onl | у | | | |
| 158 | | | S | hapiro Wilk T | Test Statistic | 0.987 | | | Shapiro Wi | lk GOF Test | | |
| 159 | | | 5% SI | hapiro Wilk C | Critical Value | 0.767 | Dete | ected Data a | opear Logno | ormal at 5% S | Significance L | evel |
| 160 | | | | Lilliefors 7 | Test Statistic | 0.218 | | | Lilliefors | GOF Test | | |
| 161 | | | 5 | % Lilliefors C | Critical Value | 0.425 | Dete | ected Data a | opear Logno | ormal at 5% S | Significance L | evel |
| 162 | | | | Dete | cted Data ap | pear Lognor | mal at 5% Si | ignificance Lo | evel | | | |
| 163 | | | | | | | | | | | | |
| 164 | | | | Lo | gnormal ROS | Statistics L | Ising Impute | d Non-Detec | ts | | | |
| 165 | | | | Mean in O | riginal Scale | 0.0146 | | | | Mean | in Log Scale | -7.825 |
| 166 | | | | SD in O | riginal Scale | 0.0384 | | | | SD | in Log Scale | 2.596 |
| 167 | | 95% t L | JCL (assume | es normality o | of ROS data) | 0.0328 | | | 95% | Percentile Bo | ootstrap UCL | N/A |
| 168 | | | 9 | 95% BCA Bo | ootstrap UCL | N/A | | | | 95% Boo | otstrap t UCL | N/A |
| 169 | | | | 95% H-UC | L (Log ROS) | 0.812 | | | | | | |
| 170 | | | | | | | | | | | | |
| 171 | | | Statis | tics using KN | V estimates o | n Logged D | ata and Assu | uming Logno | rmal Distribu | ution | | |
| 172 | | | | KM M | ean (logged) | -4.364 | | | | KN | M Geo Mean | 0.0127 |
| 173 | | | | KM | SD (logged) | 0.8 | | | 95% (| Critical H Val | ue (KM-Log) | 2.479 |
| 174 | | | KM Standa | rd Error of M | ean (logged) | 0.262 | | | | 95% H-UC | CL (KM -Log) | 0.0304 |
| 175 | | | | KM | SD (logged) | 0.8 | | | 95% (| Critical H Val | ue (KM-Log) | 2.479 |
| 176 | | | KM Standa | rd Error of M | ean (logged) | 0.262 | | | | | | |
| 177 | | | | | | | | | | | | |
| 178 | | | | | | DL/2 St | atistics | | | | | |
| 179 | | | DL/2 N | Normal | | | | | DL/2 Log-1 | ransformed | | |
| 180 | | | | Mean in O | riginal Scale | 0.0182 | | | | Mean | in Log Scale | -4.87 |
| 181 | | | | SD in O | riginal Scale | 0.037 | | | | SD | in Log Scale | 1.066 |
| 182 | | | 95% t l | JCL (Assume | es normality) | 0.0357 | | | | 95% | H-Stat UCL | 0.0319 |
| 183 | | | DL/2 i | s not a recor | mmended me | thod, provid | ed for compa | arisons and h | istorical rea | sons | | |
| 184 | | | | | | | | | | | | |
| 185 | | | | | Nonparame | tric Distribut | ion Free UCI | L Statistics | | | | |
| 186 | | | | Detected | l Data appear | Normal Dis | tributed at 59 | % Significand | e Level | | | |
| 187 | | | | | | | | | | | | |
| 188 | | | | | | Suggested | UCL to Use | | | | | |
| 189 | | | | 95% | 5 KM (t) UCL | 0.0415 | | | | | | |
| 190 | | | | | | | | | | | | |
| 191 | | Note: Sugge | stions regard | ling the selec | ction of a 95% | UCL are pr | ovided to he | Ip the user to | select the r | nost appropr | iate 95% UCL | |
| 192 | | | F | Recommenda | ations are bas | ed upon dat | a size, data | distribution, a | and skewne | SS. | | |
| 193 | | These recor | mmendations | s are based ι | upon the resu | Its of the sin | nulation studi | ies summariz | ed in Singh | , Maichle, an | d Lee (2006). | |
| 194 | Ho | wever, simu | lations result | s will not cov | /er all Real W | orld data se | ts; for additic | onal insight th | ne user may | want to cons | ult a statistici | an. |
| 195 | | | | | | | | | | | | |

Attachment 2 (Continued)

Mixed Soil Samples from 0 to 10 foot Depth (Input)

| | A | В | С | D | E | F |
|----|------------------------|--------------------------|---|-------------------|---------------------|---|
| 1 | 1,2,4-Trimethylbenzene | d_1,2,4-Trimethylbenzene | | 1,2-Dibromoethane | d_1,2-Dibromoethane | |
| 2 | 20 | 1 | | 1.43 | 0 | |
| 3 | 12 | 1 | | 1 15 | 0 | |
| 4 | 4.26 | 1 | | 0.004 | 0 | |
| 4 | 4.30 | 1 | | 0.094 | 0 | |
| 5 | 2.8 | 1 | | 0.076 | 0 | |
| 6 | 1 | 1 | | 0.046 | 0 | |
| 7 | 0.635 | 1 | | 0.039 | 0 | |
| 8 | 0.31 | 1 | | 0.024 | 0 | |
| 9 | 0.19 | 1 | | 0.024 | 0 | |
| 10 | 0.1 | 0 | | 0.02 | 0 | |
| 11 | 0.026 | 0 | | 0.0051 | 0 | |
| 10 | 0.020 | 0 | | 0.0010 | 0 | |
| 12 | 0.0054 | 0 | | 0.0046 | 0 | |
| 13 | 0.0044 | 0 | | 0.0042 | 0 | |
| 14 | 0.0044 | 0 | | 0.0041 | 0 | |
| 15 | 0.0044 | 0 | | 0.0041 | 0 | |
| 16 | 0.00118 | 1 | | 0.001365 | 0 | |
| 17 | 0.00107 | 1 | | 0.00119 | 0 | |
| 10 | 0.00105 | 1 | | 0.0008545 | 0 | |
| 10 | 0.00103 | 1 | | 0.0008343 | 0 | |
| 19 | 0.00103 | 1 | | 0.000824 | U | |
| 20 | 0.00102 | 1 | | 0.000819 | 0 | |
| 21 | 0.0008545 | 0 | | 0.000815 | 0 | |
| 22 | 0.000824 | 0 | | 0.000811 | 0 | |
| 23 | 0.000819 | 0 | | 0.000802 | 0 | |
| 24 | 0.000811 | 0 | | 0.000798 | 0 | |
| 25 | 0.000802 | 0 | | 0 000794 | 0 | |
| 20 | 0.000708 | 0 | | 0.000765 | 0 | |
| 20 | 0.000798 | 0 | | 0.000705 | 0 | |
| 27 | 0.000765 | 0 | | 0.000761 | 0 | |
| 28 | 0.000754 | 0 | | 0.000754 | 0 | |
| 29 | 0.000747 | 0 | | 0.000748 | 0 | |
| 30 | 0.000746 | 0 | | 0.000747 | 0 | |
| 31 | 0.000739 | 0 | | 0.000746 | 0 | |
| 32 | 0 000735 | 0 | | 0 000739 | 0 | |
| 22 | 0.0007305 | 0 | | 0.000735 | 0 | |
| 33 | 0.0007303 | 0 | | 0.000733 | 0 | |
| 34 | 0.000726 | 0 | | 0.000733 | 0 | |
| 35 | 0.000722 | 0 | | 0.0007305 | 0 | |
| 36 | 0.000722 | 1 | | 0.000726 | 0 | |
| 37 | 0.000718 | 0 | | 0.000725 | 0 | |
| 38 | 0.000717 | 0 | | 0.000722 | 0 | |
| 39 | 0.000715 | 0 | | 0.000722 | 0 | |
| 40 | 0.000715 | 0 | | 0.000718 | 0 | |
| 41 | 0.000710 | 0 | | 0.000717 | 0 | |
| 41 | 0.000702 | 0 | | 0.000717 | 0 | |
| 42 | 0.000697 | 0 | | 0.000715 | 0 | |
| 43 | 0.000696 | 0 | | 0.000/15 | 0 | |
| 44 | 0.000693 | 0 | | 0.000707 | 0 | |
| 45 | 0.000688 | 0 | | 0.000702 | 0 | |
| 46 | 0.000687 | 0 | | 0.000697 | 0 | |
| 47 | 0.000687 | 0 | | 0.000696 | 0 | |
| 48 | 0 000678 | 0 | | 0 000693 | 0 | |
| 10 | 0.000677 | <u> </u> | | 0.000688 | о О | |
| 49 | 0.000077 | 0 | | 0.00000 | 0 | |
| 50 | 0.000675 | U | | 0.00087 | U | |
| 51 | 0.000674 | 0 | | 0.000687 | 0 | |
| 52 | 0.000671 | 0 | | 0.000678 | 0 | |
| 53 | 0.000665 | 0 | | 0.000677 | 0 | |
| 54 | 0.000663 | 0 | | 0.000675 | 0 | |
| 55 | 0.000662 | 0 | | 0.000675 | 0 | |
| 56 | 0.000662 | 0 | | 0 000674 | 0 | |
| 55 | 0.00066 | 0 | | 0.000671 | о О | |
| 57 | 0.000651 | 0 | | 0.000071 | 0 | |
| 58 | 0.000051 | U | | 0.00005 | U | |
| 59 | 0.000651 | Ű | | 0.000663 | 0 | |
| 60 | 0.000642 | 0 | | 0.000662 | 0 | |
| 61 | 0.000613 | 0 | | 0.000662 | 0 | |
| 62 | 0.00061 | 0 | | 0.000662 | 0 | |
| 63 | 0.000584 | 1 | | 0.00066 | 0 | |
| 6/ | 0 000545 | 0 | | 0.000657 | 0 | |
| 65 | 0.000393 | 0 | | 0.000651 | 0 | |
| 00 | 0.000302 | U 1 | | 0.000001 | 0 | |
| 00 | 0.000373 | - | | 0.00001 | U | |
| 67 | 0.000374 | 0 | | 0.000642 | 0 | |

| | A | В | С | D | E | F |
|-----|------------------------|--------------------------|---|-------------------|---------------------|---|
| 1 | 1,2,4-Trimethylbenzene | d_1,2,4-Trimethylbenzene | | 1,2-Dibromoethane | d_1,2-Dibromoethane | |
| 68 | 0.00037 | 0 | | 0.0006315 | 0 | |
| 69 | 0.000369 | 0 | | 0.000618 | 0 | |
| 70 | 0.00036 | 0 | | 0.000615 | 0 | |
| 71 | 0.000305 | 0 | | 0.000613 | 0 | |
| 72 | 0.0002965 | 0 | | 0.00061 | 0 | |
| 73 | 0.000259 | 0 | | 0.000602 | 0 | |
| 74 | 0.000223 | 1 | | 0.000602 | 0 | |
| 75 | 0.000179 | 1 | | 0.0006015 | 0 | |
| 76 | 0.0001655 | 0 | | 0.000587 | 0 | |
| 77 | 0.000162 | 0 | | 0.000586 | 0 | |
| 78 | 0.000159 | 0 | | 0.000581 | 0 | |
| 79 | 0.000157 | 0 | | 0.0005655 | 0 | |
| 80 | 0.000154 | 0 | | 0.000565 | 0 | |
| 81 | 0.000147 | 0 | | 0.00056 | 0 | |
| 82 | 0.000144 | 0 | | 0.000556 | 0 | |
| 83 | 0.000137 | 0 | | 0.000547 | 0 | |
| 84 | 0.000134 | 0 | | 0.000546 | 0 | |
| 85 | 0.000134 | 0 | | 0.000546 | 0 | |
| 86 | 0.000131 | 0 | | 0.000545 | 0 | |
| 87 | 0.000131 | 0 | | 0.000526 | 0 | |
| 88 | 0.000127 | 0 | | 0.000518 | 0 | |
| 89 | 0.000126 | 0 | | 0.000518 | 0 | |
| 90 | 0.000122 | 0 | | 0.000508 | 0 | |
| 91 | 0.000121 | 0 | | 0.000502 | 0 | |
| 92 | 0.000119 | 0 | | 0.000493 | 0 | |
| 93 | 0.000118 | 0 | | 0.000491 | 0 | |
| 94 | 0.000114 | 0 | | 0.000489 | 0 | |
| 95 | 0.000112 | 0 | | 0.000484 | 0 | |
| 96 | 0.000112 | 0 | | 0.000475 | 0 | |
| 97 | 0.00011 | 0 | | 0.000466 | 0 | |
| 98 | 0.000109 | 0 | | 0.000463 | 0 | |
| 99 | 0.000107 | 0 | | 0.000454 | 0 | |
| 100 | 0.000106 | 0 | | 0.000446 | 0 | |
| 101 | 0.000105 | 0 | | 0.000382 | 0 | |
| 102 | 0.000103 | 0 | | 0.000374 | 0 | |
| 103 | 0.000101 | 0 | | 0.00037 | 0 | |
| 104 | 0.000101 | 0 | | 0.000369 | 0 | |
| 105 | 0.000099 | 0 | | 0.00036 | 0 | |
| 106 | 0.000097 | 0 | | 0.000305 | 0 | |
| 107 | | | | | | |
| 108 | | | | | | |
| 109 | | | | | | |
| 110 | | | | | | |
| 111 | | | | | | |
| 112 | | | | | | |
| 113 | | | | | | |
| 114 | | | | | | |
| 115 | | | | | | |
| 116 | | | | | | |
| 117 | | | | | | |
| 118 | | | | | | |

| | G | H | | J | K |
|----|--------------------|----------------------|--|---------------------|-----------------------|
| 1 | 1,2-Dichloroethane | d_1,2-Dichloroethane | | 1-Methylnaphthalene | d_1-Methylnaphthalene |
| 2 | 0.474 | 0 | | 0.33 | 1 |
| 3 | 0.382 | 0 | | 0.012 | 0 |
| 4 | 0 14 | 0 | | 0.011 | 0 |
| 5 | 0.11 | 0 | | 0.011 | 0 |
| 6 | 0.066 | 0 | | 0.0062 | 0 |
| 0 | 0.000 | 0 | | 0.0002 | 0 |
| / | 0.056 | 0 | | 0.006 | 0 |
| 8 | 0.035 | 0 | | 0.006 | 0 |
| 9 | 0.035 | 0 | | 0.0059 | 0 |
| 10 | 0.03 | 0 | | 0.0056 | 0 |
| 11 | 0.0073 | 0 | | 0.0056 | 0 |
| 12 | 0.0066 | 0 | | 0.0056 | 0 |
| 13 | 0.006 | 0 | | 0.0055 | 0 |
| 14 | 0.006 | 0 | | | |
| 15 | 0.006 | 0 | | | |
| 16 | 0.000 | 0 | | | |
| 10 | 0.0008345 | 0 | | | |
| 17 | 0.000824 | 0 | | | |
| 18 | 0.000819 | 0 | | | |
| 19 | 0.000815 | 0 | | | |
| 20 | 0.000811 | 0 | | | |
| 21 | 0.000802 | 0 | | | |
| 22 | 0.000798 | 0 | | | |
| 23 | 0.000794 | 0 | | | |
| 24 | 0.000765 | 0 | | | |
| 25 | 0 000754 | 0 | | | |
| 20 | 0.0007.07 | 0 | | | |
| 20 | 0.000747 | 0 | | | |
| 27 | 0.000746 | 0 | | | |
| 28 | 0.000739 | 0 | | | |
| 29 | 0.000735 | 0 | | | |
| 30 | 0.0007305 | 0 | | | |
| 31 | 0.000726 | 0 | | | |
| 32 | 0.000725 | 0 | | | |
| 33 | 0.000722 | 0 | | | |
| 34 | 0.000718 | 0 | | | |
| 35 | 0.000717 | 0 | | | |
| 26 | 0.000715 | 0 | | | |
| 30 | 0.000715 | 0 | | | |
| 37 | 0.000715 | 0 | | | |
| 38 | 0.000702 | 0 | | | |
| 39 | 0.000697 | 0 | | | |
| 40 | 0.000696 | 0 | | | |
| 41 | 0.000693 | 0 | | | |
| 42 | 0.000688 | 0 | | | |
| 43 | 0.000687 | 0 | | | |
| 44 | 0.000687 | 0 | | | |
| 45 | 0.000678 | 0 | | | |
| 46 | 0.000677 | 0 | | | |
| 47 | 0.000675 | 0 | | | |
| 10 | 0.000674 | 0 | | | |
| +0 | 0.000074 | 0 | | | |
| 49 | 0.000071 | 0 | | | |
| 50 | 0.000000 | 0 | | | |
| 51 | 0.000663 | U - | | | |
| 52 | 0.000662 | 0 | | | |
| 53 | 0.000662 | 0 | | | |
| 54 | 0.00066 | 0 | | | |
| 55 | 0.000651 | 0 | | | |
| 56 | 0.000651 | 0 | | | |
| 57 | 0.000642 | 0 | | | |
| 58 | 0.000613 | 0 | | | |
| 59 | 0.00061 | 0 | | | |
| 60 | 0.000545 | 0 | | | |
| 61 | 0.000040 | 0 0 | | | |
| 01 | 0.0004000 | 0 | | | |
| 02 | 0.000396 | U | | | |
| 63 | 0.000382 | 0 | | | |
| 64 | 0.000374 | 0 | | | |
| 65 | 0.00037 | 0 | | | |
| 66 | 0.000369 | 0 | | | |
| 67 | 0.00036 | 0 | | | |
| | | | | | |

| | G | H | I | J | K |
|----------|--------------------|----------------------|---|---------------------|-----------------------|
| 1 | 1,2-Dichloroethane | d_1,2-Dichloroethane | | 1-Methylnaphthalene | d_1-Methylnaphthalene |
| 68 | 0.000305 | 0 | | | |
| 69 | 0.0002525 | 0 | | | |
| 70 | 0.000248 | 0 | | | |
| 71 | 0.000244 | 0 | | | |
| 72 | 0.00024 | 0 | | | |
| 73 | 0.000235 | 0 | | | |
| 74 | 0.000224 | 0 | | | |
| 75 | 0.00022 | 0 | | | |
| 76 | 0.000218 | 0 | | | |
| 77 | 0.00021 | 0 | | | |
| 78 | 0.000205 | 0 | | | |
| 79 | 0.000204 | 0 | | | |
| 80 | 0.0002 | 0 | | | |
| 81 | 0.0002 | 0 | | | |
| 82 | 0.0002 | 0 | | | |
| 83 | 0.0002 | 0 | | | |
| 84 | 0.000195 | 0 | | | |
| 04 95 | 0.000193 | 0 | | | |
| 86 | 0.000193 | 0 | | | |
| 00 | 0.000100 | 0 | | | |
| 07 | 0.000186 | 0 | | | |
| 00 90 | 0.000185 | 0 | | | |
| 00 | 0.000103 | 0 | | | |
| 01 | 0.000181 | 0 | | | |
| 92 | 0.000181 | 0 | | | |
| 92 | 0.000175 | 0 | | | |
| 94 | 0.000172 | 0 | | | |
| 95 | 0.000172 | 0 | | | |
| 96 | 0.000169 | 0 | | | |
| 97 | 0.000167 | 0 | | | |
| 98 | 0.000164 | 0 | | | |
| 99 | 0.000163 | 0 | | | |
| 100 | 0.000163 | 0 | | | |
| 101 | 0.000161 | 0 | | | |
| 102 | 0.000158 | 0 | | | |
| 103 | 0.000155 | 0 | | | |
| 104 | 0.000154 | 0 | | | |
| 105 | 0.000151 | 0 | | | |
| 106 | 0.000148 | 0 | | | |
| 107 | | | | | |
| 108 | | | | | |
| 109 | | | | | |
| 110 | | | | | |
| 111 | | | | | |
| 112 | | | | | |
| 113 | | | | | |
| 114 | | | | | |
| 115 | | | | | |
| 116 | | | | | |
| 117 | | | | | |
| 118 | | | | | |

| | L | М | N | 0 | Р | Q |
|-----------|----------|---------------------|-----------------------|---|-----------|-----------|
| 1 | | 2-Methvinaphthalene | d 2-Methvinaphthalene | | Benzene | d Benzene |
| 2 | | 16 | 1 | | 0 276 | 0 |
| 2 | | 14 | 1 | | 0.222 | 0 |
| 3 | | 14 | 1 | | 0.222 | 0 |
| 4 | | 13 | 1 | | 0.09 | 0 |
| 5 | | 8.13 | 1 | | 0.073 | 0 |
| 6 | | 1.5 | 1 | | 0.044 | 0 |
| 7 | | 0.66 | 0 | | 0.037 | 0 |
| 8 | | 0.64 | 0 | | 0.023 | 0 |
| ٥ ٥ | | 0.64 | 0 | | 0.023 | 0 |
| 3 | | 0.64 | 0 | | 0.025 | 0 |
| 10 | | 0.64 | 0 | | 0.02 | 0 |
| 11 | | 0.64 | 0 | | 0.0049 | 0 |
| 12 | | 0.64 | 0 | | 0.0044 | 0 |
| 13 | | 0.64 | 0 | | 0.004 | 0 |
| 14 | | 0.63 | 0 | | 0.004 | 0 |
| 15 | | 0.63 | 0 | | 0.004 | 0 |
| 16 | | 0.375 | 0 | | 0.00225 | 1 |
| 10 | | 0.375 | 0 | | 0.00325 | 1 |
| 17 | | 0.14 | 0 | | 0.003035 | 1 |
| 18 | | 0.14 | 0 | | 0.00256 | 1 |
| 19 | | 0.14 | 0 | | 0.0023 | 1 |
| 20 | | 0.139 | 1 | | 0.0022 | 1 |
| 21 | | 0.13 | 0 | | 0.002015 | 1 |
| 22 | | 0.13 | 0 | | 0.00196 | 1 |
| 22 | | 0.13 | 0 | | 0.00130 | 1 |
| 23 | | 0.13 | 0 | | 0.00172 | 1 |
| 24 | | 0.13 | 0 | | 0.001312 | 1 |
| 25 | | 0.13 | 0 | | 0.00119 | 1 |
| 26 | | 0.13 | 0 | | 0.00116 | 1 |
| 27 | | 0.13 | 0 | | 0.00115 | 1 |
| 28 | | 0.125 | 0 | | 0.00107 | 1 |
| 20 | | 0.120 | 0 | | 0.00104 | 1 |
| 29 | | 0.12 | 0 | | 0.00104 | 1 |
| 30 | | 0.0996 | 0 | | 0.000866 | 1 |
| 31 | | 0.0975 | 0 | | 0.000861 | 1 |
| 32 | | 0.07 | 0 | | 0.0008545 | 0 |
| 33 | | 0.07 | 0 | | 0.000844 | 1 |
| 34 | | 0.07 | 0 | | 0.000824 | 0 |
| 25 | | 0.060 | 0 | | 0.000810 | 0 |
| 35 | | 0.009 | 0 | | 0.000813 | 0 |
| 36 | | 0.069 | 0 | | 0.000811 | 0 |
| 37 | | 0.068 | 0 | | 0.000802 | 0 |
| 38 | | 0.067 | 0 | | 0.0008 | 1 |
| 39 | | 0.067 | 0 | | 0.000798 | 0 |
| 40 | | 0.067 | 0 | | 0.000765 | 0 |
| <u>41</u> | | 0.0665 | 0 | | 0.000763 | 1 |
| 40 | | 0.000 | 0 | | 0.000760 | 0 |
| 42 | | 0.000 | 0 | | 0.000754 | 0 |
| 43 | | 0.066 | 0 | | 0.000752 | I |
| 44 | | 0.066 | 0 | | 0.00075 | 1 |
| 45 | | 0.066 | 0 | | 0.000747 | 0 |
| 46 | | 0.066 | 0 | | 0.000746 | 0 |
| 47 | | 0.065 | 0 | | 0.000739 | 0 |
| 10 | | 0.065 | 0 | | 0.000735 | 0 |
| +0 | | 0.000 | 0 0 | | 0.0007305 | 0 |
| 49 | | 0.005 | 0 | | 0.0007305 | U |
| 50 | | 0.065 | 0 | | 0.000/22 | 0 |
| 51 | | 0.064 | 0 | | 0.000719 | 1 |
| 52 | | 0.064 | 0 | | 0.000718 | 0 |
| 53 | | 0.064 | 0 | | 0.000717 | 0 |
| 54 | | 0.064 | 0 | | 0.000715 | 0 |
| 54 | <u> </u> | 0.06/ | <u> </u> | | 0.000715 | <u> </u> |
| 55 | | 0.004 | 0 | | 0.000713 | 0 |
| 56 | | 0.064 | U | | 0.000702 | U |
| 57 | | 0.063 | 0 | | 0.000697 | 0 |
| 58 | | 0.063 | 0 | | 0.000696 | 0 |
| 59 | | 0.063 | 0 | | 0.000693 | 0 |
| 60 | | 0.063 | 0 | | 0.000688 | 0 |
| 61 | | 0.063 | 0 | | 0.000687 | 0 |
| 01 | | 0.000 | 0 | | 0.000007 | 0 |
| 62 | | 0.003 | U | | 1,80000.0 | U |
| 63 | | 0.063 | 0 | | 0.000678 | 0 |
| 64 | | 0.062 | 0 | | 0.000677 | 0 |
| 65 | | 0.062 | 0 | | 0.000675 | 0 |
| 66 | | 0.062 | 0 | | 0.000674 | 0 |
| 67 | | 0.062 | 0 | | 0.000671 | 0 |

| | L | М | Ν | 0 | Р | Q |
|-----|---|---------------------|-----------------------|---|-----------|-----------|
| 1 | | 2-Methylnaphthalene | d_2-Methylnaphthalene | | Benzene | d_Benzene |
| 68 | | 0.0519 | 1 | | 0.000665 | 0 |
| 69 | | 0.0487 | 0 | | 0.000663 | 0 |
| 70 | | 0.0472 | 0 | | 0.000662 | 0 |
| 71 | | 0.0266 | 1 | | 0.000662 | 0 |
| 72 | | 0.013 | 0 | | 0.00066 | 0 |
| 73 | | 0.012 | 1 | | 0.000651 | 0 |
| 74 | | 0.012 | 0 | | 0.000651 | 0 |
| 75 | | 0.012 | 0 | | 0.000626 | 1 |
| 76 | | 0.0104 | 0 | | 0.000619 | 1 |
| 77 | | 0.0104 | 0 | | 0.000613 | 0 |
| 78 | | 0.00998 | 0 | | 0.00061 | 0 |
| 79 | | 0.00997 | 0 | | 0.000581 | 1 |
| 80 | | 0.00995 | 0 | | 0.000577 | 1 |
| 81 | | 0.009905 | 0 | | 0.000572 | 1 |
| 82 | | 0.00989 | 0 | | 0.000545 | 0 |
| 83 | | 0.009865 | 0 | | 0.000544 | 1 |
| 84 | | 0.00984 | 0 | | 0.000495 | 1 |
| 85 | | 0.00979 | 0 | | 0.000485 | 1 |
| 86 | | 0.00979 | 0 | | 0.000382 | 0 |
| 87 | | 0.00978 | 0 | | 0.000374 | 0 |
| 88 | | 0.00978 | 0 | | 0.000373 | 1 |
| 89 | | 0.00977 | 0 | | 0.00037 | 0 |
| 90 | | 0.00971 | 0 | | 0.000369 | 0 |
| 91 | | 0.00971 | 0 | | 0.00036 | 0 |
| 92 | | 0.00967 | 0 | | 0.000354 | 1 |
| 93 | | 0.00966 | 0 | | 0.000345 | 1 |
| 94 | | 0.00963 | 0 | | 0.000323 | 1 |
| 95 | | 0.00958 | 0 | | 0.000305 | 0 |
| 96 | | 0.00955 | 0 | | 0.000288 | 1 |
| 97 | | 0.00954 | 0 | | 0.0002805 | 1 |
| 98 | | 0.00954 | 0 | | 0.0002205 | 1 |
| 99 | | 0.009535 | 0 | | 0.000217 | 1 |
| 100 | | 0.00953 | 0 | | 0.0002115 | 1 |
| 101 | | 0.00952 | 0 | | 0.0002035 | 1 |
| 102 | | 0.00952 | 0 | | 0.000142 | 0 |
| 103 | | 0.00951 | 0 | | 0.000131 | 1 |
| 104 | | 0.00949 | 0 | | 0.000106 | 0 |
| 105 | | 0.00945 | 0 | | 0.0001 | 0 |
| 106 | | 0.00943 | 0 | | 0.000098 | 0 |
| 107 | | 0.00941 | 0 | | | |
| 108 | | 0.00931 | 0 | | | |
| 109 | | 0.00906 | 0 | | | |
| 110 | | 0.0065 | 0 | | | |
| 111 | | 0.0063 | 0 | | | |
| 112 | | 0.0063 | 0 | | | |
| 113 | | 0.0062 | 0 | | | |
| 114 | | 0.0059 | 0 | | | |
| 115 | | 0.0059 | 0 | | | |
| 116 | | 0.0059 | 0 | | | |
| 117 | | 0.0059 | 0 | | | |
| 118 | | 0.0058 | 0 | | | |

| | R | S | Т | U | V | W | Х |
|----------|---|--------------|----------------|---|------------------|--------------------|---|
| 1 | | Ethylbenzene | d_Ethylbenzene | | Isopropylbenzene | d_lsopropylbenzene | |
| 2 | | 0.57 | 0 | | 0.29 | 1 | |
| 3 | | 0.47 | 1 | | 0.243 | 0 | |
| 4 | | 0.46 | 0 | | 0.196 | 0 | |
| 5 | | 0.23 | 1 | | 0.065 | 0 | |
| 6 | | 0.088 | 0 | | 0.057 | 0 | |
| 7 | | 0.043 | 0 | | 0.053 | 0 | |
| , 0 | | 0.040 | 0 | | 0.033 | 0 | |
| 0 | | 0.030 | 0 | | 0.032 | 0 | |
| 9 | | 0.023 | 0 | | 0.032 | 0 | |
| 10 | | 0.019 | 0 | | 0.027 | 0 | |
| 11 | | 0.0047 | 0 | | 0.017 | 0 | |
| 12 | | 0.0043 | 0 | | 0.0035 | 0 | |
| 13 | - | 0.0039 | 0 | | 0.0029 | 0 | |
| 14 | | 0.0039 | 0 | | 0.0029 | 0 | |
| 15 | | 0.0038 | 0 | | 0.0029 | 0 | |
| 16 | | 0.001064 | 1 | | 0.0008545 | 0 | |
| 17 | | 0.0008545 | 0 | | 0.000824 | 0 | |
| 18 | | 0.000851 | 1 | | 0.000819 | 0 | |
| 19 | | 0.000824 | 0 | | 0.000815 | 0 | |
| 20 | | 0.000819 | 0 | | 0.000811 | 0 | |
| 21 | | 0.000815 | 0 | | 0.000802 | 0 | |
| 22 | | 0.000811 | 0 | | 0.000798 | 0 | |
| 23 | | 0.000802 | 0 | | 0.000794 | 0 | |
| 23 | | 0.000002 | 0 | | 0.000765 | 0 | |
| 24 | | 0.000796 | 0 | | 0.000763 | 0 | |
| 25 | | 0.000765 | 0 | | 0.000734 | 0 | |
| 26 | | 0.000754 | 0 | | 0.000747 | 0 | |
| 27 | | 0.000747 | 0 | | 0.000746 | 0 | |
| 28 | | 0.000746 | 0 | | 0.000739 | 0 | |
| 29 | | 0.000739 | 0 | | 0.000735 | 0 | |
| 30 | | 0.000735 | 0 | | 0.0007305 | 0 | |
| 31 | | 0.0007345 | 1 | | 0.000726 | 0 | |
| 32 | | 0.0007305 | 0 | | 0.000725 | 0 | |
| 33 | | 0.000726 | 0 | | 0.000722 | 0 | |
| 34 | | 0.000725 | 0 | | 0.000718 | 0 | |
| 35 | | 0.000722 | 0 | | 0.000717 | 0 | |
| 36 | | 0.000718 | 0 | | 0.000715 | 0 | |
| 37 | | 0.000717 | 0 | | 0.000715 | 0 | |
| 38 | | 0.000715 | 0 | | 0.000702 | 0 | |
| 39 | | 0 000715 | 0 | | 0.000697 | 0 | |
| 40 | | 0.000702 | 0 | | 0.000696 | 0 | |
| 40 A1 | | 0.000697 | 0 | | 0.000693 | 0 | |
| 12 | | 0.00000 | 0 | | 0.000688 | 0 | |
| 42 | | 0.000030 | 0 | | 0.000000 | 0 | |
| 43 | | 0.000093 | 0 | | 0.000687 | 0 | |
| 44 | | 0.000007 | 0 | | 0.00087 | 0 | |
| 45 | | 0.000687 | 0 | | 0.00078 | 0 | |
| 46 | | 0.000687 | 0 | | 0.000677 | 0 | |
| 4/ | | 0.000678 | U | | 0.000675 | U | |
| 48 | | 0.000677 | 0 | | 0.000674 | 0 | |
| 49 | | 0.000675 | 0 | | 0.000671 | 0 | |
| 50 | | 0.000674 | 0 | | 0.000665 | 0 | |
| 51 | | 0.000671 | 0 | | 0.000663 | 0 | |
| 52 | | 0.000665 | 0 | | 0.000662 | 0 | |
| 53 | | 0.000663 | 0 | | 0.000662 | 0 | |
| 54 | | 0.000662 | 0 | | 0.00066 | 0 | |
| 55 | | 0.000662 | 0 | | 0.000651 | 0 | |
| 56 | | 0.00066 | 0 | | 0.000651 | 0 | |
| 57 | | 0.000659 | 1 | | 0.000642 | 0 | |
| 58 | | 0.000651 | 0 | | 0.000613 | 0 | |
| 59 | | 0.000651 | 0 | | 0.00061 | 0 | |
| 60 | | 0.000642 | 0 | | 0.000545 | 0 | |
| 61 | | 0.000613 | 0 | | 0.000382 | 0 | |
| 60 | | 0.00061 | <u> </u> | | 0.000374 | 0 | |
| 62 | | 0.0005/65 | n 0 | | 0.00074 | 0 | |
| 03 | | 0.0005405 | 0 | | 0.00037 | 0 | |
| 04 | | 0.000405 | U 1 | | 0.000303 | 0 | |
| 00 | | 0.000477 | | | 0.00030 | 0 | |
| 00 | | 0.000477 | U | | 0.000305 | 0 | |
| 67 | | 0.000459 | 1 | | 0.0002325 | U | |

| | R | S | Т | U | V | W | Х |
|-----|---|--------------|----------------|---|------------------|--------------------|---|
| 1 | | Ethylbenzene | d_Ethylbenzene | | Isopropylbenzene | d_lsopropylbenzene | |
| 68 | | 0.000382 | 0 | | 0.000203 | 0 | |
| 69 | | 0.000375 | 1 | | 0.0001295 | 0 | |
| 70 | | 0.000374 | 0 | | 0.000127 | 0 | |
| 71 | | 0.00037 | 0 | | 0.000125 | 0 | |
| 72 | | 0.000369 | 0 | | 0.000123 | 0 | |
| 73 | | 0.00036 | 0 | | 0.00012 | 0 | |
| 74 | | 0.000344 | 1 | | 0.000115 | 0 | |
| 75 | | 0.000305 | 0 | | 0.000113 | 0 | |
| 76 | | 0.000304 | 0 | | 0.0001115 | 0 | |
| 77 | | 0.000299 | 0 | | 0.0001075 | 0 | |
| 78 | | 0.000297 | 1 | | 0.000105 | 0 | |
| 79 | | 0.000293 | 0 | | 0.000105 | 0 | |
| 80 | | 0.000283 | 0 | | 0.000102 | 0 | |
| 81 | | 0.00027 | 0 | | 0.000102 | 0 | |
| 82 | | 0.000265 | 0 | | 0.000102 | 0 | |
| 83 | | 0.000252 | 0 | | 0.0001 | 0 | |
| 84 | | 0.000247 | 0 | | 0.0001 | 0 | |
| 85 | | 0.000246 | 0 | | 0.000099 | 0 | |
| 86 | | 0.000241 | 0 | | 0.000096 | 0 | |
| 87 | | 0.000235 | 0 | | 0.000096 | 0 | |
| 88 | | 0.000234 | 0 | | 0.000095 | 0 | |
| 89 | | 0.000232 | 0 | | 0.000095 | 0 | |
| 90 | | 0.000224 | 0 | | 0.000093 | 0 | |
| 91 | | 0.000222 | 0 | | 0.000093 | 0 | |
| 92 | | 0.000219 | 0 | | 0.000093 | 0 | |
| 93 | | 0.000218 | 0 | | 0.000089 | 0 | |
| 94 | | 0.00021 | 1 | | 0.000088 | 0 | |
| 95 | | 0.000207 | 0 | | 0.000088 | 0 | |
| 96 | | 0.000203 | 0 | | 0.000086 | 0 | |
| 97 | | 0.0002 | 0 | | 0.000085 | 0 | |
| 98 | | 0.000197 | 0 | | 0.000084 | 0 | |
| 99 | | 0.000196 | 0 | | 0.000083 | 0 | |
| 100 | | 0.000196 | 0 | | 0.000083 | 0 | |
| 101 | | 0.000193 | 0 | | 0.000082 | 0 | |
| 102 | | 0.00019 | 0 | | 0.000081 | 0 | |
| 102 | | 0.000186 | 0 | | 0.000079 | 0 | |
| 104 | | 0.000185 | 0 | | 0.000079 | 0 | |
| 105 | | 0.000181 | 0 | | 0.000077 | 0 | |
| 105 | | 0.000178 | 0 | | 0.000076 | 0 | |
| 107 | | 0.000170 | v | | 0.000070 | v | - |
| 107 | | | | | | | |
| 100 | | | | | | | |
| 110 | | | | | | | |
| 111 | | | | | | | |
| 112 | | | | | | | + |
| 112 | | | | | | | + |
| 11/ | | | | | | | |
| 114 | | | | | | | |
| 110 | | | | | | | |
| 110 | | | | | | | |
| 110 | | | | | | | |
| 110 | | | | | | | L |

| | Y | Z | AA | AB | AC | AD |
|----|--------------|--------|----|--------------------------------|----------------------------------|----|
| 1 | Lead | d_Lead | | MTBE (Methyl tert-butyl ether) | d_MTBE (Methyl tert-butyl ether) | |
| 2 | 71 | 1 | | 0.622 | 0 | |
| 3 | 59 | 1 | | 0.502 | 0 | |
| 4 | 46 | 1 | | 0.31 | 0 | |
| 5 | 42.2 | 1 | | 0.25 | 0 | |
| 6 | 12 | 1 | | 0.15 | 0 | |
| 7 | 30.1 | 1 | | 0.13 | 0 | |
| / | 39.1 | 1 | | 0.13 | 0 | |
| ð | 35 | 1 | | 0.08 | 0 | |
| 9 | 25 | 1 | | 0.079 | 0 | |
| 10 | 22 | 1 | | 0.067 | 0 | |
| 11 | 18.8 | 1 | | 0.017 | 0 | |
| 12 | 18.2 | 1 | | 0.015 | 0 | |
| 13 | 18 | 1 | | 0.014 | 0 | |
| 14 | 18 | 1 | | 0.014 | 0 | |
| 15 | 17.2 | 1 | | 0.013 | 0 | |
| 16 | 17 | 1 | | 0.0008545 | 0 | |
| 17 | 14 | 1 | | 0.000824 | 0 | |
| 18 | 14 | 1 | | 0.000819 | 0 | |
| 10 | 13.5 | 1 | | 0.000815 | 0 | |
| 20 | 10.0 | 1 | | 0.000813 | 0 | |
| 20 | 11.0 | 1 | | 0.00002 | 0 | |
| 21 | 11.3 | 1 | | 0.000802 | 0 | |
| 22 | 11.255 | | | 0.000/98 | U | |
| 23 | 11 | 1 | | 0.000/94 | 0 | |
| 24 | 10.1 | 1 | | 0.000765 | 0 | |
| 25 | 9.56 | 1 | | 0.000754 | 0 | |
| 26 | 9.5 | 1 | | 0.000747 | 0 | |
| 27 | 9.01 | 1 | | 0.000746 | 0 | |
| 28 | 8.6 | 1 | | 0.000739 | 0 | |
| 29 | 8.45 | 1 | | 0.000735 | 0 | |
| 30 | 8.28 | 1 | | 0.0007305 | 0 | |
| 31 | 8.16 | 1 | | 0.000726 | 0 | |
| 32 | 8 11 | 1 | | 0.000725 | 0 | |
| 22 | 8.1 | 1 | | 0.000720 | ů O | |
| 24 | 7.0 | 1 | | 0.000722 | 0 | |
| 34 | 7.9 | 1 | | 0.000718 | 0 | |
| 35 | 7.6 | 1 | | 0.000717 | 0 | |
| 36 | 7.6 | 1 | | 0.000/15 | 0 | |
| 37 | 7.42 | 1 | | 0.000715 | 0 | |
| 38 | 7.335 | 1 | | 0.000702 | 0 | |
| 39 | 7.34 | 1 | | 0.000697 | 0 | |
| 40 | 7.28 | 1 | | 0.000696 | 0 | |
| 41 | 7.12 | 1 | | 0.000693 | 0 | |
| 42 | 6.79 | 1 | | 0.000688 | 0 | |
| 43 | 6.62 | 1 | | 0.000687 | 0 | |
| 44 | 6.6 | 1 | | 0.000687 | 0 | |
| 45 | 6.5 | 1 | | 0 000678 | 0 | |
| 45 | 6.45 | 1 | | 0.000677 | 0 | |
| 40 | 6.7J | 1 | | 0.000675 | 0 | |
| 4/ | 0.21 | 1 | | 0.000075 | 0 | |
| 48 | 0.15 | | | 0.000674 | 0 | |
| 49 | 6 | 1 | | 0.000671 | U | |
| 50 | 5.88 | 1 | | 0.000665 | 0 | |
| 51 | 5.8 | 1 | | 0.000663 | 0 | |
| 52 | 5.8 | 1 | | 0.000662 | 0 | |
| 53 | 5.585 | 1 | | 0.000662 | 0 | |
| 54 | 5.46 | 1 | | 0.00066 | 0 | |
| 55 | 5.3 | 1 | | 0.000651 | 0 | |
| 56 | 5.3 | 1 | | 0.000651 | 0 | |
| 57 | 5.13 | 1 | | 0.000642 | 0 | |
| 58 | 4.85 | 1 | | 0.000613 | 0 | |
| 50 | 4 66 | 1 | | 0.00061 | 0 | |
| 60 | 1.50 | 1 | | 0.00001 | 0 | |
| 61 | 4.55 / 55 | 1 | | 0.000545 | 0 | |
| 01 | 4.00 | 1 | | 0.000345 | 0 | |
| 62 | 4.55 | 1 | | 0.0002 | 0 | |
| 63 | 4.5 | | | 0.000382 | U | |
| 64 | 4.5 | 1 | | 0.000374 | 0 | |
| 65 | 4.49 | 1 | | 0.00037 | 0 | |
| 66 | 4.2 | 1 | | 0.000369 | 0 | |
| 67 | 4.1 | 1 | | 0.00036 | 0 | |

| Lead d_Lead MTBE (Methyl tert-butyl ether) d_MTBE (Methyl tert-butyl ether) 68 4.1 1 0.000332 0 69 4.07 1 0.000326 0 70 4 1 0.000326 0 71 3.93 1 0.000315 0 72 3.9 1 0.000305 0 73 3.8 1 0.000305 0 74 3.66 1 0.000294 0 75 3.655 1 0.0002865 0 1 76 3.63 1 0.000275 0 1 78 3.54 1 0.000263 0 1 79 3.5 1 0.000263 0 1 80 3.5 1 0.000263 0 1 81 3.4 1 0.000265 0 1 82 3.4 1 0.000266 0 1 <t< th=""></t<> |
|---|
| 68 4.1 1 0.000332 0 69 4.07 1 0.000326 0 70 4 1 0.000326 0 71 3.93 1 0.000315 0 72 3.9 1 0.000308 0 73 3.8 1 0.000305 0 74 3.66 1 0.000294 0 75 3.655 1 0.000289 0 76 3.63 1 0.000275 0 77 3.6 1 0.000275 0 78 3.54 1 0.000268 0 80 3.5 1 0.000263 0 81 3.4 1 0.0002625 0 82 3.4 1 0.000256 0 84 3.12 1 0.000256 0 84 3.12 1 0.000254 0 86 2.9 |
| 69 4.07 1 0.000326 0 70 4 1 0.00032 0 71 3.93 1 0.000315 0 72 3.9 1 0.000308 0 73 3.8 1 0.000305 0 74 3.66 1 0.000294 0 75 3.655 1 0.000289 0 76 3.63 1 0.0002865 0 77 3.6 1 0.000275 0 78 3.54 1 0.000268 0 79 3.5 1 0.000263 0 80 3.5 1 0.000263 0 81 3.4 1 0.000262 0 83 3.3 1 0.000266 0 84 3.12 1 0.000256 0 85 3 1 0.000256 0 86 2.9 1 0.0002465 0 |
| 70 4 1 0.00032 0 71 3.93 1 0.000315 0 72 3.9 1 0.000308 0 73 3.8 1 0.000305 0 74 3.66 1 0.000294 0 75 3.655 1 0.000289 0 76 3.63 1 0.000275 0 78 3.54 1 0.00027 0 79 3.5 1 0.000263 0 80 3.5 1 0.000262 0 81 3.4 1 0.000262 0 83 3.3 1 0.000262 0 84 3.12 1 0.000256 0 85 3 1 0.000256 0 86 2.9 1 0.0002465 0 87 2.9 1 0.000246 0 |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ |
| 72 3.9 1 0.000308 0 73 3.8 1 0.000305 0 74 3.66 1 0.000294 0 75 3.655 1 0.000289 0 76 3.63 1 0.000285 0 77 3.6 1 0.000275 0 78 3.54 1 0.000275 0 79 3.5 1 0.000268 0 80 3.5 1 0.000263 0 81 3.4 1 0.000262 0 82 3.4 1 0.000262 0 83 3.3 1 0.000262 0 84 3.12 1 0.000256 0 85 3 1 0.000256 0 86 2.9 1 0.0002465 0 87 2.9 1 0.0002465 0 |
| 73 3.8 1 0.000305 0 74 3.66 1 0.000294 0 75 3.655 1 0.000289 0 76 3.63 1 0.0002865 0 77 3.6 1 0.000275 0 78 3.54 1 0.000275 0 79 3.5 1 0.000268 0 80 3.5 1 0.000263 0 81 3.4 1 0.000262 0 82 3.4 1 0.000262 0 83 3.3 1 0.000256 0 84 3.12 1 0.000256 0 85 3 1 0.000256 0 86 2.9 1 0.0002465 0 87 2.9 1 0.000246 0 |
| 74 3.66 1 0.000294 0 75 3.655 1 0.000289 0 76 3.63 1 0.0002865 0 77 3.6 1 0.000275 0 78 3.54 1 0.000268 0 79 3.5 1 0.000263 0 80 3.5 1 0.000263 0 81 3.4 1 0.0002625 0 82 3.4 1 0.000266 0 83 3.3 1 0.000262 0 84 3.12 1 0.000256 0 85 3 1 0.000256 0 86 2.9 1 0.0002465 0 87 2.9 1 0.000246 0 |
| 75 3.655 1 0.000289 0 76 3.63 1 0.0002865 0 77 3.6 1 0.000275 0 78 3.54 1 0.00027 0 79 3.5 1 0.000268 0 80 3.5 1 0.000263 0 81 3.4 1 0.0002625 0 82 3.4 1 0.000266 0 83 3.3 1 0.000262 0 84 3.12 1 0.000256 0 85 3 1 0.000256 0 86 2.9 1 0.0002465 0 87 2.9 1 0.000246 0 |
| 76 3.63 1 0.0002865 0 77 3.6 1 0.000275 0 78 3.54 1 0.00027 0 79 3.5 1 0.000268 0 80 3.5 1 0.000265 0 81 3.4 1 0.000262 0 82 3.4 1 0.000266 0 83 3.3 1 0.000266 0 84 3.12 1 0.000256 0 85 3 1 0.000256 0 86 2.9 1 0.0002465 0 87 2.9 1 0.000246 0 |
| 77 3.6 1 0.000275 0 78 3.54 1 0.00027 0 79 3.5 1 0.000268 0 80 3.5 1 0.000263 0 81 3.4 1 0.0002625 0 82 3.4 1 0.000266 0 83 3.3 1 0.000266 0 84 3.12 1 0.000256 0 85 3 1 0.000256 0 86 2.9 1 0.0002465 0 87 2.9 1 0.000246 0 |
| 78 3.54 1 0.00027 0 79 3.5 1 0.000268 0 80 3.5 1 0.000263 0 81 3.4 1 0.0002625 0 82 3.4 1 0.000262 0 83 3.3 1 0.000256 0 84 3.12 1 0.000256 0 85 3 1 0.000254 0 86 2.9 1 0.0002465 0 87 2.9 1 0.000246 0 |
| 79 3.5 1 0.000268 0 80 3.5 1 0.000263 0 81 3.4 1 0.0002625 0 82 3.4 1 0.000262 0 83 3.3 1 0.000256 0 84 3.12 1 0.000256 0 85 3 1 0.000254 0 86 2.9 1 0.0002465 0 87 2.9 1 0.000246 0 |
| 80 3.5 1 0.000263 0 81 3.4 1 0.0002625 0 82 3.4 1 0.000262 0 83 3.3 1 0.000256 0 84 3.12 1 0.000256 0 85 3 1 0.000254 0 86 2.9 1 0.0002465 0 87 2.9 1 0.000246 0 |
| 81 3.4 1 0.0002625 0 82 3.4 1 0.000262 0 83 3.3 1 0.000256 0 84 3.12 1 0.000256 0 85 3 1 0.000256 0 86 2.9 1 0.0002465 0 87 2.9 1 0.000246 0 |
| 82 3.4 1 0.000262 0 83 3.3 1 0.000256 0 84 3.12 1 0.000256 0 85 3 1 0.000256 0 86 2.9 1 0.0002465 0 87 2.9 1 0.000246 0 |
| 83 3.3 1 0.000256 0 84 3.12 1 0.000256 0 85 3 1 0.000254 0 86 2.9 1 0.0002465 0 87 2.9 1 0.000246 0 |
| 84 3.12 1 0.000256 0 85 3 1 0.000254 0 86 2.9 1 0.0002465 0 87 2.9 1 0.000246 0 |
| 85 3 1 0.000254 0 86 2.9 1 0.0002465 0 87 2.9 1 0.000246 0 |
| 86 2.9 1 0.0002465 0 87 2.9 1 0.000246 0 |
| 87 2.9 1 0.000246 0 |
| |
| 88 2.8 1 0.000244 0 |
| 89 2.7 1 0.000243 0 |
| 90 2.6 1 0.000239 0 |
| 91 2.5 1 0.000238 0 |
| 92 2.5 1 0.000238 0 |
| 93 2.4 1 0.000229 0 |
| 94 2.4 1 0.000226 0 |
| 95 2.4 1 0.000226 0 |
| 96 2.3 1 0.000222 0 |
| 97 2.3 1 0.000219 0 |
| 98 2.2 1 0.000215 0 |
| 99 2 1 0.000214 0 |
| 100 1.9 1 0.000213 0 |
| 101 1.6 1 0.000211 0 |
| 102 1.3 1 0.000207 0 |
| 103 1.3 1 0.000203 0 |
| 104 1.2 1 0.000202 0 |
| 105 1.2 1 0.000198 0 |
| 106 1.1 1 0.000194 0 |
| 107 |
| 108 |
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| 114 |
| 115 |
| 116 |
| 117 |
| 118 |

| | AE | AF | AG | AH | AI | AJ | AK | AL |
|----|-------------|---------------|----|-----------|-----------|----|-----------------|------------------------------|
| 1 | Naphthalene | d_Naphthalene | | Toluene | d_Toluene | | Xylenes (total) | <pre>d_Xylenes (total)</pre> |
| 2 | 16 | 1 | | 0.688 | 0 | | 3.8 | 1 |
| 3 | 15 | 1 | | 0.554 | 0 | | 1.11 | 0 |
| 4 | 12 | 1 | | 0.091 | 0 | | 1 | 1 |
| - | 10.0 | 1 | | 0.073 | 0 | | 0 808 | 0 |
| 5 | 10.9 | 1 | | 0.073 | 0 | | 0.696 | 0 |
| 6 | 7.69 | 1 | | 0.044 | 0 | | 0.58 | 1 |
| 7 | 1.1 | 1 | | 0.038 | 0 | | 0.28 | 1 |
| 8 | 0.84 | 1 | | 0.024 | 0 | | 0.24 | 0 |
| 9 | 0.31 | 1 | | 0.023 | 0 | | 0.1 | 0 |
| 10 | 0.068 | 0 | | 0.02 | 0 | | 0.063 | 0 |
| 11 | 0.018 | 0 | | 0 0049 | 0 | | 0.013 | 0 |
| 12 | 0.012 | 0 | | 0.00446 | 1 | | 0.012 | 0 |
| 12 | 0.012 | 0 | | 0.00440 | 1 | | 0.012 | 0 |
| 13 | 0.011 | 0 | | 0.0044 | 0 | | 0.011 | 0 |
| 14 | 0.011 | 1 | | 0.00413 | 1 | | 0.011 | 0 |
| 15 | 0.01 | 1 | | 0.004 | 0 | | 0.011 | 0 |
| 16 | 0.00638 | 1 | | 0.004 | 0 | | 0.003825 | 1 |
| 17 | 0.0062 | 0 | | 0.004 | 0 | | 0.00365 | 1 |
| 18 | 0.006 | 0 | | 0.003975 | 1 | | 0.003165 | 1 |
| 19 | 0.006 | 0 | | 0.00371 | 1 | | 0 00254 | 1 |
| 20 | 0.000 | 0 | | 0.00323 | 1 | | 0.00234 | 1 |
| 20 | 0.0059 | 0 | | 0.00323 | 1 | | 0.00234 | 1 |
| 21 | 0.0056 | 0 | | 0.00299 | 1 | | 0.00221 | 1 |
| 22 | 0.0056 | 0 | | 0.00276 | 1 | | 0.001965 | 1 |
| 23 | 0.0056 | 0 | | 0.00273 | 1 | | 0.00171 | 0 |
| 24 | 0.0055 | 0 | | 0.00264 | 1 | | 0.00165 | 0 |
| 25 | 0.0037 | 0 | | 0.00229 | 1 | | 0.00164 | 0 |
| 26 | 0.003 | 0 | | 0.00223 | 1 | | 0.00162 | 0 |
| 27 | 0.003 | 0 | | 0.00222 | 1 | | 0.0016 | 0 |
| 27 | 0.000 | 0 | | 0.00170 | 1 | | 0.0016 | 0 |
| 20 | 0.003 | 0 | | 0.00179 | 1 | | 0.0016 | 0 |
| 29 | 0.00171 | 0 | | 0.00139 | 1 | | 0.00153 | 0 |
| 30 | 0.00165 | 0 | | 0.001315 | 1 | | 0.00151 | 0 |
| 31 | 0.00164 | 0 | | 0.00129 | 1 | | 0.001495 | 0 |
| 32 | 0.00163 | 0 | | 0.00103 | 1 | | 0.00149 | 0 |
| 33 | 0.00162 | 0 | | 0.00103 | 1 | | 0.00149 | 1 |
| 34 | 0.0016 | 0 | | 0.001 | 1 | | 0.00148 | 0 |
| 35 | 0.0016 | 0 | | 0.000873 | 1 | | 0 00147 | 0 |
| 26 | 0.00150 | 0 | | 0.0008545 | 0 | | 0.001465 | 0 |
| 30 | 0.00159 | 0 | | 0.0008343 | 0 | | 0.001405 | 0 |
| 37 | 0.00153 | 0 | | 0.000824 | 0 | | 0.00145 | 0 |
| 38 | 0.00151 | 0 | | 0.000819 | 0 | | 0.00144 | 0 |
| 39 | 0.001495 | 0 | | 0.000811 | 0 | | 0.00144 | 0 |
| 40 | 0.00149 | 0 | | 0.000802 | 0 | | 0.00143 | 0 |
| 41 | 0.00148 | 0 | | 0.000798 | 0 | | 0.00143 | 0 |
| 42 | 0.00147 | 0 | | 0.000795 | 1 | | 0.00143 | 0 |
| 43 | 0.001465 | 0 | | 0.000795 | 1 | | 0.0014 | 0 |
| 40 | 0.001/15 | 0 | | 0.000784 | 1 | | 0.00130 | 0 |
| 44 | 0.00140 | 0 | | 0.000765 | | | 0.00139 | 0 |
| 45 | 0.00145 | 0 | | 0.000765 | U _ | | 0.00139 | U |
| 46 | 0.00144 | U | | 0.000/64 | | | 0.00139 | U |
| 47 | 0.00144 | 0 | | 0.000755 | 1 | | 0.00138 | 0 |
| 48 | 0.00143 | 0 | | 0.000754 | 0 | | 0.00137 | 0 |
| 49 | 0.00143 | 0 | | 0.000754 | 1 | | 0.00137 | 0 |
| 50 | 0.00143 | 0 | | 0.000747 | 0 | | 0.00136 | 0 |
| 51 | 0.0014 | 0 | | 0.000746 | 0 | | 0.00135 | 0 |
| 52 | 0.00139 | 0 | | 0.000745 | 1 | | 0.00135 | 0 |
| 52 | 0.00130 | n 0 | | 0.000725 | 0 | | 0.00135 | 0 |
| 55 | 0.00133 | 0 | | 0.000730 | 0 | | 0.00133 | 0 |
| 54 | 0.00139 | 0 | | 0.0007305 | 0 | | 0.00134 | U |
| 55 | 0.00138 | 0 | | 0.000/22 | 0 | | 0.00133 | 0 |
| 56 | 0.00137 | 0 | | 0.000719 | 1 | | 0.00133 | 0 |
| 57 | 0.00137 | 0 | | 0.000718 | 0 | | 0.00132 | 0 |
| 58 | 0.00136 | 0 | | 0.000717 | 0 | | 0.00132 | 0 |
| 59 | 0.00135 | 0 | | 0.000715 | 0 | | 0.00132 | 0 |
| 60 | 0.00135 | 0 | | 0.000715 | 0 | | 0.00132 | 1 |
| 61 | 0.00135 | <u> </u> | | 0.000702 | <u> </u> | | 0.0013 | 0 |
| 60 | 0.00134 | 0 0 | | 0.000702 | | | 0.0013 | 0 |
| 02 | 0.00134 | 0 | | 0.000097 | 0 | | 0.0013 | 0 |
| 63 | 0.00133 | U | | 0.000696 | U | | 0.00128 | U |
| 64 | 0.00133 | 0 | | 0.000694 | 1 | | 0.00123 | 0 |
| 65 | 0.00132 | 0 | | 0.000693 | 0 | | 0.00122 | 0 |
| 66 | 0.00132 | 0 | | 0.000688 | 0 | | 0.00109 | 0 |
| 67 | 0.00132 | 0 | | 0.000687 | 0 | | 0.0010695 | 0 |

| | AE | AF | AG | AH | Al | AJ | AK | AL |
|-----|-------------|---------------|----|------------|-----------|----|-----------------|-------------------|
| 1 | Naphthalene | d_Naphthalene | | Toluene | d_Toluene | | Xylenes (total) | d_Xylenes (total) |
| 68 | 0.0013 | 0 | | 0.000678 | 0 | | 0.001 | 1 |
| 69 | 0.0013 | 0 | | 0.000677 | 0 | | 0.000932 | 0 |
| 70 | 0.00128 | 0 | | 0.000675 | 0 | | 0.000763 | 0 |
| 71 | 0.00123 | 0 | | 0.000674 | 0 | | 0.0007485 | 0 |
| 72 | 0.00122 | 0 | | 0.000671 | 0 | | 0.00074 | 0 |
| 73 | 0.0010975 | 1 | | 0.000665 | 0 | | 0.000738 | 0 |
| 74 | 0.00109 | 0 | | 0.000663 | 0 | | 0.00072 | 0 |
| 75 | 0.00103 | 1 | | 0.000662 | 0 | | 0.000633 | 1 |
| 76 | 0.000945 | 1 | | 0.000662 | 0 | | 0.00061 | 0 |
| 77 | 0.000763 | 0 | | 0.00066 | 0 | | 0.0005945 | 0 |
| 78 | 0.0007485 | 0 | | 0.0006585 | 0 | | 0.000584 | 0 |
| 79 | 0.00074 | 0 | | 0.00061 | 0 | | 0.000573 | 0 |
| 80 | 0.000738 | 0 | | 0.000604 | 1 | | 0.000564 | 0 |
| 81 | 0.00072 | 0 | | 0.0006 | 1 | | 0.000552 | 0 |
| 82 | 0.00061 | 0 | | 0.000587 | 1 | | 0.000527 | 0 |
| 83 | 0.0004365 | 0 | | 0.00050875 | 1 | | 0.000517 | 0 |
| 84 | 0.000381 | 0 | | 0.000429 | 1 | | 0.0004935 | 0 |
| 85 | 0.000243 | 0 | | 0.000382 | 0 | | 0.000492 | 1 |
| 86 | 0.000239 | 0 | | 0.000374 | 0 | | 0.000483 | 0 |
| 87 | 0.000234 | 0 | | 0.00037 | 0 | | 0.00048 | 0 |
| 88 | 0.000226 | 0 | | 0.000369 | 0 | | 0.000458 | 0 |
| 89 | 0.000216 | 0 | | 0.00036 | 0 | | 0.000454 | 0 |
| 90 | 0.000212 | 0 | | 0.000353 | 0 | | 0.000438 | 0 |
| 91 | 0.00021 | 1 | | 0.000305 | 0 | | 0.000435 | 0 |
| 92 | 0.0002015 | 0 | | 0.000298 | 0 | | 0.000427 | 0 |
| 93 | 0.000197 | 0 | | 0.00028 | 0 | | 0.000426 | 0 |
| 94 | 0.000196 | 0 | | 0.00027 | 0 | | 0.000411 | 0 |
| 95 | 0.000192 | 0 | | 0.000268 | 0 | | 0.000404 | 0 |
| 96 | 0.000192 | 0 | | 0.000263 | 0 | | 0.000404 | 0 |
| 97 | 0.000187 | 0 | | 0.000253 | 0 | | 0.000397 | 0 |
| 97 | 0.000187 | 0 | | 0.000253 | 1 | | 0.000392 | 0 |
| 90 | 0.000186 | 0 | | 0.000249 | 0 | | 0.000385 | 0 |
| 100 | 0.0001805 | 0 | | 0.000249 | 0 | | 0.000382 | 0 |
| 100 | 0.0001005 | 0 | | 0.000245 | 0 | | 0.000302 | 0 |
| 101 | 0.000178 | 0 | | 0.000240 | 0 | | 0.000371 | 0 |
| 102 | 0.000175 | 0 | | 0.000230 | 0 | | 0.000364 | 0 |
| 103 | 0.000173 | 0 | | 0.000223 | 1 | | 0.000362 | 0 |
| 104 | 0.000174 | 0 | | 0.000224 | 1 | | 0.000355 | 0 |
| 105 | 0.000174 | 0 | | 0.0002203 | 0 | | 0.000333 | 0 |
| 100 | 0.000165 | 0 | | 0.000213 | 0 | | 0.000340 | 0 |
| 107 | 0.000163 | 0 | | | | | | |
| 108 | 0.000162 | 0 | | | | | | |
| 109 | 0.000159 | 0 | | | | | | |
| 110 | 0.000158 | 0 | | | | | | |
| 110 | 0.000157 | 0 | | | | | | |
| 112 | 0.000155 | 0 | | | | | | |
| 113 | 0.000155 | 0 | | | | | | |
| 114 | 0.000152 | 0 | | | | | | |
| 115 | 0.000149 | 0 | | | | | | |
| 116 | 0.000148 | 0 | | | | | | |
| 117 | 0.000145 | U | | | | | | |
| 118 | 0.000142 | 0 | | | | | | |

Attachment 2 (Continued)

Mixed Soil Samples from 0 to 10 foot Depth (Output)

| | А | В | С | D | E | F | G | Н | | J | K | | L | | | |
|----------|------------|--------------|-------------------|---------------|---------------|---|----------------------------|-------------|-------------|--------------|----------------|----------|----------|--|--|--|
| 1 | | • | • | | UCL Stat | istics for Data | a Sets with Non | -Detects | | | • | | | | | |
| 2 | | | | | | | | | | | | | | | | |
| - 2 | | User | Selected Ontions | | | | | | | | | | | | | |
| 3 | | Data/Timo | of Computation | | 17/6/2017 | 1.21.20 DM | | | | | | | | | | |
| 4 | | | | FIDUCE 5 | .17/0/2017 | 4.31.20 FIVI | | | | | | | | | | |
| 5 | | | From File | workSnee | et.xis | | | | | | | | | | | |
| 6 | | | Full Precision | OFF | | | | | | | | | | | | |
| 7 | | Confide | ence Coefficient | 95% | | | | | | | | | | | | |
| 8 | Numbe | er of Bootst | trap Operations | 2000 | | | | | | | | | | | | |
| 9 | | | | 1 | | | | | | | | | | | | |
| 10 | 1.2.4-Trir | nethvibenz | rene | | | | | | | | | | | | | |
| 11 | .,_, | | | | | | | | | | | | | | | |
| 10 | | | | | | Conorol | Statiation | | | | | | | | | |
| 12 | | | | | | General | Statistics | | | <u> </u> | | 0.1 | | | | |
| 13 | | | I otal Nu | mber of Ob | servations | 105 | | | Number of | Distinct Of | oservations | 94 | | | | |
| 14 | | | | Number | of Detects | 18 | | | N | umber of N | on-Detects | 87 | | | | |
| 15 | | | Numb | er of Distir | nct Detects | 18 | | | Number of | f Distinct N | lon-Detects | 77 | | | | |
| 16 | | | | Minim | um Detect | 1.7900E-4 | | | | Minimum | Non-Detect | 9.7000 | E-5 | | | |
| 17 | | | | Maxim | um Detect | 20 | | | | Maximum | Non-Detect | 0.1 | | | | |
| 18 | | | | Varian | ce Detects | 28.09 | | | | Percent N | on-Detects | 82.8 | 36% | | | |
| 10 | | | | Mo | an Detects | 2 295 | | | | | SD Detects | 53 | | | | |
| 19 | | | | Mad | | 2.233 | | | | | OD Detects | 0.0 | - | | | |
| 20 | | | | Iviedia | an Detects | 0.00113 | | | | | CV Detects | 2.3 | 1 | | | |
| 21 | | | | Skewne | ss Detects | 2.812 | | | | Kurto | sis Detects | 7.8 | 02 | | | |
| 22 | | | Me | an of Logg | ed Detects | -3.84 | | | : | SD of Logg | jed Detects | 4.2 | 46 | | | |
| 23 | | | | | | | | | | | | | | | | |
| 24 | | | | | No | rmal GOF Tes | st on Detects O | nly | | | | | | | | |
| 25 | | | Shan | iro Wilk Te | st Statistic | 0.511 | | - | Shapiro W | ilk GOF Te | est | | | | | |
| 20 | | | 5% Shan | iro Wilk Cri | tical Value | 0.897 | Dete | ected Data | Not Norm | al at 5% Si | anificance I | evel | | | | |
| 20 | | | 070 0100 | illiofore To | et Statistia | 0.007 | Dea | | Lillioforo | | | | | | | |
| 27 | | | E0(1 | | st Statistic | 0.374 | Date | | Lineiors | GOF Test | | I | | | | |
| 28 | | | 5% L | Illiefors Cri | tical value | 0.202 | Dete | ected Data | Not Norm | al at 5% SI | gnificance L | .evei | | | | |
| 29 | | | | D | etected Da | ata Not Norma | al at 5% Signific | cance Lev | el | | | | | | | |
| 30 | | | | | | | | | | | | | | | | |
| 31 | | | Kaplan-M | eier (KM) S | Statistics u | ing Normal Critical Values and other Nonparametric UCLs | | | | | | | | | | |
| 32 | | | | | KM Mean | 0.393 | 0.393 KM Standard Error of | | | | | | | | | |
| 33 | | | | | KM SD | 2.301 | 2.301 95% KM (BCA) | | | | | | | | | |
| 24 | | | | 95% | (M (t) LICI | 0.777 | | (stran) UCL | 0.8 | 05 | | | | | | |
| 34 | | | | 050/01 | | 0.774 | | strop t UCL | 2.0 | 47 | | | | | | |
| 35 | | | 00% | 90 /0 1 | | 0.774 | | | 2.1 | 4/ | | | | | | |
| 36 | | | 90% | KM Cheby | shev UCL | 1.087 | | | 95% | 6 KM Cheb | yshev UCL | 1.4 | 01 | | | |
| 37 | | | 97.5% | KM Cheby | shev UCL | 1.837 | | | 99% | 6 KM Cheb | yshev UCL | 2.6 | 93 | | | |
| 38 | | | | | | | | | | | | | | | | |
| 39 | | | | G | amma GO | F Tests on D | etected Observ | ations On | ly | | | | | | | |
| 40 | | | | A-D Te | st Statistic | 1.408 | | An | derson-Da | rling GOF | Test | | | | | |
| /1 | | | ! | 5% A-D Cri | tical Value | 0.924 | Detected | Data Not G | Gamma Dis | tributed at | 5% Signific | ancele | evel | | | |
| 42 | | | | K-S Te | st Statistic | 0.322 | | K | olmogorov | -Smirnov (| ROF | | | | | |
| 42 | | | | 5% K C C | | 0.022 | Detected | Data Mat C | | tributod at | 5% Cianifi- | anca ! - | | | | |
| 43 | | | ; | 5 /0 N-3 UI | | 0.229 | | | | in indred at | J /0 SIGUILIC | ance Le | 5VEI | | | |
| 44 | | | | Detecte | u Data No | i Gamma Dis | unduted at 5% S | ogniticanc | e levei | | | | | | | |
| 45 | | | | | | | _ | | | | | | | | | |
| 46 | | | | | Gamm | a Statistics o | n Detected Data | a Only | | | | | | | | |
| 47 | | | | k | hat (MLE) | 0.163 | | | k star | (bias corre | ected MLE) | 0.1 | 73 | | | |
| 48 | | | | Theta | hat (MLE) | 14.11 | | | Theta star | (bias corre | ected MLE) | 13.3 | 3 | | | |
| 49 | | | | nu | hat (MLE) | 5.855 | | | n | u star (bias | corrected) | 6.2 | 12 | | | |
| 50 | L | | | Mea | n (detects) | 2,295 | | | | (| / | | | | | |
| 50 E1 | | | | | (2010010) | | 1 | | | | | <u> </u> | | | | |
| 51 | | | | | Somme DO | C Statiation | | on Datast | | | | | | | | |
| 52 | | | 0500 | | aamma KO | S SIATISTICS U | ising imputed N | UII-Detect | | | | | | | | |
| 53 | | | GROS may n | ot be used | when data | set has > 50% | % NDs with man | y tied obse | ervations a | t multiple [| JLS | | | | | |
| 54 | | GROS m | nay not be used w | hen kstar o | of detects is | s small such a | is <1.0, especia | lly when th | e sample : | size is sma | III (e.g., <15 | -20) | | | | |
| 55 | | | For | such situati | ions, GROS | S method may | yield incorrect | values of l | JCLs and E | BTVs | | | | | | |
| 56 | | | | Т | his is espe | cially true whe | en the sample si | ize is smal | I. | | | | | | | |
| 57 | | For a | amma distributed | detected | data, BTVs | and UCLs ma | ay be computed | using gan | nma distrib | ution on KI | M estimates | | | | | |
| 52 | | 8 | | | Minimum | 1.7900F-4 | | 3 9 | | | Mean | 04 | 02 | | | |
| 50 | | | | | Maximum | 20 | | | | | Madian | 0.01 | | | | |
| 59 | | | | | | 20 | | | | | | 0.0 | E 4 | | | |
| 60 | | | | | SD | 2.311 | | | | | UV. | 5./ | 04 00 | | | |
| 61 | | | | k | nat (MLE) | 0.206 | | | k star | (bias corre | ected MLE) | 0.2 | 06 | | | |
| 62 | | | | Theta | hat (MLE) | 1.952 | | | Theta star | (bias corre | ected MLE) | 1.9 | 48 | | | |
| 63 | | | | nu | hat (MLE) | 43.2 | | | n | u star (bias | corrected) | 43.3 | 3 | | | |
| 64 | | | Adjusted Lev | vel of Signi | ficance (β) | 0.0477 | | | | | , | | | | | |
| 65 | | An | proximate Chi So | uare Value | (43.30. α) | 29.21 | | Adius | sted Chi So | uare Value | e (43.30. B) | 29.0 |)5 | | | |
| 66 | 0 | 5% Gamm | a Annrovimate III | | en n>=50) | 0 595 | 05 | % Gamma | | | when n<50 | 0 5 | 99 | | | |
| 00 | 3 | | | | ion ne -00) | 0.000 | 35 | | , ajusieu | SOL (USE V | | 0.0 | | | | |

| | Α | | В | С | E | D | E | | F | G | | Н | | | | | J | | Κ | | L | |
|-----|-----------|-------|----------|------------------|-------------|--------|-------------|----------------|--------------|--------------|---------|----------|---------|---------|-------------|--------|-------|--------|----------|----------|----------|---|
| 67 | | | | | | | | | | | | | | | | | | | | | | |
| 68 | | | | | | Es | timates | of Ga | mma Para | ameters us | sing K | M Est | imate | es | | | | | | | | |
| 69 | | | | | | ľ | Mean (Kl | N) | 0.393 | | | | | | | | | S | D (KN | 1) | 2.301 | |
| 70 | | | | | | Vari | ance (Kl | N) | 5.296 | | | | | | | S | E of | Mea | ın (KN | 1) | 0.231 | |
| 71 | | | | | | | k hat (Kl | N) | 0.0292 | | | | | | | | | k sta | ar (KN | 1) | 0.0347 | |
| 72 | | | | | | n | u hat (Kl | Ú) | 6.138 | | | | | | | | n | nu sta | ar (KN | 1) | 7.296 | |
| 73 | | | | | | thet | a hat (Kl | v) | 13.46 | | | | | | | | the | ta sta | ar (KN | ń. | 11.32 | |
| 74 | | | | 80% | aamma | perce | entile (KI | (N | 0.0106 | | | | | 90% | % aa | mma | perc | centi | le (KN | 1) | 0.324 | |
| 75 | | | | 95% | namma | nerce | entile (Kl | (N) | 1 722 | | | | | 999 | <u>% да</u> | mma | ner | enti | le (KM | 1) | 9 738 | |
| 75 | | | | 0070 | gamma | poro | | •••) | | | | | | | | ., | 0.700 | | | | | |
| 70 | | | | | | | 6 | mma | Kanlan-M | laiar (KM) | Stati | etice | | | | | | | | | | |
| 77 | | | Δ. | anrovimata Chi | Caucra | Valu | Ga (7.20 | aiiiiiia ~\ | | | Statis | auca | A dive | atad C | hi C | | | | 7 20 0 | | 2 206 | |
| 78 | 050/ | 0 | A | proximate Chi | | | e (7.30, | α) ο | 2.334 | 0 | | | Auju | sted C | | | e vai | ue (/ | /.30, p | 2) | 2.290 | |
| /9 | 95% | Gam | па Ар | proximate Kivi- | OCL (us | se wn | en n>-5 | 0) | 1.23 | 9 | 5% G | amma | Auju | isteu r | | | use | wher | 111<50 | " | 1.20 | |
| 80 | | | | | | | | | | | | | - | | | | | | | | | |
| 81 | | | | | | LC | gnorma | GOF | · lest on L | | Dser | vations | s On | ly | | | | | | | | |
| 82 | | | | Sh | apiro Wi | ilk Te | st Statis | tic | 0.834 | | | | S | Shapiro | o Wil | k GC | DF Te | est | | | | |
| 83 | | | | 5% Sha | apiro Wi | lk Cri | tical Val | Je | 0.897 | | Detec | ted Da | ata N | ot Log | norn | nal at | 5% | Sign | ifican | ce l | _evel | |
| 84 | | | | | Lilliefo | rs Te | st Statis | tic | 0.308 | | | | | Lillie | fors | GOF | Tes | t | | | | |
| 85 | | | | 5% | 6 Lilliefor | rs Cri | tical Val | Je | 0.202 | | Detec | ted Da | ata N | ot Log | norn | nal at | 5% | Sign | ifican | ce l | _evel | |
| 86 | | | | | | Def | tected D | ata No | ot Lognori | mal at 5% | Signi | ficanc | e Lev | vel | | | | | | | | |
| 87 | | | | | | | | | | | | | | | | | | | | | | |
| 88 | | | | | | Lo | gnormal | ROS | Statistics | Using Imp | outed | Non-D | Detec | ts | | | | | | | | |
| 89 | | | | | Mean ir | n Oriç | ginal Sca | le | 0.393 | | | | | | | Me | an ir | n Log | g Scal | е | -16.34 | |
| 90 | | | | | SD ir | n Orig | ginal Sca | le | 2.312 | | | | | | | | SD ir | n Log | g Scal | e | 6.175 | |
| 91 | | ç | 95% t | UCL (assumes | normali | ity of | ROS dat | a) | 0.768 | | | | | 95% I | Perc | entile | Boo | otstra | ap UC | L | 0.809 | |
| 92 | | | | 9! | 5% BCA | Boot | tstrap U0 | CL | 0.991 | | | | | | ! | 95% | Boot | strar | t UC | L | 2.125 | |
| 93 | | | | | 95% H- | UCL | (Loa RO | S) 34 | 433 | | | | | | | | | • | | | | |
| 94 | | | | | | | (-3- | - / - | | | | | | | | | | | | | | |
| 95 | | | | Statis | stics usi | na Kl | M estima | ates o | n Loaaed | Data and | Assu | mina L | oand | ormal I | Distr | ibutio | on | | | | | - |
| 96 | | | | | KM | 1 Mea | n (logge | d) - | -8 247 | | | | | | | | KM | l Geo | o Mea | n 2 | 6203F-4 | |
| 97 | | | | | | KMS | D (logge | d) | 2 651 | | | | | 95% (| Critic | alH | Valu | ie (K | M-L or | 1) | 4 127 | |
| 00 | | | | KM Standard | I Error of | f Mea | n (logge | d) | 0.269 | | | | | 0070 | QI QI | 5% H | | | | <u>"</u> | 0.0258 | |
| 00 | | | | | k k | KMS | D (logge | d) | 2 651 | | | | | 95% (| Critic | al H | Valu | e (K | M-Log | יי ו) | 4 127 | |
| 100 | | | | KM Standard | I Error of | f Mea | n (logge | d) | 0.269 | | | | | 0070 | onac | Jaim | Valu | | | ,, | 1.127 | |
| 100 | | | | | | i wiec | in (logge | u) | 0.203 | | | | | | | | | | | | | |
| 101 | | | | | | | | | 0 /2 0 | Statiation | | | | | | | | | | | | |
| 102 | | | | 2/ 10 | Normal | | | | 0023 | | | | | 1 21 | | rono | form | od | | | | |
| 103 | | | | | Meenir | - 0 | rinal Car | | 0.204 | | | | L | | og-i | Ma | | | - 600 | | 7 665 | |
| 104 | | | | | Mean Ir | | Jinal Sca | | 0.394 | | | | | | | IVIE | | | | e | -7.000 | |
| 105 | | | | 050/ +11/ | | | | | 2.312 | | | | | | | | | | | e I | 2.092 | |
| 106 | | | | 95% t U | JL (ASSL | umes | normain | y) | 0.769 | | | | | | | 5 | 15% | H-5t | at UC | L | 0.053 | |
| 107 | | | | DL/2 | is not a | recol | nmende | a met | tnoa, prov | ided for co | ompar | isons | and | nistori | cal r | easo | ns | | | | | |
| 108 | | | | | | | | | | | | <u></u> | | | | | | | | | | |
| 109 | | | | | | | Nonpar | ametr | ric Distribu | | UCL | Statist | tics | | | | | | | | | |
| 110 | | | | | Data | do no | ot follow | a Dis | cernible D | istribution | at 59 | % Sign | nifica | nce Le | evel | | | | | | | |
| 111 | | | | | | | | | | | | | | | | | | | | | | |
| 112 | | | | | | | | | Suggested | UCL to U | se | | | | | | | | | | | |
| 113 | | | | 99% | % KM (C | heby | shev) U(| Ľ | 2.693 | | | | | | | | | | | | | |
| 114 | | _ | | | | | | | | | | | | | | | | | | | | |
| 115 | | Note | : Sug | gestions regard | ding the | selec | tion of a | 95% l | UCL are p | rovided to | help t | he use | er to s | select | the r | nost | appro | opria | te 95 | %ι | JCL. | |
| 116 | | | | F | Recomm | enda | tions are | e base | ed upon da | ta size, da | ta dis | tributio | on, ar | nd ske | wne | SS. | | | | | | |
| 117 | | The | ese rec | commendations | s are bas | sed u | pon the | results | s of the sin | nulation st | udies | summ | narize | ed in S | ingh | , Mai | chle, | and | Lee (| 200 | 06). | |
| 118 | Н | lowev | ver, sir | nulations result | ts will no | ot cov | er all Re | al Wo | orld data se | ets; for add | litiona | l insigl | ht the | user | may | want | to c | onsu | ılt a st | atis | stician. | |
| 119 | | | | | | | | | | | | | | | | | | | | _ | | |
| 120 | 1,2-Dibro | moet | thane | | | | | | | | | | | | | | | | | | | |
| 121 | | | | | | | | _ | | | _ | | | | | | _ | | | | | |
| 122 | | | | | | | | | General | Statistics | | | | | | | | | | | | |
| 123 | | | | Total N | Number o | of Ob | servatio | ns 1 | 105 | | | | Ν | lumbe | r of [| Distin | ct O | bser | vation | s | 93 | |
| 124 | | | | | Nur | mber | of Detec | ts | 0 | | | | | | Nu | mbei | of N | lon-[| Detect | s | 105 | |
| 125 | | | | Nur | mber of I | Distir | nct Detec | ts | 0 | | | | | Numbe | er of | Disti | nct N | lon-[| Detect | s | 93 | |
| 126 | | | | | | | | | | | | | | | | | | | | | | |
| 127 | | | Wa | arning: All obs | ervation | s are | Non-De | tects | (NDs), the | erefore all | statis | stics a | nd es | stimate | es sh | nould | also | be | NDs! | | | |
| 128 | | | Spec | ifically, sample | e mean. | UCL | .s, UPLs | , and | other stat | istics are a | also N | IDs lyi | ing b | elow tl | he la | irges | t det | ectio | on lim | it! | | |
| 129 | | The I | Projec | t Team may de | ecide to | use | alternati | ve site | e specific | values to e | estim | ate en | viron | menta | al pa | rame | ters | (e.a. | , EPC |), B | TV). | |
| 130 | | | | , | | | | | | | | | | | • | | - | | | | • | |
| 131 | L | | | | The | e dat | a set for | varia | ble 1.2-Di | bromoethe | ane w | as not | proc | essed | 11 | | | | | | | |
| 132 | l | | | | | | | | | | | | F | | | | | | | | | |
| 122 | <u> </u> | | | | | | | | | | | | | | | | | | | | | |
| 12/ | 1.2-Dich | ornet | hane | | | | | | | | | | | | | | | | | | | |
| 125 | ., | 5.001 | | | | | | | | | | | | | | | | | | | | |
| 100 | | | | | | | | | General | Statistics | | | | | | | | | | | | |

| | А | В | С | D E | | F | G | Н | | J | K | L |
|-----|------------|-------------|----------------------|-----------------------|------|----------------|----------------------|---------------|--------------|---------------------------------------|---------------|----------------|
| 137 | | | Total Nu | mber of Observati | ons | 105 | 05 Number of | | | Distinct Ob | servations | 91 |
| 138 | | | | Number of Dete | ects | 0 | | | Nu | mber of N | on-Detects | 105 |
| 139 | | | Numt | per of Distinct Dete | ects | 0 | | | Number of | Distinct N | on-Detects | 91 |
| 140 | | | | | | | | | | | | |
| 141 | | W | /arning: All obser | vations are Non-C |)ete | cts (NDs), the | erefore all statis | stics and e | stimates sl | nould also | be NDs! | |
| 142 | | Spe | cifically, sample i | mean. UCLs. UPL | s. a | and other stat | istics are also N | NDs Ivina b | pelow the la | araest dete | ection limit! | |
| 143 | | The Proie | ct Team may dec | ide to use alterna | tive | site specific | values to estimation | ate enviro | nmental pa | rameters (| e.a. EPC. | BTV). |
| 143 | | | | | | | raidee to count | | | | (o.g., o, | |
| 144 | | | | The data set fr | n v | ariable 1 2-Di | chloroethane w | as not pro | cessedi | | | |
| 140 | | | | | / •• | | | as not pro | 003304: | | | |
| 140 | | | | | | | | | | | | |
| 147 | 1_Mothvi | nanhthalai | no | | | | | | | | | |
| 140 | 1-weary | парпалаю | | | | | | | | | | |
| 149 | | | | | | General | Statistics | | | | | |
| 150 | | | Total Nu | mber of Observati | one | 12 | | | Number of | Distinct Ob | servations | 8 |
| 151 | | | Total Nu | Number of Det | | 1 | | | | mbor of N | on Dotooto | 11 |
| 152 | | | Nume | Number of Dete | | 1 | | | Number of | | on Detects | 7 |
| 153 | | | Num | | cis | 1 | | | Number of | DISUNCEN | UII-Delecis | / |
| 154 | | Momine | | data value was d | - | | | officiana) al | hauld nat h | | avah a dat | |
| 155 | It is sugg | warning: | Only one distinct | | | sted! Prouch | Or any other s | onware) si | | e useu on | such a dau | |
| 156 | it is sugg | jested to u | ise alternative site | specific values of | Jete | ermined by the | e Project Team | to estimat | e environn | iental para | ameters (e. | J., EPC, BTV). |
| 157 | | | | The data ant fai | | dabla d Mash | | | | | | |
| 158 | | | | | va | nable I-Meth | yinaphtnaiene v | was not pro | ocessea! | | | |
| 159 | | | | | | | | | | | | |
| 160 | | | | | | | | | | | | |
| 161 | 2-Methyl | naphthalei | ne | | | | | | | | | |
| 162 | | | | | | | | | | | | |
| 163 | | | | | | General | Statistics | | | | | |
| 164 | | | I otal Nu | mber of Observation | ons | 117 | | | Number of | Distinct Ob | servations | 65 |
| 165 | | | | Number of Dete | ects | 9 | | | Nu | imber of N | on-Detects | 108 |
| 166 | | | Numb | per of Distinct Dete | ects | 9 | | | Number of | Distinct N | on-Detects | 57 |
| 167 | | | | Minimum De | tect | 0.012 | | | | Minimum N | Non-Detect | 0.0058 |
| 168 | | | | Maximum De | tect | 16 | | | I | Maximum N | Non-Detect | 0.66 |
| 169 | | | | Variance Dete | ects | 47.36 | | | | Percent N | on-Detects | 92.31% |
| 170 | | | | Mean Dete | ects | 5.873 | | | | e e e e e e e e e e e e e e e e e e e | SD Detects | 6.882 |
| 171 | | | | Median Dete | ects | 1.5 | | | | (| CV Detects | 1.172 |
| 172 | | | | Skewness Dete | ects | 0.531 | | | | Kurtos | sis Detects | -1.893 |
| 173 | | | Me | an of Logged Dete | ects | -0.278 | | | S | SD of Logg | ed Detects | 2.968 |
| 174 | | | | | | | | | | | | |
| 175 | | | | | No | rmal GOF Te | st on Detects O | nly | | | | |
| 176 | | | Shap | oiro Wilk Test Stati | stic | 0.786 | | | Shapiro Wi | lk GOF Te | st | |
| 177 | | | 5% Shap | iro Wilk Critical Va | lue | 0.829 | Det | ected Data | Not Norma | al at 5% Sig | gnificance L | .evel |
| 178 | | | | _illiefors Test Stati | stic | 0.293 | | | Lilliefors | GOF Test | | |
| 179 | | | 5% L | illiefors Critical Va | lue | 0.274 | Det | ected Data | Not Norma | al at 5% Sig | gnificance L | .evel |
| 180 | | | | Detecter | d Da | ata Not Norm | al at 5% Signific | cance Lev | el | | | |
| 181 | | | | | | | | | | | | |
| 182 | | | Kaplan-M | eier (KM) Statistic | s u | sing Normal (| Critical Values a | and other I | Nonparame | etric UCLs | | |
| 183 | | | | KM M | ean | 0.458 | | | KM St | andard Err | or of Mean | 0.234 |
| 184 | | | | KM | SD | 2.384 | | | | 95% KM (| (BCA) UCL | 0.875 |
| 185 | | | | 95% KM (t) L | JCL | 0.846 | | 95% | 6 KM (Perce | entile Boot | strap) UCL | 0.854 |
| 186 | | | | 95% KM (z) l | JCL | 0.843 | | | 95% | KM Boots | strap t UCL | 1.078 |
| 187 | | | 90% | KM Chebyshev L | JCL | 1.159 | | | 95% | KM Cheby | yshev UCL | 1.477 |
| 188 | | | 97.5% | , KM Chebyshev L | JCL | 1.918 | | | 99% | KM Cheby | yshev UCL | 2.784 |
| 189 | | | | | | | | | | | | |
| 190 | | | | Gamma | GC | F Tests on D | etected Observ | ations On | ly | | | |
| 191 | | | | A-D Test Stati | stic | 0.655 | | An | derson-Da | rling GOF | Test | |
| 192 | | | | 5% A-D Critical Va | lue | 0.802 | Detected da | ata appear | Gamma Di | stributed a | t 5% Signifi | cance Level |
| 193 | | | | K-S Test Stati | stic | 0.222 | | K | olmogorov- | Smirnov G | BOF - | |
| 194 | | | | 5% K-S Critical Va | lue | 0.3 | Detected da | ata appear | Gamma Di | stributed a | t 5% Signifi | cance Level |
| 195 | | | | Detected data a | ppe | ar Gamma D | stributed at 5% | Significar | nce Level | | <u> </u> | |
| 196 | | | | | | | | | | | | |

| | Α | в | С | D | | Ξ | F | G | Н | | J | К | L | | | |
|---|----------|---------|--------------------------------------|---|--|---|---|--|---|--------------------------------------|---|--|--------------------------|--|--|--|
| 107 | | 5 | | D | | - amm | a Statistics o | n Detected Dat | a Only | <u> </u> | v | | E | | | |
| 197 | | | | | | | 0.001 | | a only | l. atau | (h:== ==== | | 0.005 | | | |
| 198 | | | | | k nat (| VILE) | 0.331 | | | K Star | (bias corre | ected MLE) | 0.295 | | | |
| 199 | | | | Thet | a hat (| MLE) | 17.73 | | | Theta star | (bias corr | ected MLE) | 19.92 | | | |
| 200 | | | | n | u hat (l | MLE) | 5.962 | | | n | u star (bias | s corrected) | 5.308 | | | |
| 201 | | | | Me | an (det | ects) | 5 873 | | | | | | | | | |
| 201 | | | | | | | 0.070 | | | | | | | | | |
| 202 | | - | | | | | | | | | | | | | | |
| 203 | | | | | Gamm | a RO | S Statistics u | sing imputed N | Ion-Detect | IS | | | | | | |
| 204 | | | GROS may n | ot be use | d when | data | set has > 50% | has > 50% NDs with many tied observations at multiple DLs | | | | | | | | |
| 205 | GR | OS m | ay not be used w | vhen kstar | r of det | ects is | s small such a | mall such as <1.0, especially when the sample size is small (e.g., <15 | | | | | | | | |
| 206 | | | For | such situa | tions (| GROS | S method may | vield incorrect | values of l | JCI s and F | BTVs | | | | | |
| 200 | | | | | This is | 0000 | cially true who | n the sample s | izo is smo | | | | | | | |
| 207 | | | | | 11115 15 | espe | | | | | | | | | | |
| 208 | | For ga | amma distributed | | i data, | BIVS | and UCLs ma | ay be computed | using gan | nma distrib | ution on Ki | vi estimates | | | | |
| 209 | | | | | Mini | mum | 0.01 | | | | | Mean | 0.461 | | | |
| 210 | | | | | Maxi | mum | 16 | | | | | Median | 0.01 | | | |
| 211 | | | | | | SD | 2.393 | | | | | CV | 5.192 | | | |
| 212 | | - | | | k hat (| MIE) | 0 209 | | | k star | (hias corr | ected MLE) | 0.209 | | | |
| 212 | | - | | The | | | 0.200 | | | These star | | | 0.200 | | | |
| 213 | | | | The | a nat (i | | 2.200 | | | Theta star | (bias com | | 2.203 | | | |
| 214 | | | | n | u hat (| MLE) | 48.89 | | | n | u star (bias | s corrected) | 48.97 | | | |
| 215 | | | Adjusted Le | vel of Sigi | nificanc | ;e (β) | 0.0479 | | | | | | | | | |
| 216 | | App | roximate Chi So | uare Valu | ie (48.9 | 97, α) | 33.91 | | Adju | sted Chi Sc | uare Valu | e (48.97, β) | 33.75 | | | |
| 217 | 95% G | amma | Approximate U | CL (use w | , hen n> | =50) | 0.666 | 95 | % Gamma | Adjusted I | UCL (use v | when n<50) | 0.669 | | | |
| 217 | | | , approximate e | 02 (000 | | , | 0.000 | | | ., ajaotoa | | | | | | |
| ∠1ŏ | - | | - | | | | 0 | maters and a state | 14 E-+' | | | | - | | | |
| 219 | | | | E | sumat | es of | Gamma Para | meters using K | INI Estima | les | | | | | | |
| 220 | | | | | Mean | (KM) | 0.458 | | | | | SD (KM) | 2.384 | | | |
| 221 | | | | Va | riance | (KM) | 5.682 | | | | SE of | Mean (KM) | 0.234 | | | |
| 222 | | | | | k hat | (KM) | 0.0369 | | | | | k star (KM) | 0.0417 | | | |
| 223 | | - | | | nu hat | (KM) | 8 64 | | | | n | u star (KM) | 9 752 | | | |
| 223 | | | | the | to hot | | 12 / 1 | | | | that | ta star (KM) | 10.00 | | | |
| 224 | | | | LITE | | | 12.41 | | | | linei | | 10.99 | | | |
| 225 | | | 80% ga | amma per | centile | (KM) | 0.0302 | | | 90% ga | amma perc | centile (KM) | 0.533 | | | |
| 226 | | | 95% ga | amma per | centile | (KM) | 2.248 | | | 99% ga | amma perc | entile (KM) | 10.67 | | | |
| 227 | | | | | | | | | | | | | | | | |
| 228 | | | | | | Gam | ma Kaplan-M | eier (KM) Stati | stics | | | | | | | |
| 220 | | Δr | nrovimate Chi S | Soliare Va | <u>م (0</u> | 75 a) | 3 787 | | ou.oo انه۵ | usted Chi S | auare Val | up (9 75 B) | 3 7/1 | | | |
| 229 | 050/ 0 | | | | lue (3.7 | 5, u) | 1.170 | 050/ 0 | Auj | | | ue (5.75, p) | 1.101 | | | |
| 230 | 95% Gamn | na App | proximate Kivi-U | CL (use w | nen n> | ·=50) | 1.179 | 95% G | amma Adj | usted Kivi- | JCL (use v | when h<50) | 1.194 | | | |
| 231 | | | | | | | | | | | | | | | | |
| 232 | | | | L | .ognor | mal G | OF Test on D | Detected Obser | vations Or | nly | | | | | | |
| 233 | | | Shap | oiro Wilk T | est Sta | atistic | 0.852 | | | Shapiro W | ilk GOF Te | əst | | | | |
| 23/ | | - | 5% Shan | iro Wilk C | ritical \ | /alue | 0.829 | Detecte | d Data an | near Loono | ormal at 5% | 6 Significand | e l evel | | | |
| 204 | | | | | The oct Sta | tistic | 0.020 | 2010010 | | Lilliofore | GOE Tool | e olgriniouric | | | | |
| 235 | | | | | 651 012 | 10300 | 0.233 | Datast | | LINCIUS | GOF Tes | (<u>O'aa</u> ifaaaa | | | | |
| 236 | | | 5% L | -Illietors C | ritical v | /aiue | 0.274 | Detecte | ed Data ap | pear Logno | ormai at 5% | 6 Significand | e Level | | | |
| 237 | | | | Det | ected I | Data a | appear Logno | ormal at 5% Sig | nificance | Level | | | | | | |
| 238 | | | | | | | | | | | | | | | | |
| 239 | | - | | L | ognorn | nal R | OS Statistics | Using Imputed | Non-Dete | cts | | | | | | |
| 240 | | | N | lean in Or | iginal S | Scale | 0 452 | <u> </u> | | | Mean ir | n Log Scale | -13 19 | | | |
| 240 | | - | | | riginal | Scalo | 2 305 | | | | SD ir | | 5.038 | | | |
| 241 | | | | 30 11 01 | | Scale | 2.395 | | | | 301 | TLUY Scale | 5.036 | | | |
| 242 | 9 | /5% t L | ICL (assumes n | ormality o | f ROS | data) | 0.819 | | | 95% Per | centile Boo | otstrap UCL | 0.861 | | | |
| 243 | | | 95% | 6 BCA Bo | otstrap | UCL | 0.997 | | | | 95% Boot | strap t UCL | 1.101 | | | |
| 244 | | | 95 | 5% H-UCI | (Log I | ROS) | 19.65 | | | | | | | | | |
| 245 | | | | | | | | | | | | | | | | |
| 246 | | | Statisti | cs usina l | (M est | imate | s on Loaaed | Data and Assu | mina Loar | ormal Dist | ribution | | | | | |
| 247 | | | | KM MA | an (loc | | _4 725 | | 9 - 091 | | | Geo Moon | 0 00887 | | | |
| 24/ | | | | | | geu) | 1.720 | | | 050/ 000 | | | 0.00007 | | | |
| 248 | | | | KM | SD (100 | yged) | 1.529 | | | 95% Criti | cai H Valu | e (NIVI-LOG) | 2.//1 | | | |
| 249 | | | KM Standard E | Error of Me | ean (log | gged) | 0.156 | | | 9 | 5% H-UCI | _ (KM -Log) | 0.0423 | | | |
| 250 | | | | KM | SD (log | gged) | 1.529 | | | 95% Criti | cal H Valu | e (KM-Log) | 2.771 | | | |
| 251 | | | KM Standard E | Error of Me | ean (loo | ged) | 0.156 | | | | | | | | | |
| 252 | | | | | | - / | 1 | 1 | | | | | | | | |
| 252 | | | | | | | | | | | | | | | | |
| 104 | | | | | | | פ מי וח | tatietice | | | | | | | | |
| 200 | | | | | | | DL/2 S | tatistics | | | F ara a f | - 4 | | | | |
| 253 | | | DL/2 N | ormal | | | DL/2 S | tatistics | | DL/2 Log-1 | Fransform | ed | | | | |
| 253 254 255 | | | DL/2 N | ormal Mean in Or | iginal (| Scale | DL/2 S | itatistics | | DL/2 Log- | Fransform Mean ir | ed n Log Scale | -3.697 | | | |
| 255 255 256 | | | DL/2 N | ormal /lean in Or SD in Or | iginal s | Scale Scale | DL/2 S 0.498 2.388 | itatistics | | DL/2 Log- | Fransform Mean ir SD ir | ed n Log Scale n Log Scale | -3.697 | | | |
| 255 255 255 256 | | | DL/2 No M 95% t UCI | ormal Iean in Or SD in Or | iginal (iginal (| Scale Scale | DL/2 S 0.498 2.388 0.864 | | | DL/2 Log- | Fransform Mean ir SD ir 95% | ed 1 Log Scale 1 Log Scale H-Stat UCI | -3.697 1.833 0.227 | | | |
| 253 254 255 256 257 | | | DL/2 No M 95% t UCL | ormal Mean in Or SD in Or (Assume | iginal (iginal (s norm | Scale Scale ality) | DL/2 S 0.498 2.388 0.864 method_provi | ded for compet | tisons and | DL/2 Log- | Fransform Mean ir SD ir 95% | ed n Log Scale n Log Scale H-Stat UCL | -3.697 1.833 0.227 | | | |
| 253 254 255 256 257 258 | | | DL/2 No N 95% t UCL DL/2 is | ormal Mean in Or SD in Or (Assume not a reco | riginal S riginal S s norm ommer | Scale Scale ality) ided i | DL/2 S 0.498 2.388 0.864 method, provi | itatistics ded for compar | isons and | DL/2 Log- | Fransform Mean ir SD ir 95% | ed n Log Scale n Log Scale H-Stat UCL | -3.697 1.833 0.227 | | | |
| 255 255 255 256 257 258 259 | | | DL/2 No N 95% t UCL DL/2 is | ormal Mean in Or SD in Or (Assume not a reco | iginal § iginal § s norm ommer | Scale Scale ality) nded i | DL/2 S 0.498 2.388 0.864 method, provi | ded for compar | isons and | DL/2 Log- | Transform Mean ir SD ir 95% reasons | ed n Log Scale n Log Scale H-Stat UCL | -3.697 1.833 0.227 | | | |
| 253 254 255 256 257 258 259 260 | | | DL/2 No M 95% t UCL DL/2 is | ormal /lean in Or SD in Or (Assume not a reco | iginal S iginal S s norm ommer Non | Scale Scale Iality) Inded I | DL/2 S 0.498 2.388 0.864 method, provi | ded for compar tion Free UCL | risons and Statistics | DL/2 Log- | Transform Mean ir SD ir 95% | ed h Log Scale h Log Scale H-Stat UCL | -3.697 1.833 0.227 | | | |
| 253 254 255 256 257 258 259 260 261 | | | DL/2 Ni M 95% t UCL DL/2 is | ormal Mean in Or SD in Or (Assume not a reco Detecte | riginal S riginal S Is norm Dommer Non d Data | Scale Scale ality) nded i paran appe | DL/2 S 0.498 2.388 0.864 method, provi netric Distribu | ded for compar tion Free UCL istributed at 5% | isons and Statistics 5 Significa | DL/2 Log- historical | Transform Mean ir SD ir 95% | ed h Log Scale h Log Scale H-Stat UCL | -3.697 1.833 0.227 | | | |
| 255 254 255 256 257 258 259 260 261 262 | | | DL/2 Ni M 95% t UCL DL/2 is | ormal Mean in Or SD in Or (Assume not a reco Detecte | iginal S iginal S s norm ommer Non d Data | Scale Scale ality) nded i paran appe | DL/2 S 0.498 2.388 0.864 method, provi netric Distribu par Gamma D | ded for compar tion Free UCL istributed at 5% | risons and Statistics 5 Significa | DL/2 Log- historical nce Level | Transform Mean ir SD ir 95% | ed h Log Scale h Log Scale H-Stat UCL | -3.697 1.833 0.227 | | | |
| 255 254 255 256 257 258 259 260 261 262 262 | | | DL/2 N N 95% t UCL DL/2 is | ormal Mean in Or SD in Or (Assume not a rec Detecte | iginal S iginal S s norm ommer Non d Data | Scale Scale ality) nded i paran appe | DL/2 S 0.498 2.388 0.864 method, provi netric Distribu nar Gamma D | ded for compar tion Free UCL istributed at 5% | isons and Statistics Significa | DL/2 Log- historical | Transform Mean ir SD ir 95% | ed h Log Scale h Log Scale H-Stat UCL | -3.697 1.833 0.227 | | | |
| 253 254 255 256 257 258 259 260 261 262 263 | | | DL/2 N M 95% t UCL DL/2 is | ormal Mean in Or SD in Or (Assume not a reco Detecte | iginal S iginal S is norm ommer Non d Data | Scale Scale ality) nded i paran appe | DL/2 S 0.498 2.388 0.864 method, provi metric Distribu par Gamma D Suggested | tatistics ded for compar tion Free UCL istributed at 5% UCL to Use | isons and Statistics 5 Significa | DL/2 Log- | Transform Mean ir SD ir 95% | ed h Log Scale h Log Scale H-Stat UCL | -3.697 1.833 0.227 | | | |

| | ۸ | В | C | D | | F | G | Ц | 1 | 1 1 | K | | | | | |
|---------|--|--|-------------------|---------------|--|------------------|--------------------|---------------|-----------------|---------------|---------------|-------------|--|--|--|--|
| 0.05 | ~ | Б | C | D | L | 1 | G | 11 | | 5 | N. | L | | | | |
| 265 | | | | | | | | | | | | | | | | |
| 266 | | Note: Sugg | gestions regardin | ig the seled | ction of a 95 | 5% UCL are p | rovided to help | the user to | select the | most appro | priate 95% | UCL. | | | | |
| 267 | | | Re | commenda | ations are b | ased upon da | ita size, data dis | stribution, a | ind skewne | ess. | | | | | | |
| 268 | | These rec | commendations a | are based u | upon the res | sults of the sir | nulation studies | summariz | ed in Sinał | n. Maichle. | and Lee (20 | 06). | | | | |
| 200 | Ц | | nulations results | will not on | | World data or | te: for addition | l incight th | | wont to or | | isticion | | | | |
| 269 | п | owever, sin | | WIII HOL COV | | | | a msigni ui | e user may | | | | | | | |
| 270 | | | | | | | | | | | | | | | | |
| 271 | Benzene | | | | | | | | | | | | | | | |
| 272 | | | | | | | | | | | | | | | | |
| 273 | | | | | | Genera | Statistics | | | | | | | | | |
| 270 | | | Total Nu | mbor of Ot | neorvatione | 105 | | | Number of | Distinct Of | servations | 98 | | | | |
| 274 | | | Total Nu | | | 105 | | | | | | 50 | | | | |
| 275 | | | | Number | r of Detects | 41 | | | N | umber of N | on-Detects | 64 | | | | |
| 276 | | | Numb | per of Disti | nct Detects | 41 | | | Number of | f Distinct N | on-Detects | 57 | | | | |
| 277 | | | | Minim | num Detect | 1.3100E-4 | | | | Minimum I | Non-Detect | 9.8000E-5 | | | | |
| 278 | | | | Maxim | num Detect | 0.00325 | | | | Maximum I | Non-Detect | 0.276 | | | | |
| 279 | | | | Varian | nce Detects | 6.3136E-7 | | | | Percent N | on-Detects | 60.95% | | | | |
| 275 | | | | Mo | an Dotocto | 0.6083E / | | | | | SD Detects | 7 04585 4 | | | | |
| 280 | | | | | | 3.0303∟-4 | | | | | JD Delects | 7.34302-4 | | | | |
| 281 | | | | Medi | ian Detects | 7.5000E-4 | | | | (| JV Detects | 0.819 | | | | |
| 282 | | | | Skewne | ess Detects | 1.412 | | | | Kurto | sis Detects | 1.325 | | | | |
| 283 | | | Me | an of Logg | ed Detects | -7.245 | | | ; | SD of Logg | ed Detects | 0.807 | | | | |
| 284 | | | | | | | 1 | | | | | | | | | |
| 205 | | | | | No | rmal GOF Te | st on Detects O | nlv | | | | | | | | |
| 200 | | | Chor | | nt Ctatiatia | 0.921 | | ,y | Shopiro W | | | | | | | |
| 286 | | | Shap | | est Statistic | 0.631 | | | Shapiro w | | 181 | <u> </u> | | | | |
| 287 | | | 5% Shap | iro Wilk Cr | itical Value | 0.941 | Det | ected Data | Not Norm | al at 5% Si | gnificance L | .evel | | | | |
| 288 | | | I | Lilliefors Te | est Statistic | 0.211 | | | Lilliefors | GOF Test | : | | | | | |
| 289 | | | 5% L | ected Data | Not Norm | al at 5% Si | gnificance L | evel | | | | | | | | |
| 290 | | | | 0 | Detected Da | ata Not Norm | al at 5% Signifi | cance Lev | el | | | | | | | |
| 200 | | | | | | | | | | | | | | | | |
| 291 | Kaplan-Mejer (KM) Statistics using Normal Critical Values and other Nonparametric UCLs | | | | | | | | | | | | | | | |
| 292 | | Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs | | | | | | | | | | | | | | |
| 293 | 293 KM Mean 5.9356E-4 KM Standard Error of Mean | | | | | | | | | | | | | | | |
| 294 | | | | | KM SD | 6.4088E-4 | | | | 95% KM | (BCA) UCL | 7.1342E-4 | | | | |
| 295 | | | | 95% | KM (t) UCL | 7.1119E-4 | | 95% | 6 KM (Perc | entile Boot | strap) UCL | 7.1317E-4 | | | | |
| 296 | | | | 95% k | KM (z) UCL | 7.1014E-4 | | | 95% | 6 KM Boot | strap t UCL | 7.2480E-4 | | | | |
| 200 | | | 90% | KM Cheb | | 8 0618E-4 | | | 95% | KM Cheh | vshev UCI | 9 0249F-4 | | | | |
| 297 | | | 07.6% | KM Chab | | 0.00102 4 | | | 000/ | KM Chab | yohev UCL | 0.0012 | | | | |
| 298 | | | 97.5% | | ysnev UCL | 0.00104 | | | 99% | | ysnev UCL | 0.0013 | | | | |
| 299 | | | | | | | | | | | | | | | | |
| 300 | | | | C | Gamma GC | F Tests on D | etected Observ | ations On | ly | | | | | | | |
| 301 | | | | A-D Te | est Statistic | 0.529 | | An | derson-Da | rling GOF | Test | | | | | |
| 302 | | | | 5% A-D Cr | itical Value | 0.762 | Detected da | ata appear | Gamma D | istributed a | at 5% Sianifi | cance Level | | | | |
| 303 | | | | K-S Te | est Statistic | 0 1 1 6 | | K | Imogorov | -Smirnov (| OF | | | | | |
| 303 | | | | | | 0.110 | Detected d | oto oppoor | | istributed a | + 5% Signifi | | | | | |
| 304 | | | | 5% K-5 U | | 0.14 | Delected da | | Gamma D | Istributed a | it 5% Signin | | | | | |
| 305 | | | | Detected | i data appe | ar Gamma D | istributed at 5% | Significal | nce Level | | | | | | | |
| 306 | | | | | | | | | | | | | | | | |
| 307 | | | | | Gamm | a Statistics o | n Detected Dat | a Only | | | | | | | | |
| 308 | | | | ŀ | k hat (MLE) | 1.777 | | | k star | · (bias corre | ected MLE) | 1.664 | | | | |
| 309 | | | | Theta | hat (MLE) | 5.4563E-4 | | | Theta star | (bias corre | ected MLE) | 5.8295E-4 | | | | |
| 210 | | | | ni | Lbat (MLE) | 1/5.8 | | | n | u star (hias | corrected) | 136 / | | | | |
| 310 | | | | iiu ۱۰ | $\frac{1}{2} \frac{1}{2} \frac{1}$ | | | | 11 | | concoleu) | 100.7 | | | | |
| 311 | | | | IVIES | in (uelects) | J.0303E-4 | | | | | | L | | | | |
| 312 | | | | | | | | | | | | | | | | |
| 313 | | | | (| Gamma RC | S Statistics u | using Imputed N | Ion-Detect | S | | | | | | | |
| 314 | | | GROS may n | ot be used | l when data | set has > 50° | % NDs with mar | ny tied obse | ervations a | t multiple D |)Ls | | | | | |
| 315 | | GROS m | ay not be used v | vhen kstar | of detects i | s small such a | as <1.0, especia | ally when th | e sample s | size is sma | II (e.q., <15 | -20) | | | | |
| 316 | | | For | such situat | tions GRO | S method may | vield incorrect | values of l | ICLs and F | RTVs | | , | | | | |
| 017 | | | | - | This is espe | oiolly true wh | on the comple of | | 1 | | | | | | | |
| 31/ | | F | omme diasticot | ا دامخمام ا | dote DTY | | en uie sample s | n∠⊂ is Silidi | n. Amerikani | ution an 14 | 1 001-00-00 | | | | | |
| 318 | | ⊢or g | amma distributed | u aetected | uata, BIVs | and UCLs m | ay be computed | i using gan | ıma dıstrıb | ution on Kl | vi estimates | | | | | |
| 319 | | | | | Minimum | 1.3100E-4 | | | | | Mean | 0.00647 | | | | |
| 320 | | | | | Maximum | 0.01 | | | | | Median | 0.01 | | | | |
| 321 | | | | | SD | 0.00445 | | | | | CV | 0.688 | | | | |
| 327 | | | | L | (MIF) | 0 972 | | | k star | hias corre | ected MI EV | 0.95 | | | | |
| 322 | | | | Thete | | 0.00666 | | | Thota atar | (bias corre | | 0.00691 | | | | |
| 323 | | | | THEE | | 0.00000 | | | meta stal | | | 100 5 | | | | |
| 324 | | | | nı | u nat (MLE) | 204 | | | n | u star (bias | corrected) | 199.5 | | | | |
| 325 | | | Adjusted Le | vel of Sign | ificance (β) | 0.0477 | | | | | | | | | | |
| 326 | | Арр | roximate Chi Squ | are Value | (199.54, α) | 167.9 | | Adjust | ed Chi Squ | are Value | (199.54, β) | 167.5 | | | | |
| 327 | 9 | 5% Gamma | a Approximate U | CL (use wł | hen n>=50) | 0.0077 | 95 | 5% Gamma | Adjusted | UCL (use v | vhen n<50) | 0.00771 | | | | |
| 220 | | | | , . | | | | | | (| / | | | | | |
| JZ0 | | | | | | | | | | | | | | | | |

| | A | В | С | D | E | F | G | Н | | | J | K | L |
|-------------------|-----------|-------------|-------------------|------------------------|-------------------------|------------------|--------------------|----------------------|--------------|---------|----------------------|---|---------------|
| 329 | | | | Est | imates of | Gamma Para | ameters using K | M Estimat | les | | | | |
| 330 | | | | Ν | lean (KM) | 5.9356E-4 | | SD (KM) | 1) 6.4088E-4 | | | | |
| 331 | | | | Varia | ance (KM) | 4.1073E-7 | | | | | SE of N | Mean (KM) | 7.0872E-5 |
| 222 | | | | 1 | (hat (KM) | 0.858 | | | | | 1 | (star (KM) | 0.84 |
| 332 | | | | | | 0.000 | | | | | r | | 170.04 |
| 333 | | | | nu | I nat (KIVI) | 180.1 | | - | | | nu | I star (KIVI) | 176.3 |
| 334 | | | | theta | a hat (KM) | 6.9197E-4 | | | | | theta | a star (KM) | 7.0694E-4 |
| 335 | | | 80% ga | amma perce | ntile (KM) | 9.6732E-4 | | | 909 | % ga | mma perce | entile (KM) | 0.00143 |
| 336 | | | 95% ga | amma perce | ntile (KM) | 0.00189 | | | 999 | % ga | mma perce | entile (KM) | 0.00299 |
| 337 | | | | | | | | | | | | | • |
| 338 | | | | | Gan | nma Kaplan-N | leier (KM) Stati | stics | | | | | |
| 330 | | Ann | roximate Chi Squ | are Value (| 176.32 a) | 146.6 | | Adjust | ed Chi | Sau | are Value (| (176.32 B) | 146.2 |
| 240 | 95% | Gamma Ar | provimate KM-L | | n = 50 | 7 1385E-4 | 95% G | amma Adi | | KM_I | | $\frac{1}{100} = \frac{1}{100} = \frac{1}{100}$ | 7 1568E-1 |
| 340 | 3578 | Сапппа Ар | | | 51112-30) | 7.1303L-4 | 35 /8 G | ianina Auj | usteu r | | | | 7.1300L-4 |
| 341 | | | | | | | | | | | | | |
| 342 | | | | LO | gnormal (| | Jetected Obser | vations Or | niy | | | | |
| 343 | | | Shap | piro Wilk Tes | st Statistic | 0.973 | | | Shapiro | o Wi | lk GOF Te | st | |
| 344 | | | 5% Shap | iro Wilk Crit | ical Value | 0.941 | Detecte | ed Data ap | pear Lo | ogno | rmal at 5% | Significan | ce Level |
| 345 | | | I | Lilliefors Tes | st Statistic | 0.0654 | | | Lillie | fors | GOF Test | | |
| 346 | | | 5% L | illiefors Crit | ical Value | 0.137 | Detecte | ed Data ap | pear Lo | ogno | rmal at 5% | Significan | ce Level |
| 347 | | | | Detec | ted Data | appear Logno | ormal at 5% Sig | nificance l | evel | - | | - | |
| 240 | | | | | | | | | | | | | |
| 340 | | | | Loc | normal P | | Lising Imputed | Non Doto | oto | | | | |
| 349 | | | | | | | | NUII-Dele | CIS | | · | | 7.05 |
| 350 | | | N | riean in Orig | mai Scale | 0.0090E-4 | | | | | iviean in | Log Scale | -7.85 |
| 351 | | | | SD in Orig | inal Scale | ь.0209E-4 | - | | | | SD in | Log Scale | 0.758 |
| 352 | | 95% t | UCL (assumes n | ormality of F | ROS data) | 6.4842E-4 | | | 95% | Perc | entile Boot | tstrap UCL | 6.5147E-4 |
| 353 | | | 95% | 6 BCA Boot | strap UCL | 6.7131E-4 | | | | | 95% Boots | trap t UCL | 6.6518E-4 |
| 354 | | | 95 | 5% H-UCL (| Log ROS) | 6.0345E-4 | | - | | | | | |
| 355 | | | | | | 1 | | | | | | | 1 |
| 356 | | | Statisti | cs usina KN | l estimate | es on Loaaed | Data and Assu | mina Loan | ormal | Dist | ibution | | |
| 357 | | | | KM Mea | n (logged) | -7 861 | | 0.0 | | | KM | Geo Mean | 3 8564F-4 |
| 250 | | | | KM SI | | 0.911 | | | 95% | Criti | al H Value | (KM-Log) | 2.13 |
| 300 | | | KM Standard F | Triar of Moo | | 0.311 | | | 5570 | Onico | | | 7 06225 4 |
| 359 | | | KIVI Stanuaru E | | n (logged) | 0.123 | | | 050/ | 9 | 5% H-UCL | | 7.0033E-4 |
| 360 | | | | KM SI |) (logged) | 0.911 | | | 95% | Critic | cal H Value | e (KM-Log) | 2.13 |
| 361 | | | KM Standard E | Fror of Mea | n (logged) | 0.123 | | | | | | | |
| 362 | | | | | | | | | | | | | |
| 363 | | | | | | DL/2 \$ | Statistics | | | | | | |
| 364 | | | DL/2 N | ormal | | | | | DL/2 L | .og-T | ransforme | d | |
| 365 | | | Ν | lean in Orio | inal Scale | 0.00448 | | | | - | Mean in | Log Scale | -7.321 |
| 366 | | | | SD in Oria | inal Scale | 0.0181 | | - | | | SD in | Log Scale | 1 455 |
| 267 | | | 95% t LICI | (Assumes | normality | 0.0074 | | | | | 95% - | | 0.00279 |
| 307 | | | DI /2 ia | | mondad | | ided for compo | deene end | histori | | 55701 | | 0.00275 |
| 368 | | | DL/2 IS | not a recon | Imenaea | metrioa, prov | ided for compar | isons and | niston | ical r | easons | | |
| 369 | | | | | | | | | | | | | |
| 370 | | | | | Nonpara | metric Distrib | ution Free UCL | Statistics | | | | | |
| 371 | | | | Detected | Data app | ear Gamma D | istributed at 5% | 5 Significar | nce Le | vel | | | |
| 372 | | | | | | | | | | | | | |
| 373 | | | | | | Suggested | I UCL to Use | | | | | | |
| 374 | | | 95% KM Appr | oximate Ga | mma UCL | 7.1385E-4 | | 95% G | ROS A | Appro | oximate Ga | mma UCL | 0.0077 |
| 375 | | | · · · · | | | | | | | | | | |
| 376 | | Note: Sug | gestions regardin | ig the select | ion of a 9 | 5% UCL are n | rovided to help t | the user to | select | the r | nost appro | priate 95% | UCL. |
| 377 | | | Ra | commendat | tions are h | ased unon da | ita size data dis | tribution a | ind ske | wne | ss | | |
| 270 | | These rea | commendations a | are based | on the re | sults of the sir | nulation studios | summori z | ed in C | Singh | Maichlo | and Lee (2) | 106) |
| 3/8 | | 11030100 | | | | Morld data | to: for oddition | | | me | , wort to a | | icticion |
| 379 | H | owever, sir | nulations results | WIII NOT COVE | er all Real | vvonu uata se | ets, for additiona | ii insight th | e user | тау | want to co | insult a stat | เธแตลก. |
| 380 | | | | | | | | | | | | | |
| 381 | Ethylbenz | zene | | | | | | | | | | | |
| 382 | | | | | | | | | | | | | |
| 383 | | | | | | Genera | Statistics | | | | | | |
| 384 | | | Total Nu | mber of Obs | servations | 105 | | _ | Numbe | er of I | Distinct Ob | servations | 99 |
| 385 | | | | Number | of Detects | 12 | 1 | | | Nu | mber of No | on-Detects | 93 |
| 386 | 1 | | Numb | per of Distin | ct Detects | 12 | | | Numb | er of | Distinct No | on-Detects | 87 |
| 387 | | | | Minim | um Detect | 2.1000F-4 | | | | | Minimum N | Ion-Detect | 1.7800E-4 |
| 200 | | | | Mavim | | 0.47 | | | | N | /aximum N | Ion-Detect | 0.57 |
| 200 | | | | Variant | Detecto | 0.77 | | | | | Dorcont N | n Dotooto | 98 570/ |
| 389 | | | | valiano | | 0.0211 | | | | | | | 0145 |
| 390 | | | | Mea | In Detects | 0.0588 | | | | | 5 | Detects | 0.145 |
| | | | | Media | in Detects | 5.7200E-4 | | | | | C | V Detects | 2.472 |
| 391 | | | | | | | A | | | | | | |
| 391 392 | | | | Skewnes | s Detects | 2.579 | | | | | Kurtos | sis Detects | 6.411 |
| 391 392 393 | | | Ме | Skewnes an of Logge | ss Detects d Detects | 2.579 -6.538 | | | | S | Kurtos D of Logge | sis Detects ed Detects | 6.411 2.58 |

| | A | В | С | D | E | F | G | Н | | J | K | | L |
|-----|------|----------------|------------------|---------------|----------------|-----------------|--------------------------|---------------|--------------|--------------|-----------------------------------|---------|----------|
| 395 | | | | | No | rmal GOF Te | st on Detects O | nly | | | | | |
| 396 | | | Shap | oiro Wilk Te | st Statistic | 0.48 | | | Shapiro Wi | ilk GOF Te | est | | |
| 397 | | | 5% Shap | iro Wilk Cri | tical Value | 0.859 | Det | ected Data | a Not Norma | al at 5% Si | ignificance | _evel | |
| 398 | | | l | Lilliefors Te | st Statistic | 0.488 | | | Lilliefors | GOF Tes | t | | |
| 399 | | | 5% L | illiefors Cri | tical Value | 0.243 | Det | ected Data | a Not Norma | al at 5% Si | ignificance | _evel | - |
| 400 | | | | D | etected D | ata Not Norma | al at 5% Signifi | cance Lev | rel | | - | | |
| 401 | | | | | | | • | | | | | | |
| 402 | | | Kaplan-M | eier (KM) S | Statistics u | sing Normal (| Critical Values a | and other | Nonparame | etric UCLs | ; | | |
| 403 | | | | | KM Mean | 0.00699 | | | KM St | andard Er | ror of Mean | 0.00 | 522 |
| 404 | | | | | KM SD | 0.0509 | | | | 95% KM | (BCA) UCL | 0.01 | 16 |
| 405 | | | | 95% ł | KM (t) UCL | 0.0156 | | 95% | % KM (Perc | entile Boo | tstrap) UCL | 0.01 | 16 |
| 406 | | | | 95% K | (M (z) UCL | 0.0156 | | | 95% | 6 KM Boot | strap t UCL | 1.8 | 15 |
| 407 | | | 90% | KM Cheby | /shev UCL | 0.0226 | | | 95% | KM Cheb | vshev UCL | 0.02 | 297 |
| 408 | | | 97.5% | KM Cheby | /shev UCL | 0.0396 | | | 99% | KM Cheb | yshev UCL | 0.05 | 589 |
| 409 | | | | , | , | | | | | | , | 1 | |
| 410 | | | | G | amma GC | F Tests on D | etected Observ | ations On | lv | | | | |
| 411 | | | | A-D Te | st Statistic | 2 668 | | Ar | nderson-Da | rlina GOF | Test | | |
| 412 | | | | 5% A-D Cri | tical Value | 0.873 | Detected | Data Not (| Gamma Dis | tributed at | 5% Signific | ance Le | evel |
| 112 | | | <u>_</u> | K-S Te | st Statistic | 0.478 | 20100104 | K | olmogorov- | Smirnov (| GOF | | |
| 413 | | | | 5% K-S Cri | tical Value | 0.272 | Detected | Data Not (| Gamma Dis | tributed at | 5% Signific | ancele | avel |
| 414 | | | | Detecte | d Data No | t Gamma Dis | tributed at 5% s | Significan | re i evel | and atou at | o /o olgrinic | | |
| 415 | | | | Dottoold | | | | Signinoun | | | | - | |
| 410 | | | | | Gamm | a Statistics o | n Detected Dat | a Only | | | | | |
| 417 | | | | k | hat (MLE) | 0 199 | | a Only | k star | (hias corr | ected MLE) | 0.2 | 05 |
| 410 | | | | Theta | hat (MLE) | 0.195 | | | Theta star | (bias corr | | 0.2 | 87 |
| 419 | | | | nu | hat (MLE) | 4 773 | | | nicia siai | ustar (hias | | 1.0 | 13 |
| 420 | | | | Mea | | 0.0588 | | | | | s conecteu) | 4.5 | 15 |
| 421 | | | | wiea | ii (uelecis) | 0.0000 | | | | | | L | |
| 422 | | | | | amma PC | Statistics (| eina Imputed N | Ion-Detec | te | | | | |
| 423 | | | CPOS may n | | when data | sot bas > 509 | | v tied obs | onvotions of | t multiplo [| 2 6 | | |
| 424 | | CPOS n | GINOS IIIay II | whon ketar | of dotocts i | | $\approx < 1.0$ ospocia | lly when t | | | JLS | 20) | |
| 425 | | GROST | Eor | | | S Sindii Such a | is < 1.0, especia | | | | iii (e.y., <13 | -20) | |
| 420 | | | 1013 | T | his is send | cially true who | an the sample s | | | 51 V 5 | | | |
| 427 | | For c | amma distributer | h detected b | data RTVs | and LICLs m | en the sample s | | nma distribi | ution on K | Mostimator | | |
| 420 | | 1016 | | u delected (| Minimum | | | using gai | | | Moon | | 156 |
| 429 | | | | | Movimum | 0.47 | | | | | Modian | 0.01 | 1 |
| 430 | | | | | | 0.47 | | | | | | 3.1 | 05 |
| 431 | | | | k | bat (MLE) | 0.0490 | | | k etar | /bias corr | | 0.0 | 55 64 |
| 432 | | | | Thota | hat (MLE) | 0.003 | | | Thota star | | ected MLE) | 0.01 | 19 |
| 433 | | | | nieta | bot (MLE) | 185.3 | | | 111010 3101 | Letar (bias | | 191 / | 10 |
| 434 | | | Adjusted Lo | vol of Signi | ficance (B) | 0.0477 | | | III | | s conecteu) | 101.4 | |
| 430 | | ۸nn | rovimate Chi Squ | ver of olgrif | (181 38 m) | 151.2 | | Δdiue | ted Chi Sau | ara Valua | (181 38 8) | 150 \$ | 2 |
| 430 | 9 | 747 5% Camm | | | (101.50, 0) | 0.0187 | 95 | % Gamma | | | $\frac{(101.30, p)}{(101.30, p)}$ | 0.01 | 187 |
| 437 | 5 | | | | len n/ -50) | 0.0107 | | o Camina | | | when h < 50) | 0.01 | |
| 430 | | | | Fe | timates of | Gamma Para | meters using k | M Estima | tes | | | | |
| 433 | | | | N | Mean (KM) | 0.00699 | | | | | SD (KM) | 0.05 | 509 |
| 1/1 | | | | Vari | ance (KM) | 0.00259 | | | | SF of | Mean (KM) | 0.00 | 522 |
| 441 | | | | van | k hat (KM) | 0.0189 | | | | 02.01 | k star (KM) | 0.00 | 247 |
| 442 | | | | n | u hat (KM) | 3.96 | | | | n | u star (KM) | 5.02 | 81 |
| 443 | | | | thet | a hat (KM) | 0.371 | | | | the | ta star (KM) | 0.1 | 83 |
| 444 | | | 80% ga | amma nerce | entile (KM) | 1 9136E-5 | | | 90% as | mma nerr | entile (KM) | 0.00 | 228 |
| 445 | | | 95% ge | amma perce | entile (KM) | 0.0218 | | | 99% ge | mma perc | entile (KM) | 0.00 | 89 |
| 440 | | | 55 /6 yz | | | 0.0210 | 1 | | 00 /0 yc | iu pert | | <u></u> | |
| 447 | | | | | Garr | ma Kanlan-M | leier (KM) Stati | stics | | | | | |
| 440 | | ^ | nnroximate Chi S | auare Valu | (5.18 m) | 1 227 | | Δdi | usted Chi S | | UP (5 18 R) | 1.0 | 11 |
| 449 | Q5% | A Gamma Ar | provimate KM II | | $\ln n > = 50$ | 0.0202 | 05% 0 | مت مستع ۵ط | iusted KM I | | when $n < 50$ | | 299 |
| 400 | 5578 | Gamina Ap | | SE (USE WII | -50) | 0.0230 | 3578 C | anna Au | | | | 0.02 | |
| 401 | | | | 1.0 | anormal | OF Teet on T |)etected Obsor | vatione O | nlv | | | | |
| 452 | | | Char | | st Statistic | 0.6/7 | | | Shaniro W | | eet | | |
| 403 | | | 5% Shan | | tical Value | 0.850 | Detor | ted Data | Not Lognor | mal at 5% | Significance | | |
| 454 | | | 5 % Shap | | et Statistia | 0.009 | Delec | Lea Daid I | Lillioform | | | , Level | |
| 455 | | | E0/ 1 | | tical Value | 0.301 | Data | ted Data I | | nal at 5% | Significance | | |
| 400 | | | 5 /0 L | | | a Not Logner | Delet nal at 5% Signi | ficance I | | nai at J /0 | Significance | , Level | |
| 45/ | | | | De | iscisu Dal | a NOLLOYHON | nai at 0 % Signi | | 5401 | | | | |
| 430 | 1 | | | | | | | | | | | | |
| | А | В | С | D | E | F | G | Н | | | J | | K | L |
|------------|------------|-------------|---------------------|----------------|------------------|------------------|--------------------|---------------|------------|--------|-------------|---------|----------|----------------|
| 459 | | | | Lo | gnormal R | OS Statistics | Using Imputed | Non-Dete | cts | | | | | |
| 460 | | | Ν | lean in Ori | - ainal Scale | 0.00672 | | | | | Mean ir | Loa | Scale | -12.36 |
| 461 | | | • | SD in Ori | ninal Scale | 0.0509 | | | | | SD ir | | Scale | 2 361 |
| 401 | | OE0/ + | | ormolity of | | 0.0000 | | | 050/ 5 | Joro | ontilo Doc | tetror | | 0.0157 |
| 462 | | 95% l | OCL (assumes n | | | 0.015 | | | 95% F | erc | | | | 0.0157 |
| 463 | | | 95% | % BCA B00 | tstrap UCL | 0.0223 | | | | | 95% BOOt | strap | TUCL | 2.033 |
| 464 | | | 9. | 5% H-UCL | (Log ROS) | 1.6540E-4 | | | | | | | | |
| 465 | | | | | | | | | | | | | | |
| 466 | | | Statisti | cs using K | M estimate | es on Logged | Data and Assu | iming Logr | normal D | Distr | ibution | | | |
| 467 | | | | KM Mea | an (logged) | -8.306 | | | | | KM | Geo | Mean | 2.4692E-4 |
| 468 | | | | KM S | D (logged) | 1.088 | | | 95% C | Critic | al H Valu | e (KM | 1-Log) | 2.29 |
| 469 | | | KM Standard E | Fror of Mea | an (logged) | 0.118 | | | | 95 | 5% H-UCI | (KM | -Log) | 5.6953E-4 |
| 470 | | | | KMS | D (logged) | 1.088 | | | 95% C | Critic | al H Valu | e (KM | 1-Loa) | 2.29 |
| 470 | | | KM Standard F | Fror of Me | n (logged) | 0.118 | | | | | | • (| . 209/ | |
| 471 | | | | | in (loggou) | 0.110 | | | | | | | | |
| 472 | | | | | | DI /2 S | totiotico | | | | | | | |
| 473 | | | | | | | | | | - T | | - d | | |
| 474 | | | | ormai | | 0.0400 | | | | og-i | ransform | a | | |
| 475 | | | Ν | lean in Ori | ginal Scale | 0.0129 | | | | | Mean ir | Log | Scale | -7.752 |
| 476 | | | | SD in Ori | ginal Scale | 0.0615 | | | | | SD ir | 1 Log | Scale | 1.743 |
| 477 | | | 95% t UCL | . (Assumes | normality) | 0.0229 | | | | | 95% | H-Stat | t UCL | 0.00328 |
| 478 | | | DL/2 is | not a reco | mmended | method, provi | ded for compa | risons and | l historic | cal re | easons | | | |
| 479 | | | | | | | | | | | | | | |
| 480 | | | | | Nonpara | metric Distribu | tion Free UCL | Statistics | | | | | | |
| /81 | | | | Data do n | ot follow a | Discernible D | istribution at 5 | % Signific: | ancele | vel | | | | |
| 400 | | | | Dulu uo II | ot tonott a | | | /o olgillilo | | | | | | |
| 482 | | | | | | Suggested | | | | | | | | |
| 483 | | | 05% | | | Suggested | | | | | | | | |
| 484 | | | 95% | KINI (Cheby | snev) UCL | 0.0297 | | | | | | | | |
| 485 | | | | | | | | | | | | | | |
| 486 | | Note: Sug | gestions regardir | ng the seled | tion of a 9 | 5% UCL are pi | rovided to help | the user to | select t | he n | nost appro | opriate | e 95% | UCL. |
| 487 | | | Re | commenda | tions are b | ased upon da | ta size, data dis | stribution, a | and skev | vnes | SS. | | | |
| 488 | | These re | commendations a | are based u | pon the re | sults of the sin | nulation studies | summariz | ed in Si | ngh, | Maichle, | and L | _ee (20 | 006). |
| 489 | Н | lowever, si | mulations results | will not cov | er all Real | World data se | ets; for additiona | al insight th | ne user r | may | want to c | onsult | t a stat | istician. |
| 490 | | | | | | | | | | | | | | |
| 491 | Isopropy | benzene | | | | | | | | | | | | |
| 492 | | | | | | | | | | | | | | |
| 102 | | | | | | General | Statistics | | | | | | | |
| 404 | | | Total Nu | mber of Ot | sorvations | 105 | | | Numbor | r of I | | ne orve | ations | 87 |
| 494 | | | Total No | Numbor | of Dotocto | 1 | | | Number | Niu | mbor of N | | atocte | 104 |
| 495 | | | Nicces | | | 1 | | | Niverslave | INU. | | | | 104 |
| 496 | | | NUM | ber of Distil | nct Detects | I | | | Numbe | er of | Distinct N | on-De | etects | 86 |
| 497 | | | | | | | | | | | | | | |
| 498 | | Warning: | Only one distinct | data value | was dete | cted! ProUCL | (or any other s | software) s | hould no | ot be | e used on | such | n a dat | a set! |
| 499 | It is sugg | jested to u | ise alternative sit | e specific v | alues det | ermined by the | e Project Team | to estima | te enviro | onm | ental par | amete | ers (e. | J., EPC, BTV). |
| 500 | | | | | | | | | | | | | | |
| 501 | | | | The da | ta set for v | variable Isopro | pylbenzene w | as not pro | cessed! | | | | | |
| 502 | | | | | | | | | | | | | | |
| 503 | | | | | | | | | | | | | | |
| 504 | | | | | | | | | | | | | | |
| 505 | Lead | | | | | | | | | | | | | |
| 505 | 2000 | | | | | | | | | | | | | |
| 500 | | | | | | Ganaral | Statietice | | | | | | | |
| 507 | | | Total No. | mbor of O | con otion- | 105 | | | Number | c of r | Distinct O | 2000 | otiona | 88 |
| 508 | | | i otai Nu | | oei valions | 105 | | | Number | | | Jaciva | ation | 00 |
| 509 | | | | | | | | | Number | OT IV | ussing O | JServa | ations | 0 |
| 510 | l | | | | Minimum | 1.1 | | | | | | | wean | 9.274 |
| 511 | | | | | Maximum | 71 | | | | | | М | ledian | 5.46 |
| 512 | | | | | SD | 11.76 | | | | | Std. Er | ror of | Mean | 1.147 |
| 513 | | | (| Coefficient of | of Variation | 1.268 | | | | | | Skev | vness | 3.131 |
| 514 | | | | | | | | | | | | | | |
| 515 | | | | | | Normal | GOF Test | | | | | | | |
| 516 | 1 | | Shai | oiro Wilk Te | est Statistic | 0.609 | | | Shapiro | Wil | k GOF Te | est | | |
| 517 | | | 5% | Shapiro W | ilk P Value | 0 | | Data Not | Normal | at 5 | % Sianifi | cance | Level | |
| 510 | | | 0.0 | | st Statistic | 0 275 | | | أمالا ا | ore | GOF Tee | 1 | | |
| 510 | | | E0/ 1 | illioforo Cr | itical Value | 0.0867 | | Data Not | Normal | 2+ F | % Cianifi | Sanco | | |
| 519 | | | 5/61 | | | | 50/ Qianifiaar - | | nonnal | ດເປ | Ju Olgriffe | ance | Level | |
| 520 | | | | | Data N | iot normal at a | o % orgninicanc | e revei | | | | | | |
| 521 | | | | | | | | | | | | | | |
| 522 | | | | | | Assuming Nor | mal Distributio | n | | | | | | |
| 523 | | | 95% Noi | mal UCL | | 1 | | 95% | UCLs (A | \dju | sted for S | kewn | ess) | |
| 524 | | | | 95% Stud | ent's-t UCL | 11.18 | | 95% | Adjuste | d-Cl | LT UCL ((| Chen- | 1995) | 11.54 |
| 525 | | | | | | | | 95% | 6 Modifie | ed-t | UCL (Joh | nson- | 1978) | 11.24 |
| 526 | 1 | | | | | • | • | | | | | | - | |
| 020 | | | | | | | | | | | | | | |
| 520 | | | | | | Gamma | GOF Test | | | | | | | |
| 520 527 | | | | A-D T4 | est Statistic | Gamma | GOF Test | Anders | son-Darl | lina | Gamma (| 30F 1 | Test | |

| | А | В | С | D | E | F | G | Н | | J | К | L |
|-----|---------|----------------|-------------------|-----------------|--------------|------------------|----------------------|----------------------|--------------|--------------|------------------|----------|
| 529 | | | | 5% A-D Crit | tical Value | 0.776 | Data | Not Gamn | na Distribut | ed at 5% S | ignificance | Level |
| 530 | | | | K-S Te | st Statistic | 0.167 | | Kolmogo | rov-Smirno | v Gamma | GOF Test | |
| 531 | | | | 5% K-S Crit | tical Value | 0.0903 | Data | Not Gamn | na Distribut | ed at 5% S | ignificance | Level |
| 532 | | | | Dat | ta Not Gar | nma Distribut | ed at 5% Signif | ficance Le | vel | | | |
| 533 | | | | | | | | | | | | |
| 534 | | | | | | Gamma | Statistics | | | | | |
| 535 | | | | k | hat (MLE) | 1.27 | | | k star | (bias corre | ected MLE) | 1.24 |
| 536 | | | | Theta | hat (MLE) | 7.304 | | | Theta star | bias corre | cted MLE) | 7.481 |
| 537 | | | | nu | hat (MLE) | 266.6 | | | ทเ | star (bias | corrected) | 260.3 |
| 538 | | | MLE | Mean (bias | corrected) | 9.274 | | | ML | E Sd (bias | corrected) | 8.329 |
| 539 | | | | | , | | | Appro | oximate Ch | i Square V | , alue (0.05) | 224 |
| 540 | | | Adjusted | Level of Si | anificance | 0.0477 | | FF | Adius | ed Chi Sa | uare Value | 223.5 |
| 541 | | | | | 5 | | | | | | | |
| 542 | | | | | A | ssuming Gar | nma Distributio | n | | | | |
| 5/3 | 9 | 5% Approx | imate Gamma U | CL (use whe | n n>=50)) | 10.78 | 95 | % Adiuste | d Gamma I | JCL (use w | (hen n<50) | 10.8 |
| 543 | | e in the prove | | 02 (000 1110 | | | | | u danna (| | | |
| 545 | | | | | | Lognorma | al GOF Test | | | | | |
| 546 | | | Sha | niro Wilk Te | st Statistic | 0.955 | | Shani | ro Wilk I or | normal G(| OF Test | |
| 540 | | | 5% | Shaniro Wi | lk P Value | 0.00569 | Г | Data Not L | ognormal a | t 5% Signif | icance Leve | _ |
| 547 | | | 0,0 | l illiefors Te | st Statistic | 0.0889 | - | | efors Logn | ormal GOF | | |
| 540 | | | 5% | Lilliefors Crit | tical Value | 0.0867 | Г | Data Not L | ognormal a | 5% Signif | icance Leve | |
| 549 | | | 570 | | Data Not | | t 5% Significan | | ognormara | t 570 Olgrin | | <u></u> |
| 550 | | | | | | Lognormara | t 576 Significan | CE LEVEI | | | | |
| 551 | | | | | | Lognorm | al Statiation | | | | | - |
| 552 | | | Mir | | agod Doto | | | | | Moon of la | agod Data | 1 79/ |
| 553 | | | IVIII | | gyeu Dala | 0.0955 | | | | | ggeu Dala | 0.971 |
| 554 | | | IVIA | | ygeu Dala | 4.203 | | | | 50 01 10 | iggeu Dala | 0.071 |
| 555 | | | | | | | arma al Diatributi | | | | | |
| 556 | | | | 0 | | Suming Logn | onnai Distributi | on | 00% Cha | huchou (M | | 11.01 |
| 557 | | | | 90 | | 10.41 | | | 90% Che | bysnev (M | | 12.09 |
| 558 | | | 95% Ch | ebysnev (IVI) | VUE) UCL | 12.37 | | | 97.5% Che | bysnev (IVI | VUE) UCL | 13.98 |
| 559 | | | 99% Ch | ebyshev (M | VUE) UCL | 17.13 | | | | | | |
| 560 | | | | | NI | | | O 1 1 1 1 1 1 | | | | |
| 561 | | | | | Nonparan | | | Statistics | • | | | |
| 562 | | | | | Data do not | t follow a Disc | cernible Distribi | ution (0.05 |) | | | |
| 563 | | | | | | | | | | | | |
| 564 | | | | | Nonp | arametric Dis | | JCLS | | | | |
| 565 | | | 0.50/ 0. | 95% | CLIUCL | 11.16 | | | | 95% Jaci | knife UCL | 11.18 |
| 566 | | | 95% Sta | andard Boot | strap UCL | 11.13 | | | 050/ 0 | 95% Boots | strap-t UCL | 11.// |
| 567 | | | 95% | Hairs Boot | strap UCL | 11.52 | | | 95% Perc | entile Boo | tstrap UCL | 11.27 |
| 568 | | | 955 | % BCA Boot | strap UCL | 11.52 | | | | | 0.0.100 | |
| 569 | | | 90% Cheb | yshev(Mean | , Sd) UCL | 12.72 | | | 95% Cheby | shev(Mear | n, Sd) UCL | 14.28 |
| 570 | | | 97.5% Cheb | yshev(Mean | i, Sd) UCL | 16.44 | | | 99% Cheby | shev(Mear | n, Sd) UCL | 20.69 |
| 571 | | | | | | | | | | | | |
| 572 | | | | | | Suggested | UCL to Use | | | | | |
| 573 | | | 95% Cheby | vshev (Mean | i, Sd) UCL | 14.28 | | | | | | |
| 574 | | Nec 0 | | | ···· · · · - | 0/ LIC | | | | | | |
| 575 | | Note: Sug | gestions regardii | ng the select | uon ot a 95 | 0% UCL are p | rovided to help t | ne user to | select the r | nost appro | priate 95% | UCL. |
| 576 | | T 1 | Re | ecommenda | tions are b | ased upon da | ta size, data dis | tribution, a | and skewne | SS. | | 200 |
| 577 | | I hese re | commendations | are based u | pon the res | sults of the sin | nulation studies | summariz | ea in Singh | , Maichle, | and Lee (20 | Ub). |
| 578 | H | lowever, si | mulations results | will not cove | er all Real | world data se | ets; tor additiona | II Insight th | e user may | want to co | onsult a stati | stician. |
| 579 | | | | | | | | | | | | |
| 580 | MTBE (N | lethyl tert-l | outyl ether) | | | | | | | | | |
| 581 | | | | | | | | | | | | |
| 582 | | | | | | General | Statistics | | | | | |
| 583 | | | Total Nu | umber of Ob | servations | 105 | | | Number of | Distinct Ob | servations | 97 |
| 584 | | | | Number | of Detects | 0 | | | Nu | mber of N | on-Detects | 105 |
| 585 | | | Num | ber of Distin | ct Detects | 0 | | | Number of | Distinct N | on-Detects | 97 |
| 586 | | | | | | | - | | | | | |
| 587 | | W | arning: All obse | vations are | Non-Dete | cts (NDs), the | erefore all statis | stics and e | stimates sl | nould also | be NDs! | |
| 588 | | Spee | cifically, sample | mean, UCL | s, UPLs, a | nd other stati | istics are also N | IDs lying l | pelow the la | argest dete | ection limit! | |
| 589 | | The Projec | t Team may dec | ide to use a | alternative | site specific | values to estimation | ate enviro | nmental pa | rameters (| e.g., EPC, | BTV). |
| 590 | | | | | | | | | | | | |
| 591 | | | TT | ne data set f | or variable | MTBE (Mether | nyl tert-butyl eth | ner) was n | ot processe | ed! | | |
| 592 | | | | | | | | | | | | |

| 593 | A | 5 | U U | D | E | F | G | Н | I | J | K | L | | |
|--|---|-----------------------------------|--|---|--|---|--|--|--|--|--|--|--|--|
| 593 594 Naphthalene | | | | | | | | | | | | | | |
| 594 | Naphtha | lene | | | | | | | | | | | | |
| 595 | | | | | | | <u></u> | | | | | | | |
| 596 | | | TatalNL | | | General | Statistics | | | | | | | |
| 597 | | | I otal Nu | Imper of Op | servations | 117 | | I | Number of | Distinct Observ | ations | 94 | | |
| 598 | | | Num | Number | of Detects | 15 | | | Numbere | Ender of Non-D | etects | 102 | | |
| 599 | | | Num | Der of Distir Minim | um Detects | 15 2 1000E / | | | Number o | Minimum Non I | Detects | | | |
| 600 | | | | Maxim | um Detect | 16 | | | | Maximum Non-I | Detect | 0.068 | | |
| 602 | | | | Varian | ne Detects | 38.07 | | | | Percent Non-D | | 87 18% | | |
| 602 | | | | Me | an Detects | 4 258 | | | | SD D | etects | 6 17 | | |
| 604 | | | | Media | an Detects | 0.31 | | | | CV D | etects | 1.449 | | |
| 605 | | | | Skewne | ss Detects | 1.047 | | | | Kurtosis D | etects | -0.678 | | |
| 606 | | | Me | an of Logg | ed Detects | -2.143 | | | ; | SD of Logged D | etects | 4.18 | | |
| 607 | | | | | | | | | | | | I | | |
| 608 | | | | | No | rmal GOF Tes | st on Detects C | Inly | | | | | | |
| 609 | Shapiro Wilk Test Statistic 0.707 Shapiro Wilk GOF Test | | | | | | | | | | | | | |
| 610 | | | 5% Shap | oiro Wilk Cri | tical Value | 0.881 | Det | ected Data | Not Norm | al at 5% Signific | ance L | evel | | |
| 611 | | | | Lilliefors Te | st Statistic | 0.362 | | | | | | | | |
| 612 | | | 5% I | _illiefors Cri | tical Value | 0.22 | Det | ected Data | Not Norm | al at 5% Signific | ance L | Level | | |
| 613 | | | | D | etected Da | ata Not Norma | | | | | | | | |
| 614 | 4 5 Kaplan-Meier (KM) Statisti | | | | | | | | | | | | | |
| 615 | | | Kaplan-M | eier (KM) S | Statistics u | sing Normal (| Critical Values | | | | | | | |
| 616 | | | | | KM Mean | 0.546 | | | KM S | andard Error of | Mean | 0.246 | | |
| 617 | | | | | KM SD | 2.566 | | | | 95% KM (BCA | () UCL | 0.953 | | |
| 618 | | | | 95% k | KM (t) UCL | 0.953 | | 95% | KM (Perc | entile Bootstrap |) UCL | 0.959 | | |
| 619 | | | | 95% K | M (z) UCL | 0.95 | | | 95% | 6 KM Bootstrap | t UCL | 1.176 | | |
| 620 | | | 90% | 6 KM Cheby | shev UCL | 1.283 | | | 95% | KM Chebyshe | v UCL | 1.616 | | |
| 621 | | | 97.5% | 6 KM Cheby | shev UCL | 2.079 | | | 99% | KM Chebyshe | v UCL | 2.989 | | |
| 622 | | | | | | | | | | | | | | |
| 623 | | | | G | iamma GC | F Tests on D | etected Observ | ations Onl | у | | | | | |
| 624 | | | | A-D Te | st Statistic | 0.839 | | An | derson-Da | rling GOF Test | | | | |
| 625 | | | | 5% A-D Cri | tical Value | 0.881 | Detected d | ata appear | Gamma D | istributed at 5% | Signifi | cance Level | | |
| 626 | | | | K-S Te | st Statistic | 0.233 | | Ka | olmogorov | -Smirnov GOF | | | | |
| 627 | | | | 5% K-S Cri | tical Value | 0.245 | Detected d | ata appear | Gamma D | istributed at 5% | Signifi | cance Level | | |
| 628 | | | | Detected | data appe | ar Gamma D | istributed at 5% | 6 Significar | ICE LEVEI | | | | | |
| 629 | | | | | | o Ctotiotico o | - Detected Det | | | | | | | |
| 630 | | | | k | Gamm | | | | k eto: | | | 0.208 | | |
| 631 | | | | ĸ | | 0.204 | | | K SIAI | | | | | |
| 632 | | | | Thoto | hat (MLE) | 20.95 | | | Thoto stor | (bias corrected | MLE) | 20.40 | | |
| 633 | | | | Theta | hat (MLE) | 20.85 | | | Theta star | (bias corrected | MLE) | 20.49 | | |
| h 3/I | | | | Theta nu Maa | hat (MLE) hat (MLE) | 20.85 6.126 | | | Theta star | (bias corrected (bias corrected u star (bias corre | I MLE) I MLE) ected) | 20.49 6.234 | | |
| 625 | | | | Theta nu Mea | hat (MLE) hat (MLE) hat (MLE) n (detects) | 20.85 6.126 4.258 | | | Theta star | bias corrected (bias corrected) u star (bias corr | MLE) MLE) ected) | 0.208 20.49 6.234 | | |
| 635 | | | | Theta nu Mea | hat (MLE) hat (MLE) hat (MLE) n (detects) | 20.85 6.126 4.258 | sing Imputed N | lon-Detect | Theta star | bias corrected (bias corrected) (bias co | I MLE) I MLE) ected) | 0.208 20.49 6.234 | | |
| 635 636 | | | GBOS may r | Theta nu Mea Cont be used | hat (MLE) hat (MLE) hat (MLE) n (detects) | 20.85 6.126 4.258 S Statistics u | ising Imputed N | Non-Detect | Theta star n s | t multiple DL s | I MLE) I MLE) ected) | 0.208 20.49 6.234 | | |
| 635 636 637 | | GBOS m | GROS may r | Theta nu Mea O not be used | hat (MLE) hat (MLE) hat (MLE) n (detects) | 20.85 6.126 4.258 S Statistics u set has > 509 | ising Imputed N % NDs with mar | Non-Detect ny tied obse | n Theta star n S ervations a | t multiple DLs | I MLE) I MLE) ected) | 20.49 6.234 | | |
| 635 636 637 638 639 | | GROS m | GROS may r nay not be used v For | Theta nu Mea O not be used when kstar o such situati | hat (MLE) hat (MLE) hat (MLE) n (detects) hamma RC when data of detects in | 20.85 6.126 4.258 S Statistics u set has > 50% s small such a | sing Imputed N % NDs with mar as <1.0, especia | Non-Detect by tied obse ally when the values of L | s ervations a e sample s ICL s and E | t multiple DLs | I MLE) I MLE) ected) g., <15- | 20.49 6.234 | | |
| 635 636 637 638 639 640 | | GROS n | GROS may r nay not be used v For | Theta nu Mea O not be used when kstar o such situati | hat (MLE) hat (MLE) hat (MLE) n (detects) amma RC when data of detects i ons, GROS his is espe | 20.85 6.126 4.258 PS Statistics u set has > 50% s small such a S method may cially true wh | Ising Imputed N % NDs with mar as <1.0, especia y yield incorrect en the sample s | Non-Detect by tied obse ally when th values of U size is smal | s s ervations a e sample s JCLs and E | t multiple DLs size is small (e.g | I MLE) I MLE) ected) g., <15- | 20.49 6.234 20) | | |
| 635 636 637 638 639 640 641 | | GROS n | GROS may r nay not be used v For namma distribute | Theta nu Mea O not be used when kstar o such situati T d detected | hat (MLE) hat (MLE) hat (MLE) n (detects) amma RC when data of detects i ons, GRO his is espedata, BTVs | 20.85 6.126 4.258 S Statistics u set has > 50% s small such a S method may cially true who and UCLs ma | Ising Imputed N % NDs with mar as <1.0, especia y yield incorrect en the sample s av be computed | Non-Detect ny tied obse ally when th values of L size is smal d using gam | s s ervations a e sample s JCLs and E I. | t multiple DLs size is small (e.g TVs | I MLE) I MLE) ected) g., <15- | 20.49 6.234 20) | | |
| 635 636 637 638 639 640 641 642 | | GROS n For g | GROS may r nay not be used v For gamma distribute | Theta nu Mea Ot be used when kstar of such situati T d detected of | hat (MLE) hat (MLE) hat (MLE) n (detects) amma RC when data of detects i ons, GROS his is espedata, BTVs Minimum | 20.85 6.126 4.258 S Statistics u set has > 50% s small such a S method may cially true who and UCLs ma 2.1000E-4 | Ising Imputed N % NDs with mar as <1.0, especia y yield incorrect en the sample s ay be computed | Non-Detect ny tied obse ally when th values of L size is smal d using gam | s s ervations a e sample s JCLs and E I. ma distrib | t multiple DLs size is small (e.g BTVs | I MLE) I MLE) ected) g., <15- iimates Mean | 20.49 6.234 20) 20) 0.555 | | |
| 635 636 637 638 639 640 641 642 642 | | GROS m For ç | GROS may r nay not be used v For gamma distribute | Theta nu Mea Conot be used when kstar of such situati T d detected of | hat (MLE) hat (MLE) hat (MLE) n (detects) Gamma RC when data of detects i ons, GROS his is espe data, BTVs Minimum Maximum | 20.85 6.126 4.258 S Statistics u set has > 509 s small such a S method may ecially true who and UCLs ma 2.1000E-4 16 | Ising Imputed N % NDs with mar as <1.0, especia y yield incorrect en the sample s ay be computed | Non-Detect ny tied obse ally when th values of L size is smal d using gam | s s ervations a e sample s JCLs and E I. mma distrib | t multiple DLs size is small (e.c BTVs | I MLE) I MLE) ected) g., <15- imates Mean Iedian | 0.208 20.49 6.234 20) 20) 0.555 0.01 | | |
| 635 636 637 638 639 640 641 642 643 644 | | GROS m For g | GROS may r nay not be used v For gamma distribute | Theta nu Mea Conot be used when kstar of such situati T d detected of | hat (MLE) hat (MLE) hat (MLE) n (detects) m (detects) | 20.85 6.126 4.258 S Statistics u set has > 509 s small such a S method may ecially true who and UCLs ma 2.1000E-4 16 2.575 | Ising Imputed N % NDs with mar as <1.0, especia y yield incorrect en the sample s ay be computed | Non-Detect ny tied obse ally when th values of L size is smal d using gam | s s ervations a e sample s JCLs and E I. mma distrib | t multiple DLs size is small (e.c BTVs ution on KM est | I MLE) I MLE) ected) g., <15- iimates Mean Iedian CV | 20.49 6.234 20) 20) 20) 0.555 0.01 4.642 | | |
| 635 636 637 638 639 640 641 642 643 644 645 | | GROS m For g | GROS may r nay not be used v For gamma distribute | Theta nu Mea Conot be used when kstar of such situati d detected of k | hat (MLE) hat (MLE) hat (MLE) n (detects) m (detects) | 20.85 6.126 4.258 S Statistics u set has > 509 s small such a S method may cially true who and UCLs ma 2.1000E-4 16 2.575 0.199 | Ising Imputed N % NDs with mar as <1.0, especia y yield incorrect en the sample s ay be computed | Non-Detect ny tied obse ally when th values of L size is smal d using gam | s s ervations a e sample s JCLs and E I. mma distrib | t multiple DLs size is small (e.g BTVs ution on KM est | I MLE) I MLE) ected) , <15- Mean Median CV I MLE) | 20.49 6.234 20) 20) 20) 0.555 0.01 4.642 0.2 | | |
| 635 636 637 638 639 640 641 642 643 644 645 646 | | GROS m | GROS may r nay not be used v For gamma distribute | Theta nu Mea C not be used when kstar o such situati T d detected o k theta | hat (MLE) hat (MLE) hat (MLE) in (detects) m (detects) | 20.85 6.126 4.258 S Statistics u set has > 50% s small such a S method may cially true who and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 | Ising Imputed N % NDs with mar as <1.0, especia y yield incorrect en the sample s ay be computed | Jon-Detect ny tied obse ally when th values of U size is smal d using garr | s s rvations a e sample s JCLs and E I. ma distrib k star Theta star | t multiple DLs size is small (e.c BTVs ution on KM est (bias corrected (bias corrected | I MLE) I MLE) ected) g., <15- imates Mean Iedian CV I MLE) I MLE) | 20.49 6.234 20) 20) 20) 0.555 0.01 4.642 0.2 2.778 | | |
| 635 636 637 638 639 640 641 642 643 644 645 644 645 646 647 | | GROS m | GROS may r nay not be used v For jamma distribute | Theta nu Mea C not be used when kstar o such situati T d detected o k theta k Theta nu | hat (MLE) hat (MLE) hat (MLE) in (detects) m (detects) | 20.85 6.126 4.258 S Statistics u set has > 50% s small such a S method may cially true who and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 46.58 | Ising Imputed N % NDs with mar as <1.0, especia y yield incorrect en the sample s ay be computed | Non-Detect ny tied obse ally when th values of L size is smal d using garr | s s rvations a e sample s JCLs and E I. ma distrib k star Theta star n | t multiple DLs size is small (e.g BTVs ution on KM est (bias corrected (bias corrected u star (bias corrected u star (bias corrected | IMLE) IMLE) ected) g., <15- imates Mean Iedian CV IMLE) IMLE) ected) | 0.208 20.49 6.234 20) 0.555 0.01 4.642 0.2 2.778 46.71 | | |
| 635 636 637 638 639 640 641 642 643 644 645 646 646 647 648 | | GROS n | GROS may r nay not be used v For jamma distribute | Theta nu Mea Conot be used when kstar of such situati T d detected of k Theta nu vvel of Signi | hat (MLE) hat (MLE) hat (MLE) n (detects) m (detects) | 20.85 6.126 4.258 S Statistics u set has > 50% s small such a S method may cially true who and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 46.58 0.0479 | sing Imputed N % NDs with mar s <1.0, especia y yield incorrect en the sample s ay be computed | Non-Detect ny tied obse ally when th values of L size is smal d using gam | s s s ervations a e sample s JCLs and E I. ma distrib k star Theta star n | t multiple DLs size is small (e.g BTVs ution on KM est (bias corrected (bias corrected u star (bias corrected u star (bias corrected | MLE) MLE) ected) ected) g., <15- imates Mean fedian CV MLE) MLE) ected) | 0.208 20.49 6.234 20) 0.555 0.01 4.642 0.2 2.778 46.71 | | |
| 635 635 636 637 638 639 640 641 642 643 644 645 646 645 646 647 648 649 | | GROS m For g | GROS may r nay not be used v For jamma distribute Adjusted Le proximate Chi So | Theta nu Mea of be used when kstar of such situati T d detected of k Theta nu vel of Signi quare Value | hat (MLE) hat (MLE) hat (MLE) n (detects) m (detects) m (detects) m (detects) for a sepe data, BTVs Minimum Maximum SD hat (MLE) hat (MLE) hat (MLE) ficance (β) (46.71, α) | 20.85 6.126 4.258 S Statistics u set has > 50% s small such a S method may cially true whe and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 46.58 0.0479 32.03 | Ising Imputed N % NDs with mar as <1.0, especia y yield incorrect en the sample s ay be computed | Non-Detect hy tied obse ally when th values of L size is smal d using garr d using garr | star Theta star n servations a e sample s JCLs and E I. ma distrib k star Theta star n sted Chi Sc | t multiple DLs size is small (e.g BTVs ution on KM est (bias corrected (bias corrected (bias corrected u star (bias corrected u star (bias corrected | MLE) MLE) ected) ected) g., <15- imates Mean dedian CV Mean dedian CV MLE) MLE) ected) .71, β) | 0.208 20.49 6.234 20) 0.555 0.01 4.642 0.2 2.778 46.71 31.88 | | |
| 635 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 | | GROS m For g Ap 95% Gamm | GROS may r nay not be used v For jamma distribute Adjusted Le proximate Chi So a Approximate U | Theta nu Mea G not be used when kstar o such situati T d detected d d detected k Theta nu vel of Signi quare Value CL (use wh | hat (MLE) hat (MLE) hat (MLE) n (detects) m (detects) m (detects) data at a of detects i ons, GROS his is esped data, BTVs Minimum Maximum SD hat (MLE) hat (MLE) hat (MLE) hat (MLE) ficance (β) (46.71, α) en n>=50) | 20.85 6.126 4.258 S Statistics u set has > 509 s small such a S method may cially true whe and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 46.58 0.0479 32.03 0.809 | Ising Imputed N % NDs with mar as <1.0, especia v yield incorrect en the sample s ay be computed | Non-Detect hy tied obse ally when th values of L size is smal d using garr d using garr Adjus | servations a e sample s JCLs and E I. mma distrib k star Theta star n sted Chi Sc Adjusted | t multiple DLs size is small (e.g strvs ution on KM est (bias corrected (bias corrected (bias corrected u star (bias corrected) | MLE) MLE) ected) g., <15- imates Mean Median CV MLE) MLE) ected) .71, β) n<50) | 0.208 20.49 6.234 20) 0.555 0.01 4.642 0.2 2.778 46.71 31.88 0.813 | | |
| 635 636 637 638 639 640 641 642 643 644 645 644 645 646 647 648 649 650 651 | | GROS m For g Ap 95% Gamm | GROS may r nay not be used v For jamma distribute Adjusted Le proximate Chi So a Approximate U | Theta nu Mea G not be used when kstar o such situati T d detected o k Theta nu vel of Signi quare Value CL (use wh | hat (MLE) hat (MLE) hat (MLE) hat (MLE) in (detects) data (MLE) hat is esped data, BTVs Minimum Maximum SD hat (MLE) hat (MLE) hat (MLE) ficance (β) (46.71, α) en n>=50) | 20.85 6.126 4.258 S Statistics u set has > 509 s small such a S method may cially true who and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 46.58 0.0479 32.03 0.809 | Ising Imputed N % NDs with mar as <1.0, especia y yield incorrect en the sample s ay be computed | Non-Detect hy tied obse ally when th values of L size is smal d using garr d using garr Adjus 5% Gamma | sted Chi Sc Adjusted | (bias corrected (bias corrected u star (bias corrected u star (bias corrected size is small (e.c 3TVs ution on KM est (bias corrected (bias corrected u star (bias corrected)) | MLE) MLE) ected) g., <15- imates Mean Median CV MLE) MLE) MLE) ected) .71, β) n<50) | 0.208 20.49 6.234 | | |
| 635 636 637 638 639 640 641 642 643 644 645 644 645 646 647 648 649 650 651 652 | | GROS n For g Ap 95% Gamm | GROS may r nay not be used v For jamma distribute Adjusted Le proximate Chi Sc a Approximate U | Theta nu Mea G not be used when kstar o such situati T d detected o k Theta nu vel of Signi quare Value CL (use wh | hat (MLE) hat (MLE) hat (MLE) hat (MLE) in (detects) data (MLE) hat is esped data, BTVs Minimum Maximum Maximum SD hat (MLE) hat (MLE) hat (MLE) hat (MLE) ficance (β) (46.71, α) en n>=50) | 20.85 6.126 4.258 S Statistics u set has > 50% s small such a 5 method may cially true who and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 46.58 0.0479 32.03 0.809 Gamma Para | Ising Imputed N % NDs with mar as <1.0, especia r yield incorrect en the sample s ay be computed ay be computed generation of the sample sameters using P | Non-Detect ny tied obse ally when th values of L size is smal d using garr d using garr | s Theta star n s ervations a e sample s JCLs and E l. ma distrib k star Theta star n sted Chi Sc Adjusted es | t multiple DLs size is small (e.c 3TVs ution on KM est (bias corrected (bias corrected u star (bias corrected) | MLE) MLE) ected) g., <15- mates Mean Median CV MLE) MLE) MLE) ected) .71, β) n<50) | 0.208 20.49 6.234 | | |
| 635 636 637 638 639 640 641 642 643 644 645 644 645 646 647 648 649 650 651 652 653 | | GROS n For g Ap 95% Gamm | GROS may r nay not be used v For gamma distribute distribute Adjusted Le proximate Chi Sc a Approximate U | Theta nu Mea O tot be used when kstar o such situati T d detected o k Theta nu vel of Signi quare Value CL (use wh | hat (MLE) hat (MLE) hat (MLE) hat (MLE) in (detects) mamma RC when data of detects in ons, GROS his is espe data, BTVs Minimum Maximum Maximum Maximum Maximum SD hat (MLE) hat (MLE) hat (MLE) hat (MLE) hat (MLE) hat (MLE) ficance (β) (46.71, α) en n>=50) timates of Mean (KM) | 20.85 6.126 4.258 S Statistics u set has > 50% s small such a S method may cially true who and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 46.58 0.0479 32.03 0.809 Gamma Para 0.546 | Ising Imputed N % NDs with mar as <1.0, especia r yield incorrect en the sample s ay be computed get get get meters using h | Non-Detect ny tied obse ally when th values of L size is smal d using garr d using garr Adjus 5% Gamma | s s ervations a e sample s JCLs and E I. Imma distrib k star Theta star n sted Chi Sc Adjusted | t multiple DLs size is small (e.c att on KM est vition on | MLE) MLE) ected) ected) g., <15- mattes Mean Median CV MLE) MLE) ected) .71, β) n<50) | 0.208 20.49 6.234 20) 0.555 0.01 4.642 0.2 2.778 46.71 31.88 0.813 2.566 | | |
| $\begin{array}{c} 635\\ 636\\ 637\\ 638\\ 639\\ 640\\ 641\\ 642\\ 643\\ 644\\ 645\\ 646\\ 647\\ 648\\ 649\\ 650\\ 651\\ 652\\ 653\\ 654\\ \end{array}$ | | GROS n For ç Ap 95% Gamm | GROS may r nay not be used v For gamma distribute Adjusted Le proximate Chi So a Approximate U | Theta nu Mea G not be used when kstar of such situati T d detected of k Theta nu vel of Signi quare Value CL (use wh Es N | hat (MLE) hat (MLE) hat (MLE) n (detects) m (MLE) hat (MLE) hat (MLE) hat (MLE) hat (MLE) hat (MLE) hat (MLE) hat (MLE) hat (MLE) ficance (β) (def.71, α) en n>=50) timates of Mean (KM) ance (KM) | 20.85 6.126 4.258 S Statistics u set has > 50% s small such a S method may cially true who and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 46.58 0.0479 32.03 0.809 Gamma Para 0.546 6.582 | Ising Imputed N % NDs with mar as <1.0, especia r yield incorrect en the sample s ay be computed ay be computed 98 meters using P | Non-Detect ny tied obse ally when th values of L size is smal d using garr d using garr Adjus 5% Gamma | s s ervations a e sample s JCLs and E I. ma distrib k star Theta star n sted Chi Sc Adjusted | (bias corrected u star (bias corrected u star (bias corrected size is small (e.c BTVs ution on KM est vition on KM est (bias corrected u star (bias corrected u star (bias corrected u star (bias corrected u star (bias corrected star (bias corrected u star (bias corrected star (bias corrected u star (bias corrected u star (bias corrected u star (bias corrected star (bias corrected u star (bias corrected u star (bias corrected star (bias corrected u star (bias corrected)) | MLE) MLE) ected) g., <15- imates Mean Median CV MLE) MLE) ected) .71, β) n<50) | 0.208 20.49 6.234 20) 0.555 0.01 4.642 0.2 2.778 46.71 31.88 0.813 | | |
| $\begin{array}{c} 635\\ 636\\ 637\\ 638\\ 639\\ 640\\ 641\\ 642\\ 643\\ 644\\ 645\\ 646\\ 646\\ 646\\ 649\\ 650\\ 651\\ 652\\ 653\\ 654\\ 655\\ \end{array}$ | | GROS m For g Ap 95% Gamm | GROS may r nay not be used v For gamma distribute Adjusted Le proximate Chi So a Approximate U | Theta nu Mea G not be used when kstar of such situati T d detected of k Theta nu vel of Signi quare Value CL (use wh Es N | hat (MLE) hat (MLE) hat (MLE) n (detects) iamma RC when data of detects i ons, GROS his is esped data, BTVs Minimum Maximum SD hat (MLE) hat (MLE) hat (MLE) hat (MLE) ficance (β) (46.71, α) en n>=50) timates of Mean (KM) ance (KM) k hat (KM) | 20.85 6.126 4.258 S Statistics u set has > 50% s small such a 5 method may cially true who and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 46.58 0.0479 32.03 0.809 Gamma Para 0.546 6.582 0.0453 | Ising Imputed N % NDs with mar as <1.0, especia y yield incorrect en the sample s ay be computed ay be computed 95 meters using H | Non-Detect ny tied obse ally when th values of L size is smal d using gam d using gam d using gam d using gam d using gam d using gam | s s ervations a e sample s JCLs and E I. ma distrib k star Theta star n sted Chi Sc Adjusted | t multiple DLs size is small (e.c BTVs ution on KM est (bias corrected (bias corrected (bias corrected u star (bias corrected u star (bias corrected UCL (use when SE SE of Mear k sta | MLE) MLE) ected) g., <15- imates Mean dedian CV MLE) MLE) ected) .71, β) n<50) D (KM) n (KM) r (KM) | 0.208 20.49 6.234 20) 0.555 0.01 4.642 0.2 2.778 46.71 31.88 0.813 2.566 0.246 0.0498 | | |
| $\begin{array}{c} 635\\ 636\\ 637\\ 638\\ 639\\ 640\\ 641\\ 642\\ 643\\ 644\\ 645\\ 646\\ 647\\ 648\\ 649\\ 655\\ 655\\ 655\\ 655\\ 655\\ 655\\ 655\\ \end{array}$ | | GROS m For g Ap 95% Gamm | GROS may r nay not be used v For gamma distribute Adjusted Le proximate Chi So a Approximate U | Theta nu Mea G not be used when kstar of such situati T d detected of k Theta nu vel of Signi quare Value CL (use wh Es N Vari | hat (MLE) hat (MLE) hat (MLE) n (detects) m (MLE) hat (MLE) hat (MLE) hat (MLE) hat (MLE) hat (MLE) hat (MLE) hat (MLE) hat (MLE) ficance (β) (def.71, α) en n>=50) timates of Mean (KM) ance (KM) k hat (KM) u hat (KM) | 20.85 6.126 4.258 S Statistics u set has > 50% s small such a 5 method may cially true who and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 46.58 0.0479 32.03 0.809 Gamma Para 0.546 6.582 0.0453 10.6 | Ising Imputed N % NDs with mar as <1.0, especia y yield incorrect en the sample s ay be computed y be computed ay be computed | Non-Detect ny tied obse ally when th values of L size is smal d using gam d using gam d using gam d using gam d using gam d using gam | s s ervations a e sample s JCLs and E I. ma distrib k star Theta star n sted Chi Sc Adjusted es | t multiple DLs size is small (e.c BTVs ution on KM est (bias corrected (bias corrected (bias corrected u star (bias corrected u star (bias corrected u star (bias corrected star (bias corrected star (bias corrected u star (bias corrected star (bias corrected u star (bias corected u star (bias corre | MLE) MLE) ected) g., <15- imates Mean dedian CV MLE) MLE) mLE) ected) .71, β) n<50) D (KM) n (KM) r (KM) r (KM) | 0.208 20.49 6.234 20) 20) 0.555 0.01 4.642 0.2 2.778 46.71 31.88 0.813 2.566 0.246 0.0498 11.66 | | |
| $\begin{array}{c} 635\\ 636\\ 637\\ 638\\ 639\\ 640\\ 641\\ 642\\ 643\\ 644\\ 645\\ 646\\ 647\\ 648\\ 649\\ 655\\ 655\\ 655\\ 655\\ 655\\ 655\\ 655\\ 65$ | | GROS m For g Ap 95% Gamm | GROS may r nay not be used v For yamma distribute Adjusted Le proximate Chi So a Approximate U | Theta nu Mea G not be used when kstar of such situati T d detected of k Theta nu vel of Signi quare Value CL (use wh CL (use wh CL (use vh CL (use th CL (use th) CL (use th CL (use th) CL | hat (MLE) hat (MLE) hat (MLE) n (detects) m (detects) | 20.85 6.126 4.258 S Statistics u set has > 509 s small such a S method may cially true who and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 46.58 0.0479 32.03 0.809 Gamma Para 0.546 6.582 0.0453 10.6 12.05 | Ising Imputed N % NDs with mar as <1.0, especia r yield incorrect en the sample s ay be computed y be computed 98 meters using P | Non-Detect ny tied obse ally when th values of L size is smal d using gam d using gam Adjus 5% Gamma KM Estimat | s s ervations a e sample s JCLs and E I. ma distrib k star Theta star n sted Chi Sc Adjusted es | t multiple DLs size is small (e.c BTVs ution on KM est (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected u star (bias corrected u star (bias corrected star (bias corrected star (bias corrected u star (bias corrected star (bias corrected star (bias corrected star (bias corrected star (bias corrected u star (bias corrected star (b | MLE) MLE) ected) g., <15- imates Mean Median CV MLE) MLE) ected) .71, β) n<50) D (KM) n (KM) r (KM) r (KM) | 0.208 20.49 6.234 20) 0.555 0.01 4.642 0.2 2.778 46.71 31.88 0.813 2.5666 0.246 0.0498 11.66 10.96 | | |
| $\begin{array}{c} 635\\ 636\\ 637\\ 638\\ 639\\ 640\\ 641\\ 642\\ 643\\ 644\\ 645\\ 646\\ 647\\ 648\\ 649\\ 655\\ 655\\ 655\\ 655\\ 655\\ 655\\ 655\\ 65$ | | GROS m For g Ap 95% Gamm | GROS may r nay not be used v For gamma distribute Adjusted Le proximate Chi Sc a Approximate U | Theta nu Mea G not be used when kstar of such situati T d detected of k Theta nu vel of Signi quare Value CL (use wh CL (use wh CL (use the CL (use th | hat (MLE) hat (MLE) hat (MLE) n (detects) m (detects) | 20.85 6.126 4.258 S Statistics u set has > 509 s small such a S method may cially true who and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 46.58 0.0479 32.03 0.809 Gamma Para 0.546 6.582 0.0453 10.6 12.05 0.0732 | Ising Imputed N % NDs with mar as <1.0, especia r yield incorrect en the sample s ay be computed gay be comput | Non-Detect ny tied obse ally when th values of L size is smal d using gam d using gam Adjus 5% Gamma | s Theta star n s ervations a e sample s JCLs and E I. ma distrib k star Theta star n sted Chi Sc Adjusted es 90% ga | t multiple DLs size is small (e.c BTVs ution on KM est (bias corrected (bias corrected))))) | MLE) MLE) ected) g., <15- imates Mean Median CV MLE) MLE) ected) .71, β) n<50) D (KM) n (KM) r (KM) r (KM) r (KM) e (KM) | 0.208 20.49 6.234 20) 20) 0.555 0.01 4.642 0.2 2.778 46.71 31.88 0.813 2.566 0.246 0.0498 11.66 10.96 0.83 | | |
| $\begin{array}{c} 635\\ 635\\ 636\\ 637\\ 638\\ 639\\ 640\\ 641\\ 642\\ 643\\ 644\\ 645\\ 646\\ 647\\ 648\\ 645\\ 656\\ 657\\ 658\\ 655\\ 656\\ 657\\ 658\\ 659\\ \end{array}$ | | GROS m For g Ap 95% Gamm | GROS may r nay not be used v For gamma distribute Adjusted Le proximate Chi Sc a Approximate U 80% ga 80% ga | Theta nu Mea Conot be used when kstar of such situati Theta d detected of k Theta nu vel of Signi quare Value CL (use wh Es N Vari n thet amma perce amma perce | hat (MLE) hat (MLE) hat (MLE) n (detects) m (detects) | 20.85 6.126 4.258 S Statistics u set has > 509 s small such a S method may cially true who and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 46.58 0.0479 32.03 0.809 Gamma Para 0.546 6.582 0.0453 10.6 12.05 0.0732 2.901 | Ising Imputed N % NDs with mar as <1.0, especia y yield incorrect en the sample s ay be computed gay be comput | Non-Detect ny tied obse ally when th values of L size is smal d using gam d using gam Adjus 5% Gamma | s Theta star n s ervations a e sample s JCLs and E I. ma distrib k star Theta star n sted Chi Sc Adjusted es 90% ga 99% ga | t multiple DLs size is small (e.c BTVs ution on KM est (bias corrected (bias corrected)))))) | MLE) MLE) ected) g., <15- imates Mean Iedian CV MLE) MLE) ected) | 0.208 20.49 6.234 20) 20) 0.555 0.01 4.642 0.2 2.778 46.71 31.88 0.813 2.566 0.246 0.0498 11.66 10.96 0.83 11.89 | | |
| $\begin{array}{c} 635\\ 636\\ 637\\ 638\\ 639\\ 640\\ 641\\ 642\\ 643\\ 644\\ 645\\ 646\\ 647\\ 648\\ 646\\ 655\\ 656\\ 655\\ 656\\ 657\\ 658\\ 659\\ 660\\ \end{array}$ | | GROS m For g Ap 95% Gamm | GROS may r nay not be used v For gamma distribute Adjusted Le proximate Chi Sc a Approximate U 80% ga 80% ga | Theta nu Mea Conot be used when kstar of such situati T d detected of k Theta nu vel of Signi quare Value CL (use wh CL (use wh CL (use wh CL (use mh ctheta nu vari ctheta nu nu nu nu nu nu nu nu nu nu nu nu nu | hat (MLE) hat (MLE) hat (MLE) n (detects) m (detects) | 20.85 6.126 4.258 S Statistics u set has > 50% s small such a S method may cially true who and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 46.58 0.0479 32.03 0.809 Gamma Para 0.546 6.582 0.0453 10.6 12.05 0.0732 2.901 | sing Imputed N % NDs with mar as <1.0, especia y yield incorrect en the sample s ay be computed gay be compute | Non-Detect ny tied obse ally when th values of L size is smal d using gam d using gam Adjus S% Gamma | s Theta star n s ervations a e sample s JCLs and E I. ma distrib k star Theta star n sted Chi Sc Adjusted es 90% ga 99% ga | t multiple DLs size is small (e.c BTVs ution on KM est (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected star (bias corrected (bias corrected))))))) | MLE) MLE) ected) g., <15- imates Mean fedian CV MLE) MLE) m<50) 0 (KM) n (KM) r (KM) r (KM) r (KM) r (KM) g (KM) e (KM) | 0.208 20.49 6.234 20) 0.555 0.01 4.642 0.2 2.778 46.71 31.88 0.813 2.566 0.246 0.0498 11.66 10.96 0.83 11.89 | | |
| $\begin{array}{c} 635\\ 636\\ 637\\ 638\\ 639\\ 640\\ 641\\ 642\\ 643\\ 644\\ 645\\ 646\\ 647\\ 648\\ 646\\ 647\\ 648\\ 645\\ 655\\ 656\\ 655\\ 656\\ 657\\ 658\\ 659\\ 660\\ 661\\ \end{array}$ | | GROS m For g Ap 95% Gamm | GROS may r nay not be used v For gamma distribute Adjusted Le proximate Chi Sc a Approximate U 80% ga 80% ga | Theta nu Mea C not be used when kstar o such situati T d detected o k Theta nu vel of Signi quare Value CL (use wh CL (use wh Es N Vari n thet amma perco | hat (MLE) hat (MLE) hat (MLE) n (detects) m (detects) | 20.85 6.126 4.258 S Statistics u set has > 50% s small such a S method may cially true who and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 46.58 0.0479 32.03 0.809 Gamma Para 0.546 6.582 0.0453 10.6 12.05 0.0732 2.901 ma Kaplan-M | Ising Imputed N % NDs with mar as <1.0, especia y yield incorrect en the sample s ay be computed gay be comput | Non-Detect ny tied obse ally when th values of L size is smal d using gam Adjus S% Gamma KM Estimat | s Theta star n s ervations a e sample s JCLs and E I. ma distrib k star Theta star n sted Chi Sc Adjusted es 90% ga 99% ga | t multiple DLs size is small (e.c BTVs ution on KM est (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected scorrected (bias corrected (bias corrected))))) | MLE) MLE) ected) g., <15- imates Mean fedian CV MLE) MLE) mCV MLE) n<50) 0 (KM) n (KM) r (KM) r (KM) r (KM) r (KM) e (KM) | 0.208 20.49 6.234 20) 0.555 0.01 4.642 0.2 2.778 46.71 31.88 0.813 2.566 0.246 0.0498 11.66 10.96 0.83 11.89 | | |
| $\begin{array}{c} 635\\ 636\\ 637\\ 638\\ 639\\ 640\\ 641\\ 642\\ 643\\ 644\\ 645\\ 646\\ 647\\ 648\\ 649\\ 655\\ 656\\ 655\\ 656\\ 655\\ 656\\ 657\\ 658\\ 659\\ 660\\ 661\\ 662\\ 662\\ 662\\ 662\\ 662\\ 662\\ 662$ | | GROS m For g Ap 95% Gamm | GROS may r nay not be used v For gamma distribute Adjusted Le proximate Chi So a Approximate U 80% ga 95% ga | Theta nu Mea C not be used when kstar o such situati T d detected o k Theta nu vel of Signi quare Value CL (use wh CL (use wh) CL (use w | hat (MLE) hat (MLE) hat (MLE) hat (MLE) n (detects) m (MLE) hat (MLE) | 20.85 6.126 4.258 S Statistics u set has > 50% s small such a S method may cially true who and UCLs ma 2.1000E-4 16 2.575 0.199 2.786 46.58 0.0479 32.03 0.809 Gamma Para 0.546 6.582 0.0453 10.6 12.05 0.0732 2.901 ma Kaplan-W 5.006 | Ising Imputed N % NDs with mar as <1.0, especia y yield incorrect en the sample s ay be computed gybe computed gybe get meters using N get get get get get get get get get get | Non-Detect ny tied obse ally when th values of L size is smal d using gam Adjus S% Gamma KM Estimat | sted Chi So 90% ga 99% ga | t multiple DLs size is small (e.c BTVs ution on KM est (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected (bias corrected star (bias corrected (bias corrected) (bias corected) (| MLE) MLE) ected) g., <15- imates Mean fedian CV MLE) MLE) mCV MLE) n<50) 0 (KM) n (KM) r (KM) r (KM) r (KM) r (KM) e (KM) e (KM) | 0.208 20.49 6.234 20) 0.555 0.01 4.642 0.2 2.778 46.71 31.88 0.813 2.566 0.246 0.0498 11.66 10.96 0.83 11.89 | | |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|-----|---------|-------------|----------------------|---------------|--------------|------------------|-------------------|----------------|-------------|--------------|---------------|-----------|
| 663 | 95% | Gamma Ap | oproximate KM-U | CL (use wh | ien n>=50) | 1.272 | 95% (| Gamma Adji | usted KM-I | JCL (use w | vhen n<50) | 1.286 |
| 664 | | | | | | | | | | | | |
| 665 | | | | Lo | ognormal G | OF Test on I | Detected Obse | rvations On | ly | | | |
| 666 | | | Shap | oiro Wilk Te | st Statistic | 0.873 | | 5 | Shapiro Wi | ilk GOF Te | st | |
| 667 | | | 5% Shap | iro Wilk Cri | tical Value | 0.881 | Dete | cted Data N | lot Lognorr | nal at 5% S | Significance | Level |
| 668 | | | l | _illiefors Te | st Statistic | 0.181 | | | Lilliefors | GOF Test | | |
| 669 | | | 5% L | illiefors Cri | tical Value | 0.22 | Detect | ed Data app | bear Logno | ormal at 5% | Significan | ce Level |
| 670 | | | C | Detected Da | ata appear | Approximate | Lognormal at | 5% Signific | ance Leve | əl | | |
| 671 | | | | | | | | | | | | |
| 672 | | | | Log | gnormal R | OS Statistics | Using Imputed | Non-Dete | cts | | | |
| 673 | | | N | lean in Orig | ginal Scale | 0.546 | | | | Mean in | Log Scale | -16.42 |
| 674 | | | | SD in Orig | ginal Scale | 2.577 | | | | SD in | Log Scale | 6.174 |
| 675 | | 95% t | UCL (assumes no | ormality of | ROS data) | 0.941 | | | 95% Perc | centile Boo | tstrap UCL | 0.959 |
| 676 | | | 95% | 6 BCA Boot | tstrap UCL | 1.104 | | | | 95% Boots | strap t UCL | 1.124 |
| 677 | | | 95 | 5% H-UCL | (Log ROS) | 2476 | | | | | | |
| 678 | | | | | | | | | | | | |
| 679 | | | Statistic | cs using Kl | M estimate | s on Logged | Data and Assu | iming Logn | ormal Dist | ribution | | |
| 680 | | | | KM Mea | an (logged) | -7.919 | | | | KM | Geo Mean | 3.6382E-4 |
| 681 | | | | KM S | D (logged) | 2.672 | | | 95% Criti | cal H Value | e (KM-Log) | 4.192 |
| 682 | | | KM Standard E | rror of Mea | an (logged) | 0.261 | | | 9 | 5% H-UCL | . (KM -Log) | 0.0366 |
| 683 | | | | KM S | D (logged) | 2.672 | | | 95% Criti | cal H Value | e (KM-Log) | 4.192 |
| 684 | | | KM Standard E | rror of Mea | an (logged) | 0.261 | | | | | | |
| 685 | | | | | | DI /0.4 | | | | | | |
| 686 | | | 51 (6) | | | DL/2 S | statistics | | | | | |
| 687 | | | DL/2 N | ormal | | 0 5 4 7 | | | DL/2 Log-I | ransforme | | 7.000 |
| 688 | | | IV | lean in Orig | ginal Scale | 0.547 | | | | Mean in | Log Scale | -7.022 |
| 689 | | | | SD in Orig | ginal Scale | 2.576 | | | | SD in | Log Scale | 2.669 |
| 690 | | | 95% t UCL | (Assumes | normality) | 0.942 | ded fer eener | | historical | 95% F | H-Stat UCL | 0.0888 |
| 691 | | | DL/2 IS | not a recor | mmenaea | metnoa, prov | ded for compa | risons and | nistorical | reasons | | |
| 692 | | | | | Nonnoron | notrio Diotribu | tion Free UCI | Statiation | | | | |
| 693 | | | | Detected | Data anne | ar Gamma D | istributed at 59 | | | | | |
| 694 | | | | Delected | | | istributed at 07 | oliginitai | 100 10401 | | | |
| 695 | | | | | | Suggester | UCL to Use | | | | | |
| 697 | | | 95% KM Appr | oximate Ga | mma UCI | 1 272 | | | | | | |
| 698 | | | ee to tall tall tall | | | | | | | | | |
| 699 | | Note: Sua | aestions regardin | a the selec | tion of a 95 | 5% UCL are p | rovided to help | the user to | select the | most appro | priate 95% | UCL. |
| 700 | | J | Re | commenda | tions are b | ased upon da | ta size, data di | stribution, a | nd skewne | SS. | | |
| 701 | | These re | commendations a | are based u | pon the res | sults of the sir | nulation studies | summarize | ed in Singh | , Maichle, | and Lee (20 | 006). |
| 702 | H | lowever, si | nulations results | will not cov | er all Real | World data se | ets; for addition | al insight the | e user may | want to co | onsult a stat | istician. |
| 703 | | | | | | | | | | | | |
| 704 | Toluene | | | | | | | | | | | |
| 705 | | | | | | | | | | | | |
| 706 | | | | | | General | Statistics | | | | | |
| 707 | | | Total Nu | mber of Ob | servations | 105 | | 1 | Number of | Distinct Ob | servations | 96 |
| 708 | | | | Number | of Detects | 37 | | | Νι | umber of N | on-Detects | 68 |
| 709 | | | Numb | per of Distin | nct Detects | 35 | | | Number of | Distinct N | on-Detects | 63 |
| 710 | | | | Minim | um Detect | 2.2050E-4 | | | | Minimum N | Non-Detect | 2.1900E-4 |
| 711 | | | | Maxim | um Detect | 0.00446 | | | | Maximum N | Non-Detect | 0.688 |
| 712 | | | | Varian | ce Detects | 1.4870E-6 | | | | Percent N | on-Detects | 64.76% |
| 713 | | | | Mea | an Detects | 0.00155 | | | | S | SD Detects | 0.00122 |
| 714 | | | | Media | an Detects | 0.001 | | | | (| CV Detects | 0.787 |
| 715 | | | | Skewne | ss Detects | 1.012 | | | | Kurto | sis Detects | -0.159 |
| 716 | | | Me | an of Logge | ed Detects | -6.781 | | | 5 | SD of Logg | ed Detects | 0.825 |
| 717 | | | | | | | | | | | | |
| 718 | | | | | No | rmal GOF Te | st on Detects C | Only | | | | |
| 719 | | | Shap | oiro Wilk Te | st Statistic | 0.845 | | 8 | Shapiro Wi | lk GOF Te | st | |
| 720 | | | 5% Shap | iro Wilk Cri | tical Value | 0.936 | De | tected Data | Not Norma | al at 5% Sig | gnificance L | evel |
| 721 | | | l | Lilliefors Te | st Statistic | 0.232 | | | Lilliefors | GOF Test | | |
| 722 | | | 5% L | illiefors Cri | tical Value | 0.144 | De | tected Data | Not Norma | al at 5% Sig | gnificance L | _evel |
| 723 | | | | D | etected Da | ata Not Norm | al at 5% Signifi | cance Leve | əl | | | |
| 724 | | | | | | | | | | | | |

| | Δ | В | C | | D | F | F | G | н | | | ĸ | · · |
|-----|------|----------|----------------|-----------|-----------|--|-----------------|------------------------|--------------|--------------|-----------------|--------------|------------|
| 705 | | D | Kanlai | n-Meier | · (KM) 9 | Statietice u | eing Normal (| L Critical Values : | and other M | lonnarame | atric LICLs | | |
| 725 | | | Rupiu | | (100) | | | | | KM O | | | |
| /26 | | | | | | r ivi ivlean | 1.8992E-4 | | | KIVI St | anuard Err | or or Mean | 1.0008E-4 |
| 727 | | | | | | KM SD | 9.9030E-4 | | | | 95% KM (| BCA) UCL | 9.5878E-4 |
| 728 | | | | | 95% ł | <m (t)="" th="" ucl<=""><th>9.6530E-4</th><th></th><th>95%</th><th>5 KM (Perc</th><th>entile Boots</th><th>strap) UCL</th><th>9.7818E-4</th></m> | 9.6530E-4 | | 95% | 5 KM (Perc | entile Boots | strap) UCL | 9.7818E-4 |
| 729 | | | | | 95% K | (M (z) UCL | 9.6374E-4 | | | 95% | 6 KM Boots | strap t UCL | 9.8064E-4 |
| 730 | | | (| 90% KM | 1 Cheby | vshev UCL | 0.00111 | | | 95% | KM Cheby | vshev UCI | 0.00125 |
| 730 | | | | | 1 Chab | | 0.00115 | | | 00% | KM Chab | | 0.00120 |
| /31 | | | 97 | .5% KIV | I Cheby | ysnev UCL | 0.00145 | | | 99% | Kivi Cheby | /snev UCL | 0.00164 |
| 732 | | | | | | | | | | | | | |
| 733 | | | | | G | amma GC | OF Tests on D | etected Observ | ations Onl | y | | | |
| 734 | | | | | A-D Te | est Statistic | 0.965 | | An | derson-Da | rling GOF | Test | |
| 735 | | | | 5% | A-D Cri | itical Value | 0.763 | Detected | Data Not G | amma Dis | tributed at | 5% Signific | ance Level |
| 736 | | | | | K-S Te | st Statistic | 0 164 | | K | olmogorov- | Smirnov G | OF | |
| 700 | | | | 5% | | itical Value | 0.101 | Detected | Data Not G | Commo Die | tributed at l | 5% Signific | |
| /3/ | | | | 576 | | | 0.147 | Delected | | | | | |
| 738 | | | | | Jetecte | a Data No | a Gamma Dis | Induted at 5% a | Significand | e Levei | | | |
| 739 | | | | | | | | | | | | | |
| 740 | | | | | | Gamm | na Statistics o | n Detected Dat | a Only | | | | |
| 741 | | | | | k | hat (MLE) | 1.755 | | | k star | (bias corre | ected MLE) | 1.631 |
| 742 | | | | | Theta | hat (MLE) | 8.8272E-4 | | | Theta star | (bias corre | ected MLE) | 9.5000E-4 |
| 7/3 | | | | | nu | hat (MLE) | 129.9 | | | nı | , star (hias | corrected) | 120.7 |
| 743 | | | | | Maa | n (dotooto) | 0.00155 | | | | | | |
| 744 | | | | | wea | ii (uelecis) | 0.00155 | | | | | | <u> </u> |
| 745 | | | | | | | | | | | | | |
| 746 | | | | | G | amma RC | DS Statistics u | sing Imputed N | lon-Detect | s | | | |
| 747 | | | GROS ma | ay not b | e used | when data | set has > 50° | % NDs with mar | ny tied obse | ervations a | t multiple D | Ls | |
| 748 | | GROS m | hay not be use | ed wher | n kstar (| of detects i | s small such a | is <1.0, especia | ally when th | e sample s | ize is smal | l (e.g., <15 | -20) |
| 749 | | | - | For such | h situati | ions. GRO | S method may | vield incorrect | values of L | JCLs and E | TVs | | |
| 750 | | | | | Т | This is esne | cially true wh | on the sample s | ize is smal | 1 | | | |
| 750 | | For a | ommo diatrib | utod do | to oto d | | | | | | itian on KN | 1 aatimataa | |
| /51 | | FOLG | jamma uisuno | uteu de | lected | | | | i using gan | ima uisuibi | | n estimates | 0.00700 |
| 752 | | | | | | Minimum | 2.2050E-4 | | | | | Mean | 0.00702 |
| 753 | | | | | | Maximum | 0.01 | | | | | Median | 0.01 |
| 754 | | | | | | SD | 0.00412 | | | | | CV | 0.587 |
| 755 | | | | | k | hat (MLE) | 1.352 | | | k star | (bias corre | ected MLE) | 1.32 |
| 756 | | | | | Theta | hat (MLE) | 0.00519 | | | Theta star | (bias corre | cted MLE) | 0.00532 |
| 750 | | | | | n | hat (MLE) | 284 | | | n | ustar (hias | corrected) | 277.2 |
| 757 | | | A | | 110 | | 204 | | | | | conecteu) | 211.2 |
| /58 | | | Adjusted | | or Signi | ficance (p) | 0.0477 | | | | | <u></u> | 000 / |
| 759 | | Арр | roximate Chi | Square | Value | (277.17, α) | 239.6 | | Adjust | ed Chi Squ | are Value | (277.17, β) | 239.1 |
| 760 | 9 | 5% Gamm | a Approximat | e UCL (| (use wh | nen n>=50) | 0.00812 | 95 | 5% Gamma | Adjusted l | JCL (use w | /hen n<50) | 0.00814 |
| 761 | | | | | | | | | | | | | |
| 762 | | | | | Es | timates of | Gamma Para | meters using k | M Estimat | es | | | |
| 763 | | | | | 1 | Mean (KM) | 7.8992E-4 | | | | | SD (KM) | 9.9030E-4 |
| 764 | | | | | Vari | iance (KM) | 9 8069F-7 | | | | SE of I | Mean (KM) | 1 0568E-4 |
| 704 | | | | | v an | k hot (KM) | 0.626 | | | | 02 011 | k eter (KM) | 0.624 |
| 765 | | | | | | | 0.030 | | | | | | 0.024 |
| 766 | | | | | n | iu hat (KM) | 133.6 | | | | ทเ | J star (KM) | 131.1 |
| 767 | | | | | thet | ta hat (KM) | 0.00124 | | | | theta | a star (KM) | 0.00127 |
| 768 | | | 80% | % gamm | na perce | entile (KM) | 0.0013 | | | 90% ga | imma perce | entile (KM) | 0.00204 |
| 769 | | | 95% | % gamm | na perco | entile (KM) | 0.0028 | | | 99% ga | imma perce | entile (KM) | 0.00465 |
| 770 | | | | - | - | . , | | | | | | , | 1 |
| 771 | | | | | | Gan | ma Kaplan-M | leier (KM) Stati | stics | | | | |
| 770 | | ۸nn | rovimato Chi | Squara | Value | (121 12 a) | 105.7 | | Adjust | od Chi Sau | aro Valuo | (121 12 8) | 105.4 |
| 772 | 050/ | | | | value | (131.13, u) | | 059/ 0 | | | | (131.13, p) | |
| //3 | 90% | Gamma Ap | pioximate KI | vi-UCL (| use wh | ien n>=50) | 9.0018E-4 | 95% 6 | aanima Adj | usieŭ KIVI-l | JCL (use w | nen n≤50) | 3.0312E-4 |
| 774 | | | | | | | | | | | | | |
| 775 | | | | | Lo | ognormal (| OF Test on I | Detected Obser | vations Or | nly | | | |
| 776 | | | S | Shapiro ' | Wilk Te | est Statistic | 0.944 | | | Shapiro Wi | lk GOF Te | st | |
| 777 | | | 5% S | hapiro \ | Wilk Cri | itical Value | 0.936 | Detecte | ed Data ap | pear Logno | ormal at 5% | Significan | ce Level |
| 778 | | | | Lillie | fors Te | st Statistic | 0.126 | | | Lilliefors | GOF Test | | |
| 770 | | | 5 | منالنا % | fore Cri | itical Value | 0.144 | Detect | ad Data an | | rmal at 5% | Significan | |
| 779 | | | | | Dete | | 0.144 | | | | innai at 370 | Significan | |
| 780 | | | | | Dete | cted Data | appear Logno | ormai at 5% Sig | inificance i | _evei | | | |
| 781 | | | | | | | | | | | | | |
| 782 | | | | | Lo | gnormal R | OS Statistics | Using Imputed | Non-Dete | cts | | | |
| 783 | | | | Mear | n in Oriç | ginal Scale | 7.1029E-4 | | | | Mean in | Log Scale | -7.794 |
| 784 | | | | SE |) in Orio | ginal Scale | 9.5302E-4 | | | | SD in | Log Scale | 0.939 |
| 785 | | 95% t | UCL (assume | es norm | ality of | ROS data) | 8.6464F-4 | | | 95% Per | entile Boo | tstran LICI | 8.5817F-4 |
| 700 | | 00701 | (0000116 | 05% D | | tetron UCI | 8 71655 4 | | | | 05% Booto | tran + UCI | 8 84365 4 |
| 186 | | | | 30% BC | | | 0.7 100E-4 | | | | 90 /0 D00IS | map i UCL | 0.0430E-4 |
| 787 | | | | 95% I | H-UCL | (Log ROS) | 7.8126E-4 | | | | | | |
| 788 | | | | | | | | | | | | | |
| 789 | | | Sta | tistics u | ising K | M estimate | es on Logged | Data and Assu | ming Logn | ormal Dist | ribution | | |
| 790 | | | | ŀ | KM Mea | an (logged) | -7.668 | | | | KM | Geo Mean | 4.6778E-4 |
| 701 | | | | - | KMS | (loaned) | 0.932 | | | 95% Criti | cal H Value | e (KM-Log) | 2.148 |
| 700 | | | KM Standa | rd Error | of Mor | | 0.106 | | | 0 | | (KM -L og) | 8 79255 1 |
| 792 | | | | | | | 0.100 | | | 9 | | | 0.70200-4 |
| 793 | | | 101.0 | . = | NVI S | iogged) יי | 0.932 | | | 95% Criti | uai 🗆 Value | ; (rivi-log) | 2.148 |
| 794 | | | KM Standa | rd Error | ot Mea | an (logged) | 0.106 | | | | | | |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|------------|-----------|------------|--------------------|---------------|---------------|------------------|--------------------|--------------|--------------|--------------|---------------|------------|
| 795 | | | | | | | | | | | | |
| 796 | | | | | | DL/2 S | Statistics | | | | | |
| 797 | | | DL/2 N | ormal | | | | | DL/2 Log-1 | Fransforme | ed | |
| 798 | | | Ν | lean in Orig | ginal Scale | 0.0082 | | | | Mean in | Log Scale | -7.215 |
| 799 | | | 050/ 1101 | SD in Orig | ginal Scale | 0.0431 | | | | SD in | Log Scale | 1.569 |
| 800 | | | 95% t UCL | (Assumes | normality) | 0.0152 | | | | 95% | H-Stat UCL | 0.00388 |
| 801 | | | DL/2 IS | not a recol | mmenaea | metnoa, prov | ided for compa | risons and | nistorical | reasons | | |
| 802 | | | | | Mannanan | a atula Diatulha | tion Free LIO | Otatiatian | | | | |
| 803 | | | | Detected F | Nonparar | | Distributed at E | | | 1 | | |
| 804 | | | | | Jata appea | r Lognormal | Distributed at 5 | % Significa | ance Leve | | | |
| 805 | | | | | | Suggostor | | | | | | |
| 800 | | | | | | | | | | | | |
| 007 | | | | | | 0.75256-4 | | | | | | |
| 000 | | Note: Suc | nestions regardir | n the selec | tion of a 95 | % LICL are n | rovided to help t | the user to | select the | most annro | onriate 95% | |
| 810 | | 11010. 000 | Re | commenda | tions are h | ased upon da | ta size data dis | tribution a | nd skewne | | | 002. |
| 811 | | These re | commendations a | are based u | non the res | sults of the sir | nulation studies | summariz | ed in Sinah | Maichle | and Lee (20 |)06) |
| 812 | Н | owever. si | imulations results | will not cov | er all Real | World data se | ets: for additiona | l insight th | e user may | want to co | onsult a stat | istician. |
| 813 | | | | | | | | | , | | | |
| 814 | Xylenes (| (total) | | | | | | | | | | |
| 815 | | . , | | | | | | | | | | |
| 816 | | | | | | General | Statistics | | | | | |
| 817 | | | Total Nu | mber of Ob | servations | 105 | | | Number of | Distinct Ob | oservations | 87 |
| 818 | | | | Number | of Detects | 16 | | | Νι | umber of N | on-Detects | 89 |
| 819 | | | Numl | ber of Distir | nct Detects | 16 | | | Number of | f Distinct N | on-Detects | 73 |
| 820 | | | | Minim | um Detect | 4.9200E-4 | | | | Minimum I | Non-Detect | 3.4800E-4 |
| 821 | | | | Maxim | um Detect | 3.8 | | | I | Maximum I | Non-Detect | 1.11 |
| 822 | | | | Varian | ce Detects | 0.922 | | | | Percent N | on-Detects | 84.76% |
| 823 | | | | Me | an Detects | 0.355 | | | | 5 | SD Detects | 0.96 |
| 824 | | | | Media | an Detects | 0.00244 | | | | (| CV Detects | 2.703 |
| 825 | | | | Skewne | ss Detects | 3.494 | | | | Kurto | sis Detects | 12.82 |
| 826 | | | Me | an of Logg | ed Detects | -4.802 | | | ç | SD of Logg | ed Detects | 2.891 |
| 827 | | | | | | | | | | | | |
| 828 | | | | · | No | rmal GOF Te | st on Detects O | nly | <u></u> | | - | |
| 829 | | | Snap 5% Shar | | st Statistic | 0.434 | Det | | Snapiro wi | | en:finance l | |
| 830 | | | 5% Snap | ITO WIIK CI | tical value | 0.887 | Det | ected Data | | | gnificance L | evei |
| 831 | | | E9/ 1 | Lilliefors Te | st Statistic | 0.393 | Det | acted Date | Lillet Norm | GUF Test | anificance l | |
| 832 022 | | | 5701 | | | 0.213 | al at 5% Signifi | | | | grinicance L | ever |
| 033 | | | | | | | ai at 576 Olymin | | 61 | | | |
| 034 | | | Kanlan-M | eier (KM) S | Statistics u | sing Normal (| Critical Values a | and other M | Vonnarame | atric UCLs | | |
| 836 | | | Tuplan II | | KM Mean | 0 0547 | | | KM St | andard Fri | ror of Mean | 0.0388 |
| 837 | | | | | KM SD | 0.385 | | | | 95% KM | (BCA) UCL | 0.136 |
| 838 | | | | 95% ł | KM (t) UCL | 0.119 | | 95% | 6 KM (Perc | entile Boot | (Strap) UCL | 0.127 |
| 839 | | | | 95% K | (M (z) UCL | 0.119 | | | | 6 KM Boot | strap t UCL | 0.428 |
| 840 | | | 90% | KM Cheby | shev UCL | 0.171 | | | 95% | KM Cheb | yshev UCL | 0.224 |
| 841 | | | 97.5% | 6 KM Cheby | shev UCL | 0.297 | | | 99% | KM Cheb | yshev UCL | 0.441 |
| 842 | | | | | | | | | | | | |
| 843 | | | | G | amma GO | F Tests on D | etected Observ | ations On | ly | | | |
| 844 | | | | A-D Te | st Statistic | 2.46 | | An | derson-Da | rling GOF | Test | |
| 845 | | | | 5% A-D Cri | tical Value | 0.887 | Detected | Data Not C | amma Dis | tributed at | 5% Significa | ance Level |
| 846 | | | | K-S Te | st Statistic | 0.425 | | Ko | olmogorov- | -Smirnov C | GOF | |
| 847 | | | | 5% K-S Cri | tical Value | 0.239 | Detected | Data Not G | amma Dis | tributed at | 5% Significa | ance Level |
| 848 | | | | Detecte | ed Data No | t Gamma Dis | tributed at 5% \$ | Significanc | e Level | | | |
| 849 | | | | | | - 04-11-11 | - D-4 | - 0.1 | | | | |
| 850 | | | | | Gamm | a Statistics o | n Detected Dat | a Only | | | | 0.001 |
| 851 | | | | | nat (MLE) | 0.196 | | | k star | (DIAS COTTO | ected MLE) | 0.201 |
| 852 | | | | Theta | hat (MLE) | 1.813 | | | i neta star | (DIAS COTT | ected MLE) | 1./b8 |
| 853 | | | | nu | nat (IVILE) | 0.272 | | | nı | u star (DIas | correctea) | 0.429 |
| 854 | | | | wea | ii (ueiecis) | 0.555 | | | | | | |
| 855 | | | | ~ | amma DO | S Statiation · | ieina Imputed N | lon-Detect | ·e | | | |
| 020 | | | GROS may r | not he used | when data | set has > 500 | % NDs with mar | v tied ober | ervations of | t multinla r |)l s | |
| 007 859 | | GROS | may not be used w | when kstar | of detects in | s small such a | as <1.0 esnecia | lly when th | e samnle s | size is sma | (e.a. <15. | -20) |
| 850 | | | For | such situati | ions. GROS | S method may | vield incorrect | values of I | JCLs and F | BTVs | (0.9., 10 | |
| 860 | | | | T | his is espe | cially true wh | en the sample s | ize is smal | . | | | |
| 861 | | For | gamma distribute | d detected | data, BTVs | and UCLs m | ay be computed | using gam | nma distrib | ution on KI | M estimates | |
| 551 | | | | | , | | | 3 5 | | | | |

| | А | В | С | D | E | F | G | н | 1 | J | K | L |
|-----|------|------------|-------------------|--------------------|------------------------|------------------|--------------------|---------------|----------------|---------------|--------------|-----------|
| 862 | | | | M | linimum | 4.9200E-4 | | | • | | Mean | 0.0626 |
| 863 | | | | Ма | aximum | 3.8 | | | | | Median | 0.01 |
| 864 | | | | | SD | 0.385 | | | | | CV | 6.156 |
| 004 | | | | k ha | | 0.359 | | | k sta | r (hias corre | cted MLE) | 0.355 |
| 800 | | | | Thoto ho | | 0.000 | | | Thoto sto | r (bias corre | | 0.000 |
| 866 | | | | Tileta lia | | 0.174 | | | Theta Sta | | | 0.170 |
| 867 | | | A 12 | nu na | | 75.42 | | | ſ | nu star (blas | corrected) | 74.0 |
| 868 | | | Adjusted Le | vel of Significa | ance (B) | 0.0477 | | | | | (74.00.0) | == 10 |
| 869 | | Ар | proximate Chi So | quare Value (7 | 4.60, α) | 55.71 | | Adjus | sted Chi S | quare Value | e (74.60, β) | 55.48 |
| 870 | ç | 5% Gamm | a Approximate U | CL (use when | n>=50) | 0.0838 | 95 | 5% Gamma | Adjusted | UCL (use w | /hen n<50) | 0.0842 |
| 871 | | | | | | | | | | | | |
| 872 | | | | Estim | ates of | Gamma Para | ameters using k | M Estimat | tes | | | |
| 873 | | | | Mea | an (KM) | 0.0547 | | | | | SD (KM) | 0.385 |
| 874 | | | | Varian | ce (KM) | 0.148 | | | | SE of I | Mean (KM) | 0.0388 |
| 875 | | | | k h | at (KM) | 0.0202 | | | | | < star (KM) | 0.026 |
| 876 | | | | nu h | at (KM) | 4.246 | | | | nı | u star (KM) | 5.458 |
| 877 | | | | theta h | at (KM) | 2.707 | | | | theta | a star (KM) | 2.106 |
| 878 | | | 80% ga | amma percenti | ile (KM) | 2.2549E-4 | | | 90% c | amma perc | entile (KM) | 0.0212 |
| 879 | | | 95% ga | amma percent | ile (KM) | 0.182 | | | 99% c | amma perc | entile (KM) | 1.463 |
| 880 | | | g- | | | | | | | , | | |
| 881 | | | | | Gam | ma Kanlan-N | Aeier (KM) Stati | stics | | | | |
| 001 | | Δ | nnrovimate Chi S | Square Value (| 5.46 a) | 1 369 | | Δdiu | isted Chi | Sauara Valu | 0 (5 / 6 B) | 1 3/2 |
| 882 | 050/ | | approximate KM L | | $\frac{5.40, u}{2.50}$ | 0.019 | 059/ 0 | | | | (0.40, p) | 0.000 |
| 883 | 95% | Gamma Ap | oproximate Kim-O | CL (use when | 1/-50) | 0.216 | 95% 6 | amma Auj | | -OCL (use w | nen n<50) | 0.225 |
| 884 | | | | | | | | | | | | |
| 885 | | | | | ormal G | | Detected Obser | vations Or | 11y 01 1 14 | | | |
| 886 | | | Shap | biro Wilk Test | Statistic | 0.768 | | | Shapiro V | VIIK GOF Te | st | |
| 887 | | | 5% Shap | piro Wilk Critica | al Value | 0.887 | Deteo | cted Data N | Not Logno | rmal at 5% S | Significance | Level |
| 888 | | | | Lilliefors Test | Statistic | 0.354 | | | Lilliefor | s GOF Test | | |
| 889 | | | 5% L | -illiefors Critica | al Value | 0.213 | Deteo | cted Data N | lot Logno | rmal at 5% S | Significance | Level |
| 890 | | | | Detec | ted Data | a Not Lognor | mal at 5% Signi | ificance Le | vel | | | |
| 891 | | | | | | | | | | | | |
| 892 | | | | Logno | ormal R | OS Statistics | Using Imputed | Non-Dete | cts | | | |
| 893 | | | N | lean in Origina | al Scale | 0.0541 | | | | Mean in | Log Scale | -12.9 |
| 894 | | | | SD in Origina | al Scale | 0.387 | | | | SD in | Log Scale | 3.862 |
| 895 | | 95% t | UCL (assumes n | ormality of RO | S data) | 0.117 | | | 95% Pe | rcentile Boo | tstrap UCL | 0.125 |
| 896 | | | 95% | 6 BCA Bootstr | ap UCL | 0.191 | | | | 95% Boots | strap t UCL | 0.385 |
| 897 | | | 95 | 5% H-UCL (Lo | g ROS) | 0.0379 | | | | | | |
| 898 | | | | | , | | | | | | | |
| 899 | | | Statisti | cs usina KM e | stimate | s on Loaaed | Data and Assu | mina Loan | ormal Dis | stribution | | |
| 900 | | | | KM Mean (| loaaed) | -7.417 | | | | KM | Geo Mean | 6.0122E-4 |
| 001 | | | | KM SD (| logged) | 1 586 | | | 95% Cri | tical H Value | (KM-Log) | 2 816 |
| 002 | | | KM Standard F | Fror of Mean (| logged) | 0 164 | | | 0070 011 | 95% H-UCI | (KM -L og) | 0.00328 |
| 902 | | | | | logged) | 1 586 | | | 05% Cri | tical H Value | | 2 816 |
| 903 | | | KM Standard F | | logged) | 0.164 | | | 33 % CH | | (INIVI-LOG) | 2.010 |
| 904 | | | | | iogyeu) | 0.104 | | | | | | |
| 905 | | | | | | DI /2 (| Statiation | | | | | |
| 906 | | | | ormol | | DL/2 3 | วเสแรแตร | | | Teorof | d | |
| 907 | | | DL/2 N | | | 0.0000 | | | DUZ LOG | - I ranstorme | | 0.000 |
| 908 | | | N | lean in Origina | al Scale | 0.0663 | | | | Mean in | Log Scale | -6.899 |
| 909 | | | | SD in Origina | al Scale | 0.391 | | | | SD in | Log Scale | 2.007 |
| 910 | | | 95% t UCL | . (Assumes no | rmality) | 0.13 | | | | 95% H | I-Stat UCL | 0.0145 |
| 911 | | | DL/2 is | not a recomm | nended i | method, prov | rided for compa | risons and | historical | reasons | | |
| 912 | | | | | | | | | | | | |
| 913 | | | | N | onparan | netric Distrib | ution Free UCL | Statistics | | | | |
| 914 | | | | Data do not f | ollow a | Discernible D | Distribution at 5 | % Significa | ance Leve | | | |
| 915 | | | | | | | | | | | | |
| 916 | | | | | | Suggester | d UCL to Use | | | | | |
| 917 | | | 95% I | KM (Chebyshe | ev) UCL | 0.224 | | | | | | |
| 918 | | | | | | 1 | <u> </u> | | | | | |
| 919 | | Note: Sug | gestions regardin | ng the selection | n of a 95 | 5% UCL are n | provided to help | the user to | select the | most appro | priate 95% | UCL. |
| 920 | | | Re | commendation | ns are h | ased upon da | ata size, data dis | stribution | ind skewn | less. | | - |
| 021 | | These rea | commendations a | are based upor | n the res | sults of the sir | mulation studies | summariz | ed in Sing | h Maichle | and Lee (20 | 06) |
| 022 | ц | OWEVEr cir | mulations results | will not cover | all Real | World data of | ets: for addition | al insight th | | w want to co | nsult a stat | istician |
| 922 | | GWGVEI, SI | | will not cover a | an ivedi | wonu udla St | | a məiyin til | | | nouil a Sidi | |
| 923 | | | | | | | | | | | | |

Attachment 2 (Continued)

Soil Vapor Samples from Q1 through Q3 2016, On-Base (Input)

| | A | В | С | D | E |
|----|------------------------|--------------------------|---|--|--|
| 1 | 1,2,4-TRIMETHYLBENZENE | d_1,2,4-TRIMETHYLBENZENE | | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE) | d_1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE) |
| 2 | 1.28 | 0 | | 1.38 | 0 |
| 3 | 3.24 | 1 | | 1.31 | 0 |
| 4 | 1.62 | 1 | | 1.31 | 0 |
| 5 | 81.11 | 1 | | 3.19 | 1 |
| 6 | 5.41 | 1 | | 2.23 | 0 |
| 7 | 4.77 | 1 | | 1.38 | 0 |
| 8 | 5.41 | 1 | | 1.31 | 0 |
| 9 | 5.41 | 1 | | 1.38 | 0 |
| 10 | 9.34 | 1 | | 1.38 | 0 |
| 11 | 5.9 | 1 | | 1.38 | 0 |
| 12 | 12.29 | 1 | | 1.31 | 0 |
| 13 | 3.29 | 1 | | 1.31 | 0 |
| 14 | 5.9 | 1 | | 1.31 | 0 |
| 15 | 290.03 | 1 | | 3.76 | 1 |
| 16 | 117.98 | 1 | | 2 | 1 |
| 17 | 35.39 | 1 | | 3,46 | 1 |
| 18 | 19.66 | 1 | | 2.31 | 1 |
| 19 | 1.28 | 0 | | 1.38 | 0 |
| 20 | 1.23 | 0 | | 1.38 | 0 |
| 21 | 32.94 | 1 | | 1.38 | 0 |
| 21 | 7.87 | 1 | | 1.38 | 0 |
| 23 | 2.26 | 1 | | 1.38 | 0 |
| 24 | 1.77 | 1 | | 1.38 | 0 |
| 25 | 3.49 | 1 | | 1.31 | 0 |
| 26 | 2.41 | 1 | | 1.46 | 0 |
| 27 | 2.29 | 1 | | 1.46 | 0 |
| 28 | 2.7 | 1 | | 1.42 | 0 |
| 29 | 3 | 1 | | 1.38 | 0 |
| 30 | 5.41 | 1 | | 1.31 | 0 |
| 31 | 2.7 | 1 | | 1.31 | 0 |
| 32 | 2.9 | 1 | | 1.31 | 0 |
| 33 | 1.18 | 0 | | 1.31 | 0 |
| 34 | 1.23 | 0 | | 1.31 | 0 |
| 35 | 5.01 | 1 | | 1.31 | 0 |
| 36 | 2.11 | 1 | | 1.31 | 0 |
| 37 | 2.16 | 1 | | 1.31 | 0 |
| 38 | 2.51 | 1 | | 1.23 | 0 |
| 39 | 31.21 | 1 | | 1.31 | 1 |
| 40 | 1.18 | 1 | | 1.23 | 0 |
| 41 | 1.43 | 1 | | 1.23 | 0 |
| 42 | 4.28 | 1 | | 1.23 | 0 |
| 43 | 8.85 | 1 | | 1.77 | 1 |
| 44 | 13.27 | 1 | | 1.61 | 1 |
| 45 | 14.26 | 1 | | 1.54 | 1 |
| 46 | 7.87 | 1 | | 1.46 | 1 |
| 47 | 8.85 | 1 | | 1.31 | 0 |
| 48 | 221.21 | 1 | | 3.23 | 1 |
| 49 | 18.19 | 1 | | 2.69 | 1 |
| 50 | 639.05 | 1 | | 2.38 | 1 |
| 51 | 113.06 | 1 | | 23.82 | 1 |
| 52 | 1.23 | 0 | | 1.34 | 0 |
| 53 | 1.25 | 0 | | 1.31 | 0 |
| 54 | 1.18 | 0 | | 1.31 | 0 |
| 55 | 1.18 | 0 | | 1.31 | 0 |

| | A | В | С | D | E |
|----|------------------------|--------------------------|---|--|--|
| 1 | 1,2,4-TRIMETHYLBENZENE | d_1,2,4-TRIMETHYLBENZENE | | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE) | d_1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE) |
| 56 | 1.67 | 1 | | 1.31 | 0 |
| 57 | 11.8 | 1 | | 1.31 | 0 |
| 58 | 2.06 | 1 | | 1.23 | 0 |
| 59 | 1.18 | 0 | | 1.31 | 0 |
| 60 | 1.18 | 0 | | 1.31 | 0 |
| 61 | 1.77 | 1 | | 1.23 | 0 |
| 62 | 1.82 | 1 | | 1.23 | 0 |
| 63 | 1.33 | 1 | | 1.23 | 0 |
| 64 | 2.11 | 1 | | 1.38 | 0 |
| 65 | 4.47 | 1 | | 1.38 | 0 |
| 66 | 2.02 | 1 | | 1.31 | 0 |
| 67 | 3.69 | 1 | | 1.46 | 0 |
| 68 | 23.6 | 1 | | 2.07 | 1 |
| 69 | 9.83 | 1 | | 1.61 | 1 |
| 70 | 3.42 | 1 | | 1.38 | 0 |
| 71 | 1.23 | 0 | | 1.38 | 0 |
| 72 | 1.28 | 0 | | 1.31 | 0 |
| 73 | 1.52 | 1 | | 1.31 | 0 |
| 74 | 7.37 | 1 | | 1.31 | 0 |
| 75 | 28.51 | 1 | | 4.15 | 1 |
| 76 | 2.75 | 1 | | 1.38 | 0 |
| 77 | 6.88 | 1 | | 1.31 | 0 |
| 78 | 113.06 | 1 | | 1.31 | 0 |
| 79 | 19.42 | 1 | | 1.08 | 0 |
| 80 | 1.33 | 0 | | 1.84 | 0 |
| 81 | 1.18 | 0 | | 1.38 | 0 |
| 82 | 1.77 | 0 | | 1.31 | 0 |
| 83 | 1.18 | 0 | | 1.31 | 0 |
| 84 | 8.85 | 1 | | 1.27 | 0 |
| 85 | 83.57 | 1 | | 1.23 | 0 |
| 86 | 3.54 | 1 | | 1.23 | 0 |
| 87 | 1.18 | 0 | | 1.61 | 0 |
| 88 | 1.18 | 0 | | 1.31 | 0 |
| 89 | 1.97 | 1 | | 1.23 | 0 |
| 90 | 4.18 | 1 | | 1.23 | 0 |
| 91 | 1.18 | 0 | | 1.23 | 0 |
| 92 | 1.18 | 0 | | 1.23 | 0 |
| 93 | 2.46 | 1 | | 1.31 | 0 |
| 94 | 1.62 | 1 | | 1.31 | 0 |

| | F | G | Н | I | J | K | L | М | N | 0 |
|----|---|--------------------|----------------------|---|---------|-----------|---|-------------|---------------|---|
| 1 | | 1,2-DICHLOROETHANE | d_1,2-DICHLOROETHANE | | BENZENE | d_BENZENE | | CYCLOHEXANE | d_CYCLOHEXANE | |
| 2 | | 1.38 | 0 | | 1.37 | 0 | | 2.48 | 0 | |
| 3 | | 1.34 | 0 | | 1.31 | 0 | | 2.41 | 0 | |
| 4 | | 1.3 | 0 | | 1.34 | 1 | | 2.34 | 0 | |
| 5 | | 1.34 | 0 | | 40.73 | 1 | | 2.43 | 0 | |
| 6 | | 1.38 | 0 | | 24.6 | 1 | | 4.13 | 0 | |
| 7 | | 2.23 | 0 | | 3 | 1 | | 2.48 | 0 | |
| 8 | | 1.34 | 0 | | 2.72 | 1 | | 48.19 | 1 | |
| 9 | | 1.42 | 0 | | 6.07 | 1 | | 2.58 | 0 | |
| 10 | | 1.38 | 0 | | 3.03 | 1 | | 4.13 | 1 | |
| 10 | | 1 34 | 0 | | 7.35 | 1 | | 2.34 | 0 | |
| 12 | | 1.38 | 0 | | 13.1 | 1 | | 5.85 | 1 | |
| 12 | | 13 | 0 | | 8.63 | 1 | | 3.44 | 1 | |
| 14 | | 1 34 | 0 | | 3.83 | 1 | _ | 4 47 | 1 | |
| 14 | | 1.34 | 0 | | 479.2 | 1 | | 378.63 | 1 | |
| 10 | | 1 38 | 0 | | 63.89 | 1 | | 22.37 | 1 | |
| 10 | | 1 38 | 0 | | 12.1 | 1 | | 15/ 0 | 1 | |
| 1/ | | 1.30 | 0 | | 38.24 | 1 | | 7 02 | 1 | |
| 18 | | 1.40 | 0 | | 1 27 | 0 | | 2 / 9 | 0 | |
| 19 | | 1.30 | 0 | | 1.37 | 0 | | 2.40 | 0 | |
| 20 | | 1.30 | 0 | | 1.37 | 0 | | 2.31 | 0 | |
| 21 | | 1.4 | 0 | | 5.11 | 1 | | 2.40 | 0 | |
| 22 | | 1.30 | 0 | | 15.07 | 1 | | 2.40 | 0 | |
| 23 | | 1.34 | 0 | | 2.01 | 1 | | 2.46 | 0 | |
| 24 | | 1.34 | 0 | | 2.01 | 1 | | 2.44 | 0 | |
| 25 | | 1.30 | 0 | | 1.41 | 0 | | 2.41 | 0 | |
| 26 | | 1.42 | 0 | | 1.44 | 0 | | 2.38 | 0 | |
| 2/ | | 1.4 | 0 | | 1.37 | 0 | | 2.38 | 0 | |
| 28 | | 1.34 | 0 | | 1.34 | 0 | | 2.55 | 0 | |
| 29 | | 1.34 | 0 | | 1.34 | 0 | | 2.46 | 0 | |
| 30 | | 1.42 | 0 | | 1.34 | 1 | | 2.44 | 0 | |
| 31 | | 1.34 | 0 | | 1.9 | 1 | | 2.41 | 0 | |
| 32 | | 1.30 | 0 | | 1.44 | 0 | | 2.41 | 0 | |
| 33 | | 1.52 | 0 | | 1.20 | 0 | | 2.39 | 0 | |
| 34 | | 1.25 | 0 | | 5.11 | 1 | | 2.36 | 0 | |
| 35 | | 1.25 | 0 | | 0.11 | 1 | | 2.34 | 0 | |
| 36 | | 1.3 | 0 | | 2.30 | 1 | | 2.34 | 0 | |
| 37 | | 1.3 | 0 | | 1.82 | 1 | | 2.31 | 0 | |
| 38 | | 1.3 | U | | 2.43 | 1 | | 2.27 | Ű | |
| 39 | | 1.34 | U | | 14.38 | 1 | | 2.41 | 0 | |
| 40 | | 1.20 | 0 | | 1.20 | 1 | | 2.27 | 0 | |
| 41 | | 1.25 | U | | 1.85 | | | 2.24 | U | |
| 42 | | 1.25 | U | | 1./9 | 1 | | 5.51 | 1 | |
| 43 | | 1.3 | U | | 0.07 | 1 | | 2.31 | U | |
| 44 | | 1.3 | U | | 7.03 | 1 | | 5.51 | 1 | |
| 45 | | 1.34 | U | | 0./1 | 1 | | 4.82 | | |
| 46 | | 1.25 | 0 | | 11.82 | 1 | | 3.79 | 1 | |
| 47 | | 1.25 | Ű | | 3.19 | 1 | | 3.44 | 1 | |
| 48 | | 1.25 | Ű | | 35.14 | 1 | | /5./3 | 1 | |
| 49 | | 1.3 | Ű | | 11.18 | 1 | | 8.61 | 1 | |
| 50 | | 1.25 | Ű | | 35.14 | 1 | | 148.01 | 1 | |
| 51 | | 1.3 | 0 | | 99.04 | 1 | | 41.31 | 1 | |
| 52 | | 1.3 | 0 | | 1.34 | 0 | | 2.38 | 0 | |
| 53 | | 1.3 | 0 | | 1.28 | 0 | | 2.41 | 0 | |
| 54 | | 1.3 | 0 | | 1.28 | 0 | | 2.34 | 0 | |
| 55 | | 1.3 | 0 | | 1.28 | 0 | | 2.34 | 0 | |

| | F | G | Н | I | J | K | L | М | Ν | 0 |
|----|---|--------------------|----------------------|---|---------|-----------|---|-------------|---------------|---|
| 1 | | 1,2-DICHLOROETHANE | d_1,2-DICHLOROETHANE | | BENZENE | d_BENZENE | | CYCLOHEXANE | d_CYCLOHEXANE | |
| 56 | | 1.34 | 0 | | 1.25 | 0 | | 2.34 | 0 | |
| 57 | | 1.25 | 0 | | 5.43 | 1 | | 2.31 | 0 | |
| 58 | | 1.25 | 0 | | 2.11 | 1 | | 2.24 | 0 | |
| 59 | | 1.3 | 0 | | 1.31 | 0 | | 2.38 | 0 | |
| 60 | | 1.3 | 0 | | 1.28 | 0 | | 2.31 | 0 | |
| 61 | | 1.25 | 0 | | 1.28 | 0 | | 2.31 | 0 | |
| 62 | | 1.25 | 0 | | 1.25 | 0 | | 2.27 | 0 | |
| 63 | | 1.25 | 0 | | 1.25 | 0 | | 2.27 | 0 | |
| 64 | | 1.38 | 0 | | 1.41 | 0 | | 2.51 | 0 | |
| 65 | | 1.3 | 0 | | 1.37 | 0 | | 2.48 | 0 | |
| 66 | | 1.38 | 0 | | 2.01 | 1 | | 4.47 | 1 | |
| 67 | | 1.42 | 0 | | 1.5 | 1 | | 2.58 | 0 | |
| 68 | | 1.38 | 0 | | 11.66 | 1 | | 53.35 | 1 | |
| 69 | | 1.38 | 0 | | 9.58 | 1 | | 251.28 | 1 | |
| 70 | | 1.38 | 0 | | 54.31 | 1 | | 8.26 | 1 | |
| 71 | | 1.3 | 0 | | 1.28 | 0 | | 2.48 | 0 | |
| 72 | | 1.34 | 0 | | 8.63 | 1 | | 2.44 | 0 | |
| 73 | | 1.3 | 0 | | 4.15 | 1 | | 2.34 | 0 | |
| 74 | | 1.38 | 0 | | 3.83 | 1 | | 2.34 | 0 | |
| 75 | | 1.34 | 0 | | 7.67 | 1 | | 2.44 | 0 | |
| 76 | | 1.09 | 0 | | 4.47 | 1 | | 2.38 | 0 | |
| 77 | | 1.3 | 0 | | 4.15 | 1 | | 2 | 0 | |
| 78 | | 1.3 | 0 | | 3.51 | 1 | | 27.88 | 1 | |
| 79 | | 1.3 | 0 | | 1.88 | 1 | | 26.85 | 1 | |
| 80 | | 1.38 | 0 | | 1.85 | 0 | | 2.51 | 0 | |
| 81 | | 1.17 | 0 | | 1.28 | 0 | | 3.37 | 0 | |
| 82 | | 1.25 | 0 | | 1.25 | 0 | | 2.38 | 0 | |
| 83 | | 1.86 | 0 | | 6.07 | 1 | | 2.34 | 0 | |
| 84 | | 1.25 | 0 | | 4.15 | 1 | | 2.31 | 0 | |
| 85 | | 1.3 | 0 | | 1.92 | 1 | | 2.27 | 0 | |
| 86 | | 1.3 | 0 | | 3.16 | 1 | | 13.08 | 1 | |
| 87 | | 1.66 | 0 | | 1.63 | 0 | | 2.41 | 0 | |
| 88 | | 1.25 | 0 | | 1.25 | 0 | | 2.27 | 0 | |
| 89 | | 1.25 | 0 | | 1.25 | 0 | | 2.27 | 0 | |
| 90 | | 1.34 | 0 | | 9.58 | 1 | | 4.82 | 1 | |
| 91 | | 1.21 | 0 | | 1.25 | 0 | | 2.27 | 0 | |
| 92 | | 1.25 | 0 | | 1.25 | 0 | | 2.24 | 0 | |
| 93 | | 1.3 | 0 | | 1.28 | 0 | | 2.34 | 0 | |
| 94 | | 1.3 | 0 | | 4.15 | 1 | | 2.34 | 0 | |

| | Р | Q | R | S | Т | U | V | W |
|----------|--------------|----------------|---|-----------------------------|-------------------------------|---|-------------|---------------|
| 1 | ETHYLBENZENE | d_ETHYLBENZENE | | M,P-XYLENE (SUM OF ISOMERS) | d_M,P-XYLENE (SUM OF ISOMERS) | | NAPHTHALENE | d_NAPHTHALENE |
| 2 | 1.39 | 0 | | 3.82 | 1 | | 1.52 | 0 |
| 3 | 1.3 | 0 | | 9.12 | 1 | | 3.25 | 1 |
| 4 | 2.08 | 1 | | 6.08 | 1 | | 2.04 | 1 |
| 5 | 62.96 | 1 | | 607.87 | 1 | | 5.71 | 1 |
| 6 | 4.26 | 1 | | 20.41 | 1 | | 5.24 | 1 |
| 7 | 3.39 | 1 | | 16.07 | 1 | | 5.24 | 1 |
| 0 | 3.95 | 1 | | 20.41 | 1 | | 4.93 | 1 |
| 0 | 6.50 | 1 | | 17.8 | 1 | | 5 77 | 1 |
| 9 | 3.95 | 1 | | 28.22 | 1 | | 14 15 | 1 |
| 10 | 4.78 | 1 | | 20.22 | 1 | | 5 77 | 1 |
| 11 | 4.78 | 1 | | 42.12 | 1 | | 12 11 | 1 |
| 12 | 10.42 | 1 | | 42.12 | 1 | | 5.04 | 1 |
| 13 | 4.78 | 1 | | 12.10 | 1 | | 5.24 | 1 |
| 14 | 3 | 1 | | 21.71 | 1 | | 3.2 | 1 |
| 15 | 243.17 | 1 | | 521.03 | 1 | | 94.30 | 1 |
| 16 | /8.16 | 1 | | 269.2 | 1 | | 52.42 | 1 |
| 17 | 21.28 | 1 | | 69.4/ | 1 | | 36.17 | 1 |
| 18 | 18.67 | 1 | | 56.44 | 1 | | 22.54 | 1 |
| 19 | 1.39 | 0 | | 2.56 | 0 | | 1.52 | 0 |
| 20 | 1.35 | 0 | | 2.52 | 0 | | /.08 | 1 |
| 21 | 1.35 | 0 | | 15.85 | 1 | | 6.29 | 1 |
| 22 | 3.28 | 1 | | 6.51 | 1 | | 2.62 | 1 |
| 23 | 14.76 | 1 | | 3.99 | 1 | | 1.94 | 1 |
| 24 | 1.61 | 1 | | 60.79 | 1 | | 19.92 | 1 |
| 25 | 1.43 | 1 | | 6.95 | 1 | | 1.68 | 1 |
| 26 | 1.43 | 0 | | 12.59 | 1 | | 1.6 | 0 |
| 27 | 1.35 | 0 | | 7.38 | 1 | | 1.52 | 0 |
| 28 | 1.35 | 0 | | 6.08 | 1 | | 6.29 | 1 |
| 29 | 2.78 | 1 | | 6.08 | 1 | | 5.24 | 1 |
| 30 | 1.65 | 1 | | 6.08 | 1 | | 5.24 | 1 |
| 31 | 1.56 | 1 | | 5.21 | 1 | | 7.86 | 1 |
| 32 | 1.43 | 1 | | 6.08 | 1 | | 4.19 | 1 |
| 33 | 1.3 | 0 | | 14.33 | 1 | | 1.47 | 0 |
| 34 | 1.26 | 0 | | 7.38 | 1 | | 1.42 | 0 |
| 35 | 3.19 | 1 | | 5.21 | 1 | | 4.14 | 1 |
| 36 | 1.95 | 1 | | 3.08 | 1 | | 1.99 | 1 |
| 37 | 1.61 | 1 | | 6.51 | 1 | | 2.57 | 1 |
| 38 | 1.78 | 1 | | 6.95 | 1 | | 3.72 | 1 |
| 39 | 24.1 | 1 | | 223.61 | 1 | | 3.8 | 1 |
| 40 | 1.26 | 0 | | 11.29 | 1 | | 1.42 | 0 |
| 41 | 2.87 | 1 | | 4.78 | 1 | | 1.42 | 0 |
| 42 | 1.3 | 1 | | 3.86 | 1 | | 3.09 | 1 |
| 43 | 5.97 | 1 | | 23.66 | 1 | | 1.47 | 0 |
| 44 | 6.51 | 1 | | 27.35 | 1 | | 5.22 | 1 |
| 45 | 8.25 | 1 | | 33 | 1 | | 7.34 | 1 |
| 46 | 10.42 | 1 | | 43.42 | 1 | | 13.63 | 1 |
| 47 | 3.78 | 1 | | 17.37 | 1 | | 5.24 | 1 |
| 48 | 52.11 | 1 | | 212.75 | 1 | | 52.42 | 1 |
| 40 | 9.12 | 1 | | 38.64 | 1 | | 18.87 | 1 |
| 4J 50 | 73.82 | 1 | | 264.86 | 1 | | 256.86 | 1 |
| 50 | 95.53 | 1 | | 360.38 | 1 | | 57.66 | 1 |
| 51 | 1 35 | 0 | | 2 43 | 0 | | 1 47 | n |
| 52 | 13 | 0 | | 2.40 | 0 | | 1 47 | n 0 |
| 55 | 13 | n 0 | | 31.26 | 1 | | 1 / 2 | 0 |
| 54 | 1.5 | 0 | | 6.09 | 1 | | 3.51 | 1 |
| 55 | 1.20 | U U | 1 | 0.00 | 1 | | 5.51 | |

| | Р | Q | R | S | Т | U | V | W |
|----|--------------|----------------|---|-----------------------------|-------------------------------|---|-------------|---------------|
| 1 | ETHYLBENZENE | d_ETHYLBENZENE | | M,P-XYLENE (SUM OF ISOMERS) | d_M,P-XYLENE (SUM OF ISOMERS) | | NAPHTHALENE | d_NAPHTHALENE |
| 56 | 1.26 | 0 | | 4.78 | 1 | | 3.09 | 1 |
| 57 | 4.78 | 1 | | 4.78 | 1 | | 2.18 | 1 |
| 58 | 1.48 | 1 | | 4.78 | 1 | | 1.42 | 1 |
| 59 | 1.3 | 0 | | 2.39 | 0 | | 1.42 | 0 |
| 60 | 1.26 | 0 | | 2.34 | 0 | | 1.42 | 0 |
| 61 | 1.26 | 0 | | 4.3 | 1 | | 2.36 | 1 |
| 62 | 1.26 | 0 | | 3.78 | 1 | | 1.68 | 1 |
| 63 | 1.26 | 0 | | 3.3 | 1 | | 1.83 | 1 |
| 64 | 3.82 | 1 | | 12.16 | 1 | | 3.72 | 1 |
| 65 | 4.26 | 1 | | 9.99 | 1 | | 1.57 | 0 |
| 66 | 3.3 | 1 | | 13.89 | 1 | | 1.52 | 0 |
| 67 | 2.08 | 1 | | 6.95 | 1 | | 1.47 | 0 |
| 68 | 7.16 | 1 | | 19.97 | 1 | | 20.97 | 1 |
| 69 | 13.9 | 1 | | 47.76 | 1 | | 8.91 | 1 |
| 70 | 13.9 | 1 | | 40.38 | 1 | | 2.02 | 1 |
| 71 | 1.39 | 0 | | 26.05 | 1 | | 1.52 | 0 |
| 72 | 1.3 | 0 | | 7.82 | 1 | | 4.56 | 1 |
| 73 | 5.65 | 1 | | 3.6 | 1 | | 4.51 | 1 |
| 74 | 1.56 | 1 | | 3.3 | 1 | | 1.47 | 1 |
| 75 | 1.3 | 0 | | 104.21 | 1 | | 37.48 | 1 |
| 76 | 15.85 | 1 | | 33 | 1 | | 23.07 | 1 |
| 77 | 5.21 | 1 | | 13.03 | 1 | | 6.81 | 1 |
| 78 | 18.24 | 1 | | 69.47 | 1 | | 6.29 | 1 |
| 79 | 2.39 | 1 | | 6.08 | 1 | | 30.4 | 1 |
| 80 | 1.39 | 0 | | 2.61 | 0 | | 2.1 | 0 |
| 81 | 1.87 | 0 | | 3.47 | 0 | | 1.42 | 0 |
| 82 | 1.26 | 0 | | 2.39 | 0 | | 1.42 | 0 |
| 83 | 1.26 | 0 | | 2.34 | 0 | | 17.3 | 1 |
| 84 | 4.78 | 1 | | 26.49 | 1 | | 4.35 | 1 |
| 85 | 14.76 | 1 | | 60.79 | 1 | | 2.41 | 1 |
| 86 | 2.3 | 1 | | 12.16 | 1 | | 1.73 | 1 |
| 87 | 1.26 | 0 | | 2.34 | 0 | | 1.83 | 0 |
| 88 | 1.26 | 0 | | 2.34 | 0 | | 1.42 | 0 |
| 89 | 5.65 | 1 | | 14.33 | 1 | | 1.42 | 0 |
| 90 | 4.17 | 1 | | 12.59 | 1 | | 2.99 | 1 |
| 91 | 1.26 | 0 | | 2.34 | 0 | | 1.42 | 0 |
| 92 | 1.22 | 0 | | 2.3 | 0 | | 1.36 | 0 |
| 93 | 1.35 | 1 | | 12.16 | 1 | | 4.19 | 1 |
| 94 | 2.48 | 1 | | 4.78 | 1 | | 2.04 | 1 |

| | Х | Y | Z | AA | AB | AC | AD | AE | AF |
|----|---|-----------|-------------|----|----------|------------|----|--------------------------------|----------------------------------|
| 1 | | n-HEPTANE | d_n-HEPTANE | | n-HEXANE | d_n-HEXANE | | O-XYLENE (1,2-DIMETHYLBENZENE) | d_O-XYLENE (1,2-DIMETHYLBENZENE) |
| 2 | | 1.43 | 0 | | 1.27 | 0 | | 1.3 | 0 |
| 3 | | 1.39 | 0 | | 1.2 | 0 | | 2.61 | 1 |
| 4 | | 1.39 | 0 | | 1.23 | 0 | | 1.69 | 1 |
| 5 | | 2.46 | 1 | | 1.25 | 0 | | 284.4 | 1 |
| 6 | | 36.48 | 1 | | 26.08 | 1 | | 5.64 | 1 |
| 7 | | 2.38 | 0 | | 2.11 | 0 | | 5.21 | 1 |
| 8 | | 1.43 | 0 | | 1.27 | 0 | | 4.34 | 1 |
| 9 | | 5.33 | 1 | | 5.64 | 1 | | 7.82 | 1 |
| 10 | | 1.52 | 0 | | 1.34 | 0 | | 4.78 | 1 |
| 11 | | 7.38 | 1 | | 9.52 | 1 | | 12.16 | 1 |
| 12 | | 4.92 | 1 | | 3.52 | 1 | | 6.95 | 1 |
| 13 | | 3.77 | 1 | | 3.21 | 1 | | 6.08 | 1 |
| 14 | | 1.39 | 0 | | 1.2 | 0 | | 3.34 | 1 |
| 15 | | 491.83 | 1 | | 599.21 | 1 | | 191.04 | 1 |
| 16 | | 39.76 | 1 | | 28.55 | 1 | | 86.84 | 1 |
| 17 | | 151.65 | 1 | | 77.54 | 1 | | 24.75 | 1 |
| 18 | | 9.02 | 1 | | 3.52 | 1 | | 19.54 | 1 |
| 19 | | 1.97 | 1 | | 1.3 | 0 | | 23.01 | 1 |
| 20 | | 1.48 | 0 | | 1.27 | 0 | | 5.64 | 1 |
| 21 | | 1.43 | 0 | | 1.27 | 0 | | 2.39 | 1 |
| 22 | | 1.43 | 0 | | 1.27 | 0 | | 2.26 | 1 |
| 23 | | 1.43 | 0 | | 1.27 | 0 | | 1.35 | 1 |
| 24 | | 1.43 | 0 | | 1.27 | 0 | | 1.3 | 0 |
| 25 | | 1.43 | 0 | | 1.27 | 0 | | 1.26 | 0 |
| 26 | | 1.64 | 1 | | 1.34 | 0 | | 3.82 | 1 |
| 27 | | 1.52 | 0 | | 1.34 | 0 | | 2.26 | 1 |
| 28 | | 1.52 | 0 | | 1.32 | 0 | | 1.82 | 1 |
| 29 | | 1.43 | 0 | | 1.27 | 0 | | 1.78 | 1 |
| 30 | | 1.43 | 0 | | 1.27 | 0 | | 1.78 | 1 |
| 31 | | 1.43 | 0 | | 1.27 | 0 | | 1.76 | 1 |
| 32 | | 1.39 | 0 | | 1.23 | 0 | | 1.56 | 1 |
| 33 | | 1.52 | 1 | | 1.23 | 0 | | 95.52 | 1 |
| 34 | | 1.93 | 1 | | 1.23 | 0 | | 5.19 | 1 |
| 35 | | 1.39 | 0 | | 1.23 | 0 | | 2.65 | 1 |
| 36 | | 1.39 | 0 | | 1.2 | 0 | | 2.52 | 1 |
| 37 | | 1.35 | 0 | | 1.2 | 0 | | 2.13 | 1 |
| 38 | | 1.35 | 0 | | 1.2 | 0 | | 1.91 | 1 |
| 39 | | 1.35 | 0 | | 1.16 | 0 | | 1.22 | 0 |
| 40 | | 6.97 | 1 | | 3.35 | 1 | | 3.65 | 1 |
| 41 | | 1.35 | 0 | | 1.16 | 0 | | 1.74 | 1 |
| 42 | | 1.31 | 0 | | 1.16 | 0 | | 1.35 | 1 |
| 43 | | 13.53 | 1 | | 3.88 | 1 | | 18.24 | 1 |
| 44 | | 5.33 | 1 | | 2.82 | 1 | | 10.85 | 1 |
| 45 | | 5.08 | 1 | | 2.68 | 1 | | 9.12 | 1 |
| 46 | | 4.92 | 1 | | 2.19 | 1 | | 8.68 | 1 |
| 47 | | 2.13 | 1 | | 1.2 | 0 | | 6.51 | 1 |
| 48 | | 98.37 | 1 | | 52.87 | 1 | | 134.6 | 1 |
| 49 | | 32.79 | 1 | | 20.09 | 1 | | 82.5 | 1 |
| 50 | | 7.79 | 1 | | 3.52 | 1 | | 13.46 | 1 |
| 51 | | 81.97 | 1 | | 26.79 | 1 | | 121.57 | 1 |
| 52 | | 3.11 | 1 | | 1.45 | 1 | | 14.33 | 1 |
| 53 | | 1.41 | 0 | | 1.23 | 0 | | 2.69 | 1 |
| 54 | | 1.39 | 0 | | 1.2 | 0 | | 1.78 | 1 |
| 55 | | 1.35 | 0 | | 1.2 | 0 | | 1.65 | 1 |

| | Х | Y | Z | AA | AB | AC | AD | AE | AF |
|----|---|-----------|-------------|----|----------|------------|----|--------------------------------|----------------------------------|
| 1 | | n-HEPTANE | d_n-HEPTANE | | n-HEXANE | d_n-HEXANE | | O-XYLENE (1,2-DIMETHYLBENZENE) | d_O-XYLENE (1,2-DIMETHYLBENZENE) |
| 56 | | 1.35 | 0 | | 1.2 | 0 | | 1.43 | 1 |
| 57 | | 1.35 | 0 | | 1.2 | 0 | | 1.22 | 0 |
| 58 | | 1.31 | 0 | | 1.16 | 0 | | 1.17 | 0 |
| 59 | | 1.39 | 0 | | 1.23 | 0 | | 1.39 | 1 |
| 60 | | 1.35 | 0 | | 1.2 | 0 | | 1.26 | 1 |
| 61 | | 1.35 | 0 | | 1.2 | 0 | | 1.22 | 0 |
| 62 | | 1.35 | 0 | | 1.16 | 0 | | 1.17 | 0 |
| 63 | | 1.35 | 0 | | 1.16 | 0 | | 1.17 | 0 |
| 64 | | 2.54 | 1 | | 1.34 | 0 | | 4.08 | 1 |
| 65 | | 11.48 | 1 | | 1.3 | 0 | | 4.34 | 1 |
| 66 | | 7.38 | 1 | | 1.27 | 0 | | 3.13 | 1 |
| 67 | | 1.48 | 0 | | 1.2 | 0 | | 2.39 | 1 |
| 68 | | 241.82 | 1 | | 236.16 | 1 | | 16.93 | 1 |
| 69 | | 77.87 | 1 | | 29.61 | 1 | | 11.72 | 1 |
| 70 | | 11.48 | 1 | | 5.99 | 1 | | 5.86 | 1 |
| 71 | | 1.56 | 1 | | 1.27 | 0 | | 13.89 | 1 |
| 72 | | 1.43 | 0 | | 1.27 | 0 | | 3.6 | 1 |
| 73 | | 1.35 | 0 | | 1.2 | 0 | | 1.43 | 1 |
| 74 | | 1.35 | 0 | | 1.2 | 0 | | 1.39 | 1 |
| 75 | | 17.62 | 1 | | 28.9 | 1 | | 29.96 | 1 |
| 76 | | 3.93 | 1 | | 1.27 | 0 | | 27.14 | 1 |
| 77 | | 3.93 | 1 | | 1.27 | 1 | | 13.89 | 1 |
| 78 | | 1.39 | 0 | | 1.23 | 0 | | 3.6 | 1 |
| 79 | | 1.19 | 0 | | 1.23 | 0 | | 2.95 | 1 |
| 80 | | 11.89 | 1 | | 12.34 | 1 | | 30.39 | 1 |
| 81 | | 1.97 | 0 | | 1.76 | 0 | | 12.16 | 1 |
| 82 | | 1.89 | 1 | | 1.3 | 0 | | 5.21 | 1 |
| 83 | | 1.48 | 0 | | 1.23 | 0 | | 1.74 | 0 |
| 84 | | 1.39 | 0 | | 1.2 | 0 | | 1.3 | 0 |
| 85 | | 1.35 | 0 | | 1.2 | 0 | | 1.17 | 0 |
| 86 | | 1.31 | 0 | | 1.16 | 0 | | 1.17 | 0 |
| 87 | | 3.85 | 1 | | 20.09 | 1 | | 4.78 | 1 |
| 88 | | 1.39 | 0 | | 1.9 | 1 | | 3.99 | 1 |
| 89 | | 1.31 | 0 | | 1.16 | 0 | | 1.17 | 0 |
| 90 | | 1.31 | 0 | | 1.16 | 0 | | 1.17 | 0 |
| 91 | | 1.31 | 0 | | 1.16 | 0 | | 1.17 | 0 |
| 92 | | 1.31 | 0 | | 1.16 | 0 | | 1.17 | 0 |
| 93 | | 1.35 | 0 | | 1.2 | 0 | | 3.3 | 1 |
| 94 | | 1.35 | 0 | | 1.2 | 0 | | 1.52 | 1 |

| A | AG | AH | AI | AJ | AK | AL | AM | AN | AO |
|--------|----|-------------------------|---------------------------|----|---------|-----------|----|----------------|------------------|
| 1 | | tert-BUTYL METHYL ETHER | d_tert-BUTYL METHYL ETHER | | TOLUENE | d_TOLUENE | | XYLENES, TOTAL | d_XYLENES, TOTAL |
| 2 | | 1.44 | 0 | | 4.15 | 1 | | 3.82 | 1 |
| 3 | | 1.41 | 0 | | 9.8 | 1 | | 11.72 | 1 |
| 4 | | 1.37 | 0 | | 8.67 | 1 | | 7.82 | 1 |
| 5 | | 1.42 | 0 | | 280.75 | 1 | | 911.8 | 1 |
| 6 | | 2.38 | 0 | | 25.63 | 1 | | 26.05 | 1 |
| 7 | | 1.44 | 0 | | 21.1 | 1 | | 20.41 | 1 |
| , o | | 1 41 | 0 | | 33.92 | 1 | | 25.62 | 1 |
| 0 | | 1 51 | 0 | | 25.63 | 1 | | 22.58 | 1 |
| 9 | | 1 48 | 0 | | 41.45 | 1 | | 36.04 | 1 |
| 10 | | 1.48 | 0 | | 33.54 | 1 | | 26.92 | 1 |
| 10 | | 1.40 | 0 | | 71.6 | 1 | | 56.44 | 1 |
| 12 | | 1 41 | 0 | | 21.49 | 1 | | 15.63 | 1 |
| 13 | | 1.41 | 0 | | 21.40 | 1 | | 29.66 | 1 |
| 14 | | 1.37 | 0 | | 004.44 | 1 | | 20.00 | 1 |
| 15 | | 1.44 | 0 | | 904.44 | 1 | | 736.13 | 1 |
| 16 | | 1.44 | 0 | | 301.48 | 1 | | 350.04 | 1 |
| 17 | | 1.55 | 0 | | 109.29 | 1 | | 95.52 | 1 |
| 18 | | 1.48 | 0 | | 102.05 | 1 | | /8.15 | 1 |
| 19 | | 1.48 | 0 | | 13.94 | | | 2.56 | Ű |
| 20 | | 1.44 | 0 | | 15.07 | 1 | | 2.52 | 0 |
| 21 | | 1.44 | 0 | | 7.54 | 1 | | 82.5 | 1 |
| 22 | | 1.44 | 0 | | 4.15 | 1 | | 21.49 | 1 |
| 23 | | 1.44 | 0 | | 3.43 | 1 | | 9.12 | 1 |
| 24 | | 1.41 | 0 | | 3.09 | 1 | | 5.21 | 1 |
| 25 | | 1.44 | 0 | | 48.99 | 1 | | 9.12 | 1 |
| 26 | | 1.51 | 0 | | 8.48 | 1 | | 6.51 | 1 |
| 27 | | 1.51 | 0 | | 5.28 | 1 | | 7.82 | 1 |
| 28 | | 1.5 | 0 | | 6.41 | 1 | | 7.82 | 1 |
| 29 | | 1.44 | 0 | | 7.91 | 1 | | 9.55 | 1 |
| 30 | | 1.44 | 0 | | 12.81 | 1 | | 16.5 | 1 |
| 31 | | 1.41 | 0 | | 6.03 | 1 | | 7.82 | 1 |
| 32 | | 1.41 | 0 | | 6.03 | 1 | | 7.82 | 1 |
| 33 | | 1.41 | 0 | | 109.29 | 1 | | 319.13 | 1 |
| 34 | | 1.41 | 0 | | 20.54 | 1 | | 19.54 | 1 |
| 35 | | 1.39 | 0 | | 15.07 | 1 | | 9.55 | 1 |
| 36 | | 1.37 | 0 | | 6.03 | 1 | | 6.95 | 1 |
| 37 | | 1.37 | 0 | | 4.9 | 1 | | 3.08 | 1 |
| 38 | | 1.37 | 0 | | 11.68 | 1 | | 8.68 | 1 |
| 39 | | 1.33 | 0 | | 10.93 | 1 | | 9.55 | 1 |
| 40 | | 1.33 | 0 | | 6.78 | 1 | | 5.21 | 1 |
| 41 | | 1.33 | 0 | | 10.93 | 1 | | 6.51 | 1 |
| 42 | | 1.33 | 0 | | 16.58 | 1 | | 14.76 | 1 |
| 43 | | 1.35 | 0 | | 37.87 | 1 | | 36.47 | 1 |
| 44 | | 1.41 | 0 | | 45.22 | 1 | | 43.42 | 1 |
| 45 | | 1.41 | 0 | | 56.53 | 1 | | 65.13 | 1 |
| 46 | | 1.37 | 0 | | 67.83 | 1 | | 23.88 | 1 |
| 47 | | 1.37 | 0 | | 22.23 | 1 | | 31.91 | 1 |
| 48 | | 1.37 | 0 | | 195.96 | 1 | | 295.25 | 1 |
| 49 | | 1.37 | 0 | | 64.06 | 1 | | 52.1 | 1 |
| 50 | | 1.37 | 0 | | 169.58 | 1 | | 403.8 | 1 |
| 51 | | 1.41 | 0 | | 716.02 | 1 | | 477.61 | 1 |
| 52 | | 1.41 | 0 | | 1.32 | 0 | | 2.43 | 0 |
| 53 | | 1.37 | 0 | | 26.38 | 1 | | 2.34 | 0 |
| 54 | | 1.37 | 0 | | 6.41 | 1 | | 6.51 | 1 |
| 55 | | 1.37 | 0 | | 5.65 | 1 | | 43.42 | 1 |

| | AG | AH | AI | AJ | AK | AL | AM | AN | AO |
|----|----|-------------------------|---------------------------|----|---------|-----------|----|----------------|------------------|
| 1 | | tert-BUTYL METHYL ETHER | d_tert-BUTYL METHYL ETHER | | TOLUENE | d_TOLUENE | | XYLENES, TOTAL | d_XYLENES, TOTAL |
| 56 | | 1.37 | 0 | | 4.62 | 1 | | 6.51 | 1 |
| 57 | | 1.33 | 0 | | 1.92 | 1 | | 6.08 | 1 |
| 58 | | 1.37 | 0 | | 9.04 | 1 | | 8.68 | 1 |
| 59 | | 1.37 | 0 | | 4.52 | 1 | | 2.39 | 0 |
| 60 | | 1.37 | 0 | | 4.15 | 1 | | 2.34 | 0 |
| 61 | | 1.33 | 0 | | 2.83 | 1 | | 5.64 | 1 |
| 62 | | 1.33 | 0 | | 2.79 | 1 | | 5.21 | 1 |
| 63 | | 1.33 | 0 | | 3.58 | 1 | | 3.3 | 1 |
| 64 | | 1.51 | 0 | | 17.34 | 1 | | 16.5 | 1 |
| 65 | | 1.48 | 0 | | 16.2 | 1 | | 13.03 | 1 |
| 66 | | 1.44 | 0 | | 25.25 | 1 | | 18.67 | 1 |
| 67 | | 1.37 | 0 | | 7.91 | 1 | | 9.55 | 1 |
| 68 | | 1.48 | 0 | | 69.72 | 1 | | 25.83 | 1 |
| 69 | | 1.48 | 0 | | 79.14 | 1 | | 65.13 | 1 |
| 70 | | 1.44 | 0 | | 165.81 | 1 | | 52.1 | 1 |
| 71 | | 1.44 | 0 | | 1.36 | 0 | | 11.29 | 1 |
| 72 | | 1.44 | 0 | | 9.04 | 1 | | 39.95 | 1 |
| 73 | | 1.37 | 0 | | 22.61 | 1 | | 4.78 | 1 |
| 74 | | 1.37 | 0 | | 4.15 | 1 | | 4.78 | 1 |
| 75 | | 1.44 | 0 | | 92.33 | 1 | | 47.76 | 1 |
| 76 | | 1.37 | 0 | | 27.13 | 1 | | 16.93 | 1 |
| 77 | | 1.37 | 0 | | 24.12 | 1 | | 9.12 | 1 |
| 78 | | 1.37 | 0 | | 6.03 | 1 | | 99.86 | 1 |
| 79 | | 1.19 | 0 | | 37.69 | 1 | | 132.43 | 1 |
| 80 | | 1.98 | 0 | | 28.26 | 1 | | 2.61 | 0 |
| 81 | | 1.37 | 0 | | 31.28 | 1 | | 2.39 | 0 |
| 82 | | 1.37 | 0 | | 12.81 | 1 | | 3.47 | 0 |
| 83 | | 1.35 | 0 | | 3.43 | 1 | | 2.34 | 0 |
| 84 | | 1.33 | 0 | | 2.3 | 1 | | 38.64 | 1 |
| 85 | | 1.26 | 0 | | 2.15 | 1 | | 91.18 | 1 |
| 86 | | 1.48 | 0 | | 5.65 | 1 | | 17.37 | 1 |
| 87 | | 1.73 | 0 | | 1.32 | 0 | | 2.34 | 0 |
| 88 | | 1.41 | 0 | | 1.32 | 0 | | 2.34 | 0 |
| 89 | | 1.33 | 0 | | 52.76 | 1 | | 18.67 | 1 |
| 90 | | 1.33 | 0 | | 23.36 | 1 | | 16.5 | 1 |
| 91 | | 1.33 | 0 | | 7.16 | 1 | | 2.3 | 0 |
| 92 | | 1.3 | 0 | | 5.28 | 1 | | 2.34 | 0 |
| 93 | | 1.37 | 0 | | 6.78 | 1 | | 6.51 | 1 |
| 94 | | 1.37 | 0 | | 33.92 | 1 | | 15.63 | 1 |

Attachment 2 (Continued)

Soil Vapor Samples from Q1 through Q3 2016, On-Base (Output)

| | А | В | С | D | E | F | G | Н | I | J | K | L |
|----|------------|--------------|--------------|-------------------|----------------|---------------|---------------|--------------|-------------|-----------------|---------------------|--------|
| 1 | | | | | UCL Statis | tics for Data | Sets with N | on-Detects | | | | |
| 2 | | | | | | | | | | | | |
| 3 | | User Sele | cted Options | | | | | | | | | |
| 4 | Dat | te/Time of C | omputation | ProUCL 5.16 | 6/26/2017 1:: | 28:45 PM | | | | | | |
| 5 | | | From File | WorkSheet. | xls | | | | | | | |
| 6 | | Fu | II Precision | OFF | | | | | | | | |
| 7 | | Confidence | Coefficient | 95% | | | | | | | | |
| 8 | Number o | of Bootstrap | Operations | 2000 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | 1,2,4-TRIM | ETHYLBEN | ZENE | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | General | Statistics | | | | | |
| 13 | | | Total | Number of O | bservations | 93 | | | Numbe | r of Distinct (| Observations | 63 |
| 14 | | | | Numbe | er of Detects | 72 | | | | Number of | Non-Detects | 21 |
| 15 | | | N | umber of Dist | inct Detects | 60 | | | Numb | er of Distinct | Non-Detects | 6 |
| 16 | | | | Mini | mum Detect | 1.18 | | | | Minimum | 1 Non-Detect | 1.18 |
| 17 | | | | Maxi | mum Detect | 639.1 | | | | Maximum | Non-Detect | 1.77 |
| 18 | | | | Varia | nce Detects | 7595 | | | | Percent | Non-Detects | 22.58% |
| 19 | | | | M | ean Detects | 29.53 | | | | | SD Detects | 87.15 |
| 20 | | | | Med | dian Detects | 4.89 | | | | | CV Detects | 2.951 |
| 21 | | | | Skewn | ess Detects | 5.524 | | | | Kurt | osis Detects | 35.17 |
| 22 | | | | Mean of Log | ged Detects | 1.936 | | | | SD of Log | ged Detects | 1.421 |
| 23 | | | | | | | | | | | | |
| 24 | | | | | Norm | al GOF Tes | t on Detects | Only | | | | |
| 25 | | | S | hapiro Wilk T | est Statistic | 0.363 | | Normal GOF | Test on De | etected Obse | rvations Only | / |
| 26 | | | | 5% Shapiro V | Vilk P Value | 0 | I | Detected Da | ta Not Norm | al at 5% Sign | ificance Leve | ;l |
| 27 | | | | Lilliefors T | est Statistic | 0.372 | | | Lilliefors | GOF Test | | |
| 28 | | | 5 | % Lilliefors C | ritical Value | 0.104 | I | Detected Da | ta Not Norm | al at 5% Sign | ificance Leve | ;I |
| 29 | | | | D | etected Data | a Not Norma | l at 5% Sign | ificance Lev | /el | | | |
| 30 | | | <u> </u> | | | | | | | | | |
| 31 | | | Kaplan- | Meier (KM) S | Statistics usi | ng Normal C | ritical Value | s and other | Nonparame | tric UCLs | | |
| 32 | | | | | KM Mean | 23.13 | | | KI | M Standard E | rror of Mean | 8.047 |
| 33 | | | | | KM SD | 77.06 | | | | 95% KN | 1 (BCA) UCL | 36.81 |
| 34 | | | | 95% | KM (t) UCL | 36.5 | | | 95% KM (F | Percentile Bo | otstrap) UCL | 38.17 |
| 35 | | | | 95% | KM (z) UCL | 36.37 | | | | 95% KM Boo | otstrap t UCL | 51.8 |
| 36 | | | | | bysnev UCL | 4/.2/ | | | | 95% KM Che | bysnev UCL | 58.21 |
| 37 | | | 97 | .5% KM Chei | bysnev UCL | /3.39 | | | | | bysnev UCL | 103.2 |
| 38 | | | | | | Tosta en Di | tooted Oha | nutions Or | | | | |
| 39 | | | | G | | | | | ndersen De | | | |
| 40 | | | | | | 7.942 | Detect | | | | 25L | |
| 41 | | | | 5% A-D C | | 0.00 | Deleci | | | Smirnov CC | | |
| 42 | | | | ۲-۵۱ ۲۰۰۵ ۲۰۰۵ | | 0.201 | Dotoot | ad Data Nat | Gamma Dia | tributed at E | " % Significance | |
| 43 | | | | Detecto | d Data Not (| Jamma Diet | ributed at 50 | | | and at 37 | | |
| 44 | | | | Delecte | | | noutou al 07 | | | | | |
| 45 | | | | | Gamma | Statistics or | Detected D | ata Only | | | | |
| 46 | | | | | k hat (MLE) | 0 446 | | | Ŀ | star (hias co | rrected MLE) | 0 437 |
| 47 | | | | The | ta hat (MLE) | 66 21 | | | N Theta | star (hias cor | | 67 63 |
| 48 | | | | n | | 64 23 | | | incia | nu star (his | as corrected) | 62.88 |
| 49 | | | | Ма | an (detects) | 29.53 | | | | | | 02.00 |
| 50 | | | | IVIC | | 20.00 | | | | | | |
| 51 | | | | C | amma ROS | Statistics | sina Imputer | l Non-Deter | ts | | | |
| 52 | | | | | | Stationto U | ang inputer | | | | | |

| | A | | В | С | | D |) | E | | F | G | | Н | | | J | | К | \Box | L |
|------------|---------------------------|-------|----------|--------------|-------------|----------|---------|----------------------|---|---------------|--------------|-----|---------------|----------|---------|------------|---------|-------------------|-----------|-------------------|
| 53 | | | | GROS ma | ay r | not be | used | when da | ita se | et has > 50% | 6 NDs with | ma | any tied obs | servatio | ons at | multiple | DLs | | | |
| 54 | | (| GROS may | y not be use | ed ۱ | when | kstar o | of detects | s is s | mall such a | s <1.0, esp | ec | cially when t | he san | nple s | ze is sm | all (e. | .g., <15-20 |) | |
| 55 | | | | F | or | such | situati | ons, GR | OS r | nethod may | yield incori | rec | ct values of | UCLs | and B | TVs | | | | |
| 56 | | | | | | | Т | his is es | pecia | ally true whe | en the samp | ble | e size is sma | all. | | | | | | |
| 57 | | | For gar | nma distrib | ute | d dete | ected | data, BT | Vs a | nd UCLs ma | ay be comp | ute | ed using ga | mma d | istribu | tion on K | (M es | stimates | | |
| 58 | | | | | | | | Minim | num | 0.01 | | | | | | | | Mea | n | 22.87 |
| 59 | | | | | | | | Maxim | num | 639.1 | | | | | | | | Media | n | 3 |
| 60 | | | | | | | | | SD | 77.56 | | | | | | | | С | V | 3.392 |
| 61 | | | | | | | | k hat (M | LE) | 0.264 | | | | | k | star (bias | s corr | ected MLE | <u>:)</u> | 0.262 |
| 62 | | | | | | | Ihe | ta hat (M | LE) | 86.73 | | | | | l heta | star (bias | s corr | ected MLE | <u>:)</u> | 8/.1/ |
| 63 | | | | | | | n | iu hat (M | LE) | 49.04 | | | | | | nu stai | r (bias | s corrected | 1) | 48.79 |
| 64 | | | A | Adjuste | | | | |) (b) | 0.0474 | | | | A | | . 0 | Male. | - (40.70.4 | | 22.50 |
| 65 | | 0 | App | proximate C | ni : | Squar | re valu | ie (48.79 | θ, α) | 33.76 | | | 05% 0 | Adjust | ed Cr | II Square | valu | ie (48.79, | 5) | 33.56 |
| 66 | | 95 | % Gamma | a Approxima | ate | UCL | (use w | /nen n>= | -50) | 33.05 | | | 95% G | amma | Aajus | | (use | wnen n<50 |) | 33.24 |
| 67 | | | | | | | | | | D | | | | | | | | | | |
| 68 | | | | | | | ES | Mean | | | | ng | KM EStima | ites | | | | | 4) | 77.06 |
| 69 | | | | | | | | | | 23.13 | | | | | | | | | 1) | 77.00 <u> </u> |
| 70 | | | | | | | Va | k hot (I | | 0.0001 | | | | | | | | | 1) | 0.047 |
| 71 | | | | | | | | | | 16 76 | | | | | | | | | 1) 1) | 17 55 |
| 72 | | | | | | | +b. | nu nat (i | NIVI) | 256.9 | | | | | | | the | | 1) | 17.55 |
| 73 | | | | 80 | 10/_ | aamn | | | KM) | 14.7 | | | | | 000 | % aamm | | | 1) 1) | 60.01 |
| 74 | | | | 00 | 50/2 | gann | | | | 13/ 6 | | | | | 000 | % gamm | | | 1) 1) | 378.2 |
| 75 | | | | 5. |) /0 | yanni | na per | | XIVI) | 134.0 | | | | | 33 | /o yammo | a per | | " | 576.2 |
| 76 | | | | | | | | 6 | mm | a Kanlan-M | ojor (KM) S | Sta | tietice | | | | | | | |
| 77 | | | Ann | vrovimate (| hi 9 | Sanar | ro Valı | Ga 17 55 ما | inni inni inni inni inni inni inni inn | 9 066 | | 210 | 105005 | Δdiust | od Ch | i Sauare | Valu | <u>م (17 55 (</u> | 3) | 8 969 |
| 78 | 95 | % (- | Anna Ani | | (M. | | | $\frac{10}{hen n>=}$ | , u) 50) | 44 78 | | | 95% Gamm | Aujusi | isted k | | | when n<5(| <i>יי</i> | 45.26 |
| 79 | | /// C | | | | | (use w | | -50) | -+.70 | | | | ia Auju | Sicur | | (use | when h so | " | 40.20 |
| 80 | | | | | | | | anorma | IGO | F Test on D | etected Of | nse | ervations O | nlv | | | | | | |
| 81 | | | SI | haniro Wilk | An | proxir | mate T | est Stati | istic | 0.875 | | | | Shan | iro W | ilk GOF ' | Test | | | |
| 82 | | | 0. | | 5 | % Sha | apiro V | Vilk P Va | alue | 5.1047E-8 | 1 | De | etected Data | Not L | oanor | mal at 5% | 6 Sia | nificance l | eve | əl |
| 83 | | | | | - | Lillie | efors T | est Stati | istic | 0.142 | | | | Lill | iefors | GOF Te | st | | | |
| 04 05 | | | | | 5% | 6 Lillie | efors C | ritical Va | alue | 0.104 | [| De | etected Data | Not L | ognor | nal at 5% | 6 Siqi | nificance L | eve | əl |
| 60 96 | | | | | - | | Det | tected D | ata I | Not Lognorn | nal at 5% S | ig | nificance L | evel | 5 | | 5 | | | - |
| 00 07 | | | | | | | | | | | | - | | | | | | | | |
| 07 | | | | | | | Lo | gnormal | ROS | S Statistics | Using Impu | ite | d Non-Dete | ects | | | | | | |
| 80 | | | | | | Mear | n in Oi | - riginal So | cale | 22.94 | | | | | | М | ean i | n Log Sca | е | 1.221 |
| <u>0</u> 0 | | | | | | SE | D in O | riginal So | cale | 77.54 | | | | | | | SD i | n Log Sca | е | 1.848 |
| 91 | | | 95% t l | JCL (assun | nes | norm | ality o | f ROS d | ata) | 36.3 | | | | | 95% | Percentil | e Boo | otstrap UC | L | 37.4 |
| 92 | | | | | 9 | 5% B0 | CA Bo | otstrap l | JCL | 43.63 | | | | | | 95% | Boot | tstrap t UC | L | 53.24 |
| 93 | | | | | | 95% I | H-UCL | L (Log R | OS) | 34.7 | | | | | | | | | + | |
| 94 | | | | | | | | | | | 1 | | | | | | | | | |
| 95 | Statistics using KM estin | | | | | | | | | on Logged | Data and A | SS | uming Log | normal | Distr | bution | | | | |
| 96 | | | | | | ł | KM Me | ean (logg | ged) | 1.536 | | | | | | | KN | 1 Geo Mea | n | 4.648 |
| 97 | | | | | | | KM | SD (logg | jed) | 1.445 | | | | | 95% | Critical H | l Valu | ie (KM-Lo | J) | 2.721 |
| 98 | | | | KM Stand | arc | l Erroi | r of Me | ean (logg | jed) | 0.151 | | | | | | 95% H | I-UC | L (KM -Lo | 3) | 19.89 |
| 99 | | | | | | | KM | SD (logg | jed) | 1.445 | | | | | 95% | Critical H | l Valu | ie (KM-Lo | J) | 2.721 |
| 100 | | | | KM Stand | arc | l Erroi | r of Me | ean (logg | jed) | 0.151 | | | | | | | | | + | |
| 101 | | | | | | | | | | | ı | | | | | | | | | |
| 102 | | | | | | | | | | DL/2 S | tatistics | | | | | | | | | |
| 103 | | | | DL/2 | 2 N | ormal | I | | | | | | | DL/2 | Log- | Fransforr | ned | | | |
| 104 | | | | | | Mear | n in Oi | riginal So | cale | 23 | | | | | | М | ean i | n Log Sca | е | 1.39 |

| | А | В | С | D | Е | F | G | Н | | J | K | L | | | |
|-----|--|-------------|-----------------|------------------|---------------|----------------|----------------|---------------|----------------|----------------|-----------------|--------|--|--|--|
| 105 | | | | SD in Ori | ginal Scale | 77.52 | | | | SD |) in Log Scale | 1.61 | | | |
| 106 | | | 95% t l | JCL (Assumes | normality) | 36.36 | | | | 959 | % H-Stat UCL | 23.92 | | | |
| 107 | | | DL/2 | is not a recom | mended m | ethod, provid | led for com | parisons and | l historical r | easons | | | | | |
| 108 | | | | | | | | | | | | | | | |
| 109 | | | | | Nonparame | etric Distribu | tion Free U | CL Statistics | | | | | | | |
| 110 | | | | Data do not | follow a D | iscernible Di | stribution a | t 5% Signific | ance Level | | | | | | |
| 111 | | | | | | | | | | | | | | | |
| 112 | - | | | | | Suggested | UCL to Use | | | | | | | | |
| 113 | | | 95 | 5% KM (Cheby | shev) UCL | 58.21 | | | | | | | | | |
| 114 | | Nata: Ourra | | ling the colocti | an of a 05% | | | | | | | | | | |
| 115 | | Note: Sugge | | | | o UCL are pro | | dictribution | select the r | nost appropr | | | | | |
| 116 | | Those reco | r mmondation | | | | | | | Noichla ar | ad Loo (2006) | | | | |
| 117 | | mese reco | | s are based up | | | te: for additi | | | , Maichie, ar | iu Lee (2000). | 'n | | | |
| 118 | | wever, sinu | | | | | | | | | | ai i. | | | |
| 119 | | | - (ETHYI EN | | =) | | | | | | | | | | |
| 120 | 1,2 010110 | | - (= | | -, | | | | | | | | | | |
| 121 | | | | | | General | Statistics | | | | | | | | |
| 122 | | | Total | Number of Ob | servations | 93 | | | Numbe | er of Distinct | Observations | 24 | | | |
| 123 | Number of Detects 17 Number of Non-Detects 7 | | | | | | | | | | | | | | |
| 124 | Number of Distinct Detects 16 Number of Distinct Non-Detects | | | | | | | | | | | | | | |
| 125 | Minimum Detect 1.31 Minimum Non-Detects | | | | | | | | | | | | | | |
| 120 | | | | Maxim | num Detect | 23.82 | | | | Maximur | m Non-Detect | 2.23 | | | |
| 127 | | | | Varian | ce Detects | 27.73 | | | | Percent | t Non-Detects | 81.72% | | | |
| 120 | | | | Ме | an Detects | 3.668 | | | | | SD Detects | 5.266 | | | |
| 130 | | | | Medi | an Detects | 2.31 | | | | | CV Detects | 1.435 | | | |
| 131 | | | | Skewne | ess Detects | 3.935 | | | | Ku | rtosis Detects | 15.9 | | | |
| 132 | | | | Mean of Logg | ed Detects | 0.954 | | | | SD of Lo | gged Detects | 0.674 | | | |
| 133 | | | | | | | I | | | | | | | | |
| 134 | | | | | Norm | nal GOF Tes | t on Detects | s Only | | | | | | | |
| 135 | | | S | hapiro Wilk Te | est Statistic | 0.408 | | | Shapiro W | ilk GOF Tes | it | | | | |
| 136 | | | 5% S | hapiro Wilk Cr | itical Value | 0.892 | | Detected Da | ta Not Norm | al at 5% Sig | nificance Level | | | | |
| 137 | | | | Lilliefors Te | est Statistic | 0.405 | | | Lilliefors | GOF Test | | | | | |
| 138 | | | 5 | % Lilliefors Cr | itical Value | 0.207 | | Detected Da | ta Not Norm | al at 5% Sig | nificance Level | | | | |
| 139 | | | | De | tected Data | a Not Norma | l at 5% Sigi | nificance Lev | el | | | | | | |
| 140 | | | Kaalaa | | | Nemelo | | | | | | | | | |
| 141 | | | Kapian- | Meler (KM) St | | | ritical value | es and other | Nonparame | | Free of Maar | 0.057 | | | |
| 142 | | | | | | 1.000 | | | ĸ | | Error or wean | 0.257 | | | |
| 143 | | | | 05% | | 1 082 | | | 05% KM / | 90 /0 Ki | otstran) UCL | 2.220 | | | |
| 144 | | | | 95% k | | 1.902 | | | 95 % KIVI (r | 95% KM Bo | | 2.001 | | | |
| 145 | | | | | | 2 326 | | | | 95% KM Ch | | 2.525 | | | |
| 146 | | | 97 | 5% KM Cheb | vshev UCI | 3 159 | | | | 99% KM Ch | ebyshev UCI | 4 11 | | | |
| 147 | | | | | , | 0.100 | | | | | 02)01101 0 0 2 | | | | |
| 148 | | | | Ga | mma GOF | Tests on De | etected Obs | ervations Or | ly | | | | | | |
| 149 | | | | A-D Te | est Statistic | 2.139 | | A | nderson-Da | rling GOF T | est | | | | |
| 151 | | | | 5% A-D Cr | itical Value | 0.755 | Detec | ted Data Not | Gamma Dis | stributed at 5 | % Significance | Level | | | |
| 152 | | | | K-S Te | est Statistic | 0.277 | | ŀ | Kolmogorov | -Smirnov G | OF | | | | |
| 153 | | | | 5% K-S Cr | itical Value | 0.213 | Detec | ted Data Not | Gamma Dis | tributed at 5 | % Significance | Level | | | |
| 154 | | | | Detected | Data Not | Gamma Dist | ributed at 5° | % Significan | ce Level | | | | | | |
| 155 | | | | | | | | | | | | | | | |
| 156 | | | | | Gamma | Statistics or | Detected [| Data Only | | | | | | | |
| | | | | | | | | | | | | | | | |

| | А | E | 3 | С | D | E | F | G | Н | | J | K | L |
|-----|----|--------|----------|---------------|----------------|----------------|---------------|---------------|---------------|-------------|--------------------|---------------|--------|
| 157 | | | | | | k hat (MLE) | 1.591 | | | ł | star (bias corre | ected MLE) | 1.349 |
| 158 | | | | | The | ta hat (MLE) | 2.306 | | | Theta | star (bias corre | ected MLE) | 2.719 |
| 159 | | | | | I | nu hat (MLE) | 54.08 | | | | nu star (bias | corrected) | 45.87 |
| 160 | | | | | Me | ean (detects) | 3.668 | | | | | | |
| 161 | | | | | | | Į | 1 | | | | | |
| 162 | | | | | (| Gamma ROS | Statistics u | sing Imputed | d Non-Detec | ts | | | |
| 163 | | | | GROS may | not be used | when data s | et has > 50% | NDs with m | nany tied obs | ervations a | t multiple DLs | | |
| 164 | | GRO | S may | not be used | l when kstar | of detects is | small such a | s <1.0, espe | cially when t | he sample : | size is small (e.g | g., <15-20) | |
| 165 | | | | Fc | or such situat | ions, GROS | method may | yield incorre | ect values of | UCLs and I | BTVs | | |
| 166 | | | | | | This is especi | ally true whe | en the sample | e size is sma | all. | | | |
| 167 | | F | or gan | nma distribut | ted detected | data, BTVs a | ind UCLs ma | ly be comput | ted using gar | mma distrib | ution on KM est | timates | |
| 169 | | | - | | | Minimum | 0.01 | | | | | Mean | 0.679 |
| 100 | | | | | | Maximum | 23.82 | | | | | Median | 0.01 |
| 169 | | | | | | SD | 2 616 | | | | | CV | 3.854 |
| 170 | | | | | | k hat (MLE) | 0.226 | | | | star (bias corre | ected MLF) | 0.225 |
| 1/1 | | | | | The | ta hat (MLE) | 3 009 | | | Thet | star (bias corre | ected MLE) | 3.011 |
| 172 | | | | | | (MLE) | /1 95 | | | Thea | nu star (bias | | /1 93 |
| 173 | | | | Adjustod | | | 0.0474 | | | | | | 41.35 |
| 174 | | | ^ | Aujusieu | | | 28.00 | | | Adjusted C | hi Sayara Value | o (41.02, 0) | 27.01 |
| 175 | | 050/ 0 | Арр | | | ue (41.95, 0) | 20.09 | | 050/ 01 | Aujusteu C | ni Square value | 3 (41.93, p) | 27.91 |
| 176 | | 95% G | amma | Approximat | e UCL (use) | when n>=50) | 1.013 | | 95% Ga | amma Adju | sted UCL (use v | vnen n<50) | 1.02 |
| 177 | | | | | | | | | | | | | |
| 178 | | | | | E | stimates of G | amma Para | meters using | g KM Estima | tes | | | |
| 179 | | | | | | Mean (KM) | 1.555 | | | | | SD (KM) | 2.402 |
| 180 | | | | | Va | ariance (KM) | 5.77 | | | | SE of | Mean (KM) | 0.257 |
| 181 | | | | | | k hat (KM) | 0.419 | | | | | k star (KM) | 0.413 |
| 182 | | | | | | nu hat (KM) | 77.99 | | | | n | u star (KM) | 76.81 |
| 183 | | | | | th | eta hat (KM) | 3.709 | | | | thet | a star (KM) | 3.767 |
| 184 | | | | 80% | % gamma pe | rcentile (KM) | 2.519 | | | 90 | % gamma perc | entile (KM) | 4.368 |
| 185 | | | | 95% | % gamma pe | rcentile (KM) | 6.392 | | | 99 | % gamma perc | entile (KM) | 11.46 |
| 186 | | | | | | | | | | | | i | |
| 187 | | | | | | Gamm | na Kaplan-M | eier (KM) St | atistics | | | | |
| 188 | | | Арр | roximate Ch | i Square Val | ue (76.81, α) | 57.62 | | | Adjusted C | hi Square Value | e (76.81, β) | 57.36 |
| 189 | 95 | % Gamm | na App | proximate KN | M-UCL (use v | when n>=50) | 2.073 | | 95% Gamm | a Adjusted | KM-UCL (use v | vhen n<50) | 2.083 |
| 190 | | | | | | | <u> </u> | | | | | L | |
| 191 | | | | | Le | ognormal GC | F Test on D | etected Obs | servations O | nly | | | |
| 192 | | | | S | hapiro Wilk | Test Statistic | 0.767 | | | Shapiro V | /ilk GOF Test | | |
| 193 | | | | 5% S | hapiro Wilk (| Critical Value | 0.892 | D | etected Data | Not Logno | mal at 5% Sign | ificance Lev | el |
| 194 | | | | | Lilliefors | Test Statistic | 0.184 | | | Lilliefor | s GOF Test | | |
| 195 | | | | 5 | % Lilliefors (| Critical Value | 0.207 | Det | ected Data a | ppear Logr | ormal at 5% Sig | gnificance Le | evel |
| 106 | | | | | Detected D | ata appear A | | Lognormal a | at 5% Signifi | cance Leve | | | |
| 190 | | | | | | | | • | | | | | |
| 197 | | | | | La | anormal RO | S Statistics | Usina Imput | ed Non-Dete | ects | | | |
| 198 | | | | | Mean in O | riginal Scale | 0.913 | | | | Mean in | l og Scale | -1 148 |
| 199 | | | | | SD in O | riginal Scale | 2 567 | | | | SD in | | 1 368 |
| 200 | | 01 | 5% + 1 | ICI (assume | s normality | of ROS data | 1 355 | | | 05% | Percentile Roo | tstran LICI | 1 407 |
| 201 | | 3 | . /0 L U | CE (assume | | | 1 206 | | | 3370 | | stran t LICI | 2 0/7 |
| 202 | | | | | | | 1.000 | | | | 35 /0 DOUL | | 2.047 |
| 203 | | | | | 90 % H-UU | L (LUY RUS) | 1.1/ð | | | | | | |
| 204 | | | | 0 | | M | an | | | annal Di i | | | |
| 205 | | | | Statis | sucs using K | | | Jata and As | suming Logr | iormai Dist | | 0 | 1.07 |
| 206 | | | | | KM M | ean (logged) | 0.239 | | | | KM | Geo Mean | 1.2/ |
| 207 | | | | | KM | SD (logged) | 0.439 | | | 95% | Critical H Value | ə (KM-Log) | 1.814 |
| 208 | | | | KM Standa | rd Error of M | ean (logged) | 0.047 | | | | 95% H-UCL | . (KM -Log) | 1.52 |

| | А | В | С | D | Е | F | G | Н | | J K | L |
|------|-----------|---------------|-----------------|----------------|---------------|----------------|-----------------|-----------------|---------------|-----------------------------|----------|
| 209 | | | | KM | SD (logged) | 0.439 | | | 95% | Critical H Value (KM-Log) | 1.814 |
| 210 | | | KM Standa | rd Error of Me | ean (logged) | 0.047 | | | | | |
| 211 | | | | | | | | | | | |
| 212 | | | | | | DL/2 S | tatistics | | | | |
| 213 | | | DL/2 | Normal | | | | | DL/2 Log- | ransformed | |
| 214 | | | | Mean in Or | iginal Scale | 1.218 | | | | Mean in Log Scale | -0.157 |
| 215 | | | | SD in Or | iginal Scale | 2.487 | | | | SD in Log Scale | 0.604 |
| 216 | | | 95% t l | JCL (Assume | s normality) | 1.646 | | | | 95% H-Stat UCL | 1.157 |
| 210 | | | DL/2 | is not a recor | nmended m | ethod, provid | ded for com | parisons and | historical re | asons | |
| 217 | | | | | | | | | | | |
| 210 | | | | | Nonparame | etric Distribu | tion Free UC | CL Statistics | | | |
| 219 | | | Dete | cted Data ap | Dear Approx | cimate Loand | ormal Distrib | outed at 5% \$ | Sianificance | Level | |
| 220 | | | | | F · FF | | | | | | |
| 221 | | | | | | Suggested | UCL to Use | | | | |
| 222 | | | | | | 1 52 | | | | | |
| 223 | | | | | | 1.02 | | | | | |
| 224 | | Note: Sugge | stions regard | ling the selec | tion of a 95% | | ovided to be | In the user to | solect the n | ost appropriate 95% LICI | |
| 225 | | Note: Sugge | | Doormondo | tions are be | | | distribution | | | |
| 226 | | Those room | r mmondation | | | | | | | Maiable and Les (2006) | |
| 227 | | These reco | mmendations | s are based u | pon the resu | | iulation stud | ies summariz | ea in Singn | | |
| 228 | H | owever, simu | liations result | s will not cov | er all Real W | orid data se | ts; for additio | onal insight tr | ie user may | want to consult a statistic | an. |
| 229 | | | _ | | | | | | | | |
| 230 | 1,2-DICHL | OROETHAN | E | | | | | | | | |
| 231 | | | | | | | | | | | |
| 232 | | | | | | General | Statistics | | | | |
| 233 | | | Total | Number of O | bservations | 93 | | | Numbe | r of Distinct Observations | 14 |
| 234 | | | | Numbe | er of Detects | 0 | | | | Number of Non-Detects | 93 |
| 235 | | | N | umber of Dist | inct Detects | 0 | | | Numb | er of Distinct Non-Detects | 14 |
| 236 | | | | | | | | | | | |
| 237 | | Wari | ning: All obs | ervations are | Non-Detect | s (NDs), the | refore all sta | atistics and e | estimates sh | ould also be NDs! | |
| 238 | | Specifi | ically, sample | e mean, UCL | s, UPLs, an | d other statis | stics are als | o NDs lying | below the la | rgest detection limit! | |
| 239 | • | The Project 7 | Team may de | ecide to use a | alternative s | ite specific v | alues to est | imate enviro | nmental par | ameters (e.g., EPC, BTV |). |
| 240 | | | | | | | | | | | |
| 241 | | | | The data s | et for variab | le 1,2-DICHI | LOROETHA | NE was not | processed! | | |
| 242 | | | | | | | | | | | |
| 243 | | | | | | | | | | | |
| 244 | BENZENE | | | | | | | | | | |
| 245 | | | | | | | | | | | |
| 246 | | | | | | General | Statistics | | | | |
| 247 | | | Total | Number of O | bservations | 93 | | | Numbe | r of Distinct Observations | 51 |
| 2/18 | | | | Numbe | er of Detects | 58 | | | | Number of Non-Detects | 35 |
| 2/0 | | | N | umber of Dist | inct Detects | 46 | | | Numb | er of Distinct Non-Detects | 9 |
| 249 | | | | Mini | mum Detect | 1.34 | | | | Minimum Non-Detect | 1.25 |
| 250 | | | | Maxi | mum Detect | 479.2 | | | | Maximum Non-Detect | 1.85 |
| 201 | | | | Varia | nce Detects | 4081 | | | | Percent Non-Detects | 37.63% |
| 252 | | | | M | ean Detects | 19.58 | | | | SD Detects | 63.88 |
| 253 | | | | Mer | lian Detects | 5.11 | | | | CV Detects | 3 262 |
| 254 | | | | Skewn | ess Detects | 6 802 | | | | Kurtosis Detects | 49.13 |
| 255 | | | | Mean of Log | aed Detects | 1 849 | | | | SD of Loaned Detects | 1 208 |
| 256 | | | | | 900 2010013 | 1.0-10 | | | | | 1.200 |
| 257 | | | | | | | | | | | |
| 258 | | | | honire MULT | NOM | | | | Test P | tested Observations C 1 | |
| 259 | | | S | mapiro Wilk I | est Statistic | 0.284 | | Normal GOF | | tected Observations Only | / |
| 260 | | | | 5% Shapiro V | Vilk P Value | 0 | | Detected Da | ta Not Norm | al at 5% Significance Leve | el |

| | А | В | | С | D | E E Tost Statist | F | 2 | G | Н | | ofore | J GOE Tes | | К | | L |
|-----|---|----------|--------|----------|---------------|---------------------|----------------------------------|------------|--------------|--------------|------------|---------|--------------|---------------------|--------------|---------|---------|
| 261 | | | | F | | Critical Value | 0.388 0.116 | , , | | Detected [| Data Not N | Jorma | Lat 5% Si | . ianific | ancelev | ام | |
| 262 | | | | | | | | ' mal 4 | ot 5% Sigr | | | NOTTIC | ii at 5 /0 5 | ignine | | | |
| 263 | | | | | | Delected Da | | mai | at 5 % Sigi | | | | | | | | |
| 264 | | | | Kanlan. | .Meier (KM |) Statistics u | sing Norma | l Cri | tical Value | s and othe | er Nonnar | amet | ric UCI s | | | | |
| 265 | | | | Rapian | | KM Mea | n 12.68 | | | | | KN | 1 Standar | d Erro | or of Mean | 1 | 5 3 1 3 |
| 266 | | | | | | KMS | 50.79 | | | | | | 95% | KM (F | | | 23.42 |
| 267 | | | | | 9 | 5% KM (t) UC | 21.51 | | | | 95% k | KM (P | ercentile I | Boots | trap) UCI | - | 23.11 |
| 268 | | | | | 95 | % KM (z) UC | L 21.42 | | | | | (. | 95% KM E | Bootst | rap t UCL | | 45.61 |
| 209 | | | | | 90% KM C | nebvshev UC | L 28.62 | | | | | ç | 5% KM C | hebv | shev UCL | _ | 35.84 |
| 270 | | | | 97 | 7.5% KM C | nebyshev UC | L 45.86 | | | | | ç | 9% KM C | heby | shev UCL | _ | 65.55 |
| 271 | | | | | | | | | | | | | | , | | | |
| 272 | | | | | | Gamma GC | F Tests on | Dete | ected Obs | ervations (| Only | | | | | | |
| 273 | | | | | A-I | D Test Statist | c 5.359 |) | | | Anderso | n-Dar | ling GOF | Test | | | |
| 275 | | | | | 5% A-E | Critical Valu | e 0.81 | | Detect | ted Data N | ot Gamma | a Dist | ributed at | 5% S | Significand | ce L | evel |
| 276 | | | | | K-: | S Test Statist | c 0.239 |) | | | Kolmog | orov- | Smirnov (| GOF | | | |
| 277 | | | | | 5% K-8 | Critical Valu | e 0.123 | 3 | Detect | ted Data N | ot Gamma | a Dist | ributed at | 5% S | Significand | ce L | evel |
| 278 | | | | | Dete | cted Data No | t Gamma D | Distrit | buted at 59 | % Significa | ance Leve | əl | | | | | |
| 279 | | | | | | | | | | | | | | | | | |
| 280 | | | | | | Gamm | a Statistics | s on [| Detected D | Data Only | | | | | | | |
| 281 | | | | | | k hat (MLE | E) 0.555 | 5 | | | | k s | star (bias o | correc | cted MLE |) | 0.538 |
| 282 | | | | | Т | heta hat (MLE | 35.25 | | | | Т | heta s | star (bias o | correc | cted MLE |) | 36.38 |
| 283 | | | | | | nu hat (MLE | 64.43 | | | | | | nu star (| bias o | corrected |) | 62.43 |
| 284 | | | | | | Mean (detects | s) 19.58 | | | | | | | | | | |
| 285 | | | | | | | | | | | | | | | | | |
| 286 | | | | | | Gamma RC | S Statistics | s usi | ng Impute | d Non-Dete | ects | | | | | | |
| 287 | | | GF | OS may | y not be us | ed when data | set has > 5 | 50% I | NDs with m | nany tied o | bservatio | ns at i | multiple D | Ls | | | |
| 288 | | GROS ma | ay not | be used | d when ksta | ar of detects i | s small such | h as · | <1.0, espe | cially wher | n the sam | ple siz | ze is smal | l (e.g. | ., <15-20) | | |
| 289 | | | | Fo | or such situ | ations, GRO | 6 method m | iay yi | ield incorre | ect values o | of UCLs a | nd B1 | Vs | | | | |
| 290 | | | | | | This is espe | cially true w | vhen | the sample | e size is sr | nall. | | | | | | |
| 291 | | For ga | amma | distribu | ted detecte | d data, BTVs | and UCLs | may | be compu | ted using g | jamma dis | stribut | | l estir | nates | _ | 10.00 |
| 292 | | | | | | Winimui | n 0.01 | | | | | | | | Median | 1 | 12.22 |
| 293 | | | | | | Iviaximui | n 4/9.2 | | | | | | | | | 1 / | 2.01 |
| 294 | | | | | | S | 0 222 | , | | | | | tor (bioc | oorroe | | <u></u> | 4.109 |
| 295 | | | | | т | K Hat (MLE | () 0.233 | > | | | т | K S | | | | / \ | 52.5 |
| 296 | | | | | | nu hat (MLE | $\frac{1}{2}$ $\frac{32.42}{12}$ | | | | 1 | | nu star (| bias (| | / \ | 43.28 |
| 297 | | | | Adjuster | 1 l evel of S | ignificance (| 3) 0.0474 | 4 | | | | | na star (| 0100 (| | / | -10.20 |
| 298 | | Ar | oproxi | mate Ch | ni Square V | alue (43.28. (| $\frac{1}{1}$ 29.2 | | | | Adjuste | ed Chi | Square \ | /alue | (43.28 B |) | 29.01 |
| 299 | | 95% Gamm | na Apr | proximat | te UCL (us | when $n \ge 5$ |)) 18.11 | | | 95% | Gamma A | diust | ed UCL (u | ise wi | hen $n < 50$ |) | 18.22 |
| 300 | | | | | | | , | | | | | | (- | | | / | |
| 202 | | | | | | Estimates of | Gamma Pa | aram | eters usine | a KM Estin | nates | | | | | | |
| 202 | | | | | | Mean (KN | 1) 12.68 | | | | | | | | SD (KM) |) | 50.79 |
| 303 | | | | | | Variance (KM |) 2580 | | | | | | SI | E of N | lean (KM) |) | 5.313 |
| 305 | | | | | | k hat (KN | 1) 0.0624 | 4 | | | | | | k | star (KM) |) | 0.0675 |
| 306 | | | | | | nu hat (KM | I) 11.6 | | | | | | | nu | star (KM) |) | 12.56 |
| 307 | | | | | | theta hat (KM | 1) 203.4 | | | | | | | theta | star (KM) |) 1 | 187.9 |
| 308 | | | | 809 | % gamma p | ercentile (KM | l) 4.17 | | | | | 90% | gamma | perce | ntile (KM) |) | 26.58 |
| 309 | | | | 959 | % gamma p | ercentile (KN | 1) 72.61 | | | | | 99% | gamma | perce | ntile (KM) |) 2 | 243 |
| 310 | | | | | | | | I | | | | | | | | | |
| 311 | | | | | | Gam | ma Kaplan- | -Mei | er (KM) St | atistics | | | | | | | |
| 312 | | Ap | oproxi | mate Ch | ni Square V | alue (12.56, d | ı) 5.596 | 6 | | | Adjuste | ed Chi | Square \ | /alue | (12.56, β) |) | 5.523 |
| | | | | | | | | | | | | | | | | | |

| | А | В | С | D | E | F | G | Н | I | J K | | L |
|-----|-----|--------------|----------------|----------------|----------------|----------------|---------------|------------------|---------------|-----------------------|----------|--------|
| 313 | 959 | % Gamma Ap | proximate KN | /I-UCL (use v | when n>=50) | 28.46 | | 95% Gamma | a Adjusted K | M-UCL (use when n | <50) | 28.84 |
| 314 | | | | | | | | | | | | |
| 315 | | | | Lo | ognormal GC | F Test on D | etected Ob | servations Or | nly | | | |
| 316 | | S | hapiro Wilk A | pproximate | Test Statistic | 0.909 | | | Shapiro Wil | k GOF Test | | |
| 317 | | | | 5% Shapiro | Wilk P Value | 1.8516E-4 | [| Detected Data | Not Lognorn | nal at 5% Significand | e Lev | el |
| 318 | | | | Lilliefors | Test Statistic | 0.103 | | | Lilliefors | GOF Test | | |
| 310 | | | 5 | % Lilliefors C | Critical Value | 0.116 | De | etected Data a | opear Logno | rmal at 5% Significa | nce Le | evel |
| 220 | | | | Detected D | ata appear A | pproximate | Lognormal | l at 5% Signific | cance Level | | | |
| 220 | | | | | | | • | • | | | | |
| 321 | | | | Lo | anormal RO | S Statistics | Jsina Impu | uted Non-Dete | cts | | | |
| 322 | | | | Mean in O | riginal Scale | 12.37 | | | | Mean in Log S | cale | 0.755 |
| 323 | | | | SD in O | riginal Scale | 51 14 | | | | SD in Log S | cale | 1 761 |
| 324 | | 95% + 1 | ICL (assume | | of ROS data) | 21 10 | | | 95% 5 | Percentile Bootstran | | 22 /0 |
| 325 | | 90 /8 L C | | | | 21.13 | | | 3J /0 F | | | 22.49 |
| 326 | | | | | | 29.01 | | | | | UCL | 44.25 |
| 327 | | | | 95% H-UC | L (LOG RUS) | 17.73 | | | | | | |
| 328 | | | | | | | | | | | | |
| 329 | | | Statis | STICS USING K | M estimates | on Logged L | Jata and A | ssuming Logn | ormal Distri | pution | - | 0.440 |
| 330 | | | | KM M | ean (logged) | 1.238 | | | | KM Geo N | lean | 3.449 |
| 331 | | | | KM | SD (logged) | 1.23 | | | 95% C | Critical H Value (KM- | Log) | 2.483 |
| 332 | | | KM Standa | rd Error of M | ean (logged) | 0.129 | | | | 95% H-UCL (KM - | Log) | 10.11 |
| 333 | | | | KM | SD (logged) | 1.23 | | | 95% C | Critical H Value (KM- | Log) | 2.483 |
| 334 | | | KM Standa | rd Error of M | ean (logged) | 0.129 | | | | | | |
| 335 | | | | | | | | | | | | |
| 336 | | | | | | DL/2 S | tatistics | | | | | |
| 337 | | | DL/2 | Normal | | | | | DL/2 Log-T | ransformed | | |
| 338 | | | | Mean in O | riginal Scale | 12.46 | | | | Mean in Log S | cale | 0.999 |
| 339 | | | | SD in O | riginal Scale | 51.12 | | | | SD in Log S | cale | 1.456 |
| 340 | | | 95% t l | JCL (Assume | es normality) | 21.27 | | | | 95% H-Stat | UCL | 11.86 |
| 341 | | | DL/2 | is not a reco | mmended m | ethod, provid | ded for con | nparisons and | historical re | asons | | |
| 342 | | | | | | | | | | | | |
| 343 | | | | | Nonparame | tric Distribu | tion Free U | JCL Statistics | | | | |
| 344 | | | Dete | cted Data ap | pear Approx | imate Logno | ormal Distri | ibuted at 5% S | Significance | Level | | |
| 3/5 | | | | | | | | | | | | |
| 345 | | | | | | Suggested | UCL to Us | e | | | | |
| 240 | | | | | KM H-UCL | 10.11 | | | | | | |
| 347 | | | | | | | | | | | | |
| 340 | | Note: Suaae | stions regard | lina the selec | tion of a 95% | UCL are pr | ovided to h | elp the user to | select the m | ost appropriate 95% | UCL. | |
| 349 | | | F | Recommenda | ations are bas | ed upon dat | a size, data | distribution. a | and skewnes | S. | | |
| 350 | | These reco | mmendations | s are based u | upon the resu | Its of the sim | ulation stu | dies summariz | ed in Sinah. | Maichle, and Lee (2) | 006). | |
| 351 | H | lowever simu | lations result | s will not cov | ver all Real W | orld data se | ts: for addit | ional insight th | e user may v | vant to consult a sta | tisticia | an. |
| 352 | • | | | | | | | ione noight in | | | | |
| 353 | | | | | | | | | | | | |
| 354 | | | | | | | | | | | | |
| 355 | | | | | | Conorol | Statiation | | | | | |
| 356 | | | Total | Number of (| haanvationa | | Statistics | | Number | of Distinct Observed | iono | 27 |
| 357 | | | rotal | | | 33 | | | number | Number of Nen Det | | 67 |
| 358 | | | N | | | 20 | | | Ni | Number of Non-De | ecis | 07 |
| 359 | | | N | UTIDER OF DIS | | 22 | | | NUMDE | Minimum N | ects | 0 |
| 360 | | | | Min | Imum Detect | 3.44 | | | | Minimum Non-De | etect | 2 |
| 361 | | | | Max | Imum Detect | 3/8.6 | | | | Maximum Non-De | etect | 4.13 |
| 362 | | | | Varia | ance Detects | 8038 | | | | Percent Non-De | ects | 72.04% |
| 363 | | | | N | lean Detects | 50.64 | | | | SD De | ects | 89.66 |
| 364 | | | | Me | dian Detects | 8.435 | | | | CV De | ects | 1.77 |

| | А | В | С | D | E | F | G | Н | I | J | K | L |
|-------------|---|-----------|---------------|----------------|---------------|-----------------|---------------|---------------|----------------|---------------|----------------|---------|
| 365 | | | | Skewn | ess Detects | 2.647 | | | | Kur | tosis Detects | 7.204 |
| 366 | | | | Mean of Log | ged Detects | 2.791 | | | | SD of Log | gged Detects | 1.467 |
| 367 | | | | | | | | | | | | |
| 368 | | | | | Norm | nal GOF Tes | t on Detects | Only | | | | |
| 369 | | | S | hapiro Wilk T | est Statistic | 0.591 | | | Shapiro Wil | k GOF Tes | t | |
| 370 | | | 5% SI | napiro Wilk C | ritical Value | 0.92 | [| Detected Dat | ta Not Norma | l at 5% Sigr | nificance Leve | |
| 370 | | | | Lilliefors T | est Statistic | 0.299 | | | Lilliefors | GOF Test | | |
| 371 | | | 5 | % Lilliefors C | ritical Value | 0.17 | [| Detected Dat | ta Not Norma | l at 5% Sigr | nificance Leve | |
| 372 | | | | D | etected Data | a Not Norma | l at 5% Sign | ificance Lev | el | 5 | | |
| 3/3 | | | | | | | 3 . | | | | | |
| 3/4 | | | Kanlan- | Meier (KM) S | tatistics usi | ng Normal C | ritical Value | s and other | Nonnarameti | ric UCI s | | |
| 3/5 | | | Kapian | | KM Mean | 15.6 | | | KM | I Standard F | rror of Mean | 5 4 3 1 |
| 376 | | | | | KM SD | 51 35 | | | | | | 25.63 |
| 377 | | | | 05% | | 24.62 | | | 05% KM (D | 95 /0 Ki | ototron) UCL | 25.05 |
| 378 | | | | 95% | | 24.02 | | | 95% KIVI (P | | | 20.40 |
| 379 | | | | 95% | | 24.53 | | | | 95% KIVI BO | | 32.74 |
| 380 | | | | | bysnev UCL | 31.89 | | | 9 | 5% KM Che | ebysnev UCL | 39.27 |
| 381 | | | 97 | 5% KM Chel | byshev UCL | 49.51 | | | g | 9% KM Che | ebyshev UCL | 69.63 |
| 382 | | | | | | | | | | | | |
| 383 | | | | G | amma GOF | Tests on De | etected Obse | ervations On | ly | | | |
| 384 | | | | A-D T | est Statistic | 1.932 | | A | nderson-Dar | ling GOF T | est | |
| 385 | | | | 5% A-D C | ritical Value | 0.803 | Detect | ed Data Not | Gamma Dist | ributed at 5° | % Significance | e Level |
| 386 | | | | K-S T | est Statistic | 0.244 | | ł | Colmogorov- | Smirnov GC |)F | |
| 387 | | | | 5% K-S C | ritical Value | 0.181 | Detect | ed Data Not | Gamma Dist | ributed at 59 | % Significance | e Level |
| 388 | | | | Detecte | d Data Not | Gamma Dist | ributed at 5% | % Significan | ce Level | | | |
| 389 | | | | | | | | | | | | |
| 390 | | | | | Gamma | Statistics or | Detected D | ata Only | | | | |
| 391 | | | | | k hat (MLE) | 0.552 | | | k s | tar (bias co | rrected MLE) | 0.514 |
| 302 | | | | Thet | a hat (MLE) | 91.74 | | | Theta s | tar (bias co | rrected MLE) | 98.53 |
| 202 | | | | n | u hat (MLE) | 28.7 | | | | nu star (bi | as corrected) | 26.73 |
| 204 | | | | Ме | an (detects) | 50.64 | | | | | , | |
| 205 | | | | | , | | | | | | | |
| 395 | | | | G | amma ROS | Statistics u | sina Imputea | l Non-Detec | ts | | | |
| 396 | | | GROS may | not be used | when data s | et has $> 50\%$ | NDs with m | any tied obs | ervations at r | nultiple DLs | 1 | |
| 397 | | GROS may | / not be used | when kstar o | of detects is | small such a | | cially when t | he sample siz | ze is small (| | |
| 398 | | | Fo | r such situati | one GROS | method may | vield incorre | et values of | | | o.g., 10 20) | |
| 399 | | | 10 | | his is osposi | ally true who | n the sample | | | v3 | | |
| 400 | | Forgor | nmo dictribut | | | | | | nma diatribut | ion on KM c | etimatos | |
| 401 | | FUI yai | | | Minimum | | | eu using gai | | | Maan | 14.10 |
| 402 | | | | | iviinimum | 0.01 | | | | | iviean | 14.10 |
| 403 | | | | | iviaximum | 3/8.0 | | | | | Median | 0.01 |
| 404 | | | | | SD | 52.02 | | | | | CV | 3.673 |
| 405 | | | | | k hat (MLE) | 0.148 | | | ks | star (bias co | rrected MLE) | 0.151 |
| 406 | | | | Thet | a hat (MLE) | 95.46 | | | Theta s | star (bias co | rrected MLE) | 93.95 |
| 407 | | | | n | u hat (MLE) | 27.6 | | | | nu star (bi | as corrected) | 28.04 |
| 408 | | | Adjusted | Level of Sigr | hificance (β) | 0.0474 | | | | | | |
| 409 | | Арр | proximate Chi | Square Valu | ie (28.04, α) | 16.96 | | | Adjusted Chi | Square Va | ue (28.04, β) | 16.82 |
| 410 | ! | 95% Gamma | Approximate | e UCL (use w | /hen n>=50) | 23.42 | | 95% Ga | amma Adjuste | ed UCL (use | e when n<50) | 23.61 |
| 411 | | | | | | | | | | | | |
| 412 | | | | Es | timates of G | amma Para | meters using | g KM Estima | tes | | | |
| 413 | | | | | Mean (KM) | 15.6 | | | | | SD (KM) | 51.35 |
| <u>41</u> 4 | | | | Va | riance (KM) | 2637 | | | | SEG | of Mean (KM) | 5.431 |
| 414 115 | | | | | k hat (KM) | 0.0923 | | | | | k star (KM) | 0.0965 |
| 415 | | | | | nu hat (KM) | 17 16 | | | | | nu star (KM) | 17 94 |
| 416 | | | | | | 17.10 | | | | | | 17.54 |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|-----|----------|-------------|-----------------|----------------|---|----------------|--------------------|-----------------|----------------------|--------------|---------------------|--------|
| 417 | | | | th | eta hat (KM) | 169.1 | | | | | theta star (KM) | 161.7 |
| 418 | | | 80% | 6 gamma per | centile (KM) | 10.26 | | | 90 | % gamma | percentile (KM) | 40.88 |
| 419 | | | 95% | 6 gamma per | centile (KM) | 90.71 | | | 99 | % gamma | percentile (KM) | 252.3 |
| 420 | | | | | | | | | | | | |
| 421 | | | | | Gamm | a Kaplan-M | eier (KM) St | atistics | | | | |
| 421 | | App | proximate Ch | i Square Valı | ue (17.94, α) | 9.348 | | | Adjusted C | hi Square | Value (17.94, β) | 9.25 |
| 422 | 95% | Gamma Apr | proximate KN | /I-UCL (use v | vhen n>=50) | 29.94 | | 95% Gamm | a Adiusted | KM-UCL (| use when n<50) | 30.25 |
| 423 | | | | (| / | | | | · · , · · · · | (| , | |
| 424 | | | | lo | onormal GO | F Test on D | etected Ohs | ervations O | nlv | | | |
| 425 | | | S | haniro Wilk 1 | est Statistic | 0.875 | | | Shaniro W | /ilk GOF T | est | |
| 426 | | | 5% S | haniro Wilk (| ritical Value | 0.92 | Di | etected Data | Not Lognor | mal at 5% | | رما |
| 427 | | | 570 0 | | Ast Statistic | 0.02 | | | Lilliefor | | | |
| 428 | | | F | | ritical Value | 0.207 | | atastad Data | | | Significance Los | (ol |
| 429 | | | J | | | | Di al at 5% Sid | | | | Significance Lev | Vei |
| 430 | | | | De | lected Data I | NOL LOGNOM | | Junicance Lo | evei | | | |
| 431 | | | | | | | 1.1 | | | | | |
| 432 | | | | LO | gnormal RO | | Using imput | ed Non-Dete | ects | | | 0.040 |
| 433 | | | | Mean in O | riginal Scale | 14.36 | | | | Me | ean in Log Scale | -0.842 |
| 434 | | | | SD in O | riginal Scale | 51.97 | | | | | SD in Log Scale | 2.767 |
| 435 | | 95% t L | JCL (assume | s normality c | of ROS data) | 23.31 | | | 95% | Percentile | e Bootstrap UCL | 23.68 |
| 436 | | | | 95% BCA Bo | otstrap UCL | 28.16 | | | | 95% | Bootstrap t UCL | 34.1 |
| 437 | | | | 95% H-UCI | (Log ROS) | 70.86 | | | | | | |
| 438 | | | | | | | | | | | | |
| 439 | | | Statis | stics using K | M estimates | on Logged [| Data and As | suming Logr | normal Dist | ibution | | |
| 440 | | | | KM Me | ean (logged) | 1.28 | | | | | KM Geo Mean | 3.597 |
| 441 | | | | KM | SD (logged) | 1.21 | | | 95% | Critical H | Value (KM-Log) | 2.461 |
| 442 | | | KM Standa | rd Error of Me | ean (logged) | 0.128 | | | | 95% H | -UCL (KM -Log) | 10.21 |
| 443 | | | | KM | SD (logged) | 1.21 | | | 95% | Critical H | Value (KM-Log) | 2.461 |
| 444 | | | KM Standa | rd Error of Me | ean (logged) | 0.128 | | | | | | |
| 445 | | | | | | | | | | | | |
| 446 | | | | | | DL/2 S | tatistics | | | | | |
| 447 | | | DL/2 | Normal | | | | | DL/2 Log- | Transform | ned | |
| 448 | | | | Mean in O | riginal Scale | 15.03 | | | | Me | ean in Log Scale | 0.916 |
| 440 | | | | SD in O | riginal Scale | 51.78 | | | | | SD in Log Scale | 1.404 |
| 449 | | | 95% t l | JCL (Assume | es normality) | 23.95 | | | | ç | 95% H-Stat UCL | 9.897 |
| 450 | | | DL/2 | is not a reco | mmended me | ethod, provid | ded for com | parisons and | l historical r | easons | | |
| 451 | | | | | | | | | | | | |
| 452 | | | | | Nonparame | tric Distribu | tion Free UC | CL Statistics | | | | |
| 455 | | | | Data do n | ot follow a Di | scernible Di | stribution at | 5% Sianific | ance Level | | | |
| 454 | | | | | | | | g | | | | |
| 455 | | | | | | Suggested | UCL to Use | | | | | |
| 456 | | | 95 | % KM (Cheh | vshev) UCL | 39.27 | | | | | | |
| 457 | | | | | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | 00.27 | | | | | | |
| 458 | | Note: Sugge | stions regard | ling the selec | tion of a 95% | | ovided to he | In the user to | solect the | most appr | opriate 95% LICI | |
| 459 | | Note. Sugge | | Recommanda | tions are bee | | | | and skowno | ee | | |
| 460 | | Those roca | mmondationa | | non the recu | | | | | Noichle | and Loc (2006) | |
| 461 | | These recor | mmendations | s are based u | pon the resu | its of the sim | lulation studi | es summanz | zea in Singn | , Maichie, | and Lee (2006). | |
| 462 | HC | wever, simu | liations result | S WIII NOT COV | er all Real W | orid data se | is; for additio | onal insight ti | ne user may | want to c | onsult a statistici | an. |
| 463 | | | | | | | | | | | | |
| 464 | EIHYLBEN | IZENE | | | | | | | | | | |
| 465 | | | | | | | | | | | | |
| 466 | | | | | | General | Statistics | | | | | |
| 467 | | | Total | Number of C | bservations | 93 | | | Numbe | er of Distin | ct Observations | 51 |
| 468 | | | | Numbe | er of Detects | 61 | | | | Number | r of Non-Detects | 32 |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|-----|---|----------|---------------|---------------|----------------|---------------|---------------|---------------|---------------|----------------|----------------------|---------|
| 469 | | | 1 | Number of Dis | stinct Detects | 47 | | | Numbe | er of Distinct | Non-Detects | 7 |
| 470 | | | | Mir | nimum Detect | 1.3 | | | | Minimum | Non-Detect | 1.22 |
| 471 | | | | Max | kimum Detect | 243.2 | | | | Maximum | Non-Detect | 1.87 |
| 472 | | | | Vari | ance Detects | 1262 | | | | Percent | Non-Detects | 34.41% |
| 473 | | | | Ν | Mean Detects | 15.43 | | | | | SD Detects | 35.52 |
| 474 | | | | Me | edian Detects | 4.26 | | | | | CV Detects | 2.302 |
| 475 | | | | Skew | ness Detects | 4.939 | | | | Kurt | osis Detects | 28.84 |
| 476 | | | | Mean of Lo | gged Detects | 1.757 | | | | SD of Log | ged Detects | 1.202 |
| 477 | | | | | | | | | | | | |
| 478 | | | | | Norn | nal GOF Tes | t on Detects | s Only | | | | |
| 170 | | | | Shapiro Wilk | Test Statistic | 0.426 | | Normal GOF | F Test on De | tected Obse | rvations Only | y |
| 473 | | | | 5% Shapiro | Wilk P Value | 0 | | Detected Da | ta Not Norma | al at 5% Sign | ificance Leve | el |
| 400 | | | | Lilliefors | Test Statistic | 0.345 | | | Lilliefors | GOF Test | | |
| 401 | | | | 5% Lilliefors | Critical Value | 0.113 | | Detected Da | ta Not Norma | al at 5% Sign | ificance Leve | el |
| 402 | | | | | Detected Dat | a Not Norma | al at 5% Sign | nificance Lev | /el | | | |
| 483 | | | | | | | | | | | | |
| 484 | | | Kanlar | -Meier (KM) | Statistics usi | ng Normal C | ritical Value | s and other | Nonnaramet | ric UCI s | | |
| 485 | | | . capital | | KM Mean | 10 54 | | | KN | A Standard F | rror of Mean | 3 066 |
| 486 | | | | | KM SD | 29.32 | | | | 95% KM | | 16.23 |
| 487 | | | | 050 | | 15.64 | | | | Joroontilo Por | | 15.04 |
| 488 | | | | 050 | | 15.04 | | | 93 /8 KIVI (F | | | 21 17 |
| 489 | | | | 90% KM Ch | | 10.00 | | | | | | 21.17 |
| 490 | | | | | | 19.74 | | | | | | 23.91 |
| 491 | | | 9 | 7.5% KM Che | ebysnev UCL | 29.69 | | | , | 99% KM Che | bysnev UCL | 41.05 |
| 492 | | | | | | | | | | | | |
| 493 | | | | | Gamma GOF | Tests on De | etected Obs | ervations Or | nly | | | |
| 494 | | | | A-D | Test Statistic | 5.151 | | A | nderson-Da | rling GOF Te | est | |
| 495 | | | | 5% A-D | Critical Value | 0.804 | Detect | ted Data Not | Gamma Dis | tributed at 5% | % Significance | e Level |
| 496 | | | | K-S | Test Statistic | 0.233 | | | Kolmogorov- | Smirnov GO | F | |
| 497 | | | | 5% K-S | Critical Value | 0.119 | Detect | ted Data Not | Gamma Dist | tributed at 5% | 6 Significanc | e Level |
| 498 | | | | Detect | ed Data Not | Gamma Dist | ributed at 59 | % Significan | ce Level | | | |
| 499 | | | | | | | | | | | | |
| 500 | | | | | Gamma | Statistics or | n Detected D | Data Only | | | | |
| 501 | | | | | k hat (MLE) | 0.627 | | | k : | star (bias cor | rected MLE) | 0.607 |
| 502 | | | | The | eta hat (MLE) | 24.61 | | | Theta | star (bias cor | rected MLE) | 25.42 |
| 503 | | | | | nu hat (MLE) | 76.49 | | | | nu star (bia | as corrected) | 74.06 |
| 504 | | | | М | ean (detects) | 15.43 | | | | | | |
| 505 | | | | | | I | 1 | | | | | 1 |
| 506 | | | | | Gamma ROS | Statistics u | sing Impute | d Non-Detec | ts | | | |
| 507 | | | GROS ma | y not be used | d when data s | et has > 50% | 6 NDs with m | nany tied obs | servations at | multiple DLs | | |
| 508 | | GROS ma | ay not be use | d when kstar | of detects is | small such a | s <1.0, espe | cially when t | he sample si | ze is small (e | e.g., <15-20) | |
| 509 | | | F | or such situa | tions, GROS | method may | yield incorre | ect values of | UCLs and B | ΓVs | | |
| 510 | | | | | This is especi | ally true whe | en the sample | e size is sma | all. | | | |
| 510 | | For da | amma distrib | uted detected | data. BTVs a | nd UCLs ma | v be compu | ted usina aai | mma distribu | tion on KM e | stimates | |
| 511 | | - 3- | | | Minimum | 0.01 | , p. | 33 | | | Mean | 10.12 |
| 512 | | | | | Maximum | 243.2 | | | | | Median | 2.3 |
| 513 | | | | | SD | 29.62 | | | | | CV | 2.926 |
| 514 | | | | | k hat (MLF) | 0 257 | | | k | star (hias cor | rected MLE | 0 256 |
| 515 | | | | Th | eta hat (MLE) | 39.34 | | | Thete | star (hias cor | | 39.51 |
| 516 | | | | | | 47.97 | | | i lieta : | nu etar (hic | as corrected | 47.66 |
| 517 | | | - + ـ:لم ۸ | d lovel of C | | 47.07 | | | | nu stal (Dia | as conected) | 47.00 |
| 518 | | • | Adjuste | | $\frac{1}{1}$ | 0.0474 | | | Adjusts - C | Causers Mr.1 | up (47.60 .0) | 20.60 |
| 519 | | | proximate C | III Square Va | iue (47.66, α) | 32.81 | | 050/ 0 | Adjusted Ch | square Vali | ue (47.00, β) | 32.62 |
| 520 | | 95% Gamm | a Approxima | ite UCL (use | when n>=50) | 14./ | | 95% Ga | amma Adjust | ed UCL (use | when n<50) | 14./9 |

| | А | | В | | С | | D | | E | F | G | | Н | | I | | J | | К | Τ | L |
|-----|----|------|------------|-----------------|-----------|---------|-----------|---------|------------------------------|----------------|------------|--------|-------------|---------|--------------|------------|------------|------------|--------------|---------------|-------|
| 521 | | | | | | | | | | | | | | | | | | | | | |
| 522 | | | | | | | Es | stimat | tes of G | amma Para | meters u | Ising | KM Esti | imate | es | | | | | | |
| 523 | | | | | | | | Mea | an (KM) | 10.54 | | | | | | | | | SD (KM |) | 29.32 |
| 524 | | | | | | | Va | arianc | e (KM) | 859.7 | | | | | | | | SE of I | Mean (KM |) | 3.066 |
| 525 | | | | | | | | k ha | at (KM) | 0.129 | | | | | | | | | k star (KM |) | 0.132 |
| 526 | | | | | | | | nu ha | at (KM) | 24.04 | | | | | | | | nı | u star (KM |) | 24.6 |
| 527 | | | | | | | th | eta ha | at (KM) | 81.55 | | | | | | | | theta | a star (KM |) | 79.7 |
| 528 | | | | | 80% | 6 gan | nma pei | rcentil | le (KM) | 10.25 | | | | | | 90% | 5 gamm | a perc | entile (KM |) | 30.58 |
| 529 | | | | | 95% | % gan | nma pei | rcentil | le (KM) | 59.33 | | | | | | 99% | gamm | a perc | entile (KM |) | 145 |
| 530 | | | | | | | | | Gamm | na Kanlan-M | eier (KM |) Sta | atistics | | | | | | | | |
| 531 | | | Ap | proxim | nate Ch | i Sau | are Valı | ue (24 | 4.60. α) | 14.31 | | , 04 | | Δ | diuste | d Chi | Square | - Value | e (24.60, ß |) | 14.18 |
| 532 | 95 | 5% C | amma An | | mate KN | л-UС | | vhen | $\frac{1000, 0.0}{n > = 50}$ | 18.13 | | | 95% Gar | mma | Adius | ted K | M-UCI | (use v | vhen n<50 | $\frac{1}{1}$ | 18.29 |
| 533 | | | | , proxim | | | 2 (000) | | | 10.10 | | | | | , lajao | | | (400 1 | | / | 10.20 |
| 534 | | | | | | | Lo | anor | mal GC | OF Test on D | etected | Obs | ervations | s On | lv | | | | | | |
| 535 | | | S | Shapiro | o Wilk A | opro | kimate | Fest S | Statistic | 0.899 | | | | | ., Shapir | o Wi | k GOF | Test | | | |
| 530 | | | | | - | 5% S | hapiro | Wilk F | ^o Value | 2.9905E-5 | | De | etected D | ata N | Not Loc | norn | nal at 5% | % Sign | ificance L | eve | |
| 537 | | | | | | Li | Iliefors⊺ | Fest S | Statistic | 0.137 | | | | | Lillie | fors | GOF Te | est | | | |
| 538 | | | | | 5 | % Lil | liefors C | Critica | l Value | 0.113 | | De | etected D | ata N | Not Loc | norn | nal at 5% | % Sign | ificance L | eve | |
| 539 | | | | | - | - | De | tecte | d Data | Not Loanorr | nal at 5% | 6 Sia | inificance | e Lev | /el | , - | | | | | |
| 540 | | | | | | | | | | | | | | | | | | | | | |
| 541 | | | | | | | Lo | gnorr | nal RO | S Statistics | Using Im | pute | ed Non-D | etec | ts | | | | | | |
| 542 | | | | | | Me | an in O | rigina | I Scale | 10.26 | | • | | | | | Μ | lean in | Log Scale | Э | 0.778 |
| 543 | | | | | | | SD in O | rigina | I Scale | 29.57 | | | | | | | | SD in | Log Scale | Э | 1.72 |
| 544 | | | 95% t | UCL (; | assume | es noi | mality o | of RO | S data) | 15.36 | | | | | 9 | 95% F | Percenti | le Boo | tstrap UCI | _ | 16 |
| 545 | | | | | | 95% | BCA Bo | otstra | ap UCL | 17.56 | | | | | | | 95% | Boots | strap t UCI | _ | 20.29 |
| 540 | | | | | | 95% | 6 H-UC | L (Log | ROS) | 16.51 | | | | | | | | | | - | |
| 547 | | | | | | | | | , | | | | | | | | | | | | |
| 540 | | | | | Statis | stics | using K | M est | timates | on Logged | Data and | Ass | suming L | ogno | ormal C | Distril | oution | | | | |
| 550 | | | | | | | KM M | ean (l | ogged) | 1.222 | | | - | | | | | KM | Geo Mea | n | 3.394 |
| 551 | | | | | | | KM | SD (I | ogged) | 1.216 | | | | | 9 | 5% C | Critical H | l Value | e (KM-Log |) | 2.468 |
| 552 | | | | KM | Standa | rd Eri | or of M | ean (l | ogged) | 0.127 | | | | | | | 95% ł | H-UCL | . (KM -Log |) | 9.718 |
| 553 | | | | | | | KM | SD (I | ogged) | 1.216 | | | | | 9 | 5% (| Critical H | - Value | e (KM-Log |) | 2.468 |
| 554 | | | | KM | Standa | rd Eri | or of M | ean (l | ogged) | 0.127 | | | | | | | | | | - | |
| 555 | | | | | | | | | | | | | | | | | | | | | |
| 556 | | | | | | | | | | DL/2 S | tatistics | | | | | | | | | | |
| 557 | | | | | DL/2 | Norm | al | | | | | | | | DL/2 L | .og-T | ransfor | med | | | |
| 558 | | | | | | Me | an in O | rigina | I Scale | 10.35 | | | | | | | Μ | lean in | Log Scale | Э | 1.009 |
| 559 | | | | | | | SD in O | rigina | I Scale | 29.54 | | | | | | | | SD in | Log Scale | Э | 1.422 |
| 560 | | | | | 95% t L | JCL (| Assume | es nor | rmality) | 15.44 | | | | | | | | 95% ŀ | I-Stat UCI | - | 11.25 |
| 561 | | | | | DL/2 i | is no | t a reco | mmei | nded m | ethod, provi | ded for c | omp | arisons a | and I | historic | al re | asons | | | | |
| 562 | | | | | | | | | | | | | | | | | | | | | |
| 563 | | | | | | | | Non | parame | etric Distribu | tion Free | e UC | L Statist | ics | | | | | | | |
| 564 | | | | | | Da | ita do n | ot foll | low a D | iscernible D | istributio | n at | 5% Sign | ifica | nce Le | vel | | | | | |
| 565 | | | | | | | | | | | | | | | | | | | | | |
| 566 | | | | | | | | | | Suggested | UCL to I | Use | | | | | | | | | |
| 567 | | | | | 95 | 5% KI | M (Chet | oyshe | v) UCL | 23.91 | | | | | | | | | | Τ | |
| 568 | | | | | | | | | | I | 1 | | | | | | | | | | |
| 569 | | No | ote: Sugge | estions | s regard | ling tl | ne selec | tion c | of a 95% | 6 UCL are pr | ovided to | o hel | p the use | er to s | select t | he m | ost app | ropriat | e 95% UC | L. | |
| 570 | | | | | F | Recor | nmenda | ations | are ba | sed upon da | a size, d | ata c | distributio | on, ai | nd skev | wnes | S. | | | | |
| 571 | | Т | hese reco | ommer | ndations | s are | based ι | ipon t | he resu | Its of the sin | nulation s | studie | es summ | arize | ed in Si | ngh, | Maichle | , and I | Lee (2006) |). | |
| 572 | | How | ever, simu | ulation | ns result | s will | not cov | er all | Real V | /orld data se | ts; for ad | lditio | nal insigl | ht the | e user i | may | want to | consul | t a statisti | cian | l. |

| | А | В | С | D | E | F | G | Н | I | J | K | L |
|-----|-----------|------------|---------------|----------------|-----------------|---------------|--------------|-----------------|---------------|----------------|---------------|----------|
| 573 | | | | | | | | | | | | |
| 574 | M,P-XYLEN | NE (SUM OF | ISOMERS) | | | | | | | | | |
| 575 | | | | | | | | | | | | |
| 576 | | | | | | General | Statistics | | | | | |
| 577 | | | Total | Number of C | bservations | 93 | | | Number | of Distinct C | Observations | 62 |
| 570 | | | | Numbe | er of Detects | 79 | | | | Number of | Non-Detects | 14 |
| 570 | | | N | umber of Dist | inct Detects | 54 | | | Numbe | r of Distinct | Non-Detects | 8 |
| 579 | | | | Mini | mum Detect | 3.08 | | | | Minimum | Non-Detect | 2.3 |
| 580 | | | | Maxi | mum Detect | 607.9 | | | | Maximum | Non-Detect | 3.47 |
| 581 | | | | Varia | nce Detects | 11245 | | | | Percent | Non-Detects | 15.05% |
| 582 | | | | M | ean Detects | 48.34 | | | | | SD Detects | 106 |
| 583 | | | | Mer | tian Detects | 12 59 | | | | | CV Detects | 2 194 |
| 584 | | | | Skown | | 3 736 | | | | Kurt | | 1/ 82 |
| 585 | | | | Moon of Log | and Dotocts | 2 802 | | | | SD of Loc | and Detects | 1 2 2 1 |
| 586 | | | | Weall Of Log | geu Delecis | 2.002 | | | | | | 1.201 |
| 587 | | | | | Nerre | | D | te Orte | | | | |
| 588 | | | | | | | t on Detec | | | | | |
| 589 | | | 5 | | | 0.46 | | Normal GOP | | | | / |
| 590 | | | | 5% Shapiro V | Vilk P Value | 0 | | Detected Da | ta Not Norma | at 5% Sign | ificance Leve | 3I |
| 591 | | | | Lilliefors T | est Statistic | 0.341 | | | Lilliefors | GOF Test | | |
| 592 | | | 5 | % Lilliefors C | ritical Value | 0.0998 | | Detected Da | ta Not Norma | ll at 5% Sign | ificance Leve |) I |
| 593 | | | | D | etected Data | a Not Norma | l at 5% Sig | gnificance Lev | rel | | | |
| 594 | | | | | | | | | | | | |
| 595 | | | Kaplan- | Meier (KM) S | Statistics usi | ng Normal C | ritical Valu | ues and other | Nonparamet | ric UCLs | | |
| 596 | | | | | KM Mean | 41.41 | | | KN | I Standard E | rror of Mean | 10.28 |
| 597 | | | | | KM SD | 98.5 | | | | 95% KN | 1 (BCA) UCL | 58.1 |
| 598 | | | | 95% | KM (t) UCL | 58.49 | | | 95% KM (P | ercentile Bo | otstrap) UCL | 59.27 |
| 599 | | | | 95% | KM (z) UCL | 58.32 | | | ! | 95% KM Boo | otstrap t UCL | 69.42 |
| 600 | | | ę | 0% KM Chel | byshev UCL | 72.25 | | | ç | 5% KM Che | byshev UCL | 86.22 |
| 601 | | | 97 | .5% KM Chel | byshev UCL | 105.6 | | | ç | 9% KM Che | byshev UCL | 143.7 |
| 602 | | | | | | | | | | | | <u> </u> |
| 603 | | | | G | amma GOF | Tests on De | etected Ob | servations Or | ly | | | |
| 604 | | | | A-D T | est Statistic | 6.63 | | A | nderson-Dai | ling GOF Te | est | |
| 605 | | | | 5% A-D C | ritical Value | 0.811 | Dete | ected Data Not | Gamma Dist | ributed at 5% | % Significanc | e Level |
| 606 | | | | K-S T | est Statistic | 0.202 | | ŀ | Kolmogorov- | Smirnov GO |)F | |
| 600 | | | | 5% K-S C | ritical Value | 0.106 | Dete | cted Data Not | Gamma Dist | ributed at 5% | & Significanc | e Level |
| 607 | | | | Detecte | d Data Not (| Gamma Dist | ributed at { | 5% Significan | ce Level | | | |
| 608 | | | | | | | | | | | | |
| 609 | | | | | Gamma | Statistics or | Detected | Data Only | | | | |
| 610 | | | | | k hat (MLE) | 0 577 | | | k | star (bias cor | rected MLE) | 0 564 |
| 611 | | | | That | | 83 72 | | | Theta | star (hias cor | | 85 72 |
| 612 | | | | | | 01.72 | | | i neta a | nu star (bia | | 80.00 |
| 613 | | | | Ma | | 10.24 | | | | | | 89.09 |
| 614 | | | | ivie | an (uelects) | 40.34 | | | | | | |
| 615 | | | | | amme DOO | Ototiati | | ad Non Date | to | | | |
| 616 | | | 0000 | G | amma ROS | Statistics u | sing imput | ea Non-Detec | | | | |
| 617 | | 0.000 | GROS may | not be used | when data s | et has > 50% | NDs with | many tied obs | ervations at | multiple DLs | | |
| 618 | | GROS may | y not be used | when kstar o | or detects is a | small such a | s <1.0, esp | becially when t | ne sample si | ze is small (e | .g., <15-20) | |
| 619 | | | Fo | r such situati | ons, GROS | method may | yield incor | rect values of | UCLs and BT | Vs | | |
| 620 | | | | Т | his is especi | ally true whe | n the sam | ple size is sma | ll. | | | |
| 621 | | For gar | mma distribut | ed detected | data, BTVs a | nd UCLs ma | y be comp | outed using gar | mma distribut | ion on KM e | stimates | |
| 622 | | | | | Minimum | 0.01 | | | | | Mean | 41.06 |
| 623 | | | | | Maximum | 607.9 | | | | | Median | 9.99 |
| 624 | | | | | SD | 99.18 | | | | | CV | 2.415 |

| | А | | В | С | D | E | F | G | Н | I | | J | | K | L |
|-----|----|------|--------------|---------------|-----------------|----------------|----------------|----------------|---------------|---------------|--------|----------------|---------|-------------|-------|
| 625 | | | | | | k hat (MLE) | 0.334 | | | | k s | tar (bias o | correc | cted MLE) | 0.33 |
| 626 | | | | | The | eta hat (MLE) | 122.9 | | | The | eta s | tar (bias o | correc | cted MLE) | 124.3 |
| 627 | | | | | | nu hat (MLE) | 62.14 | | | | | nu star (| (bias d | corrected) | 61.47 |
| 628 | | | | Adjuste | Level of Sig | nificance (β) | 0.0474 | | | | | | | | |
| 620 | | | App | proximate Ch | i Square Val | ue (61.47, α) | 44.43 | | | Adjusted | Chi | Square V | /alue | (61.47, β) | 44.21 |
| 029 | | 95 | i% Gamma | Approxima | te UCL (use v | when n>=50) | 56.8 | | 95% Ga | , amma Adi | iuste | · ed UCL (u | ise wł | nen n<50) | 57.1 |
| 630 | | | | | | | | | | , | , | | | | |
| 631 | | | | | F | stimates of G | amma Dara | meters using | n KM Fetima | itee | | | | | |
| 632 | | | | | | Moon (KM) | | | | 1163 | | | | SD (KM) | 09 5 |
| 633 | | | | | | | 41.41 | | | | | | - () | | 90.0 |
| 634 | | | | | V | ariance (KIVI) | 9702 | | | | | 51 | | iean (Kivi) | 10.28 |
| 635 | | | | | | K nat (KIVI) | 0.177 | | | | | | К | star (KIVI) | 0.178 |
| 636 | | | | | | nu hat (KM) | 32.87 | | | | | | nu | star (KM) | 33.15 |
| 637 | | | | | th | ieta hat (KM) | 234.3 | | | | | | theta | star (KM) | 232.4 |
| 638 | | | | 80 | % gamma pe | rcentile (KM) | 51.06 | | | | 90% | gamma | perce | ntile (KM) | 124.8 |
| 639 | | | | 959 | % gamma pe | rcentile (KM) | 219.6 | | | | 99% | gamma | perce | ntile (KM) | 485.7 |
| 640 | | | | | | | | | | | | | | | |
| 641 | | | | | | Gamm | a Kaplan-M | eier (KM) St | atistics | | | | | | |
| 642 | | | App | proximate Ch | ii Square Val | ue (33.15, α) | 20.98 | | | Adjusted | Chi | Square V | /alue | (33.15, β) | 20.83 |
| 643 | 95 | 5% C | amma Ap | proximate K | M-UCL (use v | when n>=50) | 65.41 | | 95% Gamm | na Adjuste | ed Kl | M-UCL (u | ise wł | nen n<50) | 65.89 |
| 644 | | | | | | | | | | | | | | L | |
| 645 | | | | | L | ognormal GC | F Test on D | etected Obs | ervations O | nly | | | | | |
| 646 | | | SI | hapiro Wilk A | Approximate | Test Statistic | 0.898 | | | Shapiro | Will | k GOF Te | est | | |
| 647 | | | | | 5% Shapiro | Wilk P Value | 5.4933E-7 | De | etected Data | Not Logr | norm | al at 5% | Signif | ficance Lev | rel |
| 648 | | | | | Lilliefors | Test Statistic | 0.114 | | | Lilliefo | ors (| GOF Test | t | | |
| 640 | | | | Ę | 5% Lilliefors (| Critical Value | 0.0998 | De | etected Data | Not Logr | norm | al at 5% | Signif | ficance Lev | rel |
| 649 | | | | | De | tected Data | Not Loanorn | nal at 5% Sid | unificance Lo | evel | | | 5 | | |
| 050 | | | | | | | J | | - | | | | | | |
| 051 | | | | | Lo | anormal RO | S Statistics | Usina Impute | ed Non-Dete | ects | | | | | |
| 652 | | | | | Mean in C | riginal Scale | 41.22 | | | | | Me | an in I | l og Scale | 2 378 |
| 653 | | | | | | riginal Scale | 00 11 | | | | | | | Log Scale | 1 56 |
| 654 | | | 95% t I | | | of ROS data) | 58.3 | | | 95 | % D | Percentile | Boote | etran LICI | 50 73 |
| 655 | | | 357810 | | | | 63.02 | | | | 701 | | Bootet | | 67.91 |
| 656 | | | | | | | 57.02 | | | | | 90 % L | JUUISI | iapioce | 07.01 |
| 657 | | | | | 95% H-UC | L (LOY ROS) | 57.92 | | | | | | | | |
| 658 | | | | . | | | | | | | | | | | |
| 659 | | | | Stati | stics using K | M estimates | on Logged I | Jata and As | suming Logi | normal Di | strib | oution | | | |
| 660 | | | | | KM M | ean (logged) | 2.506 | | | | | | KMC | Geo Mean | 12.26 |
| 661 | | | | | KM | SD (logged) | 1.368 | | | 95 | % C | ritical H \ | Value | (KM-Log) | 2.633 |
| 662 | | | | KM Standa | rd Error of M | ean (logged) | 0.143 | | | | | 95% H- | UCL | (KM -Log) | 45.46 |
| 663 | | | | | KM | SD (logged) | 1.368 | | | 95 | % C | ritical H \ | Value | (KM-Log) | 2.633 |
| 664 | | | | KM Standa | rd Error of M | ean (logged) | 0.143 | | | | | | | | |
| 665 | | | | | | | | | | | | | | | |
| 666 | | | | | | | DL/2 S | tatistics | | | | | | | |
| 667 | | | | DL/2 | Normal | | | | | DL/2 Lo | nT-go | ransform | ed | | |
| 668 | | | | | Mean in C | riginal Scale | 41.25 | | | | | Меа | an in I | Log Scale | 2.412 |
| 669 | | | | | SD in C | riginal Scale | 99.1 | | | | | S | SD in I | Log Scale | 1.504 |
| 670 | | | | 95% t | JCL (Assum | es normality) | 58.32 | | | | | 9 | 5% H | -Stat UCL | 53.52 |
| 671 | | | | DL/2 | is not a reco | mmended m | ethod, provi | ded for comp | parisons and | l historica | al rea | asons | | | |
| 672 | | | | | | | | | | | | | | | |
| 672 | | | | | | Nonparame | etric Distribu | tion Free UC | CL Statistics | | | | | | |
| 674 | | | | | Data do n | ot follow a D | iscernible Di | istribution at | 5% Signific | ance Lev | el | | | | |
| 675 | | | | | | | | | J | | | | | | |
| 0/5 | | | | | | | Suggested | UCL to Use | | | | | | | |
| 676 | | | | | | | อนฐมูออเอน | 552 10 056 | | | | | | | |

| | A B C D E F G H I J K 95% KM (Chebvshev) UCL 86.22 </th <th>J</th> <th></th> <th>Τ</th> <th>L</th> | | | | | | | | | | | | | J | | Τ | L | |
|-----|--|---------------|----------|----------|--------------|-------------|----------|----------------|------------|----------|--------------|-----------|--------|--------------|--------|-------------|--------|--------|
| 677 | | | | 95 | 5% KM (Cł | ebyshev) | UCL | 86.22 | | | | | | | | | | |
| 678 | | | | | | | | | | | | | | | | | | |
| 679 | | Note: Sugge | estions | regard | ling the se | ection of a | a 95% | UCL are pr | ovided to | help | the user t | o select | the m | iost appro | priate | e 95% UC | L. | |
| 680 | | | | F | Recommer | dations a | re bas | sed upon dat | a size, d | ata dis | stribution, | and ske | wnes | S. | | | | |
| 681 | | These reco | ommen | dations | s are base | d upon the | e resu | Its of the sin | nulation s | tudies | summari | ized in S | ingh, | Maichle, a | and L | ee (2006) |). | |
| 682 | F | lowever, simu | ulations | s result | s will not o | over all R | leal W | orld data se | ts; for ad | ditiona | al insight t | the user | may | want to co | nsult | a statistic | cian. | |
| 683 | | | | | | | | | | | | | | | | | | |
| 684 | NAPHTHA | LENE | | | | | | | | | | | | | | | | |
| 685 | | | | | | | | | | | | | | | | | | |
| 686 | | | | | | | | General | Statistic | S | | | | - | | | | - |
| 687 | | | | Total | Number o | f Observa | tions | 93 | | | | Nu | umbei | of Disting | t Ob | servations | \$ | 58 |
| 688 | | | | | Nun | nber of De | etects | 67 | | | | | | Number | of No | on-Detects | \$ | 26 |
| 689 | | | | N | umber of L | Distinct De | etects | 53 | | | | N | umbe | er of Distin | ct No | on-Detects | \$ | 8 |
| 690 | | | | | N | inimum D | etect | 1.42 | | | | | | Minim | um N | Ion-Detec | t | 1.36 |
| 691 | | | | | M | aximum D | etect | 256.9 | | | | | | Maxim | | Ion-Detec | t | 2.1 |
| 692 | | | | | Va | riance De | tects | 1166 | | | | | | Perce | nt No | on-Detects | · | 27.96% |
| 693 | | | | | | Mean De | etects | 14.71 | | | | | | | 5 | | 3 | 34.14 |
| 694 | | | | | | ledian De | etects | 5.24 | | | | | | | | V Detects | ; | 2.322 |
| 695 | | | | | Ske | whess De | etects | 5.827 | | | | | | | unos | | ; | 39.44 |
| 696 | | | | | Mean of L | ogged De | etects | 1.839 | | | | | | SD of L | logge | | 5 | 1.107 |
| 697 | | | | | | | Norm | | t on Dot | ooto C | nhy | | | | | | | |
| 698 | | | | | honiro Wil | k Toot Sta | | | | | | E Toot o | | tootod Oh | 0000 | otiona On | hz | |
| 699 | Shapiro Wilk Test Statistic 0.397 Normal GOF Test on Detected Observations Only 5% Shapiro Wilk P Value 0 Detected Data Not Normal at 5% Significance Level | | | | | | | | | | | | | יא וא | | | | |
| 700 | 5% Shapiro Wilk P Value 0 Detected Data Not Normal at 5% Significance Level | | | | | | | | | | | | | | | | | |
| 701 | Lilliefors Test Statistic 0.349 Lilliefors GOF Test 5% Lilliefors Critical Value 0.108 Detected Data Nat Name Lat 5% | | | | | | | | | | | | | ام | | | | |
| 702 | | | | | | Detecter | d Date | Not Norma | at 5% s | Signifi | | vel | | | grinik | | | |
| 703 | | | | | | | | | | g | | | | | | | | |
| 704 | | | К | aplan- | Meier (KN |) Statistic | s usi | ng Normal C | ritical Va | alues | and other | Nonpar | amet | ric UCLs | | | | |
| 705 | | | | • | • | , KM N | Mean | 10.98 | | | | • | K١ | I Standar | d Erro | or of Mear | ו ו | 3.07 |
| 700 | | | | | | KI | M SD | 29.38 | | | | | | 95% | KM (I | BCA) UCL | | 17.18 |
| 708 | | | | | 9 | 5% KM (t) | UCL | 16.08 | | | | 95% ŀ | KM (P | ercentile l | Boots | strap) UCL | - | 16.44 |
| 709 | | | | | 95 | 5% KM (z) | UCL | 16.03 | | | | | | 95% KM E | Boots | trap t UCL | - | 22.03 |
| 710 | | | | ę | 90% KM C | hebyshev | UCL | 20.19 | | | | | ę | 95% KM C | heby | shev UCL | - | 24.36 |
| 711 | | | | 97 | .5% KM C | hebyshev | UCL | 30.15 | | | | | ç | 99% KM C | heby | shev UCL | - | 41.52 |
| 712 | | | | | | | | | | | | | | | | | | |
| 713 | | | | | | Gamma | GOF | Tests on De | etected (| Observ | ations O | nly | | | | | | |
| 714 | | | | | A-I | D Test Sta | atistic | 5.403 | | | / | Anderso | n-Da | ling GOF | Test | : | | |
| 715 | | | | | 5% A-[| Critical \ | /alue | 0.796 | De | tectec | I Data No | t Gamma | a Dist | ributed at | 5% \$ | Significan | ce Le | evel |
| 716 | | | | | K- | S Test Sta | atistic | 0.26 | | | | Kolmog | orov- | Smirnov (| GOF | | | |
| 717 | | | | | 5% K-9 | Critical \ | /alue | 0.114 | De | tectec | I Data No | t Gamma | a Dist | ributed at | 5% \$ | Significan | ce Le | evel |
| 718 | | | | | Dete | cted Data | Not 0 | Gamma Dist | ributed a | nt 5% \$ | Significar | nce Leve | el | | | | | |
| 719 | | | | | | | | | | | | | | | | | | |
| 720 | | | | | | Ga | mma | Statistics or | n Detecte | ed Dat | a Only | | | | | | | |
| 721 | | | | | | k hat (l | MLE) | 0.71 | | | | | k۶ | star (bias | corre | cted MLE |) | 0.688 |
| 722 | | | | | Т | heta hat (l | MLE) | 20.71 | | | | Т | heta s | star (bias | corre | cted MLE |) | 21.37 |
| 723 | | | | | | nu hat (l | MLE) | 95.14 | | | | | | nu star (| bias | corrected |) | 92.21 |
| 724 | | | | | | Mean (det | tects) | 14.71 | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | |
| 726 | | | | _ | _ | Gamma | ROS | Statistics u | sing Imp | uted N | Ion-Dete | cts | | | | | | |
| 727 | | | GRC |)S may | not be us | ed when c | data s | et has > 50% | 6 NDs wi | th mar | ny tied ob | servatio | ns at | multiple D | Ls | | | |
| 728 | | GROS ma | ay not b | e usec | when kst | ar of detec | cts is s | small such a | s <1.0, e | specia | ally when | the sam | ple si | ze is smal | l (e.g | ., <15-20) | 1 | |

| | А | | В | С | D | E | | F | G | H | 1 | | | J | K | L |
|-----|---|------|-----------|--------------|--------------|--------------|--------------|---------------|--------------------------|-----------|--------|---------------|--------|---------------|-----------------------|---------|
| 729 | | | | Fo | or such situ | ations, GR | OSI | method may | yield incorre | ect value | es of | UCLs a | and B | TVs | | |
| 730 | | | | | | This is es | peci | ally true whe | en the sampl | e size is | s sma | ll. | | | | |
| 731 | | | For gar | nma distribu | ted detecte | d data, BT | Vs a | nd UCLs ma | y be compu | ted usin | ng gar | nma di | stribu | tion on KM e | estimates | |
| 732 | | | | | | Minin | num | 0.01 | | | | | | | Mean | 10.6 |
| 733 | | | | | | Maxim | num | 256.9 | | | | | | | Median | 3.25 |
| 734 | | | | | | | SD | 29.67 | | | | | | | CV | 2.8 |
| 735 | | | | | | k hat (M | ILE) | 0.297 | | | | | k | star (bias co | rrected MLE) | 0.295 |
| 736 | | | | | TI | ieta hat (M | ILE) | 35.65 | | | | Т | heta | star (bias co | prrected MLE) | 35.95 |
| 737 | | | | | | nu hat (M | LE) | 55.29 | | | | | | nu star (bi | as corrected) | 54.84 |
| 738 | | | | Adjuste | d Level of S | ignificance | e (β) | 0.0474 | | | | | | - | | |
| 739 | | | Арр | proximate Ch | i Square V | alue (54.84 | Ι, α) | 38.82 | | | | Adjuste | ed Ch | i Square Va | lue (54.84, β) | 38.61 |
| 740 | | ç | 95% Gamma | a Approxima | te UCL (use | when n>= | =50) | 14.97 | | 95 | 5% Ga | amma A | Adjust | ed UCL (use | e when n<50) | 15.05 |
| 741 | | | | | | | | | | | | | | | | |
| 742 | | | | | | Estimates | of G | amma Para | meters usin | g KM E | stima | tes | | | | |
| 743 | | | | | | Mean (I | KM) | 10.98 | | | | | | | SD (KM) | 29.38 |
| 744 | | | | | | Variance (I | KM) | 863.2 | | | | | | SE | of Mean (KM) | 3.07 |
| 745 | | | | | | k hat (l | KM) | 0.14 | | | | | | | k star (KM) | 0.142 |
| 746 | | | | | | nu hat (l | KM) | 25.97 | | | | | | | nu star (KM) | 26.47 |
| 747 | | | | | | theta hat (l | KM) | 78.63 | | | | | | th | ieta star (KM) | 77.16 |
| 748 | | | | 80% | % gamma p | ercentile (l | KM) | 11.42 | | | | | 90% | % gamma pe | ercentile (KM) | 32.29 |
| 749 | | | | 959 | % gamma p | ercentile (l | KM) | 61.02 | | | | | 99% | % gamma pe | ercentile (KM) | 145.3 |
| 750 | | | | | | | | | | | | | | | | |
| 751 | | | | | · | Ga | amm | a Kaplan-M | eier (KM) S [.] | tatistics | | A 12 . | | | | 45.04 |
| 752 | | 0=0/ | App | proximate Ch | Square V | alue (26.47 | /, α) | 15.74 | | 050/ 0 | | Adjuste | ed Ch | Square Va | lue (26.47, β) | 15.61 |
| 753 | Į | 95% | Gamma Ap | proximate Ki | M-UCL (use | when n>= | -50) | 18.46 | | 95% G | iamm | a Adjus | sted K | M-UCL (use | e when n<50) | 18.62 |
| 754 | | | | | | | | | | | 0 | | | | | |
| 755 | | | | | | | GU | | | servatio | ons O | niy Ohani | \\/ | | | |
| 756 | | | 51 | | | | ISUC | 0.903 | | otootod | Data | Snapi | | | it | |
| 757 | | | | | 5% Shapin | | alue | 1.0334E-5 | | etected | Data | | gnorr | | | vei |
| 758 | | | | | | Critical V | ISUC | 0.172 | | otootod | Data | | eiors | | ignificance La | |
| 759 | | | | | | | ate | U. 100 | Dal at 5% Si | anifican | | | gnon | | | |
| 760 | | | | | L | | ลเล | | 181 81 570 51 | gnincan | | evei | | | | |
| 761 | | | | | | ognormal | PO | S Statistics | leing Imput | | Doto | ote | | | | |
| 762 | | | | | Moon in | | | 10.76 | | | -Dele | 5013 | | Moor | in Log Scolo | 1 1 2 7 |
| 763 | | | | | SD in | | | 29.61 | | | | | | | | 1.137 |
| 764 | | | 95% t l | ICL (assume | | | ata) | 15.86 | | | | | 95% | Percentile B | | 16.4 |
| 765 | | | 557010 | | 95% BCA I | Bootstran I | | 21.7 | | | | | 50701 | 95% Bo | | 22.19 |
| 766 | | | | | 95% H_II | | 0.51 | 14.8 | | | | | | 55 /0 DO | 5.5up : 00L | 22.13 |
| /67 | | | | | 007011-0 | | 50) | | | | | | | | | |
| 768 | | | | Stati | stics using | KM estima | ates | on Lonned I | Data and As | sumina | Loar | ormal | Distri | bution | | |
| 769 | | | | 0.01 | KM | Mean (loor | ied) | 1 413 | | Joanning | Logi | | Diour | k | M Geo Mean | 4 107 |
| 770 | | | | | K | | (bog | 1.413 | | | | | 95% (| Critical H Va | | 2 405 |
| 771 | | | | KM Standa | | Mean (loor | ,eu) jed) | 0 121 | | | | | 5570 (| 95% H-II | | 10 72 |
| //2 | | | | | K | | ,ed) | 1 157 | | | | | 95% (| Critical H Va | | 2 405 |
| //3 | | | | KM Standa | | Mean (loor | ,ed) | 0.121 | | | | | 5570 (| | | 2.400 |
| //4 | | | | clande | | | ,, | 5.121 | | | | | | | | |
| 775 | | | | | | | | DI /2 S | tatistics | | | | | | | |
| //6 | | | | 2/ וח | Normal | | | 5520 | | | | DI /2 | Lon-1 | Transformer | <u> </u> | |
| /// | | | | 562 | Mean in | Original Se | cale | 10.8 | | | | | 9-1 | Mean | in Log Scale | 1.243 |
| //8 | | | | | SD in | Original Sc | cale | 29.6 | | | | | | SD |) in Log Scale | 1.344 |
| //9 | | | | 95% t | | nes norma | litv) | 15.9 | | | | | | 959 | H-Stat UCI | 12.32 |
| /80 | | | | 5570 L | | | | .0.0 | | | | | | 557 | | .2.02 |

| | А | В | С | D | Е | F | G | Н | | J | К | L |
|------------|---------|--------------|-----------------|-----------------|----------------|----------------|------------------|----------------|-----------------|-----------------|----------------------|--------|
| 781 | | | DL/2 | is not a recoi | mmended m | ethod, provi | ded for com | parisons and | l historical re | asons | | |
| 782 | | | | | | | | | | | | |
| 783 | | | | | Nonparame | etric Distribu | tion Free UC | CL Statistics | | | | |
| 784 | | | | Data do no | ot follow a D | iscernible D | istribution at | t 5% Signific | ance Level | | | |
| 785 | | | | | | | | | | | | |
| 786 | | | | | | Suggested | UCL to Use | I | | | | |
| 787 | | | 95 | 5% KM (Cheb | yshev) UCL | 24.36 | | | | | | |
| 788 | | | | | | | | | | | L | |
| 789 | | Note: Sugge | estions regard | ling the selec | tion of a 95% | 6 UCL are pr | ovided to he | Ip the user to | select the m | iost appropri | iate 95% UCL. | |
| 790 | | | F | Recommenda | tions are bas | sed upon da | ta size, data | distribution, | and skewnes | s. | | |
| 791 | | These reco | ommendations | s are based u | pon the resu | Its of the sin | nulation stud | ies summariz | zed in Singh, | Maichle, and | d Lee (2006). | |
| 792 | ŀ | lowever, sim | ulations result | ts will not cov | er all Real W | /orld data se | ts; for addition | onal insight t | he user may | want to cons | ult a statisticia | ın. |
| 793 | | | | | | | | | | | | |
| 794 | n-HEPTA | NE | | | | | | | | | | |
| 795 | | | | | | | | | | | | |
| 796 | | | | | | General | Statistics | | | | | |
| 797 | | | Total | Number of C | bservations | 93 | | | Number | r of Distinct (| Observations | 41 |
| 798 | | | | Numbe | er of Detects | 38 | | | | Number of | Non-Detects | 55 |
| 799 | | | N | umber of Dist | inct Detects | 33 | | | Numbe | er of Distinct | Non-Detects | 10 |
| 800 | | | | Mini | mum Detect | 1.52 | | | | Minimum | n Non-Detect | 1.19 |
| 801 | | | | Maxi | mum Detect | 491.8 | | | | Maximum | n Non-Detect | 2.38 |
| 802 | | | | Varia | nce Detects | 8061 | | | | Percent | Non-Detects | 59.14% |
| 803 | | | | М | ean Detects | 37.34 | | | | | SD Detects | 89.79 |
| 804 | | | | Мес | dian Detects | 6.15 | | | | | CV Detects | 2.405 |
| 805 | | | | Skewn | ess Detects | 4.073 | | | | Kur | tosis Detects | 18.58 |
| 806 | | | | Mean of Log | ged Detects | 2.223 | | | | SD of Log | gged Detects | 1.507 |
| 807 | | | | | | | | | | | | |
| 808 | | | | | Norn | nal GOF Tes | st on Detects | s Only | | | | |
| 809 | | | S | Shapiro Wilk T | est Statistic | 0.449 | | | Shapiro Wi | lk GOF Test | t | |
| 810 | | | 5% S | hapiro Wilk C | ritical Value | 0.938 | | Detected Da | ta Not Norma | al at 5% Sign | nificance Level | |
| 811 | | | | Lilliefors T | est Statistic | 0.35 | | | Lilliefors | GOF Test | | |
| 812 | | | 5 | % Lilliefors C | ritical Value | 0.142 | | Detected Da | ta Not Norma | al at 5% Sign | nificance Level | |
| 813 | | | | D | etected Dat | a Not Norma | al at 5% Sigr | nificance Lev | vel | | | |
| 81/ | | | | | | | | | | | | |
| 815 | | | Kaplan- | Meier (KM) S | Statistics usi | ng Normal C | Critical Value | s and other | Nonparamet | ric UCLs | | |
| 816 | | | | | KM Mean | 15.96 | | | KN | /I Standard E | Fror of Mean | 6.237 |
| 817 | | | | | KM SD | 59.35 | | | | 95% KN | Л (BCA) UCL | 28.8 |
| 818 | | | | 95% | KM (t) UCL | 26.33 | | | 95% KM (P | ercentile Bo | otstrap) UCL | 27.71 |
| 819 | | | | 95% | KM (z) UCL | 26.22 | | | | 95% KM Boo | otstrap t UCL | 42.12 |
| 820 | | | ļ | 90% KM Che | byshev UCL | 34.67 | | | ç | 95% KM Che | byshev UCL | 43.15 |
| 821 | | | 97 | .5% KM Che | byshev UCL | 54.91 | | | ę | 99% KM Che | byshev UCL | 78.02 |
| 822 | | | | | - | | | | | | | |
| 822 | | | | G | amma GOF | Tests on De | etected Obs | ervations Or | nly | | | |
| 023 924 | | | | A-D 1 | est Statistic | 3.466 | | A | nderson-Da | rling GOF To | est | |
| 024 | | | | 5% A-D C | ritical Value | 0.822 | Detect | ted Data Not | Gamma Dist | tributed at 59 | % Significance | Level |
| 020 | | | | K-S T | est Statistic | 0.267 | | | Kolmoaorov- | Smirnov GC |)F | |
| 820 | | | | 5% K-S C | ritical Value | 0.152 | Detect | ted Data Not | Gamma Dist | tributed at 5% | % Significance | Level |
| ŏ∠/ | | | | Detecte | d Data Not | Gamma Dist | tributed at 59 | % Significan | ce Level | | | |
| 020 000 | | | | | | | | 3 | | | | |
| ŏ∠9 | | | | | Gamma | Statistics of | n Detected | Data Only | | | | |
| 83U | | | | | k hat (MLE) | 0.461 | | ····· • ····, | k | star (bias co | rrected MLE) | 0.442 |
| 031 | | | | The | ta hat (MLE) | 81.08 | | | Theta | star (bias co | rrected MLE) | 84.53 |
| 032 | | | | | | | 1 | | | | · · · ··· · / | |

| | А | В | С | D | E | F | G | | Н | | I | | J | K | | L |
|------------|-----|------------|---------------|--------------|------------------|----------------|------------|-------|------------|-------|------------|------------|----------|-----------------|------|--------|
| 833 | | | | | nu hat (MLE) | 35 | | | | | | nu s | tar (bia | s corrected) | | 33.57 |
| 834 | | | | | viean (detects) | 37.34 | | | | | | | | | | |
| 835 | | | | | Gamma BOS | Statistics u | eina Impi | utod | Non Dot | oct | • | | | | | |
| 836 | | | GROS may | not he us | ed when data s | ret has > 50% | NDs wit | h ma | any tied o | hse | rvations | at multin | e DI s | | | |
| 837 | | GROS may | v not be used | when kst | ar of detects is | small such a | s < 10 es | sneci | ially whe | n th | | size is s | mall (e | a <15-20) | | |
| 838 | | | Fc | or such situ | ations, GROS | method may | vield inco | orrec | t values | of L | JCLs and | BTVs | | .g., 10 20) | | |
| 839 | | | | | This is espec | ially true whe | n the sar | nple | size is si | mal | I. | | | | | |
| 840 9/1 | | For gar | mma distribu | ted detecte | ed data, BTVs a | and UCLs ma | ly be com | pute | d using g | gam | nma distri | bution or | KM es | stimates | | |
| 842 | | | | | Minimum | 0.01 | | - | | - | | | | Mean | | 15.26 |
| 843 | | | | | Maximum | 491.8 | | | | | | | | Median | | 0.01 |
| 844 | | | | | SD | 59.85 | | | | | | | | CV | r | 3.922 |
| 845 | | | | | k hat (MLE) | 0.167 | | | | | | k star (b | ias cori | rected MLE) | | 0.168 |
| 846 | | | | Т | heta hat (MLE) | 91.58 | | | | | The | ta star (b | ias cori | rected MLE) | | 90.61 |
| 847 | | | | | nu hat (MLE) | 31 | | | | | | nu s | tar (bia | s corrected) | | 31.33 |
| 848 | | | Adjusted | Level of S | Significance (β) | 0.0474 | | | | | | | | | | |
| 849 | | Арр | proximate Ch | i Square V | 'alue (31.33, α) | 19.54 | | | | A | Adjusted | Chi Squa | re Valu | ıe (31.33, β) | | 19.4 |
| 850 | | 95% Gamma | a Approximat | e UCL (us | e when n>=50) | 24.47 | | | 95% | Gai | mma Adji | usted UC | L (use | when n<50) | | 24.65 |
| 851 | | | | | | | | | | | | | | | | |
| 852 | | | | | Estimates of G | iamma Para | meters us | sing | KM Estir | nat | es | | | 05 (10) | 1 | 50.05 |
| 853 | | | | | Mean (KM) | 15.96 | | | | | | | 05 -4 | SD (KM) | | 59.35 |
| 854 | | | | | Variance (KIVI) | 3523 | | | | | | | SEO | r iviean (Kivi) | | 0.237 |
| 855 | | | | | K hat (KM) | 13.45 | | | | | | | | K Star (KIVI) | | 14.35 |
| 856 | | | | | thota bat (KM) | 220.7 | | | | | | | tho | ta star (KM) | | 14.35 |
| 857 | | | 809 | % damma r | | 7.067 | | | | | c | 0% dam | ma ner | centile (KM) | | 36.97 |
| 858 | | | 95% | % gamma r | percentile (KM) | 92.63 | | | | | ç | 9% gam | ma per | centile (KM) | | 287.6 |
| 859 | | | | - <u>-</u> | , | | | | | | | J- | - 1 | | | |
| 861 | | | | | Gamm | na Kaplan-M | eier (KM) |) Sta | tistics | | | | | | | |
| 862 | | App | proximate Ch | i Square V | alue (14.35, α) | 6.812 | . , | | | A | Adjusted | Chi Squa | re Valu | ie (14.35, β) | | 6.73 |
| 863 | 959 | % Gamma Ap | proximate KM | M-UCL (us | e when n>=50) | 33.63 | | ę | 95% Gan | nma | a Adjuste | d KM-UC | L (use | when n<50) | | 34.03 |
| 864 | | | | | | | | | | | | | | | | |
| 865 | | | | | Lognormal GC | OF Test on D | etected (| Obse | ervations | On | ly | | | | | |
| 866 | | | S | Shapiro Wil | k Test Statistic | 0.897 | | | | | Shapiro | Wilk GO | F Test | | | |
| 867 | | | 5% S | hapiro Will | k Critical Value | 0.938 | | Det | tected Da | ata I | Not Logn | ormal at ! | 5% Sig | nificance Le | evel | |
| 868 | | | | Lilliefor | s Test Statistic | 0.15 | | | | | Lilliefo | rs GOF | Fest | | | |
| 869 | | | 5 | % Lilliefor | s Critical Value | 0.142 | | Det | tected Da | ata | Not Logn | ormal at ! | 5% Sig | nificance Le | evel | |
| 870 | | | | | Detected Data | Not Lognorn | nal at 5% | Sigr | nificance | Le | vel | | | | | |
| 871 | | | | | | 0.01.11.11.1 | | | | | | | | | | |
| 872 | | | | Maanin | Lognormal RO | | Using Im | pute | d Non-De | etec | cts | | Maani | | 1 | 0.076 |
| 873 | | | | wean in | Original Scale | 10.4 | | | | | | | iviean i | | | -0.370 |
| 874 | | 95% +1 | | | Unginal Scale | 25.7 | | | | | 950 | % Dorcor | SD I | otetran LICI | * | 2.012 |
| 875 | | 337010 | | 95% BCA | Bootstran LICI | 31 54 | | | | | 30 | | % Roo | tstran t LICI | | 40.01 |
| 8/6 | | | | 95% H-I | JCL (Log ROS) | 65.34 | | | | | | | | | | |
| 8// | | | | 00/01/0 | (| | | | | | | | | | | |
| 0/0 070 | | | Statis | stics usina | KM estimates | on Logaed I | Data and | Ass | uming La | ogne | ormal Dis | tribution | | | | |
| 079 800 | | | | KM | Mean (logged) | 1.012 | | | | | | | KN | /I Geo Mean | | 2.751 |
| 881 | | | | к | M SD (logged) | 1.385 | | | | | 959 | % Critical | H Valu | ue (KM-Log) | | 2.653 |
| 882 | | | KM Standa | rd Error of | Mean (logged) | 0.146 | | | | | | 95% | H-UC | L (KM -Log) | | 10.52 |
| 883 | | | | к | M SD (logged) | 1.385 | | | | | 959 | % Critical | H Valu | ue (KM-Log) | | 2.653 |
| 884 | | | KM Standa | rd Error of | Mean (logged) | 0.146 | | | | | | | | | | |
| | А | В | С | D | Е | F | G | Н | I | J | K | L |
|-----|----------|-------------|----------------|----------------|----------------|----------------|---------------|----------------|-----------------|------------------|------------------|---------|
| 885 | | | | | | | | | | | | |
| 886 | | | | | | DL/2 S | tatistics | | | | | |
| 997 | | | DL/2 | Normal | | | | | DL/2 Log-T | ransformed | | |
| 007 | | | | Mean in Or | riginal Scale | 15.67 | | | - | Mean i | in Log Scale | 0.7 |
| 000 | | | | SD in Or | iginal Scale | 59.75 | | | | SD | in Log Scale | 1,594 |
| 889 | | | 95% t l | | s normality) | 25.97 | | | | 95% | H-Stat UCI | 11 59 |
| 890 | | | | | nmondod m | othod provid | lod for com | naricone and | l historical re | 2000 | | 11.00 |
| 891 | | | | | | | | | | 3030113 | | |
| 892 | | | | | Nonnoromo | trio Diotribu | tion Eroo I I | CL Statistics | | | | |
| 893 | | | | Doto do no | t follow o Di | issornible Di | stribution o | + 5% Signific | | | | |
| 894 | | | | | | | | | | | | |
| 895 | | | | | | Suggested | | | | | | |
| 896 | | | 05 | | | | | , | | | | |
| 897 | | | 90 | | ysnev) UCL | 43.15 | | | | | | |
| 898 | | Noto: Suggo | ationa regard | ing the color | tion of a OE% | | wided to be | In the uper to | | aat approprie | | |
| 899 | | Note. Sugge | | | | | | distribution | | | ale 95% UCL | • |
| 900 | | These reco | mmendations | | non the resu | Its of the sim | ulation stud | | | Naichle and | | |
| 901 | На | wever simu | lations result | s will not cov | er all Real W | orld data set | s: for additi | onal insight t | he user may | want to consi | ult a statistici | an |
| 902 | | | | | | | | | | | | un. |
| 903 | n-HEXANE | | | | | | | | | | | |
| 904 | | | | | | | | | | | | |
| 905 | | | | | | General | Statistics | | | | | |
| 906 | | | Total | Number of O | bservations | 93 | | | Number | r of Distinct C |) bservations | 33 |
| 907 | | | | Numbe | er of Detects | 27 | | | | Number of I | Non-Detects | 66 |
| 908 | | | Ni | umber of Dist | inct Detects | 24 | | | Numbe | er of Distinct I | Von-Detects | 10 |
| 909 | | | | Mini | mum Detect | 1.27 | | | | Minimum | Non-Detect | 1.16 |
| 910 | | | | Maxi | mum Detect | 599.2 | | | | Maximum | Non-Detect | 2.11 |
| 911 | | | | Varia | nce Detects | 14396 | | | | Percent | Non-Detects | 70.97% |
| 912 | | | | M | ean Detects | 44.91 | | | | | SD Detects | 120 |
| 913 | | | | Мес | lian Detects | 5.99 | | | | | CV Detects | 2.671 |
| 914 | | | | Skewn | ess Detects | 4.237 | | | | Kurt | osis Detects | 19.02 |
| 915 | | | | Mean of Log | ged Detects | 2.322 | | | | SD of Log | ged Detects | 1.565 |
| 910 | | | | | - | | | | | - | - | |
| 918 | | | | | Norm | nal GOF Tes | t on Detect | s Only | | | | |
| 919 | | | S | hapiro Wilk T | est Statistic | 0.389 | | | Shapiro Wi | lk GOF Test | | |
| 920 | | | 5% SI | hapiro Wilk C | ritical Value | 0.923 | | Detected Da | ta Not Norma | al at 5% Signi | ificance Leve | l |
| 921 | | | | Lilliefors T | est Statistic | 0.403 | | | Lilliefors | GOF Test | | |
| 922 | | | 5 | % Lilliefors C | ritical Value | 0.167 | | Detected Da | ita Not Norma | al at 5% Signi | ificance Leve | I |
| 923 | | | | D | etected Data | a Not Norma | l at 5% Sig | nificance Lev | /el | | | |
| 924 | | | | | | | | | | | | |
| 925 | | | Kaplan- | Meier (KM) S | statistics usi | ng Normal C | ritical Value | es and other | Nonparamet | ric UCLs | | |
| 926 | | | | | KM Mean | 13.86 | | | KN | /I Standard E | rror of Mean | 7.025 |
| 927 | | | | | KM SD | 66.48 | | | | 95% KM | (BCA) UCL | 27.18 |
| 928 | | | | 95% | KM (t) UCL | 25.54 | | | 95% KM (P | ercentile Boo | otstrap) UCL | 26.42 |
| 929 | | | | 95% | KM (z) UCL | 25.42 | | | | 95% KM Boo | tstrap t UCL | 74.71 |
| 930 | | | ę | 0% KM Chel | oyshev UCL | 34.94 | | | ę | 95% KM Che | byshev UCL | 44.48 |
| 931 | | | 97 | .5% KM Chel | oyshev UCL | 57.73 | | | ę | 99% KM Che | byshev UCL | 83.76 |
| 932 | | | | | | | | | | | | |
| 933 | | | | G | amma GOF | Tests on De | etected Obs | ervations Or | nly | | | |
| 934 | | | | A-D T | est Statistic | 2.326 | | A | Anderson-Da | rling GOF Te | st | |
| 935 | | | | 5% A-D C | ritical Value | 0.822 | Detec | ted Data Not | Gamma Dis | tributed at 5% | 6 Significance | e Level |
| 936 | | | | K-S T | est Statistic | 0.25 | | | Kolmogorov- | Smirnov GO | F | |

| | А | В | | С | | D | | Е | F | | G | | Н | | I | | | J | | K | | L |
|-----|----|---|-------|-----------|-------|-----------|-------------|---------------|-------------|--------------|------------|-------|-----------|-------|----------|--------|---------|--------|--------|----------|-----------|---------|
| 937 | | | | | | 5% ł | <-S C | ritical Value | 0.179 | | Det | tecte | ed Data | Not (| Gamma | Dist | ribute | ed at | : 5% | Signifi | cance | e Level |
| 938 | | | | | | De | tecte | d Data Not | Gamma D | istri | ibuted at | t 5% | Signific | canc | e Level | | | | | | | |
| 030 | | | | | | | | | | | | | | | | | | | | | | |
| 040 | | | | | | | | Gamma | Statistics | on | Detecte | d Da | ata Only | / | | | | | | | | |
| 041 | | | | | | | | k hat (MLE) | 0.437 | | | | - | | | k s | star (t | oias (| corre | ected N | ЛLE) | 0.413 |
| 941 | | | | | | | The | ta hat (MLE) | 102.7 | | | | | | Th | eta s | star (t | bias (| corre | ected N | , ALE) | 108.6 |
| 942 | | | | | | | r | u hat (MLE) | 23.62 | | | | | | | | nus | star (| (hias | correc | cted) | 22.33 |
| 943 | | | | | | | Me | an (detects) | 44 91 | | | | | | | | | | | | | |
| 944 | | | | | | | | | 11.01 | | | | | | | | | | | | | |
| 945 | | | | | | | C | amma ROS | Statistics | | ina Impi | uted | Non-De | atect | e | | | | | | | |
| 946 | | | | GROS | may | not he | haau | when data s | et has > 50 | 0% | NDs wit | h m: | any tied | ohse | arvation | sati | multir | n la D |) c | | | |
| 947 | | GROS | may | | | when k | star | of detects is | small such | 1 25 | <10 0 | snec | ially who | | | | | smal | | a <15 | -20) | |
| 948 | | anoo | may | | Eo | r such s | ituati | | mothod m | - u3 | viold inco | orroc | | | | | | Sinai | | j., •10 | -20) | |
| 949 | | | | | 10 | i such s | т | bis is especi | | ay y uhor | | | | | | uЫ | v5 | | | | | |
| 950 | | | | | | | ا ار مده | | | | | Tiple | | Silla | I. | الم ال | | - 1/1 | 4 | | | |
| 951 | | For | gan | nma dist | ridut | ea aete | cted | data, BTVS a | | may | / be com | ipute | ea using | gan | ima dist | ribut | lion o | nκι | /i est | Imates | ; | 10.05 |
| 952 | | | | | | | | Winimum | 0.01 | | | | | | | | | | | N | lean | 13.05 |
| 953 | | | | | | | | Maximum | 599.2 | | | | | | | | | | | | dian | 0.01 |
| 954 | | | | | | | | SD | 67 | | | | | | | | | | | | CV | 5.135 |
| 955 | | | | | | | | k hat (MLE) | 0.149 | | | | | | | K S | star (t | Dias | corre | ected N | /ILE) | 0.151 |
| 956 | | | | | | | The | ta hat (MLE) | 87.55 | | | | | | Th | eta s | star (t | oias (| corre | ected N | /LE) | 86.19 |
| 957 | | | | | | | r | u hat (MLE) | 27.72 | | | | | | | | nu s | star (| (bias | correc | ted) | 28.16 |
| 958 | | | | Adju | sted | Level o | of Sig | nificance (β) | 0.0474 | ŀ | | | | | | | | | | | | |
| 959 | | | Арр | roximate | e Chi | Square | e Valu | ue (28.16, α) | 17.05 | | | | | | Adjusted | d Chi | i Squ | are \ | /alue | ə (28.1 | 6, β) | 16.91 |
| 960 | | 95% Gan | nma | Approxi | imate | e UCL (I | use v | /hen n>=50) | 21.55 | | | | 95% | 6 Ga | mma Ad | ljuste | ed U(| CL (u | ise v | vhen n | <50) | 21.72 |
| 961 | | | | | | | | | | | | | | | | | | | | | | |
| 962 | | | | | | | Es | timates of G | iamma Pa | ram | neters us | sing | KM Est | timat | es | | | | | | | |
| 963 | | | | | | | | Mean (KM) | 13.86 | | | | | | | | | | | SD | (KM) | 66.48 |
| 964 | | | | | | | Va | riance (KM) | 4419 | | | | | | | | | S | E of | Mean | (KM) | 7.025 |
| 965 | | | | | | | | k hat (KM) | 0.0435 | 5 | | | | | | | | | | k star (| (KM) | 0.0493 |
| 966 | | | | | | | | nu hat (KM) | 8.089 | | | | | | | | | | n | u star (| (KM) | 9.161 |
| 967 | | | | | | | th | eta hat (KM) | 318.8 | | | | | | | | | | thet | a star (| (KM) | 281.5 |
| 968 | | | | | 80% | 6 gamm | a per | centile (KM) | 1.782 | | | | | | | 90% | 6 gan | nma | perc | entile (| (KM) | 20.75 |
| 969 | | | | | 95% | 6 gamm | a per | centile (KM) | 73.33 | | | | | | | 99% | 6 gan | nma | perc | entile | (KM) | 303.4 |
| 970 | | | | | | | | | | | | | | | | | | | - | | | |
| 971 | | | | | | | | Gamm | na Kaplan- | Ме | ier (KM) |) Sta | tistics | | | | | | | | | |
| 972 | | | Ap | proximat | te Cl | hi Squai | re Va | lue (9.16, α) | 3.425 | | | | | | Adjuste | ed Cl | hi Sq | uare | Valu | Je (9.1 | 6, β) | 3.37 |
| 973 | 95 | % Gamma | App | proximate | e KN | 1-UCL (I | use v | /hen n>=50) | 37.09 | | | 1 | 95% Ga | mma | a Adjust | ed K | M-UC | CL (u | lse v | vhen n | <50) | 37.69 |
| 974 | | | | | | | | | | 1 | | | | | | | | | | | 1 | |
| 975 | | | | | | | Lo | gnormal GC | F Test on | De | etected C | Obse | ervation | s Or | ly | | | | | | | |
| 976 | | | | | S | hapiro V | Vilk T | est Statistic | 0.918 | | | | | | Shapiro | o Wil | lk GC | DF Te | est | | | |
| 977 | | | | 59 | % Sł | napiro V | Vilk C | ritical Value | 0.923 | | | De | tected D | Data | Not Log | norn | nal at | 5% | Sign | ificanc | :e Lev | /el |
| 978 | | | | | | Lilliet | fors T | est Statistic | 0.176 | | | | | | Lillief | fors | GOF | Tes | t | | | |
| 979 | | | | | 5 | % Lillief | ors C | ritical Value | 0.167 | | | De | tected D | Data | Not Log | norn | nal at | 5% | Sign | ificanc | e Lev | /el |
| 980 | | | | | | | De | tected Data | Not Logno | orma | al at 5% | Sig | nificanc | e Le | vel | | | | | | | |
| 981 | | | | | | | | | - | | | - | | | | | | | | | | |
| 982 | | | | | | | Lo | gnormal RO | S Statistic | s U | Ising Im | pute | d Non-D | Dete | cts | | | | | | | |
| 002 | | | | | | Mean | in O | riginal Scale | 13.16 | | | - | | | | | | Mea | an ir | Log S | cale | -1.469 |
| 001 | | | | | | SD | in O | riginal Scale | 66.98 | | | | | | | | | S | SD ir | Log S | cale | 3.035 |
| 005 | | 95% | 6 t U | ICL (ass | ume | s norma | ality o | f ROS data) | 24.7 | | | | | | 9 | 5% F | Perce | ntile | Boc | tstrap | UCL | 26.34 |
| 302 | | 95% FOCE (assumes normality of R 95% BCA Boots | | | | | | | 32.8 | + | | | | | | | 9 | 5% E | 3oot: | strap t | UCL | 73.62 |
| 986 | | | | | | 95% H | | _ (Loa ROS) | 104.6 | | | | | | | | 5 | | | | | |
| 987 | | | | | | | 201 | (9.100) | | | | | | | | | | | | | | |
| 988 | | | | | | | | | | | | | | | | | | | | | | |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|------|----------|--------------|----------------|----------------|----------------|----------------|-----------------|-----------------|----------------|-----------------|--------------------|--------|
| 989 | | | Statis | stics using K | M estimates | on Logged I | Data and Ase | suming Logr | ormal Distri | bution | | |
| 990 | | | | KM Me | ean (logged) | 0.78 | | | | K | M Geo Mean | 2.181 |
| 991 | | | | KM | SD (logged) | 1.287 | | | 95% (| Critical H Va | lue (KM-Log) | 2.545 |
| 992 | | | KM Standa | rd Error of Me | ean (logged) | 0.136 | | | | 95% H-U0 | CL (KM -Log) | 7.028 |
| 993 | | | | KM | SD (logged) | 1.287 | | | 95% (| Critical H Va | lue (KM-Log) | 2.545 |
| 994 | | | KM Standa | rd Error of Me | ean (logged) | 0.136 | | | | | | |
| 995 | | | | | | | | | | | | |
| 996 | | | | | | DL/2 S | tatistics | | | | | |
| 997 | | | DL/2 | Normal | | | | | DL/2 Log-T | ransformed | | |
| 998 | | | | Mean in O | riginal Scale | 13.48 | | | | Mean | in Log Scale | 0.338 |
| 999 | | | 050() | SD in O | riginal Scale | 66.91 | | | | SD | in Log Scale | 1.525 |
| 1000 | | | 95% t l | JCL (Assume | es normality) | 25.01 | | | h ! | 95% | 6 H-Stat UCL | 7.012 |
| 1001 | | | DL/2 | is not a recol | mmenaea m | etnoa, provi | aea for comp | barisons and | nistorical re | easons | | |
| 1002 | | | | | Mannanana | tria Distribu | tion Free LIC | | | | | |
| 1003 | | | | Data da n | Nonparame | | tion Free UC | | | | | |
| 1004 | | | | Data do no | ot follow a D | Iscemible D | istribution at | 5% Signific | ance Levei | | | |
| 1005 | | | | | | Suggosted | | | | | | |
| 1006 | | | QF | % KM (Cheh | | | | | | | | |
| 1007 | | | | | Jyshev) UCL | 44.40 | | | | | | |
| 1008 | | Note: Sugge | stions regard | ling the selec | tion of a 95% | UCL are pr | ovided to hel | n the user to | select the m | ost annronri | iate 95% LICI | |
| 1009 | | Hoto: ouggo | F | Recommenda | ations are bas | sed upon dat | a size, data (| distribution | and skewnes | is. | | • |
| 1010 | | These recor | mmendations | s are based u | pon the resu | Its of the sin | nulation studi | es summariz | zed in Sinah. | Maichle, an | d Lee (2006). | |
| 1011 | Н | owever, simu | lations result | s will not cov | er all Real W | /orld data se | ts; for additic | onal insight th | ne user may | want to cons | sult a statisticia | an. |
| 1012 | | | | | | | | 0 | | | | |
| 1013 | O-XYLENE | E (1,2-DIMET | HYLBENZE | NE) | | | | | | | | |
| 1015 | | | | | | | | | | | | |
| 1016 | | | | | | General | Statistics | | | | | |
| 1017 | | | Total | Number of C | Observations | 93 | | | Number | r of Distinct (| Observations | 65 |
| 1018 | | | | Numbe | er of Detects | 76 | | | | Number of | Non-Detects | 17 |
| 1019 | | | N | umber of Dist | tinct Detects | 62 | | | Numbe | er of Distinct | Non-Detects | 5 |
| 1020 | | | | Mini | mum Detect | 1.26 | | | | Minimun | n Non-Detect | 1.17 |
| 1021 | | | | Maxi | mum Detect | 284.4 | | | | Maximun | n Non-Detect | 1.74 |
| 1022 | | | | Varia | ince Detects | 2028 | | | | Percent | Non-Detects | 18.28% |
| 1023 | | | | М | ean Detects | 19.36 | | | | | SD Detects | 45.04 |
| 1024 | | | | Me | dian Detects | 4.34 | | | | | CV Detects | 2.327 |
| 1025 | | | | Skewn | less Detects | 4.055 | | | | Kur | tosis Detects | 18.51 |
| 1026 | | | | Mean of Log | ged Detects | 1.798 | | | | SD of Lo | gged Detects | 1.319 |
| 1027 | | | | | | | | | | | | |
| 1028 | | | | | Norm | nal GOF Tes | t on Detects | | | | | |
| 1029 | | | S | hapiro Wilk I | est Statistic | 0.447 | | Normal GOF | • Test on De | tected Obse | ervations Only | |
| 1030 | | | | 5% Shapiro \ | VIIK P Value | 0 | | Detected Da | ta Not Norma | ai at 5% Sigr | nificance Leve | 1 |
| 1031 | | | r | Lilliefors I | est Statistic | 0.347 | | | Lilletors | GOF Test | : (: | |
| 1032 | | | 5 | | Intical value | 0.102 | | | | ai at 5% Sigr | inicance Leve | 1 |
| 1033 | | | | D | velected Data | | n at 5% Sign | | el | | | |
| 1034 | | | Kanlan | Major (KM) C | Statietice usi | na Normal C | ritical Volue | e and other | Nonnaramat | | | |
| 1035 | | | rapian- | | | | | s and other | | A Standard E | Fror of Moon | 1 285 |
| 1036 | | | | | | 41.05 | | | Γ.IV | | | 73 82 |
| 1037 | | | | 95% | | 23 15 | | | 95% KM (P | ercentile Ro | otstran) UCI | 23.02 |
| 1038 | | | | 95% | | 23.13 | | | 33 /0 TXIVI (F | 95% KM Rov | otstran t UCI | 27.66 |
| 1039 | | | (| 00% KM Cha | hvshev LICI | 28.80 | | | (| 05% KM Cha | hvshev UCI | 34 71 |
| 1040 | | | | | by SHEV UCL | 20.03 | | | | | Loyanev UCL | J4.7 I |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|------|---|-------------|---------------|-----------------|---------------------------------------|-----------------|---------------|-----------------|--------------|-----------------------|-----------------|---------------|
| 1041 | | | 9 | 7.5% KM Che | byshev UCL | 42.79 | | | | 99% KM Chebysh | ev UCL | 58.67 |
| 1042 | | | | | | | | | | | P | |
| 1043 | | | | C | Gamma GOF | Tests on De | etected Obs | ervations O | nly | | | |
| 1044 | | | | A-D | Test Statistic | 7.005 | | ļ | Anderson-D | arling GOF Test | | |
| 1045 | | | | 5% A-D (| Critical Value | 0.814 | Detec | ted Data No | t Gamma Di | stributed at 5% Sig | nificance | Level |
| 1046 | | | | K-S | Test Statistic | 0.224 | | | Kolmogorov | -Smirnov GOF | | |
| 1040 | | | | 5% K-S (| Critical Value | 0.108 | Detec | ted Data No | t Gamma Di | stributed at 5% Sig | nificance | Level |
| 1047 | | | | Detecte | ed Data Not | Gamma Dist | ributed at 5 | % Significan | ce Level | | | |
| 1040 | | | | | | | | - | | | | |
| 1049 | | | | | Gamma | Statistics or | Detected | Data Only | | | | |
| 1050 | | | | | k hat (MLE) | 0.539 | | • | k | star (bias correcte | d MLE) | 0.526 |
| 1051 | | | | The | ta hat (MLE) | 35.92 | | | Theta | star (bias correcte | d MLE) | 36.77 |
| 1052 | | | | | nu hat (MLE) | 81.91 | | | | nu star (bias co | rrected) | 80.01 |
| 1053 | | | | Me | ean (detects) | 19.36 | | | | | , | |
| 1054 | | | | | () | | | | | | | |
| 1055 | | | | | Gamma ROS | Statistics u | sina Impute | d Non-Deter | cts | | | |
| 1056 | | | GROS ma | v not be used | when data s | et has $> 50\%$ | 6 NDs with n | nany tied ob: | servations a | t multiple DLs | | |
| 1057 | | GROS ma | v not be use | d when kstar | of detects is | small such a | s <10 espe | cially when | the sample s | size is small (e.g. < | <15-20) | |
| 1058 | | | F | or such situat | ions GROS | method may | vield incorre | ect values of | UCLs and F | STVs | 10 20) | |
| 1059 | | | | | This is especi | ally true whe | n the sampl | | all | | | |
| 1060 | | For da | mma distrihi | ited detected | data BTVs a | | av he compu | ted using ga | mma distrih | ution on KM estima | ates | |
| 1061 | | i oi gu | | | Minimum | | | ited doining go | | | Mean | 15.82 |
| 1062 | | | | | Maximum | 284.4 | | | | | Median | 3.3 |
| 1063 | | | | | | /1 35 | | | | | CV | 2.61/ |
| 1064 | | | | | k bot (MLE) | 41.55 | | | L | star (bias correcto | | 0.217 |
| 1065 | | | | The | | 10.52 | | | Thota | star (bias correcte | | 10.06 |
| 1066 | | | | The | | 49.40 50.48 | | | THELE | nu star (bias con | | 49.90 58.0 |
| 1067 | | | A divete | d Lovel of Cia | | 0.0474 | | | | | necieu) | 56.9 |
| 1068 | | ٨٥ | | | | 42.25 | | | Adjusted C | hi Sauara Valua (F | 8 00 <i>B</i>) | 42.02 |
| 1069 | | AP | | | 1000000000000000000000000000000000000 | 42.25 | | 05% 0 | Aujusieu C | | 0.90, p | 42.03 |
| 1070 | | 95% Gamm | а Арргохіпіа | le UCL (use l | when h>=50) | 22.05 | | 95% G | amma Aujus | aled UCL (use whe | n n<50) | 22.17 |
| 1071 | | | | E | timatas of C | ommo Doro | motoro unin | a KM Eatim | - | | | |
| 1072 | | | | E: | | | | | lies | <u> </u> | | 41 OF |
| 1073 | | | | | | 1695 | | | | | | 41.05 |
| 1074 | | | | Va | | 0.150 | | | | SE OI Mea | | 4.200 |
| 1075 | | | | | K nat (KIVI) | 0.153 | | | | K St | | 0.155 |
| 1076 | | | | | nu nat (KIVI) | 28.37 | | | | nu st | | 28.79 |
| 1077 | | | | tr | | 105.1 | | | | | | 103.6 |
| 1078 | | | 80 | % gamma pe | | 17.9 | | | 90 | % gamma percenti | | 47.74 |
| 1079 | | | 95 | % gamma pe | rcentile (Kivi) | 87.69 | | | 95 | % gamma percenti | | 202.9 |
| 1080 | | | | | | 14 1 14 | | | | | | |
| 1081 | | | | | Gamm | na Kaplan-M | eier (KM) Si | tatistics | | | | |
| 1082 | | Ap | proximate Cl | ni Square Val | ue (28.79, α) | 17.54 | | | Adjusted C | hi Square Value (2 | 8.79,β) | 17.4 |
| 1083 | g | 5% Gamma Ap | proximate K | M-UCL (use \ | when n>=50) | 26.31 | | 95% Gamn | na Adjusted | KM-UCL (use whe | n n<50) | 26.52 |
| 1084 | | | | | | | | | | | | |
| 1085 | | | <u> </u> | L | ognormal GC | OF Test on D | etected Obs | servations C | only | | | |
| 1086 | | S | hapiro Wilk / | Approximate | Test Statistic | 0.883 | | | Shapiro V | /ilk GOF Test | | |
| 1087 | | | | 5% Shapiro | Wilk P Value | 6.9125E-8 | D | etected Data | a Not Logno | mal at 5% Significa | ance Lev | el |
| 1088 | | | | Lilliefors | Test Statistic | 0.129 | | | Lilliefor | GOF Test | | |
| 1089 | | | Į | 5% Lilliefors (| Critical Value | 0.102 | D | etected Data | a Not Logno | mal at 5% Significa | ance Lev | el |
| 1090 | | | | De | tected Data | Not Lognorn | nal at 5% Si | gnificance L | evel | | | |
| 1091 | | | | | | | | | | | | |
| 1092 | | | | Lo | gnormal RO | S Statistics | Using Imput | ed Non-Det | ects | | | |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|------|-------------|--------------|-----------------|----------------|----------------|----------------|-----------------|----------------|-----------------|------------------|-------------------|-------|
| 1093 | | | | Mean in O | riginal Scale | 15.88 | | | | Mean i | in Log Scale | 1.266 |
| 1094 | | | | SD in O | riginal Scale | 41.33 | | | | SD i | in Log Scale | 1.657 |
| 1095 | | 95% t l | JCL (assume | s normality c | f ROS data) | 23.01 | | | 95% | Percentile Bo | otstrap UCL | 23.24 |
| 1096 | | | 9 | 95% BCA Bo | otstrap UCL | 25.05 | | | | 95% Boo | tstrap t UCL | 27.64 |
| 1097 | | | | 95% H-UCI | (Log ROS) | 23.38 | | | | | | |
| 1098 | | | | | | | | | | | | |
| 1099 | | | Statis | tics using K | M estimates | on Logged [| Data and Ass | suming Logi | normal Distri | bution | | |
| 1100 | | | | KM Me | ean (logged) | 1.499 | | | | KN | / Geo Mean | 4.477 |
| 1101 | | | | KM | SD (logged) | 1.343 | | | 95% (| Critical H Valu | ue (KM-Log) | 2.606 |
| 1102 | | | KM Standa | d Error of Me | ean (logged) | 0.14 | | | | 95% H-UC | L (KM -Log) | 15.88 |
| 1102 | | | | KM | SD (logged) | 1.343 | | | 95% (| Critical H Valu | ue (KM-Log) | 2.606 |
| 1103 | | | KM Standa | d Error of Me | ean (logged) | 0.14 | | | | | (0, | |
| 1104 | | | | | (00) | | | | | | | |
| 1105 | | | | | | DL/2 S | tatistics | | | | | |
| 1106 | | | DI /2 I | Normal | | | | | DI /2 og-1 | ransformed | | |
| 1107 | | | | Mean in O | riginal Scale | 15 93 | | | | Mean i | in Log Scale | 1 381 |
| 1108 | | | | SD in O | riginal Scale | 41 31 | | | | | in Log Scale | 1.001 |
| 1109 | | | 95% + 1 | | e normality) | 23.05 | | | | 95% | | 18 30 |
| 1110 | | | | | mondod m | zo.00 | dod for comr | arisons and | l historical re | 0700 | | 10.55 |
| 1111 | | | DUZ | | | sulou, piovid | | | | 30115 | | |
| 1112 | | | | | Nonnoroma | tria Diatribu | tion Free LIC | | | | | |
| 1113 | | | | Data da n | Nonparame | | | | | | | |
| 1114 | | | | Data do no | DI TOIIOW & DI | scemible Di | istribution at | 5% Signific | ance Level | | | |
| 1115 | | | | | | <u> </u> | | | | | | |
| 1116 | | | | | | Suggested | UCL to Use | | | | | |
| 1117 | | | 95 | % KM (Cheb | yshev) UCL | 34.71 | | | | | | |
| 1118 | | | | | | | | | | | | |
| 1119 | | Note: Sugge | stions regard | ing the selec | tion of a 95% | UCL are pro | ovided to hel | p the user to | select the m | lost appropria | ate 95% UCL. | |
| 1120 | | - | ۲ : | ecommenda | itions are bas | ed upon dat | a size, data (| distribution, | and skewnes | S. | (0000) | |
| 1121 | | I nese reco | mmendations | are based u | pon the resu | its of the sim | | es summariz | zed in Singn, | iviaichie, and | Lee (2006). | |
| 1122 | н | owever, simu | liations result | s will not cov | er all Real W | orid data se | ts; for additio | onal insight t | ne user may | want to consi | uit a statisticia | an. |
| 1123 | | | | | | | | | | | | |
| 1124 | tert-BUI YI | | INER | | | | | | | | | |
| 1125 | | | | | | <u> </u> | o | | | | | |
| 1126 | | | | | | General | Statistics | | | (5) | | 47 |
| 1127 | | | lotal | Number of C | bservations | 93 | | | Numbe | r of Distinct C | bservations | 1/ |
| 1128 | | | | Numbe | er of Detects | 0 | | | | Number of I | Non-Detects | 93 |
| 1129 | | | N | umber of Dist | linct Detects | 0 | | | Numbe | er of Distinct I | Non-Detects | 17 |
| 1130 | | | | | <u></u> | | · ·· | | | | | |
| 1131 | | War | ning: All obse | ervations are | Non-Detect | s (NDs), the | retore all sta | atistics and e | estimates sh | ouid also be | | |
| 1132 | | Specif | ically, sample | e mean, UCL | .s, UPLs, and | other statis | stics are also | o NDs lying | below the la | rgest detectio | on limit! | |
| 1133 | | The Project | Team may de | cide to use | alternative si | te specific v | alues to esti | imate enviro | onmental par | ameters (e.g | ., EPC, BTV) | • |
| 1134 | | | | | | | | | | | | |
| 1135 | | | | The data set | for variable | tert-BUTYL | METHYL ET | HER was n | ot processed | !! | | |
| 1136 | | | | | | | | | | | | |
| 1137 | | | | | | | | | | | | |
| 1138 | Toluene | | | | | | | | | | | |
| 1139 | | | | | | | | | | | | |
| 1140 | | | | | | General | Statistics | | | | | |
| 1141 | | | Tota | al Number of (| Observations | 93 | | | Numb | er of Distinct (| Observations | 72 |
| 1142 | | | | Numb | er of Detects | 89 | | | | Number of | Non-Detects | 4 |
| 1143 | | | 1 | Number of Dis | tinct Detects | 70 | | | Num | per of Distinct | Non-Detects | 2 |
| 1144 | | | | Min | imum Detect | 1.92 | | | | Minimun | n Non-Detect | 1.32 |
| | | | | | | | 1 | | | | | |

| | А | В | С | D | E | F | G | Н | | | J | K | L |
|------|---------------------|----------------------|---------------|-----------------|------------------------|----------------|----------------|-----------------|---------------|--------|-----------------|---------------|--------|
| 1145 | | | | Мах | imum Detect | 904.4 | | | | | Maximun | n Non-Detect | 1.36 |
| 1146 | | | | Vari | ance Detects | 16596 | | | | | Percent | Non-Detects | 4.301% |
| 1147 | | | | Ν | lean Detects | 52.96 | | | | | | SD Detects | 128.8 |
| 1148 | | | | Me | edian Detects | 15.07 | | | | | | CV Detects | 2.432 |
| 1149 | | | | Skew | ness Detects | 5.104 | | | | | Kur | tosis Detects | 28.99 |
| 1150 | | | | Mean of Log | gged Detects | 2.864 | | | | | SD of Lo | gged Detects | 1.345 |
| 1151 | | | | | | | | - | | | | | |
| 1152 | | | | - | Norr | nal GOF Tes | t on Detects | Only | | | | | |
| 1153 | | | | Shapiro Wilk | Test Statistic | 0.408 | | Normal GO | F Test or | n Det | ected Obser | vations Only | |
| 1154 | | | | 5% Shapiro | Wilk P Value | 0 | | Detected Da | ata Not No | orma | l at 5% Signif | icance Level | |
| 1155 | | | | Lilliefors | | 0.346 | | <u> </u> | Lilliet | tors (| | | |
| 1156 | | | | 5% Lillefors | Detected Det | 0.094 I | Lat EV Ciani | | | orma | l at 5% Signi | icance Level | |
| 1157 | | | | | Detected Da | a not norma | ii at 5% Signi | ficance Leve | | | | | |
| 1158 | | | Kapla | n Major (KM) | Statiatica un | | | and other N | onnorom | otrio | | | |
| 1159 | | | Каріа | | KM Moon | | | | onparam | | | Fror of Moon | 12 11 |
| 1160 | | | | | | 125.8 | | | | | | | 75./1 |
| 1161 | | | | 920 | | 72 53 | | | 95% | KM (I | Dercentile Bo | otstran) UCL | 74.29 |
| 1162 | | | | 95% | | 72.33 | | | 55701 | | 95% KM Bor | otstran t UCL | 98.32 |
| 1163 | | | | 90% KM Che | hyshev UCL | 90.08 | | | | | 95% KM Che | hyshev UCI | 107.9 |
| 1164 | | | C | 7 5% KM Che | hyshev UCI | 132.6 | | | | | 99% KM Che | abyshev UCI | 181.2 |
| 1165 | | | | | | 102.0 | | | | | | | |
| 1166 | | | | | Gamma GOF | Tests on De | etected Obse | rvations Only | v | | | | |
| 1167 | | | | A-D | Test Statistic | 5.156 | | | , Anderson | n-Dar | lina GOF Tes | st | |
| 1168 | | | | 5% A-D | Critical Value | 0.812 | Dete | cted Data No | t Gamma | Dist | ributed at 5% | Significance | Level |
| 1159 | | | | K-S | Test Statistic | 0.183 | | | Kolmogo | prov-S | Smirnov GOF | : | |
| 1170 | | | | 5% K-S | Critical Value | 0.0998 | Dete | cted Data No | t Gamma | Dist | ributed at 5% | Significance | Level |
| 1170 | | | | Detec | ted Data Not | Gamma Dist | ributed at 5% | Significance | e Level | | | | |
| 1172 | | | | | | | | - | | | | | |
| 1174 | | | | | Gamma | Statistics or | Detected Da | ata Only | | | | | |
| 1175 | | | | | k hat (MLE) | 0.564 | | | | k | star (bias co | rrected MLE) | 0.553 |
| 1176 | | | | The | eta hat (MLE) | 93.88 | | | Т | Theta | star (bias co | rrected MLE) | 95.84 |
| 1177 | | | | | nu hat (MLE) | 100.4 | | | | | nu star (bia | as corrected) | 98.37 |
| 1178 | | | | Μ | ean (detects) | 52.96 | | | | | | | |
| 1179 | | | | | | | | | | | | | |
| 1180 | | | | | Gamma ROS | S Statistics u | sing Imputed | Non-Detects | 6 | | | | |
| 1181 | | | GROS m | ay not be use | d when data | set has > 50% | 6 NDs with ma | any tied obse | ervations a | at mu | ltiple DLs | | |
| 1182 | | GROS | may not be us | ed when ksta | r of detects is | small such a | s <1.0, espec | cially when the | e sample | size | is small (e.g., | , <15-20) | |
| 1183 | | | | For such situa | ations, GROS | method may | yield incorrec | ct values of U | CLs and I | BTVs | 6 | | |
| 1184 | | | | | This is espec | ially true whe | n the sample | size is small | • | | | | |
| 1185 | | For | gamma distrit | outed detected | d data, BTVs | and UCLs ma | y be compute | ed using gam | ma distrib | butior | n on KM estin | nates | |
| 1186 | 6 Minimum 0.01 Mean | | | | | | | | 50.69 | | | | |
| 1187 | | Maximum 904.4 Median | | | | | | | 13.94 | | | | |
| 1188 | | | | | SD | 126.5 | | CV | 2.495 | | | | |
| 1189 | | | | | k hat (MLE) | 0.465 | | rrected MLE) | 0.457 | | | | |
| 1190 | | | | The | eta hat (MLE) | 109.1 | | | Т | heta | star (bias co | rrected MLE) | 110.9 |
| 1191 | | | • •• | | nu hat (MLE) | 86.43 | | | | | nu star (bia | as corrected) | 84.98 |
| 1192 | | | Adjuste | ea Level of Sig | gnificance (β) | 0.0474 | | | A 11 | | | (04.00.0) | 04.45 |
| 1193 | | A | uproximate C | n Square Va | ue (84.98, α) | 04.73 | | 0501 | Aajuste | | | ue (84.98, β) | 04.45 |
| 1194 | | 95% Gam | ma Approxima | ale UCL (USE | wnen n>=50) | 00.54 | | e wnen n<50) | 68.00 | | | | |
| 1195 | | | | | otimatas of (| Commo Doz- | motoro! | | | | | | |
| 1196 | | | | E | sumates of C | amma Para | meters using | NM ESTIMATE | əs | | | | |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|------|---|---------------|----------------|----------------|-----------------|----------------|-----------------|-----------------|-----------------|----------------|-----------------|-------|
| 1197 | | | | | Mean (KM) | 50.74 | | | | | SD (KM) | 125.8 |
| 1198 | | | | V | ariance (KM) | 15814 | | | | SE | of Mean (KM) | 13.11 |
| 1199 | | | | | k hat (KM) | 0.163 | | | | | k star (KM) | 0.165 |
| 1200 | | | | | nu hat (KM) | 30.29 | | | | | nu star (KM) | 30.64 |
| 1201 | | | | tl | neta hat (KM) | 311.6 | | | | th | eta star (KM) | 308 |
| 1202 | | | 80 | % gamma pe | ercentile (KM) | 59.35 | | | 90 | 9% gamma pe | ercentile (KM) | 152.1 |
| 1203 | | | 95 | % gamma pe | ercentile (KM) | 273.9 | | | 99 | % gamma pe | ercentile (KM) | 621 |
| 1204 | | | | | | | | | | | | |
| 1205 | | | | | Gamr | na Kaplan-M | eier (KM) Sta | atistics | | | | |
| 1206 | | A | Approximate C | hi Square Va | lue (30.64, α) | 19 | | | Adjusted C | hi Square Va | lue (30.64, β) | 18.85 |
| 1207 | 1 | 95% Gamma / | Approximate K | M-UCL (use | when n>=50) | 81.84 | | 95% Gan | nma Adjusted | KM-UCL (use | e when n<50) | 82.47 |
| 1208 | | | | | | | | | | | l | |
| 1200 | | | | | Lognormal GC | OF Test on D | etected Obs | ervations On | ly | | | |
| 1210 | | | Shapiro Wilk | Approximate | Test Statistic | 0.948 | | | Shapiro Wi | k GOF Test | | |
| 1210 | | | | 5% Shapiro | Wilk P Value | 0.00369 | | Detected Dat | a Not Lognorr | nal at 5% Sig | nificance Leve | |
| 1212 | | | | Lilliefors | Test Statistic | 0.0933 | | | Lilliefors | GOF Test | | |
| 1212 | | | | 5% Lilliefors | Critical Value | 0.0941 | D | etected Data | appear Logno | rmal at 5% S | ignificance Lev | /el |
| 1210 | | | | Detected | Data appear | Approximate | Lognormal a | t 5% Signific | ance Level | | | |
| 1215 | | | | | | | | | | | | |
| 1216 | | | | L | ognormal RC | S Statistics | Using Impute | ed Non-Detec | ts | | | |
| 1217 | | | | Mean in (| Driginal Scale | 50.72 | | | | Mear | i in Log Scale | 2.726 |
| 1218 | | | | SD in (| Driginal Scale | 126.4 | | | | SD | in Log Scale | 1.472 |
| 1219 | | 95% | t UCL (assum | es normality | of ROS data) | 72.5 | | | 95% | Percentile B | ootstrap UCL | 75.34 |
| 1220 | | | | 95% BCA B | ootstrap UCL | 83.51 | | | | 95% Bo | otstrap t UCL | 98.88 |
| 1221 | | | | 95% H-UC | CL (Log ROS) | 68.78 | | | | | | |
| 1222 | | | | | | | 1 | | | | ł | |
| 1223 | | | Sta | tistics using | KM estimates | on Logged I | Data and Ass | suming Logno | ormal Distribu | tion | | |
| 1224 | | | | KM M | lean (logged) | 2.753 | | | | k | M Geo Mean | 15.69 |
| 1225 | | | | KM | 1 SD (logged) | 1.41 | | | 95% | Critical H Va | lue (KM-Log) | 2.681 |
| 1226 | | | KM Standa | ard Error of N | lean (logged) | 0.147 | | | | 95% H-U | CL (KM -Log) | 62.88 |
| 1227 | | | | KN | 1 SD (logged) | 1.41 | | | 95% | Critical H Va | lue (KM-Log) | 2.681 |
| 1228 | | | KM Standa | ard Error of M | lean (logged) | 0.147 | | | | | | |
| 1229 | | | | | | | | | | | | |
| 1230 | | | | | | DL/2 S | tatistics | | | | | |
| 1231 | | | DL/2 N | Normal | | | | | DL/2 Log-T | ransformed | | |
| 1232 | | | | Mean in (| Driginal Scale | 50.71 | | | | Mear | in Log Scale | 2.724 |
| 1233 | | | | SD in (| Driginal Scale | 126.4 | | | | SD | in Log Scale | 1.475 |
| 1234 | | | 95% t | UCL (Assum | es normality) | 72.5 | | | | 95% | 6 H-Stat UCL | 69.13 |
| 1235 | | | DL/: | 2 is not a rec | ommended m | ethod, provid | ded for comp | arisons and | historical reas | sons | | |
| 1236 | | | | | | | | | | | | |
| 1237 | | | | | Nonparam | etric Distribu | tion Free UC | L Statistics | | | | |
| 1238 | | | De | tected Data | appear Appro | ximate Logno | ormal Distrib | uted at 5% S | ignificance Le | evel | | |
| 1239 | | | | | | | | | | | | |
| 1240 | | | | | | Suggested | UCL to Use | | | | | |
| 1241 | | | | | KM H-UCL | 62.88 | | | | | | |
| 1242 | | | | | | | | | | | | |
| 1243 | | Note: Sug | gestions rega | raing the sele | ection of a 95% | % UCL are pr | ovided to help | p the user to | select the mos | appropriate | 95% UCL. | |
| 1244 | | These | | Recomment | unon the rea | seu upon dat | a size, data (| | iu skewness. | aichlo, and L | 00 (2006) | |
| 1245 | | However | imulations res | | | | te: for additio | nal insight the | | attine, driu L | a statisticion | |
| 1246 | | 1100000001, 5 | 10000015165 | | | | | | , user may wa | | | |
| 1247 | | | | | | | | | | | | |
| 1248 | | , IUIAL | | | | | | | | | | |

| | А | В | С | D | Е | F | G | Н | I | J | K | L |
|------|---|---------|---------------|-----------------|-----------------|----------------|--------------|-----------------|---------------|-----------------|----------------|----------------|
| 1249 | | | | | | | | | | | | |
| 1250 | | | | | | General | Statistics | | | | | |
| 1251 | | | Total | Number of C | bservations | 93 | | | Numbe | r of Distinct C | Observations | 63 |
| 1252 | | | | Numbe | er of Detects | 79 | | | | Number of | Non-Detects | 14 |
| 1252 | | | N | umber of Dist | tinct Detects | 55 | | | Numbe | er of Distinct | Non-Detects | 8 |
| 1255 | | | | Mini | mum Detect | 3.08 | | | | Minimum | Non-Detect | 2.3 |
| 1254 | | | | Махі | mum Detect | 911.8 | | | | Maximum | Non-Detect | 3.47 |
| 1255 | | | | Varia | nce Detects | 23337 | | | | Percent | Non-Detects | 15.05% |
| 1256 | | | | M | ean Detects | 67.63 | | | | | SD Detects | 152.8 |
| 1257 | | | | Mer | dian Detects | 16.93 | | | | | CV Detects | 2 259 |
| 1258 | | | | Skown | less Detects | 3 883 | | | | Kurt | osis Detects | 16.33 |
| 1259 | | | | Mean of Log | and Detects | 3.000 | | | | SD of Loc | and Detects | 1 313 |
| 1260 | | | | Wear of Log | geu Delecto | 0.00 | | | | | geu Deleels | 1.010 |
| 1261 | | | | | Marrie | | | ta Only | | | | |
| 1262 | | | | | | | | | D. | | | |
| 1263 | | | 5 | | est Statistic | 0.453 | | Normal GO | | | | |
| 1264 | | | | 5% Shapiro V | VIIK P Value | 0 | | Detected Da | ita Not Norma | al at 5% Sign | Ificance Leve | 1 |
| 1265 | | | | Lilliefors T | est Statistic | 0.342 | | | Lilliefors | GOF Test | - | |
| 1266 | | | 5 | % Lilliefors C | critical Value | 0.0998 | | Detected Da | ita Not Norma | al at 5% Sign | ificance Leve | |
| 1267 | | | | D | etected Data | a Not Norma | l at 5% Sig | inificance Lev | vel | | | |
| 1268 | | | | | | | | | | | | |
| 1269 | | | Kaplan- | Meier (KM) S | Statistics usi | ng Normal C | ritical Valu | es and other | Nonparamet | ric UCLs | | |
| 1270 | | | | | KM Mean | 57.8 | | | KN | /I Standard E | rror of Mean | 14.8 |
| 1271 | | | | | KM SD | 141.8 | | | | 95% KN | 1 (BCA) UCL | 82.42 |
| 1272 | | | | 95% | KM (t) UCL | 82.39 | | | 95% KM (P | ercentile Boo | otstrap) UCL | 84.67 |
| 1273 | | | | 95% | KM (z) UCL | 82.14 | | | | 95% KM Boo | otstrap t UCL | 95.39 |
| 1274 | | | (| 90% KM Che | byshev UCL | 102.2 | | | (| 95% KM Che | byshev UCL | 122.3 |
| 1275 | 90% KM Chebyshev UCL 102.2 95% KM Chebyshev UCL 97.5% KM Chebyshev UCL 150.2 99% KM Chebyshev UCL | | | | | | 205.1 | | | | | |
| 1276 | | | | | | | | | | | | |
| 1270 | | | | G | amma GOF | Tests on De | etected Ob | servations O | nly | | | |
| 1277 | | | | A-D 1 | est Statistic | 6.581 | | ŀ | Anderson-Da | rling GOF Te | est | |
| 1270 | | | | 5% A-D C | ritical Value | 0.813 | Dete | cted Data Not | t Gamma Dist | tributed at 5% | 6 Significance | e Level |
| 1279 | | | | K-S T | est Statistic | 0.208 | | | Kolmogorov- | Smirnov GO | F | |
| 1280 | | | | 5% K-S C | critical Value | 0.106 | Dete | cted Data Not | Gamma Dist | tributed at 5% | 6 Significance | e l evel |
| 1281 | | | | Detecte | d Data Not (| Gamma Dist | ributed at 5 | 5% Significan | ce l evel | | e eiginieario | |
| 1282 | | | | 2010010 | | | | | | | | |
| 1283 | | | | | Gamma | Statistics or | Detected | Data Only | | | | |
| 1284 | | | | | k hat (MLE) | 0 556 | Detected | | k | star (hias cor | rected MLE) | 0.5/3 |
| 1285 | | | | The | | 121.6 | | | Thoto | star (bias cor | | 124 5 |
| 1286 | | | | I NE | | 121.0 97.0E | | | ineta | | | 124.0 QE OF |
| 1287 | | | | r | | 07.00 | | | | nu stař (bla | as corrected) | 00.00 |
| 1288 | | | | Me | an (detects) | 07.03 | | | | | | |
| 1289 | | | | - | | <u>.</u> | | | | | | |
| 1290 | | | | G | amma ROS | Statistics u | sing Impute | ed Non-Detec | ts | | | |
| 1291 | | | GROS may | not be used | when data s | et has > 50% | NDs with | many tied obs | servations at | multiple DLs | | |
| 1292 | | GROS ma | y not be used | l when kstar o | of detects is s | small such a | s <1.0, esp | ecially when | the sample si | ze is small (e | e.g., <15-20) | |
| 1293 | | | Fc | or such situati | ons, GROS I | method may | yield incorr | rect values of | UCLs and B | ΓVs | | |
| 1294 | | | | T | his is especi | ally true whe | en the samp | ole size is sma | all. | | | |
| 1295 | | For ga | mma distribut | ted detected | data, BTVs a | nd UCLs ma | y be comp | uted using ga | mma distribu | tion on KM e | stimates | |
| 1296 | | | | | Minimum | 0.01 | | | | | Mean | 57.45 |
| 1297 | | | | | Maximum | 911.8 | | | | | Median | 13.03 |
| 1298 | | | | | SD | 142.7 | | | | | CV | 2.485 |
| 1299 | | | | | k hat (MLE) | 0.322 | | | k | star (bias cor | rected MLE) | 0.318 |
| 1300 | | | | The | ta hat (MLE) | 178.6 | | | Theta | star (bias cor | rected MLE) | 180.4 |
| | | | | | - | | 1 | | | | | |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|------|-----|------------|---------------|----------------|---------------------------------------|----------------|----------------|---------------|---------------|-----------------|---------------|-------|
| 1301 | | | | - | nu hat (MLE) | 59.84 | | | | nu star (bia | s corrected) | 59.24 |
| 1302 | | | Adjusted | Level of Sig | nificance (β) | 0.0474 | | | | | | |
| 1303 | | Ар | proximate Ch | i Square Val | ue (59.24, α) | 42.54 | | | Adjusted Ch | i Square Valu | ie (59.24, β) | 42.32 |
| 1304 | | 95% Gamm | a Approximat | e UCL (use v | when n>=50) | 80 | | 95% Ga | amma Adjust | ed UCL (use | when n<50) | 80.42 |
| 1305 | | | | | | | | | | | | |
| 1306 | | | | E | stimates of G | iamma Para | meters using | g KM Estima | tes | | | |
| 1207 | | | | | Mean (KM) | 57.8 | | - | | | SD (KM) | 141.8 |
| 1200 | | | | Va | ariance (KM) | 20119 | | | | SE of | Mean (KM) | 14.8 |
| 1308 | | | | | k hat (KM) | 0.166 | | | | | k star (KM) | 0.168 |
| 1309 | | | | | nu hat (KM) | 30.88 | | | | r | nu star (KM) | 31.22 |
| 1310 | | | | th | eta hat (KM) | 348.1 | | | | the | ta star (KM) | 344.3 |
| 1311 | | | 80% | 6 gamma ne | rcentile (KM) | 68.49 | | | 90% | 6 gamma per | centile (KM) | 173.5 |
| 1312 | | | 007 | | rcontilo (KM) | 310.7 | | | | | contilo (KM) | 700.2 |
| 1313 | | | | o gamma pe | | 510.7 | | | 337 | | | 700.2 |
| 1314 | | | | | Comm | o Koplon M | oior (KM) St | otictics | | | | |
| 1315 | | ٨٣ | nrovimoto Ch | | | | | ausucs | Adjusted Ch | | · (21 22 0) | 10.21 |
| 1316 | 050 | | | | $\frac{ue(31.22, u)}{ubcn(31.22, u)}$ | 19.45 | | 050/ 00000 | | | ie (31.22, p) | 19.31 |
| 1317 | 955 | % Gamma Ap | | /I-UCL (use \ | when n>=50) | 92.75 | | 95% Gamm | la Adjusted k | INI-UCL (use | wnen n<50) | 93.45 |
| 1318 | | | | | | | | | | | | |
| 1319 | | | | L | ognormal GC | DF lest on D | | servations O | nly | | | |
| 1320 | | 5 | hapiro Wilk A | pproximate | l est Statistic | 0.911 | | | Shapiro Wi | IK GOF Test | | |
| 1321 | | | | 5% Shapiro | Wilk P Value | 7.6540E-6 | D | etected Data | Not Lognorr | nal at 5% Sig | nificance Lev | /el |
| 1322 | | | | Lilliefors | Test Statistic | 0.117 | | | Lilliefors | GOF Test | | |
| 1323 | | | 5 | % Lilliefors (| Critical Value | 0.0998 | D | etected Data | Not Lognorr | nal at 5% Sig | nificance Lev | /el |
| 1324 | | | | De | tected Data | Not Lognorn | nal at 5% Si | gnificance L | evel | | | |
| 1325 | | | | | | | | | | | | |
| 1326 | | | | Lo | gnormal RO | S Statistics | Using Imput | ed Non-Dete | ects | | | |
| 1327 | | | | Mean in O | riginal Scale | 57.64 | | | | Mean i | n Log Scale | 2.655 |
| 1328 | | | | SD in O | riginal Scale | 142.7 | | | | SD i | n Log Scale | 1.6 |
| 1329 | | 95% t | UCL (assume | s normality o | of ROS data) | 82.22 | | | 95% I | Percentile Boo | otstrap UCL | 83.55 |
| 1330 | | | | 95% BCA Bo | ootstrap UCL | 90.71 | | | | 95% Boot | tstrap t UCL | 95.85 |
| 1331 | | | | 95% H-UC | L (Log ROS) | 83.06 | | | | | | |
| 1332 | | | | | | | | | | | | |
| 1333 | | | Statis | stics using K | M estimates | on Logged I | Data and As | suming Logi | normal Distri | bution | | |
| 1334 | | | | KM M | ean (logged) | 2.751 | | | | KM | I Geo Mean | 15.66 |
| 1335 | | | · | KM | SD (logged) | 1.447 | | | 95% (| Critical H Valu | ie (KM-Log) | 2.724 |
| 1336 | | | KM Standa | rd Error of M | ean (logged) | 0.151 | | | | 95% H-UC | L (KM -Log) | 67.32 |
| 1337 | | | | KM | SD (logged) | 1.447 | | | 95% (| Critical H Valu | ie (KM-Log) | 2.724 |
| 1338 | | | KM Standa | rd Error of M | ean (logged) | 0.151 | | | | | | |
| 1330 | | | | | | | | | | | | |
| 1340 | | | | | | DL/2 S | tatistics | | | | | |
| 1341 | | | DL/2 | Normal | | | | | DL/2 Log-T | ransformed | | |
| 1242 | | | | Mean in O | riginal Scale | 57.64 | | | • | Mean i | n Log Scale | 2.656 |
| 1042 | | | | SD in O | vriginal Scale | 142.7 | | | | SD i | n Log Scale | 1.592 |
| 1343 | | | 95% t l | JCL (Assume | es normality) | 82.22 | | | | 95% | H-Stat UCL | 81.82 |
| 1045 | | | DL/2 | is not a reco | mmended m | ethod. provid | ded for com | parisons and | historical re | asons | | |
| 1345 | | | | | | | | , | | | | |
| 1346 | | | | | Nonnaram | etric Distribu | tion Free L | CL Statistics | | | | |
| 1347 | | | | Dete do n | ot follow a D | iscernihle D | istribution of | 5% Signific | ance l aval | | | |
| 1348 | | | | | | | | | | | | |
| 1349 | | | | | | Suggastad | | | | | | |
| 1350 | | | | 0/ KM /OL | | | | | | | T | |
| 1351 | | | 95 | | bysnev) UCL | 122.3 | | | | | | |
| 1352 | | | | | | | | | | | | |

| | А | В | С | D | E | F | G | Н | I | J | K | L |
|------|---|--|----------------|----------------|---------------|---------------|-----------------|-----------------|---------------|---------------|------------------|-----|
| 1353 | | Note: Sugges | stions regard | ing the selec | tion of a 95% | 6 UCL are pr | ovided to hel | p the user to | select the m | ost appropria | ate 95% UCL | |
| 1354 | | | F | Recommenda | tions are ba | sed upon dat | a size, data | distribution, a | and skewnes | S. | | |
| 1355 | | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | |
| 1356 | H | owever, simu | lations result | s will not cov | er all Real V | /orld data se | ts; for additic | onal insight th | ie user may v | want to cons | ult a statistici | an. |
| 1357 | | | | | | | | | | | | |

Attachment 2 (Continued)

Soil Vapor Samples from Q1 through Q3 2016, Off-Base (Input)

| | A | В | С | D | E |
|----|------------------------|--------------------------|---|--|--|
| 1 | 1,2,4-TRIMETHYLBENZENE | d_1,2,4-TRIMETHYLBENZENE | | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE) | d_1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE) |
| 2 | 1.23 | 0 | | 1.31 | 0 |
| 3 | 3.93 | 1 | | 1.31 | 0 |
| 4 | 1.43 | 1 | | 1.31 | 0 |
| 5 | 9.34 | 1 | | 1.31 | 0 |
| 6 | 3.22 | 1 | | 1.23 | 0 |
| 7 | 2.48 | 1 | | 1.27 | 0 |
| 8 | 2.11 | 1 | | 1.31 | 0 |
| 9 | 4.28 | 1 | | 1.31 | 0 |
| 10 | 3.54 | 1 | | 1.38 | 0 |
| 11 | 2.11 | 1 | | 1.38 | 0 |
| 12 | 1.28 | 0 | | 1.31 | 0 |
| 13 | 1.28 | 1 | | 1.31 | 0 |

| | F | G | Н | | J | K | L | М | N | 0 |
|----|---|--------------------|----------------------|--|---------|-----------|---|-------------|---------------|---|
| 1 | | 1,2-DICHLOROETHANE | d_1,2-DICHLOROETHANE | | BENZENE | d_BENZENE | | CYCLOHEXANE | d_CYCLOHEXANE | |
| 2 | | 1.42 | 0 | | 1.34 | 0 | | 2.55 | 0 | |
| 3 | | 1.38 | 0 | | 1.31 | 0 | | 2.48 | 0 | |
| 4 | | 1.34 | 0 | | 1.28 | 0 | | 2.44 | 0 | |
| 5 | | 1.34 | 0 | | 1.28 | 0 | | 2.41 | 0 | |
| 6 | | 1.3 | 0 | | 3.43 | 1 | | 2.38 | 0 | |
| 7 | | 1.3 | 0 | | 1.47 | 1 | | 2.34 | 0 | |
| 8 | | 1.3 | 0 | | 1.5 | 1 | | 2.31 | 0 | |
| 9 | | 1.27 | 0 | | 2.04 | 1 | | 2.31 | 0 | |
| 10 | | 1.25 | 0 | | 1.98 | 1 | | 2.31 | 0 | |
| 11 | | 1.25 | 0 | | 2.14 | 1 | | 2.27 | 0 | |
| 12 | | 1.25 | 0 | | 1.5 | 1 | | 4.47 | 1 | |
| 13 | | 1.25 | 0 | | 6.07 | 1 | | 6.54 | 1 | |

| | Р | Q | R | S | Т | U | V | W |
|----|--------------|----------------|---|-----------------------------|-------------------------------|---|-------------|---------------|
| 1 | ETHYLBENZENE | d_ETHYLBENZENE | | M,P-XYLENE (SUM OF ISOMERS) | d_M,P-XYLENE (SUM OF ISOMERS) | | NAPHTHALENE | d_NAPHTHALENE |
| 2 | 1.35 | 0 | | 11.72 | 1 | | 1.52 | 0 |
| 3 | 1.3 | 0 | | 2.87 | 1 | | 1.47 | 0 |
| 4 | 1.26 | 0 | | 5.64 | 1 | | 1.42 | 0 |
| 5 | 1.26 | 0 | | 5.21 | 1 | | 1.42 | 0 |
| 6 | 2.32 | 1 | | 4.3 | 1 | | 1.42 | 0 |
| 7 | 1.98 | 1 | | 14.55 | 1 | | 1.42 | 0 |
| 8 | 2.52 | 1 | | 39.95 | 1 | | 2.04 | 1 |
| 9 | 1.3 | 1 | | 16.07 | 1 | | 2.41 | 1 |
| 10 | 2.69 | 1 | | 8.68 | 1 | | 2.04 | 1 |
| 11 | 2.43 | 1 | | 14.33 | 1 | | 3.62 | 1 |
| 12 | 1.69 | 1 | | 14.76 | 1 | | 2.83 | 1 |
| 13 | 4.78 | 1 | | 12.59 | 1 | | 4.3 | 1 |

| | Х | Y | Z | AA | AB | AC | AD | AE | AF |
|----|---|-----------|-------------|----|----------|------------|----|--------------------------------|----------------------------------|
| 1 | | n-HEPTANE | d_n-HEPTANE | | n-HEXANE | d_n-HEXANE | | O-XYLENE (1,2-DIMETHYLBENZENE) | d_O-XYLENE (1,2-DIMETHYLBENZENE) |
| 2 | | 1.48 | 0 | | 1.3 | 0 | | 1.22 | 0 |
| 3 | | 1.43 | 0 | | 1.27 | 0 | | 4.23 | 1 |
| 4 | | 1.43 | 0 | | 1.27 | 0 | | 2.08 | 1 |
| 5 | | 1.39 | 0 | | 1.23 | 0 | | 3.52 | 1 |
| 6 | | 1.39 | 0 | | 1.23 | 0 | | 3.91 | 1 |
| 7 | | 1.39 | 0 | | 1.2 | 0 | | 1.78 | 1 |
| 8 | | 1.35 | 0 | | 1.2 | 0 | | 1.43 | 1 |
| 9 | | 1.35 | 0 | | 1.2 | 0 | | 5.86 | 1 |
| 10 | | 1.35 | 0 | | 1.16 | 0 | | 16.93 | 1 |
| 11 | | 1.35 | 0 | | 4.23 | 1 | | 6.51 | 1 |
| 12 | | 2.21 | 1 | | 2.22 | 1 | | 5.21 | 1 |
| 13 | | 2.54 | 1 | | 5.99 | 1 | | 5.21 | 1 |

| | AG | AH | AI | AJ | AK | AL | AM | AN | AO |
|----|----|-------------------------|---------------------------|----|---------|-----------|----|----------------|------------------|
| 1 | | tert-BUTYL METHYL ETHER | d_tert-BUTYL METHYL ETHER | | TOLUENE | d_TOLUENE | | XYLENES, TOTAL | d_XYLENES, TOTAL |
| 2 | | 1.48 | 0 | | 2.94 | 1 | | 2.87 | 1 |
| 3 | | 1.44 | 0 | | 14.89 | 1 | | 7.82 | 1 |
| 4 | | 1.44 | 0 | | 11.12 | 1 | | 6.95 | 1 |
| 5 | | 1.41 | 0 | | 15.45 | 1 | | 5.64 | 1 |
| 6 | | 1.37 | 0 | | 10.55 | 1 | | 20.19 | 1 |
| 7 | | 1.37 | 0 | | 4.9 | 1 | | 15.85 | 1 |
| 8 | | 1.37 | 0 | | 9.04 | 1 | | 56.44 | 1 |
| 9 | | 1.37 | 0 | | 16.2 | 1 | | 22.58 | 1 |
| 10 | | 1.37 | 0 | | 13.19 | 1 | | 12.16 | 1 |
| 11 | | 1.37 | 0 | | 4.9 | 1 | | 19.54 | 1 |
| 12 | | 1.35 | 0 | | 4.9 | 1 | | 19.97 | 1 |
| 13 | | 1.33 | 0 | | 8.67 | 1 | | 16.5 | 1 |

Attachment 2 (Continued)

Soil Vapor Samples from Q1 through Q3 2016, Off-Base (Output)

| | А | В | С | D | E | F | G | Н | I | J | K | | L |
|----|------------|--------------|--------------|--------------|----------------|-------------------|----------------|--------------|--------------|----------------|-----------------|-------|-------|
| 1 | | | | | UCL Statis | tics for Data | Sets with N | on-Detects | | | | | |
| 2 | | | | | | | | | | | | | |
| 3 | | User Sele | cted Options | | | | | | | | | | |
| 4 | Dat | te/Time of C | omputation | ProUCL 5. | 16/26/2017 1: | 56:54 PM | | | | | | | |
| 5 | | | From File | WorkSheet | .xls | | | | | | | | |
| 6 | | Fu | II Precision | OFF | | | | | | | | | |
| 7 | | Confidence | Coefficient | 95% | | | | | | | | | |
| 8 | Number of | of Bootstrap | Operations | 2000 | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | 1,2,4-TRIM | ETHYLBEN | ZENE | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | General | Statistics | | | | | | |
| 13 | | | Total | Number of | Observations | 12 | | | Numb | per of Distinc | t Observations | 10 | C |
| 14 | | | | Numb | er of Detects | 10 | | | | Number of | of Non-Detects | 2 | |
| 15 | | | Ν | umber of Dis | stinct Detects | 9 | | | Num | ber of Disting | t Non-Detects | 2 | |
| 16 | | | | Mir | imum Detect | 1.28 | | | | Minimu | Im Non-Detect | 1 | .23 |
| 17 | | | | Мах | timum Detect | 9.34 | | | | Maximu | Im Non-Detect | 1 | .28 |
| 18 | | | | Vari | ance Detects | 5.437 | | | | Percer | nt Non-Detects | 16 | 6.67% |
| 19 | | | | Ν | lean Detects | 3.372 | | | | | SD Detects | 2 | .332 |
| 20 | | | | Me | edian Detects | 2.85 | | | | | CV Detects | 0 | .691 |
| 21 | | | | Skew | ness Detects | 2.106 | | | | Κι | urtosis Detects | 5 | .321 |
| 22 | | | | Mean of Lo | gged Detects | 1.05 | | | | SD of L | ogged Detects | 0 | .583 |
| 23 | | | | | | | | | | | | | |
| 24 | | | | | Norn | nal GOF Tes | t on Detects | Only | | | | | |
| 25 | | | S | Shapiro Wilk | Test Statistic | 0.775 | | | Shapiro \ | Wilk GOF Te | st | | |
| 26 | | | 5% S | hapiro Wilk | Critical Value | 0.842 | | Detected Da | ita Not Nori | mal at 5% Sig | gnificance Leve | el | |
| 27 | | | | Lilliefors | Test Statistic | 0.248 | | | Lilliefo | rs GOF Test | | | |
| 28 | | | 5 | % Lilliefors | Critical Value | 0.262 | De | etected Data | appear No | ormal at 5% S | Significance Le | vel | |
| 29 | | | | Detected | Data appear | Approximat | te Normal at | 5% Signific | ance Level | | | | |
| 30 | | | | | | | | | | | | | |
| 31 | | | Kaplan- | Meier (KM) | Statistics usi | ng Normal C | ritical Value | s and other | Nonparam | etric UCLs | | | |
| 32 | | | | | KM Mean | 3.015 | | | | KM Standard | Error of Mean | 0 | .661 |
| 33 | | | | | KM SD | 2.171 | | | | 95% k | (M (BCA) UCL | 4 | .234 |
| 34 | | | | 959 | % KM (t) UCL | 4.202 | | | 95% KM | (Percentile E | ootstrap) UCL | 4 | .123 |
| 35 | | | | 95% | 5 KM (z) UCL | 4.102 | | | | 95% KM B | ootstrap t UCL | 5 | .135 |
| 36 | | | (| 90% KM Che | ebyshev UCL | 4.997 | | | | 95% KM CI | nebyshev UCL | 5 | .895 |
| 37 | | | 97 | 7.5% KM Che | ebyshev UCL | 7.141 | | | | 99% KM CI | nebyshev UCL | 9 | .589 |
| 38 | | | | | | | | | | | | | |
| 39 | | | | | Gamma GOF | lests on De | | ervations Oi | | | . . | | |
| 40 | | | | A-D | Test Statistic | 0.363 | . | F | Anderson-L | | | | |
| 41 | | | | 5% A-D | | 0.732 | Detecte | d data appe | ar Gamma | Distributed a | t 5% Significan | ce Le | evel |
| 42 | | | | K-S | | 0.165 | Datasta | | Kolmogoro | v-Smirnov G | | | |
| 43 | | | | 5% K-S | | 0.268 | Detecte | d data appe | ar Gamma | Distributed a | t 5% Significan | ce Le | evel |
| 44 | | | | Detecte | u data appea | Gamma Di | stributed at a | o% significa | INCE LEVE | | | | |
| 45 | | | | | 0 | Ototioti | Doto at | ata Orti | | | | | |
| 46 | | | | | | Statistics Of | I Detected D | ata Only | | k ato:: /b' | | ~ | 707 |
| 47 | | | | τι. | | 3.1/2 | | | T6 / 1 | K Star (DIAS C | | 2 | .20/ |
| 48 | | | | Ihe | | 1.003 | | | Inet | | | 1 | .4/5 |
| 49 | | | | | | 03.43 | | | | nu star (t | bias corrected) | 45 | 5.74 |
| 50 | | | | IVI | ean (uetects) | 3.372 | | | | | | | |
| 51 | | | | | Commo DOO | Statistics | | Non Date | ** | | | | |
| 52 | | | | 1 | Gamma ROS | Statistics u | sing imputed | I NON-Detec | лS | | | | |

| | А | В | С | D | E | F | G | Н | I | J | K | L |
|----------|-----|------------|---------------|----------------|----------------|-----------------------|---------------|---------------|---------------|----------------|-----------------|-------|
| 53 | | | GROS may | not be used | when data s | et has > 50% | 6 NDs with m | nany tied obs | ervations at | multiple DLs | | |
| 54 | | GROS mag | y not be used | when kstar of | of detects is | small such a | s <1.0, espe | cially when t | he sample si | ze is small (e | ∍.g., <15-20) | |
| 55 | | | Fo | r such situati | ons, GROS | method may | yield incorre | ect values of | UCLs and B | ΓVs | | |
| 56 | | | | Т | his is especi | ally true whe | en the sample | e size is sma | III. | | | |
| 57 | | For gar | mma distribut | ed detected | data, BTVs a | ind UCLs ma | ay be comput | ted using gar | mma distribu | tion on KM e | stimates | |
| 58 | | | | | Minimum | 0.01 | | | | | Mean | 2.812 |
| 59 | | | | | Maximum | 9.34 | | | | | Median | 2.295 |
| 60 | | | | | SD | 2.482 | | | | | CV | 0.883 |
| 61 | | | | | k hat (MLE) | 0.658 | | | k | star (bias cor | rrected MLE) | 0.549 |
| 62 | | | | The | ta hat (MLE) | 4.273 | | | Theta | star (bias cor | rected MLE) | 5.121 |
| 63 | | | | r | u hat (MLE) | 15.79 | | | | nu star (bia | as corrected) | 13.18 |
| 64 | | | Adjusted | Level of Sig | nificance (β) | 0.029 | | | | | | |
| 65 | | App | proximate Chi | Square Valu | ıe (13.18, α) | 6.012 | | | Adjusted Ch | i Square Val | ue (13.18, β) | 5.291 |
| 66 | | 95% Gamma | a Approximate | e UCL (use w | /hen n>=50) | 6.163 | | 95% Ga | amma Adjust | ed UCL (use | when n<50) | 7.002 |
| 67 | | | | | , | | | | , | , | / | |
| 67 | | | | Es | timates of G | amma Para | meters using | 1 KM Estima | tes | | | |
| 68 | | | | | Mean (KM) | 3.015 | | , | | | SD (KM) | 2.171 |
| 69 | | | | Va | riance (KM) | 4 715 | | | | SE o | of Mean (KM) | 0.661 |
| 70 | | | | | k hat (KM) | 1 928 | | | | 020 | k star (KM) | 1 502 |
| /1 | | | | | nu hat (KM) | 16.27 | | | | | nu star (KM) | 36.04 |
| 72 | | | | th | ota hat (KM) | 1 56/ | | | | th | ota star (KM) | 2 008 |
| 73 | | | 000 | | eta fiat (KN) | 1.504 | | | 0.00 | | rooptilo (KM) | 6 291 |
| 74 | | | 00% | | | 4.004 | | | 907 | | | 0.201 |
| 75 | | | 95% | a gamma per | centile (Kivi) | 7.851 | | | 99% | o gamma pe | rcentile (Kivi) | 11.4 |
| 76 | | | | | | | | | | | | |
| 77 | | | | | Gamm | na Kaplan-M | eier (KM) St | atistics | | | | |
| 78 | | Арр | proximate Chi | Square Valu | ie (36.04, α) | 23.3 | | | Adjusted Ch | i Square Val | ue (36.04, β) | 21.75 |
| 79 | 95% | 6 Gamma Ap | proximate KM | 1-UCL (use w | /hen n>=50) | 4.663 | | 95% Gamm | a Adjusted K | M-UCL (use | when n<50) | 4.996 |
| 80 | | | | | | | | | | | | |
| 81 | | | | Lo | gnormal GC | F Test on D | etected Obs | ervations O | nly | | | |
| 82 | | | S | hapiro Wilk T | est Statistic | 0.955 | | | Shapiro Wi | lk GOF Test | • | |
| 83 | | | 5% SI | napiro Wilk C | ritical Value | 0.842 | Dete | ected Data a | ppear Logno | rmal at 5% S | Significance Le | evel |
| 84 | | | | Lilliefors T | est Statistic | 0.144 | | | Lilliefors | GOF Test | | |
| 85 | | | 5 | % Lilliefors C | ritical Value | 0.262 | Dete | ected Data a | ppear Logno | rmal at 5% S | Significance Le | evel |
| 86 | | | | Dete | cted Data ap | pear Logno | rmal at 5% S | Significance | Level | | | |
| 87 | | | | | | | | | | | | |
| 88 | | | | Lo | gnormal RO | S Statistics | Using Impute | ed Non-Dete | ects | | | |
| 89 | | | | Mean in O | riginal Scale | 2.93 | | | | Mean | in Log Scale | 0.82 |
| 90 | | | | SD in O | riginal Scale | 2.349 | | | | SD | in Log Scale | 0.753 |
| 91 | | 95% t l | JCL (assume | s normality o | f ROS data) | 4.147 | | | 95% I | Percentile Bo | ootstrap UCL | 4.072 |
| 92 | | | (| 95% BCA Bo | otstrap UCL | 4.465 | | | | 95% Boo | otstrap t UCL | 4.97 |
| 93 | | | | 95% H-UCI | (Log ROS) | 5.307 | | | | | | |
| 94 | | | | | | <u> </u> | ļ | | | | | |
| 05 05 | | | Statis | tics using K | V estimates | on Logged I | Data and As | suming Logr | normal Distri | bution | | |
| 90 | | | | KM Me | ean (logged) | 0.909 | | | | K | M Geo Mean | 2.482 |
| 90 | | | | KM | SD (logaed) | 0.594 | | | 95% (| Critical H Val | ue (KM-Loa) | 2.263 |
| 9/ | | | KM Standar | d Error of Me | ean (logaed) | 0.181 | | | | 95% H-UC | CL (KM -Loa) | 4.444 |
| 90 | | | | KM | SD (loaded) | 0.594 | | | 95% (| Critical H Val | ue (KM-Loa) | 2.263 |
| 99 | | | KM Standar | d Error of Me | ean (logged) | 0.181 | | | 20,0 | | | |
| 100 | | | | | | | | | | | | |
| 101 | | | | | | <u>פ <i>גו</i>ו</u> ח | tatistics | | | | | |
| 102 | | | י כי וח | lormal | | 0020 | | | | raneformed | | |
| 103 | | | | Moon in O | riginal Casta | 2.015 | | | | Maar | in Log Sools | 0 707 |
| 104 | | | | wear in O | iyinal scale | 2.915 | | | | iviean | III LUY SCAIE | 0.797 |

| | А | В | С | D | E | F | G | Н | | J K | L | | | | |
|-----|---|-------------|------------------|------------------|---------------|----------------|-------------|-----------------|-----------------|-------------------------------|-------|--|--|--|--|
| 105 | | | | SD in Or | iginal Scale | 2.364 | | | | SD in Log Scale | 0.791 | | | | |
| 106 | | | 95% t L | ICL (Assume | s normality) | 4.14 | | | | 95% H-Stat UCL | 5.583 | | | | |
| 107 | | | DL/2 i | s not a recor | nmended m | ethod, provi | ded for co | mparisons an | d historical re | asons | | | | | |
| 108 | | | | | | | | | | | | | | | |
| 109 | | | | | Nonparame | etric Distribu | tion Free | UCL Statistic | S | | | | | | |
| 110 | | | Det | ected Data a | ippear Appr | oximate Nor | mal Distri | buted at 5% S | Significance Le | evel | | | | | |
| 111 | | | | | | <u> </u> | | | | | | | | | |
| 112 | | | | 050/ | | Suggested | | se | | | | | | | |
| 113 | | | | 95% | | 4.202 | | | | | | | | | |
| 114 | | | | ata aat fallau | | imate (a.e. | | | | | | | | | |
| 115 | | When one | when a d | ata set follow | /s an approx | and upop o | normal) di | stribution pass | sing one of the | GOF test | | | | | |
| 116 | | when app | Dicable, it is s | uggested to t | use a UCL b | ased upon a | distributio | n (e.g., gamm | ia) passing boi | IN GOF tests in Prouch | | | | | |
| 117 | | Noto: Suggo | ctions regard | ing the color | tion of a OE% | | ovidad ta | halp the upor t | a calaat tha m | act appropriate 05% LICL | | | | | |
| 118 | | Note. Sugge | | | | | | to distribution | | | • | | | | |
| 119 | | Those reco | mmondations | | non the res | lts of the sin | ulation st | | izod in Singh | s. Maichle, and Lee (2006) | | | | | |
| 120 | L | | lations result | s will not cover | er all Roal M | lorid data so | te: for add | itional incidet | the user move | want to consult a statistici | an | | | | |
| 121 | | Sinna Sinna | | | | | | | une user may v | | ан. | | | | |
| 122 | | | | |)F) | | | | | | | | | | |
| 123 | 1,2-DIDRV | | | | -) | | | | | | | | | | |
| 124 | | | | | | General | Statistics | | | | | | | | |
| 125 | | | Total | Number of O | bservations | 12 | | | Number | of Distinct Observations | 4 | | | | |
| 126 | Total Number of Observations 12 Number of Distinct Observations 4 Number of Detects 0 Number of Non-Detects 12 | | | | | | | | | | | | | | |
| 127 | Number of Detects 0 Number of Non-Detects 12 Number of Distinct Detects 0 Number of Distinct Non-Detects 4 | | | | | | | | | | | | | | |
| 128 | Number of Distinct Detects 0 Number of Distinct Non-Detects 4 | | | | | | | | | | | | | | |
| 129 | Warning: All observations are Non-Detects (NDs) therefore all statistics and estimates should also be NDs! | | | | | | | | | | | | | | |
| 130 | Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs! Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lving below the largest detection limit! | | | | | | | | | | | | | | |
| 122 | Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit! The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV). | | | | | | | | | | | | | | |
| 132 | | • | • | | | • | | | · | , | | | | | |
| 133 | | | The data se | t for variable | 1,2-DIBRC | MOETHAN | E (ETHYL | | /IDE) was not | processed! | | | | | |
| 135 | | | | | | | | | | - | | | | | |
| 136 | | | | | | | | | | | | | | | |
| 137 | 1,2-DICHI | OROETHAN | IE | | | | | | | | | | | | |
| 138 | | | | | | | | | | | | | | | |
| 139 | | | | | | General | Statistics | | | | | | | | |
| 140 | | | Total | Number of O | bservations | 12 | | | Number | of Distinct Observations | 6 | | | | |
| 141 | | | | Numbe | r of Detects | 0 | | | | Number of Non-Detects | 12 | | | | |
| 142 | | | Nu | umber of Dist | inct Detects | 0 | | | Numbe | r of Distinct Non-Detects | 6 | | | | |
| 143 | | | | | | | | | | | | | | | |
| 144 | | War | ning: All obse | ervations are | Non-Detect | ts (NDs), the | erefore all | statistics and | estimates sho | ould also be NDs! | | | | | |
| 145 | | Specifi | ically, sample | e mean, UCL | s, UPLs, an | d other stati | stics are a | also NDs lying | below the lar | gest detection limit! | | | | | |
| 146 | | The Project | Team may de | cide to use a | alternative s | ite specific v | alues to e | estimate envir | onmental para | meters (e.g., EPC, BTV) | • | | | | |
| 147 | | | | | | | | | | | | | | | |
| 148 | | | | The data s | et for variab | le 1,2-DICH | LOROETI | HANE was no | t processed! | | | | | | |
| 149 | | | | | | | | | | | | | | | |
| 150 | | | | | | | | | | | | | | | |
| 151 | BENZENE | | | | | | | | | | | | | | |
| 152 | | | | | | | | | | | | | | | |
| 153 | | | | | | General | Statistics | | | | | | | | |
| 154 | | | Total | Number of O | bservations | 12 | | | Number | of Distinct Observations | 10 | | | | |
| 155 | | | | Numbe | er of Detects | 8 | | | | Number of Non-Detects | 4 | | | | |
| | | | Nu | umber of Dist | inct Detects | 7 | | | Numbe | r of Distinct Non-Detects | 3 | | | | |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|-----|---|-----------|---------------|----------------|-----------------|---------------|---------------|------------------|--------------|------------------|---------------|----------|
| 157 | | | | Mini | mum Detect | 1.47 | | | | Minimum | Non-Detect | 1.28 |
| 158 | | | | Maxi | mum Detect | 6.07 | | | | Maximum | Non-Detect | 1.34 |
| 159 | | | | Varia | nce Detects | 2.469 | | | | Percent | Non-Detects | 33.33% |
| 160 | | | | M | ean Detects | 2.516 | | | | | SD Detects | 1.5/1 |
| 161 | | | | IVIE | alan Detects | 2.01 | | | | | CV Detects | 0.624 |
| 162 | | | | Skewn | and Detects | 2.067 | | | | SD of Log | usis Detects | 4.309 |
| 163 | | | | | geu Delecis | 0.799 | | | | SD 01 L0g | yeu Delecis | 0.495 |
| 164 | | | | | Norm | al GOF Tes | t on Detects | | | | | |
| 165 | | | S | hapiro Wilk T | est Statistic | 0.713 | | | Shapiro V | Vilk GOF Test | | |
| 167 | | | 5% S | napiro Wilk C | ritical Value | 0.818 | | Detected Da | ita Not Norr | nal at 5% Sign | ificance Leve | 9 |
| 168 | | | | Lilliefors T | est Statistic | 0.345 | | | Lilliefor | s GOF Test | | |
| 169 | | | 5 | % Lilliefors C | ritical Value | 0.283 | | Detected Da | ta Not Norr | nal at 5% Sign | ificance Leve | 9 |
| 170 | | | | D | etected Data | a Not Norma | l at 5% Sign | ificance Lev | /el | | | |
| 171 | | | | | | | | | | | | |
| 172 | | | Kaplan- | Meier (KM) S | Statistics usi | ng Normal C | ritical Value | s and other | Nonparam | etric UCLs | | |
| 173 | | | | | KM Mean | 2.104 | | | ł | KM Standard E | rror of Mean | 0.412 |
| 174 | | | | | KM SD | 1.334 | | | | 95% KN | I (BCA) UCL | 2.763 |
| 175 | | | | 95% | KM (t) UCL | 2.844 | | | 95% KM | (Percentile Boo | otstrap) UCL | 2.813 |
| 176 | | | | 95% | KM (z) UCL | 2.781 | | | | 95% KM Boo | otstrap t UCL | 4.396 |
| 177 | | | <u>)</u> | 00% KM Che | byshev UCL | 3.339 | | | | 95% KM Che | byshev UCL | 3.899 |
| 178 | | | 97 | .5% KM Che | byshev UCL | 4.675 | | | | 99% KM Che | byshev UCL | 6.2 |
| 179 | | | | | | Taata an Da | | an cation of O | - h - | | | |
| 180 | | | | G | amma GOF | | | ervations Or | | | | |
| 181 | | | | A-D I | est Statistic | 0.787 | Dotoct | F od Data Not | Gommo Di | istributed at 5% | Significance | |
| 182 | | | | 5% A-D C | | 0.719 | Delect | | | v-Smirnov GO | | e Level |
| 183 | | | | 5% K-S C | citical Value | 0.295 | Detect | ed Data Not | Gamma Di | istributed at 5% | Significance | e l evel |
| 184 | | | | Detecte | d Data Not (| Gamma Dist | ributed at 59 | % Significan | ce Level | | | |
| 100 | | | | | | | | 0 | | | | |
| 187 | | | | | Gamma | Statistics or | Detected D | ata Only | | | | |
| 188 | | | | | k hat (MLE) | 4.187 | | | I | k star (bias cor | rected MLE) | 2.7 |
| 189 | | | | The | ta hat (MLE) | 0.601 | | | Theta | a star (bias cor | rected MLE) | 0.932 |
| 190 | | | | r | u hat (MLE) | 66.99 | | | | nu star (bia | as corrected) | 43.2 |
| 191 | | | | Me | an (detects) | 2.516 | | | | | | |
| 192 | | | | | | | | | | | | |
| 193 | | | | G | amma ROS | Statistics u | sing Imputed | d Non-Detec | cts | | | |
| 194 | | | GROS may | not be used | when data s | et has > 50% | 6 NDs with m | nany tied obs | servations a | at multiple DLs | | |
| 195 | | GROS ma | y not be used | when kstar | of detects is a | small such a | s <1.0, espe | cially when t | the sample | size is small (e | e.g., <15-20) | |
| 196 | | | Fo | r such situati | ons, GROS | nethod may | yield incorre | ect values of | UCLs and I | BIVs | | |
| 197 | | | | | | ally true whe | en the sample | e size is sma | 311. | | | |
| 198 | | For gai | mma distribui | ea aetectea (| Minimum | | iy be comput | ted using ga | mma distrib | oution on KIVI e | stimates | 1 601 |
| 199 | | | | | Maximum | 6.07 | | | | | Median | 1.001 |
| 200 | | | | | | 1 759 | | | | | CV | 1.046 |
| 201 | | | | | k hat (MLE) | 0.428 | | | I | k star (bias cor | rected MLE) | 0.376 |
| 202 | | | | The | ta hat (MLE) | 3.93 | | | Theta | a star (bias cor | rected MLE) | 4.466 |
| 203 | | | | r | u hat (MLE) | 10.27 | | | | nu star (bia | is corrected) | 9.033 |
| 204 | | | Adjusted | Level of Sig | nificance (β) | 0.029 | | | | | , | |
| 206 | | Aŗ | oproximate C | hi Square Va | lue (9.03, α) | 3.347 | | | Adjusted | Chi Square Va | lue (9.03, β) | 2.84 |
| 207 | | 95% Gamma | a Approximat | e UCL (use w | /hen n>=50) | 4.537 | | 95% G | amma Adju | sted UCL (use | when n<50) | 5.346 |
| 208 | | | | | | | · | | | | | |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|-----|-----|-------------|----------------|-----------------|-----------------|----------------|------------------|----------------|-----------------|----------------|------------------|-------|
| 209 | | | | E | Estimates of G | amma Para | meters using | g KM Estima | tes | | | |
| 210 | | | | | Mean (KM) | 2.104 | | | | | SD (KM) | 1.334 |
| 211 | | | | ١ | Variance (KM) | 1.78 | | | | SE o | of Mean (KM) | 0.412 |
| 212 | | | | | k hat (KM) | 2.488 | | | | | k star (KM) | 1.921 |
| 213 | | | | | nu hat (KM) | 59.71 | | | | | nu star (KM) | 46.12 |
| 214 | | | | t | theta hat (KM) | 0.846 | | | | the | eta star (KM) | 1.095 |
| 215 | | | 80% | % gamma p | ercentile (KM) | 3.165 | | | 90% | % gamma pe | rcentile (KM) | 4.131 |
| 216 | | | 95% | % gamma p | ercentile (KM) | 5.055 | | | 99% | 6 gamma pe | rcentile (KM) | 7.109 |
| 210 | | | | | | | | | | | | |
| 217 | | | | | Gamm | a Kaplan-M | eier (KM) St | atistics | | | | |
| 210 | | Apr | oroximate Ch | i Square Va | alue (46.12, α) | 31.53 | | | Adjusted Ch | i Square Val | ue (46.12, β) | 29.7 |
| 219 | 95% | 6 Gamma Ap | proximate K | · M-UCL (use | when n>=50) | 3.077 | | 95% Gamm | a Adiusted k | (M-UCL (use | when n<50) | 3.267 |
| 220 | | | | | | | | | | | | |
| 221 | | | | I | ognormal GC |)F Test on D | etected Obs | ervations O | nlv | | | |
| 222 | | | c | haniro Wilk | Test Statistic | 0.824 | | | Shaniro Wi | Ik GOF Test | | |
| 223 | | | 5% S | hapiro Wilk | Critical Value | 0.024 | Det | ected Data a | | rmal at 5% S | Significance | |
| 224 | | | | | Tost Statistic | 0.010 | Deu | | | | | ever |
| 225 | | | | | | 0.201 | Det | acted Data a | | | Significance | |
| 226 | | | | | Cilical value | 0.203 | rmal at 5% S | | | | significance L | evei |
| 227 | | | | | | pear Logno | rmai at 5% c | Significance | Levei | | | |
| 228 | | | | <u> </u> | 100 | | | | | | | |
| 229 | | | | L | ognormal RO | S Statistics | | ed Non-Dete | ects | | | 0.005 |
| 230 | | | | Mean in (| Original Scale | 1.9 | | | | Mean | in Log Scale | 0.395 |
| 231 | | | | SD in (| Original Scale | 1.55 | | | | SD | in Log Scale | 0.719 |
| 232 | | 95% t l | JCL (assume | s normality | of ROS data) | 2.703 | | | 95% | Percentile Bo | otstrap UCL | 2.654 |
| 233 | | | | 95% BCA B | Bootstrap UCL | 2.852 | | | | 95% Boo | otstrap t UCL | 3.419 |
| 234 | | | | 95% H-U | CL (Log ROS) | 3.264 | | | | | | |
| 235 | | | | | | | | | | | | |
| 236 | | | Statis | stics using | KM estimates | on Logged I | Data and Ase | suming Logr | normal Distri | bution | | |
| 237 | | | | KM N | Vean (logged) | 0.615 | | | | K | M Geo Mean | 1.849 |
| 238 | | | | KN | VI SD (logged) | 0.458 | | | 95% (| Critical H Val | ue (KM-Log) | 2.09 |
| 239 | | | KM Standa | rd Error of N | Mean (logged) | 0.141 | | | | 95% H-UC | CL (KM -Log) | 2.739 |
| 240 | | | | KN | M SD (logged) | 0.458 | | | 95% (| Critical H Val | ue (KM-Log) | 2.09 |
| 241 | | | KM Standa | rd Error of N | Mean (logged) | 0.141 | | | | | | |
| 242 | | | | | | I | 1 | | | | I | |
| 243 | | <u> </u> | | | | DL/2 S | tatistics | | | | · | |
| 244 | | | DL/2 | Normal | | | | | DL/2 Log-1 | ransformed | | |
| 245 | | | | Mean in (| Original Scale | 1.895 | | | | Mean | in Log Scale | 0.389 |
| 246 | | | | SD in (| Original Scale | 1.554 | | | | SD | in Log Scale | 0.721 |
| 247 | | | 95% t l | JCL (Assun | nes normality) | 2.7 | | | | 95% | H-Stat UCL | 3.258 |
| 248 | | | DL/2 | is not a rec | ommended m | ethod, provi | ded for comp | parisons and | l historical re | asons | | |
| 249 | | | | | | | | | | | | |
| 250 | | | | | Nonparame | etric Distribu | tion Free UC | L Statistics | | | | |
| 250 | | | | Detected | Data appear | Lognormal [| Distributed at | t 5% Signific | ance Level | | | |
| 257 | | | | | | | | | | | | |
| 252 | | | | | | Suggested | UCL to Use | | | | | |
| 200 | | | | ŀ | KM Student's t | 2.626 | _ | | | | KM H-UCL | 2.739 |
| 204 | | | | | | | | | | | | |
| 200 | | Note: Suaae | stions reaard | ling the sele | ection of a 95% | UCL are pr | ovided to hel | p the user to | select the m | nost appropri | ate 95% UCL | |
| 250 | | | | Recommend | dations are bas | sed upon dat | a size. data | distribution | and skewnes | S. | | |
| 257 | | These reco | mmendation | s are based | upon the resu | Its of the sim | ulation studi | es summariz | zed in Singh | Maichle an | d Lee (2006) | |
| 258 | н | Owever simi | lations result | ts will not or | over all Real M | /orld data se | ts: for addition | nal insight th | ne user may | want to cons | ult a statistici | an |
| 259 | | | | | | | | | | | | |
| 260 | | | | | | | | | | | | |

| | A | В | | С | | D | E | F | G | Н | I | J | K | L |
|-----|----------------------|------------|-------|------------|---------|--------------|---------------|--------------|----------------|----------------|---------------|-----------------|---------------|--------|
| 261 | CYCLO | IEXANE | | | | | | | | | | | | |
| 262 | | | | | | | | | | | | | | |
| 263 | | | | | | | | General | Statistics | | | | | |
| 264 | | | | Total | Num | ber of C | bservations | 12 | | | Numbe | r of Distinct (| Observations | 10 |
| 265 | | | | | | Numbe | er of Detects | 2 | | | | Number of | Non-Detects | 10 |
| 266 | | | | Ν | umbe | r of Dist | tinct Detects | 2 | | | Numbe | er of Distinct | Non-Detects | 8 |
| 267 | | | | | | Mini | mum Detect | 4.47 | | | | Minimum | Non-Detect | 2.27 |
| 268 | | | | | | Maxi | mum Detect | 6.54 | | | | Maximum | Non-Detect | 2.55 |
| 269 | | | | | | Varia | nce Detects | 2.142 | | | | Percent | Non-Detects | 83.33% |
| 270 | | | | | | Μ | ean Detects | 5.505 | | | | | SD Detects | 1.464 |
| 271 | | | | | | Med | dian Detects | 5.505 | | | | | CV Detects | 0.266 |
| 272 | | | | | | Skewn | ess Detects | N/A | | | | Kur | osis Detects | N/A |
| 273 | | | | | Mear | n of Log | ged Detects | 1.688 | | | | SD of Log | ged Detects | 0.269 |
| 274 | | | | | | | | | | | | | | |
| 275 | | | | | | | Warning: D | ata set has | only 2 Dete | ected Values. | | | | |
| 276 | | | | Т | his is | not enc | ough to com | pute meanir | ngful or relia | ble statistics | and estimate | es. | | |
| 277 | | | | | | | | | | | | | | |
| 278 | | | | | | | | | | | | | | |
| 279 | | | | | | | Norn | nal GOF Te | st on Detec | | | | | |
| 280 | | | | | | | Not En | ough Data t | o Perform (| iOF lest | | | | |
| 281 | | | | Kaalaa | | | | | | | N | | | |
| 282 | | | | Kapian- | Meler | r (KM) S | | | | es and other | Nonparamet | | | 0.500 |
| 283 | | | | | | | | 2.809 | | | NI. | | | 0.522 |
| 284 | | | | | | 050/ | | 1.278 | | | | 95% KN | | N/A |
| 285 | | | | | | 95% | | 3.746 | | | 95% KIVI (F | ercentile Bo | | N/A |
| 286 | | | | | 000/ 1/ | 95% | | 3.007 | | | | | | N/A |
| 287 | | | | | 90% r | | | 4.374 | | | | | | 5.065 |
| 288 | | | | 97 | .5% r | Vivi Chei | bysnev UCL | 0.000 | | | | | bysnev UCL | 7.998 |
| 289 | | | | | | | | Tooto on D | atastad Ob | onvotione O | nh. | | | |
| 290 | | | | | | G | Not En | ough Data t | o Porform (| | iny | | | |
| 291 | | | | | | | | | | | | | | |
| 292 | | | | | | | Gamma | Statistics o | n Detected | Data Only | | | | |
| 293 | | | | | | | k hat (MLE) | 27.95 | | | k | star (bias co | rrected MLE) | N/A |
| 294 | | | | | | The | ta hat (MLE) | 0.197 | | | Theta | star (bias co | rected MLE) | N/A |
| 295 | | | | | | n | u hat (MLE) | 111.8 | | | | nu star (bia | as corrected) | N/A |
| 290 | | | | | | Ме | an (detects) | 5.505 | | | | , | | |
| 297 | | | | | | | | | | | | | | |
| 290 | | | | | | Es | timates of G | amma Para | meters usi | ng KM Estima | ates | | | |
| 300 | | | | | | | Mean (KM) | 2.809 | | - | | | SD (KM) | 1.278 |
| 301 | | | | | | Va | ariance (KM) | 1.632 | | | | SE c | of Mean (KM) | 0.522 |
| 302 | k ha | | | | | | | 4.835 | | | | | k star (KM) | 3.682 |
| 303 | nu ha | | | | | | nu hat (KM) | 116 | | | | | nu star (KM) | 88.37 |
| 304 | theta ha | | | | | | eta hat (KM) | 0.581 | | | | the | eta star (KM) | 0.763 |
| 305 | 80% gamma percentile | | | | | centile (KM) | 3.911 | | | 909 | % gamma pe | rcentile (KM) | 4.772 | |
| 306 | 95% gamma percentile | | | | | | centile (KM) | 5.568 | | | 999 | % gamma pe | rcentile (KM) | 7.274 |
| 307 | | | | | | | | I | 1 | | | | | |
| 308 | | | | | | | Gamn | na Kaplan-M | leier (KM) S | Statistics | | | | |
| 309 | | | | | | | | | | | Adjusted | Level of Sig | nificance (β) | 0.029 |
| 310 | | A | Appro | oximate Ch | ii Squa | are Valu | Je (88.37, α) | 67.7 | | | Adjusted Ch | i Square Val | ue (88.37, β) | 64.94 |
| 311 | 9 | 5% Gamma / | Appr | oximate KN | N-UCL | L (use w | vhen n>=50) | 3.667 | | 95% Gamm | na Adjusted k | (M-UCL (use | when n<50) | 3.823 |
| 312 | | | | | | | | | | | | | | |

| | А | В | С | D | E | F | G | Н | | I | J | K | L |
|-----|---|--------------|---------------|----------------|----------------|----------------|------------------|------------|-----------|------------|---------------------|-----------------|--------|
| 313 | | | | Lo | ognormal GO | Test on D | etected Obs | ervations | s Only | | | | |
| 314 | | | | | Not En | ough Data to | o Perform G | OF Test | | | | | |
| 315 | | | | | | | | | | | | | |
| 316 | | | | LO | gnormal RO | S Statistics | Using Imput | ed Non-D | etects | | | | 0.005 |
| 317 | | | | Mean in O | riginal Scale | 1.803 | | | | | Mean | In Log Scale | 0.305 |
| 318 | | 050/ +1 | | SD in O | riginal Scale | 1.804 | | | | 050/ | SD Demoentile De | In Log Scale | 0.696 |
| 319 | | 95% [[| | | | 2.739 | | | | 95% | | | 2.098 |
| 320 | | | : | | | 2.900 | | | | | 90% DUU | | 0.075 |
| 321 | | | | 95 % H-UCI | | 2.805 | | | | | | | |
| 322 | | | Statis | tice using K | M estimates | on Logged I | Data and As | sumina L | oanorm | nal Dietri | bution | | |
| 323 | | | Otatio | | ean (logged) | 0 964 | | sunning L | ognorn | | KI | M Geo Mean | 2 623 |
| 324 | | | | KM | SD (logged) | 0.333 | | | | 95% | Critical H Val | | 1 958 |
| 325 | | | KM Standar | d Error of M | ean (logged) | 0.136 | | | | 0070 | 95% H-UC | | 3.374 |
| 320 | | | | KM | SD (logged) | 0.333 | | | | 95% | Critical H Val | ue (KM-Log) | 1.958 |
| 327 | | | KM Standar | d Error of M | ean (logged) | 0.136 | | | | | | (3) | |
| 320 | | | | | (00) | | | | | | | | |
| 329 | | | | | | DL/2 S | tatistics | | | | | | |
| 330 | | | DL/2 | Normal | | | | | DL | /2 Log-1 | Fransformed | | |
| 332 | | | | Mean in O | riginal Scale | 1.909 | | | | | Mean | in Log Scale | 0.426 |
| 333 | | | | SD in O | riginal Scale | 1.737 | | | | | SD | in Log Scale | 0.596 |
| 334 | | | 95% t L | JCL (Assume | es normality) | 2.81 | | | | | 95% | H-Stat UCL | 2.747 |
| 335 | | | DL/2 i | s not a reco | mmended m | ethod, provi | ded for com | parisons a | and his | torical re | easons | | |
| 336 | | | | | | | | | | | | | |
| 337 | | | | | Nonparame | etric Distribu | tion Free UC | CL Statist | ics | | | | |
| 338 | | | | Data do n | ot follow a Di | iscernible D | istribution at | 5% Sign | ificance | e Level | | | |
| 339 | | | | | | | | | | | | | |
| 340 | | | | | | Suggested | UCL to Use | | | | | | - |
| 341 | | | | 95% | 5 KM (t) UCL | 3.746 | | | | | | KM H-UCL | 3.374 |
| 342 | | | | 95% KN | I (BCA) UCL | N/A | | | | | | | |
| 343 | | | | Warn | ing: One or r | nore Recorr | mended UC | L(s) not a | availab | le! | | | |
| 344 | | | | | | | | | | | | | |
| 345 | | Note: Sugge | stions regard | ing the selec | tion of a 95% | OCL are pr | ovided to he | p the use | er to sel | ect the n | nost appropri | ate 95% UCL | |
| 346 | | | H | ecommenda | ations are bas | sed upon dat | a size, data | | on, and | Skewnes | SS. | | |
| 347 | | | Inmendations | s are based u | ipon the resu | | te: for addition | es summ | arized i | n Singn, | want to cons | ult a statistic | on |
| 348 | | Jwever, sinu | | S WIII HOL COV | | | | nai msiyi | | sei may | | | dII. |
| 349 | | | | | | | | | | | | | |
| 350 | | | | | | | | | | | | | |
| 351 | | | | | | General | Statistics | | | | | | |
| 352 | | | Total | Number of C | Observations | 12 | | | | Numbe | r of Distinct C | Observations | 10 |
| 353 | | | | Numbe | er of Detects | 8 | | | | | Number of | Non-Detects | 4 |
| 355 | | | Nu | umber of Dis | tinct Detects | 8 | | | | Numbe | er of Distinct | Non-Detects | 3 |
| 356 | | | | Mini | imum Detect | 1.3 | | | | | Minimum | Non-Detect | 1.26 |
| 357 | | | | Maxi | imum Detect | 4.78 | | | | | Maximum | Non-Detect | 1.35 |
| 358 | | | | Varia | ance Detects | 1.09 | | | | | Percent | Non-Detects | 33.33% |
| 359 | | | | Μ | lean Detects | 2.464 | | | | | | SD Detects | 1.044 |
| 360 | | | | Me | dian Detects | 2.375 | | | | | | CV Detects | 0.424 |
| 361 | | | | Skewr | ness Detects | 1.722 | | | | | Kurt | osis Detects | 4.06 |
| 362 | | | | Mean of Log | ged Detects | 0.835 | | | | | SD of Log | ged Detects | 0.381 |
| 363 | | | | | | | | | | | | | |
| 364 | | | | | Norm | al GOF Tes | t on Detects | Only | | | | | |
| | | | | | | | | | | | | | |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|-----|---|-----------|---------------|----------------|-----------------|---------------|---------------|---------------|------------------|----------------|-----------------|----------|
| 365 | | | S | hapiro Wilk | Test Statistic | 0.834 | | | Shapiro Wi | lk GOF Test | 1 | |
| 366 | | | 5% S | hapiro Wilk (| Critical Value | 0.818 | D | etected Data | appear Norn | nal at 5% Sig | gnificance Lev | el |
| 367 | | | | Lilliefors | Test Statistic | 0.289 | | | Lilliefors | GOF Test | | |
| 368 | | | 5 | % Lilliefors C | Critical Value | 0.283 | | Detected Dat | ta Not Norma | al at 5% Sign | ificance Level | |
| 369 | | | | Detected | Data appear | Approximat | e Normal at | 5% Significa | ance Level | | | |
| 370 | | | | | | | | | | | | |
| 371 | | | Kaplan- | Meier (KM) \$ | Statistics usi | ng Normal C | ritical Value | s and other | Nonparamet | ric UCLs | | |
| 372 | | | | | KM Mean | 2.063 | | | KN | I Standard E | rror of Mean | 0.302 |
| 272 | | | | | KM SD | 0.978 | | | | 95% KN | / (BCA) UCL | 2.593 |
| 274 | | | | 95% | 6 KM (t) UCL | 2.605 | | | 95% KM (P | ercentile Bo | otstrap) UCL | 2.515 |
| 374 | | | | 95% | KM (z) UCL | 2.56 | | | | 95% KM Boo | otstrap t UCL | 2.872 |
| 375 | | | | 90% KM Che | byshev UCI | 2,969 | | | ç | 95% KM Che | byshev UCI | 3.379 |
| 376 | | | 97 | 5% KM Che | hyshev UCI | 3 948 | | | | 9% KM Che | hyshev UCI | 5.066 |
| 3// | | | | | | 0.040 | | | | | byonev doe | 0.000 |
| 378 | | | | | amma GOF | Tests on De | atected Obs | envetions On | lv. | | | |
| 379 | | | | ر ۸ ۵ | Tost Statistic | 0.385 | | | nderson-Dai | | oct | |
| 380 | | | | | Pritical Value | 0.303 | Dotooto | | | | 501 Significant | |
| 381 | | | | 5% A-D (| | 0.717 | Delecie | | | | | |
| 382 | | | | K-5 | | 0.232 | Detecto | r | Corridgorov- | Smirnov GC | / F | |
| 383 | | | | 5% K-S (| | 0.295 | Detecte | d data appea | ar Gamma Di | stributed at a | 5% Significant | ce Level |
| 384 | | | | Detected | i data appear | Gamma Di | stributed at | 5% Significa | nce Level | | | |
| 385 | | | | | | | | | | | | |
| 386 | | | | | Gamma | Statistics or | n Detected D | Data Only | | | T | |
| 387 | | | | | k hat (MLE) | 7.631 | | | k s | star (bias cor | rrected MLE) | 4.853 |
| 388 | | | | The | ta hat (MLE) | 0.323 | | | Theta s | star (bias cor | rrected MLE) | 0.508 |
| 389 | | | | 1 | nu hat (MLE) | 122.1 | | | | nu star (bia | as corrected) | 77.65 |
| 390 | | | | Me | ean (detects) | 2.464 | | | | | | |
| 391 | | | | | | | | | | | | |
| 392 | | | | C | Gamma ROS | Statistics u | sing Imputed | d Non-Detec | ts | | | |
| 393 | | | GROS may | not be used | when data s | et has > 50% | 6 NDs with m | nany tied obs | ervations at | multiple DLs | i | |
| 394 | | GROS may | y not be used | l when kstar | of detects is s | small such a | s <1.0, espe | cially when t | he sample si | ze is small (e | ə.g., <15-20) | |
| 395 | | | Fo | or such situat | ions, GROS ı | method may | yield incorre | ect values of | UCLs and B1 | -Vs | | |
| 396 | | | | ٦ | This is especi | ally true whe | en the sample | e size is sma | II. | | | |
| 397 | | For gar | mma distribu | ted detected | data, BTVs a | nd UCLs ma | y be compu | ted using gar | nma distribut | tion on KM e | stimates | |
| 398 | | | | | Minimum | 0.116 | | | | | Mean | 1.784 |
| 399 | | | | | Maximum | 4.78 | | | | | Median | 1.835 |
| 400 | | | | | SD | 1.31 | | | | | CV | 0.734 |
| 401 | | | | | k hat (MLE) | 1.505 | | | ks | star (bias cor | rrected MLE) | 1.184 |
| 402 | | | | The | ta hat (MLE) | 1.186 | | | Theta s | star (bias cor | rrected MLE) | 1.507 |
| 403 | | | | | nu hat (MLE) | 36.11 | | | | nu star (bia | as corrected) | 28.42 |
| 404 | | | Adjusted | Level of Sig | nificance (β) | 0.029 | | | | | | |
| 404 | | Apr | oroximate Ch | i Square Val | ue (28.42, α) | 17.25 | | | Adjusted Ch | i Square Val | ue (28.42, β) | 15.94 |
| 405 | | 95% Gamma | a Approximat | e UCL (use v | when n>=50) | 2.938 | | 95% Ga | - amma Adjust | ed UCL (use | when n<50) | 3.181 |
| 400 | | | | (| | | | | | - (| / | |
| 407 | | | | F | stimates of G | amma Para | meters using | u KM Estima | tes | | | |
| 408 | | | | | Mean (KM) | 2 063 | | _ 3u | | | SD (KM) | 0.978 |
| 409 | | | | 1/4 | ariance (KM) | 0.956 | | | | SE o | of Mean (KM) | 0.302 |
| 410 | | | | V | | 1 152 | | | | 02.0 | k star (KM) | 3 20/ |
| 411 | | | | | | 106.8 | | | | | | Q1 /6 |
| 412 | | | | | | 0.464 | | | | . حاله | | 01.40 |
| 413 | | | 000 | | | 0.404 | | | 000 | | | |
| 414 | | | 80% | % gamma pei | ICENTILE (KM) | 2.9 | | | 90% | o gamma pe | rcentile (KM) | 3.565 |
| 415 | | | 959 | % gamma pe | rcentile (KM) | 4.182 | | | 99% | o gamma pe | rcentile (KM) | 5.51 |
| 416 | | | | | | | | | | | | |

| | А | В | С | D | E | F | G | H | I | J | K | L |
|-----|--------------------------------|--------------|------------------|----------------|---------------|----------------|-----------------|----------------|-----------------|-----------------|-------------------|-------|
| 417 | | ۸ | rovimote Ot- | Square Val | | a Kapian-Me | eier (KM) St | alistics | Adjusted OF | | 0 (01 46 0) | 50.04 |
| 418 | 0.50 | App | proximate Chi | Square Valu | με (81.46, α) | 61.66 | | 0504 0 | Adjusted Ch | Square Valu | ue (81.46, β) | 59.04 |
| 419 | 95% | Gamma Ap | proximate KN | 1-UCL (use w | /hen n>=50) | 2.726 | | 95% Gamm | a Adjusted K | M-UCL (use | when n<50) | 2.847 |
| 420 | | | | | | | | | | | | |
| 421 | | | | | gnormal GC | PF Test on D | etected Obs | servations O | nly | | | |
| 422 | | | S | hapiro Wilk I | est Statistic | 0.947 | | | Shapiro Wi | | | |
| 423 | | | 5% Sr | hapiro Wilk C | ritical Value | 0.818 | Det | ected Data a | ippear Logno | ormal at 5% S | Significance Le | evel |
| 424 | | | | Lilliefors I | est Statistic | 0.217 | | | Lilliefors | GOF Test | | |
| 425 | | | 5 | % Lilliefors C | ritical Value | 0.283 | Det | ected Data a | ippear Logno | ormal at 5% S | Significance Le | evel |
| 426 | | | | Dete | cted Data ap | opear Logno | rmal at 5% S | Significance | Level | | | |
| 427 | | | | | 150 | | | | | | | |
| 428 | | | | | gnormal RO | S Statistics | Using Imput | ed Non-Dete | ects | | | 0.501 |
| 429 | | | | Mean in Oi | riginal Scale | 1.953 | | | | Mean | in Log Scale | 0.531 |
| 430 | | | | SD in Oi | riginal Scale | 1.125 | | | | SD | in Log Scale | 0.546 |
| 431 | | 95% t l | JCL (assume | s normality o | f ROS data) | 2.537 | | | 95% F | Percentile Bo | otstrap UCL | 2.505 |
| 432 | | | Q | 95% BCA Bo | otstrap UCL | 2.607 | | | | 95% Boo | otstrap t UCL | 2.729 |
| 433 | | | | 95% H-UCI | _ (Log ROS) | 2.835 | | | | | | |
| 434 | | | | | | | | | | | | |
| 435 | | | Statis | tics using KI | M estimates | on Logged [| Data and As | suming Logr | normal Distri | bution | | |
| 436 | | | | KM Me | ean (logged) | 0.634 | | | | KN | M Geo Mean | 1.885 |
| 437 | | | | KM | SD (logged) | 0.406 | | | 95% (| Critical H Valu | ue (KM-Log) | 2.033 |
| 438 | | | KM Standar | d Error of Me | ean (logged) | 0.125 | | | | 95% H-UC | CL (KM -Log) | 2.626 |
| 439 | | | | KM | SD (logged) | 0.406 | | | 95% (| Critical H Valu | ue (KM-Log) | 2.033 |
| 440 | | | KM Standar | d Error of Me | ean (logged) | 0.125 | | | | | | |
| 441 | | | | | | | | | | | | |
| 442 | | | | | | DL/2 S | tatistics | | | | | |
| 443 | | | DL/2 | Normal | | | | | DL/2 Log-T | ransformed | | |
| 444 | | | | Mean in Oi | riginal Scale | 1.858 | | | | Mean | in Log Scale | 0.411 |
| 445 | | | | SD in Oi | riginal Scale | 1.222 | | | | SD | in Log Scale | 0.696 |
| 446 | | | 95% t L | JCL (Assume | es normality) | 2.492 | | | | 95% | H-Stat UCL | 3.185 |
| 447 | | | DL/2 i | s not a recor | mmended m | ethod, provid | led for com | parisons and | i historical re | easons | | |
| 448 | | | | | | | | | | | | |
| 449 | | | | | Nonparame | etric Distribu | tion Free UC | CL Statistics | | | | |
| 450 | | | Det | ected Data a | appear Appro | oximate Nori | mal Distribu | ted at 5% Si | gnificance Lo | evel | | |
| 451 | | | | | | <u> </u> | | | | | | |
| 452 | | | | 050/ | | Suggested | UCL to Use | 1 | | | | |
| 453 | | | | 95% | KM (t) UCL | 2.605 | | | | | | |
| 454 | | | 14/1 | | | / | N 11 1 | | C .1 | 0051 | | |
| 455 | | 14/1 | vvnen a d | ata set follow | vs an approx | imate (e.g., r | normal) distr | bution passi | ng one of the | | | |
| 456 | | when app | licable, it is s | uggested to | use a UCL b | ased upon a | distribution | (e.g., gamma | a) passing bo | th GOF tests | IN ProUCL | |
| 457 | | | | | | | | | | | | |
| 458 | | Note: Sugge | stions regard | ing the selec | tion of a 95% | 5 UCL are pro | ovided to he | Ip the user to | select the m | lost appropria | ate 95% UCL. | |
| 459 | | T I | H | lecommenda | tions are bas | sed upon dat | a size, data | distribution, | and skewnes | S. | (0000) | |
| 460 | | I nese reco | mmendations | are based u | pon the resu | its of the sim | iulation studi | ies summariz | zed in Singh, | waichle, and | 1 Lee (2006). | |
| 461 | H | owever, simu | liations result | s will not cov | er all Real W | orid data se | ts; tor additio | onal insight t | ne user may | want to consi | uit a statisticia | n. |
| 462 | | | | | | | | | | | | |
| 463 | | | | | | | | | | | | |
| 464 | 64 M,P-XYLENE (SUM OF ISOMERS) | | | | | | | | | | | |
| 465 | | | | | | | 0 | | | | | |
| 466 | | | | NI 1 7- | | General | Statistics | | | (| N | 10 |
| 467 | | | Fotal | Number of C | observations | 12 | | | Number | r of Distinct C | observations | 12 |
| 468 | | | | | | | | | Number | of Missing C | Observations | 0 |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|-----|---|------------|------------|----------------|----------------|----------------|----------------|--------------|----------------|----------------|---------------|----------|
| 469 | | | | | Minimum | 2.87 | | | | | Mean | 12.56 |
| 470 | | | | | Maximum | 39.95 | | | | | Median | 12.16 |
| 471 | | | | | SD | 9.79 | | | | Std. E | rror of Mean | 2.826 |
| 472 | | | | Coefficient | of Variation | 0.78 | | | | | Skewness | 2.136 |
| 473 | | | | | | Į | I | | | | | |
| 474 | | | | | | Normal (| GOF Test | | | | | |
| 475 | | | S | hapiro Wilk T | est Statistic | 0.766 | | | Shapiro Wi | lk GOF Test | t . | |
| 476 | | | 5% S | hapiro Wilk C | critical Value | 0.859 | | Data No | ot Normal at § | 5% Significar | nce Level | |
| 477 | | | | Lilliefors 7 | est Statistic | 0.276 | | | Lilliefors | GOF Test | | |
| 478 | | | 5 | % Lilliefors C | critical Value | 0.243 | | Data No | ot Normal at 5 | 5% Significar | nce Level | |
| 479 | | | | | Data Not | Normal at 5 | 5% Significar | nce Level | | | | |
| 480 | | | | | | | | | | | | |
| 481 | | | | | As | suming Nori | mal Distribut | ion | | | | |
| 482 | | | 95% No | ormal UCL | | | | 95% | UCLs (Adju | sted for Ske | wness) | |
| 483 | | | | 95% Stu | dent's-t UCL | 17.63 | | | 95% Adjuste | d-CLT UCL | (Chen-1995) | 19.07 |
| 484 | | | | | | | | | 95% Modifie | ed-t UCL (Jo | hnson-1978) | 17.92 |
| 485 | | | | | | | | | | | | |
| 486 | | | | | | Gamma | GOF Test | | | | | |
| 487 | | | | A-D 1 | est Statistic | 0.43 | | Ander | rson-Darling | Gamma GC | F Test | |
| 488 | | | | 5% A-D C | ritical Value | 0.741 | Detecte | d data appea | ar Gamma Di | stributed at { | 5% Significan | ce Level |
| 489 | | | | K-S 1 | est Statistic | 0.189 | | Kolmog | orov-Smirno | v Gamma G | OF Test | |
| 490 | | | | 5% K-S C | ritical Value | 0.248 | Detecte | d data appea | ar Gamma Di | stributed at § | 5% Significan | ce Level |
| 491 | | | | Detected | data appea | r Gamma Di | stributed at { | 5% Significa | nce Level | | | |
| 492 | | | | | | | | | | | | |
| 103 | | | | | | Gamma | Statistics | | | | | |
| 494 | | | | | k hat (MLE) | 2.283 | | | ks | star (bias cor | rrected MLE) | 1.767 |
| 495 | | | | The | ta hat (MLE) | 5.501 | | | Thetas | star (bias coi | rrected MLE) | 7.104 |
| 496 | | | | r | u hat (MLE) | 54.78 | | | | nu star (bia | as corrected) | 42.42 |
| 497 | | | M | LE Mean (bia | s corrected) | 12.56 | | | | MLE Sd (bia | as corrected) | 9.444 |
| 498 | | | | | | | | | Approximate | Chi Square | Value (0.05) | 28.49 |
| 499 | | | Adjus | sted Level of | Significance | 0.029 | | | Ac | ljusted Chi S | Square Value | 26.76 |
| 500 | | | | | | | | | | | | |
| 501 | | | | | As | suming Garr | nma Distribu | tion | | | | |
| 502 | | 95% Approx | imate Gamm | a UCL (use v | vhen n>=50) | 18.7 | | 95% Ad | ljusted Gamr | na UCL (use | when n<50) | 19.91 |
| 503 | | | | | | | | | | | | |
| 504 | | | | | | Lognorma | I GOF Test | | | | | |
| 505 | | | S | hapiro Wilk T | est Statistic | 0.949 | | Sha | oiro Wilk Log | normal GOF | - Test | |
| 506 | | | 5% S | hapiro Wilk C | critical Value | 0.859 | | Data appea | r Lognormal | at 5% Signif | icance Level | |
| 507 | | | | Lilliefors 7 | est Statistic | 0.175 | | Lil | liefors Logno | ormal GOF 1 | lest | |
| 508 | | | 5 | % Lilliefors C | critical Value | 0.243 | | Data appea | r Lognormal | at 5% Signif | icance Level | |
| 509 | | | | | Data appear | · Lognormal | at 5% Signif | icance Leve | 1 | | | |
| 510 | | | | | | | | | | | | |
| 511 | | | | | | Lognorma | I Statistics | | | | | |
| 512 | | | | Minimum of L | ogged Data | 1.054 | | | | Mean of | logged Data | 2.295 |
| 513 | | | Ν | Maximum of L | ogged Data | 3.688 | | | | SD of | logged Data | 0.719 |
| 514 | | | | | | 1 | 1 | | | | | |
| 515 | | | | | Ass | uming Logno | ormal Distrib | ution | | | | |
| 516 | | | | | 95% H-UCL | 21.83 | | | 90% | Chebyshev (| (MVUE) UCL | 20.67 |
| 517 | | | 95% | Chebyshev (| MVUE) UCL | 24.36 | | | 97.5% | Chebyshev (| (MVUE) UCL | 29.48 |
| 518 | | | 99% | Chebyshev (| MVUE) UCL | 39.54 | | | | | | |
| 519 | | | | | | 1 | 1 | | | | | |
| 520 | | | | | Nonparame | etric Distribu | tion Free UC | L Statistics | | | | |
| 520 | | | | | | | | | | | | |

| | А | В | С | D | E | F | G | Н | I | J | K | | L |
|-----|---------|-------------|----------------|----------------|----------------|----------------|-------------------|---------------|---------------|----------------|---------------|----------|---------|
| 521 | | | | Data appea | r to follow a | Discernible | Distribution at | 5% Signif | icance Level | | | | |
| 522 | | | | | | | | | | | | | |
| 523 | | | | | Nonpa | rametric Dis | tribution Free | UCLs | | | | | |
| 523 | | | | 95 | % CLT UCL | 17.2 | | | | 95% J | ackknife U | CL | 17.63 |
| 524 | | | 95% | Standard Bo | otstrap UCL | 16.96 | | | | 95% Bo | otstrap-t U | CL | 20.65 |
| 525 | | | 00.0 | 5% Hall's Bo | otstran UCI | 38.51 | | | 95% F | Percentile B | ootstran U | | 17.46 |
| 526 | | | | 95% BCA Bo | otetran LICI | 10.07 | | | 00701 | | | | 17.40 |
| 527 | | | 90% Ch | | an Sd) UCI | 21.03 | | | 95% Ch | obyshov/M | oon Sd) II | | 2/ 87 |
| 528 | | | 97.5% Ch | | an, Sd) UCL | 21.00 | | | 00% Ch | | $\frac{1}{2}$ | | 40.68 |
| 529 | | | 37.370 CI | | an, 50) 00L | 50.2 | | | 3370 CH | ebysnev(ivi | | | 40.00 |
| 530 | | | | | | Suggested | | | | | | | |
| 531 | | | 05 | 0/ Adjusted C | Commo LICI | | | | | | | <u> </u> | |
| 532 | | | 90 | % Aujusteu C | | 19.91 | | | | | | | |
| 533 | | | | | | | | | | | | | |
| 534 | | Note: Sugge | stions regard | ing the selec | tion of a 95% | o UCL are pr | ovided to help | the user to | select the m | iost appropi | riate 95% (| JCL. | |
| 535 | | | | Recommenda | tions are bas | sed upon dat | a size, data dis | stribution, a | and skewnes | S. | | | |
| 536 | | These reco | mmendations | s are based u | pon the resu | Its of the sim | ulation studies | s summariz | zed in Singh, | Maichle, ar | nd Lee (200 |)6). | |
| 537 | Ho | wever, simu | lations result | s will not cov | er all Real W | /orld data se | ts; for additiona | al insight th | ne user may | want to con | sult a statis | sticia | n. |
| 538 | | | | | | | | | | | | | |
| 539 | NAPHTHA | LENE | | | | | | | | | | | |
| 540 | | | | | | | | | | | | | |
| 541 | | | | | | General | Statistics | | | | | | |
| 542 | | | Total | Number of C | bservations) | 12 | | | Number | of Distinct | Observatio | ns | 8 |
| 543 | | | | Numbe | er of Detects | 6 | | | | Number of | f Non-Dete | cts | 6 |
| 544 | | | Ν | umber of Dist | tinct Detects | 5 | | | Numbe | er of Distinct | t Non-Dete | cts | 3 |
| 545 | | | | Mini | mum Detect | 2.04 | | | | Minimu | m Non-Det | ect | 1.42 |
| 546 | | | | Maxi | mum Detect | 4.3 | | | | Maximu | m Non-Det | ect | 1.52 |
| 547 | | | | Varia | nce Detects | 0.84 | | | | Percent | t Non-Dete | cts | 50% |
| 548 | | | | М | ean Detects | 2.873 | | | | | SD Dete | cts | 0.916 |
| 549 | | | | Мес | dian Detects | 2.62 | | | | | CV Dete | cts | 0.319 |
| 550 | | | | Skewn | ess Detects | 0.804 | | | | Ku | rtosis Dete | cts | -0.825 |
| 551 | | | | Mean of Log | ged Detects | 1.015 | | | | SD of Lo | gged Dete | cts | 0.307 |
| 552 | | | | | | | | | | | | | |
| 553 | | | | | Norm | al GOF Tes | t on Detects C | Only | | | | | |
| 554 | | | S | hapiro Wilk T | est Statistic | 0.89 | | | Shapiro Wi | lk GOF Tes | st | | |
| 555 | | | 5% S | hapiro Wilk C | ritical Value | 0.788 | Dete | ected Data | appear Norn | nal at 5% S | ignificance | Lev | el |
| 556 | | | | Lilliefors T | est Statistic | 0.193 | | | Lilliefors | GOF Test | | | |
| 557 | | | 5 | % Lilliefors C | ritical Value | 0.325 | Dete | ected Data | appear Norn | nal at 5% S | ignificance | Lev | el |
| 558 | | | | Det | tected Data | appear Norn | nal at 5% Sign | ificance Lo | evel | | - | | |
| 550 | | | | | | - | | | | | | | |
| 559 | | | Kaplan- | Meier (KM) S | Statistics usi | ng Normal C | ritical Values | and other | Nonparamet | ric UCLs | | | |
| 500 | 1 | | | 、 <i>i</i> - | KM Mean | 2.147 | | | | I Standard | Error of Me | an | 0.296 |
| 501 | | | | | KM SD | 0.937 | | | | 95% K | M (BCA) II | CL | 2.638 |
| 502 | | | | 95% | | 2 679 | | | 95% KM (P | ercentile Br | otstran) II | CI | 2 614 |
| 563 | | | | 95% | KM (7) UCI | 2 634 | | | | 95% KM Bo | otstran t II | | 2 707 |
| 564 | | | (| | hvshev UCI | 3 036 | | | C | 5% KM Ch | ehvshev II | | 3 4 3 8 |
| 565 | | | 70 | 5% KM Cha | hyshev UCL | 3.000 | | | | 9% KM Ch | ehvehev II | | 5 005 |
| 566 | | | 97 | | Gyanev UCL | 5.537 | | | | | CDysnev U | | 5.095 |
| 567 | | | | ~ | amma COF | Toete on Dr | stanted Obser | vations Or | alv | | | | |
| 568 | | | | G | | | | | | | oct | | |
| 569 | | | | | | 0.352 | Data -t- ' | A | | | ESL Cimil | | |
| 570 | | | | 5% A-D C | Titical Value | 0.698 | Detected | uata appea | ar Gamma Di | stributed at | 5% Signifi | canc | e Level |
| 571 | | | | K-S T | est Statistic | 0.195 | | | Kolmogorov- | Smirnov G | | | |
| 572 | | | | 5% K-S C | ritical Value | 0.332 | Detected | data appea | ar Gamma Di | stributed at | 5% Signifi | canc | e Level |

| | А | В | С | D | E | F | G | Н | I | J | K | L |
|-----|-----|-----------|---------------|-------------------|-----------------------|---------------|----------------|---------------|----------------|-----------------|---------------|-------|
| 573 | | | | Detected | l data appea | r Gamma Di | stributed at { | 5% Significa | nce Level | | | |
| 574 | | | | | | | | | | | | |
| 575 | | | | | Gamma | Statistics or | Detected D | ata Only | | | | |
| 576 | | | | | k hat (MLE) | 12.56 | | | k | star (bias corr | rected MLE) | 6.393 |
| 577 | | | | The | ta hat (MLE) | 0.229 | | | Theta | star (bias corr | ected MLE) | 0.449 |
| 578 | | | | 1 | nu hat (MLE) | 150.8 | | | | nu star (bia | s corrected) | 76.72 |
| 579 | | | | Me | ean (detects) | 2.873 | | | | | | |
| 580 | | | | | | | | | | | | |
| 581 | | | | (| Gamma ROS | Statistics u | sing Imputed | d Non-Detec | ts | | | |
| 582 | | | GROS may | not be used | when data s | et has > 50% | 6 NDs with m | nany tied obs | ervations at | multiple DLs | | |
| 502 | | GROS may | , not be used | l when kstar | of detects is | small such a | s <1.0, espe | cially when t | he sample si | ze is small (e | .g., <15-20) | |
| 505 | | | Fo | or such situat | ions, GROS I | method may | vield incorre | ct values of | UCLs and B | TVs | | |
| 504 | | | | 7 | his is especi | ally true whe | n the sample | e size is sma | all. | | | |
| 585 | | For dar | nma distribut | ted detected | data. BTVs a | nd UCI s ma | av be comput | ted using ga | mma distribu | tion on KM es | timates | |
| 586 | | | | | Minimum | 0.01 | | iou uoing gu | | | Mean | 1 697 |
| 587 | | | | | Maximum | 43 | | | | | Median | 1.586 |
| 588 | | | | | | 1.0 | | | | | CV | 0.825 |
| 589 | | | | | k hat (MLE) | 0.9 | | | k | etar (hiae corr | rected MLE) | 0.020 |
| 590 | | | | Tho | | 1 886 | | | Thota | star (bias corr | | 0.75 |
| 591 | | | | | | 21 50 | | | Ineta | nu stor (bio | | 17 52 |
| 592 | | | A diveted | l Lovel of Sig | | 21.59 | | | | nu star (bia | s corrected) | 17.55 |
| 593 | | A | Aujusteu | | | 0.029 | | | A diverse d Ch | | - (17 52 0) | 0 107 |
| 594 | | App | proximate Cn | I Square val | ue (17.53, α) | 9.051 | | | Adjusted Ch | Square valu | le (17.53, β) | 8.137 |
| 595 | | 95% Gamma | a Approximat | e UCL (use v | when n>=50) | 3.285 | | 95% G | amma Adjust | ed UCL (use | when n<50) | 3.655 |
| 596 | | | | | | | | | | | | |
| 597 | | | | Es | stimates of G | amma Para | meters using | g KM Estima | ites | | | |
| 598 | | | | | Mean (KM) | 2.147 | | | | | SD (KM) | 0.937 |
| 599 | | | | Va | ariance (KM) | 0.878 | | | | SE of | Mean (KM) | 0.296 |
| 600 | | | | | k hat (KM) | 5.249 | | | | | k star (KM) | 3.992 |
| 601 | | | | | nu hat (KM) | 126 | | | | r | nu star (KM) | 95.82 |
| 602 | | | | th | eta hat (KM) | 0.409 | | | | the | ta star (KM) | 0.538 |
| 603 | | | 80% | % gamma pe | rcentile (KM) | 2.96 | | | 909 | % gamma per | centile (KM) | 3.587 |
| 604 | | | 95% | % gamma pe | rcentile (KM) | 4.163 | | | 999 | % gamma per | centile (KM) | 5.395 |
| 605 | | | | | | | | | | | | |
| 606 | | | | | Gamm | a Kaplan-M | eier (KM) St | atistics | | | | |
| 607 | | App | proximate Ch | i Square Val | ue (95.82, α) | 74.24 | | | Adjusted Ch | i Square Valu | ie (95.82, β) | 71.35 |
| 608 | 95% | Gamma Ap | proximate KN | /I-UCL (use v | when n>=50) | 2.771 | | 95% Gamm | a Adjusted k | M-UCL (use | when n<50) | 2.883 |
| 609 | | | | | | | | | | | | |
| 610 | | | | Lo | ognormal GC | F Test on D | etected Obs | ervations O | nly | | | |
| 611 | | | S | hapiro Wilk | Fest Statistic | 0.908 | | | Shapiro Wi | lk GOF Test | | |
| 612 | | | 5% S | hapiro Wilk C | Critical Value | 0.788 | Dete | ected Data a | ppear Logno | ormal at 5% Si | ignificance L | evel |
| 613 | | | | Lilliefors | Test Statistic | 0.171 | | | Lilliefors | GOF Test | | |
| 614 | | | 5 | % Lilliefors (| Critical Value | 0.325 | Dete | ected Data a | ppear Logno | ormal at 5% Si | ignificance L | evel |
| 615 | | | | Dete | cted Data ap | pear Logno | rmal at 5% S | Significance | Level | | | |
| 616 | | | | | • | - | | - | | | | |
| 617 | | | | Lo | gnormal RO | S Statistics | Using Impute | ed Non-Dete | ects | | | |
| 610 | | | | Mean in O | riginal Scale | 1.993 | | | | Mean i | n Log Scale | 0.551 |
| 610 | | | | SD in O | riginal Scale | 1.119 | | | | SD i | n Log Scale | 0.547 |
| 619 | | 95% † l | JCL (assume | es normality of | of ROS data) | 2.573 | | | 95% | Percentile Boo | otstrap UCI | 2.534 |
| 620 | | | | 95% BCA Bc | otstran LICI | 2.589 | | | 50,0 | 95% Boot | tstrap t UCI | 2.752 |
| 621 | | | | 95% H-IIC | | 2 800 | | | | 20,0 000 | | , JL |
| 622 | | | | 00/011-00 | - (| 2.000 | | | | | | |
| 623 | | | Static | tice using V | Mastimataa | on Loggod | Data and Acc | | ormal Diatri | bution | | |
| 624 | | | Statis | sucs using K | IVI ESTIMATES | on Logged I | Jala and AS | suming LOGI | ionnai Distri | ναιιοΠ | | |

| | А | В | С | D | E | F | G | Н | | J K | L |
|-----|----------|-------------|----------------|----------------|---------------|-----------------|------------------|----------------|------------------------|-----------------------------|---------|
| 625 | | | | KM Me | an (logged) | 0.683 | | | | KM Geo Mean | 1.98 |
| 626 | | | | KMS | SD (logged) | 0.387 | | | 95% | Critical H Value (KM-Log) | 2.012 |
| 627 | | | KM Standar | d Error of Me | an (logged) | 0.122 | | | 050/ | 95% H-UCL (KM -Log) | 2.698 |
| 628 | | | KM Ctorday | | | 0.387 | | | 95% | Critical H Value (KM-Log) | 2.012 |
| 629 | | | Kivi Standar | d Error of Me | an (logged) | 0.122 | | | | | |
| 630 | | | | | | DI /2 S | tatistics | | | | |
| 631 | | | DL/2 | lormal | | | | | DL/2 Log- | Transformed | |
| 632 | | | | Mean in Ori | ginal Scale | 1.798 | | | 0 - 1 - 10g | Mean in Log Scale | 0.345 |
| 634 | | | | SD in Ori | ginal Scale | 1.282 | | | | SD in Log Scale | 0.73 |
| 635 | | | 95% t U | CL (Assumes | s normality) | 2.463 | | | | 95% H-Stat UCL | 3.168 |
| 636 | | | DL/2 i | s not a recom | nmended m | ethod, provi | ded for comp | parisons and | l historical r | easons | |
| 637 | | | | | | | | | | | |
| 638 | | | | | Nonparame | etric Distribu | tion Free UC | CL Statistics | | | |
| 639 | | | | Detected | Data appea | r Normal Di | stributed at § | 5% Significa | nce Level | | |
| 640 | | | | | | | | | | | |
| 641 | | | | | | Suggested | UCL to Use | | | | |
| 642 | | | | 95% | KM (t) UCL | 2.679 | | | | | |
| 643 | | | | | | | | | | | |
| 644 | 1 | Note: Sugge | stions regard | ng the select | ion of a 95% | 6 UCL are pr | ovided to he | lp the user to | select the | nost appropriate 95% UCL | |
| 645 | | Those reco | R | ecommendat | ions are bas | sed upon dat | a size, data | distribution, | and skewne | SS. | |
| 646 | Ца | These recor | Intrine recult | are based up | | lits of the sin | te: for addition | es summanz | zed in Singn | , Maichle, and Lee (2006). | <u></u> |
| 647 | ПО | wever, sinu | | | | | | inal insight u | ne user may | | di i. |
| 648 | n-HFPTAN | = | | | | | | | | | |
| 649 | | - | | | | | | | | | |
| 651 | | | | | | General | Statistics | | | | |
| 652 | | | Total | Number of Ol | oservations | 12 | | | Numbe | er of Distinct Observations | 6 |
| 653 | | | | Numbe | r of Detects | 2 | | | | Number of Non-Detects | 10 |
| 654 | | | Nu | mber of Disti | nct Detects | 2 | | | Numb | er of Distinct Non-Detects | 4 |
| 655 | | | | Minin | num Detect | 2.21 | | | | Minimum Non-Detect | 1.35 |
| 656 | | | | Maxin | num Detect | 2.54 | | | | Maximum Non-Detect | 1.48 |
| 657 | | | | Variar | nce Detects | 0.0545 | | | | Percent Non-Detects | 83.33% |
| 658 | | | | Me | an Detects | 2.375 | | | | SD Detects | 0.233 |
| 659 | | | | Med | ian Detects | 2.375 | | | | CV Detects | 0.0983 |
| 660 | | | | Skewne | ess Detects | N/A | | | | Kurtosis Detects | N/A |
| 661 | | | | iviean of Logg | jed Detects | 0.863 | | | | SD of Logged Detects | 0.0984 |
| 662 | | | | | Warning: D | ata sat has | only 2 Deter | ted Values | | | |
| 663 | | | Т | is is not eno | ugh to com | oute meanin | oful or reliab | leu values. | and estima | tae | |
| 664 | | | | | agii to com | | | | | | |
| 665 | | | | | | | | | | | |
| 667 | | | | | Norn | nal GOF Tes | t on Detects | Only | | | |
| 668 | | | | | Not En | ough Data to | Perform G | - OF Test | | | |
| 669 | | | | | | - | | | | | |
| 670 | | | Kaplan-I | Meier (KM) S | tatistics usi | ng Normal C | ritical Value | s and other | Nonparame | etric UCLs | |
| 671 | | | | | KM Mean | 1.521 | | | К | M Standard Error of Mean | 0.158 |
| 672 | | | | | KM SD | 0.388 | | | | 95% KM (BCA) UCL | N/A |
| 673 | | | | 95% | KM (t) UCL | 1.805 | | | 95 <mark>%</mark> KM (| Percentile Bootstrap) UCL | N/A |
| 674 | | | | 95% I | KM (z) UCL | 1.781 | | | | 95% KM Bootstrap t UCL | N/A |
| 675 | | | 9 | 0% KM Cheb | yshev UCL | 1.996 | | | | 95% KM Chebyshev UCL | 2.211 |
| 676 | | | 97. | 5% KM Cheb | yshev UCL | 2.51 | | | | 99% KM Chebyshev UCL | 3.096 |

| | А | В | | С | | D | E | | F | C | à | Н | | | | J | | | K | | L |
|-----|-----|---------|-------|------------|---------|----------|-----------------------|-----------|---------------|----------|--------|----------|--------|--------|----------------|---------------|---------|---------|---------------------|---|-------|
| 677 | | | | | | | | | | | | | _ | | | | | | | | |
| 678 | | | | | | Ģ | iamma G | | lests on De | etected | Obse | rvation | s On | ly | | | | | | | |
| 679 | | | | | | | Not | Eno | ugh Data to | Perto | rm GC | JF Test | | | | | | | | | |
| 680 | | | | | | | 0.000 | | | Datas | | ata Onl | | | | | | | | | |
| 681 | | | | | | | Gam | | | | | ata Uni | У | | | ator (hio | r | raata | | N | NI/A |
| 682 | | | | | | Tho | K Hat (IVIL | | 0.0115 | | | | | | K : Chota i | star (bia | | roctor | | 1 | N/A |
| 683 | | | | | | rite | u hat (MI |) | 827.4 | | | | | | ineta . | | r (hia | | | 1 | |
| 684 | | | | | | Me | an (detec | ts) | 2 375 | | | | | | | nu sta | | 5 001 | recieu) | • | 1//7 |
| 685 | | | | | | | |) | 2.070 | | | | | | | | | | | | |
| 680 | | | | | | Es | timates o | f Ga | amma Para | meters | using | KM Es | timat | tes | | | | | | | |
| 688 | | | | | | | Mean (K | M) | 1.521 | | | | | | | | | S | D (KM) | | 0.388 |
| 689 | | | | | | Va | ariance (K | M) | 0.15 | | | | | | | | SE of | f Mea | n (KM) | | 0.158 |
| 690 | | | | | | | k hat (K | M) | 15.37 | | | | | | | | | k sta | ar (KM) | | 11.59 |
| 691 | | | | | | | nu hat (K | M) | 368.9 | | | | | | | | r | nu sta | ar (KM) | 2 | 78 |
| 692 | | | | | | th | eta hat (K | M) | 0.0989 | | | | | | | | the | eta sta | ar (KM) | | 0.131 |
| 693 | | | | 809 | % gam | ma per | centile (K | M) | 1.879 | | | | | | 90% | 6 gamm | a per | centil | e (KM) | | 2.114 |
| 694 | | | | 959 | % gam | ma per | centile (K | M) | 2.323 | | | | | | 99% | 6 gamm | a per | centil | e (KM) | | 2.748 |
| 695 | | | | | | | | | | | | | | | | | | | | | |
| 696 | | | | | | | Ga | mma | a Kaplan-M | eier (K | M) Sta | atistics | | | | | (0) | | (0) | | 0.000 |
| 697 | | | nnrov | vimata Chi | Sauce | | 1070 04 | ~) | 240.4 | | | | Δ | Ad | | Level o | of Sigr | | | 2 | 0.029 |
| 698 | 059 | | | amate Chi | | | $\frac{2}{2}(278.04)$ | α) 50) | 240.4 | | | 05% 0 | A | | | | value | + (278 | $\frac{5.04}{5.04}$ | 2 | 1 700 |
| 699 | 90. | o Gamma | Аррі | | VI-UCL | . (use v | |))) | 1.759 | | | 90 % Ga | amm | a Auju | sieu r | | (use | when | 11\50) | | 1.799 |
| 700 | | | | | | | anormal | GOF | F Test on D | etecte | d Obs | ervatior | ns Or | nlv | | | | | | | |
| 701 | | | | | | | Not | Eno | ugh Data to | Perfo | rm GC | OF Test | | , | | | | | | | |
| 702 | | | | | | | | | | | | | - | | | | | | | | |
| 703 | | | | | | Lo | gnormal l | ROS | Statistics | Using I | mpute | ed Non- | Dete | cts | | | | | | | |
| 705 | | | | | Mea | an in O | riginal Sc | ale | 1.481 | | | | | | | Μ | lean i | in Log | g Scale | | 0.352 |
| 706 | | | | | S | D in O | riginal Sc | ale | 0.47 | | | | | | | | SD i | in Log | g Scale | | 0.288 |
| 707 | | 95% | t UC | CL (assume | es norr | nality c | of ROS da | ta) | 1.724 | | | | | | 95% I | Percenti | le Bo | otstra | p UCL | | 1.707 |
| 708 | | | | | 95% B | BCA Bo | otstrap U | CL | 1.743 | | | | | | | 95% | Boo | tstrap | t UCL | | 1.88 |
| 709 | | | | | 95% | H-UC | _ (Log RC | S) | 1.75 | | | | | | | | | | | | |
| 710 | | | | | | | | | | | | | | | | | | | | | |
| 711 | | | | Stati | stics u | sing K | M estimat | ies o | on Logged [| Data ar | nd Ass | suming | Logn | ormal | Distri | bution | | | | 1 | |
| 712 | | | | | | KM M | ean (logge | ed) | 0.394 | | | | | | 050/ / | Durite) 1 - 1 | KN | / Geo | o Mean | | 1.483 |
| 713 | | | L | (M Standa | rd Fre | | SD (logge | ea) | 0.212 | | | | | | 95% (| | | | VI-LOG) | | 1.852 |
| 714 | | | r | | | | | eu) | 0.0004 | | | | | | 95% (| 95% I | | | | | 1.700 |
| 715 | | | k | (M Standa | rd Frre | or of M | ean (logge | od) | 0.212 | | | | | | 5070 (| Sinicari | i vait | | wi-Log) | | 1.002 |
| /16 | | | | | | | (1099(| | 0.0004 | | | | | | | | | | | | |
| 710 | | | | | | | | | DL/2 S | tatistic | s | | | | | | | | | | |
| 710 | | | | DL/2 | Norma | al | | | | | | | | DL/2 | Log-T | ransfor | med | | | | |
| 720 | | | | | Меа | an in O | riginal Sc | ale | 0.975 | | | | | | - | Μ | lean i | in Log | g Scale | - | 0.159 |
| 721 | | | | | S | D in O | riginal Sc | ale | 0.658 | | | | | | | | SD i | in Log | g Scale | | 0.479 |
| 722 | | | | 95% t l | JCL (A | Assume | es normali | ty) | 1.316 | | | | | | | | 95% | H-Sta | at UCL | | 1.298 |
| 723 | | | | DL/2 | is not | a reco | mmendec | me | thod, provid | ded for | comp | arisons | and | histor | ical re | asons | | | | | |
| 724 | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | Nonpara | met | tric Distribu | tion Fr | ee UC | L Statis | stics | | | | | | | | |
| 726 | | | | | Dat | a do n | ot follow a | a Dis | scernible Di | istribut | ion at | 5% Sig | nifica | ance L | .evel | | | | | | |
| 727 | | | | | | | | | <u> </u> | | | | | | | | | | | | |
| 728 | | | | | | | | ; | Suggested | UCL to | o Use | | | | | | | | | | |

| | А | | В | С | D | E | F | G | Н | | | J | К | L |
|-----|---|-----|------------|----------------|-----------------|---------------|----------------|---------------|----------------|-----------|---------|--------------|--------------------|-------|
| 729 | | | | | 95% | KM (t) UCL | 1.805 | | | | | | KM H-UCL | 1.706 |
| 730 | | | | | 95% KM | (BCA) UCL | N/A | | | | | | | |
| 731 | | | | | Warni | ing: One or r | more Recom | mended U | CL(s) not a | vailable! | | | | |
| 732 | | | | | | | | | | | | | | |
| 733 | | No | ote: Sugge | estions regard | ling the selec | tion of a 95% | UCL are pro | ovided to he | elp the user | to selec | t the m | ost approp | riate 95% UCL. | |
| 734 | | | | I | Recommenda | tions are bas | sed upon dat | a size, data | a distributior | n, and sk | ewnes | S. | | |
| 735 | | Т | hese reco | mmendation | s are based u | pon the resu | Its of the sim | ulation stud | dies summa | rized in | Singh, | Maichle, a | nd Lee (2006). | |
| 736 | I | How | ever, simu | lations resul | ts will not cov | er all Real W | /orld data set | ts; for addit | ional insight | t the use | r may v | want to cor | sult a statisticia | an. |
| 737 | | | | | | | | | | | | | | |
| 738 | n-HEXAN | IE | | | | | | | | | | | | |
| 739 | | | | | | | | | | | | | | |
| 740 | | | | | | | General | Statistics | | | | | | |
| 741 | | | | Tota | Number of O | bservations | 12 | | | N | lumber | of Distinct | Observations | 8 |
| 742 | | | | | Numbe | er of Detects | 3 | | | | | Number o | f Non-Detects | 9 |
| 743 | | | | N | umber of Dist | inct Detects | 3 | | | 1 | Numbe | r of Distinc | t Non-Detects | 5 |
| 744 | | | | | Mini | mum Detect | 2.22 | | | | | Minimu | m Non-Detect | 1.16 |
| 745 | | | | | Maxi | mum Detect | 5.99 | | | | | Maximu | m Non-Detect | 1.3 |
| 746 | | | | | Varia | nce Detects | 3.558 | | | | | Percen | t Non-Detects | 75% |
| 747 | | | | | M | ean Detects | 4.147 | | | | | | SD Detects | 1.886 |
| 748 | | | | | Med | dian Detects | 4.23 | | | | | | CV Detects | 0.455 |
| 749 | | | | | Skewn | ess Detects | -0.198 | | | | | Κι | irtosis Detects | N/A |
| 750 | | | | | Mean of Log | ged Detects | 1.343 | | | | | SD of Lo | ogged Detects | 0.504 |
| 751 | | | | | | | | | | | | | | |
| 752 | | | | | | Warning: D | ata set has | only 3 Dete | cted Value | S. | | | | |
| 753 | | | | Т | his is not end | ough to comp | oute meaning | gful or relia | ble statistic | s and e | stimate | es. | | |
| 754 | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | |
| 756 | | | | | | Norm | nal GOF Tes | t on Detect | ts Only | | | | | |
| 757 | | | | 5 | Shapiro Wilk T | est Statistic | 0.999 | | | Shap | iro Wil | k GOF Te | st | |
| 758 | | | | 5% S | hapiro Wilk C | ritical Value | 0.767 | | Detected Da | ta appea | ar Norn | nal at 5% S | Significance Lev | el |
| 759 | | | | | Lilliefors T | est Statistic | 0.184 | | | Lill | iefors | GOF Test | | |
| 760 | | | | Ę | % Lillietors C | ritical Value | 0.425 | L | Detected Da | ta appea | ar Norn | nal at 5% S | Significance Lev | el |
| 761 | | | | | Det | ected Data | appear Norm | nal at 5% S | ignificance | Level | | | | |
| 762 | | | | Kanlan | | | N | | | | | | | |
| 763 | | | | Kapian | Meler (KM) S | | | ritical valu | es and othe | er Nonpa | Iramet | | | 0.500 |
| 764 | | | | | | KIM Mean | 1.907 | | | | KIV | | Error of Mean | 0.532 |
| 765 | | | | | 050/ | | 1.505 | | | 050/ | | 95% N | | |
| 766 | | | | | 95% | | 2.002 | | | 95% | | | | |
| 767 | | | | | 90 % | | 2.702 | | | | | | | N/A |
| 768 | | | | 07 | | | 5.505 | | | | 8 | | | 4.220 |
| 769 | | | | 97 | | bysnev UCL | 5.25 | | | | 3 | | IEDYSINEV UCL | 7.202 |
| 770 | | | | | 6 | amma GOF | Tests on De | stacted Obs | envetione (| July | | | | |
| 771 | | | | | 9 | Not En | ouch Data to | Perform G | | Jilly | | | | |
| 772 | | | | | | NULEI | | | | | | | | |
| 773 | | | | | | Gamma | Statistics or | | Data Only | | | | | |
| 774 | | | | | | k hat (MLE) | 6 488 | | | | kr | star (hias o | orrected MLE) | N/A |
| 775 | | | | | The | ta hat (MLE) | 0.400 | | | - | Theta a | star (hias o | | N/A |
| /76 | nu hat (MLE) 38.93 nu star (bias corrected) N/A | | | | | | | | | | | | | |
| //7 | | | | | M_ | an (detects) | 4 147 | | | | | | | |
| /78 | | | | | IVIC | | -7.1-77 | | | | | | | |
| //9 | | | | | C | amma ROS | Statistics | sina Impute | d Non-Det | ects | | | | |
| 780 | | | | | 6 | | ວເລແອແປອ ຟະ | ang mpute | | | | | | |

| | А | | В | С | | D | | E | F | | G | | Н | | | | J | | К | \Box | L | |
|-----|---|-----------------------------------|----------|-------------|------|---------|--------------|----------|---------------|-------------|------|--------------|-------|------------|-------|---------|--------|-------------|-----------|------------|----------|---------|
| 781 | | | | GROS m | ayı | not b | e used | when | data s | et has > 50 |)% I | NDs with m | nan | ny tied ob | serva | ations | atr | nultiple D | Ls | | | |
| 782 | | | GROS mag | y not be us | ed | wher | n kstar (| of dete | ects is | small such | as | <1.0, espe | ecia | lly when | the s | sample | e siz | e is smal | l (e.g. | ., <15-20 |) | |
| 783 | | | | | For | such | n situati | ions, C | GROS | method ma | ау у | ield incorre | ect | values of | UCI | _s and | d BT | Vs | | | | |
| 784 | | | | | | | Т | his is | especi | ally true w | hen | the sample | e si | ize is sma | all. | | | | | | | |
| 785 | | | For gai | mma distrib | oute | ed de | tected | data, E | BTVs a | and UCLs n | nay | be comput | ted | l using ga | mma | a distr | ributi | ion on KN | 1 estir | nates | | |
| 786 | | | | | | | | Mir | nimum | 0.01 | | | | | | | | | | Mear | <u>ו</u> | 1.044 |
| 787 | | | | | | | | Max | kimum | 5.99 | | | | | | | | | | Media | 1 | 0.01 |
| 788 | | | | | | | | | SD | 2.036 | | | | | | | | | | C/ | / | 1.95 |
| 789 | | | | | | | | k hat | (MLE) | 0.228 | | | | | | | k s | tar (bias o | correc | ted MLE |) | 0.227 |
| 790 | | | | | | | The | ta hat | (MLE) | 4.579 | | | | | | The | eta s | tar (bias o | correc | ted MLE |) | 4.609 |
| 791 | | | | | | | r | hu hat | (MLE) | 5.4/3 | | | | | | | | nu star (| bias d | corrected |) | 5.438 |
| 792 | | | | Adjust | | Leve | l of Sig | nificar | $\frac{1}{1}$ | 0.029 | | | | | | | | | | | _ | |
| 793 | | | Ap | oproximate | Ch | ii Squ | uare Va | ilue (5 | .44, α) | 1.36 | | | | 050/ 0 | Ac | djuste | d Cr | i Square | Value | e (5.44, β |) | 1.076 |
| 794 | | 9 | 5% Gamma | a Approxim | ate | UCL | _ (use v | vhen n | i>=50) | 4.176 | | | | 95% G | amn | na Adj | juste | ed UCL (u | ise wł | nen n<50 |) | N/A |
| 795 | | | | | | | _ | | | | | | | | | | | | | | | |
| 796 | | | | | | | Es | stimate | es of G | iamma Par | ram | eters using | gК | M Estima | ates | | | | | 00 // // | | 4 505 |
| 797 | | | | | | | | Mear | 1 (KM) | 1.907 | | | | | | | | | | SD (KM |) | 1.505 |
| 798 | | | | | | | Va | ariance | e (KM) | 2.266 | | | | | | | | SE | = of N | lean (KM |) | 0.532 |
| 799 | | | | | | | | k ha | t (KM) | 1.605 | | | | | | | | | k | star (KM |) | 1.259 |
| 800 | | | | | | | | nu ha | t (KM) | 38.51 | | | | | | | | | nu | star (KM |) | 30.22 |
| 801 | | theta hat 80% gamma percentile | | | | | | | | 1.188 | | | | | | | 000/ | | theta | star (KM |) | 1.514 |
| 802 | | 80% gamma percentile | | | | | | | | 3.005 | | | | | | | 90% | gamma j | perce | ntile (KM |) | 4.148 |
| 803 | | 95% gamma percentile | | | | | | | | 5.271 | | | | | | | 99% | gamma j | perce | ntile (KM |) | 7.837 |
| 804 | | | | | | | | | | | | | | | | | | | | | | |
| 805 | | | | | | _ | <u> </u> | | Gamm | na Kaplan- | Mei | ier (KM) St | tatis | stics | | | | | | | | |
| 806 | | | Арр | proximate C | Chi | Squa | are Valu | ue (30. | .22, α) | 18.66 | | | | | Adj | usted | Chi | Square V | /alue | (30.22, β |) | 17.29 |
| 807 | ç | 95% | Gamma Ap | proximate I | ΚM· | -UCL | . (use v | vhen n | i>=50) | 3.087 | | | 95 | 5% Gamn | na A | djuste | ed Kl | M-UCL (u | ise wł | nen n<50 |) | 3.332 |
| 808 | | | | | | | | | | | _ | | | | | | | | | | | |
| 809 | | | | | | | Lo | ognorn | nal GC | OF Test on | De | tected Obs | ser | vations C | only | | | | | | | |
| 810 | | | | | Sh | napiro | o Wilk T | Fest St | tatistic | 0.971 | | | | | Sh | napiro | Will | k GOF Te | est | | | |
| 811 | | | | 5% | Sh | apiro | Wilk C | Critical | Value | 0.767 | | Det | tect | ted Data a | appe | ear Lo | gnor | mal at 5% | % Sigr | nificance | Lev | /el |
| 812 | | | | | | Lill | ietors I | l est Si | tatistic | 0.245 | | | | | | Lillief | ors (| GOF Test | | | <u> </u> | |
| 813 | | | | | 5% | % Lilli | iefors C | Critical | Value | 0.425 | | Det | tect | ted Data a | appe | ear Lo | gnor | mal at 5% | % Sigr | nificance | Lev | /el |
| 814 | | | | | | | Dete | cted L | Data ap | opear Logr | orn | nal at 5% S | Sigi | nificance | Lev | 'el | | | | | | |
| 815 | | | | | | | | | | | | | | | | | | | | | | |
| 816 | | | | | | | Lo | gnorm | | S Statistic | s U | sing Imput | ed | Non-Det | ects | | | | | | | |
| 817 | | | | | | Mea | an in O | riginal | Scale | 1.369 | | | | | | | | Mea | an in I | Log Scale | 3 | -0.362 |
| 818 | | | 050/ | | | S | o in O וו עפ | riginal | Scale | 1.867 | | | | | | ~- | 0/ - | S | ו חו ה | Log Scale | э — | 1.143 |
| 819 | | | 95% t l | JCL (assun | nes | s norr | mality c | of ROS | aata) | 2.338 | | | | | | 95 | 0% P | ercentile | BOOts | strap UCI | - | 2.28/ |
| 820 | | | | | 9 | 15% E | SCA Bo | otstra | p UCL | 2.534 | | | | | | | | 95% B | sootst | rap t UCI | - | 3.929 |
| 821 | | | | | | 95% | H-UC | L (Log | ROS) | 4 | | | | | | | | | | | \perp | |
| 822 | | | | | | | | | | | | | | | | | | | | | | |
| 823 | | | | Sta | tist | tics u | Ising K | M esti | mates | on Logged | d Da | ata and As | sur | ming Log | norn | nal Di | strib | oution | 1/1-1-1 | | | 4 = 0 : |
| 824 | | KM Mean (I | | | | | | | | 0.447 | | | | | | | | | KMC | Jeo Mea | <u>ו</u> | 1.564 |
| 825 | | | | | | | KM | SD (lo | ogged) | 0.557 | | | | | | 95 | 9% C | ritical H V | /alue | (KM-Log |) | 2.213 |
| 826 | | | | KM Stand | arc | d Erro | or of Me | ean (lo | ogged) | 0.197 | | | | | | | | 95% H- | UCL | (KM -Log |) | 2.647 |
| 827 | | | | | | | KM | SD (lo | ogged) | 0.557 | | | | | | 95 | 9% C | ritical H V | /alue | (KM-Log |) | 2.213 |
| 828 | | | | KM Stand | laro | d Erro | or of Me | ean (lo | ogged) | 0.197 | | | | | | | | | | | | |
| 829 | | | | | | | | | | | _ | | | | | | | | | | | |
| 830 | | | | | | - | | | | DL/2 | Sta | tístics | | | _ | | | | | | | |
| 831 | | | | DL/: | 2 N | lorma | al | | | [| | | | | DI | L/2 Lo | og-Ti | ransforme | ed | | | |
| 832 | | | | | | Меа | an in O | riginal | Scale | 1.498 | | | | | | | | Mea | an in I | Log Scale | Э | -0.0299 |

| | А | В | С | D | E | F | G | Н | I | | J | | K | | L |
|------------|----------|--------------|----------------|-----------------|---------------|----------------|---------------|-----------------|----------------|-----------|-----------|------------|--------------|------|--------|
| 833 | | | 050/ +1 | SD In Or | | 1.789 | | | | | | | | | 0.856 |
| 834 | | | 95% [[| | s normality) | 2.420 | | | d blatavia | <u></u> | | 95% H- | -Stat UCL | | 2.783 |
| 835 | | | DL/2 | is not a recon | nmended m | etnoa, provid | led for com | ipansons and | a historic | | asons | | | | |
| 836 | | | | | Nonnarama | trio Dictribu | tion Eroo II | CL Statistics | | | | | | | |
| 837 | | | | Detected | Data annea | r Normal Die | stributed at | 5% Significa | , ance Leve | <u>اد</u> | | | | | |
| 838 | | | | Delected | | | | 0 /0 Olgrinica | | 51 | | | | | |
| 839 | | | | | | Suggested | UCL to Use | <u> </u> | | | | | | | |
| 840 | | | | 95% | KM (t) UCI | 2 862 | 002 10 031 | • | | | | | | | |
| 841 | | | | 0070 | 1411 (1) 002 | 2.002 | | | | | | | | | |
| 842 | | Note: Suaae | stions regard | ling the select | ion of a 95% | UCL are pr | ovided to he | elp the user to | o select th | ne mo | ost app | ropriate | 95% UCI | | |
| 843 | | | F | Recommendat | ions are bas | sed upon dat | a size. data | distribution. | and skew | vness | 6. 6. | | | | |
| 844 945 | | These reco | mmendations | are based up | oon the resu | Its of the sim | ulation stud | lies summari | zed in Sir | ngh, l | Maichle | e, and Le | ee (2006). | | |
| 045 046 | He | owever, simu | lations result | s will not cove | er all Real W | /orld data set | s; for additi | onal insight t | he user n | nay w | vant to | consult | a statistici | an. | |
| 840 | | | | | | | | | | - | | | | | |
| 848 | O-XYLENE | E (1,2-DIMET | HYLBENZE | NE) | | | | | | | | | | | |
| 849 | | | | | | | | | | | | | | | |
| 850 | | | | | | General | Statistics | | | | | | | | |
| 851 | | | Total | Number of O | bservations | 12 | | | Nur | nber | of Disti | nct Obs | ervations | 1 | 1 |
| 852 | | | | Numbe | r of Detects | 11 | | | | | Numbe | er of No | n-Detects | | 1 |
| 853 | | | N | umber of Disti | nct Detects | 10 | | | Nu | mbei | r of Dist | tinct No | n-Detects | | 1 |
| 854 | | | | Minir | num Detect | 1.43 | | | | | Mini | mum No | on-Detect | | 1.22 |
| 855 | | | | Maxir | num Detect | 16.93 | | | | | Maxi | mum No | on-Detect | | 1.22 |
| 856 | | | | Varia | nce Detects | 18.08 | | | | | Per | cent No | n-Detects | 1 | 8.333% |
| 857 | | | | Me | ean Detects | 5.152 | | | | | | SI | D Detects | 4 | 4.252 |
| 858 | | | | Med | ian Detects | 4.23 | | | | | | C | V Detects | (| 0.825 |
| 859 | | | | Skewne | ess Detects | 2.402 | | | | | | Kurtosi | s Detects | (| 6.866 |
| 860 | | | | Mean of Log | ged Detects | 1.409 | | | | | SD o | f Logge | d Detects | (| 0.69 |
| 861 | | | | | | | | | | | | | | | |
| 862 | | | | | Norm | al GOF Tes | t on Detect | s Only | | | | _ . | | | |
| 863 | | | 5 | hapiro Wilk T | est Statistic | 0.723 | | Data at a d Da | Shapiro | | | lest | | | |
| 864 | | | 5% 5 | | | 0.85 | | Detected Da | | orma | | Signific | ance Leve | 4 | |
| 865 | | | 5 | Lilliefors C | ritical Value | 0.284 | | Datastad Da | | | | Signifio | | | |
| 866 | | | | | | 0.201 | l at 5% Sig | nificance Lev | | Jilla | 1 at 5 % | Signine | | 1 | |
| 867 | | | | | | | i at 5 % Sig | | VEI | | | | | | |
| 868 | | | Kaplan- | Meier (KM) S | tatistics usi | ng Normal C | ritical Valu | es and other | Nonnara | metr | ic UCL | s | | | |
| 869 | | | | | KM Mean | 4.824 | | | | KM | Standa | ard Erro | r of Mean | | 1.22 |
| 870 971 | | | | | KM SD | 4.031 | | | | | 959 | % KM (E | BCA) UCL | | 7.144 |
| 071 | | | | 95% | KM (t) UCL | 7.016 | | | 95% KI | M (Pe | ercentil | e Bootst | trap) UCL | 1 | 6.76 |
| 072 973 | | | | 95% | KM (z) UCL | 6.831 | | | | <u> </u> | 5% KN | 1 Bootst | rap t UCL | ; | 8.821 |
| 874 | | | (| 0% KM Cheb | yshev UCL | 8.485 | | | | 9 | 5% KM | Chebys | shev UCL | 1 | 0.14 |
| 875 | | | 97 | .5% KM Cheb | yshev UCL | 12.45 | | | | 9 | 9% KM | Chebys | shev UCL | 1 | 6.97 |
| 876 | | | | | | l | l | | | | | | | | |
| 877 | | | | G | amma GOF | Tests on De | etected Obs | servations O | nly | | | | | | |
| 878 | | | | A-D T | est Statistic | 0.439 | | ŀ | Anderson | -Darl | ling GC | OF Test | | | |
| 879 | | | | 5% A-D C | ritical Value | 0.737 | Detecte | ed data appe | ar Gamm | a Dis | stribute | d at 5% | Significan | ce L | .evel |
| 880 | | | | K-S T | est Statistic | 0.188 | | | Kolmogo | rov-S | Smirnov | v GOF | | | |
| 881 | | | | 5% K-S C | ritical Value | 0.258 | Detecte | ed data appe | ar Gamm | a Dis | stribute | d at 5% | Significan | ce L | .evel |
| 882 | | | | Detected | data appea | r Gamma Dis | stributed at | 5% Significa | ance Leve | əl | | | | | |
| 883 | | | | | | | | | | | | | | | |
| 884 | | | | | Gamma | Statistics or | Detected | Data Only | | | | | | | |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|-----|-----|------------|---------------|----------------|-------------------------|---------------|---------------|---------------|---------------|------------------|---------------|---------|
| 885 | | | | | k hat (MLE) | 2.327 | | | k | star (bias corre | ected MLE) | 1.753 |
| 886 | | | | The | ta hat (MLE) | 2.214 | | | Theta | star (bias corre | ected MLE) | 2.939 |
| 887 | | | | 1 | nu hat (MLE) | 51.19 | | | | nu star (bias | s corrected) | 38.56 |
| 888 | | | | Me | ean (detects) | 5.152 | | | | | | |
| 889 | | | | | | | 1 | | | | 4 | |
| 890 | | | | (| amma ROS | Statistics u | sing Imputed | d Non-Detec | ts | | | |
| 891 | | | GROS may | not be used | when data s | et has > 50% | 5 NDs with m | nany tied obs | ervations at | multiple DLs | | |
| 892 | | GROS may | / not be used | when kstar | of detects is | small such a | s <1.0, espe | cially when t | he sample si | ze is small (e. | g., <15-20) | |
| 893 | | | Fo | r such situat | ions, GROS | method may | yield incorre | ect values of | UCLs and B | TVs | | |
| 894 | | | | ٦ | his is especi | ally true whe | n the sample | e size is sma | all. | | | |
| 895 | | For gar | nma distribut | ed detected | data, BTVs a | nd UCLs ma | y be comput | ted using gar | mma distribu | tion on KM est | timates | |
| 896 | | | | | Minimum | 0.01 | | | | | Mean | 4.723 |
| 907 | | | | | Maximum | 16.93 | | | | | Median | 4.07 |
| 097 | | | | | SD | 4.317 | | | | | CV | 0.914 |
| 090 | | | | | k hat (MLE) | 0.906 | | | k | star (bias corre | ected MLE) | 0.735 |
| 099 | | | | The | ta hat (MLE) | 5.211 | | | Theta | star (bias corre | ected MLE) | 6.423 |
| 900 | | | | - | nu hat (MLE) | 21.75 | | | | nu star (bias | s corrected) | 17.65 |
| 901 | | | Adjusted | Level of Sig | nificance (B) | 0.029 | | | | (| , | |
| 902 | | Apr | proximate Ch | Square Val | ue (17.65, α) | 9.138 | | | Adjusted Ch | i Square Valu | е (17.65. В) | 8 2 1 8 |
| 903 | | 95% Gamma | | | $\frac{10}{(17.00, 4)}$ | 9 123 | | 95% Ga | amma Δdiust | | when n<50) | 10.14 |
| 904 | | | i Approximat | 002 (000) | | 0.120 | | | | | | 10.14 |
| 905 | | | | F | timates of G | amma Para | meters using | n KM Estima | tos | | | |
| 906 | | | | | Moon (KM) | | | | 163 | | SD (KM) | 4 031 |
| 907 | | | | 1/- | | 16.25 | | | | SE of | Moon (KM) | 1 22 |
| 908 | | | | Va | | 1 422 | | | | 3E 01 | | 1.22 |
| 909 | | | | | K nat (KIVI) | 1.432 | | | | | K Star (KIVI) | 1.13 |
| 910 | | | | | nu nat (KIVI) | 34.38 | | | | n | u star (KIVI) | 27.12 |
| 911 | | | | tn | eta nat (KM) | 3.368 | | | | thet | a star (KM) | 4.27 |
| 912 | | | 80% | b gamma per | centile (KM) | 7.682 | | | 909 | 6 gamma perc | centile (KM) | 10.78 |
| 913 | | | 95% | amma pe | centile (KM) | 13.85 | | | 999 | 6 gamma perc | centile (KM) | 20.9 |
| 914 | | | | | | | | | | | | |
| 915 | | | | | Gamm | a Kaplan-M | eier (KM) St | atistics | | - | | |
| 916 | | Арр | proximate Ch | Square Val | ue (27.12, α) | 16.24 | | | Adjusted Ch | i Square Value | e (27.12, β) | 14.97 |
| 917 | 95% | 6 Gamma Ap | proximate KN | 1-UCL (use v | vhen n>=50) | 8.054 | | 95% Gamm | a Adjusted k | (M-UCL (use v | when n<50) | 8.739 |
| 918 | | | | | | | | | | | | |
| 919 | | | | Lo | ognormal GC | F Test on D | etected Obs | servations O | nly | | | |
| 920 | | | S | hapiro Wilk | Fest Statistic | 0.948 | | | Shapiro W | lk GOF Test | | |
| 921 | | | 5% SI | napiro Wilk (| Critical Value | 0.85 | Det | ected Data a | ppear Logno | ormal at 5% Sig | gnificance L | evel |
| 922 | | | | Lilliefors | Fest Statistic | 0.16 | | | Lilliefors | GOF Test | | |
| 923 | | | 5 | % Lilliefors C | Critical Value | 0.251 | Det | ected Data a | ppear Logno | ormal at 5% Sig | gnificance L | evel |
| 924 | | | | Dete | cted Data ap | pear Logno | rmal at 5% S | Significance | Level | | | |
| 925 | | | | | | | | | | | | |
| 926 | | | | Lo | gnormal RO | S Statistics | Using Imput | ed Non-Dete | ects | | | |
| 927 | | | | Mean in O | riginal Scale | 4.787 | | | | Mean ir | n Log Scale | 1.271 |
| 928 | | | | SD in O | riginal Scale | 4.246 | | | | SD ir | n Log Scale | 0.814 |
| 929 | | 95% t l | JCL (assume | s normality of | of ROS data) | 6.989 | | | 95% | Percentile Boo | otstrap UCL | 6.829 |
| 930 | | | ! | 95% BCA Bo | otstrap UCL | 7.58 | | | | 95% Boot | strap t UCL | 8.592 |
| 931 | | | | 95% H-UC | L (Log ROS) | 9.382 | | | | | | |
| 932 | | | | | | I | 1 | | | | | |
| 932 | | | Statis | tics using K | M estimates | on Logged [| Data and As | suming Logr | normal Distri | bution | | |
| 031 | | | | KM M | ean (logged) | 1.308 | | | | KM | Geo Mean | 3.7 |
| 035 | | | | KM | SD (logged) | 0.713 | | | 95% | Critical H Valu | e (KM-Log) | 2.434 |
| 300 | | | KM Standa | d Error of M | ean (logged) | 0.216 | | | | 95% H-UCI | _ (KM -Loa) | 8.053 |
| 930 | | | | | (-33-3) | | | | | | 3/ | |

| | А | В | С | D | F | F | G | Н | | JK | | |
|------------|------------|--------------|----------------|-----------------|----------------|----------------|------------------|-----------------|-----------------|-----------------------|--------|---------|
| 937 | | | . <u> </u> | KM | SD (logged) | 0.713 | ~ | | 95% (| Critical H Value (KM- | Log) | 2.434 |
| 938 | | | KM Standa | rd Error of M | ean (logged) | 0.216 | | | | | | |
| 020 | | | | | | | | | | | | |
| 939 | | | | | | DL/2 S | tatistics | | | | | |
| 940 | | | DL/2 | Normal | | | | | DL/2 Loa-T | ransformed | | |
| 941 | | | | Mean in O | riginal Scale | 4,773 | | | | Mean in Log S | cale | 1.251 |
| 942 | | | | SD in O | riginal Scale | 4.261 | | | | SD in Log S | cale | 0.857 |
| 943 | | | 95% t l | | s normality) | 6 982 | | | | 95% H-Stat | | 10.04 |
| 944 | | | | | | ethod provid | led for com | narisons and | l historical re | | OOL | 10.04 |
| 945 | | | | | | | | | | | | |
| 946 | | | | | Nonparam | tric Dietribu | tion Free LI | CL Statistics | | | | |
| 947 | | | | Detected | Data annoa | r Gommo Di | stributed at | 5% Significa | | | | |
| 948 | | | | Delected | Data appea | | | | | | | |
| 949 | | | | | | Suggested | | | | | | |
| 950 | | | 050/ 1/ | M A diverse d C | | | | • | | | | 10.14 |
| 951 | | | 95% K | M Adjusted C | iamma UCL | 8.739 | | | 95% GRO | S Adjusted Gamma | UCL | 10.14 |
| 952 | | | | | | | | | | | | |
| 953 | | Note: Sugge | stions regard | ing the selec | tion of a 95% | 5 UCL are pr | ovided to he | Ip the user to | select the m | lost appropriate 95% | UCL | • |
| 954 | | | H | Recommenda | itions are bas | sed upon dat | a size, data | distribution, | and skewnes | S. | | |
| 955 | | These reco | mmendations | s are based u | pon the resu | Its of the sim | ulation stud | ies summariz | zed in Singh, | Maichle, and Lee (2 | 006). | |
| 956 | Ho | owever, simu | lations result | s will not cov | er all Real W | /orld data se | ts; for addition | onal insight th | ne user may | want to consult a sta | istici | an. |
| 957 | | | | | | | | | | | | |
| 958 | tert-BUTYL | . METHYL E | THER | | | | | | | | | |
| 959 | | | | | | | | | | | | |
| 960 | | | | | | General | Statistics | | | | | |
| 961 | | | Total | Number of C | bservations) | 12 | | | Numbe | of Distinct Observa | ions | 6 |
| 962 | | | | Numbe | er of Detects | 0 | | | | Number of Non-De | ects | 12 |
| 963 | | | N | umber of Dis | tinct Detects | 0 | | | Numbe | er of Distinct Non-De | ects | 6 |
| 964 | | | | | | | | | | | | |
| 965 | | War | ning: All obse | ervations are | Non-Detect | s (NDs), the | refore all st | atistics and e | estimates sh | ould also be NDs! | | |
| 966 | | Specifi | ically, sample | e mean, UCL | .s, UPLs, an | d other statis | stics are als | o NDs lying | below the la | gest detection limit! | | |
| 967 | - | The Project | Team may de | ecide to use | alternative s | ite specific v | alues to est | imate enviro | nmental para | ameters (e.g., EPC, | BTV) | |
| 968 | | | | | | | | | | | | |
| 969 | | | • | The data set | for variable | tert-BUTYL | METHYL E | THER was n | ot processed | 1 | | |
| 970 | | | | | | | | | | | | |
| 971 | | | | | | | | | | | | |
| 972 | | | | | | | | | | | | |
| 973 | TOLUENE | | | | | | | | | | | |
| 974 | | | | | | | | | | | | |
| 975 | | | | | | General | Statistics | | | | | |
| 976 | | | Total | Number of C | bservations) | 12 | | | Numbe | of Distinct Observa | ions | 10 |
| 977 | | | | | | | | | Number | of Missing Observa | ions | 0 |
| 978 | | | | | Minimum | 2.94 | | | | Ν | lean | 9.729 |
| 979 | | | | | Maximum | 16.2 | | | | Me | dian | 9.795 |
| 980 | | | | | SD | 4.607 | | | | Std. Error of N | lean | 1.33 |
| 981 | | | | Coefficient | of Variation | 0.474 | | | | Skew | ness | -0.0134 |
| 982 | | | | | | I | I | | | | | |
| 083 | | | | | | Normal (| GOF Test | | | | | |
| 084 | | | S | hapiro Wilk 1 | est Statistic | 0.925 | | | Shapiro Wi | lk GOF Test | | |
| 025 | | | 5% SI | hapiro Wilk C | critical Value | 0.859 | | Data appe | ear Normal a | t 5% Significance Le | vel | |
| 900 | | | | Lilliefors | est Statistic | 0.186 | | | Lilliefors | GOF Test | | |
| 000 700 | | | 5 | % Lilliefors C | critical Value | 0.243 | | Data app | ear Normal a | t 5% Significance Le | vel | |
| 987 | | | | | Data anne | ar Normal at | 5% Signific | ance Level | | | | |
| 988 | | | | | | | | | | | | |
| | А | | В | С | D | E | F | G | Н | I | J | K | L | | |
|------|------------------------|-------|----------|------------|---------------|----------------|---------------|---|--------------|------------------|-----------------|---------------|----------|--|--|
| 989 | | | | | | | | | | | | | | | |
| 990 | | | | | | As | suming Norr | nal Distribut | tion | | | | | | |
| 991 | | | | 95% No | ormal UCL | | | | 95% | 6 UCLs (Adju | sted for Ske | wness) | | | |
| 992 | | | | | 95% Stu | dent's-t UCL | 12.12 | | | 95% Adjuste | ed-CLT UCL (| (Chen-1995) | 11.91 | | |
| 993 | | | | | | | | | | 95% Modifi | ed-t UCL (Jol | nnson-1978) | 12.12 | | |
| 994 | | | | | | | | | | | | | | | |
| 995 | | | | | | | Gamma | GOF Test | | | | | | | |
| 996 | | | | | A-D 1 | Fest Statistic | 0.465 | | Ande | erson-Darling | Gamma GO | F Test | | | |
| 007 | | | | | 5% A-D C | Critical Value | 0.735 | Detecte | d data appe | ar Gamma Di | istributed at 5 | 5% Significan | ce Level | | |
| 008 | | | | | K-S 1 | Fest Statistic | 0.191 | | Kolmo | gorov-Smirno | ov Gamma G | OF Test | | | |
| 000 | | | | | 5% K-S C | Critical Value | 0.246 | Detected data appear Gamma Distributed at 5% Significance Level | | | | | | | |
| 1000 | | | | | Detected | data appear | Gamma Dis | stributed at § | 5% Significa | ance Level | | | | | |
| 1000 | | | | | | | | | | | | | | | |
| 1001 | | | | | | | Gamma | Statistics | | | | | | | |
| 1002 | | | | | | k hat (MLE) | 4 09 | | | k | star (bias cor | rected MLE) | 3 123 | | |
| 1003 | | | | | The | ta hat (MLE) | 2,379 | | | Theta | star (bias cor | rected MLE) | 3.115 | | |
| 1004 | | | | | r | nu hat (MLE) | 98.17 | | | | nu star (bia | s corrected) | 74.96 | | |
| 1005 | | | | М | I E Mean (bia | s corrected) | 9 729 | | | | MLE Sd (bia | is corrected) | 5 505 | | |
| 1006 | | | | | | | 0.720 | | | Approximate | Chi Square | Value (0.05) | 56.02 | | |
| 1007 | | | | Adius | sted Level of | Significance | 0.029 | | | Δ | diusted Chi S | nuare Value | 53 53 | | |
| 1008 | | | | 7.636 | | olgrinicarice | 0.020 | | | 7.0 | | quare value | 00.00 | | |
| 1009 | | | | | | Δο | suming Gam | ma Distribut | tion | | | | | | |
| 1010 | | 05% | Approvir | nato Cammo | | hon n>-50)) | 13.02 | | | diustod Com | ma LICL (uso | when $n < 50$ | 13.62 | | |
| 1011 | | 90 /0 | Appioxii | | | nen n>-50)) | 13.02 | | 33 % A | | | when h<50) | 13.02 | | |
| 1012 | | | | | | | Lognormo | | | | | | | | |
| 1013 | Shapiro Wilk Test Sta | | | | | | | GOFTES | Sha | niro Wilk Loc | | Tost | | | |
| 1014 | Shapiro Wilk Test Stat | | | | | Pritical Value | 0.902 | | Doto oppo | | at 5% Signifi | | | | |
| 1015 | | | | 5%3 | | | 0.009 | | | | | | | | |
| 1016 | | | | 5 | | | 0.173 | | Doto onno | | | | | | |
| 1017 | | | | | % Lilleiois C | | | ot 5% Signif | | | | | | | |
| 1018 | | | | | | Data appear | Lognorma | at 5 /6 Olymin | | J I | | | | | |
| 1019 | | | | | | | Lognormo | l Statistics | | | | | | | |
| 1020 | | | | | Minimum of I | agged Data | 1 079 | | | | Moon of | logged Data | 2 1/0 | | |
| 1021 | | | | | | | 2 795 | | | | | logged Data | 0.550 | | |
| 1022 | | | | 1 | | | 2.705 | | | | 30 01 | loggeu Dala | 0.559 | | |
| 1023 | | | | | | A | | rmal Diatrib | ution | | | | | | |
| 1024 | | | | | | | 14 56 | | uuon | 90% | Chebyshey (| | 1/ 70 | | |
| 1025 | | | | 05% | Chobyshov (| | 17.00 | | | 07.5% | Chobyshov (| | 20.11 | | |
| 1026 | | | | 95% | Chebyshev (| | 26.10 | | | 97.570 | Chebyshev (| | 20.11 | | |
| 1027 | | | | 99% | Chebyshev (| | 20.19 | | | | | | | | |
| 1028 | | | | | | Nonnonon | tuia Diatuiku | Han Free LIC | | | | | | | |
| 1029 | | | | | Data annas | | | tion Free UC | | ; Gaanaa Lawa | | | | | |
| 1030 | | | | | Data appea | r to follow a | Discernible | | at 5% Signi | ricance Level | | | | | |
| 1031 | | | | | | Nerrer | | ulle alle a Fra | - 1101 - | | | | | | |
| 1032 | | | | | 0.5 | | | | e UCLS | | 050/ 1 | | 10.10 | | |
| 1033 | | | | 050 | 95 | | 11.92 | 1.92 95% Jackknife UCL | | | | | 12.12 | | |
| 1034 | | | | 95% | Standard Bo | otstrap UCL | 11.79 | | | | 95% Boo | istrap-t UCL | 12.07 | | |
| 1035 | | | | ç | 5% Hall's Bo | otstrap UCL | 11.84 | | | 95% | Percentile Bo | otstrap UCL | 11.76 | | |
| 1036 | | | | | 95% BCA Bo | otstrap UCL | 11.82 | | | | | | 4 | | |
| 1037 | | | | 90% Cł | ebyshev(Me | an, Sd) UCL | 13.72 | | | 95% Ch | ebyshev(Me | an, Sd) UCL | 15.53 | | |
| 1038 | | | | 97.5% Ch | ebyshev(Me | an, Sd) UCL | 18.03 | | | 99% Ch | ebyshev(Me | an, Sd) UCL | 22.96 | | |
| 1039 | | | | | | | | | | | | | | | |
| 1040 | | | | | | | Suggested | UCL to Use | | | | | | | |

| | А | В | С | D | E | F | G | Н | | I | J | K | L |
|------|---------------------------|--------------|----------------|----------------|---------------|----------------|-------------|-----------------|--------|---------------|----------------|--------------------|-------|
| 1041 | | | | 95% Stud | dent's-t UCL | 12.12 | | | | | | | |
| 1042 | | | | | | | | | | | | | |
| 1043 | | Note: Sugge | stions regard | ling the selec | tion of a 95% | UCL are pro | ovided to h | nelp the us | ser to | select the n | nost approp | riate 95% UCL | • |
| 1044 | | | F | Recommenda | tions are bas | sed upon dat | a size, dat | a distribut | ion, a | and skewnes | S. | | |
| 1045 | | These reco | mmendations | s are based u | pon the resu | Its of the sim | ulation stu | udies sumr | mariz | zed in Singh, | Maichle, ar | nd Lee (2006). | |
| 1046 | Н | owever, simu | lations result | s will not cov | er all Real W | /orld data set | s; for add | itional insig | ght tł | ne user may | want to con | sult a statisticia | an. |
| 1047 | | | | | | | | | | | | | |
| 1048 | | Note: For | highly negat | ively-skewed | l data, confi | dence limits | (e.g., Che | n, Johnso | on, Lo | ognormal, ar | nd Gamma) | may not be | |
| 1040 | | | reliable. | Chen's and J | ohnson's me | ethods provi | de adjustr | nents for p | posit | vely skewed | data sets. | | |
| 1050 | | | | | | | | | | - | | | |
| 1050 | | | | | | | | | | | | | |
| 1051 | XYLENES, | TOTAL | | | | | | | | | | | |
| 1052 | | | | | | | | | | | | | |
| 1053 | | | | | | General | Statistics | | | | | | |
| 1054 | | | Total | Number of C | bservations | 12 | | | | Numbe | r of Distinct | Observations | 12 |
| 1055 | | | | | | | | | | Numbe | r of Missina | Observations | 0 |
| 1050 | | | | | Minimum | 2.87 | | | | | | Mean | 17.21 |
| 1057 | | | | | Maximum | 56.44 | | | | | | Median | 16.18 |
| 1058 | | | | | SD | 13.98 | | | | | Std | Error of Mean | 4.036 |
| 1059 | | | | Coefficient | of Variation | 0.812 | | | | | | Skewness | 2 157 |
| 1060 | | | | | | 0.012 | | | | | | Chonness | 2.107 |
| 1061 | | | | | | Normal (| OF Test | | | | | | |
| 1062 | | | | haniro Wilk T | est Statistic | 0.77 | | | | Shaniro Wi | | et . | |
| 1063 | | | 5% S | haniro Wilk C | ritical Value | 0.77 | | Dat | ta No | t Normal at | 5% Significa | nce l evel | |
| 1064 | | | 5/00 | | | 0.000 | | Dat | | | | | |
| 1065 | | | 5 | | | 0.207 | | Dat | to No | | Significa | | |
| 1066 | | | 5 | 70 LINEIOIS C | Dete Not | Normal at 5 | % Signific | | | | | | |
| 1067 | | | | | | | o Olgrinit | | | | | | |
| 1068 | | | | | Δε | suming Norr | nal Dietrik | ution | | | | | |
| 1069 | | | 95% N/ | | | Suming Non | | | 95% | LICI e (Adiu | eted for Sk | owness) | |
| 1070 | | | 0070110 | 95% Stur | lent's_t Cl | 24.46 | | | 0070 | | | (Chen_1995) | 26 53 |
| 1071 | | | | 3570 5100 | | 24.40 | | | | 95% Modifi | | $hnson_1978$ | 20.00 |
| 1072 | | | | | | | | | | 3376 WOUT | | 5111301-1370) | 24.00 |
| 1073 | | | | | | Commo | | | | | | | |
| 1074 | | | | | oct Statistic | | | Δ | ndo | eon-Darling | Gamma G | OE Test | |
| 1075 | | | | 5% A D C | ritical Value | 0.373 | Dotoc | n tod data a | nnoc | | istributed at | 5% Significan | |
| 1076 | | | | 5% A-D C | | 0.741 | Delec | Kol | Imoo | | W Gamma | | |
| 1077 | | | | 5% K S C | ritical Value | 0.173 | Dotoc | | nnog | r Commo D | istributed at | 5% Significan | |
| 1078 | | | | Detected | | Commo Die | Delec | | ifica | | isti ibuteu at | 5 % Significan | |
| 1079 | | | | Delected | uata appea | | | | inica | | | | |
| 1080 | | | | | | Commo | Statiation | | | | | | |
| 1081 | | | | | | | Sidustics | | | k | otor (biog or | reated MLE) | 1 50/ |
| 1082 | | | | The | | 2.030 | | | | Thoto | star (bias co | | 10.96 |
| 1083 | | | | Ine | | 8.44Z | | | | Ineta | | | 10.80 |
| 1084 | | | | n I E Maria | | 48.92 | | | | | nu star (b | ias corrected) | 38.02 |
| 1085 | MLE Mean (bias corrected) | | | | 17.21 | | | | A | | as corrected) | 13.67 | |
| 1086 | | | | 4-41 - 1 - 1 | 0: | 0.000 | | | | Approximate | e Uni Square | e value (0.05) | 24.9 |
| 1087 | | | Adjus | sted Level of | Significance | 0.029 | | | | A | ajusted Chi | Square Value | 23.29 |
| 1088 | | | | | - | | | | | | | | |
| 1089 | | 0.5% | | | As | suming Gam | ma Distril | oution | | | | | 00.05 |
| 1090 | | 95% Approx | imate Gamm | a UCL (use w | /hen n>=50) | 26.28 | | 959 | % Ad | justed Gami | na UCL (us | e when n<50) | 28.09 |
| 1091 | | | | | | | | | | | | | |
| 1092 | | | | | | Lognorma | GOF Tes | st | | | | | |

| | А | В | С | D | | Е | F | G | Н | | J | K | L | |
|------|---|--------------|-------------|---------------|----------|---------------|----------------|------------------------------|-----------------|--------------|-----------------|-------------------|-------|--|
| 1093 | | | | Shapiro W | Vilk Te | est Statistic | 0.955 | | Shap | oiro Wilk Lo | gnormal GOF | - Test | | |
| 1094 | | | 5% | Shapiro W | /ilk Cri | itical Value | 0.859 | | Data appea | r Lognorma | ll at 5% Signif | icance Level | | |
| 1095 | | | | Lilliefo | ors Te | est Statistic | 0.176 | | Lill | liefors Logr | ormal GOF 1 | ſest | | |
| 1096 | | | | 5% Lilliefo | ors Cri | itical Value | 0.243 | | Data appea | r Lognorma | ll at 5% Signif | icance Level | | |
| 1097 | | | | | D | ata appear | Lognormal | at 5% Signif | icance Leve | | | | | |
| 1098 | | | | | | | | | | | | | | |
| 1099 | | | | | | | Lognorma | I Statistics | | | | | | |
| 1100 | | | | Minimum | n of Lo | ogged Data | 1.054 | | | | Mean of | logged Data | 2.581 | |
| 1101 | | | | Maximum | n of Lo | ogged Data | 4.033 | | | | SD of | logged Data | 0.782 | |
| 1102 | | | | | | | | | | | | | | |
| 1103 | | | | | | Assu | uming Logno | ormal Distrib | ution | | | | | |
| 1104 | | | | | 9 | 5% H-UCL | 32.66 | 90% Chebyshev (MVUE) UCL 29. | | | | | | |
| 1105 | | | 95% | % Chebysh | nev (M | IVUE) UCL | 35.34 | | | 97.5% | Chebyshev (| (MVUE) UCL | 43.11 | |
| 1106 | | | 999 | % Chebysh | nev (M | IVUE) UCL | 58.37 | | | | | | | |
| 1107 | | | | | | | | | | | | | | |
| 1108 | | | | | l | Nonparame | etric Distribu | tion Free UC | CL Statistics | | | | | |
| 1109 | 109 Data appear to follow a Discernible Distribution at 5% Significance Level | | | | | | | | | | | | | |
| 1110 | | | | | | | | | | | | | | |
| 1111 | | | | | | Nonpa | rametric Dis | tribution Fre | e UCLs | | | | | |
| 1112 | | | | | 95% | 6 CLT UCL | 23.85 | | | | 95% Ja | ackknife UCL | 24.46 | |
| 1113 | | | 95 | % Standard | d Boo | tstrap UCL | 23.55 | | | | 95% Boo | otstrap-t UCL | 28.9 | |
| 1114 | | | | 95% Hall's | s Boo | tstrap UCL | 54.14 | | | 95% | Percentile Bo | ootstrap UCL | 24.49 | |
| 1115 | | | | 95% BCA | A Boo | tstrap UCL | 26.54 | | | | | | | |
| 1116 | | | 90% (| Chebyshev | /(Mear | n, Sd) UCL | 29.32 | | | 95% C | hebyshev(Me | an, Sd) UCL | 34.8 | |
| 1117 | | | 97.5% (| Chebyshev | /(Mear | n, Sd) UCL | 42.42 | | | 99% C | hebyshev(Me | an, Sd) UCL | 57.37 | |
| 1118 | | | | | | | | | | | | | | |
| 1119 | | | | | | | Suggested | UCL to Use | | | | | | |
| 1120 | | | ç | 95% Adjust | ted Ga | amma UCL | 28.09 | | | | | | | |
| 1121 | 21 | | | | | | | | | | | | | |
| 1122 | | Note: Sugge | stions rega | rding the s | selecti | on of a 95% | UCL are pr | ovided to he | lp the user to | select the I | most appropri | ate 95% UCL | • | |
| 1123 | | | | Recomme | endati | ons are bas | sed upon dat | a size, data | distribution, a | and skewne | SS. | | | |
| 1124 | | These reco | mmendatio | ns are bas | sed up | on the resu | Its of the sim | ulation studi | es summariz | ed in Singh | , Maichle, and | d Lee (2006). | | |
| 1125 | He | owever, simu | lations res | ults will not | t cove | r all Real W | /orld data se | ts; for additic | onal insight th | ie user may | want to cons | ult a statisticia | an. | |
| 1126 | 26 | | | | | | | | | | | | | |

Attachment 2 (Continued)

Groundwater Samples from Q3 and Q4 2015, On-Base (Input)

| | A | В | С | D | E | F |
|----|------------------------|--------------------------|---|--------------------|---------------------|---|
| 1 | 1,2,4-Trimethylbenzene | d_1,2,4-Trimethylbenzene | | 1,2-Dichloroethane | d_1,2-Dibromoethane | |
| 2 | 493 | 1 | | 93 | 1 | |
| 3 | 410 | 1 | | 70.2 | 1 | |
| 4 | 400 | 1 | | 18 | 1 | |
| 5 | 361 | 1 | | 15.1 | 1 | |
| 6 | 250 | 1 | | 9.12 | 1 | |
| 7 | 212 | 1 | | 6.58 | 1 | |
| 8 | 109 | 1 | | 6.17 | 1 | |
| 9 | 109 | 1 | | 5.22 | 1 | |
| 10 | 83.2 | 1 | | 5.18 | 1 | |
| 11 | 71.2 | 1 | | 3.76 | 1 | |
| 12 | 69.5 | 1 | | 3.31 | 1 | |
| 13 | 42.5 | 1 | | 2.27 | 1 | |
| 14 | 23.5 | 1 | | 0.997 | 1 | |
| 15 | 13.2 | 1 | | 0.686 | 1 | |
| 16 | 9.77 | 1 | | 0.255 | 1 | |
| 17 | 5.99 | 1 | | 0.241 | 1 | |
| 18 | 4.86 | 1 | | 0.216 | 1 | |
| 19 | 2.13 | 1 | | 0.0953 | 1 | |
| 20 | 1.59 | 1 | | 0.0759 | 1 | |
| 21 | 1 | 1 | | 0.0664 | 1 | |
| 22 | 0.5 | 0 | | 0.0368 | 1 | |
| 23 | 0.5 | 0 | | 0.00966 | 0 | |
| 24 | 0.25 | 0 | | 0.00964 | 0 | |
| 25 | 0.25 | 0 | | 0.00957 | 0 | |
| 26 | 0.25 | 0 | | 0.00953 | 0 | |
| 27 | 0.25 | 0 | | 0.00952 | 0 | |
| 28 | 0.25 | 0 | | 0.00949 | 0 | |
| 29 | 0.25 | 0 | | 0.00947 | 0 | |
| 30 | 0.25 | 0 | | 0.00946 | 0 | |
| 31 | 0.25 | 0 | | 0.00946 | 0 | |
| 32 | 0.25 | 0 | | 0.00945 | 0 | |
| 33 | 0.25 | 0 | | 0.00945 | 0 | |
| 34 | 0.25 | 0 | | 0.009445 | 0 | |
| 35 | 0.25 | 0 | | 0.00943 | 0 | |
| 36 | 0.25 | 0 | | 0.00942 | 0 | |
| 37 | 0.25 | 0 | | 0.00942 | 0 | |
| 38 | 0.25 | 0 | | 0.009415 | 0 | |
| 39 | 0.25 | 0 | | 0.0094 | 0 | |
| 40 | 0.25 | 0 | | 0.0094 | 0 | |
| 41 | 0.25 | 0 | | 0.00939 | 0 | |
| 42 | 0.25 | 0 | | 0.00939 | 0 | |
| 43 | 0.25 | 0 | | 0.00939 | 0 | |
| 44 | 0.25 | 0 | | 0.009385 | 0 | |
| 45 | 0.25 | 0 | | 0.00938 | 0 | |
| 46 | 0.25 | 0 | | 0.00938 | 0 | |
| 47 | 0.25 | 0 | | 0.00938 | 0 | |
| 48 | 0.25 | 0 | | 0.009375 | 0 | |
| 49 | 0.25 | 0 | | 0.00937 | 0 | |
| 50 | 0.25 | 0 | | 0.00937 | 0 | |

| | А | В | С | D | E | F |
|----|------------------------|--------------------------|---|--------------------|---------------------|---|
| 1 | 1,2,4-Trimethylbenzene | d_1,2,4-Trimethylbenzene | | 1,2-Dichloroethane | d_1,2-Dibromoethane | |
| 51 | 0.25 | 0 | | 0.00937 | 0 | |
| 52 | 0.25 | 0 | | 0.00936 | 0 | |
| 53 | 0.25 | 0 | | 0.00935 | 0 | |
| 54 | 0.25 | 0 | | 0.00935 | 0 | |
| 55 | 0.25 | 0 | | 0.00934 | 0 | |
| 56 | 0.25 | 0 | | 0.00934 | 0 | |
| 57 | 0.25 | 0 | | 0.00934 | 0 | |
| 58 | 0.25 | 0 | | 0.00933 | 0 | |
| 59 | 0.25 | 0 | | 0.00933 | 0 | |
| 60 | 0.25 | 0 | | 0.00933 | 0 | |
| 61 | 0.25 | 0 | | 0.00933 | 0 | |
| 62 | 0.25 | 0 | | 0.00931 | 0 | |
| 63 | 0.25 | 0 | | 0.0093 | 0 | |
| 64 | 0.25 | 0 | | 0.00929 | 0 | |
| 65 | 0.25 | 0 | | 0.00928 | 0 | |
| 66 | 0.25 | 0 | | 0.00926 | 0 | |
| 67 | 0.25 | 0 | | 0.00923 | 0 | |
| 68 | 0.25 | 0 | | 0.00919 | 0 | |
| 69 | 0.25 | 0 | | 0.00917 | 0 | |

| | G | Н | | J | K | L |
|------------|--------------------|----------------------|--|---------------------|-----------------------|---|
| 1 | 1,2-Dichloroethane | d_1,2-Dichloroethane | | 1-Methylnaphthalene | d_1-Methylnaphthalene | |
| 2 | 50 | 0 | | 98.8 | 1 | |
| 3 | 25 | 0 | | 79.2 | 1 | |
| 4 | 25 | 0 | | 66.8 | 1 | |
| 5 | 12.5 | 0 | | 65.8 | 0 | |
| 6 | 5.52 | 1 | | 62.5 | 0 | |
| 7 | 5.22 | 1 | | 61.5 | 1 | |
| 8 | 5 | 0 | | 60.7 | 0 | |
| 9 | 5 | 0 | | 39.7 | 1 | |
| 10 | 5 | 0 | | 38.6 | 1 | |
| 11 | 5 | 0 | | 31.9 | 1 | |
| 12 | 4.84 | 1 | | 22.7 | 1 | |
| 13 | 4.3 | 1 | | 14.7 | 1 | |
| 14 | 4.04 | 1 | | 14.7 | 0 | |
| 15 | 2.5 | 0 | | 13.3 | 1 | |
| 16 | 2.5 | 0 | | 12.4 | 1 | |
| 17 | 2.5 | 0 | | 10.3 | 1 | |
| 18 | 2.5 | 0 | | 2.55 | 1 | |
| 19 | 2.12 | 1 | | 1.84 | 1 | |
| 20 | 1.13 | 1 | | 1.47 | 0 | |
| 21 | 0.5 | 0 | | 1.275 | 0 | |
| 22 | 0.5 | 0 | | 1.25 | 0 | |
| 23 | 0.5 | 0 | | 1.25 | 0 | |
| 24 | 0.25 | 0 | | 1.25 | 0 | |
| 25 | 0.25 | 0 | | 1.25 | 0 | |
| 26 | 0.25 | 0 | | 1.25 | 0 | |
| 27 | 0.25 | 0 | | 1.24 | 0 | |
| 28 | 0.25 | 0 | | 1.24 | 0 | |
| 29 | 0.25 | 0 | | 1.24 | 0 | |
| 30 | 0.25 | 0 | | 1.23 | 0 | |
| 31 | 0.25 | 0 | | 1.23 | 0 | |
| 32 | 0.25 | 0 | | 1.23 | 0 | |
| 33 | 0.25 | 0 | | 1.21 | 0 | |
| 34 | 0.25 | 0 | | 1.21 | 0 | |
| 35 | 0.25 | 0 | | 12 | 0 | |
| 36 | 0.25 | 0 | | 12 | 0 | |
| 37 | 0.25 | 0 | | 1.2 | 0 | |
| 38 | 0.25 | 0 | | 12 | 0 | |
| 39 | 0.25 | 0 | | 12 | 0 | |
| 40 | 0.25 | 0 | | 12 | 0 | |
| <u>4</u> 1 | 0.25 | 0 | | 1 19 | 0 | |
| 42 | 0.25 | 0 | | 1 19 | 0 | |
| 43 | 0.25 | 0 | | 1 19 | n 0 | |
| 44 | 0.25 | 0 | | 1 19 | 0 | |
| 45 | 0.25 | 0 | | 1 19 | 0 | |
| 46 | 0.25 | 0 | | 1 19 | 0 | |
| 47 | 0.25 | 0 | | 1 12 | n 0 | |
| 47 | 0.25 | 0 | | 1 18 | 0 | |
| 40 | 0.25 | 0 | | 1 18 | 0 | |
| 50 | 0.25 | 0 | | 1 18 | 0 | |

| | G | Н | I | J | К | L |
|----|--------------------|----------------------|---|---------------------|-----------------------|---|
| 1 | 1,2-Dichloroethane | d_1,2-Dichloroethane | | 1-Methylnaphthalene | d_1-Methylnaphthalene | |
| 51 | 0.25 | 0 | | 1.18 | 0 | |
| 52 | 0.25 | 0 | | 1.18 | 0 | |
| 53 | 0.25 | 0 | | 1.18 | 0 | |
| 54 | 0.25 | 0 | | 1.18 | 0 | |
| 55 | 0.25 | 0 | | 1.18 | 0 | |
| 56 | 0.25 | 0 | | 1.17 | 0 | |
| 57 | 0.25 | 0 | | 1.17 | 0 | |
| 58 | 0.25 | 0 | | 1.16 | 0 | |
| 59 | 0.25 | 0 | | 1.16 | 0 | |
| 60 | 0.25 | 0 | | 1.16 | 0 | |
| 61 | 0.25 | 0 | | 1.16 | 0 | |
| 62 | 0.25 | 0 | | 1.16 | 0 | |
| 63 | 0.25 | 0 | | 1.16 | 0 | |
| 64 | 0.25 | 0 | | 1.16 | 0 | |
| 65 | 0.25 | 0 | | 1.16 | 0 | |
| 66 | 0.25 | 0 | | 1.16 | 0 | |
| 67 | 0.25 | 0 | | 1.16 | 0 | |
| 68 | 0.25 | 0 | | 1.16 | 0 | |
| 69 | 0.25 | 0 | | 1.16 | 0 | |

| | Μ | Ν | 0 | Р | Q | R | S |
|----|---------------------|-----------------------|---|--------------|----------------|---|---------|
| 1 | 2-Methylnaphthalene | d_2-Methylnaphthalene | | Acetophenone | d_Acetophenone | | Benzene |
| 2 | 105 | 1 | | 4520 | 1 | | 16000 |
| 3 | 75.5 | 1 | | 2830 | 1 | | 8940 |
| 4 | 73.8 | 1 | | 2550 | 1 | | 6540 |
| 5 | 73.6 | 1 | | 2400 | 1 | | 5580 |
| 6 | 65.8 | 0 | | 2150 | 1 | | 5290 |
| 7 | 62.5 | 0 | | 1980 | 1 | | 2710 |
| 8 | 60.7 | 0 | | 1660 | 1 | | 1960 |
| 9 | 41.1 | 1 | | 1260 | 1 | | 1920 |
| 10 | 25.4 | 1 | | 968 | 1 | | 1890 |
| 11 | 22.7 | 1 | | 796 | 1 | | 1770 |
| 12 | 22.1 | 1 | | 640 | 1 | | 1400 |
| 13 | 14.7 | 0 | | 220 | 1 | | 1010 |
| 14 | 12.3 | 0 | | 152 | 1 | | 697 |
| 15 | 12.1 | 0 | | 139 | 1 | | 453 |
| 16 | 8.44 | 1 | | 84.6 | 1 | | 385 |
| 17 | 6.25 | 0 | | 77.1 | 1 | | 320 |
| 18 | 1.47 | 0 | | 12.3 | 0 | | 259 |
| 19 | 1.275 | 0 | | 6.25 | 0 | | 108 |
| 20 | 1.25 | 0 | | 1.47 | 0 | | 53.7 |
| 21 | 1.25 | 0 | | 1.275 | 0 | | 19.1 |
| 22 | 1.25 | 0 | | 1.25 | 0 | | 2.31 |
| 23 | 1.25 | 0 | | 1.25 | 0 | | 0.5 |
| 24 | 1.25 | 0 | | 1.25 | 0 | | 0.275 |
| 25 | 1.24 | 0 | | 1.25 | 0 | | 0.25 |
| 26 | 1.24 | 0 | | 1.25 | 0 | | 0.25 |
| 27 | 1.24 | 0 | | 1.24 | 0 | | 0.25 |
| 28 | 1.23 | 0 | | 1.24 | 0 | | 0.25 |
| 29 | 1.23 | 0 | | 1.24 | 0 | | 0.25 |
| 30 | 1.23 | 0 | | 1.23 | 0 | | 0.25 |
| 31 | 1.21 | 0 | | 1.23 | 0 | | 0.25 |
| 32 | 1.21 | 0 | | 1.23 | 0 | | 0.25 |
| 33 | 1.2 | 0 | | 1.21 | 0 | | 0.25 |
| 34 | 1.2 | 0 | | 1.21 | 0 | | 0.25 |
| 35 | 1.2 | 0 | | 1.2 | 0 | | 0.25 |
| 36 | 1.2 | 0 | | 1.2 | 0 | | 0.25 |
| 37 | 1.2 | 0 | | 1.2 | 0 | | 0.25 |
| 38 | 1.2 | 0 | | 1.2 | 0 | | 0.25 |
| 39 | 1.2 | 0 | | 1.2 | 0 | | 0.25 |
| 40 | 1.19 | 0 | | 1.2 | 0 | | 0.25 |
| 41 | 1.19 | 0 | | 1.19 | 0 | | 0.25 |
| 42 | 1.19 | 0 | | 1.19 | 0 | | 0.25 |
| 43 | 1.19 | 0 | | 1.19 | 0 | | 0.25 |
| 44 | 1.19 | 0 | | 1.19 | 0 | | 0.25 |
| 45 | 1.19 | 0 | | 1.19 | 0 | | 0.25 |
| 46 | 1.18 | 0 | | 1.18 | 0 | | 0.25 |
| 47 | 1.18 | 0 | | 1.18 | 0 | | 0.25 |
| 48 | 1.18 | 0 | | 1.18 | 0 | | 0.25 |
| 49 | 1.18 | 0 | | 1.18 | 0 | | 0.25 |
| 50 | 1.18 | 0 | | 1.18 | 0 | | 0.25 |

| | Μ | Ν | 0 | Р | Q | R | S |
|----|---------------------|-----------------------|---|--------------|----------------|---|---------|
| 1 | 2-Methylnaphthalene | d_2-Methylnaphthalene | | Acetophenone | d_Acetophenone | | Benzene |
| 51 | 1.18 | 0 | | 1.18 | 0 | | 0.25 |
| 52 | 1.18 | 0 | | 1.18 | 0 | | 0.25 |
| 53 | 1.18 | 0 | | 1.18 | 0 | | 0.25 |
| 54 | 1.18 | 0 | | 1.18 | 0 | | 0.25 |
| 55 | 1.17 | 0 | | 1.17 | 0 | | 0.25 |
| 56 | 1.17 | 0 | | 1.17 | 0 | | 0.25 |
| 57 | 1.17 | 0 | | 1.17 | 0 | | 0.25 |
| 58 | 1.16 | 0 | | 1.16 | 0 | | 0.25 |
| 59 | 1.16 | 0 | | 1.16 | 0 | | 0.25 |
| 60 | 1.16 | 0 | | 1.16 | 0 | | 0.25 |
| 61 | 1.16 | 0 | | 1.16 | 0 | | 0.25 |
| 62 | 1.16 | 0 | | 1.16 | 0 | | 0.25 |
| 63 | 1.16 | 0 | | 1.16 | 0 | | 0.25 |
| 64 | 1.16 | 0 | | 1.16 | 0 | | 0.25 |
| 65 | 1.16 | 0 | | 1.16 | 0 | | 0.25 |
| 66 | 1.16 | 0 | | 1.16 | 0 | | 0.25 |
| 67 | 1.16 | 0 | | 1.16 | 0 | | 0.25 |
| 68 | 1.16 | 0 | | 1.16 | 0 | | 0.25 |
| 69 | 1.16 | 0 | | 1.16 | 0 | | 0.25 |

| | Т | U | V | W | Х | Y | Z | AA | AB |
|----|-----------|---|--------------|----------------|---|------|--------|----|-------------|
| 1 | d_Benzene | | Ethylbenzene | d_Ethylbenzene | | Lead | d_Lead | | Naphthalene |
| 2 | 1 | | 1550 | 1 | | 7.5 | 0 | | 227 |
| 3 | 1 | | 1370 | 1 | | 7.5 | 0 | | 190 |
| 4 | 1 | | 1160 | 1 | | 3.44 | 1 | | 178 |
| 5 | 1 | | 1060 | 1 | | 3.17 | 1 | | 143 |
| 6 | 1 | | 818 | 1 | | 3 | 0 | | 60.4 |
| 7 | 1 | | 802 | 1 | | 3 | 0 | | 54.8 |
| 8 | 1 | | 423 | 1 | | 3 | 0 | | 53.5 |
| 9 | 1 | | 360 | 1 | | 2.38 | 1 | | 52.7 |
| 10 | 1 | | 303 | 1 | | 2.06 | 1 | | 51.2 |
| 11 | 1 | | 231 | 1 | | 2 | 0 | | 44.9 |
| 12 | 1 | | 188 | 1 | | 1.57 | 1 | | 40.4 |
| 13 | 1 | | 184 | 1 | | 1.5 | 0 | | 35.2 |
| 14 | 1 | | 79 | 1 | | 1.5 | 0 | | 22.5 |
| 15 | 1 | | 57.9 | 1 | | 1.5 | 0 | | 18.3 |
| 16 | 1 | | 54 | 1 | | 1.5 | 0 | | 11.2 |
| 17 | 1 | | 51 | 1 | | 1.5 | 0 | | 7.88 |
| 18 | 1 | | 39.8 | 1 | | 1.5 | 0 | | 6.94 |
| 19 | 1 | | 14.3 | 1 | | 1.5 | 0 | | 4.1 |
| 20 | 1 | | 6.49 | 1 | | 1.5 | 0 | | 1.66 |
| 21 | 1 | | 0.582 | 1 | | 1.5 | 0 | | 0.635 |
| 22 | 1 | | 0.5 | 0 | | 1.5 | 0 | | 0.5 |
| 23 | 0 | | 0.5 | 0 | | 1.5 | 0 | | 0.5 |
| 24 | 1 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 25 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 26 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 27 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 28 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 29 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 30 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 31 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 32 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 33 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 34 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 35 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 36 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 37 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 38 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 39 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 40 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 41 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 42 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 43 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 44 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 45 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 46 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 47 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 48 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 49 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 50 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |

| | Т | U | V | W | Х | Y | Z | AA | AB |
|----|-----------|---|--------------|----------------|---|------|--------|----|-------------|
| 1 | d_Benzene | | Ethylbenzene | d_Ethylbenzene | | Lead | d_Lead | | Naphthalene |
| 51 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 52 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 53 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 54 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 55 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 56 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 57 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 58 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 59 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 60 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 61 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 62 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 63 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 64 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 65 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 66 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 67 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 68 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |
| 69 | 0 | | 0.25 | 0 | | 1.5 | 0 | | 0.25 |

| | AC | AD | AE | AF | AG | AH | AI |
|----|---------------|----|---------|-----------|----|-----------------|-------------------|
| 1 | d_Naphthalene | | Toluene | d_Toluene | | Xylenes (total) | d_Xylenes (total) |
| 2 | 1 | | 21400 | 1 | | 5120 | 1 |
| 3 | 1 | | 15600 | 1 | | 4230 | 1 |
| 4 | 1 | | 14300 | 1 | | 3290 | 1 |
| 5 | 1 | | 13100 | 1 | | 2920 | 1 |
| 6 | 1 | | 3250 | 1 | | 1520 | 1 |
| 7 | 1 | | 2810 | 1 | | 1290 | 1 |
| 8 | 1 | | 1890 | 1 | | 895 | 1 |
| 9 | 1 | | 1760 | 1 | | 614 | 1 |
| 10 | 1 | | 1500 | 1 | | 582 | 1 |
| 11 | 1 | | 955 | 1 | | 571 | 1 |
| 12 | 1 | | 910 | 1 | | 558 | 1 |
| 13 | 1 | | 831 | 1 | | 377 | 1 |
| 14 | 1 | | 632 | 1 | | 307 | 1 |
| 15 | 1 | | 485 | 1 | | 189 | 1 |
| 16 | 1 | | 248 | 1 | | 108 | 1 |
| 17 | 1 | | 146 | 1 | | 25.7 | 1 |
| 18 | 1 | | 3.42 | 1 | | 5.26 | 1 |
| 19 | 1 | | 1.44 | 1 | | 2.51 | 1 |
| 20 | 1 | | 1.38 | 1 | | 2.17 | 1 |
| 21 | 1 | | 0.5 | 0 | | 1.92 | 1 |
| 22 | 0 | | 0.5 | 0 | | 1.5 | 0 |
| 23 | 0 | | 0.5 | 0 | | 1.5 | 0 |
| 24 | 0 | | 0.5 | 0 | | 0.75 | 0 |
| 25 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 26 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 27 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 28 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 29 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 30 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 31 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 32 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 33 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 34 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 35 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 36 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 37 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 38 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 39 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 40 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 41 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 42 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 43 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 44 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 45 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 46 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 47 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 48 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 49 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 50 | 0 | | 0.25 | 0 | | 0.75 | 0 |

| | AC | AD | AE | AF | AG | AH | AI |
|----|---------------|----|---------|-----------|----|-----------------|-------------------|
| 1 | d_Naphthalene | | Toluene | d_Toluene | | Xylenes (total) | d_Xylenes (total) |
| 51 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 52 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 53 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 54 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 55 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 56 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 57 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 58 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 59 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 60 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 61 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 62 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 63 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 64 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 65 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 66 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 67 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 68 | 0 | | 0.25 | 0 | | 0.75 | 0 |
| 69 | 0 | | 0.25 | 0 | | 0.75 | 0 |

Attachment 2 (Continued)

Groundwater Samples from Q3 and Q4 2015, On-Base (Output)

| | А | | В | T | С | D | | F | F | G | | Н | 1 | 1 | L. | i T | К | | 1 |
|----|----------|-----|---------|-----|---------------------------|------------|------------|--------------------|------------------|-------------|----------|--------|----------|----------|----------|--------|--------------------|--------------|-------------------|
| 1 | | | | | <u> </u> | <u> </u> | ICI | Statistics | for Data Sets | with Non. | Deter | rte | | · · | | - | ·· | <u> </u> | |
| - | | | | | | | | . 010100100 | | with Hon | 2010 | 010 | | | | | - | | |
| 2 | | | | | | 1 | | | | | | | | | | | | | |
| 3 | | | | | User Selected Options | | | | | | | | | | | | | | |
| 4 | | | | D | ate/Time of Computation | ProUCL | L 5. | 16/20/2017 | 9:44:13 AM | | | | | | | | | | |
| 5 | | | | | From File | WorkSh | hee | t.xls | | | | | | | | | | | |
| 6 | | | | | Full Precision | OFF | | | | | | | | | | | | | |
| | | | | | Confidence Coofficient | 050/ | | | | | | | | | | | | | |
| / | | | Niccost | | | 90 /0 | | | | | | | | | | | | | |
| 8 | | | Num | ber | of Bootstrap Operations | 2000 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | |
| 10 | 1,2,4-Tr | ime | thylber | nze | ene | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | - | | |
| 12 | | | | | | | | | General Statis | tics | | | | | | | | | |
| 12 | | | | | Total N | umbor o | fO | hearvations | 69 | | | | Num | oor of | Dicting | | convot | tions | 21 |
| 13 | | | | | Total N | | | | 08 | | | | Num | | Distille | | | .10115 | 21 |
| 14 | | | | | | Num | ibe | r of Detects | 20 | | | | | NU | imber | of No | on-Det | ects | 48 |
| 15 | | | | | Num | nber of D | Disti | nct Detects | 19 | | | | Num | ber of | Distin | ict N | on-Det | ects | 2 |
| 16 | | | | | | M | linin | num Detect | 1 | | | | | | Minim | um N | √on-De | etect | 0.25 |
| 17 | | | | | | Ma | axin | num Detect | 493 | | | | | 1 | Maxim | um M | Von-De | etect | 0.5 |
| 18 | | | | | | Va | riar | nce Detects | 26058 | | | | | | Perce | nt N | on-Det | tects | 70.59% |
| 10 | | | | | | | Me | an Detects | 133.6 | | | | | | | | SD Det | tects | 161.4 |
| 19 | | | | | | | A a d | ian Data ata | 70.25 | | | | | | | - | | COLO | 1 200 |
| 20 | | | | | | 11 | lea | ian Detects | 70.35 | | | | | | | | JV Det | ects | 1.208 |
| 21 | | | | | | Ske | wne | ess Detects | 1.15 | | | | | | K | urtos | sis Det | ects | -0.0712 |
| 22 | | | | | M | lean of L | .ogg | ged Detects | 3.682 | | | | | 5 | SD of L | _ogg | ed Det | ects | 1.991 |
| 23 | | | | | | | | | | | | | | | | | | | |
| 24 | | | | | | | | Normal G | OF Test on D | etects Or | nly | | | | | | | | |
| 25 | | | | | Sha | apiro Wil | k To | est Statistic | 0.792 | | | | S | Shapiro | o Wilk | GO | F Test | | |
| 20 | | | | | 5% Sha | niro Will | k Ci | ritical Value | 0.905 | | Dete | octod | Data | Not N | ormal | at 5º | % Sign | ificar | |
| 20 | | | | | 0,0010 | Lilliofor | <u>а т</u> | act Statiatic | 0.000 | | Doit | 00100 | Dulu | Lillio | foro O | | Teet | moun | |
| 27 | | | | | 50/ | Lineion | 5 10 | | 0.201 | | <u> </u> | | <u> </u> | Line | | | rest | | |
| 28 | | | | | 5% | Lilliefors | s Ci | ritical Value | 0.192 | | Dete | ected | Data | Not N | ormal | at 5% | % Sign | ifican | ice Level |
| 29 | | | | | | Dete | ecte | ed Data No | t Normal at 5 | % Signific | ance | Leve | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | |
| 31 | | | | | Kaplan-Meier (l | KM) Sta | tist | ics using N | ormal Critical | Values a | nd oth | her N | onpa | ramet | ric UC | Ls | | | |
| 32 | | | | | · · · · | , | | KM Mear | 39.48 | | | | • | KM St | andard | d Frr | or of M | lean | 13.03 |
| 32 | | | | | | | | KM SD | 104.8 | | | | | | 05% | KM (| (BCA) | | 63.82 |
| 33 | | | | | | 01 | E0/ | | 61.00 | | | 050 | | (Dere | | Deet | | | 61.50 |
| 34 | | | | | | 95 | 5% | | 61.22 | | | 95% | % KIVI | (Perc | | 3000 | strap) | UCL | 61.59 |
| 35 | | | | | | 95 | 9% I | KM (z) UCL | 60.92 | | | | | 95% | 5 KM E | Boots | strap t | UCL | 70.36 |
| 36 | | | | | 90' | % KM C | heb | yshev UCL | 78.58 | | | | | 95% | KM C | heb | yshev I | UCL | 96.29 |
| 37 | | | | | 97.5 | % KM C | heb | yshev UCL | 120.9 | | | | | 99% | KM C | heb | yshev I | UCL | 169.2 |
| 38 | | | | | | | | | | | | | | | | | | | |
| 39 | | | | | | Gan | nma | a GOF Tes | ts on Detecte | d Observa | ations | ; Only | / | | | | | | |
| 40 | | | | | | Α-Γ | | est Statistic | 0.37 | | | | And | ierson | -Darli | na C | OF Te | et | |
| 40 | | | | | | 5% A C | | ritical Value | 0.801 | Dotoo | tod do | to on | noor | Comm | Dict | | | 50/ Ci | ignificance Lovel |
| 41 | | | | | | 370 A-L | | | 0.001 | Delec | leu ua | ita ap | vpear · | | | Induc | | 570 01 | gillicance Level |
| 42 | | | | | | N-0 | 5 10 | | 0.114 | | | | NU | imogo | 100-31 | mm | ov GO | | |
| 43 | | | | | | 5% K-5 | S CI | ritical Value | 0.205 | Detec | ted da | ita ap | pear | Gamm | na Dist | ribut | ed at 5 | <u>اک %د</u> | gnificance Level |
| 44 | | | | | Dete | ected da | ata | appear Ga | mma Distribu | ted at 5% | Signi | fican | ce Le | vel | | | | | |
| 45 | | | | | | | | | | | | | | | | | | | |
| 46 | | | | | | | G | amma Stat | istics on Dete | cted Data | a Only | / | | | | | | | |
| 47 | | | | | | | I | k hat (MLE) | 0.52 | | | | | k star | (bias d | corre | ected N | ЛLE) | 0.476 |
| 48 | | | | | | TI | het | a hat (MI F) | 256.7 | | | | The | a star | (bias d | corre | ected M | ALE) | 280.9 |
| 40 | | | | | | | n | u hat (MLE) | 20.82 | | | | | n | star (| hias | COTTAC | ted) | 19.03 |
| 49 | | | | | | | Mar | | 122.6 | | | | | nu | (| 5.03 | 551166 | | |
| 50 | | | | | | ľ | NIES | | 133.0 | | | | | | | | | | |
| 51 | | | | | | | | | | | | | | | | | | | |
| 52 | | | | | | Gan | nm | a ROS Sta | tistics using li | nputed N | on-De | etects | 3 | | | | | | |
| 53 | | | | | GROS may not be | used wh | nen | data set ha | is > 50% NDs | with many | y tied | obsei | rvatio | ns at r | nultiple | e DL | s | | |
| 54 | | | G | GRC | OS may not be used when I | kstar of o | dete | ects is smal | l such as <1.0 | , especial | ly whe | en the | e sam | ple siz | e is sr | nall (| (e.g., < | :15-2 | 0) |
| 55 | | | | | For such : | situation | is, (| GROS meth | od may vield | incorrect v | alues | of U | CLs a | nd BT | Vs | | | | |
| 56 | | | | | | This | s is | especially | rue when the | sample si | ze is s | small | | | | | | | |
| 55 | | | | | or gamma distributed data | nted dat | ta " | BTVe and I | ICI s may be | omnuted | lising | nam | ma di | stributi | ion on | KM | estimo | ites | |
| 57 | | | | - 1 | | | .u, I | Minimum | | | aaniy | guill | na ul | Janual | | | N | 1000 | 30.21 |
| 58 | | | | | | | | wiininnum Maari | 0.01 | | | | | | | | 11 | iean | 0.01 |
| 59 | | | | | | | | Maximum | 493 | | | | | | | | Me | dian | 0.01 |
| 60 | | | | | | | | SD | 105.6 | | | | | | | | | CV | 2.686 |
| 61 | | | | | | | | k hat (MLE) | 0.134 | | | | | k star | (bias d | corre | cted N | /LE) | 0.138 |
| 62 | | | | | | TI | heta | a hat (MLE) | 293.8 | | | | Thet | a star | (bias d | corre | ected N | /LE) | 285.5 |
| 63 | | | | | | | nı | u hat (MLE) | 18.2 | | | | | nı | ı star (| bias | correc | cted) | 18.73 |
| 64 | | | | | Adjusted L | evel of S | Sian | ificance (R) | 0.0465 | | | | | | - (| | | | |
| 65 | | | | | Annrovimate Chi S | | alu. | a (18 73 ~) | 9 019 | | | ۵diu | sted (| hi Sa | uare \ | /alur | /12 7 [,] | 3 8) | 9 779 |
| CO | | | | | | | aiu | bon | 74.00 | - | E0/ 0 | Auju | | Jun Oq | | | , (10.7. | -FO | 75.00 |
| 66 | | | | 9 | 5% Gamma Approximate l | UCL (USE | e w | nen n>=50) | /4.22 | 9 | o% Gi | amma | a Adji | usted l | JUL (U | ise w | men n | ~5U) | /5.28 |

| | A B | С | D | E | F | G | Н | | J | K | L |
|---|--|--|---|--|--|--|---|---|---|--|---|
| 67 | | | | | | | | | | | |
| 68 | | | Estimate | es of Gamm | a Parameter | s using KM | I Estimate | s | | | |
| 69 | | | | Mean (KM) | 39.48 | | | | | SD (KM) | 104.8 |
| 70 | | | Var | riance (KM) | 10974 | | | | SE of | Mean (KM) | 13.03 |
| 71 | | | - | k hat (KM) | 0 142 | | | | | k star (KM) | 0 146 |
| 72 | | | r | nu hat (KM) | 19.31 | | | | n | ustar (KM) | 19.8 |
| 72 | | | the | ta hat (KM) | 278 | | | | thet | a etar (KM) | 271.2 |
| 73 | | 2 0% c | | | 278 41.0 | | | 0.0% | | a star (KNI) | 116.5 |
| /4 | | 00% (| yannia perc | | 41.9 | | | 90% | yannna perc | | F10.0 |
| 75 | | 95% (| gamma perc | entile (KIVI) | 218.5 | | | 99% (| gamma perc | entile (KIVI) | 516.3 |
| 76 | | | | | | | | | | | |
| 77 | | | | Gamma Ka | plan-Meier (F | (M) Statis | ICS | | | | |
| 78 | | Approximate Chi S | Square Value | e (19.80, α) | 10.7 | | Adjus | sted Chi S | Square Value | e (19.80, β) | 10.56 |
| 79 | 95% | Gamma Approximate KM-I | UCL (use wł | hen n>=50) | 73.03 | 95% 0 | amma Adj | usted KN | 1-UCL (use v | /hen n<50) | 74.04 |
| 80 | | | | | | | | | | | |
| 81 | | | Lognorm | nal GOF Te | st on Detecte | d Observ | ations Only | / | | | |
| 82 | | Sha | apiro Wilk Te | est Statistic | 0.925 | | | Shap | iro Wilk GO | F Test | |
| 83 | | 5% Sha | apiro Wilk Cr | ritical Value | 0.905 | De | tected Data | a appear | Lognormal a | it 5% Signif | cance Level |
| 84 | | | Lilliefors Te | est Statistic | 0.161 | | | Lill | iefors GOF | Test | |
| 85 | | 5% | Lilliefors Cr | ritical Value | 0.192 | De | tected Data | a appear | Lognormal a | it 5% Signif | cance Level |
| 86 | | | Detected D |)ata appear | Lognormal a | t 5% Sign | ificance Le | vel | | | |
| 87 | | | | •• | | | | | | | |
| 88 | | | Loanorm | al ROS Sta | atistics Usina | Imputed N | lon-Detect | s | | | |
| 80 | | | Mean in Ori | iginal Scale | 39.6 | | | | Mean ir | Log Scale | -0.893 |
| 0.0 | | | SD in Ori | ininal Scale | 105.5 | | | | SD ir | Log Scale | 3 855 |
| 01 | | 95% tUCL (accumacy | normality of | ROS data) | 60.0/ | | | 95% Dr | arcentile Roo | tstran LICI | 61 91 |
| 91 | | | 5% BCA Roo | | 66.24 | | | 55 /0 FE | 95% Root | stran t LICI | 69.35 |
| 92 | | 95 | | | 6062 | | | | 33 /0 DUU | map i UCL | 03.30 |
| 93 | | | 50 /0 Π-UUL | (LUY RUS) | 0303 | | | | | | |
| 94 | | 04 -11-11 | ing 1/14/' | materia | aged D-t- | nd Anarr | ing ! = == | | ulbu ti a m | | |
| 95 | | Statistics us | ING KM ESTI | mates on L | ogged Data a | na Assum | ing Lognoi | rmai Dist | ribution | <u> </u> | |
| 96 | | | KM Mea | an (logged) | 0.104 | | | | KM | Geo Mean | 1.11 |
| 97 | | | KM S | SD (logged) | 2.538 | | | 95% Cr | itical H Valu | e (KM-Log) | 3.068 |
| 98 | | KM Standard | Error of Mea | an (logged) | 0.316 | | | | 95% H-UCL | (KM -Log) | 71.98 |
| 99 | | | KM S | SD (logged) | 2.538 | | | 95% Cr | itical H Valu | e (KM-Log) | 3.068 |
| 100 | | KM Standard | Error of Mea | an (logged) | 0.316 | | | | | | |
| 101 | | | | | | | | | | | |
| 102 | | | | | DL/2 Statistic | xs | | | | | |
| 103 | | DL/2 Norma | al | | | | | DL/2 | Log-Transf | ormed | |
| 104 | | | Mean in Ori | iginal Scale | 39.39 | | | | Mean ir | Log Scale | -0.364 |
| 105 | | | SD in Ori | iginal Scale | 105.6 | | | | SD ir | Log Scale | 2.84 |
| | | 95% t UC | CL (Assumes | s normality) | 60.74 | | | | 95% I | I-Stat UCL | 128.5 |
| 106 | | | | | | | | | | | |
| 106 107 | | DL/2 is not a | recommen | ded method | d, provided fo | r comparis | sons and h | istorical | reasons | | |
| 106 107 108 | | DL/2 is not a | recommen | ded method | l, provided fo | r compari | sons and h | istorical | reasons | | |
| 106 107 108 109 | | DL/2 is not a | recomment | ded methoo parametric I | l, provided fo | r comparis | sons and h | istorical | reasons | | |
| 106 107 108 109 110 | | DL/2 is not a | Nonp | ded methoo parametric I appear Gar | l, provided fo Distribution F mma Distribu | r comparis ree UCL S ed at 5% | tatistics | e Level | reasons | | |
| 106 107 108 109 110 111 | | DL/2 is not a Dete | Nonp ected Data | ded methoo parametric I appear Gar | l, provided fo Distribution F mma Distribu | r comparis ree UCL S red at 5% | sons and h tatistics Significanc | istorical ce Level | reasons | | |
| 106 107 108 109 110 111 | | DL/2 is not a Dete | Nonp Rected Data | ded method parametric I appear Gar Sug | d, provided fo Distribution F mma Distribu | r comparis ree UCL S ted at 5% o Use | sons and h tatistics Significanc | istorical | reasons | | |
| 106 107 108 109 110 111 112 113 | | DL/2 is not a Dete 95% KM App | Nonp ected Data a | ded methoo parametric I appear Gar Sug amma UCL | d, provided for Distribution F nma Distribut gested UCL t | r comparis ree UCL S red at 5% o Use | sons and h tatistics Significanc | istorical | reasons | | |
| 106 107 108 109 110 111 112 113 114 | | DL/2 is not a Dete 95% KM App | Nonp ected Data a | ded method parametric I appear Gar Sug amma UCL | d, provided for Distribution F nma Distribu gested UCL t 73.03 | r comparis ree UCL S ted at 5% o Use | sons and h tatistics Significanc | istorical | reasons | | |
| 106 107 108 109 110 111 112 113 114 | Note | DL/2 is not a Detu 95% KM App Suggestions regarding the | recommend Nonp ected Data a proximate Ga selection of | ded method parametric I appear Gar Sug amma UCL | d, provided for Distribution F mma Distribut gested UCL t 73.03 | r comparis ree UCL S red at 5% o Use | tatistics Significance | ce Level | most approp | riate 95% I | |
| 106 107 108 109 110 111 112 113 114 115 116 | Note: | DL/2 is not a Detu 95% KM App Suggestions regarding the Becomp | Nonp ected Data a proximate Ga selection of | ded method parametric (appear Gar Sug amma UCL i a 95% UCl are based u | d, provided for Distribution F mma Distribut gested UCL t 73.03 _ are provideo poor data size | r comparis ree UCL S red at 5% o Use | tatistics Significance e user to se | elect the | most approp | riate 95% U | CL. |
| 106 107 108 109 110 111 112 113 114 115 116 | Note: | DL/2 is not a Detu 95% KM App Suggestions regarding the Recomm | Nonp ected Data a proximate Ga selection of nendations a seed upon th | ded method parametric I appear Gar Sug amma UCL f a 95% UCI are based u are based u | I, provided for Distribution F nma Distribut gested UCL t 73.03 - are provided pon data size the simulatio | r comparis ree UCL S ed at 5% o Use I to help th , data distr | e user to so | elect the lossewne | most approp | riate 95% L | CL. |
| 106 107 108 109 110 111 112 113 114 115 116 117 | Note: | DL/2 is not a Detu 95% KM App Suggestions regarding the Recomm se recommendations are ba ar simulations results will p | recomment Nonp ected Data a proximate Ga selection of nendations a assed upon th of cover all P | ded method parametric I appear Gar Sug amma UCL f a 95% UCI are based u he results of Beal World | d, provided for Distribution F nma Distribut gested UCL t 73.03 - are provideo pon data size the simulatio data sets: for | r comparis ree UCL S and at 5% o Use | tatistics Significance e user to se ibution, and ummarized | elect the d skewned in Singh | most approp ss. n, Maichle, a | riate 95% L nd Lee (200 | CL. 6). |
| 106 107 108 109 110 111 112 113 114 115 116 117 118 | Note: Thes Howeve | DL/2 is not a Detu 95% KM App Suggestions regarding the Recomm se recommendations are ba ar, simulations results will no | Nonp ected Data a proximate Ga selection of mendations a ased upon th ot cover all F | ded method parametric I appear Gar Sug amma UCL f a 95% UCL are based u ne results of Real World | d, provided for Distribution F nma Distribut gested UCL t 73.03 - are provideo pon data size the simulatio data sets; for | r comparis ree UCL S teed at 5% o Use i to help th , data distri n studies s additional | e user to se ibution, and ummarized insight the | elect the d skewne d in Singh user may | most approp ess. n, Maichle, a v want to cor | riate 95% L nd Lee (200 sult a statis | CL. 6). tician. |
| 106 107 108 109 110 111 112 113 114 115 116 117 118 119 | Note: Thes Howeve | DL/2 is not a Detu 95% KM App Suggestions regarding the Recomm se recommendations are ba er, simulations results will no | Nonp ected Data a proximate Ga selection of mendations a ased upon th ot cover all F | ded method parametric I appear Gar Sug amma UCL i a 95% UCI are based u he results of Real World | d, provided for Distribution F nma Distribut gested UCL t 73.03 - are provided pon data size the simulatio data sets; for | r comparis ree UCL S ted at 5% o Use I to help th data distr n studies s additional | e user to se ibution, and ummarized insight the | elect the d skewne d in Singh user may | most approp ess. n, Maichle, a v want to cor | riate 95% L nd Lee (200 sult a statis | CL. 6). tician. |
| 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 | Note: Thes Howeve | DL/2 is not a Detu 95% KM App Suggestions regarding the Recomm se recommendations are ba er, simulations results will no | Nonp ected Data a proximate Ga selection of mendations a ased upon th ot cover all F | ded method parametric I appear Gar Sug amma UCL i a 95% UCI are based u he results of Real World | d, provided for Distribution F nma Distribut gested UCL t 73.03 - are provided pon data size the simulatio data sets; for | r comparis ree UCL S ted at 5% o Use l to help th , data distr n studies s additional | e user to se ibution, an ummarized insight the | elect the d d skewne d in Singh user may | most approp ess. n, Maichle, a / want to cor | riate 95% L nd Lee (200 sult a statis | CL. 6). tician. |
| 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 | Note: The: Howeve | DL/2 is not a Detu 95% KM App Suggestions regarding the Recomm se recommendations are ba ar, simulations results will no | Nonp ected Data a proximate Ga selection of mendations a ased upon th ot cover all F | ded method parametric I appear Gar Sug amma UCL f a 95% UCI are based u he results of Real World | d, provided for Distribution F nma Distribut gested UCL t 73.03 - are provided pon data size the simulatio data sets; for | r comparis ree UCL S ted at 5% o Use l to help th , data distr n studies s additional | e user to se ibution, an ummarized | elect the d skewned in Singhuser may | most approp ess. n, Maichle, a v want to cor | riate 95% U nd Lee (200 sult a statis | CL. 6). tician. |
| 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 | Note: The: Howeve | DL/2 is not a Detu 95% KM App Suggestions regarding the Recomm se recommendations are ba er, simulations results will no Total N | Nonp ected Data a proximate Ga selection of mendations a ased upon th ot cover all F | ded method parametric I appear Gar Sug amma UCL i a 95% UCI are based u ne results of Real World G Beservations | d, provided for Distribution F mma Distribut gested UCL t 73.03 - are provided pon data size the simulatio data sets; for ieneral Statis | r comparis ree UCL S ted at 5% o Use i to help th , data distr n studies s additional tics | e user to se ibution, and ummarized | elect the d d skewne d in Singh user may | most approp ess. n, Maichle, a v want to cor | riate 95% L nd Lee (200 sult a statis | CL. 6). tician. |
| 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 | Note: The: Howeve | DL/2 is not a Det 95% KM App Suggestions regarding the Recomm se recommendations are ba er, simulations results will no Total N | Nonp ected Data a proximate Ga selection of mendations a ased upon th ot cover all F | ded method parametric I appear Gar Sug amma UCL i a 95% UCI are based u the results of Real World G bservations | d, provided for Distribution F mma Distribur gested UCL to 73.03 - are provided pon data size the simulatio data sets; for data sets; for eneral Statis 68 21 | r comparis ree UCL S ted at 5% o Use i to help th , data distr n studies s additional tics | e user to se ibution, and ummarized | elect the d skewned d in Singhuser may | most approp ess. n, Maichle, a v want to cor | riate 95% L nd Lee (200 sult a statis | CL. 6). tician. 52 |
| 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 122 123 | Note: The: Howeve 1,2-Dibromoethane | DL/2 is not a Dete 95% KM App Suggestions regarding the Recomm se recommendations are ba er, simulations results will no Total N | Nonp ected Data a proximate Ga selection of nendations a ased upon th ot cover all F | ded method parametric I appear Gar Sug amma UCL are based u the results of Real World of Real World of G bservations r of Detects | d, provided for Distribution F nma Distribur gested UCL 1 73.03 - are provided pon data size the simulatio data sets; for eneral Statis 68 21 | r comparis ree UCL S ed at 5% o Use l to help th , data distri n studies s additional tics | e user to se ibution, an- ummarized insight the | elect the d skewned d in Singh user may | most approp ess. n, Maichle, a v want to cor of Distinct Ol Number of N | riate 95% L nd Lee (200 sult a statis | ICL. 6). tician. 52 47 21 |
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| 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 | Note: Thes Howeve 1,2-Dibromoethane | DL/2 is not a Deter Dete | Nonp ected Data a proximate Ga selection of nendations a ased upon th ot cover all f umber of Ot Number nber of Distin Minim Maxim Varian Medi Skewne lean of Logg apiro Wilk Te apiro Wilk Te Lilliefors Te Lilliefors Te | ded method parametric I appear Gar Sug amma UCL a 95% UCI are based u the results of Real World of Real World of Real World of Real World of the results of Real World of the results of Real World of the results of the Detects an Detects an Detects an Detects ped Detects Detects Detects Detects an Detects Sess Detects Detects Detects Detects Sess Detects Normal G est Statistic ritical Value est Statistic ritical Value | d, provided for Distribution F mma Distribution F mma Distribution gested UCL 1 73.03 - are provided pon data size the simulation data sets; for | r comparis ree UCL S ed at 5% o Use i to help th , data distr n studies s additional tics etects On etects On | e user to se ibution, and ummarized insight the insight the insight the insight the insight the insight the insight the insight the insight the insigh | elect the elect the d skewned in Singhuser may see the set of the skewned in Singhuser may see the set of the skewned in Singhuser may see the skewned in Singhuser m | most approp ess. , Maichle, a / want to cor of Distinct Ot Number of N of Distinct N Minimum I Maximum I Percent N Percent N SD of Logg iro Wilk GO Normal at 5' iefors GOF | riate 95% U nd Lee (200 sult a statis on-Detects on-Detects Son-Detects SD Detects SD Detects SD Detects sis Detects ed Detects ed Detects F Test % Significar Test | CL. 6). tician. 52 47 31 0.00917 0.00966 69.12% 24.11 2.104 7.747 2.304 ice Level ice Level |
| 106 107 108 109 110 111 112 113 114 115 116 117 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 | Note: The Howeve 1,2-Dibromoethane | DL/2 is not a Deter Dete | Nonp ected Data a proximate Ga selection of mendations a ased upon th ot cover all F lumber of Ot Number nber of Distii Minim Maxim Varian Medi Skewne Iean of Logg apiro Wilk Te apiro Wilk Te apiro Wilk Te Lilliefors Te Lilliefors Te | ded method parametric I appear Gar Sug amma UCL i a 95% UCI are based u he results of Real World of Real World of Real World of Beservations of Detects num Detects in Detects ian Detects ian Detects ged Detects beservations con Detects ian Detects ian Detects ian Detects ian Detects beservations ged Detects Normal G est Statistic itical Value est Statistic itical Value est Statistic itical Value | d, provided for Distribution F mma Distribution F mma Distribution gested UCL 1 73.03 - are provided pon data size the simulation data sets; for - are provided pon data size the simulation data sets; for - are provided pon data size the simulation - are provided pon data size the simulation - are provided - are | r comparis ree UCL S red at 5% o Use ito help th , data distri n studies s additional tics etects On % Significa Values ar | e user to se ibution, and ummarized insight the ibution, and ummarized insight the lipution, and ummarized insight the lipution insight the lipu | elect the in Singhuser may shap Data Not Lill Data Not Sonparame | most approp iss. , Maichle, a / want to cor of Distinct Ot Number of N of Distinct N Minimum I Maximum I Percent N SD of Logg iro Wilk GO Normal at 5' iefors GOF Normal at 5' ietric UCLs | riate 95% L nd Lee (200 sult a statis on-Detects on-Detects on-Detects SD Detects SD Detects SD Detects sis Detects ed Detects ed Detects F Test % Significar Test | CL. 6). tician. 52 47 31 0.00917 0.00966 69.12% 24.11 2.104 7.747 2.304 ice Level ice Level |
| 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 | Note: The Howeve 1,2-Dibromoethane | DL/2 is not a Dete Dete 95% KM App Suggestions regarding the Recomn se recommendations are ba er, simulations results will no Total N Nun Nun Sha Sha S% Sha S% Kaplan-Meier (| Nonp ected Data a proximate Ga selection of nendations a ased upon th ot cover all F lumber of Disti Minim Maxim Varian Medi Skewne Iean of Logg apiro Wilk Te Lilliefors Te Lilliefors Te Lilliefors Cr | ded method parametric I appear Gar Sug amma UCL i a 95% UCI are based u he results of Real World of Real World of Real World of Best vations r of Detects num Detects num Detects ian Detects an Detects ian Detects ged Detects is Detects it cal Value est Statistic it cal Value is statistic it cal Value | d, provided for Distribution F mma Distribution F mma Distribution F gested UCL 1 73.03 are providect pon data size the simulation data sets; for ieneral Statis 68 21 21 0.0368 93 581.2 11.46 3.31 2.88 0.538 OF Test on C 0.51 0.908 0.348 0.188 Normal at 57 ormal Critical 3.544 | r comparis ree UCL S ad at 5% o Use i to help th data distr n studies s additional tics c etects On etects On % Significa Values ar | e user to se ibution, and ummarized insight the ibution, and ummarized insight the ly Detected I Detected I ance Level ad other No | elect the diskewned din Singh user may Number of Number of Number Number of Number of Number Number of Number of Number of Number Number of Number of Number of Number of Number Number of Number of Nu | most approp ess. Maichle, a want to cor of Distinct Ot Number of N of Distinct N Minimum I Maximum I Percent N Mormal at 5° iefors GOF Normal at 5° etric UCLs Standard Err | riate 95% L nd Lee (200 sult a statis on-Detects on-Detects on-Detects SD Detects SD Detects SD Detects cV Detects sis Detects ed Detects F Test % Significar Fest % Significar | CL. 6). tician. 52 47 31 0.00917 0.00966 69.12% 24.11 2.104 7.747 2.304 ice Level ice Level ice Level 1.753 |

| | ۸ | D | | | - | D | Е | Г | <u> </u> | | T 1 | | 1 | V | 1 |
|-----|---|-----|----------------|-------------|-----------|----------|---------------|----------------|-------------|-------------|-------------|----------|------------|---------------|-------------------|
| 1/2 | A | D | | , | | D | KM SD | г 14 1 | G | | 1 | 95 | 5% KM | (BCA) UCI | Z 069 |
| 143 | | | | | | 95% | KW (t) LICI | 6.467 | | 95 | % KM (Pe | arcent | ile Boot | (BON) UCL | 6 761 |
| 144 | - | | | | | 95% | | 6.427 | | 50 | 0 1) MIN 0/ | 5% K | M Boot | stran t LICI | 14.82 |
| 145 | | | | | 90% K | M Cheł | ovshev UCI | 8 802 | | | 9.5 | 5% KI | M Cheh | vshev UCI | 11.02 |
| 140 | | | | 97 | 7.5% K | M Chel | ovshev UCL | 14.49 | | | 99 | 9% KI | M Cheb | vshev UCL | 20.98 |
| 148 | | | | | | | ., | | | | | | | , | |
| 149 | | | | | | Gamm | a GOF Test | s on Detecte | d Observa | tions Onl | v | | | | |
| 150 | | | | | | A-D T | est Statistic | 0.696 | | | Anders | on-D | arling C | OF Test | |
| 151 | | | | | 5% | A-D C | ritical Value | 0.835 | Detect | ed data ap | pear Gan | nma [| Distribu | ted at 5% S | ignificance Level |
| 152 | | | | | | K-S T | est Statistic | 0.155 | | | Kolmo | goro | v-Smirn | ov GOF | <u> </u> |
| 153 | | | | | 5% | K-S C | ritical Value | 0.204 | Detect | ed data ap | pear Gan | nma [| Distribu | ted at 5% S | ignificance Level |
| 154 | | | | D | Detecte | d data | appear Gar | nma Distribu | ted at 5% | Significan | ce Level | | | | |
| 155 | | | | | | | | | | | | | | | |
| 156 | | | | | | G | amma Stati | stics on Dete | ected Data | Only | | | | | |
| 157 | | | | | | | k hat (MLE) | 0.353 | | | k st | tar (bi | as corre | ected MLE) | 0.335 |
| 158 | | | | | | Thet | a hat (MLE) | 32.43 | | | Theta st | tar (bi | as corre | ected MLE) | 34.24 |
| 159 | | | | | | n | u hat (MLE) | 14.84 | | | | nu st | ar (bias | corrected) | 14.05 |
| 160 | | | | | | Me | an (detects) | 11.46 | | | | | | | |
| 161 | | | | | | | | | | | | | | | |
| 162 | | | | | | Gamm | a ROS Stat | istics using I | mputed No | on-Detects | S | | | | |
| 163 | | | GROS | s may not | be use | d when | data set ha | s > 50% NDs | with many | tied obse | rvations a | at mul | tiple DL | .s | 0 |
| 164 | | GR | OS may not be | used whe | en kstar | r of det | ects is small | such as <1.0 | , especiall | y when the | e sample s | SIZE IS | s small | (e.g., <15-2 | 0) |
| 165 | | | | For suc | ch situa | This is | aRUS meth | od may yield | incorrect v | alues of U | ICLS and E | BIVS | | | |
| 165 | | | For gamma die | stributed d | latactor | t lis is | BTVs and U | | | | ma distrib | ution | on KM | ectimates | |
| 169 | | | i oi gainna ui | sinbuleu u | letectet | uala, | Minimum | | | using gam | | Julion | | Mean | 3 545 |
| 169 | | | | | | | Maximum | 93 | | | | | | Median | 0.01 |
| 170 | | | | | | | SD | 14.21 | | | | | | CV | 4.008 |
| 171 | | | | | | | k hat (MLE) | 0.175 | | | k st | tar (bi | as corre | ected MLE) | 0.177 |
| 172 | | | | | | Thet | a hat (MLE) | 20.21 | | | Theta st | tar (bi | as corre | ected MLE) | 19.98 |
| 173 | | | | | | n | u hat (MLE) | 23.85 | | | | nu st | ar (bias | corrected) | 24.13 |
| 174 | | | | Adjusted | d Level | of Sigr | nificance (β) | 0.0465 | | | | | | | |
| 175 | | | Appro | ximate Ch | ni Squa | re Valu | e (24.13, α) | 13.95 | | Adju | usted Chi S | Squa | re Value | e (24.13, β) | 13.78 |
| 176 | | | 95% Gamma A | pproximat | te UCL | (use w | hen n>=50) | 6.133 | 95 | 5% Gamm | a Adjuste | d UC | L (use v | vhen n<50) | 6.208 |
| 177 | | | | | | | | | | | | | | | |
| 178 | | | | | E | stimat | es of Gamm | a Parameter | s using KN | V Estimat | es | | | 00 // 0 0 | |
| 179 | | | | | | | Mean (KM) | 3.544 | | | | | 05 (| SD (KM) | 14.1 |
| 180 | | | | | | va | riance (KIVI) | 198.9 | | | | | SE OT | Mean (KM) | 1.753 |
| 181 | | | | | | | K fiat (KIVI) | 0.0032 | | | | | n | K Star (KIVI) | 0.0702 |
| 102 | | | | | | the | ta hat (KM) | 56 12 | | | | | 11 thet | a star (KM) | 50.51 |
| 103 | | | | 809 | % damr | ma nero | centile (KM) | 1 277 | | | 90% | namr | na nero | entile (KM) | 7 663 |
| 185 | | | | 959 | % gamr | ma per | centile (KM) | 20.39 | | | 99% | gamr | na perc | entile (KM) | 66.71 |
| 186 | | | | | | | | | | | | J | | | |
| 187 | | | | | | | Gamma Ka | plan-Meier (l | KM) Statis | tics | | | | | |
| 188 | | | Appr | oximate C | Chi Squ | are Val | ue (9.54, α) | 3.659 | Ĺ | Ad | justed Chi | i Squ | are Valu | ue (9.54, β) | 3.58 |
| 189 | | 95% | Gamma Appro | oximate Kl | M-UCL | (use w | hen n>=50) | 9.245 | 95% C | Gamma Ad | djusted KM | N-UCI | L (use v | vhen n<50) | 9.449 |
| 190 | | | | | | | | | • | | | | | | |
| 191 | | | | | L | ognori | nal GOF Te | st on Detect | ed Observ | ations On | ly | | | | |
| 192 | | | | 5 | Shapiro | Wilk T | est Statistic | 0.954 | | | Shap | piro V | Vilk GO | F Test | |
| 193 | | | | 5% S | Shapiro | Wilk C | ritical Value | 0.908 | De | etected Da | ta appear | r Logr | normal a | at 5% Signif | icance Level |
| 194 | | | | | Lilli | efors T | est Statistic | 0.136 | | | Lill | liefor | s GOF | Test | |
| 195 | | | | 5 | 5% Lillie | efors C | ritical Value | 0.188 | De De | etected Da | ta appear | r Logr | normal a | at 5% Signif | cance Level |
| 196 | | | | | Det | ected [| Jata appear | Lognormal a | at 5% Sign | lificance L | .evel | | | | |
| 197 | | | | | | | | | | | | | | | |

| | A | В | С | D | E | F | G | Н | I | J | K | L |
|-----|-----------|-----------|----------------------------------|-------------|-----------------|--------------------|-------------|--------------|--------------|--------------|---------------|------------------|
| 198 | | | | Lognorm | al ROS Sta | tistics Using | Imputed I | Non-Detect | s | | | |
| 199 | | | M | lean in Ori | iginal Scale | 3.54 | | | | Mean in | n Log Scale | -4.502 |
| 200 | | | | SD in Ori | iginal Scale | 14.21 | | | | SD in | 1 Log Scale | 3.795 |
| 201 | | | 95% t UCL (assumes no | ormality of | ROS data) | 6.414 | | | 95% Perc | centile Boo | tstrap UCL | 6.537 |
| 202 | | | . 95% | BCA Boo | , tstrap UCL | 8.097 | | | | 95% Boots | strap t UCL | 14.79 |
| 202 | | | 95 | % H-UCI | (Log ROS) | 138.8 | | | | | | |
| 203 | | | | | (Log 100) | 100.0 | | | | | | |
| 204 | | | Statistica usin | a KM aati | motoo on L | aged Data a | | | rmal Diatril | hution | | |
| 205 | | | Statistics usin | | | | inu Assun | ning Logno | | | Cas Maan | 0.0461 |
| 206 | | | | | an (logged) | -3.077 | | | 050/ 0 ::: | | Geo Mean | 0.0461 |
| 207 | | | | KMS | SD (logged) | 2.72 | | | 95% Criti | cal H Value | e (KM-Log) | 3.26 |
| 208 | | | KM Standard E | rror of Me | an (logged) | 0.338 | | | 9 | 5% H-UCL | . (KM -Log) | 5.506 |
| 209 | | | | KMS | SD (logged) | 2.72 | | | 95% Criti | cal H Value | e (KM-Log) | 3.26 |
| 210 | | | KM Standard E | rror of Me | an (logged) | 0.338 | | | | | | |
| 211 | | | | | | | | | | | | |
| 212 | | | | | | DL/2 Statisti | cs | | | | | |
| 213 | | | DL/2 Normal | | | | | | DL/2 L | .og-Transf | ormed | |
| 214 | | | Μ | lean in Ori | iginal Scale | 3.541 | | | | Mean in | I Log Scale | -3.54 |
| 215 | | | | SD in Ori | iginal Scale | 14.21 | | | | SD in | Log Scale | 3.021 |
| 216 | | | 95% t UCL | (Assumes | s normality) | 6.415 | | | | 95% I | H-Stat UCL | 11.02 |
| 217 | | | DL/2 is not a re | commen | ded method | brovided fo | r compari | isons and h | istorical re | asons | | |
| 218 | | | | | | | | | | | | |
| 210 | | | | Nonr | parametric [| Distribution F | ree UCL S | Statistics | | | | |
| 213 | | | Deter | ted Data | annear Gar | nma Distribu | ted at 5% | Significan | ne i evel | | | |
| 220 | - | | Detter | | | | | olginnoan | | | | |
| 221 | | | | | Sug | anatad UCL i | | | | | | |
| 222 | | | | vimata C | | | 0 030 | | | | | |
| 223 | | | 95% Kivi Appit | DXIIIIale G | | 9.245 | | | | | | |
| 224 | | Neter | | - 1 + | | | | | | 4 | | 0 |
| 225 | | Note | Suggestions regarding the s | election of | a 95% UCL | _ are provided | to neip tr | ne user to s | elect the m | ost approp | riate 95% U | UL. |
| 226 | | | Recomme | endations | are based u | pon data size | , data dist | ribution, an | d skewnes | S. | | |
| 227 | | The | se recommendations are base | ed upon th | ne results of | the simulatio | n studies s | summarize | d in Singh, | Maichle, a | nd Lee (200 | 6). |
| 228 | | Howeve | er, simulations results will not | cover all l | Real World | data sets; for | additional | insight the | user may v | want to con | sult a statis | tician. |
| 229 | | | | | | | | | | | | |
| 230 | 1,2-Dichl | oroethane | | | | | | | | | | |
| 231 | | | | | | | | | | | | |
| 232 | | | | | G | eneral Statis | tics | | | | | |
| 233 | | | Total Nur | mber of Ol | bservations | 68 | | | Number of | Distinct Ob | oservations | 14 |
| 234 | | | | Number | r of Detects | 7 | | | Nu | umber of N | on-Detects | 61 |
| 235 | | | Numb | er of Disti | nct Detects | 7 | | | Number of | f Distinct N | on-Detects | 7 |
| 236 | | | | Minin | num Detect | 1.13 | | | | Minimum I | Non-Detect | 0.25 |
| 237 | | | | Maxin | num Detect | 5.52 | | | I | Maximum I | Non-Detect | 50 |
| 238 | | | | Variar | nce Detects | 2.711 | | | | Percent N | on-Detects | 89.71% |
| 239 | | | | Me | ean Detects | 3.881 | | | | ę | SD Detects | 1.647 |
| 240 | | | | Med | ian Detects | 4.3 | | | | (| CV Detects | 0.424 |
| 241 | | | | Skewne | ess Detects | -0.969 | | | | Kurto | sis Detects | -0.434 |
| 242 | | | Me | an of Logo | ed Detects | 1.238 | | | S | SD of Loga | ed Detects | 0.586 |
| 243 | | | - | 30 | | | | | | 33 | | |
| 243 | | | | | Normal G | OF Test on D | etects Or | nlv | | | | |
| 244 | | | Shan | iro Wilk Te | est Statistic | 0.882 | | , | Shanin | o Wilk GO | F Test | |
| 240 | | | 5% Shan | | itical Value | 0.802 | | Detected D | ata annear | Normal at | 5% Significa | ance l evel |
| 240 | | | | | act Statistic | 0.000 | | | | | | |
| 247 | | | E0/ 1 | illiofora C | itical Value | 0.203 | | Detected D | | Normal at | 5% Cianifia | |
| 248 | | | 5% L | Detected | Dete and | 0.304 | E0/ 0:'6 | | | nomai at | | ance Level |
| 249 | | | | Detected | Data appe | ai inormai at | o no signif | icance Lév | CI | | | |
| 250 | | | Vanlan Male (17 | A) 04-41-11 | | | Values | nd at ** | | | | |
| 251 | | | Kapian-Meier (K | w) statisti | ICS USING NO | ormal Critical | values a | na otner N | unparamet | | | 0.171 |
| 252 | | | | | KM Mean | 0.667 | | | KM St | andard Err | or of Mean | 0.1/4 |
| 253 | | | | | KM SD | 1.26 | | | | 95% KM | (BCA) UCL | 0.931 |
| 254 | | | | 95% | KM (t) UCL | 0.957 | | 95% | 6 KM (Perc | entile Boot | strap) UCL | 0.932 |
| 255 | | | | 95% I | KM (z) UCL | 0.953 | | | 95% | 6 KM Boots | strap t UCL | 0.925 |
| 256 | | | 90% | KM Cheb | yshev UCL | 1.188 | | | 95% | 6 KM Cheb | yshev UCL | 1.424 |
| 257 | | | 97.5% | KM Cheb | yshev UCL | 1.752 | | | 99% | KM Cheb | yshev UCL | 2.395 |
| 258 | | | | | | | | | | | | |
| 259 | | | | Gamma | a GOF Test | s on Detecte | d Observa | ations Only | | | | |
| 260 | | | | A-D Te | est Statistic | 0.638 | | | Andersor | n-Darling G | OF Test | |
| 261 | 1 | | Ę | 5% A-D Cr | ritical Value | 0.71 | Detect | ted data ap | pear Gamm | na Distribut | ted at 5% Si | gnificance Level |
| 262 | | | | K-S Te | est Statistic | 0.311 | | | Kolmogo | prov-Smirn | ov GOF | |
| 263 | | | ł | 5% K-S Cr | ritical Value | 0.313 | Detect | ted data ap | pear Gamm | na Distribut | ted at 5% Si | gnificance Level |
| 264 | | | Detec | ted data | appear Gan | nma Distribu | ted at 5% | Significand | e Level | | | - |
| | | | | | | · · · · | | | | | | |

| | A | В | С | D | E | F | G | Н | | J | K | L |
|------------|---|-----|----------------------------|----------------|-----------------------|-----------------|-----------------|-------------|---------------|---------------|--------------|------------|
| 265 | | | | | | | | | | | | |
| 266 | | | | G | amma Stati | stics on Dete | cted Data | Only | | | | 0.005 |
| 267 | | | | T L - 4 | k hat (MLE) | 4.391 | | | k star | r (bias corre | ected MLE) | 2.605 |
| 268 | | | | Ine | ta nat (MLE) | 0.884 | | | Theta star | (Dias corre | ected MLE) | 1.49 |
| 269 | | | | Me | | 3 881 | | | 11 | u stai (bias | conecteu) | 30.40 |
| 270 | | | | | | 0.001 | | | | | | |
| 272 | | | | Gamm | na ROS Stat | istics using li | mputed No | on-Detects | | | | |
| 273 | | | GROS may not be | used wher | n data set ha | s > 50% NDs | with many | tied obser | vations at | multiple DL | .s | |
| 274 | | GF | ROS may not be used when I | kstar of det | ects is small | such as <1.0 | , especially | y when the | e sample siz | ze is small | (e.g., <15-2 | 0) |
| 275 | | | For such : | situations, | GROS meth | od may yield | incorrect v | alues of U | CLs and B1 | ۲Vs | | |
| 276 | | | | This is | s especially to | rue when the | sample siz | e is small. | | | | |
| 277 | | | For gamma distributed dete | ected data, | BIVs and U Minimum | CLs may be c | computed i | using gamr | na distribut | tion on KM | estimates | 0.594 |
| 278 | | | | | Maximum | 5.52 | | | | | Median | 0.004 |
| 279 | | | | | SD | 1.3 | | | | | CV | 2.225 |
| 281 | | | | | k hat (MLE) | 0.271 | | | k star | r (bias corre | ected MLE) | 0.269 |
| 282 | | | | The | ta hat (MLE) | 2.156 | | | Theta star | r (bias corre | ected MLE) | 2.174 |
| 283 | | | | n | u hat (MLE) | 36.84 | | | n | u star (bias | corrected) | 36.55 |
| 284 | | | Adjusted Lo | evel of Sig | nificance (β) | 0.0465 | | | | | | |
| 285 | | | Approximate Chi S | quare Valu | ue (36.55, α) | 23.71 | | Adju | sted Chi So | quare Value | e (36.55, β) | 23.49 |
| 286 | | | 95% Gamma Approximate l | JCL (use w | vnen n>=50) | 0.9 | 95 | o% Gamma | a Adjusted | UCL (use v | vnen n<50) | 0.909 |
| 28/ | | | | Fetimet | es of Gamm | a Parameter | s usina KA | / Fetimete | 20 | | | |
| 208 280 | | | | Lound | Mean (KM) | 0.667 | | | ~ | | SD (KM) | 1.26 |
| 209 | | | | Va | ariance (KM) | 1.589 | | | | SE of | Mean (KM) | 0.174 |
| 291 | | | | | k hat (KM) | 0.28 | | | | | k star (KM) | 0.278 |
| 292 | | | | | nu hat (KM) | 38.1 | | | | n | u star (KM) | 37.76 |
| 293 | | | | the | eta hat (KM) | 2.381 | | | | thet | a star (KM) | 2.403 |
| 294 | | | 80% g | gamma per | centile (KM) | 1.002 | | | 90% ga | amma perc | entile (KM) | 1.985 |
| 295 | | | 95% g | jamma per | centile (KM) | 3.128 | | | 99% ga | amma perc | entile (KM) | 6.128 |
| 296 | | | | | Commo Ko | nion Moior /k | | | | | | |
| 297 | | | Approximate Chi S | auare Valu | | 24 69 | | ucs Adiu | sted Chi Sc | uare Value | a (37 76 R) | 24.46 |
| 290 | | 95% | Gamma Approximate KM-U | JCL (use w | vhen n>=50) | 1.02 | 95% G | Samma Ad | iusted KM- | UCL (use v | vhen n<50) | 1.03 |
| 300 | | | | | , | | | | | | / | |
| 301 | | | | Lognor | mal GOF Te | st on Detecte | ed Observa | ations Onl | у | | | |
| 302 | | | Sha | apiro Wilk T | est Statistic | 0.803 | | | Shapir | ro Wilk GO | F Test | |
| 303 | | | 5% Sha | piro Wilk C | critical Value | 0.803 | C | Detected D | ata Not Log | gnormal at | 5% Significa | ance Level |
| 304 | | | 50/ | Lilliefors T | Test Statistic | 0.321 | | | Lillie | fors GOF | Test | <u> </u> |
| 305 | | | 5% | Lilliefors C | ritical Value | 0.304 | L 5% Signifi | Detected D | ata Not Log | gnormal at | 5% Significa | ance Level |
| 306 | | | | Delecter | | ognorniai at | 5% Signin | | | | | |
| 307 | | | | Lognorr | nal ROS Sta | tistics Usina | Imputed N | on-Detec | ts | | | |
| 309 | | | | Mean in O | riginal Scale | 0.871 | | | | Mean in | n Log Scale | -0.74 |
| 310 | | | | SD in O | riginal Scale | 1.202 | | | | SD in | n Log Scale | 1.08 |
| 311 | | | 95% t UCL (assumes i | normality o | f ROS data) | 1.115 | | | 95% Per | centile Boo | otstrap UCL | 1.116 |
| 312 | | | 95 | % BCA Bo | otstrap UCL | 1.15 | | | | 95% Boots | strap t UCL | 1.205 |
| 313 | | | ç | 95% H-UCI | L (Log ROS) | 1.151 | | | | | | |
| 314 | | | Statiation uni | ina KM eet | imates on L | naned Data a | nd Accum | | rmal Dietri | hution | | |
| 315 | | | Sidusuce US | KM M4 | ean (logned) | -1.081 | | | | KM | Geo Mean | 0.339 |
| 317 | | | | KM | SD (logged) | 0.858 | | | 95% Criti | ical H Value | e (KM-Loa) | 2.153 |
| 318 | | | KM Standard | Error of Me | ean (logged) | 0.119 | | | ç | 95% H-UCL | (KM -Log) | 0.614 |
| 319 | | | | KM | SD (logged) | 0.858 | | | 95% Criti | ical H Value | e (KM-Log) | 2.153 |
| 320 | | | KM Standard | Error of Me | ean (logged) | 0.119 | | | | | | |
| 321 | | | | | | DI /0 C: - | | | | | | |
| 322 | | | DI /0 N | | | DL/2 Statistic | cs | | | 00 Tre | amed | |
| 323 | | | DL/2 Norma | Mean in O | riginal Soola | 1 5/2 | | | | Log- I ranste | | _1 125 |
| 324 | | | | SD in O | riginal Scale | 3 802 | | | | SD in | Log Scale | 1.552 |
| 326 | | | 95% t UC | L (Assume | s normality) | 2.312 | | | | 95% | H-Stat UCL | 1.714 |
| 327 | | | DL/2 is not a | recommen | nded method | l, provided fo | r comparis | sons and h | nistorical re | easons | | |
| 328 | | | | | | | | | | | | |
| 329 | | | | Non | parametric [| Distribution F | ree UCL S | Statistics | | | | |
| 330 | | | Det | ected Data | a appear Nor | mal Distribut | ed at 5% s | Significand | ce Level | | | |
| 331 | | | | | | | | | | | | |
| 332 | | | | 050 | Sug | gested UCL 1 | to Use | | | | | |
| 333 | | | | 95% | KM (t) UCL | 0.957 | | | | | | |

| | ۸ | B | 1 | C | | D | T | - | Ē | - | G | T 1 | _ | | | 1 | | ĸ | | |
|-----|---------|------------|----------------|--------------|------------|----------|-----------|----------------|--------------|-----------|------------|-------------|-------------|-----------|-------------|----------|-----------|---------------|------------|----------|
| 224 | A | D | | C | | D | | _ | Г | | u | | 1 | 1 | | J | | N | | <u> </u> |
| 334 | | | | | | | | | | | | | | | | | | | | |
| 335 | | Note | e: Suggestion | s regarding | the sel | ection | of a 95 | % UC | L are provid | ded | to help th | ne user | r to sel | lect the | most | appro | priate 9 | 35% U | CL. | |
| 336 | | | | Rec | ommen | dations | s are ba | ased u | ipon data s | ize, | data dist | ributio | n, and | skewne | ess. | | | | | |
| 337 | | The | ese recomme | ndations ar | e based | l upon | the res | ults of | the simula | ation | studies s | summa | arized | in Singl | h, Ma | ichle, a | and Lee | э (200 | 6). | |
| 338 | | Howev | ver, simulatio | ns results w | /ill not c | over al | ll Real V | Norld | data sets; | for a | additional | insigh | t the u | iser mag | y war | nt to co | nsult a | statis | tician. | - |
| 339 | | | | | | | | | | | | | | | | | | | - | |
| 340 | 1-Methv | Inaphthale | ne | | | | | | | | | | | | | | | | | |
| 2/1 | | | | | | | | | | | | | | | | | | | | |
| 242 | | | | | | | | 6 | Conoral Sta | atieti | ice | | | | | | | | | |
| 342 | | | | Tet | | hor of (| Ohaan | - tiono | | Juou | 6.0 | | N | umbor | | tingt (| boonio | tiona | 20 | |
| 343 | | | | 101 | ai numi | | Observa | | 00 | | | | IN | uniber | | | Dserva | | 20 | |
| 344 | | | | | | Numb | er of De | etects | 14 | | | | | | Num | ber of r | Ion-De | tects | 54 | |
| 345 | | | | | Number | r of Dis | stinct De | etects | 14 | | | | ١ | Number | r of Di | stinct N | √on-De | tects | 15 | |
| 346 | | | | | | Min | nimum E | Detect | 1.84 | | | | | | Mi | nimum | Non-D | etect | 1.16 | |
| 347 | | | | | | Max | kimum E | Detect | 98.8 | | | | | | Ma | ximum | Non-D | etect | 65.8 | |
| 348 | | | | | | Varia | ance De | etects | 929.9 | | | | | | Pe | ercent N | lon-De | etects | 79.41 | % |
| 349 | | | | | | Ν | Aean De | etects | 35.31 | | | | | | | | SD De | etects | 30.49 | , |
| 350 | | | | | | Me | edian De | etects | 27.3 | | | | | | | | CV De | etects | 0.864 | 1 |
| 351 | | | | | | Skew | ness De | etects | 0.849 | | | | | | | Kurte | osis De | tects | -0.312 | |
| 252 | | | | | Mean | | | atects | 3.063 | | | | | | SD | of Log | | tects | 1 212 | , |
| 352 | | | | | Wical | | ggcu Di | 510013 | 0.000 | | | | | | 00 | OI LOG | Jea De | 10013 | 1.2.12 | |
| 353 | | | | | | | N | | 0F T | | | | | | | | | | | |
| 354 | | | | | | | NOR | mai G | OF Test o | n De | etects Or | ııy | | | | | | | | |
| 355 | | | | | Shapiro | o Wilk | Test St | atistic | 0.9 | | | | | Shap | piro V | Vilk GC |)F Tes | <u>.t</u> | | |
| 356 | | | | 5% | Shapiro | o Wilk (| Critical | Value | 0.874 | | [| Detecte | ed Dat | ta appe | ar No | rmal at | : 5% Si | gnifica | ance Leve | əl |
| 357 | | | | | Lill | liefors | Test St | atistic | 0.179 | | | | | Lil | liefor | s GOF | Test | | | |
| 358 | | | | | 5% Lilli | iefors (| Critical | Value | 0.226 | | [| Detecte | ed Dat | ta appe | ar No | rmal at | t 5% Si | gnifica | ance Leve | el |
| 359 | | | | | D |)etecte | ed Data | appe | ar Normal | at 5 | 5% Signif | icance | e Leve | 1 | | | | | | |
| 360 | | | | | | | | | | | - | | | | | | | - | | |
| 361 | | | | Kaplan-Me | ier (KM) |) Statis | stics us | ina N | ormal Criti | cal \ | Values a | nd oth | er Nor | nparam | etric | UCLs | - | | | |
| 262 | | | | | | , | KM | Mean | 8 354 | | | | | KM | Stan | dard Fr | ror of l | Mean | 2 44 | 1 |
| 302 | | | | | | | | | 10.001 | | | | | 1.00 | oluni ol | | | | 12.11 | |
| 303 | | | | | | 050 | | | 19.27 | | | | 050/ | | | | | | 12.0 | |
| 364 | | | | | | 95% | % KIVI (1 | | 12.43 | | | | 95% | KIVI (Pe | Freen | пе вос | istrap) | UCL | 12.43 | |
| 365 | | | | | | 95% | 6 KM (z |) UCL | 12.37 | | | | | 9 | 5% K | M Boo | istrap t | UCL | 14.3 | |
| 366 | | | | | 90% k | KM Che | ebyshev | / UCL | 15.68 | | | | | 95 | 5% K | M Chel | oyshev | UCL | 18.99 | |
| 367 | | | | 9 | 97.5% K | KM Che | ebyshev | / UCL | 23.6 | | | | | 99 | 9% K | M Chel | oyshev | UCL | 32.64 | |
| 368 | | | | | | | | | | | | | | | | | | | | |
| 369 | | | | | | Gamr | ma GOI | F Test | ts on Dete | cted | Observa | ations | Only | | | | | | | |
| 370 | | | | | | A-D | Test St | atistic | 0.233 | | | | | Anders | ion-D | arling | GOF T | est | | |
| 371 | | | | | 5% | 6 A-D (| Critical | Value | 0.757 | | Detect | ed dat | a appe | ear Gan | nma | Distribu | uted at | 5% Si | ianificanc | e Level |
| 372 | | | | | - | K-S | Test St | atistic | 0 116 | | | | | Kolmo | aoro | v-Smir | nov GC | OF | 3 | |
| 272 | | | | | 59 | 6 K-S (| Critical | Value | 0.234 | | Detect | tch ha | a ann | ar Gan | nma | Distribu | ited at | 5% Si | ignificanc | |
| 373 | | | | | Dotocto | on dote | | value v Gar | nma Dietri | bute | od at 5% | Signifi | ioanos | | mia | Diotribe | | 0 /0 01 | grinicario | |
| 374 | | | | | Delecie | su uaio | a appea | | | Dute | su al 570 | Signin | icance | Level | | | | | | |
| 375 | | | | | | | _ | <u> </u> | | | | <u>.</u> | | | | | | | | |
| 376 | | | | | | | Gamma | a Stat | Istics on D | etec | ted Data | Only | | | | | | | | |
| 377 | | | | | | | k hat (| MLE) | 1.135 | | | | | k st | tar (bi | as corr | ected I | MLË) | 0.939 | 1 |
| 378 | | | | | | The | eta hat (| (MLE) | 31.11 | | | | ٦ | Theta st | tar (bi | as corr | ected I | MLE) | 37.59 | |
| 379 | | | | | | | nu hat (| (MLE) | 31.77 | | | | | | nu st | ar (bia | s corre | cted) | 26.3 | |
| 380 | | | | | | M | ean (de | tects) | 35.31 | _[| | | | | | | | 1 | | |
| 381 | | | | | | | | | | | | | | | | | | | | |
| 382 | | | | | | Gamr | ma ROS | S Stat | istics using | g Im | puted No | on-Det | tects | | | | | | - | - |
| 383 | | | GF | OS may no | t be use | ed whe | n data | set ha | s > 50% N | - Ds v | vith many | v tied o | bserv | ations a | at mu | tiple D | Ls | | | |
| 384 | | GF | ROS may not | be used wh | nen ksta | ar of de | etects is | smal | such as < | 1.0. | especial | Iv whei | n the s | ample | size i | s small | (e.a., · | <15-2 | 0) | |
| 205 | | | | For s | uch situ | ations | GROS | meth | od may vie | Id in | correct v | alues | | s and l | BTVs | o onnan | (e.g., | | | |
| 200 | | | | 1015 | aon anu | Thie i | | | | her | amplo ci- | | mall | | 2143 | | | | | |
| 380 | | | For game: - | diotrikta -! | dote at - | | | | | ne s | | 20 15 5 | niall. | o dictail | | 00 1/11 | 004 | otor | | |
| 387 | | | roi yamma | uistributed | uelecte | u uata | , DIVS | and U | | | proputed i | using (| yarnma | a uistrib | JULION | ON KIV | estima | ates | | |
| 388 | | | | | | | Min | imum | 0.01 | | | | | | | | N | viean | 1.277 | / |
| 389 | | | | | | | Max | imum | 98.8 | | | | | | | | Me | edian | 0.01 | |
| 390 | | | | | | | | SD | 19.68 | | | | | | | | | CV | 2.704 | 1 |
| 391 | | | | | | | k hat (| (MLE) | 0.153 | | | | | k st | tar (bi | as corr | ected I | MLE) | 0.156 | 3 |
| 392 | | | | | | The | eta hat (| (MLE) | 47.58 | | | | ٦ | Theta st | tar (bi | as corr | ected l | MLE) | 46.65 | |
| 393 | | | | | | | nu hat (| (MLE) | 20.8 | 1 | | | | | nu st | ar (bia | s corre | cted) | 21.22 | |
| 394 | | | | Adiust | ed Leve | l of Sic | qnifican | ce (B) | 0.0465 | ; † | | | | | | | | - / | | |
| 305 | | | Δn | proximate (| Chi Sour | are Val | ue (21 | 22 m | 11 75 | + | | | Adjust | ed Chi | Saue | re Valu | e (21 3 | 22 B) | 11.6 | |
| 200 | | | 95% Gamm | a Annrovim | | (1160 1 | when n' | >=50 | 13.1/ | | 01 | ، ~0% 5% | mma | | duc | (uee | whon r | , P/ 1<501 | 12 21 | |
| 390 | | | | | | - (use | wiidli (l | | 13.14 | | 95 | 0 /0 Gd | in in ind i | nujusie | u 00 | r (neg | wiidii li | , 50) | 13.31 | |
| 397 | | | | | | | | | | | | | | | | | | | | |

| | A | В | С | D | E | F | G | Н | | J | K | L |
|-----|-----------|---------------|---------------------------------|--------------|---------------|-----------------|---------------|--------------|--------------|--------------|----------------|--------------|
| 398 | | | | Estimat | es of Gamm | a Parameter | s using KN | I Estimates | 3 | | | |
| 399 | | | | | Mean (KM) | 8.354 | | | | | SD (KM) | 19.27 |
| 400 | | | | Va | riance (KM) | 371.3 | | | | SE of | f Mean (KM) | 2.441 |
| 401 | | | | | k hat (KM) | 0.188 | | | | | k star (KM) | 0.189 |
| 402 | | | | | nu hat (KM) | 25.56 | | | | I | nu star (KM) | 25.77 |
| 403 | | | | the | eta hat (KM) | 44.45 | | | | the | eta star (KM) | 44.09 |
| 404 | | | 80% g | amma per | centile (KM) | 10.69 | | | 90% g | amma per | centile (KM) | 25.24 |
| 405 | | | 95% g | amma per | centile (KM) | 43.64 | | | 99% g | amma per | centile (KM) | 94.76 |
| 406 | | | | | | | | | | | | |
| 407 | | | | | Gamma Ka | plan-Meier (H | (M) Statist | tics | | | | |
| 408 | | | Approximate Chi S | quare Valu | ie (25.77, α) | 15.2 | | Adjus | ted Chi So | quare Valu | ue (25.77, β) | 15.02 |
| 409 | | 95% | Gamma Approximate KM-L | JCL (use w | rhen n>=50) | 14.16 | 95% 0 | Gamma Adji | usted KM- | UCL (use | when n<50) | 14.33 |
| 410 | | | | | | | | | | | | |
| 411 | | | | Lognori | mal GOF Te | st on Detecte | d Observation | ations Only | , | | | |
| 412 | | | Sha | piro Wilk T | est Statistic | 0.921 | | | Shapi | ro Wilk GO | OF Test | |
| 413 | | | 5% Sha | oiro Wilk C | ritical Value | 0.874 | De | etected Data | a appear L | .ognormal | at 5% Signif | icance Level |
| 414 | | | | Lilliefors T | est Statistic | 0.131 | | | Lillie | ofors GOF | Test | |
| 415 | | | 5% | Lilliefors C | ritical Value | 0.226 | De | tected Data | a appear L | .ognormal | at 5% Signif | icance Level |
| 416 | | | | Detected I | Data appear | Lognormal a | t 5% Sign | ificance Le | vel | | | |
| 417 | | | | | | | | | | | | |
| 418 | | | | Lognorn | nal ROS Sta | tistics Using | Imputed N | on-Detects | S | | | |
| 419 | | | 1 | Mean in Or | iginal Scale | 7.887 | | | | Mean | in Log Scale | -0.0724 |
| 420 | | | | SD in Or | iginal Scale | 19.46 | | | | SD | in Log Scale | 2.037 |
| 421 | | | 95% t UCL (assumes r | normality o | f ROS data) | 11.82 | | | 95% Per | centile Bo | otstrap UCL | 12 |
| 422 | | | 95 | % BCA Bo | otstrap UCL | 12.65 | | | | 95% Boo | tstrap t UCL | 13.45 |
| 423 | | | 9 | 5% H-UCL | (Log ROS) | 15.54 | | | | | | |
| 424 | | | | | | | | | | | | |
| 425 | | | Statistics usi | na KM est | imates on Lo | ogged Data a | nd Assum | ina Loanor | mal Distri | bution | | |
| 426 | | | | KM Me | an (logged) | 0.77 | | 0.0 | | K | / Geo Mean | 2.159 |
| 427 | | | | KM | SD (logged) | 1.305 | | | 95% Crit | ical H Valı | Je (KM-Loa) | 2.134 |
| 428 | | | KM Standard | Error of Me | an (logged) | 0.167 | | | 9070 011 | 95% H-UC | L (KM -Log) | 7.116 |
| 420 | | | | KM | SD (logged) | 1 305 | | | 95% Crit | ical H Valı | le (KM-Log) | 2 134 |
| 429 | | | KM Standard I | Frror of Me | an (logged) | 0 167 | | | 0070 011 | | | 2.101 |
| 430 | | | | | un (loggou) | 0.107 | | | | | | |
| 431 | | | | | | DI /2 Statistic | 3 | | | | | |
| 432 | | | DI /2 Normal | 1 | | | | | DI /2 | on-Trans | formed | |
| 433 | | | DD2 Holma | Mean in Or | ininal Scale | 9 208 | | | 0021 | Mean i | in Log Scale | 0.436 |
| 434 | | | | SD in Or | iginal Scale | 20.01 | | | | SD | in Log Scale | 1 685 |
| 435 | | | 95% t LIC | | | 13.26 | | | | 05% | H_Stat LICI | 10.86 |
| 430 | | | DI /2 is not a | | ded methor | | r comparie | eone and hi | ietorical n | 3070 | | 10.00 |
| 437 | | | | recommen | | i, provided io | | | Istorical in | 5030113 | | |
| 438 | | | | Non | noromotrio (| Vietribution E | | totiotico | | | | |
| 439 | | | Dot | | appear Nor | mal Distribut | ad at 5% | Significano | | | | |
| 440 | | | Dett | | | | | Significance | e Level | | | |
| 441 | | | | | Sug | nonted LICL + | | | | | | |
| 442 | | | | 059/ | | | 0 050 | | | | | |
| 443 | | | | 90% | | 12.43 | | | | | | |
| 444 | | Note | Suggestions regarding the | coloction o | f a 05% LICI | are provides | to holp th | e user to co | lact tha ~ | oet annra | priate 05% | |
| 445 | | note | | endations | are based | non data ciza | data dietr | ibution and | d skowner | iosi appio | pilate 90% U | 0L. |
| 446 | | The | | | | | | | | Naiahla | and Las (200 | (C) |
| 447 | | I ne | se recommendations are bas | sed upon t | Deel World | the simulation | n studies s | innight the | i in Singh, | want to on | and Lee (200 | tioion |
| 448 | | noweve | er, simulations results WIII no | n cover all | | uata sets; ior | auuuuonal | msignt the t | изет шаў | want to CO | mount a statis | |
| 449 | O Mathe | م م الم الم م | • | | | | | | | | | |
| 450 | 2-Methylr | napntnaien | e | | | | | | | | | |
| 451 | | | | | | en enel Ot of | | | | | | |
| 452 | | | | | G | eneral Statis | tics | | | | | |
| 453 | | | I otal Nu | umber of O | oservations | 68 | | Ν | Number of | Distinct C | observations | 27 |
| 454 | | | | Numbe | r of Detects | 9 | | | N | umber of I | Non-Detects | 59 |
| 455 | | | Num | ber of Dist | Inct Detects | 9 | | | Number o | t Distinct I | Non-Detects | 18 |
| 456 | | | | Minii | mum Detect | 8.44 | | | | Minimum | Non-Detect | 1.16 |
| 457 | | | | Maxii | mum Detect | 105 | | | | Maximum | Non-Detect | 65.8 |
| 458 | | | | Varia | nce Detects | 1092 | | | | Percent | Non-Detects | 86.76% |
| 459 | | | | M | ean Detects | 49.74 | | | | | SD Detects | 33.04 |
| 460 | | | | Мес | lian Detects | 41.1 | | | | | CV Detects | 0.664 |
| 461 | | | | Skewn | ess Detects | 0.388 | | | | Kurt | osis Detects | -1.243 |
| 462 | | | M | ean of Log | ged Detects | 3.653 | | | | SD of Log | ged Detects | 0.819 |
| 463 | | | | | | | | | | | | |

| | А | | В | С | D | E | F | G | Н | | J | K | L |
|-----|---|---|-----|----------------------------|--------------|---------------|-----------------|--------------|-------------|--------------|-------------------|---------------|------------------|
| 464 | | | | | | Normal G | OF Test on D | etects On | ly | | | | |
| 465 | | | | Sha | apiro Wilk T | est Statistic | 0.904 | | | Shapir | o Wilk GO | F Test | |
| 466 | | | | 5% Sha | apiro Wilk C | ritical Value | 0.829 | D | Detected Da | ata appear | Normal at | 5% Significa | ance Level |
| 467 | | | | | Lilliefors T | est Statistic | 0.214 | | | Lillie | fors GOF | Test | |
| 468 | | | | 5% | Lilliefors C | ritical Value | 0.274 | D | Detected Da | ata appear | Normal at | 5% Significa | ance Level |
| 469 | | | | | Detected | d Data appea | ar Normal at | 5% Signifi | cance Lev | el | | | |
| 470 | | | | | | | | | | | | | |
| 471 | | | | Kaplan-Meier (| KM) Statist | tics using No | ormal Critical | Values an | d other No | onparamet | ric UCLs | | |
| 472 | | | | - | | KM Mean | 7.678 | | | KM St | andard Err | or of Mean | 2.582 |
| 473 | | | | | | KM SD | 20.01 | | | | 95% KM | (BCA) UCL | 11.84 |
| 474 | | | | | 95% | KM (t) UCL | 11.98 | | 95% | 6 KM (Perc | entile Boot | strap) UCL | 11.96 |
| 475 | | | | | 95% | KM (z) UCL | 11.92 | | | 95% | 6 KM Boots | strap t UCL | 12.93 |
| 476 | | | | 90 | % KM Chel | byshev UCL | 15.42 | | | 95% | KM Cheb | yshev UCL | 18.93 |
| 477 | | | | 97.5 | % KM Chel | byshev UCL | 23.8 | | | 99% | KM Cheb | yshev UCL | 33.37 |
| 478 | | | | | | | | | | | | | |
| 479 | | | | | Gamm | a GOF Test | s on Detecte | d Observa | tions Only | , | | | |
| 480 | | | | | A-D T | est Statistic | 0.424 | | - | Andersor | -Darling C | OF Test | |
| 481 | | | | | 5% A-D C | ritical Value | 0.729 | Detecte | ed data ap | pear Gamn | na Distribut | ted at 5% Si | gnificance Level |
| 482 | | | | | K-S T | est Statistic | 0.242 | | | Kolmogo | prov-Smirn | ov GOF | • |
| 483 | | | | | 5% K-S C | ritical Value | 0.282 | Detecte | ed data ap | pear Gamn | na Distribut | ted at 5% Si | gnificance Level |
| 484 | | | | Det | ected data | appear Gan | nma Distribut | ed at 5% \$ | Significand | e Level | | | • |
| 485 | | | | | | | | | • | | | | |
| 486 | | | | | G | amma Stati | stics on Dete | cted Data | Only | | | | |
| 487 | | | | | | k hat (MLE) | 2.124 | | | k star | (bias corre | ected MLE) | 1.49 |
| 488 | | | | | Thet | a hat (MLE) | 23.41 | | | Theta star | (bias corre | ected MLE) | 33.37 |
| 489 | | | | | n | u hat (MLE) | 38.24 | | | n | , u star (bias | corrected) | 26.83 |
| 490 | | | | | Ме | an (detects) | 49.74 | | | | | , | |
| 491 | | | | | | . , | | | | | | | |
| 492 | | | | | Gamm | a ROS Stati | istics using Ir | nputed No | n-Detects | | | | |
| 493 | | | | GROS may not be | used when | data set ha | s > 50% NDs | with many | tied obser | vations at r | nultiple DL | .s | |
| 494 | | | GF | ROS may not be used when | kstar of det | ects is small | such as <1.0 | , especially | when the | sample siz | e is small | (e.g., <15-2 | 0) |
| 495 | | | | For such | situations, | GROS metho | od may yield i | ncorrect va | alues of U(| CLs and BT | Vs | | |
| 496 | | | | | This is | especially tr | ue when the | sample siz | e is small. | | | | |
| 497 | | | | For gamma distributed dete | ected data, | BTVs and U | CLs may be c | omputed u | ising gamn | na distribut | ion on KM | estimates | |
| 498 | | | | | | Minimum | 0.01 | | | | | Mean | 6.592 |
| 499 | | | | | | Maximum | 105 | | | | | Median | 0.01 |
| 500 | | | | | | SD | 20.46 | | | | | CV | 3.104 |
| 501 | | | | | | k hat (MLE) | 0.143 | | | k star | (bias corre | ected MLE) | 0.147 |
| 502 | | | | | Thet | a hat (MLE) | 45.99 | | | Theta star | (bias corre | ected MLE) | 44.9 |
| 503 | | | | | n | u hat (MLE) | 19.49 | | | n | u star (bias | corrected) | 19.97 |
| 504 | | | | Adjusted L | evel of Sigr | hificance (β) | 0.0465 | | | | | | |
| 505 | | | | Approximate Chi S | Square Valu | ie (19.97, α) | 10.83 | | Adjus | sted Chi Sc | uare Value | e (19.97, β) | 10.68 |
| 506 | | | | 95% Gamma Approximate | UCL (use w | /hen n>=50) | 12.16 | 95 | % Gamma | Adjusted | UCL (use v | vhen n<50) | 12.32 |
| 507 | | | | | | | | | | | | | |
| 508 | | | | | Estimat | es of Gamm | a Parameters | s using KM | I Estimate | s | | | |
| 509 | | | | | | Mean (KM) | 7.678 | - | | | | SD (KM) | 20.01 |
| 510 | | | | | Va | riance (KM) | 400.6 | | | | SE of | Mean (KM) | 2.582 |
| 511 | | | | | | k hat (KM) | 0.147 | | | | | k star (KM) | 0.15 |
| 512 | | | | | | nu hat (KM) | 20.01 | | | | n | u star (KM) | 20.46 |
| 513 | | | | | the | eta hat (KM) | 52.17 | | | | thet | a star (KM) | 51.02 |
| 514 | | | | 80% (| gamma per | centile (KM) | 8.38 | | | 90% ga | amma perc | entile (KM) | 22.78 |
| 515 | | | | 95% (| gamma per | centile (KM) | 42.23 | | | 99% ga | amma perc | entile (KM) | 98.65 |
| 516 | | | | | | | | | | | | | |
| 517 | | | | | | Gamma Ka | plan-Meier (H | (M) Statist | ics | | | | |
| 518 | | | | Approximate Chi S | Square Valu | ie (20.46, α) | 11.19 | | Adjus | sted Chi Sc | uare Value | e (20.46, β) | 11.05 |
| 519 | | | 95% | 6 Gamma Approximate KM- | UCL (use w | /hen n>=50) | 14.04 | 95% G | amma Adj | usted KM- | UCL (use v | vhen n<50) | 14.23 |
| 520 | | | | | | | | | | | | | |
| 521 | | | | | Lognori | mal GOF Te | st on Detecte | ed Observa | ations Only | y | | | |
| 522 | | | | Sha | apiro Wilk T | est Statistic | 0.915 | | | Shapir | o Wilk GO | F Test | |
| 523 | | | | 5% Sha | apiro Wilk C | ritical Value | 0.829 | De | tected Dat | a appear L | ognormal a | at 5% Signifi | cance Level |
| 524 | | | | | Lilliefors T | est Statistic | 0.229 | | | Lillie | fors GOF | Test | |
| 525 | | | | 5% | Lilliefors C | ritical Value | 0.274 | De | tected Dat | a appear L | ognormal a | at 5% Signifi | cance Level |
| 526 | | | | | Detected | Data appear | Lognormal a | t 5% Signi | ificance Le | evel | | | |
| 527 | | | | | | | | | | | | | |
| 528 | | | | | Lognorn | nal ROS Sta | tistics Using | Imputed N | ion-Detect | s | | | |
| 529 | | | | | Mean in Or | riginal Scale | 8.238 | | | | Mean in | Log Scale | 0.588 |
| 530 | | | | | SD in Or | riginal Scale | 20.01 | | | | SD in | Log Scale | 1.615 |
| 531 | | | | 95% t UCL (assumes | normality o | f ROS data) | 12.29 | | | 95% Per | centile Boo | tstrap UCL | 12.41 |
| 532 | | | | 95 | 5% BCA Bo | otstrap UCL | 13.67 | | | | 95% Boots | strap t UCL | 14.62 |
| 533 | | | | | 95% H-UCL | (Log ROS) | 10.84 | | | | | | |
| | | - | | | | | | | | | | | |

| | А | В | С | D E | F | G | Н | | J | K | L |
|-----|----------|-------|-------------------------------|---------------------------------------|----------------|--------------|-------------|--------------|---------------|---------------|------------------|
| 534 | | | | | | | | | | | |
| 535 | | | Statistics usir | ng KM estimates on L | ogged Data a | nd Assum | ing Logno | rmal Distri | ibution | | |
| 536 | | | | KM Mean (logged) | 0.625 | | | | KM | Geo Mean | 1.867 |
| 537 | | | | KM SD (logged) | 1.23 | | | 95% Crit | ical H Value | ∍ (KM-Log) | 2.139 |
| 538 | | | KM Standard E | Error of Mean (logged) | 0.16 | | | ç | 95% H-UCL | (KM -Log) | 5.488 |
| 539 | | | | KM SD (logged) | 1.23 | | | 95% Crit | ical H Value | ∍ (KM-Log) | 2.139 |
| 540 | | | KM Standard E | Error of Mean (logged) | 0.16 | | | | | | |
| 541 | | | | | | | | | | | |
| 542 | | | | | DL/2 Statistic | cs | | | | | |
| 543 | | | DL/2 Normal | | | | | DL/2 I | Log-Transfo | ormed | |
| 544 | | | Ν | lean in Original Scale | 8.765 | | | | Mean in | Log Scale | 0.344 |
| 545 | | | | SD in Original Scale | 20.77 | | | | SD in | Log Scale | 1.633 |
| 546 | | | 95% t UCL | (Assumes normality) | 12.97 | | | | 95% H | I-Stat UCL | 8.824 |
| 547 | | | DL/2 is not a r | ecommended metho | d, provided fo | r comparis | sons and h | istorical re | easons | | |
| 548 | | | | | | | | | | | |
| 549 | | | | Nonparametric | Distribution F | ree UCL S | itatistics | | | | |
| 550 | | | Dete | cted Data appear No | rmal Distribut | ed at 5% S | Significanc | e Level | | | |
| 551 | | | | | | | | | | | |
| 552 | | | | Sug | gested UCL t | o Use | | | | | |
| 553 | | | | 95% KM (t) UCL | 11.98 | | | | | | |
| 554 | | | 0 | | | | | | | | |
| 555 | | Note | : Suggestions regarding the s | selection of a 95% UC | L are provided | to help the | e user to s | elect the m | nost approp | riate 95% U | CL. |
| 556 | | The | Recomm | endations are based t | ipon data size | , data distr | ibution, an | d skewnes | S. | | <u>()</u> |
| 557 | | Ine | ese recommendations are bas | teo upon the results of | dete ester for | n studies s | incidet the | un Singn, | Walchie, ar | Id Lee (200 | 0). tioion |
| 558 | | nowev | | | | auullionai | insignt the | user may | want to con | suit a statis | |
| 559 | Acetophe | none | | | | | | | | | |
| 560 | Acelophe | | | | | | | | | | |
| 562 | | | | | eneral Statis | tics | | | | - | |
| 563 | | | Total Nu | mber of Observations | 68 | | | Number of | Distinct Ob | servations | 29 |
| 564 | | | 10101110 | Number of Detects | 16 | | | N | umber of No | on-Detects | 52 |
| 565 | | | Numl | ber of Distinct Detects | 16 | | | Number o | f Distinct No | on-Detects | 13 |
| 566 | | | | Minimum Detect | 77.1 | | | | Minimum N | Von-Detect | 1.16 |
| 567 | | | | Maximum Detect | 4520 | | | | Maximum N | Von-Detect | 12.3 |
| 568 | | | | Variance Detects | 1615817 | | | | Percent No | on-Detects | 76.47% |
| 569 | | | | Mean Detects | 1402 | | | | 5 | SD Detects | 1271 |
| 570 | | | | Median Detects | 1114 | | | | (| CV Detects | 0.907 |
| 571 | | | | Skewness Detects | 0.942 | | | | Kurtos | sis Detects | 0.695 |
| 572 | | | Me | an of Logged Detects | 6.623 | | | | SD of Logg | ed Detects | 1.359 |
| 573 | | | | | • | | | | | | |
| 574 | | | | Normal G | OF Test on D | etects On | ly | | | | |
| 575 | | | Shap | piro Wilk Test Statistic | 0.898 | | | Shapii | ro Wilk GO | FTest | |
| 576 | | | 5% Shap | iro Wilk Critical Value | 0.887 | C | Detected Da | ata appear | Normal at | 5% Significa | ance Level |
| 577 | | | | Lilliefors Test Statistic | 0.149 | | | Lillie | ofors GOF | rest | |
| 578 | | | 5% [| Illiefors Critical Value | 0.213 | | Detected Da | ata appear | Normal at | 5% Significa | ance Level |
| 579 | | | | Detected Data appe | ar Normal at | 5% Signifi | cance Lev | el | | | |
| 580 | | | Konlon Mojor /K | M) Statiatics using N | ormal Critical | Velues or | nd othor N | nnoromo | | | |
| 581 | | | | KM Mean | | values al | | N S KM S | tandard Err | or of Mean | 105 5 |
| 582 | | | | KM SD | 842.2 | | | | | | 510.1 |
| 584 | | | | 95% KM (t) LICI | 506.6 | | 95% | 6 KM (Per | centile Boot | strap) UCI | 513.2 |
| 585 | | | | 95% KM (7) UCI | 504.2 | | 007 | 959 | % KM Boots | strap t UCI | 575.6 |
| 586 | | | 90% | 6 KM Chebyshey UCL | 647.1 | | | 95% | 6 KM Cheby | vshev UCL | 790.5 |
| 587 | | | 97.5% | 6 KM Chebyshev UCL | 989.4 | | | 99% | % KM Cheby | vshev UCL | 1380 |
| 588 | | | | · · · · · · · · · · · · · · · · · · · | | | | | | | |
| 589 | | | | Gamma GOF Tes | ts on Detecte | d Observa | tions Only | | | | |
| 590 | | | | A-D Test Statistic | 0.472 | | | Anderso | n-Darling G | OF Test | |
| 591 | | | | 5% A-D Critical Value | 0.766 | Detecte | ed data ap | pear Gamr | na Distribut | ed at 5% Si | gnificance Level |
| 592 | | | | K-S Test Statistic | 0.153 | | | Kolmog | orov-Smirn | ov GOF | |
| 593 | | | | 5% K-S Critical Value | 0.222 | Detecte | ed data ap | pear Gamr | na Distribut | ed at 5% Si | gnificance Level |
| 594 | | | Dete | cted data appear Gai | nma Distribut | ed at 5% \$ | Significand | e Level | | | |
| 595 | | | | | | | | | | | |
| 596 | | | | Gamma Stat | istics on Dete | cted Data | Only | | | | |
| 597 | | | | k hat (MLE) | 0.934 | | | k sta | r (bias corre | ected MLE) | 0.801 |
| 598 | | | | Theta hat (MLE) | 1500 | | | Theta sta | r (bias corre | cted MLE) | 1751 |
| 599 | | | | nu hat (MLE) | 29.9 | | | n | u star (bias | corrected) | 25.62 |
| 600 | | | | Mean (detects) | 1402 | | | | | | |
| 601 | | | | | | | | | | | |

| - | A | В | C | D | E | F | G | Н | | J | K | L |
|--|---|----------------|--|---|--|--|--|---|---|---|---|--|
| 602 | | | | Gamm | a ROS Stat | istics using li | mputed No | on-Detects | | | | |
| 603 | | | GROS may not be | used when | data set ha | s > 50% NDs | with many | tied obser | vations at r | multiple DL | .S | |
| 604 | | GR | OS may not be used when k | star of dete | ects is small | such as <1.0 | , especiall | y when the | sample siz | ze is small | (e.g., <15-2 | 0) |
| 605 | | | For such s | situations, (| GROS meth | od may yield | incorrect v | alues of UC | CLs and BT | Vs | | |
| 606 | | | | This is | especially to | rue when the | sample siz | ze is small. | | | | |
| 607 | | | For gamma distributed dete | cted data, | BTVs and U | CLs may be o | computed u | using gamn | na distribut | ion on KM | estimates | |
| 608 | | | | | Minimum | 0.01 | | | | | Mean | 329.8 |
| 609 | | | | | Maximum | 4520 | | | | | Median | 0.01 |
| 610 | | | | | SD | 848.8 | | | | | CV | 2.574 |
| 611 | | | | | k hat (MLE) | 0.104 | | | k star | (bias corre | ected MLE) | 0.109 |
| 612 | | | | Thet | a hat (MLE) | 3168 | | | Theta star | (bias corre | ected MLE) | 3017 |
| 613 | | | | n | u hat (MLE) | 14.16 | | | nı | u star (bias | corrected) | 14.87 |
| 614 | | | Adjusted Le | evel of Sigr | nificance (β) | 0.0465 | | | | | | |
| 615 | | | Approximate Chi S | quare Valu | e (14.87, α) | 7.168 | | Adjus | sted Chi So | quare Value | e (14.87, β) | 7.052 |
| 616 | | | 95% Gamma Approximate l | JCL (use w | hen n>=50) | 684 | 95 | 5% Gamma | Adjusted | UCL (use v | vhen n<50) | 695.2 |
| 617 | | | | | | | | | | | | |
| 618 | | | | Estimate | es of Gamm | a Parameter | s using KN | A Estimate | S | | | |
| 619 | | | | | Mean (KM) | 330.7 | | | | 0= (| SD (KM) | 842.2 |
| 620 | | | | Va | riance (KM) | /09351 | | | | SE of | Mean (KM) | 105.5 |
| 621 | | | | | k hat (KM) | 0.154 | | | | | k star (KM) | 0.157 |
| 622 | | | | | nu hat (KM) | 20.97 | | | | n | u star (KM) | 21.37 |
| 623 | | | 000/ | the | eta hat (KM) | 2145 | | | | thet | a star (KM) | 2104 |
| 624 | | | 80% g | amma pero | centile (KM) | 3/3.5 | | | 90% ga | amma perc | entile (KM) | 986.4 |
| 625 | | | 95% g | amma pero | centile (KM) | 1803 | | | 99% ga | amma perc | entile (KM) | 4151 |
| 626 | | | | | 0 | nlan Malar /I | | | | | | |
| 627 | | | Approvimato Chi S | quare Valu | | 11 97 | (M) Statis | ucs Adius | tod Chi Sa | waro Voluc | (21 27 8) | 11 72 |
| 628 | | 95% | Approximate CIII 3 | | $\frac{e(21.37, u)}{hen n>=50}$ | 595.5 | 95% (| Auju: Samma Adi | usted KM-I | | $\frac{(21.37, p)}{(21.37, p)}$ | 603.3 |
| 620 | | 007 | | 1000 (000 11 | | 000.0 | 00700 | aannina 7 (aj | | 002 (000) | | 000.0 |
| 631 | | | | Lognorr | nal GOF Te | st on Detecte | od Observ | ations Only | , | | | |
| 632 | | | Sha | piro Wilk T | est Statistic | 0.893 | | | Shapir | o Wilk GO | F Test | |
| 633 | | | 5% Sha | piro Wilk C | ritical Value | 0.887 | De | etected Data | a appear L | ognormal a | at 5% Signif | icance Level |
| 634 | | | | Lilliefors T | est Statistic | 0.157 | | | Lillie | fors GOF | Test | |
| 635 | | | 5% | Lilliefors C | ritical Value | 0.213 | De | etected Data | a appear L | ognormal a | at 5% Signif | icance Level |
| 636 | | | | Detected [| Data appear | Lognormal a | t 5% Sign | ificance Le | vel | | | |
| 637 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 638 | | | | Lognorm | nal ROS Sta | tistics Using | Imputed N | Non-Detect | s | | | |
| 638 639 | | | | Lognorm Mean in Or | n al ROS Sta iginal Scale | tistics Using 342.5 | Imputed N | Non-Detect | S | Mean in | Log Scale | 3.031 |
| 638 639 640 | | | | Lognorn Mean in Or SD in Or | nal ROS Sta iginal Scale iginal Scale | tistics Using 342.5 844 | Imputed N | Non-Detect | s | Mean in SD in | Log Scale | 3.031 2.493 |
| 638 639 640 641 | | | 95% t UCL (assumes r | Lognorm Mean in Or SD in Or normality of | nal ROS Sta iginal Scale iginal Scale f ROS data) | tistics Using 342.5 844 513.2 | Imputed N | Non-Detect | s 95% Perc | Mean in SD in centile Boo | Log Scale Log Scale tstrap UCL | 3.031 2.493 523.2 |
| 638 639 640 641 642 | | | 95% t UCL (assumes i 95 | Lognorm Mean in Or SD in Or normality of % BCA Boo | nal ROS Sta iginal Scale iginal Scale f ROS data) otstrap UCL | tistics Using 342.5 844 513.2 553.4 | Imputed N | Non-Detect | s 95% Perc | Mean in SD in centile Boo 95% Boots | Log Scale Log Scale tstrap UCL strap t UCL | 3.031 2.493 523.2 588.8 |
| 638 639 640 641 642 643 | | | 95% t UCL (assumes r 95 5 | Lognorm Mean in Or SD in Or normality of % BCA Boo 95% H-UCL | nal ROS Sta iginal Scale iginal Scale f ROS data) otstrap UCL . (Log ROS) | tistics Using 342.5 844 513.2 553.4 1171 | Imputed N | Non-Detect | s 95% Pero | Mean in SD in centile Boo 95% Boots | Log Scale Log Scale tstrap UCL strap t UCL | 3.031 2.493 523.2 588.8 |
| 638 639 640 641 642 643 644 | | | 95% t UCL (assumes i 95 5 5 | Lognorm Mean in Or SD in Or normality of % BCA Boo 95% H-UCL | hal ROS Sta iginal Scale iginal Scale f ROS data) otstrap UCL . (Log ROS) | stistics Using 342.5 844 513.2 553.4 1171 1171 | | Non-Detect | s 95% Pero | Mean in SD in centile Boo 95% Boots | Log Scale Log Scale tstrap UCL strap t UCL | 3.031 2.493 523.2 588.8 |
| 638 639 640 641 642 643 644 645 | | | 95% t UCL (assumes r 95 S Statistics usi | Lognorm Mean in Or SD in Or normality of % BCA Boo 5% H-UCL ng KM esti | nal ROS Sta iginal Scale iginal Scale f ROS data) otstrap UCL (Log ROS) imates on Lu | tistics Using 342.5 844 513.2 553.4 1171 | Imputed N | Non-Detect | 95% Pero | Mean in SD in centile Boo 95% Boots bution | Log Scale Log Scale tstrap UCL strap t UCL | 3.031 2.493 523.2 588.8 |
| 638 639 640 641 642 643 644 645 646 | | | 95% t UCL (assumes r 95 s Statistics usi | Lognorm Mean in Or SD in Or normality of % BCA Boo 95% H-UCL ng KM esti KM Me | nal ROS Sta iginal Scale iginal Scale f ROS data) otstrap UCL . (Log ROS) imates on Lu can (logged) | tistics Using 342.5 844 513.2 553.4 1171 00gged Data a 1.672 2.840 | Imputed N | Non-Detect | 95% Pero | Mean in SD in centile Boo 95% Boots bution KM | Log Scale Log Scale tstrap UCL strap t UCL Geo Mean | 3.031 2.493 523.2 588.8 5.321 2.207 |
| 638 639 640 641 642 643 644 645 646 647 | | | 95% t UCL (assumes r 95 5 Statistics usi | Lognorm Mean in Or SD in Or normality of % BCA Boo 55% H-UCL ng KM esti KM Me KM S | nal ROS Sta iginal Scale iginal Scale f ROS data) otstrap UCL . (Log ROS) imates on Lu can (logged) SD (logged) | tistics Using 342.5 844 513.2 553.4 1171 00gged Data a 1.672 2.819 0.222 | Imputed N | Non-Detect | 95% Pero mal Distril 95% Criti | Mean in SD in centile Boo 95% Boots bution KM ical H Value | Log Scale Log Scale tstrap UCL strap t UCL Geo Mean e (KM-Log) | 3.031 2.493 523.2 588.8 5.321 5.321 3.397 |
| 638 639 640 641 642 643 644 645 646 647 648 | | | 95% t UCL (assumes r 95 5 Statistics usi KM Standard | Lognorm Mean in Or SD in Or normality of % BCA Boo 5% H-UCL Mg KM esti KM Me KM S Error of Me | nal ROS Sta iginal Scale iginal Scale f ROS data) otstrap UCL (Log ROS) imates on Lu an (logged) SD (logged) an (logged) | tistics Using 342.5 844 513.2 553.4 1171 00gged Data a 1.672 2.819 0.353 2.819 | Imputed N | Non-Detect | 95% Pero mal Distril 95% Criti 9 | Mean in SD in centile Boo 95% Boots bution KM ical H Value 55% H-UCL | Log Scale Log Scale tstrap UCL strap t UCL Geo Mean e (KM-Log) c (KM-Log) | 3.031 2.493 523.2 588.8 5.321 3.397 912.7 3.397 |
| 638 639 640 641 642 643 644 645 644 645 646 647 648 649 650 | | | 95% t UCL (assumes r 95 Statistics usi KM Standard | Lognorm Mean in Or SD in Or normality of % BCA Boo 55% H-UCL mg KM esti KM Me KM S Error of Me Error of Me | nal ROS Sta iginal Scale iginal Scale f ROS data) otstrap UCL (Log ROS) imates on Lo an (logged) SD (logged) an (logged) an (logged) | tistics Using 342.5 844 513.2 553.4 1171 00gged Data a 1.672 2.819 0.353 2.819 0.353 | Imputed N | Non-Detect | 95% Pero mal Distril 95% Criti 9 95% Criti | Mean in SD in centile Boo 95% Boots 95% Boots bution KM ical H Value 5% H-UCL ical H Value | Geo Mean (KM-Log) (KM-Log) (KM-Log) (KM-Log) | 3.031 2.493 523.2 588.8 5.321 3.397 912.7 3.397 |
| 638 639 640 641 642 643 644 645 646 647 648 649 650 | | | 95% t UCL (assumes r 95 Statistics usi KM Standard KM Standard | Lognorm Mean in Or SD in Or normality of % BCA Boo 55% H-UCL mg KM esti KM Me KM S Error of Me Error of Me | nal ROS Sta iginal Scale iginal Scale f ROS data) otstrap UCL (Log ROS) imates on Lo an (logged) SD (logged) an (logged) an (logged) | tistics Using 342.5 844 513.2 553.4 1171 00gged Data a 1.672 2.819 0.353 2.819 0.353 | Imputed N | Non-Detect | 95% Pero mal Distril 95% Criti 9 95% Criti | Mean in SD in centile Boo 95% Boots 95% Boots bution KM ical H Value 5% H-UCL ical H Value | Geo Mean (KM-Log) (KM-Log) (KM-Log) | 3.031 2.493 523.2 588.8 5.321 3.397 912.7 3.397 |
| 638 639 640 641 642 643 644 645 646 645 646 647 648 649 650 651 652 | | | 95% t UCL (assumes r 95 Statistics usi KM Standard KM Standard | Lognorm Mean in Or SD in Or normality of % BCA Boo 55% H-UCL of KM esti KM Me KM S Error of Me Error of Me | nal ROS Sta iginal Scale iginal Scale f ROS data) otstrap UCL (Log ROS) imates on Lo an (logged) SD (logged) an (logged) an (logged) | tistics Using 342.5 844 513.2 553.4 1171 00gged Data a 1.672 2.819 0.353 2.819 0.353 2.819 0.353 | Imputed N | Non-Detect | 95% Perc mal Distril 95% Criti 95% Criti | Mean in SD in centile Boo 95% Boots 95% Boots bution KM ical H Value 5% H-UCL ical H Value | Geo Mean (KM-Log) (KM-Log) (KM-Log) | 3.031 2.493 523.2 588.8 5.321 3.397 912.7 3.397 |
| 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 | | | 95% t UCL (assumes r 95 Statistics usi KM Standard KM Standard | Lognorm Mean in Or SD in Or normality of % BCA Boo 55% H-UCL ong KM esti KM Me KM S Error of Me Error of Me | nal ROS Sta iginal Scale iginal Scale f ROS data) otstrap UCL (Log ROS) imates on Lo an (logged) SD (logged) SD (logged) an (logged) | tistics Using 342.5 844 513.2 553.4 1171 00gged Data a 1.672 2.819 0.353 2.819 0.353 2.819 0.353 | Imputed N | Non-Detect | s 95% Perc mal Distril 95% Criti 95% Criti | Mean in SD in centile Boo 95% Boots bution KM cal H Value 5% H-UCL cal H Value | Geo Mean e (KM-Log) (KM-Log) e (KM-Log) | 3.031 2.493 523.2 588.8 5.321 3.397 912.7 3.397 |
| 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 | | | 95% t UCL (assumes r 95 Statistics usi KM Standard KM Standard DL/2 Norma | Lognorm Mean in Or SD in Or normality of % BCA Boo 55% H-UCL MI KM Me KM SE Error of Me KM SE Error of Me KM SE Error of Me | nal ROS Sta iginal Scale iginal Scale f ROS data) otstrap UCL . (Log ROS) imates on L can (logged) SD (logged) SD (logged) SD (logged) an (logged) ian (logged) ian (logged) | tistics Using 342.5 844 513.2 553.4 1171 00gged Data a 1.672 2.819 0.353 2.819 0.353 DL/2 Statistic 330.4 | Imputed N | Non-Detect | s 95% Perc mal Distril 95% Criti 9 95% Criti | Mean in SD in centile Boo 95% Boots bution KM ical H Value 5% H-UCL ical H Value 5% H-UCL ical H Value | Geo Mean e (KM-Log) (KM-Log) e (KM-Log) e (KM-Log) | 3.031 2.493 523.2 588.8 5.321 3.397 912.7 3.397 |
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| 638 639 640 641 642 643 644 645 646 647 648 649 650 651 656 657 658 659 660 661 662 663 | | | 95% t UCL (assumes r 95 Statistics usi KM Standard KM Standard DL/2 Norma 95% t UC DL/2 is not a Det | Lognorm Mean in Or SD in Or normality of % BCA Boo 5% H-UCL Mg KM esti KM Me KM S Error of Me | nal ROS Sta iginal Scale iginal Scale f ROS data) otstrap UCL . (Log ROS) imates on L can (logged) SD (logged) SD (logged) SD (logged) SD (logged) iginal Scale iginal Scale is normality) ided methoc parametric I appear Nor SU KM (t) UCL | tistics Using 342.5 844 513.2 553.4 1171 00gged Data a 1.672 2.819 0.353 2.819 0.353 DL/2 Statistic 330.4 848.6 502 J. provided for Distribution F mal Distribut 506.6 | Imputed N Impute | Non-Detect | s 95% Pero mal Distril 95% Criti 9 95% Criti 9 95% Criti e Level | Mean in SD in centile Boo 95% Boots bution KM ical H Value 95% H-UCL ical H Value 05% H-UCL ical H Value 95% H SD in 95% H 95% H | Geo Mean (KM-Log) (KM-Log) (KM-Log) (KM-Log) (KM-Log) (CM | 3.031 2.493 523.2 588.8 5.321 3.397 912.7 3.397 912.7 3.397 1.226 3.103 1803 |
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| 638 639 640 641 642 643 644 645 646 647 648 649 650 6551 6552 6565 6552 6566 6557 6568 6569 6661 662 6663 6664 6667 6668 6667 | | Note The Howev | 95% t UCL (assumes r 95 Statistics usi KM Standard KM Standard DL/2 Norma 95% t UC DL/2 is not a 0 DL/2 is not a 0 Det Suggestions regarding the Recomm se recommendations are ba er, simulations results will no | Lognorm Mean in Or SD in Or normality of % BCA Boo 5% H-UCL Mg KM esti KM Me KM S Error of Me SD in Or L (Assume recommen SD in Or L (Assume recommen S S S S S S S S S S S S S S S S S S S | nal ROS Sta iginal Scale iginal Scale f ROS data) otstrap UCL . (Log ROS) imates on L an (logged) SD (logged) an (logged) SD (logged) an (logged) SD (logged) an (logged) iginal Scale iginal Scale s normality) ided method parametric I appear Nor SUG KM (t) UCL f a 95% UCI are based u ne results of Real World of | tistics Using 342.5 844 513.2 553.4 1171 pgged Data a 1.672 2.819 0.353 2.819 0.353 DL/2 Statistic 330.4 848.6 502 J, provided for Distribution F mal Distribut 506.6 are provided pon data size the simulatio data sets; for | Imputed N Impute | sons and h Statistics Significance isource to se ibution, an summarized insight the | s 95% Perc 95% Criti 95% Criti 95% Criti 95% Criti 925% | Mean in SD in centile Boo 95% Boots bution KM ical H Value 5% H-UCL ical H Value 5% H-UCL 5% | Log Scale Log Scale tstrap UCL strap t UCL Geo Mean a (KM-Log) (KM -Log) a (KM-Log) a (K | 3.031 2.493 523.2 588.8 5.321 3.397 912.7 3.397 912.7 3.397 912.7 3.397 912.7 3.397 912.7 3.397 912.7 3.397 912.7 3.397 912.7 3.397 912.7 3.397 912.7 3.397 912.7 3.397 912.7 3.397 912.7 6. |

| | Α | В | | С | D | E | F | G | | Н | | | J | K | L | |
|------|---------|----------|-----|---------------------------|--------------|-------------------|------------------|-------------|------------|---------------------|-------------|-----------|---------|------------------|-------------------|---|
| 670 | Benzene | | | | | | | | | | | | | | | |
| 671 | | | | | | | | | | | | | | | | |
| 672 | | | | | | G | eneral Statis | tics | | | | | | | | |
| 673 | | | | Total N | umber of O | bservations) | 68 | | | 1 | Number c | of Distin | ct Ob | servations | 24 | |
| 674 | | | | | Numbe | er of Detects | 22 | | | | 1 | Number | of N | on-Detects | 46 | |
| 675 | | | | Num | nber of Dist | inct Detects | 22 | | | | Number | of Distir | nct N | on-Detects | 2 | |
| 676 | | | | | Minii | mum Detect | 0.275 | | | | | Minim | num N | Non-Detect | 0.25 | |
| 677 | | | | | Maxii | mum Detect | 16000 | | | | | Maxim | num N | Non-Detect | 0.5 | |
| 678 | | | | | Varia | nce Detects | 14957982 | | | | | Perce | ent N | on-Detects | 67.65% | |
| 679 | | | | | M | ean Detects | 2605 | | | | | | 5 | SD Detects | 3868 | |
| 680 | | | | | Med | dian Detects | 1205 | | | | | | (| CV Detects | 1.485 | |
| 681 | | | | | Skewn | ess Detects | 2.372 | | | | | ł | Kurtos | sis Detects | 6.301 | |
| 682 | | | | М | ean of Log | ged Detects | 6.277 | | | | | SD of | Logg | ed Detects | 2.706 | |
| 683 | | | | | | | | | | | | | | | | |
| 684 | | | | | | Normal G | OF Test on D | Detects Or | nly | / | | | | | | _ |
| 685 | | | | Sha | apiro Wilk T | est Statistic | 0.692 | | | | Shap | biro Will | (GO | F Test | | |
| 686 | | | | 5% Sha | piro Wilk C | ritical Value | 0.911 | | | Detected [| Data Not | Normal | at 5% | % Significar | nce Level | |
| 687 | | | | | Lilliefors T | est Statistic | 0.293 | | | | Lill | liefors C | GOF | Test | | |
| 688 | | | | 5% | Lilliefors C | ritical Value | 0.184 | | L | Jetected L | Jata Not | Normal | at 5% | % Significar | nce Level | |
| 689 | | | | | Detect | ed Data No | Normal at 5 | % Signific | an | nce Level | | | | | | |
| 690 | | | | 12 1 14 1 1 | | | | | | | | | | | | |
| 691 | | | | Kapian-Meier (I | KM) Statist | | | values a | ina | I OTHER NO | onparame | | LS | | 200 7 | |
| 692 | | | | | | KM Mean | 842.9 | | | | KMS | Standar | dErr | or of Mean | 306.7 | |
| 693 | | | | | 059/ | | 2471 | | | 050/ | | 95% | | | 1300 | |
| 694 | | | | | 95% | | 1354 | | | 95% | | rcentile | Boot | strap) UCL | 1400 | |
| 695 | | | | 000 | 95% | | 1347 | | | | 95 | 5% KIVI | BOOts | strap t UCL | 1695 | |
| 696 | | | | 90 | % KM Chel | bysnev UCL | 1/63 | | | | 95 | 0% KIVI (| Cheb | ysnev UCL | 2180 | |
| 697 | | | | 97.5 | % KIVI Chei | bysnev UCL | 2/58 | | | | 99 | | Cheb | ysnev UCL | 3894 | |
| 698 | | | | | | | n an Dataata | d Obeen | - 41 | ana Onki | | | | | | |
| 699 | | | | | Gainin | a GOF Tes | | | au | ons only | Andoro | on Dorl | ing G | | | |
| 700 | | | | | A-D I | ritical Value | 0.140 | Detect | tor | data ann | Anuers | on-Dan | ing G | | ignificance Loval | |
| 701 | | | | | 5% A-D C | oct Statistic | 0.023 | Delect | lec | u uata app | | | mirn | | ignificance Level | |
| 702 | | | | | 5% K S C | ritical Value | 0.0009 | Dotoct | tor | data anr | | yorov-a | tribut | od at 5% S | ignificanco Lovol | _ |
| 703 | | | | Detr | o C-N % C | annear Gar | nma Dietribut | Delect | S | a uata app | | | unbut | eu al 5 /6 5 | Igninicance Lever | |
| 704 | | | | Dell | | appear Gar | | | | ignineane | 0 20101 | | | | | |
| 705 | | | | | | amma Stati | stics on Dete | cted Data | a (| Only | | | | | | _ |
| 700 | | | | | | k hat (MLE) | 0.412 | | | ,, | k sta | ar (hias | corre | acted MLE) | 0 386 | |
| 707 | | | | | Thet | a hat (MLE) | 6317 | | | | Theta sta | ar (bias | corre | cted MLE) | 6741 | _ |
| 700 | | | | | n | u hat (MLE) | 18 14 | | | | Theta St | nu star | (hias | corrected) | 17 | |
| 709 | | | | | Me | an (detects) | 2605 | | | | | na otai | (blub | conceted) | ., | |
| 710 | | | | | 1110 | | 2000 | | | | | | | | | |
| 712 | | | | | Gamm | a ROS Stat | istics usina li | mputed No | on | -Detects | | | | | | |
| 713 | | | | GROS may not be | used when | n data set ha | s > 50% NDs | with many | v ti | ied observ | vations at | t multip | le DL | s | | - |
| 714 | | GR | ROS | 5 may not be used when k | kstar of det | ects is smal | such as <1.0 | , especial | j Ily ' | when the | sample s | size is s | mall (| (e.g., <15-2 | 20) | |
| 715 | | | | For such s | situations, | GROS meth | od may yield | incorrect v | val | lues of UC | Ls and E | BTVs | | | | |
| 716 | | | | | This is | especially t | rue when the | sample siz | ze | is small. | | | | | | |
| 717 | | | Fo | or gamma distributed dete | ected data, | BTVs and U | CLs may be o | computed | us | ing gamm | na distribi | ution or | n KM | estimates | | |
| 718 | | | | | | Minimum | 0.01 | | | | | | | Mean | 842.8 | |
| 719 | | | | | | Maximum | 16000 | | | | | | | Median | 0.01 | |
| 720 | | | | | | SD | 2489 | | | | | | | CV | 2.953 | |
| 721 | | | | | | k hat (MLE) | 0.103 | | | | k sta | ar (bias | corre | ected MLE) | 0.109 | |
| 722 | | | | | Thet | ta hat (MLE) | 8151 | | | | Theta sta | ar (bias | corre | ected MLE) | 7757 | |
| 723 | | | | | n | u hat (MLE) | 14.06 | | | | | nu star | (bias | corrected) | 14.78 | |
| 724 | | | | Adjusted Le | evel of Sigr | nificance (β) | 0.0465 | | | | | | | | | |
| 725 | | | | Approximate Chi S | Square Valu | ue (14.78, α) | 7.105 | | | Adjus | ted Chi S | Square | Value | e (14.78, β) | 6.99 | |
| 726 | | | 95 | % Gamma Approximate l | UCL (use w | /hen n>=50) | 1752 | 9 | 5% | 6 Gamma | Adjusted | d UCL (I | use w | /hen n<50) | 1781 | |
| 727 | | | | | | | | | | | | | | | | |
| 728 | | | | | Estimat | es of Gamm | a Parameter | s using Kl | М | Estimates | S | | | | | _ |
| 729 | | | | | | Mean (KM) | 842.9 | | | | | | | SD (KM) | 2471 | |
| 730 | | | | | Va | Iriance (KM) | 6104133 | | | | | S | E of I | Mean (KM) | 306.7 | |
| 731 | | | | | | k hat (KM) | 0.116 | | | | | | | k star (KM) | 0.121 | |
| 732 | | | | | | nu hat (KM) | 15.83 | | | | | | n | u star (KM) | 16.47 | |
| 733 | | | | 0001 | the | eta nat (KM) | 7242 | | | | 0001 | | tneta | a star (KM) | 2204 | |
| /34 | | | | 80% g | jamma per | cenule (KM) | /40./ | | | | 90% (| yamma | perce | enuie (KM) | 2394 | |
| 735 | I | | | 95% g | jamma per | centile (KM) | 4805 | | | | 99% (| yamma | perco | entile (KM) | 12140 | |
| /36 | | | | | | Gamme V | nion Meine / | (11) 6+-+'- | | ~ | | | | | | |
| /37 | | | | Approvimete Ok: 0 | | | PIALI-IVIEIEF (I | wij Statis | รแต | دخت :ابر∧ | tod Chi C | Sauces | Val | (16 47 0) | 0 166 | |
| /38 | | 0=0/ | 6 | Approximate Chi S | ICL (uco | $\frac{10.47}{0}$ | 0.291 | 0E0/ / | 6 | Adjus | usted KM | | value | $(10.47, \beta)$ | 0.100 | |
| 739 | | 50% | υ C | | COL (USE W | men 11/-00) | 10/4 | 55% | Jad | anna Auji | usieu riv | | นอช ฟ | men 11>00) | 1700 | _ |
| 740 | | | | | Lognor | mal COF To | st on Detect | ad Obeen | u a t | tione Only | , | | | | | _ |
| 741 | | | | Cha | | est Statistic | 0.88 | | r a l | | Shan | niro Will | 60 | F Teet | | |
| 742 | | | | 5% Sha | piro Wilk C | ritical Value | 0.911 | 1 | De | etected De | ata Not L | ognorm | al at l | 5% Signific | ance Level | _ |
| 743 | | | | 070 0114 | Lilliefors T | est Statistic | 0.168 | | 20 | | | liefore G | GOF T | Test | 2 | |
| 744 | | | | 5% | Lilliefors C | ritical Value | 0 184 | | ete | ected Data | appear | Loanor | mal a | t 5% Signif | icance l evel | - |
| . 45 | | | | 570 | | | | | | | | 9.101 | | | | |

| | ۸ | Р | T | | <u> </u> | | D | | Гг | | 1 | | 1 | - | 1 | 1 | | | |
|------------|-----------|----------|-------|------------|------------|----------|--------------|-----------------|-----------------|---------------|-------|----------------|-------|----------|------------|-----------|---|------------|-----------|
| 746 | A | В | | | U | Detect | ed Data a | nnear Annr | vimate Logr | ormal at F | 5% S | ⊓ Signific | ance | | | J | ĸ | | L |
| 740 | | | | | | 001001 | | | Annato Logi | | //0 (| Jiginin | Juno | | | | | | |
| 747 | | | | | | | Lognor | mal ROS St | atistics lein | 1 Imputed | Nor | -Deter | rte | | | | | | |
| 740 | | | | | | | Mean in O | riginal Scale | 844 7 | Jimputou | | | | | | Mean ir | n Log Se | cale | 1 096 |
| 750 | | | | | | | SD in O | riginal Scale | 2488 | | | | | | | SD ir | 1 Log Se | cale | 4.66 |
| 751 | | | | 95% t l | UCL (ass | umes r | normality c | of ROS data | 1348 | | | | 9 | 5% Pe | ercen | itile Boo | otstran l | | 1396 |
| 752 | _ | | | | 002 (000 | 95 | % BCA Bo | ootstran UCI | 1539 | | | | | | 95 | % Boot | stran t l | | 1751 |
| 753 | | | | | | | 5% H-UC | L (Log ROS) | 4960943 | | | | | | 00 | Nº DOOL | onupre | OOL | |
| 754 | | | | | | - | | - (| | | | | | | | | | | 4 |
| 755 | | | | | Statist | tics usi | na KM est | timates on L | ogged Data | and Assur | ninc | ı Loan | orma | al Distr | ributi | ion | | | |
| 756 | | | | | | | KM M | ean (logged) | 1.093 | | | | | | | KM | Geo M | lean | 2.983 |
| 757 | | | | | | | KM | SD (logged) | 3.888 | | | | 95 | 5% Cri | itical | H Valu | e (KM-L | _og) | 4.957 |
| 758 | | | | | KM Sta | ndard | Error of Me | ean (logged) | 0.483 | | | | | | 95% | H-UCL | _ (KM -L | Log) | 60140 |
| 759 | | | | | | | KM | SD (logged) | 3.888 | | | | 95 | 5% Cri | itical | H Valu | e (KM-L | _og) | 4.957 |
| 760 | | | | | KM Sta | ndard | Error of Me | ean (logged) | 0.483 | | | | | | | | | | |
| 761 | | | | | | | | | | | | | | | | | | | |
| 762 | | | | | | | | | DL/2 Statist | ics | | | | | | | | | |
| 763 | | | | | DL/2 | Norma | | | | | | | | DL/2 | Log | -Transf | ormed | | |
| 764 | | | | | | | Mean in O | riginal Scale | 842.8 | | | | | | | Mean ir | n Log So | cale | 0.634 |
| 765 | | | | | | | SD in O | riginal Scale | 2489 | | | | | | | SD ir | n Log So | cale | 4.214 |
| 766 | | | | | 959 | % t UC | L (Assume | es normality) | 1346 | | | | | | | 95% | H-Stat l | UCL | 221526 |
| 767 | | | | | DL/2 is | s not a | recomme | nded metho | d, provided f | or compar | isor | ns and | histo | orical r | rease | ons | | | |
| 768 | | | | | | | | | | | | | | | | | | | |
| 769 | | | | | | | Non | nparametric | Distribution I | Free UCL : | Stat | istics | | | | | | | |
| 770 | | | | | | Dete | ected Data | a appear Ga | mma Distrib | uted at 5% | Sig | Inificar | nce L | _evel | | | | | |
| 771 | | | | | | | | | | | | | | | | | | | |
| 772 | | | | | | | | Sug | gested UCL | to Use | | | | | | | | | |
| 773 | | | | | 95% K | М Арр | roximate (| Gamma UCL | 1674 | | | | | | | | | | |
| 774 | | | | | | | | 6 050/ 110 | | | | | | | | | | -0/ 1 | |
| 775 | | Note | : S | uggestion | s regardi | ng the | selection of | of a 95% UC | L are provide | d to help the | he u | iser to | selec | ct the r | most | approp | priate 95 | 5% L | JCL. |
| 776 | | The | | raaamma | ndotiono | ore he | | the regulte of | the simulati | e, uata uis | | moria | | Singh | 55. Mo | ichlo o | ndlaa | (200 | |
| 777 | | Howey | or | simulation | | | seu upon i | I Real World | data sets: fo | r additiona | Sun | intanze | | or may | | nt to cor | | | tician |
| 770 | | 11000000 | , cr, | Simulation | is results | | | | uutu 30t3, 10 | additiona | 1113 | igni in | 0 430 | Ji may | war | | isuit a s | Julia | |
| 780 | Ethvibenz | zene | | | | | | | | | | | | | | | | | |
| 781 | , | | | | | | | | | | | | | | | | | | |
| 782 | | | | | | | | (| General Stati | stics | | | | | | | | | |
| 783 | | | | | Т | otal Nu | umber of C | Observations | 68 | | | | Nur | nber o | of Dis | stinct O | bservati | ions | 22 |
| 784 | | | | | | | Numbe | er of Detects | 20 | | | | | Ν | Numb | ber of N | Ion-Dete | ects | 48 |
| 785 | | | | | | Num | ber of Dis | tinct Detects | 20 | | | | Nu | mber o | of Di | stinct N | Ion-Dete | ects | 2 |
| 786 | | | | | | | Mini | imum Detect | 0.582 | | | | | | Mir | nimum | Non-De | etect | 0.25 |
| 787 | | | | | | | Maxi | imum Detect | 1550 | | | | | | Ma | ximum | Non-De | etect | 0.5 |
| 788 | | | | | | | Varia | ance Detects | 251096 | | | | | | Pe | ercent N | Ion-Dete | ects | 70.59% |
| 789 | | | | | | | Μ | lean Detects | 437.6 | | | | | | | | SD Dete | ects | 501.1 |
| 790 | | | | | | | Me | dian Detects | 209.5 | | | | | | | | CV Dete | ects | 1.145 |
| 791 | | | | | | | Skewr | ness Detects | 1.091 | | | | | | | Kurto | sis Dete | ects | -0.139 |
| 792 | | | | | | M | ean of Log | gged Detects | 4.977 | | | | | | SD | of Logo | ged Dete | ects | 2.028 |
| 793 | | | | | | | | | - | | | | | | | | | | |
| 794 | | | | | | <u> </u> | | Normal G | OF Test on | Detects O | niy | | | | | | | | |
| 795 | | | | | | Sha | piro Wilk | I est Statistic | 0.813 | | - | | | Shapi | Iro V | vilk GO | F Test | | |
| 796 | | | | | 5 | % Sha | piro Wilk C | Jritical Value | 0.905 | - | De | etectec | 1 Dat | a Not I | Norn | nal at 5 | % Signi | ificar | ice Level |
| 797 | | | | | | F0/ | Lillietors | est Statistic | 0.212 | | _ | | | Lilli | ietor | s GOF | I est | <i>c</i> . | |
| 798 | | | | | | 5% | Lilliefors C | ritical Value | 0.192 | W 0110 | De | | u Dat | a Not I | Norn | nai at 5 | % Signi | iticar | ICE LEVEI |
| 799 | | | | | | | Detect | ted Data No | t inormal at t | o% Signific | anc | e Leve | ei | | | | | | |
| 800 | | | | | Kanlon N | loier / | (M) Statia | tice using N | ormal Critica | | nd | othor • | Jonn | aroma | atric | | | | |
| 801 | | | | | ∿аріа⊓-№ | nelet (I | wij Statis | | | a values a | niù (| ouier l | aoub | | Store | | ror of M | loon | A1 24 |
| 802 | | | | | | | | KW CL | 331 5 | | | | | INIVI C | | 5% KM | | | 195.5 |
| 003 | | | | | | | 92% | | 197 7 | - | | 95 | % KI | M (Por | JC Cent | ile Root | tstran) I | | 203.3 |
| 004 805 | | | | | | | 95% | | 196.7 | 1 | | 90 | 70 NI | | 5% K | M Root | stran t I | | 223.9 |
| 200 | | | | | | 909 | % KM Che | byshev LICI | 252.6 | + | | | | 95 | % KI | M Cheh | yshev I | | 308.6 |
| 000 | | | | | | 97.59 | % KM Che | hyshev LICI | 386.4 | | | | | 90 | % KI | M Cheh | vshev l | | 539.2 |
| 802 | | | | | | 57.5 | | Joyanav UOL | 000.4 | 1 | | | | 33 | 70 11 | in onet | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | JUL | 000.2 |

| | ۸ | D | <u> </u> | | Е | Б | <u> </u> | Ц | 1 | 1 | V | |
|-----|---|-----|----------------------------|---------------|---------------|-------------------|----------------|----------------|--------------|--------------|--------------|-------------------|
| 000 | A | В | U | Comm | | ⊢ a an Dataata | G d Observe | H Hana Only | | J | ĸ | L |
| 809 | | | | Gainin | a GOF Test | S OII Delecte | | uons only | A | D | 0F T | |
| 810 | | | | A-D I | est Statistic | 0.257 | | | Andersor | -Darling G | OF Test | |
| 811 | | | | 5% A-D C | ritical Value | 0.797 | Detect | ed data app | ear Gamn | na Distribut | ed at 5% Si | ignificance Level |
| 812 | | | | K-S T | est Statistic | 0.125 | | | Kolmogo | orov-Smirn | ov GOF | |
| 813 | | | | 5% K-S C | ritical Value | 0.204 | Detect | ed data app | ear Gamm | na Distribut | ed at 5% Si | ignificance Level |
| 814 | | | Det | ected data | appear Gan | nma Distribut | ed at 5% | Significanc | e Level | | | |
| 815 | | | | | | | | | | | | |
| 916 | | | | 6 | amma Stati | stics on Dete | cted Data | Only | | | | |
| 010 | | | | | k hot (MLE) | 0.565 | | Unity | k etar | (hine corre | otod MLE) | 0.512 |
| 017 | | | | That | | 0.000 | | | Thoto otor | | oted MLE) | 952.4 |
| 818 | | | | met | | 774.0 | | | Theta Star | | | 002.4 |
| 819 | | | | n | u nat (IVILE) | 22.59 | | | nı | i star (blas | corrected) | 20.54 |
| 820 | | | | Me | an (detects) | 437.6 | | | | | | |
| 821 | | | | | | | | | | | | |
| 822 | | | | Gamm | a ROS Stat | istics using li | mputed No | on-Detects | | | | |
| 823 | | | GROS may not be | used when | data set ha | s > 50% NDs | with many | tied observ | ations at r | nultiple DL | 5 | |
| 824 | | GF | ROS may not be used when | kstar of det | ects is small | such as <1.0 | , especiall | y when the | sample siz | e is small (| e.g., <15-2 | 0) |
| 825 | | | For such | situations, (| GROS meth | od may yield | incorrect v | alues of UC | Ls and BT | Vs | | |
| 826 | | | | This is | especially ti | rue when the | sample siz | ze is small. | | | | |
| 827 | | | For gamma distributed dete | ected data. | BTVs and U | CLs may be o | computed u | usina aamm | na distribut | ion on KM | estimates | |
| 828 | | | 5 | , | Minimum | 0.01 | | 00 | | | Mean | 128 7 |
| 920 | | | | | Maximum | 1550 | | | | | Median | 0.01 |
| 029 | | | | | | 334 | | | | | CV | 2 505 |
| 030 | | | | | | 0.110 | | | - مذه با | (higo com | | 0.124 |
| 831 | | | | | | 0.119 | | | K Star | UIAS COTTE | | 0.124 |
| 832 | | | | Inet | a nat (IVILE) | 10/8 | | | i neta star | (Dias corre | cieu MLE) | 10.55 |
| 833 | | | | n | u nat (MLE) | 16.24 | | | nı | ı star (bias | corrected) | 16.86 |
| 834 | | | Adjusted L | evel of Sigr | nificance (β) | 0.0465 | | | | | | |
| 835 | | | Approximate Chi S | Square Valu | e (16.86, α) | 8.572 | | Adjus | ted Chi So | uare Value | (16.86, β) | 8.443 |
| 836 | | | 95% Gamma Approximate | UCL (use w | hen n>=50) | 253.2 | 95 | 5% Gamma | Adjusted | JCL (use w | hen n<50) | 257 |
| 837 | | | | | | | | | | | | |
| 838 | | | | Estimate | es of Gamm | a Parameter | s using KM | A Estimates | 5 | | | |
| 839 | | | | | Mean (KM) | 128.9 | _ | | | | SD (KM) | 331.5 |
| 840 | | | | Va | riance (KM) | 109871 | | | | SE of I | Mean (KM) | 41.24 |
| 841 | | | | | k hat (KM) | 0.151 | | | | | star (KM) | 0.154 |
| 041 | | | | | nu hat (KM) | 20.56 | | | | ni | ustar (KM) | 20.99 |
| 042 | | | | the | ta hat (KM) | 852.5 | | | | thets | etar (KM) | 835.2 |
| 843 | | | 000/ | | | 142 5 | | | 000/ | | | 200.2 |
| 844 | | | 80% (| yamma per | | 143.5 | | | 90% ga | imma perce | | 383.0 |
| 845 | | | 95% (| gamma per | centile (KM) | 705.4 | | | 99% ga | imma perce | entile (KM) | 1634 |
| 846 | | | | | | | | | | | | |
| 847 | | | | | Gamma Ka | plan-Meier (H | (M) Statis | tics | | | | r |
| 848 | | | Approximate Chi S | Square Valu | e (20.99, α) | 11.58 | | Adjus | ted Chi So | uare Value | (20.99, β) | 11.43 |
| 849 | | 95% | 6 Gamma Approximate KM- | UCL (use w | hen n>=50) | 233.5 | 95% 0 | Gamma Adj | usted KM-I | JCL (use w | hen n<50) | 236.6 |
| 850 | | | | | | | | | | | | |
| 851 | | | | Lognor | nal GOF Te | st on Detecte | ed Observ | ations Only | ' | | | |
| 852 | | | Sha | apiro Wilk T | est Statistic | 0.909 | | | Shapir | o Wilk GO | - Test | |
| 853 | | | 5% Sha | apiro Wilk C | ritical Value | 0.905 | De | etected Data | a appear L | ognormal a | t 5% Signifi | icance Level |
| 854 | | | | Lilliefors T | est Statistic | 0.147 | | | Lillie | fors GOF | Test | |
| 855 | | | 5% | Lilliefors C | ritical Value | 0.192 | De | etected Data | appear L | ognormal a | t 5% Sianif | icance Level |
| 856 | | | | Detected I | Data appear | Lognormal a | t 5% Sian | ificance Le | vel | - J | | |
| 957 | | | | 20100100 | | | | | | | | |
| 057 | | | | Lognorn | al POS Sta | tietice Lleina | Imputed N | lon-Detect | • | | | |
| 000 | l | | | Mean in Or | ininal Soolo | 130 | pateu r | | - | Maanin | Log Scole | 0 580 |
| 859 | | | | | | 100 222 E | | | | | Log Scale | 2 715 |
| 860 | | | | SU IN Ur | | 333.5 | | | 050/ 5 | SU IN | LUY SCAIE | 3.715 |
| 861 | | | 95% t UCL (assumes | normality of | I RUS data) | 197.4 | | | 95% Pero | centile Boot | strap UCL | 199.0 |
| 862 | | | 95 | 5% BCA BO | USTRAP UCL | 217.9 | | | | ษอ% Boots | uap t UCL | 220.8 |
| 863 | | | | 95% H-UCL | . (Log ROS) | 15185 | | | | | | |
| 864 | | | | | | | | | | | | |
| 865 | | | Statistics us | ing KM esti | imates on Lo | ogged Data a | nd Assum | ning Lognor | mal Distri | oution | | |
| 866 | | | | KM Me | an (logged) | 0.485 | | | | KM | Geo Mean | 1.625 |
| 867 | | | | KM | SD (logged) | 3.091 | | | 95% Criti | cal H Value | (KM-Log) | 3.83 |
| 868 | | | KM Standard | Error of Me | an (logged) | 0.385 | | | 9 | 5% H-UCL | (KM -Log) | 820.7 |
| 869 | | | | KM | SD (logged) | 3.091 | | | 95% Criti | cal H Value | (KM-Log) | 3.83 |
| 870 | | | KM Standard | Error of Me | an (logged) | 0.385 | | | | | | |
| 871 | | | | | | - | 1 | | | | | |
| 870 | | | | | | DL/2 Statisti | cs | | | | | |
| 872 | | | DI /2 Norma | 1 | | | | | י כי וח | on-Tranef | ormed | |
| 073 | | | | Mean in Or | ininal Soola | 128.8 | | | | Maan in | | 0.0165 |
| 0/4 | | | | | iginal Scale | 334 | | | | | | 3 404 |
| ŏ/5 | | | 050/ 1110 | | | 106.0 | | | | | | 3.404 |
| 876 | | | 95% t UC | ∠ (Assume | s normality) | 190.3 | | | - | 95% F | I-Stat UCL | 1901 |
| 877 | | | DL/2 is not a | recommen | iaea methoa | i, provided fo | r comparis | sons and h | istorical re | asons | | |
| 878 | | | | | | | | | | | | |
| 879 | | | | Non | parametric [| Distribution F | ree UCL S | Statistics | | | | |
| 880 | | | Det | ected Data | appear Gar | nma Distribu | ted at 5% | Significanc | e Level | | | |
| 881 | | | | | | | | | | | | |
| 882 | | | | | Sug | gested UCL t | o Use | | | | | |
| 883 | | | 95% KM Apr | proximate G | amma UCL | 233.5 | | | | | | |
| 004 | | | | | | | | | | | | |

| | Α | В | | | <u>.</u> | | D |) | E | | F | 0 | i | H | | 1 | <u> </u> | J | | K | | L |
|------------|------|------------|-----------|----------|----------|-----------------|----------|------------|----------|---------------|---------------|-----------|--------|-----------|---------|---------|----------|---------|---------|---------|-----------|----------------------|
| 885 | | Note | e: Sugge | stions r | egardu | ng the | select | ion of a | a 95% | UCL | are provid | ed to he | Ip the | user to | select | the m | nost a | pprop | oriates | 95% L | CL. | |
| 886 | | T 1 | | | R | ecomm | nendat | ions a | re bas | ed u | pon data siz | e, data | distri | bution, a | and ske | ewnes | SS. | | | - (000 | <u>()</u> | |
| 887 | - | Ine | ese recor | mmend | ations | are bas | sed up | bon the | e resul | ts of | the simulat | on stud | es su | immariz | ed in S | singh, | Maici | nie, a | nd Le | e (200 | 6). | |
| 888 | - | Howev | ver, simu | lations | results | s will no | ot cove | er all R | teal w | orid | data sets; fo | r additio | nal II | nsight th | le user | may | want t | to cor | nsult a | statis | tician. | |
| 889 | 1 | | | | | | | | | | | | | | | | | | | | | |
| 890 | Lead | | | | | | | | | | | | | | | | | | | | | |
| 891 | | | | | | | | | | | onoral Stat | lation | | | | | | | | | | |
| 892 | | | | | т | Cotol Nu | umbor | of Oh | convot | ione | | เธแตร | | | Num | hor of | f Dictir | | bean | ations | 0 | |
| 893 | | | | | | Utar Nu | Ni | umber | | ente | 5 | _ | | | INUITI | | lumbe | or of N | lon-De | | 63 | |
| 094 00E | | | | | | Num | her of | Distin | of Det | ects | 5 | - | | | Num | her o | of Disti | inct N | | | 4 | |
| 806 | | | | | | TNUTT | | Minim | | etect | 1.57 | | | | Null | | Minir | mum | Non-D |)etect | 15 | |
| 807 | | | | | | | | Maxim | um De | etect | 3 44 | _ | | | | | Maxir | mum | Non-D |)etect | 7.5 | |
| 898 | | | | | | | | /ariano | ce Det | ects | 0.601 | - | | | | | Perc | ent N | lon-De | etects | 92 F | 5% |
| 899 | | | | | | | | Mea | an Det | ects | 2.524 | | | | | | | | SD De | etects | 0.7 | 75 |
| 900 | | | | | | | | Media | an Det | ects | 2.38 | | | | | | | | CV De | etects | 0.3 | 07 |
| 901 | | | | | | | Sk | ewne | ss Det | ects | 0.06 | | | | | | | Kurto | sis De | etects | -1.92 | 25 |
| 902 | | | | | | Me | ean of | Logge | ed Det | ects | 0.886 | | | | | | SD of | f Logo | ged De | etects | 0.3 | 2 |
| 903 | | | | | | | | | | | | _! | | | | | | | - | | | |
| 904 | | | | | | | | | Norm | al G | OF Test on | Detects | onl | y | | | | | | | | |
| 905 | | | | | | Sha | piro W | /ilk Te | st Stat | istic | 0.95 | | | | S | Shapiı | ro Wil | lk GO | F Tes | st | | |
| 906 | | | | | 5 | % Shap | piro W | ilk Cri | tical V | alue | 0.762 | | D | etected | Data a | ppear | r Norm | nal at | 5% S | ignific | ance Le | vel |
| 907 | | | | | | | Lillief | ors Te | st Stat | tistic | 0.198 | | | | | Lillie | efors (| GOF | Test | | | |
| 908 | | | | | | 5% | Lilliefo | ors Crit | tical V | alue | 0.343 | | D | etected | Data a | ppear | r Norm | nal at | 5% S | ignific | ance Le | vel |
| 909 | | | | | | | Dete | ected | Data a | appe | ar Normal a | t 5% Si | gnific | ance Le | evel | | | | | | | |
| 910 | | | | | | | | | | | | | | | | | | | | | | |
| 911 | | | | Ka | plan-M | <i>leier (F</i> | (M) S | tatistic | cs usir | ng No | ormal Critic | al Value | s an | d other | Nonpa | rame | tric U | CLs | | | | |
| 912 | | | | | | | | | KM N | lean | 1.579 | | | | | KM S | standa | rd Er | ror of | Mean | 0.04 | 59 |
| 913 | | | | | | | | | KN | 1 SD | 0.332 | _ | | | | | 95% | 6 KM | (BCA) |) UCL | 1.6 | 52 |
| 914 | | | | | | | | 95% K | KM (t) | UCL | 1.655 | | | 95 | 5% KM | (Perc | centile | Boo | tstrap) | UCL | 1.6 | 56 |
| 915 | | | | | | | | 95% K | .M (z) | | 1.654 | _ | | | | 955 | % KM | Boot | strap | | 1.6 | 36 |
| 916 | | | | | | 90% | % KM | Cheby | /shev | | 1./16 | _ | | | | 95% | % KM | Cheb | yshev | | 1.7 | 79 20 |
| 917 | | | | | | 97.5% | % KIVI | Cneby | /snev | UCL | 1.865 | | | | | 99% | % KIVI | Cneb | ysnev | UCL | 2.0. | 30 |
| 918 | | | | | | | | | COF | Toot | a on Dotod | od Obo | oniot | | h. | | | | | | | |
| 919 | | | | | | | Ga | | et Stat | istic | 0 2/18 | | eival | | Δη | doreo | n-Dor | dina (| | oet | | |
| 920 | | | | | | | 5% Δ | | tical V | alue | 0.240 | De | torto | d data a | nnear | Gamr | ma Die | stribu | ted at | 5% S | ignificar | |
| 921 | | | | | | | 570 A | -S Te | st Stat | tistic | 0.075 | | | u uutu u | Ko | olmoa | orov-S | Smirr | nov G | OF | grinical | |
| 923 | | | | | | | 5% K | -S Crit | tical V | alue | 0.357 | De | tecte | d data a | ppear | Gamr | ma Dis | stribu | ted at | 5% S | ianificar | nce Level |
| 924 | | | | | | Dete | ected | data a | ppear | Gan | nma Distrib | uted at | 5% S | ianifica | nce Le | vel | | 011101 | tou ut | 0.00 | gimea | |
| 925 | | | | | | | | | | | | | | <u> </u> | | | | | | | | |
| 926 | | | | | | | | Ga | mma | Stati | stics on De | tected [|)ata (| Only | | | | | | | | |
| 927 | | | | | | | | k | hat (N | 1LE) | 12.72 | | | | | k sta | r (bias | s corr | ected | MLE) | 5.2 | 21 |
| 928 | | | | | | | | Theta | hat (N | 1LE) | 0.198 | | | | The | ta sta | r (bias | s corr | ected | MLE) | 0.4 | 83 |
| 929 | | | | | | | | nu | hat (N | 1LE) | 127.2 | | | | | n | nu star | r (bias | s corre | ected) | 52.2 | 21 |
| 930 | | | | | | | | Mear | n (dete | ects) | 2.524 | | | | | | | | | | | |
| 931 | | | | | | | | | | | | | | | | | | | | | | |
| 932 | | | | | | | G | amma | ROS | Stat | istics using | Impute | d Nor | n-Detect | ts | | | | | | | |
| 933 | | | | GRO | S may | not be | used v | when c | data se | et ha | s > 50% NC | s with n | nany | tied obs | ervatio | ons at | multip | ole DL | _S | | | |
| 934 | | GF | ROS may | y not be | e used | when k | star o | f deteo | cts is s | mall | such as <1 | 0, espe | cially | when th | ne sam | ple si | ze is s | small | (e.g., | <15-2 | 0) | |
| 935 | | | | | For | such s | situatio | ons, G | ROS r | neth | od may yiel | d incorre | ect va | lues of l | JCLs a | and B | TVs | | | | | |
| 936 | | | _ | | | | Tł | nis is e | specia | ally ti | rue when th | e sampl | e size | e is sma | II. | | | 10 | | | | |
| 937 | | | ⊦or gar | nma di | stribute | ed dete | cted d | iata, B | IVsa | nd U | CLS may be | compu | ted us | sing gan | nma di | stribu | tion o | n KM | estim | ates | | 07 |
| 938 | | | | | | | | | Mari | num | 0.01 | - | | | | | | | | iviean | 0.3 | J/ |
| 939 | | | | | | | | | waxir | num | 3.44 | | | | | | | | M | eaian | 0.01 | E2 |
| 940 | | | | | | | | 1. | hot / | 5D | 0.721 | | | | | k etc | r /h: | 0.00 | | | 2.3 | 04 |
| 941 | | | | | | | | K Thete | hat (N | | 0.297 | + | | | The | K Sidi | r (bias | | ected | | 0.2 | <u>54</u> 11 |
| 942 | | | | | | | | nield | hat (N | | 40.30 | - | | | ine | ia sidi | i (Dias | | | | 1.04 | 4 |
| 943 | | | | | Δdiu | Isted I / | عروا مر | Signif | ficance | - (R) | 0.039 | + | | | | | iu stal | (Dids | JUITE | ,cieu) | 39.8 | |
| 944 Q/F | | | | Annre | | - Chi S | duare | Value | (39 0 | - (P) (n 1 | 26 46 | + | | ihΔ | usted (| Chi Sr | quare | Valu | e (39 0 | 94 R) | 26 3 | 3 |
| 940 Q/A | | | 95% Ge | amma / | Approvi | imate I | JCI (II | ise wh | en n>: | =50) | 0.463 | | 950 | % Gam | na Adii | usted | | (USP) | when | n<50) | 0.2 | . . 67 |
| 940 | | | 5570 QC | | -44.01 | | | | | 55) | 0.100 | | 00 | Juan | | | 2011 | , | | | 0.4 | |

| | Α | В | С | D | E | F | G | Н | | J | K | L |
|------|----------|--------|---------------------------------|--------------|---------------|------------------|--------------|----------------|------------------|--------------|---------------|---------------------------------------|
| 948 | | | | Estimate | es of Gamm | na Parameter | s using KN | M Estimates | | | | |
| 949 | | | | | Mean (KM) | 1.579 | | | | | SD (KM) | 0.332 |
| 950 | | | | Va | riance (KM) | 0.11 | | | | SE of I | Mean (KM) | 0.0459 |
| 951 | | | | | k hat (KM) | 22.56 | | | | | k star (KM) | 21.58 |
| 952 | | | | | nu hat (KM) | 3069 | | | | n | u star (KM) | 2935 |
| 953 | | | | the | eta hat (KM) | 0.07 | | | | theta | a star (KM) | 0.0732 |
| 954 | | | 80% g | amma pero | centile (KM) | 1.855 | | | 90% ga | amma perc | entile (KM) | 2.027 |
| 955 | | | 95% g | amma pero | centile (KM) | 2.176 | | | 99% ga | amma perc | entile (KM) | 2.475 |
| 956 | | | | | | | | | | | | |
| 957 | | | | | Gamma Ka | plan-Meier (l | (M) Statis | tics | | | | |
| 958 | | | Approximate Chi | Square Va | lue (N/A, α) | 2810 | | Adju | sted Chi S | Square Val | ue (N/A, β) | 2807 |
| 959 | | 95% | Gamma Approximate KM-L | JCL (use w | hen n>=50) | 1.649 | 95% 0 | Gamma Adju | sted KM-l | UCL (use w | /hen n<50) | 1.65 |
| 960 | | | | | | | | | | | | |
| 961 | | | 0 | Lognor | mal GOF Te | est on Detecte | ed Observa | ations Only | <u> </u> | | | |
| 962 | | | Sha | piro Wilk I | est Statistic | 0.954 | D | te etc d Dete | Snapir | o Wilk GO | | · · · · · · · · · · · · · · · · · · · |
| 963 | | | 5% Sha | | ritical Value | 0.762 | De | etected Data | appear Lo | ognormal a | it 5% Signif | icance Level |
| 964 | | | E0/ | Lilliefora C | ritical Value | 0.190 | De | tested Data | | | t E% Signif | iconco Lovol |
| 965 | | | 576 | Detected | | | t 5% Sign | | | ognormara | it 5 % Signi | |
| 966 | | | | Delected | Jara ahheai | Lognormal a | | | | | | |
| 907 | | | | Lognorn | nal ROS Sta | atistics lsing | Imputed N | Von-Detects | | | | |
| 900 | | | | Mean in Or | iginal Scale | 0.66 | | | | Mean in | Log Scale | -0 775 |
| 970 | | | | SD in Or | iginal Scale | 0.652 | | | | SD in | Log Scale | 0.847 |
| 971 | | | 95% t UCL (assumes r | normality of | f ROS data) | 0.792 | | | 95% Perc | centile Boo | tstrap UCL | 0.798 |
| 972 | | | 95 | % BCA Bo | otstrap UCL | 0.813 | | | | 95% Boots | trap t UCL | 0.825 |
| 973 | | | ç | 5% H-UCL | (Log ROS) | 0.824 | | | | | | |
| 974 | | | | | | 1 | | | | | | <u></u> |
| 975 | | | Statistics usi | ng KM esti | imates on L | ogged Data a | and Assum | ning Lognorn | nal Distril | bution | | |
| 976 | | | | KM Me | an (logged) | 0.442 | | | | KM | Geo Mean | 1.557 |
| 977 | | | | KMS | SD (logged) | 0.15 | | | 95% Criti | cal H Value | e (KM-Log) | 1.697 |
| 978 | | | KM Standard | Error of Me | ean (logged) | 0.0208 | | | 9 | 5% H-UCL | (KM -Log) | 1.624 |
| 979 | | | | KMS | SD (logged) | 0.15 | | | 95% Criti | cal H Value | e (KM-Log) | 1.697 |
| 980 | | | KM Standard | Error of Me | ean (logged) | 0.0208 | | | | | | |
| 981 | | | | | | | | | | | | |
| 982 | | | | - | | DL/2 Statisti | cs | | | | | |
| 983 | | | DL/2 Norma | | | 4 005 | | | DL/2 L | .og-Transfe | ormed | 0.110 |
| 984 | | | | Mean in Or | iginal Scale | 1.005 | | | | Mean in | Log Scale | -0.119 |
| 985 | | | | SD in Or | Iginal Scale | 0.707 | | | | SD In | Log Scale | 0.424 |
| 986 | | | 95% t UC | L (Assume | s normality) | 1.140 | r compori | oono ond hir | toriool ro | 95% F | 1-51at UCL | 1.068 |
| 987 | | | | recommen | | a, provideu ic | | | SUNCALIE | 30115 | | |
| 988 | | | | Non | narametric I | Distribution F | ree UCL S | Statistics | | | | |
| 903 | | | Det | ected Data | appear No | rmal Distribut | ed at 5% 3 | Significance | Level | | | |
| 991 | | | | | | | | | | | | |
| 992 | | | | | Sug | gested UCL | to Use | | | | | |
| 993 | | | | 95% | KM (t) UCL | 1.655 | | | | | | |
| 994 | | | | | | | | | | | | |
| 995 | | Note | : Suggestions regarding the | selection o | f a 95% UCI | are provided | d to help th | ne user to sel | ect the m | ost approp | riate 95% L | JCL. |
| 996 | | | Recomm | nendations | are based u | pon data size | , data distr | ribution, and | skewnes | S. | | |
| 997 | | The | se recommendations are ba | sed upon tl | he results of | the simulatio | n studies s | summarized | in Singh, | Maichle, ai | nd Lee (200 | 16). |
| 998 | | Howeve | er, simulations results will no | ot cover all | Real World | data sets; for | additional | insight the u | ser may v | want to con | sult a statis | tician. |
| 999 | | | | | | | | | | | | |
| 1000 | Naphthal | ene | | | | | | | | | | |
| 1001 | | | | | | | | | | | | |
| 1002 | | | | unch an of O | | ieneral Statis | TICS | N | | Diatia at Ok | | 22 |
| 1003 | | | Total N | | Detecto | 00 | | IN | | Distinct OL | servations | 22 |
| 1004 | | | Num | her of Dist | inct Detects | 20 | | N | Int Jumber of | Inder of N | on-Detects | 40 |
| 1005 | | | Null | Minir | mum Detecta | 0.635 | | | | Minimum | Jon-Detect | 0.25 |
| 1000 | | | | Maxir | mum Detect | 227 | | | | Maximum N | Von-Detect | 0.5 |
| 1007 | | | | Varia | nce Detects | 4639 | | | | Percent N | on-Detects | 70.59% |
| 1000 | | | | M | ean Detects | 60.22 | | | | | SD Detects | 68.11 |
| 1010 | | | | Mec | lian Detects | 42.65 | | | | (| CV Detects | 1.131 |
| 1011 | | | | Skewn | ess Detects | 1.457 | | | | Kurto | sis Detects | 1.02 |
| 1012 | | | М | ean of Log | ged Detects | 3.288 | | | 5 | SD of Logg | ed Detects | 1.579 |
| 1013 | | | | | | 1 | 1 | | | | | L |
| 1014 | | | | | Normal G | OF Test on D | etects On | nly | | | | |
| 1015 | | | Sha | piro Wilk T | est Statistic | 0.777 | | | Shapir | o Wilk GO | F Test | |
| 1016 | | | 5% Sha | piro Wilk C | ritical Value | 0.905 | | Detected D | ata Not N | ormal at 59 | % Significar | nce Level |
| 1017 | | | | Lilliefors T | est Statistic | 0.299 | | | Lillie | fors GOF | Test | |
| 1018 | | | 5% | Lilliefors C | ritical Value | 0.192 | | Detected D | ata Not N | ormal at 59 | % Significar | nce Level |
| 1019 | | | | Detect | ed Data Not | Normal at 5 | % Significa | ance Level | | | | |

| | А | В | С | | D | E | F | G | Н | | | J | K | L |
|------|---------|-----|-----------------------|-----------|---------------------|---------------|-----------------|--|------------|----------|--------------|------------|-------------|-------------------|
| 1020 | | | | | | | | | | | | | | |
| 1021 | | | Kaplan-Me | ier (KN | A) Statist | ics using N | ormal Critical | Values a | nd other | Nonpara | ametric | UCLs | | |
| 1022 | | | | | | KM Mean | 17.89 | | | K | M Star | ndard Err | or of Mean | 5.623 |
| 1023 | | | | | | KM SD | 45.2 | | | | 9 | 5% KM (| BCA) UCL | 29.47 |
| 1024 | | | | | 95% | KM (t) UCL | 27.27 | | 95 | 5% KM (| Percen | tile Boot | strap) UCL | 27.65 |
| 1025 | | | | | 95% | KM (z) UCL | 27.14 | | | | 95% ŀ | KM Boots | trap t UCL | 30.89 |
| 1026 | | | | 90% | KM Cheb | yshev UCL | 34.76 | | | | 95% K | M Cheby | /shev UCL | 42.4 |
| 1027 | | | (| 97.5% | KM Cheb | yshev UCL | 53 | | | | 99% K | M Cheby | /shev UCL | 73.84 |
| 1028 | | | | | | - | 1 | | | | | | | |
| 1029 | | | | | Gamma | a GOF Test | s on Detecte | d Observa | ations On | ly | | | | |
| 1030 | | | | | A-D T | est Statistic | 0.328 | | | Ande | erson-D | Darling G | OF Test | |
| 1031 | | | | 5 | % A-D C | ritical Value | 0.78 | Detect | ed data a | ppear G | amma | Distribut | ed at 5% S | ignificance Level |
| 1032 | | | | | K-S T | est Statistic | 0.147 | | | Kolr | nogoro | v-Smirn | ov GOF | |
| 1033 | | | | 5 | 5% K-S C | ritical Value | 0.201 | Detect | ed data a | ppear G | amma | Distribut | ed at 5% S | ignificance Level |
| 1034 | | | | Detec | ted data | appear Gar | nma Distribu | ted at 5% | Significa | nce Lev | el | | | |
| 1035 | | | | | | | | | | | | | | |
| 1036 | | | | | G | amma Stati | stics on Dete | cted Data | Only | | | | | |
| 1037 | | | | | I | k hat (MLE) | 0.741 | | | k | : star (b | ias corre | cted MLE) | 0.663 |
| 1038 | | | | | Theta | a hat (MLE) | 81.3 | | | Theta | ı star (b | ias corre | cted MLE) | 90.83 |
| 1039 | | | | | n | u hat (MLE) | 29.63 | | | | nu s | star (bias | corrected) | 26.52 |
| 1040 | | | | | Mea | an (detects) | 60.22 | | | | | | | |
| 1041 | | | | | | | | | | | | | | |
| 1042 | | | | | Gamm | a ROS Stat | istics using l | mputed No | on-Detect | ts | | | | |
| 1043 | | | GROS may no | ot be us | sed when | data set ha | s > 50% NDs | with many | / tied obs | ervation | s at mu | Itiple DL | S | |
| 1044 | | GR | OS may not be used wh | hen kst | tar of dete | ects is small | such as <1.0 | , especial | ly when th | ne samp | le size | is small (| e.g., <15-2 | 0) |
| 1045 | | | For s | uch sit | uations, (| GROS meth | od may yield | incorrect v | alues of l | UCLs an | id BTVs | 5 | | - |
| 1046 | | | E | | I his is | especially t | rue when the | sample siz | ze is sma | II. | | | | |
| 1047 | | | For gamma distributed | detect | ed data, l | BIVs and U | CLs may be o | computed | using gan | nma dist | ributior | n on KM | estimates | 17 70 |
| 1048 | | | | | | Minimum | 0.01 | | | | | | Mean | 17.72 |
| 1049 | | | | | | Maximum | 227 | | | | | | Median | 0.01 |
| 1050 | | | | | | | 45.0 | | | | eter /k | | | 2.574 |
| 1051 | | | | | Thot | hat (MLE) | 0.149 | | | Thota | star (b | ias corre | cted MLE) | 116.2 |
| 1052 | | | | | mea | | 20.29 | | | meta | | tar (bias | | 20.72 |
| 1053 | | | Adjust | | | | 20.20 | | | | nu s | stai (bias | corrected) | 20.72 |
| 1054 | | | Approvimate (| Cu Lov | iare Valu | (20.72 a) | 11 38 | | ١bΔ | iustad C | hi Saus | are Value | (20 72 B) | 11 23 |
| 1055 | | | 95% Gamma Approxim | ate UC | | hen n>=50) | 32.25 | 9 | 5% Gamn | na Adius | sted LIC | | (20.72, p) | 32.68 |
| 1050 | | | | | | | 02.20 | 5. | o /o Gamin | na Auju | | DE (030 M | | 02.00 |
| 1057 | | | | | Estimate | es of Gamm | a Parameter | s usina Kl | M Estima | tes | | | | |
| 1059 | | | | | | Mean (KM) | 17.89 | | | | | | SD (KM) | 45.2 |
| 1060 | | | | | Va | riance (KM) | 2043 | | | | | SE of I | Mean (KM) | 5.623 |
| 1061 | | | | | | k hat (KM) | 0.157 | | | | | ŀ | star (KM) | 0.16 |
| 1062 | | | | | | nu hat (KM) | 21.3 | | | | | nı | star (KM) | 21.69 |
| 1063 | | | | | the | ta hat (KM) | 114.2 | | | | | theta | a star (KM) | 112.1 |
| 1064 | | | 80 | 0% gar | nma pero | entile (KM) | 20.43 | | | 90 | % gam | ma perce | entile (KM) | 53.44 |
| 1065 | | | 9! | 5% gar | mma perc | entile (KM) | 97.23 | | | 99 | % gam | ma perce | entile (KM) | 222.7 |
| 1066 | | | | | | | • | | | | | | | |
| 1067 | | | | | | Gamma Ka | plan-Meier (l | <m) statis<="" td=""><td>tics</td><td></td><td></td><td></td><td></td><td></td></m)> | tics | | | | | |
| 1068 | | | Approximate C | Chi Squ | uare Valu | e (21.69, α) | 12.11 | | Adj | justed C | hi Squa | are Value | (21.69, β) | 11.95 |
| 1069 | | 95% | Gamma Approximate | KM-UC | CL (use w | hen n>=50) | 32.04 | 95% (| Gamma A | djusted | KM-UC | CL (use w | hen n<50) | 32.46 |
| 1070 | | | | | | | | | | | | | | |
| 1071 | | | | | Lognorr | nal GOF Te | st on Detect | ed Observ | ations O | nly | | | | |
| 1072 | | | | Shapi | ro Wilk T | est Statistic | 0.932 | | | Sł | napiro \ | Wilk GO | - Test | |
| 1073 | | | 5% | Shapii | ro Wilk C | ritical Value | 0.905 | De | etected Da | ata appe | ear Log | normal a | t 5% Signif | icance Level |
| 1074 | | | | Li | illiefors T | est Statistic | 0.169 | | | | Lilliefo | rs GOF 1 | Fest | |
| 1075 | | | | 5% Li | Iliefors Ci | ritical Value | 0.192 | De | etected D | ata appe | ear Log | normal a | t 5% Signif | cance Level |
| 1076 | | | | D | etected L | ata appear | · Lognormal a | at 5% Sigr | nificance | Level | | | | |
| 1077 | | | | | Lonnorm | | tistics lains | Increased | lan Data | | | | | |
| 1078 | | | | | Lognorm | ial RUS Sta | atistics Using | Imputed I | Non-Dete | ects | | Mana in | | 0.000 |
| 1079 | | | | IVI | ean in Or | iginal Scale | 10.10 | | | | | wean in | Log Scale | -0.239 |
| 1080 | | | 05% + LICL (00000 | noc | rmality | BUC dote | 40.4Z | | | 0=0/ | Doroc | ou in | | 2.370 |
| 1081 | | | 35 % LOCE (assum | 011 63110 | | nuo uala) | 21.37 | | | 30% | reicel or | S% Booto | tran t UCL | 27.24 |
| 1082 | | | | 90 % | | (Log ROS) | 252 | | | | 90 | - /0 DOOLS | ap i UCL | 51.30 |
| 1083 | | | | 90 | /0 1 I-OCL | (LUY NUS) | 2.52 | | | | | | | L |
| 1004 | | | Statistics | s jisin/ | 1 KM Aeti | mates on L | oaaed Dete a | nd Assum | ning Loga | normel F |)istrihu | tion | | |
| 1085 | | | Glaustic | o aoniţ | KM Me | an (lonned) | -0.0114 | | a cogi | .ərmai L | | KM | Geo Mean | 0.989 |
| 1087 | | | | | KM | (loaned) | 2.288 | | | 95% | Critica | H Value | (KM-Log) | 3.084 |
| 1007 | <u></u> | | KM Stand | dard Fr | ror of Me | an (logged) | 0.285 | | | 0070 | 95% | | (KM -Log) | 32.05 |
| 1080 | | | | | KMS | SD (loaned) | 2.288 | | | 95% | Critica | I H Value | (KM-Loa) | 3.084 |
| 1090 | | | KM Stand | dard Er | ror of Me | an (logged) | 0.285 | | | | | | 3/ | |
| 1091 | | | | | | (-35-4) | 1 | 1 | | | | | | <u>.</u> |
| | | | | | | | | | | | | | | |

| | A B C | D E | F | G | ΗI | J K | L |
|--|---------------------------------------|--|---|--|--|--|--|
| 1092 | DI /2 Normal | | DL/2 Statisti | CS | | Transformed | |
| 1093 | DL/2 Normai | laan in Original Cool | 17.0 | | | - I ransformed Mean in Lan Caala | 0.49 |
| 1094 | IVI | En in Original Scal | | | | Din Log Scale | -0.48 |
| 1095 | 05% + 1101 | SD In Original Scal | 45.57 | | | | 2.594 |
| 1096 | 95% t UCL | (Assumes normality |) 27.02 | | and historical roos | 95% H-Stat UCL | 47.99 |
| 1097 | | scommended metric | a, provided id | or compansons | and historical reas | ions | |
| 1098 | | Nonnarametric | Distribution F | ree LICI Statio | atice | | |
| 1100 | Detec | ted Data appear G | mma Distribu | ted at 5% Sign | ificance Level | | |
| 1100 | | | | | | | |
| 1102 | | Su | agested UCL | to Use | | | |
| 1103 | 95% KM Appro | oximate Gamma UC | 32.04 | | | | |
| 1104 | | | | 1 | | | |
| 1105 | Note: Suggestions regarding the se | election of a 95% UC | L are provide | d to help the us | er to select the mos | t appropriate 95% U | ICL. |
| 1106 | Recomme | ndations are based | upon data size | e, data distribut | ion, and skewness. | | |
| 1107 | These recommendations are base | ed upon the results of | of the simulation | n studies sumr | narized in Singh, Ma | aichle, and Lee (200 | 6). |
| 1108 | However, simulations results will not | cover all Real World | data sets; for | additional insig | ght the user may war | nt to consult a statis | tician. |
| 1109 | | | | | | | |
| 1110 | | | | | | | |
| 1111 | | | 0 | | | | |
| 1112 | Tatal New | | | STICS | Newskaw of D | | 01 |
| 1113 | i otal Nur | nber of Observation | 5 68 | | Number of Dis | stinct Observations | 21 |
| 1114 | Numb | Number of Detect | s 19 a 10 | | Num | ber of Non-Detects | 49 |
| 1115 | Numb | Minimum Dated | 5 I9 + 1.20 | | Number of D | istinct Non-Detects | 2 |
| 1116 | | Maximum Detec | t 1.38 | | IVII Ma | nimum Non-Detect | 0.25 |
| 1110 | | Variance Detect | a 12021735 | | | arcent Non-Detects | 72.06% |
| 1110 | | Mean Detect | s 4201 | | | SD Detects | 6551 |
| 1120 | | Median Detect | s 955 | | | CV Detects | 1.559 |
| 1121 | | Skewness Detect | s 1.7 | | | Kurtosis Detects | 1.622 |
| 1122 | Mea | an of Logged Detect | s 6.446 | | SD | of Logged Detects | 2.932 |
| 1123 | | | 1 | 1 | | | |
| 1124 | | Normal (| GOF Test on [| Detects Only | | | |
| 1125 | Shap | iro Wilk Test Statisti | c 0.663 | | Shapiro \ | Wilk GOF Test | |
| 1126 | 5% Shapi | ro Wilk Critical Valu | e 0.901 | Det | ected Data Not Nor | mal at 5% Significar | nce Level |
| 1127 | L | illiefors Test Statisti. | c 0.347 | | Lilliefo | rs GOF Test | |
| 1128 | 5% Li | illiefors Critical Valu | e 0.197 | Det | ected Data Not Nor | mal at 5% Significar | nce Level |
| 1129 | | Detected Data No | ot Normal at 5 | % Significance | Level | | |
| 1130 | Kaplan Majar (Ki | M) Statistics using I | lormal Critica | Voluce and a | than Nannaramatria | | |
| 1131 | | KM Mea | | | KM Stan | dard Error of Mean | /81.2 |
| 1122 | | KM SI | 3862 | | 9 | 5% KM (BCA) UCI | 2007 |
| 1133 | | 95% KM (t) UC | 1977 | | 95% KM (Percen | tile Bootstran) UCI | 2003 |
| 1135 | | 95% KM (z) UC | 1966 | | 95% K | (M Bootstrap t UCL | 2638 |
| 1136 | 90% | KM Chebyshev UC | 2618 | | 95% K | M Chebyshev UCL | 3271 |
| 1137 | 4 | | | | | M Chebyshev UCL | 5962 |
| 1138 | 97.5% | KM Chebyshev UC | L 4179 | | 99% K | | 0002 |
| | 97.5% | KM Chebyshev UC | L 4179 | | 99% K | | 0002 |
| 1139 | 97.5% | KM Chebyshev UC | L 4179 | d Observation | 99% K s Only | | 0002 |
| 1139 1140 | 97.5% | KM Chebyshev UC Gamma GOF Tee A-D Test Statisti | L 4179 Sts on Detecte c 0.467 | d Observation | 99% K s Only Anderson-D | Darling GOF Test | 5502 |
| 1139 1140 1141 | 97.5% | KM Chebyshev UC Gamma GOF Tea A-D Test Statisti 3% A-D Critical Valu | 4179 Sts on Detecte c 0.467 e 0.832 | d Observation | 99% K s Only Anderson-E ata appear Gamma | Darling GOF Test Distributed at 5% S | ignificance Level |
| 1139 1140 1141 1142 | 97.5% | KM Chebyshev UC Gamma GOF Tec A-D Test Statisti 3% A-D Critical Valu K-S Test Statisti | L 4179 sts on Detecte c 0.467 e 0.832 c 0.127 c 0.127 | d Observation | 99% K s Only Anderson-E ata appear Gamma Kolmogoro | Darling GOF Test Distributed at 5% S v-Smirnov GOF | ignificance Level |
| 1139 1140 1141 1142 1143 | 97.5% | KM Chebyshev UC Gamma GOF Tee A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu | 4179 sts on Detecte c 0.467 a 0.832 c 0.127 a 0.214 mma Distribution | d Observation Detected d Detected d ted at 5% Size | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ifeaano Lorat | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S | ignificance Level |
| 1139 1140 1141 1142 1143 1144 | 97.5% | KM Chebyshev UC Gamma GOF Ter A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga | 4179 sts on Detecte c 0.467 e 0.832 c 0.127 e 0.214 mma Distribu | d Observation Detected d Detected d ted at 5% Sign | s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ificance Level | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S | ignificance Level |
| 1139 1140 1141 1142 1143 1144 1145 | 97.5% | KM Chebyshev UC Gamma GOF Ter A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta | 4179 sts on Detecte 0.467 0.832 0.127 0.214 mma Distribut tistics on Detected | d Observation Detected d Detected d ted at 5% Sign | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ificance Level | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S | ignificance Level |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 | 97.5% | KM Chebyshev UC Gamma GOF Te: A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE | 4179 sts on Detecte c 0.467 a 0.832 c 0.127 a 0.214 mma Distribut tistics on Detected) 0.354 | d Observation Detected d Detected d ted at 5% Sign | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ificance Level y k star (b | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE | ignificance Level |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 | 97.5% | KM Chebyshev UC Gamma GOF Te A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE | 4179 sts on Detecte 0.467 0.832 0.127 0.214 mma Distribu tistics on Detecte) 0.354) 11873 | d Observation Detected d Detected d ted at 5% Sign acted Data Onl | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ificance Level y k star (b Theta star (b | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) | ignificance Level ignificance Level 0.333 12614 |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 | 97.5% | KM Chebyshev UC Gamma GOF Te: A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE nu hat (MLE | 4179 sts on Detecte 0.467 0.832 0.127 0.214 mma Distribu tistics on Detection) 0.354) 11873) 13.45 | d Observation Detected d Detected d ted at 5% Sign acted Data Onl | 99% K s Only Anderson-E ata appear Gamma ificance Level y k star (b Theta star (b nu s | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) tar (bias corrected) | ignificance Level ignificance Level 0.333 12614 12.66 |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 | 97.5% | KM Chebyshev UC Gamma GOF Te A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE nu hat (MLE Mean (detects | (1179) (1179) (1170 | d Observation Detected d Detected d ted at 5% Sign | 99% K s Only Anderson-E ata appear Gamma ificance Level y k star (b Theta star (b nu s | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) tar (bias corrected) | ignificance Level ignificance Level 0.333 12614 12.66 |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 | 97.5% | KM Chebyshev UC Gamma GOF Te A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE nu hat (MLE Mean (detects | (1179) (1179) (1170 | d Observation Detected d Detected d ted at 5% Sign | 99% K s Only Anderson-E ata appear Gamma ificance Level y k star (b Theta star (b nu s | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) tar (bias corrected) | ignificance Level ignificance Level 0.333 12614 12.66 |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1151 | 97.5% | KM Chebyshev UC Gamma GOF Te A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE nu hat (MLE Mean (detects Gamma ROS Sta | (119) (110) (| d Observation Detected d Detected d ted at 5% Sign acted Data Onl mputed Non-D | 99% K s Only Anderson-E ata appear Gamma ificance Level y k star (b Theta star (b nu s etects | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) tar (bias corrected) | ignificance Level ignificance Level 0.333 12614 12.66 |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 | 97.5% | KM Chebyshev UC Gamma GOF Te A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE nu hat (MLE Mean (detects Gamma ROS Sta sed when data set h | (119) (110) (| d Observation Detected d Detected d ted at 5% Sign acted Data Onl mputed Non-D with many tied | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ificance Level y k star (b Theta star (b nu s etects observations at mu | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) tar (bias corrected) tar (bias corrected) | ignificance Level ignificance Level 0.333 12614 12.66 |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 | 97.5% | KM Chebyshev UC Gamma GOF Te A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE nu hat (MLE Mean (detects Gamma ROS Sta sed when data set h tar of detects is sma | 4179 sts on Detected c 0.467 a 0.832 c 0.127 a 0.214 mma Distribut tistics on Detected i) 0.354) 13.45) 4201 tistics using I as > 50% NDs II such as <1.00 | d Observation Detected d Detected d ted at 5% Sign acted Data Onl with many tied , especially wh | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ificance Level y k star (b Theta star (b nu s etects lobservations at mu en the sample size | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) tar (bias corrected) Itiple DLs is small (e.g., <15-2 | ignificance Level ignificance Level 0.333 12614 12.66 0) |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 | 97.5% | KM Chebyshev UC Gamma GOF Te A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE nu hat (MLE Mean (detects Gamma ROS Sta sed when data set h tar of detects is sma tuations, GROS met | 4179 sts on Detecter c 0.467 a 0.832 c 0.127 a 0.214 mma Distribut tistics on Detecter i) 0.354) 13.45) 4201 ttistics using I as > 50% NSs II such as <1.0 hod may yield | d Observation Detected d Detected d ted at 5% Sign acted Data Onl mputed Non-D with many tied o, especially wh incorrect value | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ificance Level y k star (b Theta star (b nu s etects to be servations at mu ien the sample size is of UCLs and BTVs | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) tar (bias corrected) tar (bias corrected) ltiple DLs is small (e.g., <15-2 | ignificance Level ignificance Level 0.333 12614 12.66 0) |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 | 97.5% | KM Chebyshev UC Gamma GOF Te A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE Mean (detects Gamma ROS Sta sed when data set h tar of detects is sma tuations, GROS met This is especially | _ 4179 sts on Detecte 0.467 c 0.467 a 0.832 c 0.127 a 0.214 mma Distribut tistics on Detecte tistics on Detecte 0.354) 13.45) 13.45) 4201 tistics using I as > 50% NDs II such as <1.0 hod may yield true when the | d Observation Detected d Detected d ted at 5% Sign acted Data Onl with many tied b, especially wh incorrect value sample size is | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ificance Level y k star (b Theta star (b nu s etects l observations at mu en the sample size is s of UCLs and BTVs small. | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) tar (bias corrected) tar (bias corrected) ltiple DLs is small (e.g., <15-2 | ignificance Level ignificance Level 0.333 12614 12.66 0) |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 | 97.5% | KM Chebyshev UC Gamma GOF Te A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE Mean (detects Gamma ROS Sta sed when data set h tar of detects is sma tuations, GROS met This is especially ted data, BTVs and | 4179 sts on Detecte c 0.467 a 0.832 c 0.127 a 0.214 mma Distribut tistics on Detected) 0.354) 11873) 13.45) 4201 tistics using I as > 50% NDs II such as <1.0 hod may yield true when the JCLs may be | d Observation Detected d Detected d ted at 5% Sign acted Data Onl with many tied b, especially wh incorrect value sample size is computed using | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ificance Level y k star (b Theta star (b nu s etects l observations at mu ien the sample size s of UCLs and BTVs small. g gamma distribution | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) tar (bias corrected) ltiple DLs is small (e.g., <15-2 s | ignificance Level ignificance Level 0.333 12614 12.66 0) |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 | 97.5% | KM Chebyshev UC Gamma GOF Te A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE nu hat (MLE Mean (detects Gamma ROS Sta sed when data set h tar of detects is sma tuations, GROS met This is especially ted data, BTVs and Minimur | | d Observation Detected d Detected d ted at 5% Sign acted Data Onl with many tied b, especially wh incorrect value sample size is computed using | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ificance Level y k star (b Theta star (b nu s etects l observations at mu ien the sample size s of UCLs and BTVs small. g gamma distributior | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) ias corrected MLE) tar (bias corrected) ltiple DLs is small (e.g., <15-2 s n on KM estimates Mean | ignificance Level ignificance Level 0.333 12614 12.66 0) |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 | 97.5% | KM Chebyshev UC Gamma GOF Ter A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE Mean (detects Gamma ROS Sta set of detects is sma tuations, GROS met This is especially ted data, BTVs and Minimur Maximur | _ 4179 sts on Detecte 0.467 c 0.467 a 0.832 c 0.127 a 0.214 mma Distribut tistics on Dete) 0.354) 11873) 13.45) 4201 tistics using I as > 50% NDs II such as <1.0 hod may yield true when the JCLs may be 0 1 21400 380 | d Observation Detected d Detected d ted at 5% Sign acted Data Onl with many tied b, especially wh incorrect value sample size is computed using | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ifficance Level y k star (b Theta star (b nu s etects l observations at mu ien the sample size is s of UCLs and BTVs small. g gamma distribution | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) tar (bias corrected) ltiple DLs is small (e.g., <15-2 s n on KM estimates Mean Media | ignificance Level ignificance Level 0.333 12614 12.66 0) 1174 0.01 3 314 |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1155 1155 1157 1158 1159 | 97.5% | KM Chebyshev UC Gamma GOF Ter A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE Theta hat (MLE Mean (detects Gamma ROS Sta sed when data set h tar of detects is smatuations, GROS met This is especially ted data, BTVs and Minimur Maximur Sta k hat (MLE K hat (MLE | _ 4179 sts on Detecte 0.467 c 0.467 a 0.832 c 0.127 a 0.214 mma Distribut tistics on Dete) 0.354) 11873) 13.45) 4201 tistics using I as > 50% NDs II such as <1.0 hod may yield true when the JCLs may be 0 1 21400 2 3891) 0.0952 | d Observation Detected d Detected d ted at 5% Sign acted Data Onl with many tied b, especially wh incorrect value sample size is computed using | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ifficance Level y k star (b Theta star (b nu s etects l observations at mu en the sample size s of UCLs and BTVs small. g gamma distribution k star (b | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) tar (bias corrected) ltiple DLs is small (e.g., <15-2 s n on KM estimates Mean Median CV ias corrected MLE) | ignificance Level ignificance Level 0.333 12614 12.66 0) 1174 0.01 3.314 0.101 |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1155 1155 1157 1158 1159 1160 | 97.5% | KM Chebyshev UC Gamma GOF Ter A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE Mean (detects Gamma ROS Sta sed when data set h tar of detects is sma tuations, GROS met This is especially ted data, BTVs and Minimur Maximur SI k hat (MLE Theta hat (MLE K hat | _ 4179 sts on Detecte 0.467 c 0.467 a 0.832 c 0.127 a 0.214 mma Distribution 11473 13.45 13.45 13.45 4201 tistics using I as > 50% NDs II such as <1.0 hod may yield true when the JCLs may be 6 1 21400 2 3891 1 0.0952 1 12334 | d Observation Detected d Detected d ted at 5% Sign acted Data Onl with many tied b, especially wh incorrect value sample size is computed using | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ifficance Level y k star (b Theta star (b nu s etects lobservations at mu ien the sample size s of UCLs and BTVs small. g gamma distributior k star (b Theta star (b | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) tar (bias corrected) ltiple DLs is small (e.g., <15-2 s n on KM estimates Mean Median CV ias corrected MLE) ias corrected MLE) ias corrected MLE) | ignificance Level ignificance Level 0.333 12614 12.66 0) 1174 0.01 3.314 0.101 11648 |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1155 1155 1155 1155 1155 | 97.5% | KM Chebyshev UC Gamma GOF Ter A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE Mean (detects Gamma ROS Sta sed when data set h tar of detects is smatuations, GROS met This is especially ted data, BTVs and Minimur Maximur SI k hat (MLE Theta hat (MLE L heta hat (MLE | 4179 sts on Detecte c 0.467 a 0.832 c 0.127 a 0.214 mma Distribut tistics on Dete) 0.354) 13.45) 13.45) 4201 tistics using I as > 50% NDs II such as <1.0 hod may yield true when the J 0.01 1 21400) 3891) 12.334 | d Observation Detected d Detected d ted at 5% Sign acted Data Onl with many tied b, especially wh incorrect value sample size is computed using | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ifficance Level y k star (b Theta star (b nu s etects lobservations at mu een the sample size s of UCLs and BTVs small. g gamma distributior k star (b Theta star (b Russer (b Ru | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) tar (bias corrected MLE) tar (bias corrected MLE) is small (e.g., <15-2 s n on KM estimates Mean Median CV ias corrected MLE) ias corrected MLE) tar (bias corrected MLE) tar (bias corrected MLE) | ignificance Level ignificance Level 0.333 12614 12.66 0) 1174 0.01 3.314 0.101 11648 13.71 |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1155 1155 1155 1155 1155 | 97.5% | KM Chebyshev UC Gamma GOF Ter A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE Mean (detects Gamma ROS Sta sed when data set h tar of detects is sma tuations, GROS met This is especially ted data, BTVs and Minimur Maximur Sta k hat (MLE Theta hat (MLE Theta hat (MLE Cheta hat (MLE Cheta hat (MLE Cheta hat (MLE) Cheta hat (MLE) | 4179 sts on Detects c 0.467 a 0.832 c 0.127 a 0.214 mma Distribut tistics on Detects itistics on Detects 0.354 11873 13.45 4201 tistics using I as > 50% NDs II such as <1.0 hod may yield true when the JCLs may be (a) 12334 12.94 0.0465 | d Observation Detected d Detected d ted at 5% Sign acted Data Onl with many tied o, especially wh incorrect value sample size is computed using | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ifficance Level y k star (b Theta star (b nu s etects l observations at mu ien the sample size s of UCLs and BTVs small. g gamma distributior k star (b Theta star (b nu s | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) tar (bias corrected) ltiple DLs is small (e.g., <15-2 s n on KM estimates Mean Median CV ias corrected MLE) ias corrected MLE) ias corrected MLE) tar (bias corrected) | ignificance Level ignificance Level 0.333 12614 12.66 0) 1174 0.01 3.314 0.101 11648 13.71 |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 1159 1160 1161 1162 1163 1164 1165 | 97.5% | KM Chebyshev UC Gamma GOF Ter A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu ted data appear Ga Gamma Sta k hat (MLE Theta hat (MLE Theta hat (MLE Mean (detects Gamma ROS Sta sed when data set h tar of detects is sma tuations, GROS met This is especially ted data, BTVs and Minimur Maximur SI k hat (MLE Theta hat (MLE Cheta hat (MLE C | 4179 sts on Detects c 0.467 a 0.832 c 0.127 a 0.214 mma Distribution 11873 11873 13.45 11873 13.45 11873 13.45 1183 13.45 1180 as > 50% NDs II such as <1.0 hod may yield true when the JCLs may be of J 0.01 121400 3891 0.0952 12334 12.94 0.0465 0.371 | d Observation Detected d Detected d ted at 5% Sign ected Data Onl with many tied b, especially wh incorrect value sample size is computed using | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ifficance Level y k star (b Theta star (b nu s etects l observations at mu ien the sample size is s of UCLs and BTVs small. g gamma distributior k star (b Theta star (b nu s Adjusted Chi Squa | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) tar (bias corrected MLE) tar (bias corrected MLE) is small (e.g., <15-2 s n on KM estimates Mean Median CV ias corrected MLE) ias corrected MLE) tar (bias corrected MLE) tar (bias corrected MLE) tar (bias corrected MLE) tar (bias corrected MLE) | ignificance Level ignificance Level 0.333 12614 12.66 0) 1174 0.01 3.314 0.101 11648 13.71 6.262 |
| 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 1159 1160 1161 1162 1163 1164 | 97.5% | KM Chebyshev UC Gamma GOF Ter A-D Test Statisti 5% A-D Critical Valu K-S Test Statisti 5% K-S Critical Valu xed data appear Ga Gamma Sta K hat (MLE Theta hat (MLE Mean (detects) Gamma ROS Sta sed when data set h tar of detects is sma tuations, GROS met This is especially ted data, BTVs and Minimur Maximur SI K hat (MLE Theta hat (MLE Check Sta Sed when data set h tar of detects is sma tuations, GROS met This is especially ted data, BTVs and Minimur SI K hat (MLE Theta hat (MLE Check Sta Sa A A A A A A A A A A A A A A A A A A A | 4179 sts on Detects c 0.467 a 0.832 c 0.127 a 0.214 mma Distribution 11873) 0.354) 11873) 13.45) 14201 tistics using I as > 50% NDs as > 50% NDs II such as <1.0 hod may yield true when the JCLs may be a 12334) 12.34) 0.0465) 0.371 | d Observation Detected d Detected d ted at 5% Sign ected Data Onl with many tied , especially wh incorrect value sample size is computed using 95% C | 99% K s Only Anderson-E ata appear Gamma Kolmogoro ata appear Gamma ifficance Level y k star (b Theta star (b nu s etects l observations at mu ien the sample size is s of UCLs and BTVs small. g gamma distributior k star (b Theta star (b Adjusted Chi Squa Gamma Adjusted UC | Darling GOF Test Distributed at 5% S v-Smirnov GOF Distributed at 5% S ias corrected MLE) ias corrected MLE) tar (bias corrected) ltiple DLs is small (e.g., <15-2 s n on KM estimates Mean Median CV ias corrected MLE) tar (bias corrected) tar (bias corrected) tar (bias corrected) tar (bias corrected) tar (bias corrected) tar (bias corrected) tar (bias corrected) | ignificance Level ignificance Level 0.333 12614 12.66 0) 1174 0.01 3.314 0.101 11648 13.71 6.262 2569 |

| | Α | В | С | D | E | F | G | Н | | J | K | L |
|------|-----------|--------|---------------------------------|--------------|---------------|-----------------|-----------------|---------------|-------------|-------------|---------------|------------|
| 1168 | | | | Estimate | es of Gamm | a Parameter | s using KM | I Estimates | | | | |
| 1169 | | | | | Mean (KM) | 1174 | | | | | SD (KM) | 3862 |
| 1170 | | | | Va | riance (KM) | 14914934 | | | | SE of I | Mean (KM) | 481.2 |
| 1171 | | | | | k hat (KM) | 0.0924 | | | | | k star (KM) | 0.0981 |
| 1172 | | | | | nu hat (KM) | 12.57 | | | | n | u star (KM) | 13.35 |
| 1173 | | | | the | ta hat (KM) | 12704 | | | | theta | a star (KM) | 11963 |
| 1174 | | | 80% o | amma pero | entile (KM) | 792.6 | | | 90% ga | mma perc | entile (KM) | 3100 |
| 1175 | | | 95% 0 | amma pero | entile (KM) | 6822 | | | 99% ga | mma perc | entile (KM) | 18825 |
| 1176 | | | | | | | | | | | () | |
| 1177 | | | | | Gamma Ka | plan-Meier (k | (M) Statis | tics | | | | |
| 1178 | | | Approximate Chi S | quare Valu | e (13 35 α) | 6 127 | | Adiust | ed Chi Sa | uare Value | (13 35 B) | 6.021 |
| 1170 | | 95% | 6 Gamma Approximate KM-I | ICL (use w | hen n>=50) | 2558 | 95% 0 | Samma Adiu | sted KM-I | ICL (use w | /hen n<50) | 2603 |
| 1180 | | | | | | | | | | | | |
| 1181 | | | | Lognorr | nal GOF Te | st on Detecte | od Observ | ations Only | | | | |
| 1107 | | | Sha | niro Wilk T | est Statistic | 0.856 | | adono only | Shanir | Wilk GO | F Test | |
| 1102 | | | 5% Sha | niro Wilk Ci | ritical Value | 0.901 | Г | Detected Dat | ta Not Log | normal at | 5% Signific | ance Level |
| 118/ | | | 070 0114 | Lilliefors T | est Statistic | 0.001 | - | | l illie | fors GOF | Test | |
| 1185 | | | 5% | Lilliefors C | ritical Value | 0 197 | Г | Detected Dat | ta Not Log | normal at | 5% Signific | ance Level |
| 1186 | | | 0,0 | Detected | Data Not I | ognormal at | - 5% Signifi | cance Leve | I | | o io orginito | |
| 1100 | | | | 20100104 | | lognormal at | o /o olgilli | | | | | |
| 1107 | | | | Lognorm | al ROS Sta | tistics Using | Imputed N | Ion-Detects | | | | |
| 1100 | | | | Mean in Or | iginal Scale | 1175 | | | | Mean in | Log Scale | -0.0387 |
| 1100 | | | | SD in Or | iginal Scale | 3890 | | | | SD in | Log Scale | 5 337 |
| 1101 | | | 95% t UCL (assumes r | normality of | ROS data) | 1962 | | | 95% Per | entile Boo | tstran LICI | 2026 |
| 1102 | | | 95 | % BCA Bor | tstran LICI | 2273 | | | 00701 010 | 95% Boots | tran t LICI | 2640 |
| 1102 | | | 00 | 5% H-UCI | | 1 279F+8 | | | | 50 /0 D000 | 500D | 2040 |
| 1104 | | | | 0,011 002 | (2091100) | 1.2762.0 | | | | | | <u> </u> |
| 1105 | | | Statistics usi | na KM esti | mates on l | onned Data a | nd Assum | ing Lognor | nal Distrit | ution | | |
| 1106 | | | | KM Mo | an (logged) | | | ing Logilon | | KM | Geo Mean | 2.23 |
| 1107 | | | | KM 9 | | 3.825 | | | 95% Criti | al H Value | (KM-Log) | 4 866 |
| 1100 | | | KM Standard | Frror of Me | an (logged) | 0.020 | | | 9 | 5% H-UCI | (KM -L og) | 32525 |
| 1190 | | | | KM 9 | | 3 825 | | | 95% Criti | al H Value | (KM - Log) | 4 866 |
| 1200 | | | KM Standard | Error of Me | an (logged) | 0.020 | | | 50% Onu | | (INII-LOG) | 4.000 |
| 1200 | | | | | an (logged) | 0.477 | | | | | | |
| 1201 | | | | | | DI /2 Statistic | ~ | | | | | |
| 1202 | | | DI /2 Norma | 1 | | | | | DI /2 I | og-Transfe | ormed | |
| 1203 | | | DEL Norma | Mean in Or | ininal Scale | 1174 | | | 0020 | Mean in | L og Scale | 0.343 |
| 1204 | | | | SD in Or | iginal Scale | 3891 | | | | SD in | Log Scale | 4 122 |
| 1205 | | | 95% t UC | | s normality) | 1961 | | | | 95% 1 | I-Stat UCI | 99429 |
| 1200 | - | | DI/2 is not a | recommen | ded methor | nrovided fo | r comparis | sons and his | storical re | asons | 1 Oldi OOL | 00120 |
| 1207 | | | DELIGHTE | | | | - company | | | | | |
| 1200 | | | | Nonr | arametric l | Distribution F | ree UCL S | tatistics | | | | |
| 1210 | | | Dete | cted Data | appear Ga | nma Distribut | ted at 5% | Significance | e Level | | | |
| 1210 | | | | | | | | | | | | |
| 1211 | | | | | Sug | aested UCL_t | o Use | | | | | |
| 1212 | | | 95% KM App | roximate G | amma UCL | 2558 | | | | | | <u> </u> |
| 1213 | | | 0070 Tull 7 pp | | | 2000 | | | | | | |
| 1215 | | Note | : Suggestions regarding the | selection of | f a 95% UCI | are provided | to help th | e user to se | lect the mo | ost approp | riate 95% l | JCL. |
| 1216 | | | Recomm | nendations | are based u | pon data size | , data distr | ibution, and | skewness | 5. | | |
| 1217 | | The | se recommendations are ba | sed upon th | ne results of | the simulatio | n studies s | ummarized | in Singh, I | Maichle, ar | nd Lee (200 | 06). |
| 1218 | | Howev | er, simulations results will no | ot cover all | Real World | data sets; for | additional | insight the u | iser may w | ant to con | sult a statis | stician. |
| 1219 | | | | | | | | | | | | |
| 1220 | Xylenes (| total) | | | | | | | | | | |
| 1221 | - ` | | | | | | | | | | | |
| 1222 | | | | | G | eneral Statis | tics | | | | | |
| 1223 | | | Total N | umber of O | bservations | 68 | | Ν | umber of | Distinct Ob | servations | 22 |
| 1224 | | | | Numbe | r of Detects | 20 | | | Nu | mber of N | on-Detects | 48 |
| 1225 | | | Num | ber of Disti | nct Detects | 20 | | 1 | Number of | Distinct N | on-Detects | 2 |
| 1226 | | | | Minir | num Detect | 1.92 | | | | Minimum N | Non-Detect | 0.75 |
| 1227 | | | | Maxir | num Detect | 5120 | | | N | Maximum N | Non-Detect | 1.5 |
| 1228 | | | | Varia | nce Detects | 2332293 | | | | Percent N | on-Detects | 70.59% |
| 1229 | - | | | Me | ean Detects | 1130 | | | | Ś | SD Detects | 1527 |
| 1230 | | | | Med | ian Detects | 564.5 | | | | (| CV Detects | 1.351 |
| 1231 | | | | Skewne | ess Detects | 1.617 | | | | Kurto | sis Detects | 1.622 |
| 1232 | | | М | ean of Load | ged Detects | 5.427 | | | 5 | SD of Loga | ed Detects | 2.601 |
| 1233 | | | | 5. | | 1 | 1 | | | | | 1 |
| 1234 | - | | | | Normal G | OF Test on D | etects On | ly | | | | |
| 1235 | | | Sha | piro Wilk T | est Statistic | 0.744 | | | Shapiro | Wilk GO | F Test | |
| 1236 | | | 5% Sha | piro Wilk Ci | ritical Value | 0.905 | | Detected D | ata Not No | ormal at 59 | % Significa | nce Level |
| 1237 | | | | Lilliefors T | est Statistic | 0.282 | | | Lillie | fors GOF | Test | |
| 1238 | - | | 5% | Lilliefors C | ritical Value | 0.192 | | Detected D | ata Not No | ormal at 59 | % Significa | nce Level |
| 1239 | | | | Detecte | ed Data Not | Normal at 59 | % Significa | ance Level | | | - | |
| 1240 | | | | | | | - | | | | | |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|------|---|-----|------------------------------|---------------|---------------|-----------------|-------------|--------------|--------------|--------------|----------------|-------------------|
| 1241 | | | Kaplan-Meier (K | (M) Statisti | ics using No | ormal Critical | Values ar | nd other No | nparametr | ic UCLs | | |
| 1242 | | | | | KM Mean | 333 | | | KM Sta | andard Err | or of Mean | 119.1 |
| 1243 | | | | | KM SD | 957.4 | | | | 95% KM | (BCA) UCL | 562.3 |
| 1244 | | | | 95% | KM (t) UCL | 531.7 | | 95% | KM (Perce | entile Boot | strap) UCL | 539.6 |
| 1245 | | | | 95% ł | KM (z) UCL | 528.9 | | | 95% | KM Boots | strap t UCL | 652.1 |
| 1246 | | | 90% | 6 KM Cheb | yshev UCL | 690.4 | | | 95% | KM Cheb | vshev UCL | 852.2 |
| 1247 | | | 97.5% | 6 KM Cheb | vshev UCL | 1077 | | | 99% | KM Cheb | , vshev UCL | 1518 |
| 1248 | | | | | , | | | | | | , | |
| 1240 | | | | Gamma | a GOF Test | s on Detecte | d Observa | tions Only | | | | |
| 1249 | | | | A-D Te | est Statistic | 0.363 | | | Anderson | -Darling G | OF Test | |
| 1250 | | | | 5% A-D Cr | ritical Value | 0.822 | Detect | ed data ann | ear Gamm | a Distribut | ted at 5% S | ignificance Level |
| 1251 | | | | K-S T | est Statistic | 0.113 | Dottoot | | Kolmogo | rov-Smirn | | |
| 1252 | | | | 5% K-S Cr | ritical Value | 0.207 | Detect | ed data ann | ear Gamm | a Distribut | ed at 5% S | ignificance Level |
| 1255 | | | Dete | cted data | annear Gan | ma Distribut | ad at 5% | Significance | | | | |
| 1254 | | | Dele | | | | | olgrinicario | 5 20401 | | | |
| 1200 | | | | G | amma Stati | etice on Dete | ated Data | Only | | | | |
| 1256 | | | | | k hot (MLE) | | | Only | k ctor | /hinc corr | octod MLE) | 0.291 |
| 1257 | | | | Thete | | 0.403 | | | K Sidi | | | 0.301 |
| 1258 | | | | Theta | | 2/03 | | | Theta star | (DIAS COILE | | 2907 |
| 1259 | | | | nu Maa | | 10.30 | | | nu | i star (blas | corrected) | 15.24 |
| 1260 | | | | IVIE | an (detects) | 1130 | | | | | | |
| 1261 | | | | | BOO 0 | | | <u> </u> | | | | |
| 1262 | | | 0500 | Gamma | a ROS Stat | Istics using in | nputed No | on-Detects | | | | |
| 1263 | | | GROS may not be u | used when | data set ha | s > 50% NDs | with many | tied observ | ations at n | nultiple DL | S | |
| 1264 | | GH | OS may not be used when k | star of dete | ects is small | such as <1.0 | , especiali | y when the | sample siz | e is small | (e.g., <15-2 | .0) |
| 1265 | | | For such s | ituations, C | ROS meth | od may yield i | ncorrect v | alues of UC | Ls and BT | Vs | | |
| 1266 | | | | I his is | especially ti | ue when the | sample siz | ze is small. | | | | |
| 1267 | | | For gamma distributed detect | cted data, l | BIVs and U | CLs may be c | computed i | using gamm | a distributi | on on KM | estimates | |
| 1268 | | | | | Minimum | 0.01 | | | | | Mean | 332.5 |
| 1269 | | | | | Maximum | 5120 | | | | | Median | 0.01 |
| 1270 | | | | | SD | 964.7 | | | | | CV | 2.901 |
| 1271 | | | | | k hat (MLE) | 0.108 | | | k star | (bias corre | ected MLE) | 0.113 |
| 1272 | | | | Theta | a hat (MLE) | 3084 | | | Theta star | (bias corre | ected MLE) | 2946 |
| 1273 | | | | ทเ | u hat (MLE) | 14.66 | | | nu | ı star (bias | corrected) | 15.35 |
| 1274 | | | Adjusted Le | evel of Sign | ificance (β) | 0.0465 | | | | | | |
| 1275 | | | Approximate Chi So | quare Value | e (15.35, α) | 7.504 | | Adjus | ted Chi Sq | uare Value | e (15.35, β) | 7.385 |
| 1276 | | | 95% Gamma Approximate U | ICL (use wl | hen n>=50) | 680 | 95 | 5% Gamma | Adjusted L | JCL (use v | vhen n<50) | 691 |
| 1277 | | | | | | | | | | | | |
| 1278 | | | | Estimate | es of Gamm | a Parameter | s using KM | M Estimates | 3 | | | |
| 1279 | | | | | Mean (KM) | 333 | | | | | SD (KM) | 957.4 |
| 1280 | | | | Var | riance (KM) | 916619 | | | | SE of | Mean (KM) | 119.1 |
| 1281 | | | | | k hat (KM) | 0.121 | | | | | k star (KM) | 0.125 |
| 1282 | | | | r | nu hat (KM) | 16.45 | | | | n | u star (KM) | 17.06 |
| 1283 | | | | the | ta hat (KM) | 2753 | | | | thet | a star (KM) | 2655 |
| 1284 | | | 80% ga | amma perc | entile (KM) | 306.6 | | | 90% ga | mma perc | entile (KM) | 954.5 |
| 1285 | | | 95% ga | amma perc | entile (KM) | 1889 | | | 99% ga | mma perc | entile (KM) | 4711 |
| 1286 | | | | | | | | | | | | |
| 1287 | | | | | Gamma Ka | plan-Meier (H | (M) Statis | tics | | | | |
| 1288 | | | Approximate Chi So | quare Value | e (17.06, α) | 8.716 | | Adjus | ted Chi Sq | uare Value | e (17.06, β) | 8.586 |
| 1289 | | 95% | 6 Gamma Approximate KM-U | ICL (use wl | hen n>=50) | 651.9 | 95% 0 | Gamma Adji | usted KM-L | JCL (use v | vhen n<50) | 661.7 |
| 1290 | | | | | | | | | | | | |
| 1291 | | | | Lognorn | nal GOF Te | st on Detecte | ed Observ | ations Only | | | | |
| 1292 | | | Shap | piro Wilk Te | est Statistic | 0.869 | | | Shapiro | Wilk GO | F Test | |
| 1293 | | | 5% Shap | piro Wilk Cr | ritical Value | 0.905 | 0 | Detected Da | ta Not Log | normal at | 5% Signific | ance Level |
| 1294 | | | | Lilliefors Te | est Statistic | 0.196 | | | Lillief | fors GOF | Test | |
| 1295 | | | 5% l | Lilliefors Cr | ritical Value | 0.192 | | Detected Da | ta Not Log | normal at | 5% Signific | ance Level |
| 1296 | | | | Detected | Data Not L | ognormal at | 5% Signifi | icance Leve | əl 🛛 | | | |
| 1297 | | | | | | | | | | | | |
| 1298 | | | | Lognorm | al ROS Sta | tistics Using | Imputed N | Non-Detects | 3 | | | |
| 1299 | | | Ν | lean in Ori | iginal Scale | 333.2 | | | | Mean in | Log Scale | -0.22 |
| 1300 | | | | SD in Ori | iginal Scale | 964.4 | | | | SD in | Log Scale | 4.779 |
| 1301 | | | 95% t UCL (assumes n | ormality of | ROS data) | 528.3 | | | 95% Perc | entile Boo | tstrap UCL | 536.4 |
| 1302 | | | 95% | % BCA Boo | otstrap UCL | 597.4 | | | 1 | 95% Boots | strap t UCL | 667.6 |
| 1303 | | | 9 | 5% H-UCL | (Log ROS) | 2831200 | | | | | | |
| 1304 | | | | | | | | | | | | |
| 1305 | | | Statistics usir | ng KM esti | mates on Lo | ogged Data a | nd Assum | ning Lognor | mal Distrib | oution | | |
| 1306 | | | | KM Me | an (logged) | 1.393 | | | | KM | Geo Mean | 4.028 |
| 1307 | | | | KMS | SD (logged) | 2.945 | | | 95% Critic | cal H Value | e (KM-Log) | 3.602 |
| 1308 | | | KM Standard E | Error of Me | an (logged) | 0.366 | | | 95 | 5% H-UCL | (KM -Log) | 1124 |
| 1309 | | | | KM S | SD (logged) | 2.945 | | | 95% Critic | al H Value | e (KM-Log) | 3.602 |
| 1310 | | | KM Standard E | Error of Me | an (logged) | 0.366 | | | | | | |
| 1311 | | | | | | | | | | | | |

| | А | В | С | D | E | F | G | Н | I | J | K | L |
|------|---|--------|---------------------------------|--------------|---------------|----------------|--------------|-------------|--------------|-------------|---------------|---------|
| 1312 | | | | | | DL/2 Statisti | :s | | | | | |
| 1313 | | | DL/2 Norma | | | | | | DL/2 L | .og-Transfo | ormed | |
| 1314 | | | | Mean in Oi | iginal Scale | 332.8 | | | | Mean in | Log Scale | 0.924 |
| 1315 | | | | SD in Or | iginal Scale | 964.6 | | | | SD in | Log Scale | 3.242 |
| 1316 | | | 95% t UC | L (Assume | s normality) | 527.9 | | | | 95% H | I-Stat UCL | 2386 |
| 1317 | | | DL/2 is not a | recommer | nded method | d, provided fo | r comparis | sons and h | istorical re | asons | | |
| 1318 | | | | | | | | | | | | |
| 1319 | | | | Non | parametric I | Distribution F | ree UCL S | tatistics | | | | |
| 1320 | | | Dete | ected Data | appear Gar | nma Distribu | ted at 5% | Significand | e Level | | | |
| 1321 | | | | | | | | | | | | |
| 1322 | | | | | Sug | gested UCL 1 | o Use | | | | | |
| 1323 | | | 95% KM App | oroximate G | iamma UCL | 651.9 | | | | | | |
| 1324 | | | | | | | | | | | | |
| 1325 | | Note: | Suggestions regarding the | selection o | f a 95% UCI | are provided | I to help th | e user to s | elect the m | iost approp | riate 95% U | CL. |
| 1326 | | | Recomm | nendations | are based u | pon data size | , data distr | ibution, an | d skewnes | s. | | |
| 1327 | | The | se recommendations are ba | sed upon t | he results of | the simulatio | n studies s | ummarized | l in Singh, | Maichle, ar | nd Lee (200 | 6). |
| 1328 | | Howeve | er, simulations results will no | ot cover all | Real World | data sets; for | additional | insight the | user may v | want to con | sult a statis | tician. |
| 1329 | | | | | | | | | | | | |

Attachment 2 (Continued)

Groundwater Samples from Q3 and Q4 2015, Off-Base (Input)
| | А | В | С | D | E | F |
|----|------------------------|--------------------------|---|-------------------|---------------------|---|
| 1 | 1,2,4-Trimethylbenzene | d_1,2,4-Trimethylbenzene | | 1,2-Dibromoethane | d_1,2-Dibromoethane | |
| 2 | 117 | 1 | | 11.5 | 1 | |
| 3 | 111 | 1 | | 8.16 | 1 | |
| 4 | 13.5 | 1 | | 7.42 | 1 | |
| 5 | 9.14 | 1 | | 6.96 | 1 | |
| 6 | 4.97 | 1 | | 0.865 | 1 | |
| 7 | 1.25 | 0 | | 0.825 | 1 | |
| 8 | 1.0065 | 1 | | 0.8005 | 1 | |
| 9 | 0.5 | 0 | | 0.696 | 1 | |
| 10 | 0.5 | 0 | | 0.665 | 1 | |
| 11 | 0.5 | 0 | | 0.558 | 1 | |
| 12 | 0.5 | 0 | | 0.523 | 1 | |
| 13 | 0.5 | 0 | | 0.4655 | 1 | |
| 14 | 0.5 | 0 | | 0.397 | 1 | |
| 15 | 0.5 | 0 | | 0.38 | 1 | |
| 16 | 0.5 | 0 | | 0.366 | 1 | |
| 17 | 0.5 | 0 | | 0.316 | 1 | |
| 18 | 0.5 | 0 | | 0.297 | 1 | |
| 19 | 0.5 | 0 | | 0.242 | 1 | |
| 20 | 0.5 | 0 | | 0.228 | 1 | |
| 21 | 0.5 | 0 | | 0.227 | 1 | |
| 22 | 0.5 | 0 | | 0.183 | 1 | |
| 23 | 0.5 | 0 | | 0.1585 | 1 | |
| 24 | 0.5 | 0 | | 0.158 | 1 | |
| 25 | 0.5 | 0 | | 0.143 | 1 | |
| 26 | 0.5 | 0 | | 0.138 | 1 | |
| 27 | 0.5 | 0 | | 0.137 | 1 | |
| 28 | 0.5 | 0 | | 0.131 | 1 | |
| 29 | 0.5 | 0 | | 0.119 | 1 | |
| 30 | 0.5 | 0 | | 0.109 | 1 | |
| 31 | 0.5 | 0 | | 0.107 | 1 | |
| 32 | 0.5 | 0 | | 0.106 | 1 | |
| 33 | 0.5 | 0 | | 0.1 | 1 | |
| 34 | 0.5 | 0 | | 0.0962 | 1 | |
| 35 | 0.25 | 0 | | 0.0897 | 1 | |
| 36 | 0.25 | 0 | | 0.0877 | 1 | |
| 37 | 0.25 | 0 | | 0.0857 | 1 | |
| 38 | 0.25 | 0 | | 0.0818 | 1 | |
| 39 | 0.25 | 0 | | 0.0787 | 1 | |
| 40 | 0.25 | 0 | | 0.07795 | 1 | |
| 41 | 0.25 | 0 | | 0.0766 | 1 | |
| 42 | 0.25 | 0 | | 0.073 | 1 | |
| 43 | 0.25 | 0 | | 0.072 | 1 | |
| 44 | 0.25 | 0 | | 0.062 | 1 | |
| 45 | 0.25 | 0 | | 0.0576 | 1 | |
| 46 | 0.25 | 0 | | 0.0544 | 1 | |
| 47 | 0.25 | 0 | | 0.0511 | 1 | |
| 48 | 0.25 | 0 | | 0.0503 | 1 | |
| 49 | 0.25 | 0 | | 0.0484 | 1 | |
| 50 | 0.25 | 0 | | 0.0474 | 1 | |
| 51 | 0.25 | 0 | | 0.0442 | 1 | |
| 52 | 0.25 | 0 | | 0.0365 | 1 | |

| | A | В | С | D | E | F |
|-----|------------------------|--------------------------|---|-------------------|---------------------|---|
| 1 | 1,2,4-Trimethylbenzene | d_1,2,4-Trimethylbenzene | | 1,2-Dibromoethane | d_1,2-Dibromoethane | |
| 53 | 0.25 | 0 | | 0.03435 | 1 | |
| 54 | 0.25 | 0 | | 0.0335 | 1 | |
| 55 | 0.25 | 0 | | 0.0332 | 1 | |
| 56 | 0.25 | 0 | | 0.0329 | 1 | |
| 57 | 0.25 | 0 | | 0.0322 | 1 | |
| 58 | 0.25 | 0 | | 0.0296 | 1 | |
| 59 | 0.25 | 0 | | 0.0286 | 1 | |
| 60 | 0.25 | 0 | | 0.0268 | 1 | |
| 61 | 0.25 | 0 | | 0.025 | 1 | |
| 62 | 0.25 | 0 | | 0.0217 | 1 | |
| 63 | 0.25 | 0 | | 0.0214 | 1 | |
| 64 | 0.25 | 0 | | 0.0211 | 1 | |
| 65 | 0.25 | 0 | | 0.0208 | 1 | |
| 66 | 0.25 | 0 | | 0.0192 | 1 | |
| 67 | 0.25 | 0 | | 0.0178 | 1 | |
| 68 | 0.25 | 0 | | 0.0149 | 1 | |
| 69 | 0.25 | 0 | | 0.0148 | 1 | |
| 70 | 0.25 | 0 | | 0.011 | 1 | |
| 71 | 0.25 | 0 | | 0.00985 | 0 | |
| 72 | 0.25 | 0 | | 0.00968 | 0 | |
| 73 | 0.25 | 0 | | 0.00968 | 0 | |
| 74 | 0.25 | 0 | | 0.00966 | 0 | |
| 75 | 0.25 | 0 | | 0.00963 | 0 | |
| 76 | 0.25 | 0 | | 0.00962 | 0 | |
| 77 | 0.25 | 0 | | 0.0096 | 0 | |
| 78 | 0.25 | 0 | | 0.00958 | 0 | |
| 79 | 0.25 | 0 | | 0.00958 | 0 | |
| 80 | 0.25 | 0 | | 0.00958 | 0 | |
| 81 | 0.25 | 0 | | 0.00958 | 0 | |
| 82 | 0.25 | 0 | | 0.00957 | 0 | |
| 83 | 0.25 | 0 | | 0.00956 | 0 | |
| 84 | 0.25 | 0 | | 0.00956 | 0 | |
| 85 | 0.25 | 0 | | 0.00956 | 0 | |
| 86 | 0.25 | 0 | | 0.00954 | 0 | |
| 87 | 0.25 | 0 | | 0.00954 | 0 | |
| 88 | 0.25 | 0 | | 0.00954 | 0 | |
| 89 | 0.25 | 0 | | 0.00953 | 0 | |
| 90 | 0.25 | 0 | | 0.00953 | 0 | |
| 91 | 0.25 | 0 | | 0.00953 | 0 | |
| 92 | 0.25 | 0 | | 0.00952 | 0 | |
| 93 | 0.25 | 0 | | 0.00952 | 0 | |
| 94 | 0.25 | 0 | | 0.00952 | 0 | |
| 95 | 0.25 | 0 | | 0.00951 | 0 | |
| 96 | 0.25 | 0 | | 0.00951 | 0 | |
| 97 | 0.25 | 0 | | 0.00951 | 0 | |
| 98 | 0.25 | 0 | | 0.00951 | 0 | |
| 99 | 0.25 | 0 | | 0.0095 | 0 | |
| 100 | 0.25 | 0 | | 0.00949 | 0 | |
| 101 | 0.25 | 0 | | 0.00949 | 0 | |
| 102 | 0.25 | U | | 0.00949 | U | |
| 103 | 0.25 | U | | 0.00949 | U | |
| 104 | 0.25 | 0 | | 0.00949 | U | |

| | A | В | С | D | E | F |
|-----|------------------------|--------------------------|---|-------------------|---------------------|---|
| 1 | 1,2,4-Trimethylbenzene | d_1,2,4-Trimethylbenzene | | 1,2-Dibromoethane | d_1,2-Dibromoethane | |
| 105 | 0.25 | 0 | | 0.00948 | 0 | |
| 106 | 0.25 | 0 | | 0.00948 | 0 | |
| 107 | 0.25 | 0 | | 0.00948 | 0 | |
| 108 | 0.25 | 0 | | 0.00947 | 0 | |
| 109 | 0.25 | 0 | | 0.00947 | 0 | |
| 110 | 0.25 | 0 | | 0.00947 | 0 | |
| 111 | 0.25 | 0 | | 0.00947 | 0 | |
| 112 | 0.25 | 0 | | 0.00946 | 0 | |
| 113 | 0.25 | 0 | | 0.00946 | 0 | |
| 114 | 0.25 | 0 | | 0.00946 | 0 | |
| 115 | 0.25 | 0 | | 0.00945 | 0 | |
| 116 | 0.25 | 0 | | 0.00945 | 0 | |
| 117 | 0.25 | 0 | | 0.009445 | 0 | |
| 118 | 0.25 | 0 | | 0.00944 | 0 | |
| 119 | 0.25 | 0 | | 0.00944 | 0 | |
| 120 | 0.25 | 0 | | 0.00944 | 0 | |
| 121 | 0.25 | 0 | | 0.00943 | 0 | |
| 122 | 0.25 | 0 | | 0.00943 | 0 | |
| 123 | 0.25 | 0 | | 0.00943 | 0 | |
| 124 | 0.25 | 0 | | 0.00943 | 0 | |
| 125 | 0.25 | 0 | | 0.00943 | 0 | |
| 120 | 0.25 | 0 | | 0.00943 | 0 | |
| 120 | 0.25 | 0 | | 0.00942 | 0 | |
| 127 | 0.25 | 0 | | 0.00942 | 0 | |
| 120 | 0.25 | 0 | | 0.00942 | 0 | |
| 120 | 0.25 | 0 | | 0.00042 | 0 | |
| 121 | 0.25 | 0 | | 0.000410 | 0 | |
| 122 | 0.25 | 0 | | 0.00941 | 0 | |
| 102 | 0.25 | 0 | | 0.00941 | 0 | |
| 124 | 0.25 | 0 | | 0.00041 | 0 | |
| 134 | 0.25 | 0 | | 0.00941 | 0 | |
| 135 | 0.25 | 0 | | 0.00941 | 0 | |
| 127 | 0.25 | 0 | | 0.00041 | 0 | |
| 120 | 0.25 | 0 | | 0.0004 | 0 | |
| 120 | 0.25 | 0 | | 0.0094 | 0 | |
| 139 | 0.25 | 0 | | 0.0034 | 0 | |
| 140 | 0.25 | 0 | + | 0.00303 | 0 | |
| 141 | 0.25 | 0 | | 0.00939 | 0 | |
| 142 | 0.25 | 0 | | 0.00939 | 0 | |
| 143 | 0.25 | 0 | | 0.00939 | 0 | |
| 1/4 | 0.25 | 0 | | 0.00300 | 0 | |
| 1/6 | 0.25 | 0 | | 0.0030 | 0 | |
| 140 | 0.25 | 0 | | 0.00930 | 0 | |
| 14/ | 0.25 | 0 | + | 0.003373 | 0 | |
| 140 | 0.25 | 0 | | 0.00937 | 0 | |
| 149 | 0.25 | 0 | | 0.00937 | 0 | |
| 100 | 0.25 | 0 | | 0.00937 | 0 | |
| 151 | 0.25 | 0 | | 0.00937 | 0 | |
| 152 | 0.25 | 0 | | 0.00337 | 0 | |
| 103 | 0.25 | 0 | | 0.0030 | 0 | |
| 104 | 0.25 | 0 | | 0.0030 | 0 | |
| 155 | 0.25 | 0 | | 0.0030 | 0 | |
| 156 | 0.25 | U | | 0.00936 | U | |

| | Α | В | С | D | E | F |
|-----|------------------------|--------------------------|---|-------------------|---------------------|---|
| 1 | 1,2,4-Trimethylbenzene | d_1,2,4-Trimethylbenzene | | 1,2-Dibromoethane | d_1,2-Dibromoethane | |
| 157 | 0.25 | 0 | | 0.00936 | 0 | |
| 158 | 0.25 | 0 | | 0.00936 | 0 | |
| 159 | 0.25 | 0 | | 0.00935 | 0 | |
| 160 | 0.25 | 0 | | 0.00934 | 0 | |
| 161 | 0.25 | 0 | | 0.00934 | 0 | |
| 162 | 0.25 | 0 | | 0.00934 | 0 | |
| 163 | 0.25 | 0 | | 0.00934 | 0 | |
| 164 | 0.25 | 0 | | 0.00933 | 0 | |
| 165 | 0.25 | 0 | | 0.00933 | 0 | |
| 166 | 0.25 | 0 | | 0.00932 | 0 | |
| 167 | 0.25 | 0 | | 0.00932 | 0 | |
| 168 | 0.25 | 0 | | 0.00932 | 0 | |
| 169 | 0.25 | 0 | | 0.00932 | 0 | |
| 170 | 0.25 | 0 | | 0.00932 | 0 | |
| 171 | 0.25 | 0 | | 0.00931 | 0 | |
| 172 | 0.25 | 0 | | 0.00931 | 0 | |
| 173 | 0.25 | 0 | | 0.00931 | 0 | |
| 174 | 0.25 | 0 | | 0.00931 | 0 | |
| 175 | 0.25 | 0 | | 0.00931 | 0 | |
| 176 | 0.25 | 0 | | 0.0093 | 0 | |
| 177 | 0.25 | 0 | | 0.0093 | 0 | |
| 178 | 0.25 | 0 | | 0.00929 | 0 | |
| 179 | 0.25 | 0 | | 0.00929 | 0 | |
| 180 | 0.25 | 0 | | 0.00929 | 0 | |
| 181 | 0.25 | 0 | | 0.00928 | 0 | |
| 182 | 0.25 | 0 | | 0.00928 | 0 | |
| 183 | 0.25 | 0 | | 0.00927 | 0 | |
| 184 | 0.25 | 0 | | 0.00927 | 0 | |
| 185 | 0.25 | 0 | | 0.00927 | 0 | |
| 186 | 0.25 | 0 | | 0.00927 | 0 | |
| 187 | 0.25 | 0 | | 0.00926 | 0 | |
| 188 | 0.25 | 0 | | 0.00926 | 0 | |
| 189 | 0.25 | 0 | | 0.00926 | 0 | |
| 190 | 0.25 | 0 | | 0.00924 | 0 | |
| 191 | 0.25 | 0 | | 0.00924 | 0 | |
| 192 | 0.25 | 0 | | 0.00924 | 0 | |
| 193 | 0.25 | 0 | | 0.00923 | 0 | |
| 194 | 0.25 | 0 | | 0.00923 | 0 | |
| 195 | 0.25 | 0 | | 0.00922 | 0 | |
| 196 | 0.25 | 0 | | 0.00919 | 0 | |
| 197 | 0.25 | 0 | | 0.00914 | 0 | |
| 198 | 0.25 | 0 | | 0.00903 | 0 | |

| | G | Н | I | J | К | L |
|----|--------------------|----------------------|---|---------------------|-----------------------|---|
| 1 | 1,2-Dichloroethane | d_1,2-Dichloroethane | | 1-Methylnaphthalene | d_1-Methylnaphthalene | |
| 2 | 5.45 | 1 | | 20.4 | 1 | |
| 3 | 5.41 | 1 | | 18.6 | 1 | |
| 4 | 5 | 0 | | 12.5 | 0 | |
| 5 | 4.24 | 1 | | 11.6 | 1 | |
| 6 | 3.98 | 1 | | 11.35 | 1 | |
| 7 | 3.83 | 1 | | 10.8 | 1 | |
| 8 | 2.95 | 1 | | 6.34 | 1 | |
| 9 | 2.57 | 1 | | 5.62 | 1 | |
| 10 | 2.04 | 1 | | 1.32 | 0 | |
| 11 | 1.94 | 1 | | 1.28 | 0 | |
| 12 | 1.86 | 1 | | 1.25 | 0 | |
| 13 | 1.44 | 1 | | 1.25 | 0 | |
| 14 | 1.44 | 1 | | 1.25 | 0 | |
| 15 | 1.37 | 1 | | 1.25 | 0 | |
| 16 | 1.345 | 1 | | 1.25 | 0 | |
| 17 | 1.09 | 1 | | 1.25 | 0 | |
| 18 | 1.07 | 1 | | 1.25 | 0 | |
| 19 | 1.05 | 1 | | 1.25 | 0 | |
| 20 | 0.947 | 1 | | 1.25 | 0 | |
| 21 | 0.8755 | 1 | | 1.25 | 0 | |
| 22 | 0.807 | 1 | | 1.25 | 0 | |
| 23 | 0.759 | 1 | | 1.25 | 0 | |
| 24 | 0.758 | 1 | | 1.25 | 0 | |
| 25 | 0.757 | 1 | | 1.25 | 0 | |
| 26 | 0.7215 | 1 | | 1.25 | 0 | |
| 27 | 0.707 | 1 | | 1.25 | 0 | |
| 28 | 0.645 | 1 | | 1.24 | 0 | |
| 29 | 0.644 | 1 | | 1.24 | 0 | |
| 30 | 0.625 | 1 | | 1.24 | 0 | |
| 31 | 0.568 | 1 | | 1.24 | 0 | |
| 32 | 0.568 | 1 | | 1.24 | 0 | |
| 33 | 0.502 | 1 | | 1.24 | 0 | |
| 34 | 0.5 | 0 | | 1.24 | 0 | |
| 35 | 0.5 | 0 | | 1.24 | 0 | |
| 36 | 0.5 | 0 | | 1.24 | 0 | |
| 37 | 0.5 | 0 | | 1.24 | 0 | |
| 38 | 0.401 | 1 | | 1.24 | 0 | |
| 39 | 0.39 | 1 | | 1.24 | 0 | |
| 40 | 0.33 | 1 | | 1.23 | 0 | |
| 41 | 0.3275 | 1 | | 1.23 | 0 | |
| 42 | 0.295 | 1 | | 1.23 | 0 | |
| 43 | 0.25 | 0 | | 1.23 | 0 | |
| 44 | 0.25 | 0 | | 1.23 | 0 | |
| 45 | 0.25 | 0 | | 1.23 | 0 | |
| 46 | 0.25 | 0 | | 1.23 | 0 | |
| 47 | 0.25 | 0 | | 1.23 | 0 | |
| 48 | 0.25 | 0 | | 1.23 | 0 | |
| 49 | 0.25 | 0 | | 1.23 | 0 | |
| 50 | 0.25 | 0 | | 1.23 | 0 | |
| 51 | 0.25 | 0 | | 1.23 | 0 | |
| 52 | 0.25 | 0 | | 1.23 | 0 | |

| | G | Н | | J | К | L |
|----------|--------------------|----------------------|--|---------------------|-----------------------|---|
| 1 | 1,2-Dichloroethane | d_1,2-Dichloroethane | | 1-Methylnaphthalene | d_1-MethyInaphthalene | |
| 53 | 0.25 | 0 | | 1.23 | 0 | |
| 54 | 0.25 | 0 | | 1.23 | 0 | |
| 55 | 0.25 | 0 | | 1.23 | 0 | |
| 56 | 0.25 | 0 | | 1.21 | 0 | |
| 57 | 0.25 | 0 | | 1.21 | 0 | |
| 58 | 0.25 | 0 | | 1.21 | 0 | |
| 59 | 0.25 | 0 | | 1.21 | 0 | |
| 60 | 0.25 | 0 | | 1.21 | 0 | |
| 61 | 0.25 | 0 | | 1.21 | 0 | |
| 62 | 0.25 | 0 | | 1.21 | 0 | |
| 63 | 0.25 | 0 | | 1.21 | 0 | |
| 64 | 0.25 | 0 | | 1.21 | 0 | |
| 65 | 0.25 | 0 | | 1.21 | 0 | |
| 66 | 0.25 | 0 | | 1.21 | 0 | |
| 67 | 0.25 | 0 | | 1.21 | 0 | |
| 68 | 0.25 | 0 | | 1.21 | 0 | |
| 69 | 0.25 | 0 | | 121 | 0 | |
| 70 | 0.25 | 0 | | 1.21 | 0 | |
| 71 | 0.25 | 0 | | 121 | 0 | |
| 72 | 0.25 | 0 | | 121 | 0 | |
| 73 | 0.25 | 0 | | 121 | 0 | |
| 74 | 0.25 | 0 | | 1 205 | 0 | |
| 75 | 0.25 | 0 | | 12 | 0 | |
| 76 | 0.20 | 0 | | 12 | 0 | |
| 70 | 0.25 | 0 | | 12 | 0 | |
| 79 | 0.25 | 0 | | 1.2 | 0 | |
| 70 | 0.25 | 0 | | 1.2 | 0 | |
| 79 00 | 0.25 | 0 | | 1.2 | 0 | |
| 00 | 0.25 | 0 | | 1.2 | 0 | |
| 01 | 0.25 | 0 | | 1.2 | 0 | |
| 02 | 0.25 | 0 | | 1.2 | 0 | |
| 03 | 0.25 | 0 | | 1.2 | 0 | |
| 04 95 | 0.25 | 0 | | 1.2 | 0 | |
| 00 | 0.25 | 0 | | 1.2 | 0 | |
| 00 07 | 0.25 | 0 | | 1.2 | 0 | |
| 0/ | 0.25 | 0 | | 1.2 | 0 | |
| 00 00 | 0.20 | 0 | | 1.2 | 0 | |
| 09 | 0.20 | 0 | | 1.2 | 0 | |
| 90 | 0.25 | 0 | | 1.2 | 0 | |
| 91 | 0.25 | 0 | | 1.2 | 0 | |
| 92 | 0.25 | 0 | | 1.2 | 0 | |
| 93 | 0.25 | 0 | | 1.2 | 0 | |
| 94 | 0.25 | 0 | | 1.2 | Ű | |
| 95 | 0.25 | 0 | | 1.2 | Ŭ | |
| 96 | 0.25 | 0 | | 1.2 | 0 | |
| 97 | 0.25 | 0 | | 1.2 | 0 | |
| 98 | 0.25 | 0 | | 1.2 | 0 | |
| 99 | 0.25 | 0 | | 1.2 | 0 | |
| 100 | 0.25 | 0 | | 1.2 | 0 | |
| 101 | 0.25 | 0 | | 1.2 | 0 | |
| 102 | 0.25 | 0 | | 1.2 | 0 | |
| 103 | 0.25 | 0 | | 1.2 | 0 | |
| 104 | 0.25 | 0 | | 1.195 | 0 | |

| | G | Н | J | К | L |
|-----|--------------------|----------------------|---------------------|-----------------------|---|
| 1 | 1,2-Dichloroethane | d_1,2-Dichloroethane | 1-Methylnaphthalene | d_1-MethyInaphthalene | |
| 105 | 0.25 | 0 | 1.195 | 0 | |
| 106 | 0.25 | 0 | 1.19 | 0 | |
| 107 | 0.25 | 0 | 1.19 | 0 | |
| 108 | 0.25 | 0 | 1.19 | 0 | |
| 109 | 0.25 | 0 | 1.19 | 0 | |
| 110 | 0.25 | 0 | 1.19 | 0 | |
| 111 | 0.25 | 0 | 1.19 | 0 | |
| 112 | 0.25 | 0 | 1.19 | 0 | |
| 113 | 0.25 | 0 | 1.19 | 0 | |
| 114 | 0.25 | 0 | 1.19 | 0 | |
| 115 | 0.25 | 0 | 1.19 | 0 | |
| 116 | 0.25 | 0 | 1.19 | 0 | |
| 117 | 0.25 | 0 | 1.19 | 0 | |
| 118 | 0.25 | 0 | 1.19 | 0 | |
| 119 | 0.25 | 0 | 1.19 | 0 | |
| 120 | 0.25 | 0 | 1.19 | 0 | |
| 121 | 0.25 | 0 | 1.19 | 0 | |
| 122 | 0.25 | 0 | 1.19 | 0 | |
| 123 | 0.25 | 0 | 1.19 | 0 | |
| 124 | 0.25 | 0 | 1.19 | 0 | |
| 125 | 0.25 | 0 | 1.19 | 0 | |
| 126 | 0.25 | 0 | 1.19 | 0 | |
| 127 | 0.25 | 0 | 1.19 | 0 | |
| 128 | 0.25 | 0 | 1.19 | 0 | |
| 129 | 0.25 | 0 | 1.18 | 0 | |
| 130 | 0.25 | 0 | 1.18 | 0 | |
| 131 | 0.25 | 0 | 1.18 | 0 | |
| 132 | 0.25 | 0 | 1.18 | 0 | |
| 133 | 0.25 | 0 | 1.18 | 0 | |
| 134 | 0.25 | 0 | 1.10 | 0 | |
| 130 | 0.25 | 0 | 1.10 | 0 | |
| 127 | 0.25 | 0 | 1.10 | 0 | |
| 132 | 0.25 | 0 | 1 18 | 0 | |
| 130 | 0.25 | 0 | 1 18 | 0 | |
| 140 | 0.25 | 0 | 1 18 | 0 | |
| 141 | 0.25 | 0 | 1.18 | 0 | |
| 142 | 0.25 | 0 | 1.18 | 0 | |
| 143 | 0.25 | 0 | 1.18 | 0 | |
| 144 | 0.25 | 0 | 1.18 | 0 | |
| 145 | 0.25 | 0 | 1.18 | 0 | |
| 146 | 0.25 | 0 | 1.18 | 0 | |
| 147 | 0.25 | 0 | 1.18 | 0 | |
| 148 | 0.25 | 0 | 1.18 | 0 | |
| 149 | 0.25 | 0 | 1.18 | 0 | |
| 150 | 0.25 | 0 | 1.18 | 0 | |
| 151 | 0.25 | 0 | 1.18 | 0 | |
| 152 | 0.25 | 0 | 1.18 | 0 | |
| 153 | 0.25 | 0 | 1.18 | 0 | |
| 154 | 0.25 | 0 | 1.18 | 0 | |
| 155 | 0.25 | 0 | 1.18 | 0 | |
| 156 | 0.25 | 0 | 1.18 | 0 | |

| | G | Н | J | К | L |
|-----|--------------------|----------------------|---------------------|-----------------------|---|
| 1 | 1,2-Dichloroethane | d_1,2-Dichloroethane | 1-Methylnaphthalene | d_1-MethyInaphthalene | |
| 157 | 0.25 | 0 | 1.18 | 0 | |
| 158 | 0.25 | 0 | 1.18 | 0 | |
| 159 | 0.25 | 0 | 1.18 | 0 | |
| 160 | 0.25 | 0 | 1.18 | 0 | |
| 161 | 0.25 | 0 | 1.18 | 0 | |
| 162 | 0.25 | 0 | 1.18 | 0 | |
| 163 | 0.25 | 0 | 1.18 | 0 | |
| 164 | 0.25 | 0 | 1.18 | 0 | |
| 165 | 0.25 | 0 | 1.18 | 0 | |
| 166 | 0.25 | 0 | 1.18 | 0 | |
| 167 | 0.25 | 0 | 1.18 | 0 | |
| 168 | 0.25 | 0 | 1.18 | 0 | |
| 169 | 0.25 | 0 | 1.18 | 0 | |
| 170 | 0.25 | 0 | 1.18 | 0 | |
| 171 | 0.25 | 0 | 1.18 | 0 | |
| 172 | 0.25 | 0 | 1.18 | 0 | |
| 173 | 0.25 | 0 | 1.18 | 0 | |
| 174 | 0.25 | 0 | 1.175 | 0 | |
| 175 | 0.25 | 0 | 1.17 | 0 | |
| 176 | 0.25 | 0 | 1.17 | 0 | |
| 177 | 0.25 | 0 | 1.17 | 0 | |
| 178 | 0.25 | 0 | 1.17 | 0 | |
| 179 | 0.25 | 0 | 1.17 | 0 | |
| 180 | 0.25 | 0 | 1.17 | 0 | |
| 181 | 0.25 | 0 | 1.17 | 0 | |
| 182 | 0.25 | 0 | 1.17 | 0 | |
| 183 | 0.25 | 0 | 1.17 | 0 | |
| 184 | 0.25 | 0 | 1.165 | 0 | |
| 185 | 0.25 | 0 | 1.16 | 0 | |
| 186 | 0.25 | 0 | 1.16 | 0 | |
| 187 | 0.25 | 0 | 1.16 | 0 | |
| 188 | 0.25 | 0 | 1.16 | 0 | |
| 189 | 0.25 | 0 | 1.16 | 0 | |
| 190 | 0.25 | 0 | 1.16 | 0 | |
| 191 | 0.25 | 0 | 1.16 | 0 | |
| 192 | 0.25 | 0 | 1.16 | 0 | |
| 193 | 0.25 | 0 | 1.16 | 0 | |
| 194 | 0.25 | 0 | 1.16 | 0 | |
| 195 | 0.25 | 0 | 1.16 | 0 | |
| 196 | 0.25 | 0 | 1.16 | 0 | |
| 197 | 0.25 | 0 | 1.16 | 0 | |
| 198 | 0.25 | 0 | 0.619 | 0 | |

| | М | N | 0 | Р | Q | R |
|----|---------------------|-----------------------|---|--------------|----------------|---|
| 1 | 2-Methylnaphthalene | d_2-Methylnaphthalene | | Acetophenone | d_Acetophenone | |
| 2 | 12.5 | 0 | | 903 | 1 | |
| 3 | 11.6 | 0 | | 860 | 1 | |
| 4 | 9.93 | 1 | | 129 | 1 | |
| 5 | 1.61 | 1 | | 122 | 1 | |
| 6 | 1.32 | 0 | | 8.78 | 1 | |
| 7 | 1.28 | 0 | | 3.68 | 1 | |
| 8 | 1.25 | 0 | | 1.68 | 1 | |
| 9 | 1.25 | 0 | | 1.32 | 0 | |
| 10 | 1.25 | 0 | | 1.28 | 0 | |
| 11 | 1.25 | 0 | | 1.25 | 0 | |
| 12 | 1.25 | 0 | | 1.25 | 0 | |
| 13 | 1.25 | 0 | | 1.25 | 0 | |
| 14 | 1.25 | 0 | | 1.25 | 0 | |
| 15 | 1.25 | 0 | | 1.25 | 0 | |
| 16 | 1.25 | 0 | | 1.25 | 0 | |
| 17 | 1.25 | 0 | | 1.25 | 0 | |
| 18 | 1.25 | 0 | | 1.25 | 0 | |
| 19 | 1.25 | 0 | | 1.25 | 0 | |
| 20 | 1.25 | 0 | | 1.25 | 0 | |
| 21 | 1.25 | 0 | | 1.25 | 0 | |
| 22 | 1.25 | 0 | | 1.25 | 0 | |
| 23 | 1.25 | 0 | | 1.25 | 0 | |
| 24 | 1.25 | 0 | | 1.25 | 0 | |
| 25 | 1.24 | 0 | | 1.25 | 0 | |
| 26 | 1.24 | 0 | | 1.25 | 0 | |
| 27 | 1.24 | 0 | | 1.25 | 0 | |
| 28 | 1.24 | 0 | | 1.24 | 0 | |
| 29 | 1.24 | 0 | | 1.24 | 0 | |
| 30 | 1.24 | 0 | | 1.24 | 0 | |
| 31 | 1.24 | 0 | | 1.24 | 0 | |
| 32 | 1.24 | 0 | | 1.24 | 0 | |
| 33 | 1.24 | 0 | | 1.24 | 0 | |
| 34 | 1.24 | 0 | | 1.24 | 0 | |
| 35 | 1.24 | 0 | | 1.24 | 0 | |
| 36 | 1.24 | 0 | | 1.24 | 0 | |
| 37 | 1.23 | 0 | | 1.24 | 0 | |
| 38 | 1.23 | 0 | | 1.24 | 0 | |
| 39 | 1.23 | 0 | | 1.24 | 0 | |
| 40 | 1.23 | 0 | | 1.23 | 0 | |
| 41 | 1.23 | 0 | | 1.23 | 0 | |
| 42 | 1.23 | 0 | | 1.23 | 0 | |
| 43 | 1.23 | 0 | | 1.23 | 0 | |
| 44 | 1.23 | 0 | | 1.23 | 0 | |
| 45 | 1.23 | 0 | | 1.23 | 0 | |
| 46 | 1.23 | 0 | | 1.23 | 0 | |
| 47 | 1.23 | 0 | | 1.23 | 0 | |
| 48 | 1.23 | 0 | | 1.23 | 0 | |
| 49 | 1.23 | 0 | | 1.23 | 0 | |
| 50 | 1.23 | 0 | | 1.23 | 0 | |
| 51 | 1.23 | 0 | | 1.23 | 0 | |
| 52 | 1.23 | 0 | | 1.23 | 0 | |

| | М | N | 0 | Р | Q | R |
|-----|---------------------|-----------------------|---|--------------|----------------|---|
| 1 | 2-Methylnaphthalene | d_2-Methylnaphthalene | | Acetophenone | d_Acetophenone | |
| 53 | 1.21 | 0 | | 1.23 | 0 | |
| 54 | 1.21 | 0 | | 1.23 | 0 | |
| 55 | 1.21 | 0 | | 1.23 | 0 | |
| 56 | 1.21 | 0 | | 1.21 | 0 | |
| 57 | 1.21 | 0 | | 1.21 | 0 | |
| 58 | 1.21 | 0 | | 1.21 | 0 | |
| 59 | 1.21 | 0 | | 1.21 | 0 | |
| 60 | 1.21 | 0 | | 1.21 | 0 | |
| 61 | 1.21 | 0 | | 1.21 | 0 | |
| 62 | 1.21 | 0 | | 1.21 | 0 | |
| 63 | 1.21 | 0 | | 1.21 | 0 | |
| 64 | 1.21 | 0 | | 1.21 | 0 | |
| 65 | 1.21 | 0 | | 1.21 | 0 | |
| 66 | 1.21 | 0 | | 1.21 | 0 | |
| 67 | 1.21 | 0 | | 1.21 | 0 | |
| 68 | 1.21 | 0 | | 1.21 | 0 | |
| 69 | 1.21 | 0 | | 1.21 | 0 | |
| 70 | 121 | 0 | | 1.21 | 0 | |
| 71 | 121 | 0 | | 1 21 | 0 | |
| 72 | 1 205 | 0 | | 1 21 | 0 | |
| 72 | 12 | 0 | | 1.21 | 0 | |
| 73 | 12 | 0 | | 1.21 | 0 | |
| 75 | 12 | 0 | | 1 205 | 0 | |
| 76 | 1.2 | 0 | | 1.200 | 0 | |
| 70 | 1.2 | 0 | | 1.2 | 0 | |
| 70 | 1.2 | 0 | | 1.2 | 0 | |
| 70 | 1.2 | 0 | | 1.2 | 0 | |
| 79 | 1.2 | 0 | | 1.2 | 0 | |
| 01 | 1.2 | 0 | | 1.2 | 0 | |
| 01 | 1.2 | 0 | | 1.2 | 0 | |
| 02 | 1.2 | 0 | | 1.2 | 0 | |
| 03 | 1.2 | 0 | | 1.2 | 0 | |
| 84 | 1.2 | 0 | | 1.2 | 0 | |
| 85 | 1.2 | 0 | | 1.2 | 0 | |
| 86 | 1.2 | 0 | | 1.2 | 0 | |
| 87 | 1.2 | 0 | | 1.2 | 0 | |
| 88 | 1.2 | U | | 1.2 | U | |
| 89 | 1.2 | U | | 1.2 | U | |
| 90 | 1.2 | Ű | | 1.2 | U | |
| 91 | 1.2 | 0 | | 1.2 | U | |
| 92 | 1.2 | 0 | | 1.2 | U | |
| 93 | 1.2 | 0 | | 1.2 | 0 | |
| 94 | 1.2 | U | | 1.2 | 0 | |
| 95 | 1.2 | 0 | | 1.2 | U | |
| 96 | 1.2 | 0 | | 1.2 | 0 | |
| 97 | 1.2 | 0 | | 1.2 | 0 | |
| 98 | 1.2 | 0 | | 1.2 | 0 | |
| 99 | 1.2 | 0 | | 1.2 | 0 | |
| 100 | 1.2 | 0 | | 1.2 | 0 | |
| 101 | 1.2 | 0 | | 1.2 | 0 | |
| 102 | 1.195 | 0 | | 1.2 | 0 | |
| 103 | 1.195 | 0 | | 1.2 | 0 | |
| 104 | 1.19 | 0 | | 1.2 | 0 | |

| | Μ | N | 0 | Р | Q | R |
|-----|---------------------|-----------------------|---|--------------|----------------|---|
| 1 | 2-Methylnaphthalene | d_2-Methylnaphthalene | | Acetophenone | d_Acetophenone | |
| 105 | 1.19 | 0 | | 1.195 | 0 | |
| 106 | 1.19 | 0 | | 1.195 | 0 | |
| 107 | 1.19 | 0 | | 1.19 | 0 | |
| 108 | 1.19 | 0 | | 1.19 | 0 | |
| 109 | 1.19 | 0 | | 1.19 | 0 | |
| 110 | 1.19 | 0 | | 1.19 | 0 | |
| 111 | 1.19 | 0 | | 1.19 | 0 | |
| 112 | 1.19 | 0 | | 1.19 | 0 | |
| 113 | 1.19 | 0 | | 1.19 | 0 | |
| 114 | 1.19 | 0 | | 1.19 | 0 | |
| 115 | 1.19 | 0 | | 1.19 | 0 | |
| 116 | 1.19 | 0 | | 1.19 | 0 | |
| 117 | 1 19 | 0 | | 1 19 | 0 | |
| 118 | 1 19 | 0 | | 1 19 | 0 | |
| 119 | 1 19 | 0 | | 1 19 | 0 | |
| 120 | 1 19 | 0 | | 1 19 | 0 | |
| 121 | 1 19 | 0 | | 1 19 | 0 | |
| 121 | 1 19 | 0 | | 1.15 | 0 | |
| 122 | 1 10 | 0 | | 1 10 | 0 | |
| 123 | 1 10 | 0 | | 1.10 | 0 | |
| 124 | 1.19 | 0 | | 1.19 | 0 | |
| 120 | 1.19 | 0 | | 1.19 | 0 | |
| 120 | 1.19 | 0 | | 1.19 | 0 | |
| 127 | 1.18 | 0 | | 1.19 | 0 | |
| 128 | 1.18 | 0 | | 1.18 | 0 | |
| 129 | 1.18 | 0 | | 1.18 | 0 | |
| 130 | 1.18 | 0 | | 1.18 | 0 | |
| 131 | 1.18 | 0 | | 1.18 | 0 | |
| 132 | 1.18 | 0 | | 1.18 | 0 | |
| 133 | 1.18 | 0 | | 1.18 | 0 | |
| 134 | 1.18 | 0 | | 1.18 | 0 | |
| 135 | 1.18 | 0 | | 1.18 | 0 | |
| 136 | 1.18 | 0 | | 1.18 | 0 | |
| 137 | 1.18 | 0 | | 1.18 | 0 | |
| 138 | 1.18 | 0 | | 1.18 | 0 | |
| 139 | 1.18 | 0 | | 1.18 | 0 | |
| 140 | 1.18 | 0 | | 1.18 | 0 | |
| 141 | 1.18 | 0 | | 1.18 | 0 | |
| 142 | 1.18 | 0 | | 1.18 | 0 | |
| 143 | 1.18 | 0 | | 1.18 | 0 | |
| 144 | 1.18 | 0 | | 1.18 | 0 | |
| 145 | 1.18 | 0 | | 1.18 | 0 | |
| 146 | 1.18 | 0 | | 1.18 | 0 | |
| 147 | 1.18 | 0 | | 1.18 | 0 | |
| 148 | 1.18 | 0 | | 1.18 | 0 | |
| 149 | 1.18 | 0 | | 1.18 | 0 | |
| 150 | 1.18 | 0 | | 1.18 | 0 | |
| 151 | 1.18 | 0 | | 1.18 | 0 | |
| 152 | 1.18 | 0 | | 1.18 | 0 | |
| 153 | 1.18 | 0 | | 1.18 | 0 | |
| 154 | 1.18 | 0 | | 1.18 | 0 | |
| 155 | 1.18 | 0 | | 1.18 | 0 | |
| 156 | 1.18 | 0 | | 1.18 | 0 | |

| | Μ | N | 0 | Р | Q | R |
|-----|---------------------|-----------------------|---|--------------|----------------|---|
| 1 | 2-Methylnaphthalene | d_2-Methylnaphthalene | | Acetophenone | d_Acetophenone | |
| 157 | 1.18 | 0 | | 1.18 | 0 | |
| 158 | 1.18 | 0 | | 1.18 | 0 | |
| 159 | 1.18 | 0 | | 1.18 | 0 | |
| 160 | 1.18 | 0 | | 1.18 | 0 | |
| 161 | 1.18 | 0 | | 1.18 | 0 | |
| 162 | 1.18 | 0 | | 1.18 | 0 | |
| 163 | 1.18 | 0 | | 1.18 | 0 | |
| 164 | 1.18 | 0 | | 1.18 | 0 | |
| 165 | 1.18 | 0 | | 1.18 | 0 | |
| 166 | 1.18 | 0 | | 1.18 | 0 | |
| 167 | 1.18 | 0 | | 1.18 | 0 | |
| 168 | 1.18 | 0 | | 1.18 | 0 | |
| 169 | 1.18 | 0 | | 1.18 | 0 | |
| 170 | 1.18 | 0 | | 1.18 | 0 | |
| 171 | 1.18 | 0 | | 1.18 | 0 | |
| 172 | 1.175 | 0 | | 1.175 | 0 | |
| 173 | 1.175 | 0 | | 1.175 | 0 | |
| 174 | 1.17 | 0 | | 1.17 | 0 | |
| 175 | 1.17 | 0 | | 1.17 | 0 | |
| 176 | 1.17 | 0 | | 1.17 | 0 | |
| 177 | 1.17 | 0 | | 1.17 | 0 | |
| 178 | 1.17 | 0 | | 1.17 | 0 | |
| 179 | 1.17 | 0 | | 1.17 | 0 | |
| 180 | 1.17 | 0 | | 1.17 | 0 | |
| 181 | 1.17 | 0 | | 1.17 | 0 | |
| 182 | 1.17 | 0 | | 1.17 | 0 | |
| 183 | 1.165 | 0 | | 1.165 | 0 | |
| 184 | 1.16 | 0 | | 1.16 | 0 | |
| 185 | 1.16 | 0 | | 1.16 | 0 | |
| 186 | 1.16 | 0 | | 1.16 | 0 | |
| 187 | 1.16 | 0 | | 1.16 | 0 | |
| 188 | 1.16 | 0 | | 1.16 | 0 | |
| 189 | 1.16 | 0 | | 1.16 | 0 | |
| 190 | 1.16 | 0 | | 1.16 | 0 | |
| 191 | 1.16 | 0 | | 1.16 | 0 | |
| 192 | 1.16 | 0 | | 1.16 | 0 | |
| 193 | 1.16 | 0 | | 1.16 | 0 | |
| 194 | 1.16 | 0 | | 1.16 | 0 | |
| 195 | 1.16 | 0 | | 1.16 | 0 | |
| 196 | 1.16 | 0 | | 1.16 | 0 | |
| 197 | 1.16 | 0 | | 1.16 | 0 | |
| 198 | 0.619 | 0 | | 0.619 | 0 | |

| | S | Т | U | V | W | Х | Y | Z | AA |
|----------|---------|-----------|---|--------------|----------------|---|------|--------|----|
| 1 | Benzene | d_Benzene | | Ethylbenzene | d_Ethylbenzene | | Lead | d_Lead | |
| 2 | 2170 | 1 | | 903 | 1 | | 5.3 | 1 | |
| 3 | 1990 | 1 | | 748 | 1 | | 4.52 | 1 | |
| 4 | 508 | 1 | | 186 | 1 | | 3.83 | 1 | |
| 5 | 479 | 1 | | 73.4 | 1 | | 3 | 0 | |
| 6 | 36.7 | 1 | | 64.8 | 1 | | 3 | 0 | |
| 7 | 6.535 | 1 | | 50.4 | 1 | | 3 | 0 | |
| 8 | 4.21 | 1 | | 6.79 | 1 | | 3 | 0 | |
| 9 | 1.945 | 1 | | 6.49 | 1 | | 3 | 0 | |
| 10 | 1.25 | 0 | | 5.69 | 1 | | 3 | 0 | |
| 11 | 1.24 | 1 | | 2.71 | 1 | | 3 | 0 | |
| 12 | 0.624 | 1 | | 1.25 | 0 | | 2.18 | 1 | |
| 13 | 0.544 | 1 | | 0.5 | 0 | | 2.11 | 1 | |
| 14 | 0 538 | 1 | | 0.5 | 0 | | 2 07 | 1 | |
| 15 | 0.5 | 0 | | 0.5 | 0 | | 2 | 0 | |
| 16 | 0.5 | 0 | | 0.5 | 0 | | 2 | 0 | |
| 17 | 0.5 | 0 | | 0.5 | 0 | | 2 | 0 | |
| 18 | 0.5 | 0 | | 0.5 | 0 | | 2 | 0 | |
| 19 | 0.5 | 0 | | 0.5 | 0 | | 1.9 | 0 | |
| 20 | 0.5 | 0 | | 0.5 | 0 | | 1.9 | 0 | |
| 21 | 0.5 | 0 | | 0.5 | 0 | | 1.9 | 0 | |
| 22 | 0.5 | 0 | | 0.5 | 0 | | 1.9 | 0 | |
| 22 | 0.5 | 0 | | 0.5 | 0 | | 1.9 | 0 | |
| 24 | 0.5 | 0 | | 0.5 | 0 | | 1.9 | 0 | |
| 24 | 0.5 | 0 | | 0.5 | 0 | | 1.5 | 0 | |
| 20 | 0.5 | 0 | | 0.5 | 0 | | 1.0 | 0 | |
| 20 | 0.5 | 0 | | 0.5 | 0 | | 1.0 | 0 | |
| 27 | 0.5 | 0 | | 0.5 | 0 | | 1.75 | 0 | |
| 20 | 0.5 | 0 | | 0.5 | 0 | | 1.7 | 0 | |
| 20 | 0.5 | 0 | | 0.5 | 0 | | 1.7 | 0 | |
| 31 | 0.0 | 0 | | 0.5 | 0 | | 1.6 | 0 | |
| 22 | 0.5 | 0 | | 0.5 | 0 | | 1.0 | 1 | |
| 32 22 | 0.5 | 0 | | 0.5 | 0 | | 1.54 | 0 | |
| 33 | 0.5 | 0 | | 0.3 | 0 | | 1.5 | 0 | |
| 25 | 0.5 | 0 | | 0.375 | 0 | | 1.5 | 0 | |
| 20 | 0.20 | 0 | | 0.20 | 0 | | 1.0 | 0 | |
| 00 27 | 0.20 | 0 | | 0.20 | 0 | | 1.0 | 0 | |
| 37 20 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 20 | 0.20 | 0 | | 0.20 | 0 | | 1.0 | 0 | |
| 39 | 0.25 | 0 | | 0.20 | 0 | | 1.0 | 0 | |
| 4U 11 | 0.20 | 0 | | 0.20 | 0 | | 1.0 | 0 | |
| 41 10 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 42 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 43 | 0.20 | 0 | | 0.20 | 0 | | 1.0 | 0 | |
| 44 15 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 40 40 | 0.20 | 0 | | 0.20 | 0 | | 1.0 | 0 | |
| 40 | 0.20 | 0 | | 0.20 | 0 | | 1.0 | 0 | |
| 4/ | 0.25 | 0 | | 0.25 | 0 | | 1.5 | | |
| 48 40 | 0.20 | 0 | | 0.20 | 0 | | 1.0 | 0 | |
| 49 | 0.25 | 0 | | 0.20 | 0 | | 1.0 | 0 | |
| UC E1 | 0.25 | 0 | | 0.20 | 0 | | 1.0 | 0 | |
| 51 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 52 | 0.25 | U | | 0.25 | U | | 1.5 | l U | |

| | S | Т | U | V | W | Х | Y | Z | AA |
|-----|---------|-----------|---|--------------|----------------|---|------|--------|----|
| 1 | Benzene | d_Benzene | | Ethylbenzene | d_Ethylbenzene | | Lead | d_Lead | |
| 53 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 54 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 55 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 56 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 57 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 58 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 59 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 60 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 61 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 62 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 63 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 64 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 65 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 66 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 67 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 68 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 69 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 70 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 71 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 72 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 73 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 74 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 75 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 76 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 77 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 78 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 79 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 80 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 81 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 82 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 83 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 84 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 85 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 86 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 8/ | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 88 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 89 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 90 | 0.20 | 0 | | 0.20 | 0 | | 1.5 | 0 | |
| 91 | 0.20 | 0 | | 0.20 | 0 | | 1.0 | 0 | |
| 92 | 0.20 | 0 | | 0.20 | 0 | | 1.0 | 0 | |
| 93 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 05 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 90 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 90 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 97 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| ga | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 100 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 101 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 102 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 103 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 104 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |

| | S | Т | U | V | W | Х | Y | Z | AA |
|------|---------|-----------|---|--------------|----------------|---|------|--------|----|
| 1 | Benzene | d_Benzene | | Ethylbenzene | d_Ethylbenzene | | Lead | d_Lead | |
| 105 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 106 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 107 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 108 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 109 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 110 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 111 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 112 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 113 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 114 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 115 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 116 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 117 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 118 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 119 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 120 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 121 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 122 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 123 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 124 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 125 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 126 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 127 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 128 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 129 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 130 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 131 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 132 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 133 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 134 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 135 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 136 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 137 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 138 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 139 | 0.20 | 0 | | 0.20 | 0 | | 1.0 | 0 | |
| 140 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 1/12 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 1/12 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 143 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 145 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 146 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 147 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 148 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 149 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 150 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 151 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 152 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 153 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 154 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 155 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 156 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |

| | S | Т | U | V | W | Х | Y | Z | AA |
|-----|---------|-----------|---|--------------|----------------|---|------|--------|----|
| 1 | Benzene | d_Benzene | | Ethylbenzene | d_Ethylbenzene | | Lead | d_Lead | |
| 157 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 158 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 159 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 160 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 161 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 162 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 163 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 164 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 165 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 166 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 167 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 168 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 169 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 170 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 171 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 172 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 173 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 174 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 175 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 176 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 177 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 178 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 179 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 180 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 181 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 182 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 183 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 184 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 185 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 186 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 187 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 188 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 189 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 190 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 191 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 192 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 193 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 194 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 195 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 196 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 197 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |
| 198 | 0.25 | 0 | | 0.25 | 0 | | 1.5 | 0 | |

| | AB | AC | AD | AE | AF | AG |
|------------|--------------------------------|----------------------------------|----|-------------|---------------|----|
| 1 | MTBE (Methyl tert-butyl ether) | d_MTBE (Methyl tert-butyl ether) | | Naphthalene | d_Naphthalene | |
| 2 | 5 | 0 | | 35 | 1 | |
| 3 | 5 | 0 | | 23.8 | 1 | |
| 4 | 2.5 | 0 | | 11.5 | 1 | |
| 5 | 1.25 | 0 | | 6.87 | 1 | |
| 6 | 1.25 | 0 | | 4.88 | 1 | |
| 7 | 0.645 | 1 | | 3.21 | 1 | |
| 8 | 0.562 | 1 | | 2.55 | 1 | |
| 9 | 0.5 | 0 | | 1.25 | 0 | |
| 10 | 0.5 | 0 | | 1.03 | 1 | |
| 11 | 0.5 | 0 | | 0.938 | 1 | |
| 12 | 0.5 | 0 | | 0.5 | 0 | |
| 13 | 0.5 | 0 | | 0.5 | 0 | |
| 14 | 0.5 | 0 | | 0.5 | 0 | |
| 15 | 0.5 | 0 | | 0.5 | 0 | |
| 16 | 0.5 | 0 | | 0.5 | 0 | |
| 17 | 0.5 | <u> </u> | | 0.5 | 0 | |
| 18 | 0.5 | 0 | | 0.5 | 0 | |
| 10 | 0.5 | 0 | | 0.5 | 0 | |
| 20 | 0.5 | 0 | | 0.5 | 0 | |
| 20 | 0.5 | 0 | | 0.5 | 0 | |
| 21 | 0.5 | 0 | | 0.5 | 0 | |
| 22 | 0.5 | 0 | | 0.5 | 0 | |
| 23 | 0.5 | 0 | | 0.5 | 0 | |
| 24 | 0.5 | 0 | | 0.5 | 0 | |
| 20 | 0.5 | 0 | | 0.5 | 0 | |
| 20 | 0.5 | 0 | | 0.5 | 0 | |
| 27 | 0.5 | 0 | | 0.5 | 0 | |
| 20 | 0.5 | 0 | | 0.5 | 0 | |
| 29 | 0.5 | 0 | | 0.5 | 0 | |
| 21 | 0.5 | 0 | | 0.5 | 0 | |
| 31 22 | 0.5 | 0 | | 0.5 | 0 | |
| ა <u>∠</u> | 0.5 | 0 | | 0.5 | 0 | |
| 33 | 0.5 | 0 | | 0.5 | 0 | |
| 34 | 0.375 | 0 | | 0.0 | 0 | |
| 35 | 0.25 | 0 | | 0.375 | 0 | |
| 36 | 0.25 | 0 | | 0.25 | 0 | |
| 3/ | 0.25 | 0 | | 0.25 | 0 | |
| 38 | 0.25 | 0 | | 0.25 | U | |
| 39 | 0.25 | 0 | | 0.25 | 0 | |
| 40 | 0.25 | 0 | | 0.25 | 0 | |
| 41 | 0.25 | 0 | | 0.25 | 0 | |
| 42 | 0.25 | 0 | | 0.25 | 0 | |
| 43 | 0.25 | 0 | | 0.25 | 0 | |
| 44 | 0.25 | 0 | | 0.25 | 0 | |
| 45 | 0.25 | 0 | | 0.25 | 0 | |
| 46 | 0.25 | 0 | | 0.25 | 0 | |
| 47 | 0.25 | 0 | | 0.25 | 0 | |
| 48 | 0.25 | 0 | | 0.25 | 0 | |
| 49 | 0.25 | 0 | | 0.25 | 0 | |
| 50 | 0.25 | 0 | | 0.25 | 0 | |
| 51 | 0.25 | 0 | | 0.25 | 0 | |
| 52 | 0.25 | 0 | | 0.25 | 0 | |

| | AB | AC | AD | AE | AF | AG |
|----------|--------------------------------|----------------------------------|----|-------------|---------------|----|
| 1 | MTBE (Methyl tert-butyl ether) | d_MTBE (Methyl tert-butyl ether) | | Naphthalene | d_Naphthalene | |
| 53 | 0.25 | 0 | | 0.25 | 0 | |
| 54 | 0.25 | 0 | | 0.25 | 0 | |
| 55 | 0.25 | 0 | | 0.25 | 0 | |
| 56 | 0.25 | 0 | | 0.25 | 0 | |
| 57 | 0.25 | 0 | | 0.25 | 0 | |
| 58 | 0.25 | 0 | | 0.25 | 0 | |
| 59 | 0.25 | 0 | | 0.25 | 0 | |
| 60 | 0.25 | 0 | | 0.25 | 0 | |
| 61 | 0.25 | 0 | | 0.25 | 0 | |
| 62 | 0.25 | 0 | | 0.25 | 0 | |
| 63 | 0.25 | 0 | | 0.25 | 0 | |
| 64 | 0.25 | 0 | | 0.25 | 0 | |
| 65 | 0.25 | 0 | | 0.25 | 0 | |
| 66 | 0.25 | 0 | | 0.25 | 0 | |
| 67 | 0.25 | 0 | | 0.25 | 0 | |
| 68 | 0.25 | 0 | | 0.25 | 0 | |
| 69 | 0.25 | 0 | | 0.25 | 0 | |
| 70 | 0.25 | 0 | | 0.25 | 0 | |
| 71 | 0.25 | 0 | | 0.25 | 0 | |
| 72 | 0.25 | 0 | | 0.25 | 0 | |
| 73 | 0.25 | 0 | | 0.25 | 0 | |
| 74 | 0.25 | 0 | | 0.25 | 0 | |
| 75 | 0.25 | 0 | | 0.25 | 0 | |
| 76 | 0.25 | 0 | | 0.25 | 0 | |
| 70 | 0.25 | 0 | | 0.25 | 0 | |
| 78 | 0.25 | 0 | | 0.25 | 0 | |
| 70 | 0.25 | 0 | | 0.25 | 0 | |
| 79 | 0.25 | 0 | | 0.25 | 0 | |
| 00 | 0.25 | 0 | | 0.25 | 0 | |
| 01 | 0.25 | 0 | | 0.25 | 0 | |
| 02 | 0.25 | 0 | | 0.25 | 0 | |
| 03 04 | 0.25 | 0 | | 0.25 | 0 | |
| 84 95 | 0.25 | 0 | | 0.25 | 0 | |
| 00 | 0.25 | 0 | | 0.25 | 0 | |
| 80 | 0.25 | 0 | | 0.25 | 0 | |
| 87 | 0.25 | 0 | | 0.25 | 0 | |
| 80 | 0.25 | 0 | | 0.25 | 0 | |
| 89 | 0.25 | 0 | | 0.25 | 0 | |
| 90 | 0.25 | 0 | | 0.25 | 0 | |
| 91 | 0.25 | 0 | | 0.25 | 0 | |
| 92 | 0.25 | 0 | | 0.25 | 0 | |
| 93 | 0.25 | 0 | | 0.25 | 0 | |
| 94 | 0.25 | 0 | | 0.25 | 0 | |
| 95 | 0.25 | 0 | | 0.25 | 0 | |
| 96 | 0.25 | 0 | | 0.25 | 0 | |
| 9/ | 0.25 | 0 | | 0.25 | 0 | |
| 98 | 0.25 | 0 | | 0.25 | U | |
| 99 | 0.25 | 0 | | 0.25 | Ű | |
| 100 | 0.25 | 0 | | 0.25 | 0 | |
| 101 | 0.25 | 0 | | 0.25 | 0 | |
| 102 | 0.25 | 0 | | 0.25 | 0 | |
| 103 | 0.25 | 0 | | 0.25 | 0 | |
| 104 | 0.25 | 0 | | 0.25 | 0 | |

| | AB AC AD AE | | AF | AG | |
|-----|--------------------------------|----------------------------------|-------------|---------------|--|
| 1 | MTBE (Methyl tert-butyl ether) | d_MTBE (Methyl tert-butyl ether) | Naphthalene | d_Naphthalene | |
| 105 | 0.25 | 0 | 0.25 | 0 | |
| 106 | 0.25 | 0 | 0.25 | 0 | |
| 107 | 0.25 | 0 | 0.25 | 0 | |
| 108 | 0.25 | 0 | 0.25 | 0 | |
| 109 | 0.25 | 0 | 0.25 | 0 | |
| 110 | 0.25 | 0 | 0.25 | 0 | |
| 111 | 0.25 | 0 | 0.25 | 0 | |
| 112 | 0.25 | 0 | 0.25 | 0 | |
| 113 | 0.25 | 0 | 0.25 | 0 | |
| 114 | 0.25 | 0 | 0.25 | 0 | |
| 115 | 0.25 | 0 | 0.25 | 0 | |
| 116 | 0.25 | 0 | 0.25 | 0 | |
| 117 | 0.25 | 0 | 0.25 | 0 | |
| 118 | 0.25 | 0 | 0.25 | 0 | |
| 119 | 0.25 | 0 | 0.25 | 0 | |
| 120 | 0.25 | 0 | 0.25 | 0 | |
| 121 | 0.25 | 0 | 0.25 | 0 | |
| 122 | 0.25 | 0 | 0.25 | 0 | |
| 123 | 0.25 | 0 | 0.25 | 0 | |
| 124 | 0.25 | 0 | 0.25 | 0 | |
| 125 | 0.25 | 0 | 0.25 | 0 | |
| 126 | 0.25 | 0 | 0.25 | 0 | |
| 127 | 0.25 | 0 | 0.25 | 0 | |
| 128 | 0.25 | 0 | 0.25 | 0 | |
| 129 | 0.25 | 0 | 0.25 | 0 | |
| 130 | 0.25 | 0 | 0.25 | 0 | |
| 131 | 0.25 | 0 | 0.25 | 0 | |
| 132 | 0.25 | 0 | 0.25 | 0 | |
| 133 | 0.25 | 0 | 0.25 | 0 | |
| 134 | 0.25 | 0 | 0.25 | 0 | |
| 135 | 0.25 | 0 | 0.25 | 0 | |
| 136 | 0.25 | 0 | 0.25 | 0 | |
| 137 | 0.25 | 0 | 0.25 | 0 | |
| 138 | 0.25 | 0 | 0.25 | 0 | |
| 139 | 0.25 | 0 | 0.25 | 0 | |
| 140 | 0.25 | 0 | 0.25 | 0 | |
| 141 | 0.25 | 0 | 0.25 | 0 | |
| 142 | 0.25 | 0 | 0.25 | 0 | |
| 143 | 0.25 | 0 | 0.25 | 0 | |
| 144 | 0.25 | 0 | 0.25 | 0 | |
| 145 | 0.25 | 0 | 0.25 | 0 | |
| 146 | 0.25 | 0 | 0.25 | 0 | |
| 147 | 0.25 | 0 | 0.25 | 0 | |
| 148 | 0.25 | 0 | 0.25 | 0 | |
| 149 | 0.25 | 0 | 0.25 | 0 | |
| 150 | 0.25 | 0 | 0.25 | 0 | |
| 151 | 0.25 | 0 | 0.25 | 0 | |
| 152 | 0.25 | 0 | 0.25 | 0 | |
| 153 | 0.25 | 0 | 0.25 | 0 | |
| 154 | 0.25 | 0 | 0.25 | 0 | |
| 155 | 0.25 | 0 | 0.25 | 0 | |
| 156 | 0.25 | 0 | 0.25 | 0 | |

| | AB | AC | AD | AE | AF | AG |
|-----|--------------------------------|----------------------------------|----|-------------|---------------|----|
| 1 | MTBE (Methyl tert-butyl ether) | d_MTBE (Methyl tert-butyl ether) | | Naphthalene | d_Naphthalene | |
| 157 | 0.25 | 0 | | 0.25 | 0 | |
| 158 | 0.25 | 0 | | 0.25 | 0 | |
| 159 | 0.25 | 0 | | 0.25 | 0 | |
| 160 | 0.25 | 0 | | 0.25 | 0 | |
| 161 | 0.25 | 0 | | 0.25 | 0 | |
| 162 | 0.25 | 0 | | 0.25 | 0 | |
| 163 | 0.25 | 0 | | 0.25 | 0 | |
| 164 | 0.25 | 0 | | 0.25 | 0 | |
| 165 | 0.25 | 0 | | 0.25 | 0 | |
| 166 | 0.25 | 0 | | 0.25 | 0 | |
| 167 | 0.25 | 0 | | 0.25 | 0 | |
| 168 | 0.25 | 0 | | 0.25 | 0 | |
| 169 | 0.25 | 0 | | 0.25 | 0 | |
| 170 | 0.25 | 0 | | 0.25 | 0 | |
| 171 | 0.25 | 0 | | 0.25 | 0 | |
| 172 | 0.25 | 0 | | 0.25 | 0 | |
| 173 | 0.25 | 0 | | 0.25 | 0 | |
| 174 | 0.25 | 0 | | 0.25 | 0 | |
| 175 | 0.25 | 0 | | 0.25 | 0 | |
| 176 | 0.25 | 0 | | 0.25 | 0 | |
| 177 | 0.25 | 0 | | 0.25 | 0 | |
| 178 | 0.25 | 0 | | 0.25 | 0 | |
| 179 | 0.25 | 0 | | 0.25 | 0 | |
| 180 | 0.25 | 0 | | 0.25 | 0 | |
| 181 | 0.25 | 0 | | 0.25 | 0 | |
| 182 | 0.25 | 0 | | 0.25 | 0 | |
| 183 | 0.25 | 0 | | 0.25 | 0 | |
| 184 | 0.25 | 0 | | 0.25 | 0 | |
| 185 | 0.25 | 0 | | 0.25 | 0 | |
| 186 | 0.25 | 0 | | 0.25 | 0 | |
| 187 | 0.25 | 0 | | 0.25 | 0 | |
| 188 | 0.25 | 0 | | 0.25 | 0 | |
| 189 | 0.25 | 0 | | 0.25 | 0 | |
| 190 | 0.25 | 0 | | 0.25 | 0 | |
| 191 | 0.25 | 0 | | 0.25 | 0 | |
| 192 | 0.25 | 0 | | 0.25 | 0 | |
| 193 | 0.25 | 0 | | 0.25 | 0 | |
| 194 | 0.25 | 0 | | 0.25 | 0 | |
| 195 | 0.25 | 0 | | 0.25 | 0 | |
| 196 | 0.25 | 0 | | 0.25 | 0 | |
| 197 | 0.25 | 0 | | 0.25 | 0 | |
| 198 | 0.25 | 0 | | 0.25 | 0 | |

| | AH | AI | AJ | AK | AL |
|----|---------|-----------|----|-----------------|-------------------|
| 1 | Toluene | d_Toluene | | Xylenes (total) | d_Xylenes (total) |
| 2 | 2880 | 1 | | 537 | 1 |
| 3 | 2860 | 1 | T | 534 | 1 |
| 4 | 561 | 1 | | 132 | 1 |
| 5 | 560 | 1 | | 95.4 | 1 |
| 6 | 1.25 | 0 | T | 16.4 | 1 |
| 7 | 0.5 | 0 | T | 3.75 | 0 |
| 8 | 0.5 | 0 | | 1.66 | 0 |
| 9 | 0.5 | 0 | | 1.5 | 0 |
| 10 | 0.5 | 0 | | 1.5 | 0 |
| 11 | 0.5 | 0 | | 1.5 | 0 |
| 12 | 0.5 | 0 | | 1.5 | 0 |
| 13 | 0.5 | 0 | | 1.5 | 0 |
| 14 | 0.5 | 0 | 1 | 1.5 | 0 |
| 15 | 0.5 | 0 | | 1.5 | 0 |
| 16 | 0.5 | 0 | 1 | 1.5 | 0 |
| 17 | 0.5 | 0 | | 1.5 | 0 |
| 18 | 0.5 | 0 | | 1.5 | 0 |
| 19 | 0.5 | 0 | 1 | 1.5 | 0 |
| 20 | 0.5 | 0 | + | 1.5 | 0 |
| 21 | 0.5 | 0 | + | 1.5 | 0 |
| 22 | 0.5 | 0 | + | 1.5 | 0 |
| 23 | 0.5 | 0 | + | 1.5 | 0 |
| 24 | 0.5 | 0 | | 1.5 | 0 |
| 25 | 0.5 | 0 | + | 1.5 | 0 |
| 26 | 0.5 | 0 | | 1.5 | 0 |
| 27 | 0.5 | 0 | | 1.5 | 0 |
| 28 | 0.5 | 0 | + | 1.5 | 0 |
| 29 | 0.5 | 0 | + | 1.5 | 0 |
| 30 | 0.5 | 0 | + | 1.5 | 0 |
| 31 | 0.5 | 0 | | 1.5 | 0 |
| 32 | 0.5 | 0 | - | 1.5 | 0 |
| 33 | 0.5 | 0 | - | 1.5 | 0 |
| 34 | 0.375 | 0 | | 1.5 | 0 |
| 35 | 0.308 | 1 | | 0.75 | 0 |
| 36 | 0.25 | 0 | + | 0.75 | 0 |
| 37 | 0.25 | 0 | 1 | 0.75 | 0 |
| 38 | 0.25 | 0 | | 0.75 | 0 |
| 39 | 0.25 | 0 | + | 0.75 | 0 |
| 40 | 0.25 | 0 | 1 | 0.75 | 0 |
| 41 | 0.25 | 0 | + | 0.75 | 0 |
| 42 | 0.25 | 0 | | 0.75 | 0 |
| 43 | 0.25 | 0 | + | 0.75 | 0 |
| 44 | 0.25 | 0 | + | 0.75 | 0 |
| 45 | 0.25 | 0 | + | 0.75 | 0 |
| 46 | 0.25 | 0 | + | 0.75 | 0 |
| 40 | 0.25 | 0 | | 0.75 | 0 |
| 47 | 0.25 | 0 | | 0.75 | 0 |
| 40 | 0.25 | 0 | + | 0.75 | 0 |
| 50 | 0.25 | 0 | + | 0.75 | 0 |
| 50 | 0.25 | 0 | + | 0.75 | 0 |
| 51 | 0.25 | 0 | | 0.75 | 0 |
| 52 | 0.25 | 0 | | 0.75 | 0 |

| | AH | Al | AJ | AK | AL |
|-----------|---------|-----------|----|-----------------|-------------------|
| 1 | Toluene | d_Toluene | | Xylenes (total) | d_Xylenes (total) |
| 53 | 0.25 | 0 | | 0.75 | 0 |
| 54 | 0.25 | 0 | | 0.75 | 0 |
| 55 | 0.25 | 0 | | 0.75 | 0 |
| 56 | 0.25 | 0 | | 0.75 | 0 |
| 57 | 0.25 | 0 | | 0.75 | 0 |
| 58 | 0.25 | 0 | | 0.75 | 0 |
| 59 | 0.25 | 0 | | 0.75 | 0 |
| 60 | 0.25 | 0 | | 0.75 | 0 |
| 61 | 0.25 | 0 | | 0.75 | 0 |
| 62 | 0.25 | 0 | | 0.75 | 0 |
| 63 | 0.25 | 0 | | 0.75 | 0 |
| 64 | 0.25 | 0 | | 0.75 | 0 |
| 65 | 0.25 | 0 | | 0.75 | 0 |
| 66 | 0.25 | 0 | | 0.75 | 0 |
| 67 | 0.25 | 0 | | 0.75 | 0 |
| 68 | 0.25 | 0 | | 0.75 | 0 |
| 69 | 0.25 | 0 | | 0.75 | 0 |
| 70 | 0.25 | 0 | | 0.75 | 0 |
| 71 | 0.25 | 0 | | 0.75 | 0 |
| 72 | 0.25 | 0 | | 0.75 | 0 |
| 73 | 0.25 | 0 | | 0.75 | 0 |
| 74 | 0.25 | 0 | | 0.75 | 0 |
| 75 | 0.25 | 0 | | 0.75 | 0 |
| 76 | 0.25 | 0 | | 0.75 | 0 |
| 77 | 0.25 | 0 | | 0.75 | 0 |
| 78 | 0.25 | 0 | | 0.75 | 0 |
| 79 | 0.25 | 0 | | 0.75 | 0 |
| 80 | 0.25 | 0 | | 0.75 | 0 |
| 81 | 0.25 | 0 | | 0.75 | 0 |
| 82 | 0.25 | 0 | | 0.75 | 0 |
| 83 | 0.25 | 0 | | 0.75 | 0 |
| 84 | 0.25 | 0 | | 0.75 | 0 |
| 85 | 0.25 | 0 | | 0.75 | 0 |
| 86 | 0.25 | 0 | | 0.75 | 0 |
| 87 | 0.25 | 0 | | 0.75 | 0 |
| 88 | 0.25 | 0 | | 0.75 | 0 |
| 89 | 0.25 | 0 | | 0.75 | 0 |
| 90 | 0.25 | Ű | | 0.75 | U |
| 91 | 0.25 | 0 | | 0.75 | U |
| 92 | 0.25 | 0 | | 0.75 | U |
| 93 | 0.25 | 0 | | 0.75 | 0 |
| 94 | 0.25 | U | | 0.75 | U |
| 95 | 0.25 | 0 | | 0.75 | 0 |
| 96 | 0.25 | 0 | | 0.75 | U |
| 9/ | 0.25 | 0 | | 0.75 | U |
| 98 | 0.25 | 0 | | 0.75 | 0 |
| 99 100 | 0.20 | 0 | | 0.75 | 0 |
| 100 | 0.25 | 0 | | 0.75 | 0 |
| 101 | 0.25 | 0 | | 0.75 | 0 |
| 102 | 0.25 | 0 | | 0.75 | 0 |
| 104 | 0.25 | 0 | | 0.75 | 0 |

| | AH | AI | AJ | AK | AL |
|-----|---------|-----------|----|-----------------|-------------------|
| 1 | Toluene | d_Toluene | | Xylenes (total) | d_Xylenes (total) |
| 105 | 0.25 | 0 | | 0.75 | 0 |
| 106 | 0.25 | 0 | | 0.75 | 0 |
| 107 | 0.25 | 0 | | 0.75 | 0 |
| 108 | 0.25 | 0 | | 0.75 | 0 |
| 109 | 0.25 | 0 | | 0.75 | 0 |
| 110 | 0.25 | 0 | | 0.75 | 0 |
| 111 | 0.25 | 0 | | 0.75 | 0 |
| 112 | 0.25 | 0 | | 0.75 | 0 |
| 113 | 0.25 | 0 | | 0.75 | 0 |
| 114 | 0.25 | 0 | | 0.75 | 0 |
| 115 | 0.25 | 0 | | 0.75 | 0 |
| 116 | 0.25 | 0 | | 0.75 | 0 |
| 117 | 0.25 | 0 | | 0.75 | 0 |
| 118 | 0.25 | 0 | | 0.75 | 0 |
| 119 | 0.25 | 0 | | 0.75 | 0 |
| 120 | 0.25 | 0 | | 0.75 | 0 |
| 121 | 0.25 | 0 | | 0.75 | 0 |
| 122 | 0.25 | 0 | | 0.75 | 0 |
| 123 | 0.25 | 0 | | 0.75 | 0 |
| 124 | 0.25 | 0 | | 0.75 | 0 |
| 125 | 0.25 | 0 | | 0.75 | 0 |
| 126 | 0.25 | 0 | | 0.75 | 0 |
| 127 | 0.25 | 0 | | 0.75 | 0 |
| 128 | 0.25 | 0 | | 0.75 | 0 |
| 129 | 0.25 | 0 | | 0.75 | 0 |
| 130 | 0.25 | 0 | | 0.75 | 0 |
| 131 | 0.25 | 0 | | 0.75 | 0 |
| 132 | 0.25 | 0 | | 0.75 | 0 |
| 133 | 0.25 | 0 | | 0.75 | 0 |
| 134 | 0.25 | 0 | | 0.75 | 0 |
| 135 | 0.25 | 0 | | 0.75 | 0 |
| 136 | 0.25 | 0 | | 0.75 | 0 |
| 137 | 0.25 | 0 | | 0.75 | 0 |
| 138 | 0.25 | 0 | | 0.75 | 0 |
| 139 | 0.25 | 0 | | 0.75 | 0 |
| 140 | 0.25 | 0 | | 0.75 | 0 |
| 141 | 0.25 | 0 | | 0.75 | 0 |
| 142 | 0.25 | 0 | | 0.75 | 0 |
| 143 | 0.25 | 0 | | 0.75 | U |
| 144 | 0.25 | 0 | | 0.75 | 0 |
| 145 | 0.25 | 0 | | 0.75 | 0 |
| 146 | 0.25 | 0 | | 0.75 | 0 |
| 14/ | 0.25 | 0 | | 0.75 | 0 |
| 148 | 0.25 | 0 | | 0.75 | U |
| 149 | 0.25 | 0 | | 0.75 | 0 |
| 150 | 0.20 | 0 | | 0.75 | 0 |
| 151 | 0.25 | 0 | | 0.75 | 0 |
| 152 | 0.25 | 0 | | 0.75 | 0 |
| 154 | 0.25 | 0 | | 0.75 | 0 |
| 155 | 0.25 | 0 | - | 0.75 | 0 |
| 156 | 0.25 | 0 | | 0.75 | 0 |

| | AH | AI | AJ | AK | AL |
|-----|---------|-----------|----|-----------------|-------------------|
| 1 | Toluene | d_Toluene | | Xylenes (total) | d_Xylenes (total) |
| 157 | 0.25 | 0 | | 0.75 | 0 |
| 158 | 0.25 | 0 | | 0.75 | 0 |
| 159 | 0.25 | 0 | | 0.75 | 0 |
| 160 | 0.25 | 0 | | 0.75 | 0 |
| 161 | 0.25 | 0 | | 0.75 | 0 |
| 162 | 0.25 | 0 | | 0.75 | 0 |
| 163 | 0.25 | 0 | | 0.75 | 0 |
| 164 | 0.25 | 0 | | 0.75 | 0 |
| 165 | 0.25 | 0 | | 0.75 | 0 |
| 166 | 0.25 | 0 | | 0.75 | 0 |
| 167 | 0.25 | 0 | | 0.75 | 0 |
| 168 | 0.25 | 0 | | 0.75 | 0 |
| 169 | 0.25 | 0 | | 0.75 | 0 |
| 170 | 0.25 | 0 | | 0.75 | 0 |
| 171 | 0.25 | 0 | | 0.75 | 0 |
| 172 | 0.25 | 0 | | 0.75 | 0 |
| 173 | 0.25 | 0 | | 0.75 | 0 |
| 174 | 0.25 | 0 | | 0.75 | 0 |
| 175 | 0.25 | 0 | | 0.75 | 0 |
| 176 | 0.25 | 0 | | 0.75 | 0 |
| 177 | 0.25 | 0 | | 0.75 | 0 |
| 178 | 0.25 | 0 | | 0.75 | 0 |
| 179 | 0.25 | 0 | | 0.75 | 0 |
| 180 | 0.25 | 0 | | 0.75 | 0 |
| 181 | 0.25 | 0 | | 0.75 | 0 |
| 182 | 0.25 | 0 | | 0.75 | 0 |
| 183 | 0.25 | 0 | | 0.75 | 0 |
| 184 | 0.25 | 0 | | 0.75 | 0 |
| 185 | 0.25 | 0 | | 0.75 | 0 |
| 186 | 0.25 | 0 | | 0.75 | 0 |
| 187 | 0.25 | 0 | | 0.75 | 0 |
| 188 | 0.25 | 0 | | 0.75 | 0 |
| 189 | 0.25 | 0 | | 0.75 | 0 |
| 190 | 0.25 | 0 | | 0.75 | 0 |
| 191 | 0.25 | 0 | | 0.75 | 0 |
| 192 | 0.25 | 0 | | 0.75 | 0 |
| 193 | 0.25 | 0 | | 0.75 | 0 |
| 194 | 0.25 | 0 | | 0.75 | 0 |
| 195 | 0.25 | 0 | | 0.75 | 0 |
| 196 | 0.25 | 0 | | 0.75 | 0 |
| 197 | 0.25 | 0 | | 0.75 | 0 |
| 198 | 0.25 | 0 | | 0.75 | 0 |

Attachment 2 (Continued)

Groundwater Samples from Q3 and Q4 2015, Off-Base (Output)

| — | | | E | G | Ц | | 1 | K | 1 |
|----------|--------------------------------|-------------------------------|-------------|-------------------|---------------|-------------|--------------|---------------|-------------------|
| <u> </u> | АВС | | | G Coto usith N | | | J | n | L |
| | | OCL Statistic | | | NOII-Delec | ເຮ | | | |
| 2 | | | | | | | | | |
| 3 | User Selected Optio | ns | | | | | | | |
| 4 | Date/Time of Computation | ProUCL 5.16/20/2017 9: | 15:37 AM | | | | | | |
| 5 | From File | WorkSheet.xls | | | | | | | |
| 6 | Full Precision | OFF | | | | | | | |
| 7 | Confidence Coefficien | t 95% | | | | | | | |
| 8 | Number of Bootstrap Operations | 3 2000 | | | | | | | |
| q | | | | | | | | | |
| 10 | 1 2 4-Trimethylbenzene | | | | | | | | |
| 11 | | | | | | | | | |
| 11 | | | O an anal C | | | | | | - |
| 12 | | | | | | | <u></u> | | |
| 13 | | tal Number of Observations | 197 | | | Number of | Distinct Of | servations | 9 |
| 14 | | Number of Detects | 6 | | | N | imber of N | on-Detects | 191 |
| 15 | | Number of Distinct Detects | 6 | | | Number of | Distinct N | on-Detects | 3 |
| 16 | | Minimum Detect | 1.007 | | | | Minimum N | Non-Detect | 0.25 |
| 17 | | Maximum Detect | 117 | | | I | Maximum N | Non-Detect | 1.25 |
| 18 | | Variance Detects | 3065 | | | | Percent N | on-Detects | 96.95% |
| 19 | | Mean Detects | 42.77 | | | | S | SD Detects | 55.36 |
| 20 | | Median Detects | 11.32 | | | | (| CV Detects | 1.294 |
| 21 | | Skewness Detects | 0.949 | | | | Kurtos | sis Detects | -1.845 |
| 22 | | Mean of Logged Detects | 2 649 | | | 9 | SD of Logg | ed Detects | 1 843 |
| 22 | | | 2.010 | | | | 55 0. 2099 | | |
| 23 | | Normal | COF Teet | on Detect | e Only | | | | |
| 24 | | Shanira Wilk Tast Statistic | 0 716 | | 5 Only | Shani | | E Toot | |
| 25 | E0/ | Shapiro Wilk Critical Value | 0.710 | | Detected | Dete Net N | o wiik GO | VF Test | |
| 26 | 5% | Snapiro Wilk Critical Value | 0.788 | | Detected | | iormal at 5 | % Significa | nce Level |
| 27 | | Lilliefors Test Statistic | 0.368 | | | Lillie | otors GOF | lest | |
| 28 | | 5% Lilliefors Critical Value | 0.325 | | Detected | Data Not N | lormal at 5 | % Significa | nce Level |
| 29 | | Detected Data N | lot Normal | at 5% Sig | nificance L | .evel | | | |
| 30 | | | | | | | | | |
| 31 | Kaplan- | Meier (KM) Statistics using | Normal Cr | itical Value | es and othe | er Nonpara | metric UC | Ls | |
| 32 | | KM Mean | 1.545 | | | KM St | andard Err | or of Mean | 0.894 |
| 33 | | KM SD | 11.45 | | | | 95% KM (| (BCA) UCL | 3.195 |
| 34 | | 95% KM (t) UCL | 3.022 | | 95% | 6 KM (Perc | entile Boot | strap) UCL | 3.197 |
| 35 | | 95% KM (z) UCL | 3.015 | | | . 95% | KM Boots | strap t UCL | 10.89 |
| 26 | | 90% KM Chebyshev LICI | 4 227 | | | 95% | KM Cheb | vshev UCI | 5 442 |
| 27 | | 97.5% KM Chebyshev UCL | 7 128 | | | 90% | KM Cheb | | 10.44 |
| 37 | | | 7.120 | | | 557 | | yanev ool | 10.44 |
| 38 | | Commo COE To | ata an Dai | acted Obe | onvotione | Only | | | |
| 39 | | | | | ervauoris | Anderes | n Darlin a (| | |
| 40 | | A-D Test Statistic | 0.467 | | | Anderso | n-Daning (| JUF Test | |
| 41 | | 5% A-D Critical Value | 0.732 | Detect | ted data ap | pear Gamr | na Distribu | ted at 5% S | ignificance Level |
| 42 | | K-S Test Statistic | 0.268 | | | Kolmog | orov-Smirr | 10V GOF | |
| 43 | | 5% K-S Critical Value | 0.347 | Detect | ted data ap | pear Gamr | na Distribu | ted at 5% S | ignificance Level |
| 44 | | Detected data appear G | iamma Dis | tributed at | 5% Signifi | icance Lev | el | | |
| 45 | | | | | | | | | |
| 46 | | Gamma St | atistics on | Detected I | Data Only | | | | |
| 47 | | k hat (MLE) | 0.564 | | | k star | (bias corre | ected MLE) | 0.393 |
| 48 | | Theta hat (MLE) | 75.87 | | | Theta star | (bias corre | ected MLE) | 108.8 |
| 49 | | nu hat (MLE) | 6.764 | 1 | | nı | ı star (bias | corrected) | 4.716 |
| 50 | | Mean (detects) | 42.77 | | | | , | , | |
| 51 | | | | I | | | | | - |
| 51 | | Gamma ROS S | atistice ve | ina impute | d Non-Det | ects | | | |
| 52 | GPOS mou | not be used when data act | 126 > 50% | | nany tied o | hearvation | s at multipl | o Di s | |
| 53 | GROS IIIay | not be used when data set | 1as > 50% | | nany ueu o | | s at multipi | | 15.00) |
| 54 | GRUS may not be used | when kstar or detects is sm | an such as | I.U, espe | cially wriel | in une samp | | maii (e.g., < | 10-20) |
| 55 | Fo | r such situations, GROS me | triod may y | riela incorre | ect values | or UCLs an | aBIVS | | |
| 56 | | This is especiall | y true wher | the sampl | le size is si | mall. | | | |
| 57 | For gamma distribut | ed detected data, BTVs and | UCLs may | be compu | ited using g | gamma dist | ribution on | KM estima | tes |
| 58 | | Minimum | 0.01 | | | | | Mean | 1.312 |
| 59 | | Maximum | 117 | | | | | Median | 0.01 |
| 60 | | SD | 11.51 | | | | | CV | 8.77 |
| 61 | | k hat (MLE) | 0.163 | | | k star | (bias corre | ected MLE) | 0.164 |
| 62 | | Theta hat (MLE) | 8.048 | 1 | | Theta star | (bias corre | ected MLE) | 8.004 |
| 63 | | nu hat (MLE) | 64.25 | | | nı | star (bias | corrected) | 64.6 |
| 6/ | auihA | ted Level of Significance (R) | 0.0488 | | | | , | | |
| 65 | Δnnrovimate | Chi Square Value (64.60 m) | 47 11 | - | ۵diu | sted Chi So | uare Value | (64 60 R) | 47 |
| 05 | | | 10 | 05 | | Adjusted | | (0+.00, p) | 1 904 |
| 66 | 95% Gamma Approxir | nate UCL (use when n>=50) | ٥.۱ | 95 | o‰ Gamma | a Aujusted | JUL (USE V | vuen n<50) | 1.804 |

| | A B C D E | F | G H I J K | L |
|---|---|---|--|--|
| 67 | Estimates of Gam | ma Param | eters using KM Estimates | |
| 69 | Mean (KM) | 1.545 | SD (KM) | 11.45 |
| 70 | Variance (KM) | 131.2 | SE of Mean (KM) | 0.894 |
| 71 | k hat (KM) | 0.0182 | k star (KM) | 0.0213 |
| 72 | nu hat (KM) | 7.17 | nu star (KM) theta star (KM) | 8.394 |
| 73 | 80% gamma percentile (KM) | 0.00117 | 90% gamma percentile (KM) | 0.296 |
| 75 | 95% gamma percentile (KM) | 3.93 | 99% gamma percentile (KM) | 42.82 |
| 76 | | | · · · · · · · · · | |
| 77 | Gamma k | Kaplan-Mei | er (KM) Statistics | 2.041 |
| 78 79 | 95% Gamma Approximate KM-UCL (use when n>=50) | 2.965 | 95% Gamma Adjusted KM-UCL (use when n<50) | 4.409 |
| 80 | | | | |
| 81 | Lognormal GOF | Test on De | tected Observations Only | |
| 82 | Shapiro Wilk Test Statistic | 0.925 | Shapiro Wilk GOF Test | |
| 83 84 | Lilliefors Test Statistic | 0.788 | Lilliefors GOF Test | |
| 85 | 5% Lilliefors Critical Value | 0.325 | Detected Data appear Lognormal at 5% Signifi | icance Level |
| 86 | Detected Data appe | ar Lognorr | nal at 5% Significance Level | |
| 87 | | | - In a law make of Mars. Data sta | |
| 88 80 | Lognormal ROS S Mean in Original Scale | 1 317 | Mean in Log Scale | -12.2 |
| 90 | SD in Original Scale | 11.51 | SD in Log Scale | 6.505 |
| 91 | 95% t UCL (assumes normality of ROS data) | 2.672 | 95% Percentile Bootstrap UCL | 2.939 |
| 92 | 95% BCA Bootstrap UCL | 3.594 | 95% Bootstrap t UCL | 14.86 |
| 93 04 | 95% H-UCL (Log ROS) | 53/85/ | | |
| 95 | Statistics using KM estimates on | Logged Da | ata and Assuming Lognormal Distribution | |
| 96 | KM Mean (logged) | -1.263 | KM Geo Mean | 0.283 |
| 97 | KM SD (logged) | 0.753 | 95% Critical H Value (KM-Log) | 1.978 |
| 98 | KM Standard Error of Mean (logged) KM SD (logged) | 0.0588 | 95% H-UCL (KM -Log) 95% Critical H Value (KM-Log) | 1 978 |
| 99 100 | KM Standard Error of Mean (logged) | 0.0588 | | 1.570 |
| 101 | | | | |
| 102 | | DL/2 Sta | tistics | |
| 103 | DL/2 Normal | 1 1 1 2 | DL/2 Log-Transformed | 1 926 |
| 104 | SD in Original Scale | 11.443 | SD in Log Scale | 0.888 |
| 106 | 95% t UCL (Assumes normality) | 2.796 | 95% H-Stat UCL | 0.27 |
| 107 | DI /2 is not a recommanded math | | | |
| 107 | | od, provide | ed for comparisons and historical reasons | |
| 107 | Nonnarametric | od, provide | ed for comparisons and historical reasons | |
| 107 108 109 110 | Nonparametric Detected Data appear G | od, provide c Distributi amma Dis | on Free UCL Statistics | |
| 107 108 109 110 111 | Nonparametric Detected Data appear G | od, provide c Distributi amma Dis | ed for comparisons and historical reasons on Free UCL Statistics rributed at 5% Significance Level | |
| 107 108 109 110 111 112 | Nonparametric Detected Data appear G St | od, provide c Distribution amma Distribution uggested L | ad for comparisons and historical reasons on Free UCL Statistics iributed at 5% Significance Level ICL to Use | |
| 107 108 109 110 111 112 113 114 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL | od, provide c Distributi amma Dis uggested L 4.374 | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level ICL to Use | |
| 107 108 109 110 111 112 113 114 115 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U | od, provide c Distributi amma Dist uggested L 4.374 CL are prov | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level ICL to Use | |
| 107 108 109 110 111 112 113 114 115 116 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based | od, provide c Distributi amma Dis uggested U 4.374 CL are prov upon data | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level ICL to Use //ided to help the user to select the most appropriate 95 size, data distribution, and skewness. | % UCL. |
| 107 108 109 110 111 112 113 114 115 116 117 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results | c Distribution amma Distribution arggested L 4.374 CL are provupon data of the simu | ad for comparisons and historical reasons on Free UCL Statistics influted at 5% Significance Level ICL to Use vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee i for additional insight the user may want to consult a se | % UCL. (2006). |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 | Nonparametric Detected Data appear G Su 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl | od, provide c Distributi amma Dis uggested L 4.374 CL are prov upon data of the simu d data sets | ad for comparisons and historical reasons on Free UCL Statistics iributed at 5% Significance Level ICL to Use ivided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s | % UCL. (2006). tatistician. |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane | c Distributi amma Dis aggested L 4.374 CL are prov upon data of the simu d data sets | ad for comparisons and historical reasons on Free UCL Statistics inbuted at 5% Significance Level ICL to Use vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s | % UCL. (2006). tatistician. |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane | c Distributi amma Distributi aggested L 4.374 CL are pro- upon data of the simu d data sets | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level iCL to Use //ided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s | % UCL. (2006). tatistician. |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane | c Distributi amma Distributi aggested L 4.374 CL are pro- upon data of the simu d data sets General S 197 | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level ICL to Use ICL to Use Idea to help the user to select the most appropriate 95 size, data distribution, and skewness. Iation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations | % UCL. (2006). tatistician. |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Observations Number of Detects | c Distributi amma Dist aggested L 4.374 CL are prov upon data of the simu d data sets General S 197 69 | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level ICL to Use ICL to Use Idea to help the user to select the most appropriate 95 size, data distribution, and skewness. Iation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Interference Instruct Observations Number of Distinct Observations Number of Non-Detects | % UCL. (2006). :tatistician. 116 128 |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Observations Number of Detects Output Detects | c Distributi amma Dist uggested L 4.374 CL are pro- upon data of the simu d data sets General S 197 69 | ad for comparisons and historical reasons on Free UCL Statistics iributed at 5% Significance Level ICL to Use ivided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects | i% UCL. (2006). tatistician. 116 128 47 |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 | Nonparametrik Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Observations Number of Detects Number of Distinct Detects Minimum Detect | c Distributi amma Dis aggested L 4.374 CL are pro- upon data of the simu d data sets General S 197 69 69 60 | ad for comparisons and historical reasons on Free UCL Statistics iributed at 5% Significance Level ICL to Use i/ided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics tatistics Number of Distinct Observations Number of Non-Detects Minimum Non-Detects Minimum Non-Detects | i% UCL. (2006). tatistician. 116 128 47 0.00903 0.00003 |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 127 127 127 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Observations Number of Detects Number of Detects Minimum Detect Maximum Detect | C Distributi amma Distributi aggested L 4.374 CL are provupon data of the simu d data sets 197 69 69 0.011 11.5 4.022 | ad for comparisons and historical reasons on Free UCL Statistics induced at 5% Significance Level iCL to Use idea to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Derrent Non-Detect | i% UCL. (2006). tatistician. 116 128 47 0.00903 0.00985 64 97% |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Observations Number of Detects Number of Detects Minimum Detect Maximum Detects Variance Detects Mean Detects | c Distributi amma Distributi aggested L 4.374 CL are provupon data of the simu d data sets 9 69 69 0.011 11.5 4.083 0.655 | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level iCL to Use idea to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics tatistics Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Maximum Non-Detect Percent Non-Detects SD Detects | i% UCL. (2006). tatistician. 116 128 47 0.00903 0.00985 64.97% 2.021 |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Observations Number of Detects Number of Detects Number of Distinct Detects Maximum Detect Variance Detects Mean Detects | Clare provide Clare provide data sets General S 197 69 69 0.011 11.5 4.083 0.655 0.0877 | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level iCL to Use idea to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics tatistics Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Dercent Non-Detects SD Detects SD Detects CV Detects | i% UCL. (2006). tatistician. 116 128 47 0.00903 0.00985 64.97% 2.021 3.085 |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 | Nonparametric Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Observations Number of Detects Number of Distinct Detects Maximum Detect Variance Detects Mean Detects Skewness Detects Skewness Detects | od, provide c Distributi amma Dis uggested L 4.374 CL are provide upon data of the simu d data sets General S 197 69 0.011 11.5 4.083 0.655 0.0877 4.127 | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level iCL to Use iCL to Use ided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects CV Detects CV Detects Kurtosis Detects | i% UCL. (2006). tatistician. 116 128 47 0.00903 0.00985 64.97% 2.021 3.085 16.8 |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 122 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Detects Number of Detects Number of Detects Minimum Detect Maximum Detect Median Detects Skewness Detects Mean of Logged Detects | od, provide c Distributi amma Dis uggested L 4,374 CL are provide upon data of the simu d data sets General S 197 69 0.011 11.5 4.083 0.655 0.0877 4.127 -2.156 | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level CL to Use CL to Use Cd to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics tatistics Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detect Maximum Non-Detect SD Detects CV Detects CV Detects Kurtosis Detects SD of Logged Detects | 116 (2006). ttatistician. 116 128 47 0.00903 0.00985 64.97% 2.021 3.085 16.8 1.545 |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Detects Number of Detects Number of Detects Number of Distinct Detects Minimum Detect Maximum Detect Variance Detects Mean Detects Skewness Detects Mean of Logged Detects | od, provide c Distributia amma Dis uggested L 4.374 CL are provide upon data of the simu d data sets General S 197 69 0.011 11.5 4.083 0.655 0.0877 4.127 -2.156 GOF Test | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level CL to Use CL to Use CL to Use Cd to help the user to select the most appropriate 95 size, data distribution, and skewness. Iation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Tatistics The second se | 116 128 47 0.00903 0.00985 64.97% 2.021 3.085 16.8 1.545 |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Detects Number of Detects Number of Detects Minimum Detect Maximum Detect Uariance Detects Mean Detects Median Detects Skewness Detects Mean of Logged Detects Mean of Logged Detects Mean of Logged Detects Normal | od, provide c Distributiamma Distanta uggested L 4.374 CL are provide upon data of the simudidate d data sets 9 0.011 11.5 4.083 0.655 0.0877 4.127 -2.156 GOF Test 0.343 | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level CL to Use CL to Use CL to Use Cd to help the user to select the most appropriate 95 size, data distribution, and skewness. Iation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics tatistics tatistics Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detect Number of Distinct Non-Detects SD Detects CV Detects CV Detects SD of Logged Detects Normal GOF Test on Detected Observation | i% UCL. (2006). tatistician. 116 128 47 0.00903 0.00985 64.97% 2.021 3.085 16.8 1.545 |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 | Nonparametrik Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Detects Number of Detects Number of Detects Number of Detects Maximum Detect Maximum Detect Maximum Detects Mean Detects Median Detects Skewness Detects Mean of Logged Detects Mean of Logged Detects Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk Polue | od, provide cod, provide coding coding | tatistics tatistics Number of Distinct Non-Detects Number of Distinct Non-Detects CV Detects CV D | i% UCL. (2006). tatistician. 116 128 47 0.00903 0.00985 64.97% 2.021 3.085 16.8 1.545 ons Only nce Level |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Observations Number of Detects Number of Detects Number of Detects Number of Detects Number of Detects Variance Detects Mean Detects Mean Detects Skewness Detects Mean of Logged Detects Mean of Logged Detects Shapiro Wilk Test Statistic 5% Shapiro Wilk P Value Lilliefors Test Statistic | od, provide cod, provide coding coding | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level CL to Use CL to Use CL to Use Cd to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects SD Detects CV Detects CV Detects SD of Logged Detects on Detects Only Normal GOF Test on Detected Observatio Detected Data Not Normal at 5% Significar Lillefors GOF Test Detected Data Not Normal at 5% Significar | i% UCL. (2006). tatistician. 116 128 47 0.00903 0.00985 64.97% 2.021 3.085 16.8 1.545 16.8 1.545 |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 137 138 139 | Nonparametric Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Observations Number of Detects Number of Detects Number of Detects Maximum Detect Maximum Detects Median Detects Median Detects Median Detects Median Detects Median Detects Median Detects Mean of Logged Detects Mormal Shapiro Wilk Test Statistic 5% Shapiro Wilk P Value Lilliefors Critical Value Detected Data | od, provide c Distributi amma Dis uggested L 4.374 CL are provide upon data of the simu d data sets 99 0.011 11.5 4.083 0.655 0.0877 4.127 -2.156 GOF Test 0.343 0 0.107 ot Normal | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level iCL to Use ided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics tatistics tatistics Number of Distinct Observations Number of Distinct Non-Detects SD Detects CV Detects SD Detects SD of Logged Detects on Detects Only Normal GOF Test on Detected Observati Detected Data Not Normal at 5% Significar Lilliefors GOF Test Detected Data Not Normal at 5% Significar at 5% Significance Level | i% UCL. (2006). tatistician. 116 128 47 0.00903 0.00985 64.97% 2.021 3.085 16.8 1.545 16.8 1.545 |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 137 138 139 140 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Observations Number of Detects Number of Detects Number of Distinct Detects Number of Distinct Detects Maximum Detect Wariance Detects Mean Detects Skewness Detects Median Detects Skewness Detects Mean of Logged Detects Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk P Value Lilliefors Test Statistic | od, provide c Distributi amma Dis uggested L 4.374 CL are provide upon data of the simu d data sets General S 197 69 0.011 11.5 4.083 0.655 0.0877 4.127 -2.156 GOF Test 0.343 0 0.401 0.107 ot Normal | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level iCL to Use idea to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detectt Minimum Non-Detectt Percent Non-Detects SD Detects CV Detects SD of Logged Detects On Detects Only Normal GOF Test on Detected Observatio Detected Data Not Normal at 5% Significar at 5% Significance Level | i% UCL. (2006). tatistician. 116 128 47 0.00903 0.00985 64.97% 2.021 3.085 16.8 1.545 16.8 1.545 ons Only nce Level |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Detects Number of Detects Number of Detects Number of Detects Number of Detects Number of Detects Number of Detects Maximum Detect Maximum Detect Skewness Detects Median Detects Median Detects Median Detects Needian Detects Mean of Logged Detects Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk P Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data N | od, provide c Distributi amma Dis uggested L 4,374 CL are provide upon data of the simu d data sets 9 0 197 69 0.011 11.5 4.083 0.655 0.0877 4.127 -2.156 GOF Test 0.343 0 0.107 ot Normal Cri | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level iCL to Use iCL to Use ided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects SD Detects CV Detects SD of Logged Detects On Detects Only Normal GOF Test on Detected Observati Detected Data Not Normal at 5% Significar at 5% Significance Level | i% UCL. (2006). tatistician. 116 128 47 0.00903 0.00985 64.97% 2.021 3.085 16.8 1.545 |
| 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Detects Number of Detects Number of Detects Number of Detects Number of Detects Number of Detects Number of Detects Maximum Detect Maximum Detect Skewness Detects Mean Detects Skewness Detects Mean of Logged Detects Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk P Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data N | od, provide c Distributi amma Dis uggested L 4,374 CL are provide upon data of the simu d data sets General S 197 69 0.011 11.5 4.083 0.655 0.0877 4.127 -2.156 GOF Test 0.343 0 0.401 0.107 ot Normal Cri 0.235 | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level iCL to Use iCL to Use ided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics tatistics tatistics tatistics Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects SD Detects CV Detects CV Detects CV Detects SD of Logged Detects Detected Data Not Normal at 5% Significance titcal Values and other Nonparametric UCLs KM Standard Error of Mean | i% UCL. (2006). tatistician. 116 128 47 0.00903 0.00985 64.97% 2.021 3.085 16.8 1.545 0015 0015 0015 0015 0015 0015 0015 0 |
| IO7 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Detects Number of Detects Number of Detects Number of Distinct Detects Minimum Detect Maximum Detect Variance Detects Mean Detects Skewness Detects Mean of Logged Detects Mean of Logged Detects Mean of Logged Detects Shapiro Wilk Test Statistic 5% Shapiro Wilk P Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data N Kaplan-Meier (KM) Statistics using KM Mean KM Mean | od, provide c Distributi amma Dis uggested L 4.374 CL are provide upon data of the simu d data sets 9 0.011 11.5 4.083 0.655 0.0877 4.127 -2.156 GOF Test 0.343 0 0.401 0.107 ot Normal Cri 0.235 1.226 0.381 | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level CL to Use CL to Use CL to Use CL to use Cd to help the user to select the most appropriate 95 size, data distribution, and skewness. Iation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Tatistics The second | i% UCL. (2006). itatistician. 116 128 47 0.00903 0.00985 64.97% 2.021 3.085 16.8 1.545 |
| IO7 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Observations Number of Detects Number of Detects Number of Detects Maximum Detect Maximum Detect Variance Detects Mean Detects Median Detects Skewness Detects Median Detects Mean of Logged Detects Mean of Logged Detects Mean of Logged Detects Skewness Detects Mean of Logged Detects Mean of Logged Detects Skewness Detects Mean of Logged Detects Mean of Logged Detects Mean of Logged Detects Skewness Control Value Shapiro Wilk Test Statistic 5% Shapiro Wilk P Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data N Kaplan-Meier (KM) Statistics using KM Mean KM Sa | od, provide c Distributi amma Dis uggested L 4,374 CL are provide upon data of the simu d data sets 9 0.011 11.5 4.083 0.655 0.0877 4.127 -2.156 GOF Test 0.343 0 0.401 0.107 ot Normal Cri 0.235 1.226 0.381 | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level CL to Use CL to Use CL to Use CL to use Cd to help the user to select the most appropriate 95 size, data distribution, and skewness. Iation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Tatistics Tatistics Tatistics The second | i% UCL. (2006). itatistician. 116 128 47 0.00903 0.00985 64.97% 2.021 3.085 16.8 1.545 ons Only nce Level 0.088 0.383 0.385 0.526 |
| IO7 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 144 145 146 | Nonparametric Detected Data appear G St 95% KM Approximate Gamma UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl 1,2-Dibromoethane Total Number of Observations Number of Detects Number of Detects Number of Detects Maximum Detect Maximum Detect Uariance Detects Mean Detects Median Detects Skewness Detects Mean of Logged Detects Mean of Logged Detects Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk P Value Lilliefors Test Statistic 5% Shapiro Wilk P Value Lilliefors Critical Value Detected Data N Kaplan-Meier (KM) Statistics using KM Mean KM SD 95% KM (t) UCL 90% KM (chebyshev UCL | od, provide c Distributi amma Dis uggested L 4,374 CL are provide upon data of the simu d data sets 9 0.011 11.5 4.083 0.655 0.0877 4.127 -2.156 GOF Test 0.343 0 0.401 0.107 ot Normal Cri 0.235 1.226 0.381 0.38 | ad for comparisons and historical reasons on Free UCL Statistics tributed at 5% Significance Level CL to Use CL to Use CL to Use CL to use Cd to help the user to select the most appropriate 95 size, data distribution, and skewness. Iation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Tatistics Tatistics The set of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects SD Detects CV Detects CV Detects CV Detects CV Detects SD of Logged Detects Detected Data Not Normal at 5% Significar LUIIIefors GOF Test Detected Data Not Normal at 5% Significar at 5% Significance Level KM Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Chebyshev UCL | % UCL. (2006). itatistician. 116 128 47 0.00903 0.00985 64.97% 2.021 3.085 16.8 1.545 ons Only nce Level 0.088 0.383 0.385 0.526 0.619 |

| | A | | В | С | D | E | F | G | Н | I | | J | K | L |
|-----|---|-----|------------|----------------|-----------------|---------------|--------------|-------------|-------------|-----------------|---------|------------|---------------|------------------|
| 148 | | | | | - | | | | | | | | | |
| 149 | | | | | Gamr | na GOF Te | sts on Det | ected Obs | ervations | Only | | | | |
| 150 | | | | | A-D Te | est Statistic | 8.044 | | | Ande | rson | -Darling (| GOF Test | |
| 151 | | | | | 5% A-D Cr | itical Value | 0.845 | Dete | cted Data | Not Gan | nma | Distribute | ed at 5% Sig | inificance Level |
| 152 | | | | | K-S Te | est Statistic | 0.254 | | | Kolm | logo | rov-Smirr | nov GOF | |
| 153 | | | | | 5% K-S Cr | itical Value | 0.115 | Dete | cted Data | Not Gan | nma | Distribute | ed at 5% Sig | inificance Level |
| 154 | | | | | Detected Da | ata Not Gar | nma Distri | buted at 5 | % Signific | ance Le | evel | | | |
| 155 | | | | | | <u> </u> | | | | | | | | |
| 156 | | | | | | Gamma Sta | atistics on | Detected [| Data Only | | | | | 0.070 |
| 157 | | | | | | (hat (MLE) | 0.383 | | | K S | star (| bias corre | ected MLE) | 0.376 |
| 158 | | | | | Ineta | | 1./1Z | | | Theta s | star (| DIAS COFFE | ected IVILE) | 1.744 |
| 159 | | | | | nu | | 52.8 | | | | nu | star (blas | corrected) | 51.83 |
| 160 | | | | | Iviea | in (detects) | 0.655 | | | | | | | L |
| 161 | | | | | Com | | atiatiaa uai | na Imputo | d Non Do | ooto | | | | |
| 162 | | | | | Gam | | | | | ecis | iono | ot multipl | | |
| 163 | | 0 | POS mov | GRUS may no | on keter of de | tooto io omo | | | any tieu o | bservat | mpla | | | (15.20) |
| 164 | | e | inos illay | For s | uch situations | | thod may y | < 1.0, espe | | | | | maii (e.y., s | 15-20) |
| 100 | | | | 1013 | This i | | true when | the sampl | | mall | sanu | DIVS | | |
| 167 | | | For dam | ma distributed | detected data | BTVs and | | he compu | ted using | nan. Tamma (| dictri | bution on | KM estima | tes |
| 169 | | | i oi gan | | | Minimum | 0.01 | | teu using (| Jannia | uistri | button on | Mean | 0.236 |
| 160 | | | | | | Maximum | 11.5 | | | | | | Median | 0.01 |
| 170 | | | | | | SD | 1 23 | | | | | | CV | 5.01 |
| 170 | | | | | ŀ | (hat (MLF) | 0.3 | | | ks | star (| bias corre | ected MLE) | 0.298 |
| 172 | | | | | Theta | a hat (MLE) | 0.788 | | | Theta s | star (| bias corre | ected MLE) | 0.791 |
| 173 | | | | | nu | u hat (MLE) | 118 | | | | nu | star (bias | corrected) | 117.5 |
| 174 | | | | Adjusted | Level of Sign | ificance (β) | 0.0488 | | | | - | | | |
| 175 | | | Ap | proximate Chi | Square Value | (117.55, α) | 93.51 | | Adjust | ed Chi S | Squa | re Value | (117.55, β) | 93.36 |
| 176 | | | 95% Gam | ma Approxima | te UCL (use wi | hen n>=50) | 0.297 | 95 | % Gamma | a Adjuste | ed U | CL (use v | vhen n<50) | 0.297 |
| 177 | | | | | | , | | | | | | , | , | |
| 178 | | | | | Estima | ites of Gam | ma Param | eters usin | g KM Esti | mates | | | | |
| 179 | | | | | | Mean (KM) | 0.235 | | - | | | | SD (KM) | 1.226 |
| 180 | | | | | Var | iance (KM) | 1.504 | | | | | SE of | Mean (KM) | 0.088 |
| 181 | | | | | | k hat (KM) | 0.0368 | | | | | | k star (KM) | 0.0396 |
| 182 | | | | | r | nu hat (KM) | 14.5 | | | | | n | u star (KM) | 15.61 |
| 183 | | | | | the | ta hat (KM) | 6.394 | | | | | theta | a star (KM) | 5.938 |
| 184 | | | | 809 | % gamma perc | entile (KM) | 0.0123 | | | 90% | 6 gan | nma perc | entile (KM) | 0.251 |
| 185 | | | | 959 | % gamma perc | entile (KM) | 1.122 | | | 99% | 6 gan | nma perc | entile (KM) | 5.578 |
| 186 | | | | | | | | | | | | | | |
| 187 | | | | | | Gamma k | (aplan-Mei | er (KM) St | tatistics | | | | | |
| 188 | | | A | pproximate Ch | i Square Value | e (15.61, α) | 7.687 | | Adju | sted Chi | i Squ | are Value | e (15.61, β) | 7.646 |
| 189 | | 95% | Gamma A | Approximate K | M-UCL (use wh | hen n>=50) | 0.478 | 95% G | amma Adj | justed K | M-U | CL (use v | vhen n<50) | 0.48 |
| 190 | | | | | | | _ | | | | | | | |
| 191 | | | | | Logno | rmal GOF 1 | est on De | tected Ob | servations | Only | - | | | |
| 192 | | | | Shapiro Wilk A | pproximate Te | est Statistic | 0.906 | | | Sha | apiro | Wilk GO | F Test | |
| 193 | | | | | 5% Shapiro W | /ilk P Value | 1.8401E-5 | [| Detected D | ata Not | Log | normal at | 5% Signific | ance Level |
| 194 | | | | _ | Lilliefors Te | est Statistic | 0.115 | | | L | _illief | ors GOF | Test | |
| 195 | | | | 5 | % Lilliefors Cr | itical Value | 0.107 |] | Detected D | ata Not | Logi | normal at | 5% Signific | ance Level |
| 196 | | | | | Detecte | ed Data Not | Lognorma | ai at 5% Si | gnificance | Level | | | | |
| 197 | | | | | | | | | | | | | | |

| | А | В | С | D | E | F | G | Н | I | J | K | L |
|-----|---------------|--------------|------------------|--------------------|-------------|--------------|--------------|------------|------------------|----------------|-----------------|-----------------|
| 198 | | | | Lognorm | al ROS S | tatistics U | sing Imput | ed Non-D | etects | | | 5 4 4 7 |
| 199 | | | | Mean in Origi | nal Scale | 0.231 | | | | Mean in | Log Scale | -5.147 |
| 200 | | 050/ | | SD in Origi | nal Scale | 1.23 | | | 050/ D- | SD in | Log Scale | 2.571 |
| 201 | | 95% | t UCL (assume | S normality of H | tran LICI | 0.376 | | | 95% Per | OF% Pasts | tstrap UCL | 0.391 |
| 202 | | | | | | 0.451 | | | | 95% DUUIS | | 0.522 |
| 203 | | | | 95% H-UCL (I | LOY RUS) | 0.325 | | | | | | |
| 204 | | | Statistic | e ueina KM oeti | matee on | Logged D | ata and Ae | eumina l | ognormal | Dietribution | | |
| 205 | | | Statistic | KM Mear | | _3.814 | | sunning L | ognorman | KM | Geo Mean | 0.0221 |
| 200 | | | | KM SC | | 1 518 | | | 95% Crit | ical H Value | (KM-Log) | 2 682 |
| 207 | | | KM Standa | rd Error of Mear | (logged) | 0.109 | | | 0070 011 | 95% H-UCL | (KM -Log) | 0.0935 |
| 200 | | | | KM SE | (loaaed) | 1.518 | | | 95% Crit | ical H Value | e (KM-Log) | 2.682 |
| 210 | | | KM Standa | rd Error of Mear | (logged) | 0.109 | | | | | - (· ···· =- 3) | |
| 211 | | | | | (00) | | | | | | | |
| 212 | | | | | | DL/2 Sta | tistics | | | | | |
| 213 | | | DL/2 No | rmal | | | | | DL/2 | Log-Transf | ormed | |
| 214 | | | | Mean in Origi | nal Scale | 0.232 | | | | Mean in | Log Scale | -4.237 |
| 215 | | | | SD in Origi | nal Scale | 1.23 | | | | SD in | Log Scale | 1.782 |
| 216 | | | 95% t l | JCL (Assumes r | normality) | 0.377 | | | | 95% H | I-Stat UCL | 0.103 |
| 217 | | | DL/2 is n | ot a recommen | ded meth | od, provide | ed for com | parisons a | and histori | cal reasons | 3 | |
| 218 | | | | | | | | | | | | |
| 219 | | | | Non | parametric | c Distributi | on Free UC | CL Statist | ics | | | |
| 220 | | | | Data do not follo | ow a Disc | ernible Dis | tribution at | 5% Sign | ificance Le | evel | | |
| 221 | | | | | | | | | | | | |
| 222 | | | | | SL | Iggested L | ICL to Use | | | | | |
| 223 | | | 95 | 5% KM (Chebys | hev) UCL | 0.619 | | | | | | |
| 224 | N | -+ 0 | | | | 01 | | | | 4h | | 0/ LIOI |
| 225 | N | ote: Sugges | tions regarding | the selection of | ra 95% U | CL are prov | vided to hel | ip the use | r to select | the most ap | propriate 95 | 5% UCL. |
| 226 | | These record | mendations ar | e based upon th | are based | of the simu | Size, uala | | n, and ske | ingh Maich | le and lee | (2006) |
| 227 | Ном | | ations results w | ill not cover all | Real Work | d data sets | for addition | | at the user | may want to | | (2000). |
| 220 | 110% | ever, simule | niona resulta w | | | u uulu 3013 | | nai maigi | it the user | may want to | | |
| 229 | 1 2-Dichloroe | thane | | | | | | | | | | |
| 231 | ., | | | | | | | | | | | |
| 232 | | | | | | General S | tatistics | | | | | |
| 233 | | | Total | Number of Obs | ervations | 197 | | | Number of | Distinct Ob | servations | 37 |
| 234 | | | | Number o | of Detects | 36 | | | N | umber of N | on-Detects | 161 |
| 235 | | | N | umber of Disting | t Detects | 34 | | | Number of | of Distinct No | on-Detects | 3 |
| 236 | | | | Minimu | Im Detect | 0.295 | | | | Minimum N | Non-Detect | 0.25 |
| 237 | | | | Maximu | Im Detect | 5.45 | | | | Maximum N | Non-Detect | 5 |
| 238 | | | | Varianc | e Detects | 2.003 | | | | Percent No | on-Detects | 81.73% |
| 239 | | | | Mea | n Detects | 1.52 | | | | 5 | SD Detects | 1.415 |
| 240 | | | | Media | n Detects | 0.911 | | | | (| CV Detects | 0.931 |
| 241 | | | | Skewnes | s Detects | 1.654 | | | | Kurtos | sis Detects | 1.881 |
| 242 | | | | Mean of Logge | d Detects | 0.0761 | | | | SD of Logg | ed Detects | 0.813 |
| 243 | | | | | Nerman | 005 7 | D-44- | Orto | | | | |
| 244 | | | | honira Wills Too | Normal | | on Detects | Only | Chan | | ETeet | |
| 245 | | | 50/ 01 | | | 0.759 | | Detector | Snap | | VF IESL | |
| 240 | | | 5% 5 | | t Statistic | 0.935 | | Delected | | | Teet | |
| 247 | | | 5 | % Lilliefors Criti | cal Value | 0.245 | | Detected | LIII Data Not | Normal at 5 | % Significa | |
| 240 | | | 5 | Detector | ed Data N | ot Normal | at 5% Sion | ificance | evel | | orgrinical | |
| 249 | | | | 201001 | | et normal | | | | | | |
| 251 | | | Kaplan-Me | ier (KM) Statist | ics usina | Normal Cri | itical Value | s and oth | er Nondar | ametric UC | Ls | |
| 252 | | | | , , | KM Mean | 0.483 | | | KMS | tandard Err | or of Mean | 0.056 |
| 253 | | | | | KM SD | 0.773 | | | | 95% KM (| BCA) UCL | 0.583 |
| 254 | | | | 95% K | M (t) UCL | 0.575 | | 95% | % KM (Pero | centile Boot | strap) UCL | 0.578 |
| 255 | | | | 95% KN | / (z) UCL | 0.575 | | | 95 | % KM Boots | strap t UCL | 0.605 |
| 256 | | | 9 | 90% KM Chebys | shev UCL | 0.651 | | | 959 | % KM Cheb | yshev UCL | 0.727 |
| 257 | | | 97 | .5% KM Chebys | shev UCL | 0.832 | | | 999 | % KM Cheb | yshev UCL | 1.04 |
| 258 | | | | | | | | | | | | |
| 259 | | | | Gamma | a GOF Te | sts on Det | ected Obs | ervations | Only | | | |
| 260 | | | | A-D Tes | t Statistic | 1.229 | | | Anderso | on-Darling (| GOF Test | |
| 261 | | | | 5% A-D Criti | cal Value | 0.765 | Detec | cted Data | Not Gamm | a Distribute | ed at 5% Sig | nificance Level |
| 262 | | | | K-S Tes | t Statistic | 0.162 | | | Kolmog | orov-Smirr | nov GOF | |
| 263 | | | | 5% K-S Criti | cal Value | 0.149 | Detec | ted Data | Not Gamm | a Distribute | ed at 5% Sig | nificance Level |
| 264 | | | | Detected Dat | a Not Gar | mma Distri | buted at 59 | % Signific | ance Leve | el | | |

| | А | В | С | D | E | F | G | Н | | J | K | L |
|-----|----|------------|----------------|------------------|-----------------|--------------|-------------|--------------|------------|---------------|---------------|---------------|
| 265 | | | | | | | | • | | | | |
| 266 | | | | C | Gamma Sta | atistics on | Detected I | Data Only | | | | |
| 267 | | | | k | hat (MLE) | 1.607 | | | k star | r (bias corre | ected MLE) | 1.492 |
| 268 | | | | Theta | hat (MLE) | 0.945 | | | Theta star | r (bias corre | ected MLE) | 1.018 |
| 269 | | | | nu | hat (MLE) | 115.7 | | | n | u star (bias | corrected) | 107.4 |
| 270 | | | | Mea | n (detects) | 1.52 | | | | | | |
| 271 | | | | | | | | | | | | |
| 272 | | | | Gamn | na ROS St | atistics usi | ing Impute | d Non-Det | ects | | | |
| 273 | | | GROS may no | t be used when | n data set h | nas > 50% | NDs with n | nany tied o | bservation | is at multipl | e DLs | 45.00 |
| 274 | | GROS may | not be used wh | hen kstar of det | ects is sma | all such as | <1.0, espe | cially wher | n the samp | | mall (e.g., < | :15-20) |
| 275 | | | For s | uch situations, | GRUS me | thod may y | the compl | ect values (| of UCLS al | nd BTVS | | |
| 2/6 | | For gon | ma distributed | | BTVc and | | he compu | tod uping o | nan. | tribution on | KM octimo | too |
| 277 | | FUI yali | | delected data, | Minimum | | be compu | teu using g | jamma uis | | Mean | 0.286 |
| 270 | | | - | | Maximum | 5 45 | | | | | Median | 0.01 |
| 280 | | | | | SD | 0.836 | | | | | CV | 2.926 |
| 281 | | | | k | hat (MLE) | 0.279 | | | k sta | r (bias corre | ected MLE) | 0.278 |
| 282 | | | | Theta | hat (MLE) | 1.023 | | | Theta star | r (bias corre | ected MLE) | 1.026 |
| 283 | | | | nu | hat (MLE) | 110.1 | | | n | u star (bias | corrected) | 109.7 |
| 284 | | | Adjusted | I Level of Signi | ficance (β) | 0.0488 | | | | | | |
| 285 | | Ap | proximate Chi | Square Value (| (109.72, α) | 86.54 | | Adjust | ed Chi Sq | uare Value | (109.72, β) | 86.39 |
| 286 | | 95% Gam | ma Approximat | e UCL (use wh | ien n>=50) | 0.362 | 95 | 5% Gamma | Adjusted | UCL (use v | vhen n<50) | 0.363 |
| 287 | | | | | | | | | | | | |
| 288 | | | | Estimat | tes of Gam | ma Param | eters usin | g KM Estir | nates | | 00 ((0.0 | 0.770 |
| 289 | | | | | Mean (KM) | 0.483 | | | | 05 -4 | SD (KM) | 0.773 |
| 290 | | | | vari | ance (KNI) | 0.598 | | | | SEOT | k eter (KM) | 0.050 |
| 291 | | | | n | K Hat (KM) | 0.39 | | | | | K Star (KIVI) | 152 7 |
| 292 | | | | thet | a hat (KM) | 1 238 | | | | thet | a star (KM) | 1 246 |
| 293 | | | 80% | 6 gamma perce | entile (KM) | 0.776 | | | 90% a | amma perc | entile (KM) | 1.372 |
| 295 | | | 95% | 6 gamma perce | entile (KM) | 2.029 | | | 99% g | amma perc | entile (KM) | 3.686 |
| 296 | | | | <u> </u> | () | | | | | | () | |
| 297 | | | | | Gamma k | Kaplan-Mei | ier (KM) Si | tatistics | | | | |
| 298 | | Ap | proximate Chi | Square Value (| (152.69, α) | 125.1 | | Adjust | ed Chi Sq | uare Value | (152.69, β) | 124.9 |
| 299 | 95 | 5% Gamma / | Approximate KM | M-UCL (use wh | ien n>=50) | 0.589 | 95% G | amma Adj | usted KM- | UCL (use v | vhen n<50) | 0.59 |
| 300 | | | | | | | | | | | | |
| 301 | | | | Lognor | mal GOF | Test on De | tected Ob | servations | Only | | | |
| 302 | | | S | hapiro Wilk Te | st Statistic | 0.945 | | | Shapi | iro Wilk GC | F Test | <u> </u> |
| 303 | | | 5% 5 | hapiro Wilk Cri | tical value | 0.935 | De | etected Dat | a appear i | Lognormal a | at 5% Signi | licance Level |
| 304 | | | | % Lilliefors Cri | tical Value | 0.112 | | atected Dat | annear l | | at 5% Signi | ficance Level |
| 305 | | | | Detected | Data anne | ar Lognor | nal at 5% | Significand | e Level | Lognorman | at 576 Signi | |
| 307 | | | | 20100104 | Data appo | | | g | | | | |
| 308 | | | | Lognor | mal ROS S | statistics U | sing Imput | ted Non-De | etects | | | |
| 309 | | | | Mean in Orig | ginal Scale | 0.352 | | | | Mean in | Log Scale | -2.503 |
| 310 | | | | SD in Oriç | ginal Scale | 0.819 | | | | SD in | Log Scale | 1.763 |
| 311 | | 95% | t UCL (assume | es normality of | ROS data) | 0.449 | | | 95% Per | centile Boo | tstrap UCL | 0.453 |
| 312 | | | | 95% BCA Boot | tstrap UCL | 0.47 | | | | 95% Boots | strap t UCL | 0.482 |
| 313 | | | | 95% H-UCL | (Log ROS) | 0.562 | | | | | | |
| 314 | | | 01-11-11- | | | | | | | | | |
| 315 | | | Statistic | s using KM es | timates on | | ata and As | suming Lo | ignormai i | Distribution | Cao Maan | 0.227 |
| 316 | | | | | D (logged) | -1.110 | | | 05% Crit | ical H Value | | 1.01/ |
| 317 | | | KM Standa | rd Error of Mea | n (logged) | 0.002 | | | 33 % CIII | | | 0.446 |
| 310 | | | | KM S | D (logged) | 0.662 | | | 95% Crit | ical H Value | e (KM-Log) | 1.914 |
| 320 | | | KM Standa | rd Error of Mea | an (logged) | 0.0479 | | | | | - (3) | |
| 321 | | | | | (*33**7 | | | | | | |] |
| 322 | | | | | | DL/2 Sta | atistics | | | | | |
| 323 | | | DL/2 No | rmal | | | | | DL/2 | Log-Transf | formed | |
| 324 | | | | Mean in Orig | ginal Scale | 0.394 | | | | Mean in | Log Scale | -1.656 |
| 325 | | | | SD in Orig | ginal Scale | 0.819 | | | | SD in | Log Scale | 0.92 |
| 326 | | | 95% t l | JCL (Assumes | normality) | 0.491 | | | | 95% H | H-Stat UCL | 0.335 |
| 327 | | | DL/2 is n | iot a recomme | nded meth | od, provid | ed for com | parisons a | nd histori | cal reasons | ; | |
| 328 | | | | | | | | <u></u> | | | | |
| 329 | | | <u>-</u> | Nor | parametric | c Distributi | on Free U | CL Statistic | CS | | | |
| 330 | | | | vetected Data | appear Log | ynormal Di | stributed a | n 5% Signi | mcance Le | evei | | |
| 331 | | | | | e. | Indested | | | | | | |
| 332 | | | | | SL KM H LICI | | າວ∟ ເບ US€ | 7 | | | | |
| 333 | | | | | | 0.440 | | | | | | i |

| 333 Net: Suggestors regarding the selection of a 59% UCL, are growided to help the user to select the most agromphile 85% UCL. 333 Net: Suggestors regarding the selection of a 59% UCL, are growided to help the user to select the most agromphile 85% UCL. 334 These economechations are based upon the regarding of the substant on taking summarizes in Singh. Marking, and Len (2006) 335 These economechations results with of care at Real Work data size, data distinuit inagit the user nay ward to consult a statistical. 336 Total Multice Care at Real Work data size, data distinuit inagit the user nay ward to consult a statistical. 337 Number of Distinuit December 124 Number of Distinuit December 127 Number of Distinuit December 127 338 Total Multice Care at Number of Distinuit December 123 Number of Distinuit December 123 Number of Distinuit December 123 339 Mean of Distinuit December 123 Provide Care at Distinuit December 123 Distinuit December 123 Distinuit December 123 330 Mean of Lingged Debets 136 December 2016 Other 2015 331 Mean of Lingged Debets 136 December 2016 Other 2015 333 Mean of Lingged Debets 136 December 2016 Other 2015 333 | | А | В | С | D |) | E | F | G | Н | I | J K | | L |
|--|-----|---------------|-------------|----------------|-------------|---------------------|-----------------------------------|---------------|--------------|-----------------------------|----------------------|---------------------------|-------------|----------|
| | 334 | | | | | | | | | | | | | |
| 33 These recommendations are based upon data size, data autochol, and severes. 33 These recommendations are based upon the size, data autochol, and severes. 33 Howere, immufations results will not cover all Reb Wold data size, for additional insight Market, and Lee (2006). 34 Howere, immufations results will not cover all Reb Wold data size, for additional insight Market, and Lee (2006). 34 Total Number of Determinations. 97 34 Number of Determinations. 7 34 Number of Determinations. 7 34 Number of Determinations. 7 34 Number of Determinations. 80.6 35 Mean Determinations. 80.6 80.6 35 Mean of Logged Detects. 2.396 SD of Logged Detects. 0.456 36 Mean of Logged Detects. 2.396 SD of Logged Detects. <th>335</th> <td>No</td> <td>te: Sugges</td> <td>tions regardir</td> <td>ng the sele</td> <td>ection of</td> <td>a 95% U</td> <td>CL are prov</td> <td>vided to he</td> <td>Ip the user</td> <td>to select th</td> <td>ne most appropriate 9</td> <td>5% UCL.</td> <td></td> | 335 | No | te: Sugges | tions regardir | ng the sele | ection of | a 95% U | CL are prov | vided to he | Ip the user | to select th | ne most appropriate 9 | 5% UCL. | |
| Market Robinsburger Number Robinsburger Number Robinsburger Number Robinsburger 33 Hendryingshifteline Image: Robinsburger 24 34 Hendryingshifteline Image: Robinsburger 24 35 Image: Robinsburger 7 Number Robinsburger 24 36 Total Number Robinsburger 7 Number Robinsburger 24 36 Number Robinsburger 7 Number Robinsburger 24 36 Number Robinsburger 7 Number Robinsburger 24 36 Number Robinsburger 14 Marcinum Non-Detect 15 36 Moninum Detect 52 Moninum Non-Detect 15 36 Median Letects 11.5 CV Detects 6.61 37 Median Letects 12.5 Kontons Detects 12.6 38 Median Letects 12.6 CV Detects 6.64 39 Detectect Detains Detects 12.6 CV Detects 0.64 39 Detectect Detains Detecte 12.6 Det | 336 | T | | Re | | dations a | re based | upon data | size, data | distribution | i, and skev | ness. | (2006) | |
| Add Number of Disservations 17 Number of District Observations 24 341 Add Number of District Observations 17 Number of District Observations 24 343 Total Number of District Observations 17 Number of District Observations 24 344 Number of District Observations 24 34 34 346 Number of District Observations 24 34 34 346 Maximum District 7 Number of District Observations 24 347 Maximum District 30.4 Maximum Non-Detect 36.97 348 Maximum District 30.2 Normal COF Test on District Observation 30.7 349 Stansmite 30.01 Stansmite 30.01 Stansmite 30.01 350 Stansmite 30.01 Stansmite 30.01 Stansmite 30.01 351 Stansmite 30.01 Stansmite 30.01 District Observation on and 37.8 Significance Level 353 Stansmite Stansmite 30.01 District O | 337 | Howe | ever simula | ations results | will not co | ver all R | eal Work | d data sets | for addition | nal insight | the user r | nav want to consult a | statisticia | n |
| 301 HerryInspiritations Junctor of Distinct Observations 24 343 Total Number of Destrict Press 7 Number of Destrict Observations 24 344 Number of Destrict Press 7 Number of Destrict Press 71 345 Number of Destrict Press 7 Number of Destrict Press 71 346 Number of Destrict Press 7 Number of Destrict Press 71 347 Maximum Prostoct 7.8 Number of Destrict Press 71 348 Maximum Prostoct 7.8 Restrict Press 71 349 Maximum Prostoct 7.8 Restrict Press 71 340 Marinum Prostoct 7.0 Restrict Press 71 341 Marinum Prostoct 7.0 Restrict Press 72 342 Marinum Prostoct 700 Restrict Press 74 343 Statistica Test Statistic 723 Restrict Press 75 344 Statistica Test Statistic 724 Restrict Presstrict Presstrict Press 345< | 339 | | | | | | | | , | jjjjjj | | | | |
| 31 Sevent Statist 32 Total Number of Observations 97 Number of Datin Cheervations 24 34 Number of Datin Cheevation 197 Number of Datin Cheevations 197 346 Number of Datin Cheevation 24 Number of Datin Cheevations 17 347 Maximum Devet 5.2 Marinum No-Devet 5.61 347 Maximum Devet 5.2 Marinum No-Devet 5.61 348 Maximum Devet 5.2 Marinum No-Devet 5.61 349 Mean Devet 5.1 Parcen No-Devets 5.61 340 Mean Devet 5.8 Marinum No-Devet 5.61 351 Mean Devet 5.60 Marinum No-Devet 5.63 352 Shappin Will Chicality Value 5.60 Marinum No-Devet 5.65 352 Shappin Will Chicality Value 5.60 Marinum No-Devet 5.65 353 Shappin Will Chicality Value 5.60 Marinum No-Devet 5.60 354 Devet Date Shappin Will Chicality Value | 340 | 1-Methylnapht | halene | | | | | | | | | | | |
| General Statistics General Statistics 343 Total Number of Detextists 7 Number of District Observations 34 344 Number of Detextists 7 Number of Detextists 190 345 Number of Detextists 7 Number of Detextists 190 346 Marinum Detect 5.2 Marinum Nun-Cleest 12.3 347 Maximum Detects 12.1 Sto Detexts 6.61 349 Mean Detexts 12.1 Sto Detexts 0.64 351 Statement Detects 2.36 Stotage With Test Statistics 0.907 352 Stotage With Test Statistics 0.907 Stotage With Test Statistics 0.907 353 Stotage With Test Statistics 0.907 Detected Data appear Normal ESK Storffacture Level 353 Stotage With Test Statistics 0.907 Detected Data appear Normal ESK Storffacture Level 354 With Test Statistics 0.907 Normal ASK Storffacture Level 1.827 355 With Test Statistics 0.957 Normal ASK Storffacture of Manal 1.78 </th <th>341</th> <th></th> | 341 | | | | | | | | | | | | | |
| 43.1 Index of UseR values 107 Number of UseR volces 24 44.1 Number of Disknet Dotes 7 Number of Disknet Non-Detes 170 44.1 Minimum Dotes 72 Number of Disknet Non-Detes 170 45.1 Minimum Dotes 72 Minimum Non-Detes 170 45.2 Minimum Non-Detes 171 Percent Non-Detes 6.65% 45.3 Mediam Detects 12.1 Percent Non-Detes 6.65% 45.3 Serverse Detects 0.502 Kursen Non-Detes 6.972 35.1 Mediam Detects 2.398 DSD of Logged Detects 0.448 35.3 Serverse Notes 0.502 Kursen Notes 0.972 35.4 Normel 4/204F Test on Detects Only Stager Normal at 5%, Significance Level 35.7 Signific Wilk Circlal Value 0.803 Detected Date appear Normal at 5%, Significance Level 36.8 Moreiron A/204E S.301 Detected Date appear Normal at 5%, Significance Level 36.9 Dotected Nata Normel 4/204E Significance Level 1.82 | 342 | | | | | (0) | | General S | tatistics | | | | 0.1 | |
| Bit Number of Depine Depine 7 Number of Depine New Depices 77 286 Maimum Depice 204 Munitrum Non-Oberci 15.9 286 Wainen Depices 204 Mean Non-Oberci 12.6 286 Wainen Depices 12.1 Percent Non-Depices 56.4 281 Mean Depices 12.5 CV Depices 56.4 282 Mean Depices 12.5 CV Depices 56.4 283 Stewmess Detects 0.302 Kurnsie Detects 0.408 283 Normal COF Test on Detects Only Steppinov With Creat Statistic 0.301 Detected Data appear Normal TS% Significance Level 286 Shapiro With Creat Statistic 0.302 Detected Data appear Normal TS% Significance Level 287 Lillefors Critical Value 0.302 Significance Level 1.827 288 SNA (Mass In Value 0.302 Significance Level 1.83 289 Detected Data appear Normal TS% Significance Level 1.83 1.827 280 SNA (Mass Normal Critical Value 0.328 | 343 | | | IOt | | umber of | Detects | 197 | | r | Number of | under of Non-Detects | 24 190 | |
| 346 Minimum Durect 5.62 Minimum Nun-Dister 0.519 347 Warance Detects 31.47 Percent Non-Disters 64.45% 348 Warance Detects 1.21 SD Detects 65.45% 350 Median Detects 1.135 CV Detects 0.641 351 Staveness Detects 0.302 Kurans Detects 0.444 351 Staveness Detects 0.302 Kurans Detects 0.446 351 Staveness Detects 0.495 0.446 0.446 353 Stavpior Witk Tres statistic 0.301 Stavpior Witk Tres statistic 0.35 353 Stavpior Witk Tres statistic 0.35 Lillefors Core Test 1.28 354 Detected Data appear Normal at 5% Significance Level 1.28 1.28 1.28 353 Staviard Kitch Vice A 1.28 KN Standard Error of Mann 1.18 1.28 1.28 1.28 1.28 1.28 1.28 1.28 1.28 1.28 1.28 1.28 1.28 1.28 1.28 | 344 | | | | Number o | f Distinct | Detects | 7 | | | Number of | Distinct Non-Detects | 130 | |
| 342 Maximum Deciset 20.4 Maximum Non-Deciset 2.5 348 Waring Non-Deciset 13.147 Present 5.6.1 359 Metan Detects 11.35 CV Deciset 0.644 351 Skewness Detects 0.502 Kurtosis Deciset 0.972 352 Mean of Logged Detects 2.399 SD of Logged Deciset 0.486 353 Shapiro Wilk Test Statistic 0.501 Shapiro Wilk GOF Test 0.486 355 Shapiro Wilk Test Statistic 0.50 Lilliefors Test Statistic 0.52 Lilliefors CoF Test 356 Shapiro Wilk Test Statistic 0.54 Lilliefors Cor Test 1.53 CURL 1.53 <th>346</th> <td></td> <td></td> <td></td> <td></td> <td>Minimur</td> <td>n Detect</td> <td>5.62</td> <td></td> <td></td> <td></td> <td>Minimum Non-Detect</td> <td>0.619</td> <td>9</td> | 346 | | | | | Minimur | n Detect | 5.62 | | | | Minimum Non-Detect | 0.619 | 9 |
| 346 Variance Detects 31.47 Percent Non-Detects 96.4%, 350 Median Detects 11.35 CV Detects 0.484 351 Stowness Detects 0.392 Kurtosis Detects 0.972 352 Mean of Logged Detects 2.395 SD of Logged Detects 0.485 353 Nomel COF Test on Detects Only 0.485 0.485 354 Nomel COF Test on Detects Only 0.486 355 Stagero Witk Kerls Statistic 0.301 Detected Data appeer Normal at 5% Significance Level 356 Detected Data appeer Normal at 5% Significance Level 0.486 0.486 350 Detected Data appeer Normal at 5% Significance Level 0.486 0.486 350 Kaplan-Meior (KOI) Statistics using Normal at 5% Significance Level 0.486 0.486 351 Kaplan-Meior (KOI) Statistics using Normal at 5% Significance Level 0.486 0.486 352 Kaplan-Meior (KOI) Statistics using Normal at 5% Significance Level 0.486 0.486 352 Statistics and Normal at 5% Significance Level 0.486 0.486 3 | 347 | | | | | Maximur | n Detect | 20.4 | | | I | Maximum Non-Detect | 12.5 | |
| 349 Mean Detects 12.1 SD Detects 5.61 350 Mean Detects 1.35 CV Detects -0.572 351 Skewness Detects 0.502 Kurtusis Detects 0.644 353 Stagin Of Logged Detects 0.502 Stagin Of Logged Detects 0.465 353 Stagin Wilk Test Statistic 0.801 Detected Data agear Nomial 55. Significance Level 354 Stagin Vilk Test Statistic 0.28 Lilliefors Test Statistic 0.28 355 Stagin Critical Vilue 0.34 Detected Data agear Normal at 55. Significance Level 359 Detected Data agear Normal at 55. Significance Level 1.135 1.135 361 Kaplan-Meire (Vol) Statistics using Normal Critical Values and other Nonparametric UCLa 1.135 362 KM Man 1.232 KN Maloa Terror Mean 1.135 363 Stagin Simple Vilk (N UCL 1.325 95% KM (Deck), UCL 1.222 364 95% KM (Deck), UCL 1.325 95% KM (Deck), UCL 1.222 365 Content Volk (V UCL 1.350 95% KM (Cek), UCL <th>348</th> <td></td> <td></td> <td></td> <td></td> <td>Variance</td> <td>Detects</td> <td>31.47</td> <td></td> <td></td> <td></td> <td>Percent Non-Detects</td> <td>96.45</td> <td>%</td> | 348 | | | | | Variance | Detects | 31.47 | | | | Percent Non-Detects | 96.45 | % |
| 350 Modula Details 11.53 C.V. Davids Davids 351 Skownas Details 1.332 Kutois Details 0.492 352 Maan of Loggel Deteils 2.366 SD of Logged Deteils 0.486 353 SD of Logged Deteils 2.366 SD of Logged Deteils 0.486 354 Namel GOF Test on Detects Only Stappiro Wilk Critical Value 0.803 Detected Data appear Normal at 5% Significance Level 357 Lillefors Critical Value 0.304 Detected Data appear Normal at 5% Significance Level 359 Detected Data appear Normal at 5% Significance Level 1.872 351 Kaplam-Meir (KM) Statistics using Mormal Critical Values and other Nonparametric UCLs 352 KM Mon 1.028 KM Significance Level 353 Statistics 0.324 99% KM (Debugher UCL 1.222 354 Statistics 0.324 99% KM (Debugher UCL 1.222 355 Genoma Critical Value 0.313 Detected data appear Gomma DataTicated at 5% Significance Level 356 Genoma Statistics 0.155 Kolagoon-Simon OGF | 349 | | | | | Mean | Detects | 12.1 | | | | SD Detects | 5.61 | 4 |
| 33 Mean of Cogget Detects 2.396 SD of Logget Detects 0.486 33 Normal GOF Test on Detects Only SD of Logget Detects 0.486 34 Staptio Wilk Test Statutal 0.801 Detected Data appear Normal at 5% Significance Level 35 Shapto Wilk Test Statutal 0.803 Detected Data appear Normal at 5% Significance Level 36 St Limifors Critical Value 0.804 Detected Data appear Normal at 5% Significance Level 37 Limitors Test Statutal 0.834 Detected Data appear Normal at 5% Significance Level 38 Detected Data appear Normal at 5% Significance Level 1.827 39 Kaptan-Meior (Kol) Statistics using Normal ctricel Values and other Nongarametric UCLs 1.827 39 Significance Level 1.835 1.837 395 95% KK (C) UCL 1.326 95% KM Bootstrapt UCL 1.822 396 Gamma GOF Test on Detected Obtas appear Normal at 5% Significance Level 2.823 396 Gamma GOF Test on Detected Obtas appear Sommo Sommor GOF 1.815 397 S% KK (C) UCL 1.852 95% KM Sonstrapt UCL 2.823 | 350 | | | | 9 | kownoss | Detects | 0.502 | | | | CV Detects | -0.972 | + |
| Solution Consideration Constraints Constraints Constraints 351 Shapiro Wilk ColF Test on Detected One Shapiro Wilk ColF Test 352 5% Shapiro Wilk Coltcal Value 0.801 Detected Data appear Normal at 5% Significance Level 353 5% Shapiro Wilk ColF Test 0.251 Detected Data appear Normal at 5% Significance Level 353 5% Unifiedro Test Statistic 0.251 Detected Data appear Normal at 5% Significance Level 354 Shapiro Wilk ColF Test Detected Data appear Normal at 5% Significance Level 355 Shapiro Wilk Old Test 0.18 356 KM Mean 1.028 KM Standard Error Mean 0.18 353 KM Kol UCL 1.325 95% KM (IBCA) UCL 1.877 356 95% KM (OULCL 1.325 95% KM (Debyshev UCL 1.815 357 95% KM (Physhev UCL 1.569 95% KM (Chebyshev UCL 1.815 357 95% KM Chebyshev UCL 1.569 95% KM Chebyshev UCL 2.823 351 Gamma GOF Tests on Detected Observations ON Madranco-Dering OF Test 3.3122 371 | 351 | | | | Mean o | f Loaaed | Detects | 2.396 | | | ç | SD of Logged Detects | 0.48 | 3 |
| Sig Nommal GOF Test on Detects Only Sign (VMK GOF Test) 355 Shapiro VMK rest Statistic 0.403 Detected Data appear Normal at 5% Significance Level 357 Lillidors Critical Value 0.303 Detected Data appear Normal at 5% Significance Level 358 Detected Data appear Normal at 5% Significance Level Detected Data appear Normal at 5% Significance Level 359 Detected Data appear Normal at 5% Significance Level Significance Level 360 Kaplen-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs Significance Level 361 Kaplen-Meier (KM) Statistics US Normal AT 5% Significance Level Significance Level 362 KM Mean 1.028 KM Standard Error of Mean 1.18 363 Significance Level Significance Level 1.827 395% KM (Policy Link) 1.821 364 95% KM (Policy Link) 1.528 95% KM (Deteyphery UCL 1.821 395% KM (Deteyphery UCL 2.823 370 APD Test Statistic 0.931 Detected Data appear Gamma Distributed at 5% Significance Level 372 371 5% APD Critical Value 0.71 Detected data appear | 353 | | | | | | | | | | | | | - |
| 335 Shapiro Wilk Test Statistic 0.001 Shapiro Wilk OF Test 336 5% Shapiro Wilk Cricital Value 0.030 Detected Data appear Normal at 5% Significance Level 337 Lillefors OF Test Lillefors OF Test 338 Obtacted Data appear Normal at 5% Significance Level 349 Detected Data appear Normal at 5% Significance Level 350 KM Mean 1.032 353 KM Significance Level 354 Lillefors OF Test 355 KM Mean 1.032 356 KM Mean 1.032 353 Significance Level 1.237 354 95% KM (PCL) 1.257 356 95% KM (Pottop) 1.252 357 Significance Level 1.282 358 Camma GOF Tests on Detected Detas appear Camme Distributed ICL 1.282 359 Camma GOF Tests on Detected Detas appear Camme Distributed Significance Level 370 A-D Test Statistic 0.312 Netected data appear Camme Distributed Significance Level 371 Significance Level 3.312 Netected data appear Camme Distributed Signif | 354 | | | | | | Normal | GOF Test | on Detects | 3 Only | | | | |
| 356 5% Shapiro Wilk Ortical Value 0.803 Detected Data appear Normal at 5% Significance Level 357 Significance Level 0.304 Detected Data appear Normal at 5% Significance Level 358 S% Uliefors Critical Value 0.304 Detected Data appear Normal at 5% Significance Level 360 Normal At 5% Significance Level 0.18 0.18 361 Kaplan-Meier (KM) Statistics using Normal Critical Values and other Norparametric UCLs 0.18 362 KM Kong 2.342 95% KM (BCA) UCL 1.737 365 95% KM (Debyshev UCL 1.526 95% KM (Debyshev UCL 1.827 366 95% KM Chebyshev UCL 1.559 95% KM Chebyshev UCL 1.827 367 97.5% KM Chebyshev UCL 1.559 95% KM Chebyshev UCL 1.827 370 Ab Test Statistic 0.362 Anderson-Daring GOF Test 371 371 5% KK Chebyshev UCL 0.351 Detected data appear Gammo Distributed at 5% Significance Level 372 KK Stratical Value 0.352 Anderson-Daring GOF Test 371 373 Deteteted data appear Gammo Distributed | 355 | | | | Shapiro V | Vilk Test | Statistic | 0.901 | | | Shapi | o Wilk GOF Test | | |
| 357 Lillefors (est statistic) 0.304 Detected Data appear Normal at 5% Significance Level 358 Detected Data appear Normal at 5% Significance Level 359 359 Detected Data appear Normal at 5% Significance Level 350 KM Mean 1028 KM Mean 1028 351 KM Mean 1028 KM Mean 1028 KM Mean 1028 352 KM Mean 1028 KM Mean 1028 KM Mean 1028 353 95% KM (BCA) UCL 1.827 1.827 364 95% KM (10 UCL 1.325 95% KM (BCA) UCL 1.827 365 95% KM Chebyshev UCL 1.825 95% KM Chebyshev UCL 1.828 366 Gamma GOF Festo an Detected Observations Only 1.815 2.823 370 A-D Test Statistic 0.321 Detected data appear Gamma Distributed at 5% Significance Level 371 5% K S Grincal Value 0.313 Detected data appear Gamma Distributed at 5% Significance Level 373 5% K S Grincal Value 0.313 Detected Data Only 3.122 374 Detected Data appear Gamma Distributed at 5% Significance Level 3.77 < | 356 | | | 5% | Shapiro W | /ilk Critic | al Value | 0.803 | | Detected Da | ata appear | Normal at 5% Signifi | cance Lev | vel |
| Gase Detected Data appear Vormit at SV Significance Level 360 Network Vorman SV Significance Level 361 Kaplan-Meier (KM) Statistics using Normal Critical Values and other Noparametric UCLs 362 KM Mean 1.028 KM Standard Error of Mean 0.18 363 Next Statistics using Normal Critical Values and other Noparametric UCLs 1.82 95% KM (DUCL) 1.327 364 95% KM (I) UCL 1.325 95% KM (Debysher UCL) 1.816 365 95% KM (Chebysher UCL) 1.826 95% KM (Debysher UCL) 1.816 367 97.5% KM Chebysher UCL 1.569 95% KM (Debysher UCL) 2.823 368 Gemma GOF Tests on Detected Observations Only 2.823 2.823 370 A-D Test Statistic 0.362 Anderson-Darling GOF Test 371 5% K-S Critical Value 0.313 Detected data appear Gamma Distributed at 5% Significance Level 373 5% K-S Critical Value 0.313 Detected data appear Gamma Distributed at 5% Significance Level 374 Detected data appear Gamma Distributed at 5% Significance Level 367 375 Gamma Sta | 357 | | | | Lillief | ors l'est | Statistic | 0.25 | | Detected D | Lillie ata annocr | Normal at 5% Signifi | anco I ci | (ol |
| 300 Construct of point (NM) and any of the optimization of other 361 Kaplan-Meler (KM) Statistics using Normal Critical Values and other Nonparametric UCLs 362 KM Standard Error of Mean 0.18 363 KM Standard Error of Mean 0.18 364 95% KM (U) UCL 1.325 95% KM (Mercenitie Bootsharp) UCL 1.737 365 95% KM (U) UCL 1.325 95% KM No tohyshory UCL 1.822 366 90% KM Chebryshory UCL 1.859 95% KM No tohyshory UCL 2.823 367 97.5% KM Chebryshory UCL 2.155 99% KM Chebryshory UCL 2.823 368 Gamma GOF Tests on Detected Observations Only 2.823 2.823 371 A-D Test Statistic 0.155 Kolmogorov-Smirov GOF 2.823 372 K-S Test Statistic 0.155 Kolmogorov-Smirov GOF 3.122 373 Gamma Statistics on Detected Data Only 3.122 3.877 3.122 373 Gamma Statistics and piperit of the sample size is small 3.122 3.877 374 Hot (MEE) 2.415 nu star (bias correc | 358 | | | | 5% Lillien | etected | Data anr | 0.304 | lat5%,Si | anificance | | normal at 5% Signin | cance Lev | /ei |
| Sec Kaplan-Meler (KM) Statistics using Normal Critical Values and other Nonparametric UCLS 362 KM Mean 1.028 KM Stander Error of Mean 0.18 363 KM SD 2.342 SS% KM (BCA) UCL 1.327 364 95% KM (1) UCL 1.326 95% KM (BCA) UCL 1.737 365 95% KM (2) UCL 1.325 95% KM (Chebyshev UCL 1.827 366 90% KM Chebyshev UCL 2.155 95% KM (Chebyshev UCL 2.823 367 37.5% KM Chebyshev UCL 2.155 95% KM (Chebyshev UCL 2.823 368 Gamma GOF Tests on Detected Observations Only 2.823 2.823 370 A-D Test Statistic 0.352 Anderson-Darling GOF Test 2.823 371 5% K-D Critical Value 0.313 Detected data appear Gamma Distributed at 5% Significance Level 373 5% K-S Critical Value 0.313 Detected data appear Gamma Distributed at 5% Significance Level 374 Detected data appear Gamma Distributed at 5% Significance Level 3.77 374 Gamma Statistics on Detected Data Only 3.77 375 | 360 | | | | 0 | 5.50.04 | a - a - a - a - a - a - a - a - a | | | ə041100 | | | | |
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| KM SD 2.342 95% KM (BCA) UCL 1.827 364 95% KM (UCL 1.325 95% KM (BCA) UCL 1.737 365 95% KM (Cbubysher UCL 1.559 95% KM Chebysher UCL 2.65 366 90% KM Chebysher UCL 2.155 95% KM Chebysher UCL 2.823 368 | 362 | | | | | K | M Mean | 1.028 | | | KM St | andard Error of Mean | 0.18 | |
| 384 95% KM (1) UCL 1.326 95% KM (2) UCL 1.371 385 95% KM (2) UCL 1.325 95% KM (2) UCL 1.262 386 97.5% KM Chebyshev UCL 1.569 95% KM (2) UCL 1.262 387 97.5% KM Chebyshev UCL 2.155 99% KM (2) UCL 2.823 388 | 363 | | | | | | KM SD | 2.342 | | | | 95% KM (BCA) UCL | 1.82 | 7 |
| 385 95% KM (2) UCL 1.55 95% KM Chebyshev UCL 1.56 367 97.5% KM Chebyshev UCL 2.155 95% KM Chebyshev UCL 2.823 369 Gamma GOF Tests on Detected Observations Only 2.823 370 A-D Test Statistic 0.362 Anderson-Darling GOF Tests 371 5% A-D Critical Value 0.31 Detected data appear Gamma Distributed at 5% Significance Level 372 K-S Test Statistic 0.195 Kolmozov-Smirnov GOF 373 5% K-S Critical Value 0.31 Detected data popear Gamma Distributed at 5% Significance Level 374 Detected data papear Gamma Distributed at 5% Significance Level 3.122 375 Gamma Statistics on Detected Data Only 3.122 378 Theta hat (MLE) 2.285 Theta star (bias corrected MLE) 3.127 379 nu hat (MLE) 7.45 nu star (bias corrected MLE) 3.72 379 nu hat (MLE) 7.45 nu star (bias corrected MLE) 3.72 378 Gamma ROS Statistics using imputed Non-Detects 3.77 3.77 Satata tarchis acorrected MLE) 3.87 </td <th>364</th> <td></td> <td></td> <td></td> <td></td> <td>95% KM</td> <td>I (t) UCL</td> <td>1.326</td> <td></td> <td>95%</td> <td>KM (Perc</td> <td>entile Bootstrap) UCL</td> <td>1.73</td> <td>7</td> | 364 | | | | | 95% KM | I (t) UCL | 1.326 | | 95% | KM (Perc | entile Bootstrap) UCL | 1.73 | 7 |
| 300 300 httm://interview.clim. 1.303 300 httm://interview.clim. 1.303 307 97.5% kM Chebyshev UCL 2.155 99% kM Chebyshev UCL 2.823 308 | 365 | | | | 00% KM | 95% KM | (Z) UCL | 1.325 | | | 95% | M Chebyshev UCL | 1.264 | 2 |
| Solution Construction of the statistic of the statis of the statistic of the statistic of the statisti | 367 | | | | 97.5% KM | Chebys | hev UCL | 2.155 | | | 99% | KM Chebyshev UCL | 2.823 | 3 |
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| 370 A-D Test Statistic 0.362 Anderson-Darling QOF Test 371 5% A-D Critical Value 0.171 Detected data appear Gamma Distributed at 5% Significance Level 373 5% K-S Critical Value 0.133 Detected data appear Gamma Distributed at 5% Significance Level 374 Detected data appear Gamma Distributed at 5% Significance Level Detected data appear Gamma Distributed at 5% Significance Level 375 Camma Statistics on Detected Data Only 3.122 378 Theta hat (MLE) 2.295 Theta star (bias corrected MLE) 3.122 379 nu hat (MLE) 7.4.15 nu star (bias corrected MLE) 3.877 380 Mean (detects) 12.1 | 369 | | | | | Gamma | GOF Te | sts on Det | ected Obs | ervations (| Only | | | |
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| 372 Komogorov-Smirnov GU 373 6.5% K-S Critical Value 0.313 Detected data appear Gamma Distributed at 5% Significance Level 374 Detected data appear Gamma Distributed at 5% Significance Level 375 376 Gamma Statistics on Detected Data Only 3.122 378 A that (MLE) 5.296 k star (bias corrected MLE) 3.877 379 Nu kat (MLE) 2.285 Theta star (bias corrected MLE) 3.877 380 Mean (detects) 12.1 nu star (bias corrected MLE) 3.7 381 Gamma ROS Statistics using Imputed Non-Detects 383 GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs 384 GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs 385 Tor such situations, GROS method may yied incorrect values of UCLs and BTVs 386 386 This is especially true when the sample size is small (e.g., <15-20) | 371 | | | | 5% A | A-D Critic | al Value | 0.71 | Detect | ed data ap | pear Gamr | na Distributed at 5% | Significan | ce Level |
| 3/3 Detected data apper Gamma Distributed at 5% Significance Level 3/5 Camma Statistics on Detected Data Only 3/7 Camma Statistics on Detected Data Only 3/7 K hat (MLE) 5.296 k star (bias corrected MLE) 3.122 3/8 Theta hat (MLE) 2.285 Theta star (bias corrected MLE) 3.877 3/9 nu hat (MLE) 74.15 nu star (bias corrected MLE) 3.877 3/80 Mean (detects) 12.1 nu star (bias corrected MLE) 3.877 3/81 Camma ROS Statistics using imputed Non-Detects 3383 GROS may not be used when data set has > 50%. NDs with many tied observations at multiple DLs 3/84 GROS may not be used when kata of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) 3/85 For such situations, GROS method may yield incorrect values of UCLs and BTVs 3/86 Theis is especially true when the sample size is small. 3/87 For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates 3/88 Minimum 0.01 Mean 0.458 3/89 Adjusted Level of Significance (β) 0.448 | 372 | | | | F9/ k | K-S Test | Statistic | 0.195 | Dotoot | od data an | Kolmog | Distributed at 5% | Significan | |
| Gramma Statistics on Detected Data Only 376 Gamma Statistics on Detected Data Only 377 k hat (MLE) 5.296 k star (bias corrected MLE) 3.122 378 Theta hat (MLE) 2.285 Theta star (bias corrected MLE) 3.877 379 nu hat (MLE) 7.4 15 Theta star (bias corrected MLE) 3.877 380 Mean (detects) 12.1 | 373 | | | | Detecte | ed data a | opear G | amma Dist | ributed at | 5% Signific | cance Lev | | significan | |
| 376 Gamma Statistics on Detected Data Only 377 k hat (MLE) 5.296 k star (bias corrected MLE) 3.122 378 Theta hat (MLE) 2.285 Theta star (bias corrected MLE) 3.877 379 nu hat (MLE) 74.15 nu star (bias corrected) 43.7 380 Mean (detects) 12.1 nu star (bias corrected) 43.7 381 Gamma ROS Statistics using Imputed Non-Detects 333 GROS may not be used when data set has > 50%. NDs with many tied observations at multiple DLs 384 382 GROS may not be used when data set has > 50%. NDs with many tied observations at multiple DLs 385 383 For such situations, GROS method may yield incorrect values of UCLs and BTVs 385 384 GROS may not be used when data with may = 0.0 Maximum 0.01 385 For such situations, GROS method may yield incorrect values of UCLs and BTVs 386 388 Minimum 0.01 Mean 389 Maximum 20.4 Median 0.01 391 k tar (bias corrected MLE) 0.209 332 392 The | 375 | | | | | | | | | | | | | |
| 377 k hat (MLE) 5.296 k star (bias corrected MLE) 3.122 378 Theta hat (MLE) 2.285 Theta star (bias corrected MLE) 3.877 379 nu hat (MLE) 74.15 nu star (bias corrected) 43.7 380 Mean (detects) 12.1 ustar (bias corrected) 43.7 381 Camma ROS Statust council (bias corrected) 43.7 Council (bias corrected) 43.7 382 GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs Start Start 384 GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) Start 385 For such situations, GROS method may yield incorrect values of UCLs and BTVs Start 388 Minimum 0.01 Mean 0.458 389 Maximum 20.4 Median 0.01 380 CV 5.36 CV 5.36 CV 5.36 381 Maximum 0.01 Mean 0.458 382 Maximum 0.01 Mean 0.458 | 376 | | | | | Ga | mma Sta | atistics on | Detected D | Data Only | | | | |
| 378 Theta hat (MLE) 2.285 Theta star (bias corrected MLE) 3.877 379 nu hat (MLE) 74.15 nu star (bias corrected) 43.7 380 Mean (detects) 12.1 — — 381 GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs 383 GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs 384 GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs 386 — — 386 For such situations, GROS method may yield incorrect values of UCLs and BTVs — — — 387 For gamma distributed detected dat, BTVs and UCLs may be computed using gamma distribution on KM estimates — — — 388 Minimum 0.01 Mean 0.458 … … 389 Maximum 20.4 Median 0.01 … … … 389 Maximum 20.4 k star (bias corrected MLE) 0.209 … … … … … … … … … … | 377 | | | | | k ha | at (MLE) | 5.296 | | | k star | (bias corrected MLE) | 3.122 | 2 |
| 379 nu nat (MLE) 74.1s nu star (blas corrected) 4.7 380 Mean (detects) 12.1 | 378 | | | | | Theta ha | at (MLE) | 2.285 | | | Theta star | (bias corrected MLE) | 3.87 | 7 |
| 360 Itera (decks) Itera 381 | 379 | | | | | nu na | at (MLE) | /4.15 12.1 | | | nı | i star (bias corrected) | 43.7 | |
| Gamma ROS Statistics using Imputed Non-Detects GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs 384 GROS may not be used when katar of detects is small such as < 1.0, especially when the sample size is small (e.g., <15-20) | 381 | | | | | Wear (| uciccia) | 12.1 | | | | | | |
| 383 GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs 384 GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | 382 | | | | | Gamma | ROS St | atistics usi | ng Impute | d Non-Dete | ects | | | |
| 384 GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) 385 For such situations, GROS method may yield incorrect values of UCLs and BTVs 386 This is especially true when the sample size is small. 387 For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates 388 Minimum 0.01 Mean 0.458 389 Maximum 20.4 Median 0.01 390 SD 2.453 CV 5.36 391 K hat (MLE) 0.208 k star (bias corrected MLE) 0.209 392 Theta hat (MLE) 2.197 Theta star (bias corrected MLE) 2.194 393 nu hat (MLE) 82.09 nu star (bias corrected MLE) 2.194 394 Adjusted Level of Significance (β) 0.0488 | 383 | | | GROS may r | not be use | d when c | lata set h | nas > 50% | NDs with m | nany tied ol | oservation | s at multiple DLs | | |
| 385 For such situations, GROS method may yield incorrect values of UCLs and BTVs 386 This is especially true when the sample size is small. 387 For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates 388 Minimum 0.01 389 Maximum 20.4 390 SD 2.453 391 k hat (MLE) 0.208 392 Theta hat (MLE) 2.197 393 nu hat (MLE) 82.09 394 Adjusted Level of Significance (β) 0.0488 395 Approximate Chi Square Value (82.18, a) 62.29 396 95% Gamma Approximate UCL (use when n>=50) 0.604 397 95% Gamma Approximate UCL (use when n>=50) 0.604 398 Estimates of Gamme Parameters using KM Estimates 399 399 Mean (KM) 1.028 391 K hat (KM) 0.193 392 Mean (KM) 1.028 393 Optimizer Chi Square Value (82.18, b) 62.16 394 Adjusted Level of Signifficance (β) 0. | 384 | G | ROS may | not be used v | when kstar | r of detec | ts is sma | all such as | <1.0, espe | cially wher | the samp | e size is small (e.g., | <15-20) | |
| 300 This is expectally use when the sample size is Strain. 387 For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates 388 Minimum 0.01 Mean 0.458 389 Maximum 20.4 Median 0.01 390 SD 2.453 CV 5.36 391 K hat (MLE) 0.208 k star (bias corrected MLE) 0.209 392 Theta hat (MLE) 2.197 Theta star (bias corrected MLE) 2.194 393 nu hat (MLE) 82.09 nu star (bias corrected) 82.18 394 Adjusted Level of Significance (β) 0.0488 | 385 | | | For | such situa | ations, G | KUS met | thod may y | the come! | ect values o | or UCLs an | a BTVs | | |
| Bit is a structure to the bit of the bit o | 385 | | For nam | ıma distribute | d detected | d data R | TVs and | UCLs may | be comput | e size is Sr ted usina a | amma dist | ribution on KM estimation | ites | |
| 389 Maximum 20.4 Median 0.01 390 SD 2.453 CV 5.36 391 k hat (MLE) 0.208 k star (bias corrected MLE) 0.209 392 Theta hat (MLE) 2.197 Theta star (bias corrected MLE) 2.194 393 nu hat (MLE) 82.09 nu star (bias corrected) 82.18 394 Adjusted Level of Significance (β) 0.0488 | 388 | | . er gan | | | , D N | Ainimum | 0.01 | | sea aonig g | | Mear | 0.458 | 3 |
| 390 SD 2.453 CV 5.36 391 k hat (MLE) 0.208 k star (bias corrected MLE) 0.209 392 Theta hat (MLE) 2.197 Theta star (bias corrected MLE) 2.194 393 nu hat (MLE) 82.09 nu star (bias corrected MLE) 82.18 394 Adjusted Level of Significance (β) 0.0488 395 Approximate Chi Square Value (82.18, α) 62.29 Adjusted Chi Square Value (82.18, β) 62.16 396 95% Gamma Approximate UCL (use when n>=50) 0.604 95% Gamma Adjusted UCL (use when n<50) | 389 | | | | | M | laximum | 20.4 | | | | Mediar | 0.01 | |
| 391 k hat (MLE) 0.208 k star (bias corrected MLE) 0.209 392 Theta hat (MLE) 2.197 Theta star (bias corrected MLE) 2.194 393 nu hat (MLE) 82.09 nu star (bias corrected) 82.18 394 Adjusted Level of Significance (β) 0.0488 395 Approximate Chi Square Value (82.18, α) 62.29 Adjusted Chi Square Value (82.18, β) 62.16 396 95% Gamma Approximate UCL (use when n>=50) 0.604 95% Gamma Adjusted UCL (use when n<50) | 390 | | | | | | SD | 2.453 | | | | CV | 5.36 | |
| 392 Theta hat (MLE) 2.197 Theta star (bias corrected MLE) 2.194 393 nu hat (MLE) 82.09 nu star (bias corrected) 82.18 394 Adjusted Level of Significance (β) 0.0488 395 Approximate Chi Square Value (82.18, α) 62.29 Adjusted Chi Square Value (82.18, β) 62.16 396 95% Gamma Approximate UCL (use when n>=50) 0.604 95% Gamma Adjusted UCL (use when n<50) | 391 | | | | | k ha | at (MLE) | 0.208 | | | k star | (bias corrected MLE) | 0.209 | 9 |
| 393 nu nat (MLE) 82.09 nu star (bias corrected) 82.18 394 Adjusted Level of Significance (β) 0.0488 395 Approximate Chi Square Value (82.18, α) 62.29 Adjusted Chi Square Value (82.18, β) 62.16 396 95% Gamma Approximate UCL (use when n>=50) 0.604 95% Gamma Adjusted UCL (use when n<50) | 392 | | | | | Theta ha | at (MLE) | 2.197 | | | Theta star | (bias corrected MLE) | 2.194 | 1 |
| 334 Character Level of orginitation (p) 0.0400 395 Approximate Chi Square Value (82.18, α) 62.29 Adjusted Chi Square Value (82.18, β) 62.16 396 95% Gamma Approximate UCL (use when n>=50) 0.604 95% Gamma Adjusted UCL (use when n<50) | 393 | | | Adjust | ad Lovel a | nu ha f Signifia | at (MLE) | 82.09 | | | nı | i star (bias corrected) | 82.18 | |
| Signed of hoge of background (ker (k, je)) Signed of hoge of background (ker (k, je)) Signed of hoge of background (ker (ker (ker (ker (ker (ker (ker (ker | 394 | | Δ | pproximate (| Chi Sauare | Value (8 | 32,18. n) | 62.29 | | Adius | ted Chi So | uare Value (82 18 R) | 62 16 | |
| 397 398 Estimates of Gamma Parameters using KM Estimates 399 Mean (KM) 1.028 SD (KM) 2.342 400 Variance (KM) 5.486 SE of Mean (KM) 0.18 401 k hat (KM) 0.193 k star (KM) 0.193 402 nu hat (KM) 75.91 nu star (KM) 76.09 403 theta hat (KM) 5.336 theta star (KM) 5.324 404 80% gamma percentile (KM) 1.329 90% gamma percentile (KM) 3.108 405 95% gamma percentile (KM) 5.345 99% gamma percentile (KM) 11.54 | 396 | | 95% Gam | ma Approxim | ate UCL (| use wher | n n>=50) | 0.604 | 95 | % Gamma | Adjusted l | JCL (use when n<50) | 0.605 | 5 |
| 398 Estimates of Gamma Parameters using KM Estimates 399 Mean (KM) 1.028 SD (KM) 2.342 400 Variance (KM) 5.486 SE of Mean (KM) 0.18 401 k hat (KM) 0.193 k star (KM) 0.193 402 nu hat (KM) 75.91 nu star (KM) 76.09 403 theta hat (KM) 5.336 theta star (KM) 5.324 404 80% gamma percentile (KM) 1.329 90% gamma percentile (KM) 3.108 405 95% gamma percentile (KM) 5.345 99% gamma percentile (KM) 11.54 | 397 | | | | | | | | | | - | | | |
| 399 Mean (KM) 1.028 SD (KM) 2.342 400 Variance (KM) 5.486 SE of Mean (KM) 0.18 401 k hat (KM) 0.193 k star (KM) 0.193 402 nu hat (KM) 75.91 nu star (KM) 76.09 403 theta hat (KM) 5.336 theta star (KM) 5.324 404 80% gamma percentile (KM) 1.329 90% gamma percentile (KM) 3.108 405 95% gamma percentile (KM) 5.345 99% gamma percentile (KM) 11.54 | 398 | | | | E | Estimates | s of Gam | ma Param | eters using | g KM Estin | nates | | | |
| 400 Variance (KM) 5.486 SE of Mean (KM) 0.18 401 k hat (KM) 0.193 k star (KM) 0.193 402 nu hat (KM) 75.91 nu star (KM) 76.09 403 theta hat (KM) 5.336 theta star (KM) 5.324 404 80% gamma percentile (KM) 1.329 90% gamma percentile (KM) 3.108 405 95% gamma percentile (KM) 5.345 99% gamma percentile (KM) 11.54 | 399 | | | | | Me | an (KM) | 1.028 | | | | SD (KM) | 2.342 | 2 |
| 401 K Hat (KM) 0.193 K Star (KM) 0.193 402 nu hat (KM) 75.91 nu star (KM) 76.09 403 theta hat (KM) 5.336 theta star (KM) 5.324 404 80% gamma percentile (KM) 1.329 90% gamma percentile (KM) 3.108 405 95% gamma percentile (KM) 5.345 99% gamma percentile (KM) 11.54 | 400 | | | | | Varian | ICE (KM) | 5.486 | | | | SE of Mean (KM) | 0.18 | 2 |
| 402 100 Hot (KM) 70.09 403 theta hat (KM) 5.336 theta star (KM) 5.324 404 80% gamma percentile (KM) 1.329 90% gamma percentile (KM) 3.108 405 95% gamma percentile (KM) 5.345 99% gamma percentile (KM) 11.54 | 401 | | | | | KI | hat (KM) | 75 01 | | | | K star (KM) | 76.00 | 2 |
| 404 80% gamma percentile (KM) 1.329 90% gamma percentile (KM) 3.108 405 95% gamma percentile (KM) 5.345 99% gamma percentile (KM) 11.54 | 403 | | | | | thetal | hat (KM) | 5.336 | | | | theta star (KM) | 5.324 | 1 |
| 405 95% gamma percentile (KM) 5.345 99% gamma percentile (KM) 11.54 | 404 | | | 80 | 0% gamma | a percent | tile (KM) | 1.329 | | | 90% ga | mma percentile (KM) | 3.108 | 3 |
| | 405 | | | 95 | 5% gamma | a percent | tile (KM) | 5.345 | | | 99% ga | mma percentile (KM) | 11.54 | |

| \vdash | А | В | | С | | D | | E | F | G | Н | | I | | J | | K | | L | |
|--|-----------------------------|--|--|--|--|--|---|---|--|--|---|---|---|--|--|--|--|--|--|--|
| 406 | | | | | | | Ga | ımma k | (aplan-Me | ier (KM) S | tatistics | | | | | | | | | |
| 408 | | | Appr | oximate | Chi S | quare Va | alue (76 | .09, α) | 57 | | Adj | justed | Chi S | quare | Value | (76. | 09, β) | 56 | 6.87 | |
| 409 | 95% | 6 Gamma | а Арр | roximate | e KM-L | JCL (use | when n | ו>=50) | 1.373 | 95% G | Gamma A | djuste | d KM | -UCL (| use w | hen | n<50) | 1 | .375 | |
| 410 | | | | | | Log | Inormal | GOF 1 | est on De | tected Ob | servatio | ns Onl | у | | | | | | | |
| 412 | | | | | Sha | piro Wilk | Test St | tatistic | 0.917 | | | | Shap | iro Wil | k GOI | F Te | st | | | |
| 413 | | | | 5% | 6 Shap | oiro Wilk Lilliefors | Critical Test St | Value tatistic | 0.803 | De | etected L | Data ap | pear | Lognoi | rmal a | it 5% Test | Signi | licanc | e Level | |
| 415 | | | | | 5% I | _illiefors | Critical | Value | 0.304 | De | etected D | Data ap | pear | Lognoi | rmal a | it 5% | Signif | ficanc | e Level | |
| 416 | | | | | | Detect | ted Data | a appe | ar Lognori | nal at 5% | Significa | ince Le | evel | | | | | | | |
| 417 | | | | | | Logr | normal | ROS S | tatistics U | sing Imput | ted Non- | Detec | ts | | | | | | | |
| 419 | | | | | Ν | Mean in (| Original | Scale | 1.175 | | | | | Me | an in | Log | Scale | -0. | 753 | |
| 420 | | 95% | % t U | CL (assu | imes r | SD in (ormality | Original | Scale | 2.477 | | | 95 | % Pe | rcentile | SD in Boot | Log strar | Scale DUCL | 1 | .304 .469 | |
| 422 | | | | - (| 959 | % BCA E | Bootstra | p UCL | 1.554 | | | | | 95% | Boots | trap | t UCL | 1 | .613 | |
| 423 | | | | | 9 | 5% H-U | CL (Log | ROS) | 1.387 | | | | | | | | | | | |
| 424 | | | | Statis | stics u | sing KM | l estima | ites on | Logged D | ata and As | suming | Logno | rmal | Distrib | ution | | | | | |
| 426 | | | | | | KM N | Mean (Io | ogged) | -0.377 | | | 0.5 | | | KM | Geo | Mean | 0 | .686 | |
| 427 | | | | KM Stan | ndard I | KN Error of N | M SD (lo Mean (lo | ogged) | 0.54 | | | 95 | % Crit | 11cal H 95% H | Value | (KIV (KM | I-Log) -Log) | 1 | .839 .852 | |
| 429 | | | | | | KN | M SD (lo | ogged) | 0.54 | | | 959 | % Crit | tical H | Value | (KN | I-Log) | 1 | .839 | |
| 430 | | | | KM Stan | ndard I | Error of N | Mean (Io | ogged) | 0.0416 | | | | | | | | | | | |
| 431 | | | | | | | | | DL/2 Sta | tistics | | | | | | | | | | |
| 433 | | | | DL/2 | Norm | al Anna in A | Orininal | 0 | 1.020 | | | | DL/2 | Log-T | ransfo | orme | d | | 200 | |
| 434 | | | | | ľ | SD in (| Original | Scale | 2.379 | | | | | IVIE | sD in | Log | Scale Scale | -0. 0 | .572 | |
| 436 | | | | 95% | 5 t UCI | _ (Assum | nes norr | mality) | 1.316 | | | | | ç | 95% H | I-Sta | t UCL | 0 | .853 | |
| 437 | | | | DL/2 i | is not | a recom | mende | d meth | od, provid | ed for com | parisons | s and h | nistori | cal rea | isons | | | | | |
| 439 | | | | | | 1 | Nonpara | ametric | Distributi | on Free U | CL Statis | stics | | | | | | | | |
| 440 | | | | | De | etected [| Data ap | pear N | ormal Dist | ributed at | 5% Sign | ificanc | e Lev | /el | | | | | | |
| 441 | | | | | | | | Sı | iggested L | ICL to Use |) | | | | | | | | | |
| 443 | | | | | | 95 | 6% KM (1 | t) UCL | 1.326 | | | | | | | | | | | |
| 444 | No | te: Suaae | estion | ns regardi | lina th | e selecti | on of a 9 | 95% U | CL are pro | vided to he | lp the us | er to s | elect | the mo | st apr | oropi | iate 9 | 5% U | CL. | |
| 445 | | | | R | | mondati | | | | | np ale ae | | 0.000 | | or app | o, op. | | | 02. | |
| -++0 | | | | | vecom | menuau | ons are | based | upon data | size, data | distribut | ion, an | id ske | wness | | | | | | |
| 447 | T | hese reco | omme | endations | s are b | ased up | ons are on the r | e based results (| upon data of the simu | size, data lation stud | distribut lies sumr | ion, an marize | d in S | wness ingh, N | Aaichle | e, ar | nd Lee | (2006 | 6). Tician | |
| 447 448 449 | T | hese reco ever, simu | omme ulatio | endations ns results | s are b | ased up | ons are on the r r all Rea | e based results o al Worlo | upon data of the simu d data sets | size, data lation stud ; for additi | distribut lies sumr onal insig | ion, an marize ght the | d in S user | wness ingh, N may w | Aaichl ant to | e, ar con | nd Lee sult a s | (2006 statist | 6). tician. | |
| 447 448 449 450 | T Howe 2-Methylnaph | hese reco ever, simu t halene | omme ulatio | endations ns results | s are b | ased up | ons are on the r r all Rea | e based results (al Worl | upon data of the simu d data sets | size, data lation stud ; for additi | distribut lies sumr onal insi | ion, an marize ght the | id ske d in S user | wness ingh, N may w | Maichle ant to | e, ar | nd Lee sult a s | (2006 statist | 6). ician. | |
| 447 448 449 450 451 452 | T Howe 2-Methylnapht | hese reco ever, simu :halene | omme ulatio | endations ns results | s are b | ased up | ons are on the r r all Rea | e based results (al Worl) | upon data of the simu d data sets General S | size, data lation stud ; for additi tatistics | distribut ies sumr onal insig | ion, an marize ght the | id ske d in S user | wness ingh, N may w | /aichl ant to | e, ar | nd Lee sult a s | (2000 statist | 6). iician. | |
| 447 448 449 450 451 452 453 | T Howe 2-Methylnaph | hese recc ever, simu halene | omme | endations ns results To | s are b s will i | imber of | ons are on the ro r all Rea | e based results of al World | upon data of the simu d data sets General S 197 | size, data lation stud ; for additi tatistics | distribut lies sumr onal insi | ion, an marize ght the Num | d ske d in S user ber of | wness ingh, M may w | Aaichle ant to ct Obs | e, ar | nd Lee sult a s | (2000 statist | 6). iician. | |
| 447 448 449 450 451 452 453 454 455 | ⊤ Howe 2-Methylnaphi | hese reco ever, simu halene | omme ulation | endations ns results To | s are b s will i otal Nu | imber of Numl ber of Di | ons are on the r r all Rea Observ ber of D istinct D | a based results of al World vations Detects Detects | upon data of the simu d data sets General S 197 2 2 | size, data lation stud ; for additi tatistics | distribut ies sumr onal insig | ion, an marize ght the Num Num | d in S user ber of N | wness ingh, M may w f Distin lumber of Distin | Maichli ant to ct Obs | e, ar con serva | ations | (2000 statist 20 195 | 5). iician. | |
| 447 448 449 450 451 452 453 454 455 456 | Ti Howe | hese reco ever, simu halene | omme ulation | endations ns results To | s are b s will i otal Nu | imber of Di ber of Di Min | ons are on the ro r all Rea Observ ber of D istinct D nimum | vations Detects Detect | upon data of the simu d data sets General S 197 2 2 1.61 | size, data lation stud ; for additi | distribut ies sumr onal insi | ion, an marize ght the Num Num | d in S user ber of hber c | wness ingh, M may w f Distin lumber of Distin Minin | Maichle ant to ant to ct Obs of No not No num N | e, ar con: serva on-De on-De lon-E | ations etects Detect | (2000 statist 20 195 18 0 | 6). iician. 0 5 3 .619 | |
| 447 448 449 450 451 452 453 454 455 456 457 458 | T Howe | hese reco | omme | endations ns results To | s are b s will r otal Nu | umber of Di Min Ma Var | ons are on the r r all Rea Observ ber of D istinct D nimum ximum | vations Detects Detects Detects | upon data of the simu d data sets d data sets 197 2 2 1.61 9.93 34.61 | size, data lation stud ; for additi tatistics | distribut ies sumr onal insi | ion, an marize ght the Num Nun | d in S user ber of N | wness ingh, M may w f Distin lumber of Distin Minin Maxin Perce | t Obs ct Obs of No not No num N | e, ar con: serva on-De on-De lon-E lon-E | ations etects Detect | (2006 statist 20 195 18 0 12 9 | 6). iician. 0 5 3 .619 2.5 3 98% | |
| 447 448 449 450 451 452 453 454 455 456 457 458 459 | T Howe | hese recc | omme | endations ns results To | otal Num | umber of Numi ber of Di Min Ma Var | ons are on the r r all Rea Observ ber of D istinct D nimum I ximum I riance D Mean D | vations Detects Detects Detects Detects Detects Detects | upon data of the simu. d data sets General S 197 2 2 1.61 9.93 34.61 5.77 | size, data lation stud ; for additi tatistics | distribut ies sumr onal insi | ion, an marize ght the Num Num | d in S user ber of N | wness ingh, M may w f Distin lumber of Distin Minin Maxin Perce | ct Obs ct Obs of No not No num N num N ent No | e, ar con: serva on-De on-De lon-E lon-E lon-E | ations etects etects Detect etects etects etects etects etects etects | (2000 statist 20 195 18 0 12 98 5 | 6). dician. dician. 0 5 3 .619 2.5 3.98% .883 | |
| 447 448 449 450 451 452 453 454 455 456 457 458 459 460 | Ti Howe | hese recc ever, simu thalene | omme | endations ns results To | otal Num | umber of Numl ber of Di Ma Var | ons are on the r r all Rea Observ ber of D istinct D nimum istinct D Mean D ledian D | vations Detects Detects Detects Detects Detects Detects Detects Detects Detects | upon data of the simu d data sets 197 2 2 1.61 9.93 34.61 5.77 5.77 | size, data lation stud ; for additi tatistics | distribut ies sumr onal insis | Num | d ske d in S u user ber of N hber of | wness ingh, M may w f Distin lumber of Distin Minin Maxin Perce | ct Obs ct Obs of No not No num N num N ent No S C | e, ar con: serva pn-Da bn-Da lon-Da lon-Da c | ations etects etects Detect etects etects etects etects etects etects etects | (2000 statist 200 195 18 0 0 12 98 55 1 1 | 6). iician.) 5 3 .619 2.5 3.98% .883 .02 A | |
| 447 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 | T Howe | hese recc ever, simu halene | omme | ndations ns results To | otal Num | Imber of Numl ber of Di Min Ma Var M Skev ean of Lc | Observing Observ | vations Detects Detects Detects Detects Detects Detects Detects Detects Detects Detects Detects Detects Detects Detects Detects Detects | upon data of the simu d data sets 197 2 2 1.61 9.93 34.61 5.77 5.77 N/A 1.386 | size, data lation stud ; for additi tatistics | distribut ies sumr onal insi | Num | d ske d in S user ber of N hber of | wness ingh, M may w f Distin lumber of Distin Minin Maxin Perce | Alaichl Aant to ant to ct Obs of Nc net No num N ent No S C C Kurtos | e, ar con: serva on-Do on-Do lon-D lon-D lon-D co D Do CV Do cis Do eed Do | ations etects etects etects etects etects etects etects etects etects etects etects etects etects etects | (2000 statist 20 195 18 0 0 12 98 5 5 1 1 N// | 6). iician. 0 5 3 619 2.5 3.98% 883 .02 A .286 | |
| $\begin{array}{r} ++0 \\$ | T Howe | hese recc ever, simu halene | omme | To | s are b s will i btal Nu Num | umber of Numi ber of Di Mia Var Skew ean of Lc | Observ Observ ber of D istinct D nimum ximum iance D Mean D ledian D wness D ogged D | vations petects petects petects petects petects petects petects petects petects petects petects petects petects petects petects | upon data of the simu d data sets General S 197 2 2 1.61 9.93 34.61 5.77 5.77 N/A 1.386 | size, data lation stud ; for additi tatistics | distribut ies summ onal insig | ion, ann marize gght the Num Num | d ske d in S suser ber of N nber of | wness ingh, N may w f Distin lumber of Distin Minin Maxin Perce SD of | tant to ant to ct Obs of No not No num N num N sent No S C C Kurtos | e, ar con: serva on-De lon-De lon-De con-De lon-Ce con-De lon-Ce con-De lon-Ce con-De lon-Ce con-Ce | ations ations etects etects Detect Detect etects etects etects etects etects etects | (2000 statist 195 18 0 12 98 55 1 1 N// 1 | 5). icician. 0 5 3 6 19 2.5 3.98% .883 .02 A .286 | |
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| - | A B C D E | F | G H I J K | L |
|---|--|---|---|--|
| 487 | | | | |
| 488 | Estimates of Gam | ma Param | eters using KM Estimates | 0.669 |
| 489 | Variance (KM) | 0.072 | SE of Mean (KM) | 0.008 |
| 491 | k hat (KM) | 1.01 | k star (KM) | 0.998 |
| 492 | nu hat (KM) | 398 | nu star (KM) | 393.3 |
| 493 | theta hat (KM) | 0.665 | theta star (KM) | 0.673 |
| 494 | 80% gamma percentile (KM) | 1.081 | 90% gamma percentile (KM) | 1.548 |
| 495 | 95% gamma percentile (KM) | 2.014 | 99% gamma percentile (KM) | 3.097 |
| 496 | Gamma | (aplan-Mei | er (KM) Statistics | |
| 498 | | | Adjusted Level of Significance (β) | 0.0488 |
| 499 | Approximate Chi Square Value (393.26, α) | 348.3 | Adjusted Chi Square Value (393.26, β) | 348 |
| 500 | 95% Gamma Approximate KM-UCL (use when n>=50) | 0.759 | 95% Gamma Adjusted KM-UCL (use when n<50) | 0.759 |
| 501 | | | tested Observations Only | |
| 502 | Not Enoug | h Data to | Perform GOF Test | |
| 503 | ·····• | | | |
| 505 | Lognormal ROS S | tatistics U | sing Imputed Non-Detects | |
| 506 | Mean in Original Scale | 0.0587 | Mean in Log Scale | -18.25 |
| 507 | SD in Original Scale | 0.716 | SD in Log Scale | 6.654 |
| 508 | 95% TOCE (assumes normality of ROS data) 95% BCA Bootstrap UCL | 0.143 | 95% Percentile Bootstrap UCL | 37.82 |
| 510 | 95% H-UCL (Log ROS) | 4076 | | |
| 511 | | | | |
| 512 | Statistics using KM estimates on | Logged Da | ata and Assuming Lognormal Distribution | |
| 513 | KM Mean (logged) | -0.461 | KM Geo Mean | 0.631 |
| 514 | KM Standard Error of Mean (logged) | 0.0212 | 95% H-UCL (KM -Log) | 0.661 |
| 516 | KM SD (logged) | 0.209 | 95% Critical H Value (KM-Log) | 1.693 |
| 517 | KM Standard Error of Mean (logged) | 0.0212 | | |
| 518 | | | | |
| 519 | DI /2 Normal | DL/2 Sta | tistics | |
| 520 | Mean in Original Scale | 0.706 | Mean in Log Scale | -0.471 |
| 522 | SD in Original Scale | 0.86 | SD in Log Scale | 0.317 |
| 523 | 95% t UCL (Assumes normality) | 0.808 | 95% H-Stat UCL | 0.683 |
| 524 | DL/2 is not a recommended meth | od, provide | ed for comparisons and historical reasons | |
| 525 | Nonparametric | : Distributi | on Free UCL Statistics | |
| 527 | Data do not follow a Disc | ernible Dis | tribution at 5% Significance Level | |
| 528 | | | | |
| 529 | 31 | iggested L | ICL to Use | |
| 530 | 95% KM (Chebyshey) UCI | 0.967 | | |
| 530 531 | 95% KM (Chebyshev) UCL | 0.967 | | |
| 530 531 532 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U | 0.967 CL are prov | vided to help the user to select the most appropriate 95 | 5% UCL. |
| 530 531 532 533 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based | 0.967 CL are prov upon data | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. | 5% UCL. |
| 530 531 532 533 534 535 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl | CL are prov upon data of the simu d data sets | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s | i% UCL. (2006). statistician. |
| 530 531 532 533 534 535 536 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl | 0.967 CL are pro- upon data of the simu d data sets | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s | i% UCL. (2006). statistician. |
| 530 531 532 533 534 535 536 537 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone | 0.967 CL are prov upon data of the simu d data sets | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s | 5% UCL. (2006). statistician. |
| 530 531 532 533 534 535 536 537 538 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone | 0.967 CL are prov upon data of the simu d data sets | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s | 5% UCL. (2006). tatistician. |
| 530 531 532 533 534 535 536 537 538 539 540 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations | 0.967 CL are pro- upon data of the simu d data sets General S 197 | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics | 5% UCL. (2006). ttatistician. |
| 530 531 532 533 534 535 536 537 538 539 540 541 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects | 0.967 CL are prov upon data of the simu d data sets General S 197 7 | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Non-Detects | 5% UCL. (2006). tatistician. 23 190 |
| 530 531 532 533 534 535 536 537 538 539 540 541 542 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects Number of Distinct Detects | 0.967 CL are prov upon data of the simu d data sets General S 197 7 7 | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects | 5% UCL. (2006). statistician. 23 190 16 |
| 530 531 532 533 534 535 536 537 538 539 540 541 542 543 543 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects Number of Distinct Detects Minimum Detect | CL are provupon data of the simu d data sets General S 197 7 7 1.68 002 | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Non-Detects Mumber of Distinct Non-Detects Mumber of Distinct Non-Detects | 23 190 16 0.619 |
| 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects Number of Distinct Detects Minimum Detect Maximum Detect Variance Detects | 0.967 CL are provupon data of the simu d data sets General S 197 7 7 1.68 903 166501 | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Non-Detects Minimum Non-Detects Detects Percent Non-Detect | 23 190 16 0.619 1.32 96.45% |
| 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects Number of Distinct Detects Minimum Detect Maximum Detects Variance Detects Mean Detects | 0.967 CL are provupon data of the simu d data sets 197 7 1.68 903 166501 289.7 | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Percent Non-Detects SD Detects | 23 190 16 0.619 1.32 96.45% 408 |
| 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects Number of Distinct Detects Minimum Detect Variance Detects Mean Detects Median Detects | 0.967 CL are prov upon data of the simu d data sets General S 197 7 7 1.68 903 166501 289.7 122 | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Percent Non-Detects SD Detects CV Detects | 23 190 16 0.619 1.32 96.45% 408 1.408 |
| 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects Number of Detects Number of Distinct Detects Minimum Detect Maximum Detects Variance Detects Mean Detects Median Detects | 0.967 CL are provupon data of the simu d data sets 197 7 1.68 903 166501 289.7 122 1.16 | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Distinct Observations Number of Distinct Non-Detects Minimum Non-Detect Maximum Non-Detects SD Detects CV Detects Kurtosis Detects | 23 190 16 0.619 1.32 96.45% 408 1.408 -0.881 |
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| 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 544 545 546 547 548 549 550 550 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects Number of Detects Minimum Detect Maximum Detect Variance Detects Mean Detects Skewness Detects Mean of Logged Detects Mean of Logged Detects | 0.967 CL are provupon data of the simu d data sets 903 166501 289.7 122 1.16 3.889 GOF Test | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Maximum Non-Detect Percent Non-Detects SD Detects CV Detects SD of Logged Detects on Detects Only | 5% UCL. (2006). ttatistician. 23 190 16 0.619 1.32 96.45% 408 1.408 -0.881 2.566 |
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| 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects Number of Detects Number of Distinct Detects Minimum Detect Maximum Detect Variance Detects Mean Detects Median Detects Skewness Detects Mean of Logged Detects Mean Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value | 0.967 CL are provupon data of the simu d data sets 903 166501 289.7 122 1.16 3.889 GOF Test 0.703 0.803 | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Maximum Non-Detect Or Detects SD Detects SD Detects SD of Logged Detects On Detects Only Shapiro Wilk GOF Test Detected Data Not Normal at 5% Significar | 23 190 16 0.619 1.32 96.45% 408 1.408 -0.881 2.566 nce Level |
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| 530 531 532 533 534 535 536 537 538 539 540 542 543 544 545 546 547 548 549 550 551 555 555 556 557 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects Number of Detects Number of Detects Number of Detects Number of Detects Variance Detects Mean Detects Median Detects Skewness Detects Mean of Logged Detects Mean of Logged Detects Normal Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value | 0.967 CL are provupon data of the simu d data sets General S 197 7 7 1.68 903 166501 289.7 122 1.16 3.889 GOF Test 0.703 0.803 0.367 0.304 ot Normal | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Maximum Non-Detect SD Detects SD Detects CV Detects Kurtosis Detects SD of Logged Detects On Detects Only Shapiro Wilk GOF Test Detected Data Not Normal at 5% Significar Lilliefors GOF Test Detected Data Not Normal at 5% Significar at 5% Significance Level | 3% UCL. (2006). statistician. 23 190 16 0.619 1.32 96.45% 408 1.408 -0.881 2.566 |
| 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 551 552 555 556 557 558 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects Number of Detects Number of Distinct Detects Minimum Detect Maximum Detect Variance Detects Mean Detects Skewness Detects Median Detects Skewness Detects Mean of Logged Detects Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data N | 0.967 CL are provupon data of the simu d data sets 197 7 1.68 903 166501 289.7 122 1.16 3.889 GOF Test 0.703 0.803 0.367 0.304 ot Normal Cr | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Maximum Non-Detects SD Detects CV Detects SD of Logged Detects On Detects Only Shapiro Wilk GOF Test Detected Data Not Normal at 5% Significar at 5% Significance Level | 5% UCL. (2006). statistician. 23 190 16 0.619 1.32 96.45% 408 1.408 -0.881 2.566 |
| 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 556 557 558 556 557 558 559 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Deservations Number of Detects Number of Detects Number of Distinct Detects Number of Distinct Detects Maximum Detect Wariance Detects Mean Detects Skewness Detects Mean of Logged Detects Mean of Logged Detects Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data N Kaplan-Meler (KM) Statistics using KM Mean | 0.967 CL are provupon data of the simu d data sets General S 197 7 7 1.68 903 166501 289.7 122 1.16 3.889 GOF Test 0.703 0.803 0.367 0.304 ot Normal Cri 10.89 20.00 | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Maximum Non-Detect Percent Non-Detects SD Detects CV Detects SD of Logged Detects On Detects Only Shapiro Wilk GOF Test Detected Data Not Normal at 5% Significar at 5% Significance Level tical Values and other Nonparametric UCLs KM Standard Error of Mean | 5% UCL. (2006). statistician. 23 190 16 0.619 1.32 96.45% 408 1.408 -0.881 2.566 mce Level mce Level 6.855 24.72 |
| 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 544 545 554 555 556 557 558 559 550 555 555 555 555 555 555 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects Number of Distinct Detects Number of Distinct Detects Number of Distinct Detects Naximum Detect Variance Detects Mean Detects Keen Sbewenss Detects Neen of Logged Detects Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Detected Data N Kaplan-Meier (KM) Statistics using KM Mean | 0.967 CL are provupon data of the simu d data sets 197 7 1.68 903 166501 289.7 122 1.16 3.889 GOF Test 0.703 0.803 0.367 0.304 ot Normal Cr 10.89 Sormal Cr 10.89 8.908 22 22 | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Maximum Non-Detect Percent Non-Detects SD Detects CV Detects SD Detects SD of Logged Detects SD of Logged Detects On Detects Only Shapiro Wilk GOF Test Detected Data Not Normal at 5% Significar Lilliefors GOF Test Detected Data Not Normal at 5% Significar at 5% Significance Level tical Values and other Nonparametric UCLs KM Standard Error of Mean 95% KM (BCA) UCL | 5% UCL. (2006). statistician. 23 190 16 0.619 1.32 96.45% 408 1.408 -0.881 2.566 nce Level nce Level 6.855 24.72 23.89 |
| 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 556 557 558 550 556 557 558 550 560 561 562 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects Number of Detects Number of Distinct Detects Maximum Detect Maximum Detect Variance Detects Mean Detects Skewness Detects Mean of Logged Detects Mean of Logged Detects Mean of Logged Detects Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Cortected Data N Kaplan-Meier (KM) Statistics using KM Mean KM SD Shapiro KM (t) UCL | 0.967 CL are provupon data of the simu d data sets 903 166501 289.7 122 1.16 3.889 GOF Test 0.703 0.803 0.367 0.304 ot Normal Cr 10.89 89.08 89.08 22.22 22.17 | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Maximum Non-Detect Percent Non-Detects SD Detects SD Detects CV Detects SD of Logged Detects SD of Logged Detects Detected Data Not Normal at 5% Significar Lilliefors GOF Test Detected Data Not Normal at 5% Significar at 5% Significance Level tical Values and other Nonparametric UCLs KM Standard Error of Mean 95% KM (BCA) UCL | i% UCL. (2006). istatistician. 23 190 16 0.619 1.32 96.45% 408 1.408 -0.881 2.566 nce Level 6.855 24.72 23.89 68.63 |
| 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 556 557 558 550 550 550 550 560 561 562 563 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects Number of Detects Number of Distinct Detects Maximum Detect Maximum Detect Variance Detects Median Detects Skewness Detects Median Detects Skewness Detects Median Detects Median Detects Skewness Detects Median Cogged Detects Median Cogged Detects U Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Kaplan-Meier (KM) Statistics using KM Mean KM SD 95% KM (t) UCL 90% KM (chebyshev UCL | 0.967 CL are provupon data of the simu d data sets 903 166501 289.7 122 1.16 3.889 GOF Test 0.703 0.803 0.367 0.304 ot Normal Cri 10.89 89.08 22.22 22.17 31.46 | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Maximum Non-Detect Percent Non-Detects SD Detects CV Detects SD of Logged Detects SD of Logged Detects On Detects Only Shapiro Wilk GOF Test Detected Data Not Normal at 5% Significar Lilliefors GOF Test Detected Data Not Normal at 5% Significar at 5% Significance Level tical Values and other Nonparametric UCLs KM Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Bootstrap t UCL | i% UCL. (2006). statistician. 23 190 16 0.619 1.32 96.45% 408 1.408 -0.881 2.566 nce Level 6.855 24.72 23.89 68.63 40.77 |
| 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 544 545 544 545 556 557 558 555 556 557 558 559 560 561 562 563 564 555 556 557 558 559 560 561 562 563 564 555 558 556 557 558 556 557 558 556 557 558 556 557 558 556 557 558 557 558 559 560 561 557 558 559 560 557 558 559 550 557 558 559 550 557 558 559 550 557 558 559 550 557 558 556 557 558 556 557 558 556 557 558 556 557 558 556 557 558 556 557 558 556 557 558 556 557 558 556 557 558 556 557 558 556 557 558 557 558 556 557 558 556 557 558 557 558 556 557 558 557 558 557 558 556 557 558 558 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects Number of Distinct Detects Number of Distinct Detects Maximum Detect Variance Detects Mean Detects Median Detects Skewness Detects Mean of Logged Detects Mean of Logged Detects Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Kaplan-Meier (KM) Statistics using KM Mean KM SD 95% KM (t) UCL 97.5% KM Chebyshev UCL | 0.967 CL are provupon data of the simu d data sets General S 197 7 7 1.68 903 166501 289,7 122 1.16 3.889 GOF Test 0.703 0.803 0.367 0.304 ot Normal Cr 10.89 89.08 22.22 22.17 31.46 53.7 | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Maximum Non-Detect ON-Detects SD Detects SD Detects CV Detects SD of Logged Detects SD of Logged Detects On Detects Only Shapiro Wilk GOF Test Detected Data Not Normal at 5% Significar at 5% Significance Level KM Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Chebyshev UCL | 3% UCL. (2006). statistician. 23 190 16 0.619 1.32 96.45% 408 1.408 -0.881 2.566 nce Level 6.855 24.72 23.89 68.63 40.77 79.1 |
| 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 550 551 552 553 556 556 557 558 560 561 562 563 564 565 566 567 568 566 567 568 566 567 568 566 566 566 566 | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects Number of Distinct Detects Number of Distinct Detects Maximum Detect Maximum Detect U Variance Detects Mean Detects Skewness Detects Mean of Logged Detects Mean of Logged Detects Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Kaplan-Meler (KM) Statistics using KM Mean KM SD 95% KM (t) UCL 97.5% KM (chebyshev UCL 97.5% KM Chebyshev UCL | 0.967 CL are provupon data of the simu d data sets General S 197 7 7 1.68 903 166501 289.7 122 1.16 3.889 GOF Test 0.703 0.803 0.367 0.304 ot Normal Cr 10.89 89.08 22.22 22.17 31.46 53.7 | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Maximum Non-Detect SD Detects SD Detects SD Detects CV Detects SD of Logged Detects SD of Logged Detects On Detects Only Shapiro Wilk GOF Test Detected Data Not Normal at 5% Significar Lilliefors GOF Test Detected Data Not Normal at 5% Significar at 5% Significance Level KM Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL | 3% UCL. (2006). statistician. 23 190 16 0.619 1.32 96.45% 408 1.408 -0.881 2.566 nce Level 6.855 24.72 23.89 68.63 40.777 79.1 |
| $\begin{array}{c} 530\\ 531\\ 532\\ 533\\ 533\\ 533\\ 533\\ 533\\ 533\\ 533$ | 95% KM (Chebyshev) UCL Note: Suggestions regarding the selection of a 95% U Recommendations are based These recommendations are based upon the results However, simulations results will not cover all Real Worl Acetophenone Total Number of Observations Number of Detects Number of Detects Number of Distinct Detects Number of Distinct Detects Maximum Detect Maximum Detect Variance Detects Mean Detects Mean Detects Skewness Detects Mean of Logged Detects Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Kaplan-Meier (KM) Statistics using KM Mean KM SD 95% KM (t) UCL 90% KM Chebyshev UCL 97.5% KM Chebyshev UCL 97.5% KM Chebyshev UCL | 0.967 CL are provupon data of the simu d data sets General S 197 7 7 1.68 903 166501 289.7 122 1.16 3.889 GOF Test 0.703 0.803 0.367 0.304 ot Normal Normal Cr 10.89 89.08 22.22 22.17 31.46 53.7 sts on Det 0.435 | vided to help the user to select the most appropriate 95 size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee ; for additional insight the user may want to consult a s tatistics Number of Distinct Observations Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Observations Detects SD Detects SD Detects CV Detects Kurtosis Detects SD of Logged Detects On Detects Only Shapiro Wilk GOF Test Detected Data Not Normal at 5% Significar Lilliefors GOF Test Detected Data Not Normal at 5% Significar at 5% Significance Level tical Values and other Nonparametric UCLs KM Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM (Chebyshev UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL | i% UCL. (2006). istatistician. 23 190 16 0.619 1.32 96.45% 408 1.408 -0.881 2.566 nce Level 6.855 24.72 23.89 68.63 40.77 79.1 |

| | ۸ | P | C C | D | E | E | C | ш | - | - | K | 1 |
|-----|---|-----------|----------------|------------------|------------------|--------------|--------------|---------------|-------------|--------------|---------------|--------------------------|
| 569 | A | D | U | 5% A-D Crit | ت tical Value | 0 772 | Detect | ed data an | near Gamn | na Distribu | red at 5% S | |
| 500 | | | | | et Statiatia | 0.772 | Delect | ou uula ap | Kolmo | | | igniticatios Level |
| 569 | | | | K-3 Te | | 0.210 | Datast | | Kolinioge | | | Section and a section of |
| 570 | | | | 5% K-5 CI | | 0.332 | Delect | | Jear Gami | | iteu al 5% S | ignificance Level |
| 571 | | | | Detected data | appear Ga | amma Dist | riduted at | 5% Signitio | cance Leve | Ð | | |
| 572 | | | | | | | | | | | | |
| 573 | | | | C | amma Sta | tistics on | Detected I | Data Only | | | | |
| 574 | | | | k | hat (MLE) | 0.374 | | | k star | (bias corre | ected MLE) | 0.309 |
| 575 | | | | Theta | hat (MLE) | 775.3 | | | Theta star | (bias corre | ected MLE) | 938.3 |
| 576 | | | | nu | hat (MLE) | 5.232 | | | nu | ı star (bias | corrected) | 4.323 |
| 577 | | | | Mea | n (detects) | 289.7 | | | | | | |
| 578 | | | | | | | | | | | | |
| 579 | | | | Gamn | na ROS Sta | atistics usi | ng Impute | d Non-Dete | ects | | | |
| 580 | | | GROS may no | t be used wher | n data set h | as > 50% I | NDs with n | nany tied ol | oservations | at multipl | e DLs | |
| 581 | (| GROS may | not be used wh | nen kstar of det | ects is sma | all such as | <1.0, espe | cially when | the sampl | e size is si | mall (e.g., < | :15-20) |
| 582 | | | For s | uch situations. | GROS met | hod mav v | ield incorre | ect values of | of UCLs an | d BTVs | | |
| 583 | | | | This is | especially | true when | the sampl | e size is sr | nall. | | | |
| 584 | | For dam | ma distributed | detected data | BTVs and | UCI s may | be compu | ted usina a | amma dist | ribution on | KM estima | tes |
| 504 | | i oi guin | | dottobiou data, | Minimum | 0.01 | be compa | tou uonig g | | | Mean | 10.3 |
| 505 | | | | | Maximum | 0.01 | | | | | Median | 0.01 |
| 586 | | | | | | 903 | | | | | wieulan | 0.01 |
| 587 | | | | 1. | | 09.30 | | | l | /h: | | 0.073 |
| 588 | | | | к т | nat (MLE) | 0.12 | | | K Star | (blas corre | ected MLE) | 0.121 |
| 589 | | | | Iheta | hat (MLE) | 86.19 | | | I heta star | (bias corre | ected MLE) | 85.07 |
| 590 | | | | nu | hat (MLE) | 47.11 | | | nı | i star (bias | corrected) | 47.72 |
| 591 | | | Adjusted | Level of Signif | icance (β) | 0.0488 | | | | | | |
| 592 | | A | pproximate Ch | i Square Value | (47.72, α) | 32.87 | | Adjus | ted Chi Sq | uare Value | e (47.72, β) | 32.78 |
| 593 | | 95% Gamr | ma Approximat | e UCL (use wh | en n>=50) | 14.96 | 95 | 5% Gamma | Adjusted l | JCL (use w | vhen n<50) | 15 |
| 594 | | | | | | | | | | | | |
| 595 | | | | Estimat | es of Gam | ma Param | eters usin | g KM Estin | nates | | | |
| 596 | | | | Ν | /lean (KM) | 10.89 | | | | | SD (KM) | 89.08 |
| 597 | | | | Vari | ance (KM) | 7936 | | | | SE of I | Mean (KM) | 6.855 |
| 598 | | | | | k hat (KM) | 0.015 | | | | | k star (KM) | 0.0181 |
| 599 | | | | n | u hat (KM) | 5.89 | | | | nı | u star (KM) | 7.134 |
| 600 | | | | thet | a hat (KM) | 728.6 | | | | theta | a star (KM) | 601.6 |
| 601 | | | 80% | 6 gamma perce | entile (KM) | 0.00152 | | | 90% ga | mma perce | entile (KM) | 1.02 |
| 602 | | | 95% | 6 gamma perce | entile (KM) | 20.86 | | | 99% ga | mma perce | entile (KM) | 307.2 |
| 602 | | | | - <u>g</u> = | | | | | j- | | | |
| 604 | | | | | Gamma k | anlan-Mei | er (KM) St | tatietice | | | | |
| 004 | | | | hi Square Valu | $a(7.13 \alpha)$ | 2 2/4 | | Adiu | sted Chi S | quare Valu | in (7 13 B) | 2 224 |
| 605 | 059 | Commo A | Approximate C | | e(7.13, u) | 24.62 | 05% (| Auju | usted KM I | | (7.13, p) | 21.02 |
| 606 | 90 | | Approximate Ki | N-OCL (USE WIT | en n>=50) | 34.02 | 95%6 | annna Auji | | | men n<50) | 34.93 |
| 607 | | | | | | ant on Da | | | 0-1-1 | | | |
| 608 | | | | Lognor | | est on De | | servations | | | | |
| 609 | | | S | hapiro Wilk Te | st Statistic | 0.896 | | | Shapir | o Wilk GO | P⊢ lest | |
| 610 | | | 5% S | hapiro Wilk Cri | tical Value | 0.803 | De | etected Dat | a appear L | ognormal a | at 5% Signif | icance Level |
| 611 | | | | Lilliefors Te | st Statistic | 0.211 | | | Lillie | fors GOF | Test | |
| 612 | | | 5 | % Lilliefors Cri | tical Value | 0.304 | De | etected Dat | a appear L | ognormal a | at 5% Signif | icance Level |
| 613 | 613 Detected Data appear Lognormal at 5 | | | | | | | Significanc | e Level | | | |
| 614 | | | | | | | | | | | | |
| 615 | | | | Lognori | nal ROS S | tatistics U | sing Imput | ted Non-De | tects | | | |
| 616 | | | | Mean in Orig | inal Scale | 10.3 | | | | Mean in | Log Scale | -15.39 |
| 617 | | | | SD in Orig | inal Scale | 89.38 | | | | SD in | Log Scale | 8.036 |
| 618 | | 95% | t UCL (assume | s normality of | ROS data) | 20.82 | | | 95% Perc | entile Boo | tstrap UCL | 23.01 |
| 619 | | | | 95% BCA Boot | strap UCL | 27.75 | | | | 95% Boots | strap t UCL | 103.2 |
| 620 | | | | 95% H-UCL | Log ROS) | 1.337E+10 | | | | | | |
| 621 | | | | | | | | | | | | |
| 021 | | | | | | | | | | | | |

| | A | В | С | D | | E | F | G | Н | 1 | J | К | L |
|------------|---------|----------------|---------------|------------------|----------|-------------|--------------|--------------|---------------|-------------|---------------|---------------|------------------|
| 622 | | | Statistic | s using KN | / estir | mates on | Logged D | ata and As | suming Lo | gnormal [| Distribution | 1 | |
| 623 | | | | KM | Mean | (logged) | -0.324 | | | | KM | Geo Mean | 0.723 |
| 624 | | | | K | (M SD | (logged) | 0.924 | | | 95% Criti | ical H Valu | e (KM-Log) | 2.111 |
| 625 | | | KM Standa | rd Error of | Mean | (logged) | 0.0711 | | | 9501 0 10 | 95% H-UCL | _ (KM -Log) | 1.274 |
| 626 | | | KM Standa | K rd Error of | Maan | (logged) | 0.924 | | | 95% Criti | ical H valu | e (KIM-LOG) | 2.111 |
| 627 | | | KIVI Stanua | | wear | (loggeu) | 0.0711 | | | | | | |
| 629 | | | | | | | DL/2 Sta | tistics | | | | | |
| 630 | | | DL/2 No | rmal | | | | | | DL/2 | Log-Trans | formed | |
| 631 | | | | Mean in | Origin | nal Scale | 10.87 | | | | Mean ir | n Log Scale | -0.357 |
| 632 | | | | SD in | Origin | nal Scale | 89.31 | | | | SD ir | n Log Scale | 0.934 |
| 633 | | | 95% t L | JCL (Assu | mes n | ormality) | 21.39 | | | | 95% I | H-Stat UCL | 1.246 |
| 634 | | | DL/2 is n | ot a recon | nmeno | ded meth | od, provid | ed for com | parisons a | nd historic | cal reasons | 3 | |
| 635 | | | | | | | | | | | | | |
| 636 | | | | Detected | Nonp | arametri | c Distributi | on Free U | CL Statistic | xs | (a) | | |
| 637 | | | | Delected | Data | appear G | amma Dis | unduteu at | 5% Signin | cance Lev | /ei | | |
| 630 | | | | | | S | uaaested L | ICL to Use |) | | | | |
| 640 | | | 95% KM A | pproximate | e Gan | nma UCL | 34.62 | | | | | | |
| 641 | | | | | | | 1 | 1 | | | | | |
| 642 | No | te: Suggestic | ons regarding | the select | tion of | a 95% U | CL are pro | vided to he | Ip the user | to select t | the most ap | propriate 98 | 5% UCL. |
| 643 | | | Rec | ommendat | tions a | are based | upon data | size, data | distributior | i, and skev | wness. | | |
| 644 | TI | hese recomm | nendations ar | e based up | oon th | e results | of the simu | lation stud | ies summa | rized in Si | ingh, Maich | le, and Lee | (2006). |
| 645 | Howe | ever, simulati | ons results w | III not cove | er all F | Real Worl | d data sets | ; tor additi | onal insight | the user i | may want to | o consult a s | statistician. |
| 646 | Bonzona | | | | | | | | | | | | |
| 647 | Denzene | | | | | | | | | | | | |
| 648 | | | | | | | General S | tatistics | | | | | |
| 650 | | | Total | Number o | of Obse | ervations | 197 | | 1 | lumber of | Distinct Ob | oservations | 15 |
| 651 | | | | Num | nber o | f Detects | 12 | | | N | umber of N | on-Detects | 185 |
| 652 | | | N | umber of D | Distinc | t Detects | 12 | | | Number of | f Distinct N | on-Detects | 3 |
| 653 | | | | М | linimu | m Detect | 0.538 | | | | Minimum I | Non-Detect | 0.25 |
| 654 | | | | Ma | aximu | m Detect | 2170 | | | | Maximum I | Non-Detect | 1.25 |
| 655 | | | | Va | riance | e Detects | 627742 | | | | Percent N | on-Detects | 93.91% |
| 656 | | | | | Mear | 1 Detects | 433.3 | | | | | SD Detects | 792.3 |
| 657 | | | | N Sko | viediar | Detects | 5.3/3 | | | | Kurto | CV Detects | 1.829 |
| 658 | | | | Mean of L | ondes | Detects | 2.815 | | | | | sis Delects | 2.059 |
| 660 | | | | moun or E | oggot | | 2.010 | | | | OD OI LOGG | | 0.200 |
| 661 | | | | | | Normal | GOF Test | on Detects | s Only | | | | |
| 662 | | | S | hapiro Wil | k Test | t Statistic | 0.607 | | - | Shapi | iro Wilk GC | OF Test | |
| 663 | | | 5% SI | napiro Will | k Critio | cal Value | 0.859 | | Detected | Data Not N | Normal at 5 | 5% Significa | nce Level |
| 664 | - | | | Lilliefor | s Test | t Statistic | 0.358 | | | Lillie | efors GOF | Test | |
| 665 | | | 5 | % Lilliefors | s Critic | cal Value | 0.243 | | Detected | Data Not N | Normal at 5 | % Significa | nce Level |
| 666 | | | | D | etecte | d Data N | ot Normal | at 5% Sig | nificance L | evel | | | |
| 667 | | | Kanlan Ma | | totioti | | | | | Nonner | omotrio LIC | | |
| 668 | | | Rapiari-ivie | | kausu | CS USING | 26.63 | | | KW S | tandard Fr | ror of Mean | 15.92 |
| 670 | | | | | · | KM SD | 214 | | | 1411 0 | 95% KM | (BCA) UCL | 56.9 |
| 671 | | | | 9 | 5% KN | И (t) UCL | 52.94 | | 95% | KM (Perc | entile Boot | strap) UCL | 53.75 |
| 672 | - | | | 95 | 5% KN | 1 (z) UCL | 52.82 | | | 95% | % KM Boots | strap t UCL | 159.6 |
| 673 | | | (| 90% KM C | hebys | hev UCL | 74.39 | | | 95% | 6 KM Cheb | yshev UCL | 96.03 |
| 674 | | | 97 | .5% KM C | hebys | hev UCL | 126.1 | | | 99% | 6 KM Cheb | yshev UCL | 185 |
| 675 | | | | ~ | | 005- | | | | D | | | |
| 676 | | | | G | | GUF TE | SIS ON Det | ectéd Obs | ervations (| | n Darling (| | |
| 0// 670 | | | | Α-L 5% Δ_Γ |) Critic | cal Value | 0.977 | Dete | cted Data M | Jot Gamm | a Distribute | ed at 5% Sid | inificance Level |
| 679 | | | | | S Test | t Statistic | 0.275 | Dere | | Kolmon | orov-Smiri | nov GOF | |
| 680 | | | | 5% K-S | S Critic | cal Value | 0.27 | Dete | cted Data N | lot Gamm | a Distribute | ed at 5% Sid | unificance Level |
| 681 | | | | Detecte | d Data | a Not Ga | mma Distri | buted at 5 | % Significa | nce Leve | 1 | | |
| 682 | | | | | | | | | | | | | |
| 683 | | | | | Ga | amma Sta | atistics on | Detected I | Data Only | | | | |
| 684 | | | | | k h | at (MLE) | 0.222 | | | k star | r (bias corre | ected MLE) | 0.222 |
| 685 | | | | Т | neta h | at (MLE) | 1949 | | | I heta star | (bias corre | ected MLE) | 1950 |
| 686 | | | | | nu h | (detects) | 5.334 | | | n | u star (bias | corrected) | 5.334 |
| 600 | | | | | wean | (uerects) | 433.3 | | | | | | |
| 680 | | | | G | amme | ROS SI | atistics usi | ng Impute | d Non-Det | ects | | | |
| 690 | | G | ROS may no | t be used v | when | data set l | nas > 50% | NDs with n | nany tied of | oservation | is at multip | le DLs | |
| 691 | G | ROS may no | ot be used wh | en kstar o | f dete | cts is sm | all such as | <1.0, espe | cially wher | the samp | le size is s | mall (e.g., < | 15-20) |
| 692 | | | For si | uch situatio | ons, G | ROS me | thod may y | ield incorre | ect values of | of UCLs ar | nd BTVs | | |
| 693 | | | | Tł | his is e | especially | true when | the sampl | e size is sr | nall. | | | |
| 694 | | For gamm | a distributed | detected c | data, B | BTVs and | UCLs may | be compu | ted using g | amma dis | tribution on | n KM estima | tes |

| | A | В | С | D | Е | F | G | Н | | | J | K | L |
|-----|--------------|--------------|------------------|-----------------------|---------------------|---------------|--------------|------------|-----------|---------|--------------|-----------------------|---------------|
| 695 | | | | Mir | nimum | 0.01 | | | | | | Mean | 26.4 |
| 696 | | | | Max | kimum | 2170 | | | | | | Median | 0.01 |
| 697 | | | | | SD | 214.5 | | | | | | CV | 8.126 |
| 698 | | | | k hat | (MLE) | 0.108 | | | k | < star | (bias corre | ected MLE) | 0.11 |
| 699 | | | | Theta hat | (MLE) | 243.9 | | | Theta | a star | (bias corre | ected MLE) | 240.1 |
| 700 | | | | nu hat | (MLE) | 42.65 | | | | n | u star (bias | corrected) | 43.33 |
| 701 | | | Adjusted | Level of Significan | ice (β) | 0.0488 | | | | | (| | |
| 701 | | Δ | nnroximate Ch | i Square Value (43 | 33 n) | 29.24 | | μA | iusted C | hi Sc | iuare Value | = (43 33 B) | 29.15 |
| 702 | | 95% Gam | ma Approximat | | $\frac{100, 0}{12}$ | 20.21 | QF | 5% Gamr | na Δdius | stad | | $\frac{10.00}{10.00}$ | 39.24 |
| 703 | | oo /o cain | | | . 00) | 00.10 | | o dann | na / laja | olou | 002 (000 1 | | 00.21 |
| 704 | | | | Entimotoo | of Com | mo Dorom | otoro unin | | timotoo | | | | |
| 705 | | | | Launates C | | 26.62 | | | umates | , | | SD (KM) | 214 |
| 706 | | | | Varianas | | 20.03 | | | | | CE of | SD (KW) | 15.02 |
| /0/ | | | | Variance | | 43776 | | | | | 3E 01 | | 15.92 |
| 708 | | | | кпа | | 0.0155 | | | | | | K Star (KIVI) | 0.0186 |
| 709 | | | | nu na | t (KM) | 6.102 | | | | | n | u star (KM) | 7.343 |
| 710 | | | | theta ha | t (KM) | 1/19 | | | | | thet | a star (KM) | 1429 |
| 711 | | | 80% | 6 gamma percentile | e (KM) | 0.00514 | | | 90 |)% ga | amma perc | entile (KM) | 2.861 |
| 712 | | | 95% | 6 gamma percentile | e (KM) | 53.89 | | | 99 | 9% ga | amma perc | entile (KM) | 749.3 |
| 713 | | | | | | | | | | | | | |
| 714 | | | | Ga | mma k | Kaplan-Mei | er (KM) S | tatistics | | | | | |
| 715 | | | Approximate C | hi Square Value (7. | .34, α) | 2.361 | | A | djusted (| Chi S | Square Valu | ue (7.34, β) | 2.34 |
| 716 | 95% | 6 Gamma / | Approximate KI | A-UCL (use when n | ı>=50) | 82.83 | 95% G | Gamma A | djusted | KM- | UCL (use v | when n<50) | 83.56 |
| 717 | | | | | | | | | | | | | |
| 718 | | | | Lognormal | GOF 1 | Fest on De | tected Ob | servation | ns Only | | | | |
| 719 | | | S | hapiro Wilk Test St | tatistic | 0.856 | | | S | Shapi | ro Wilk GC | OF Test | |
| 720 | | | 5% S | hapiro Wilk Critical | Value | 0.859 | | Detected | Data No | ot Lo | gnormal at | 5% Signific | cance Level |
| 721 | | | | Lilliefors Test St | tatistic | 0.196 | | | | Lilli | efors GOF | Test | |
| 722 | | | 5 | % Lilliefors Critical | Value | 0.243 | De | etected D |)ata app | ear L | ognormal | at 5% Signi | ficance Level |
| 723 | | | D | etected Data appea | ar App | roximate L | ognormal | at 5% Si | ignifican | nce L | evel | | |
| 724 | | | | | | | | | | | | | |
| 725 | | | | Lognormal I | ROS S | tatistics U | sing Impu | ted Non- | Detects | ; | | | |
| 726 | | | | Mean in Original | Scale | 26.4 | | | | | Mean ir | n Log Scale | -16.38 |
| 727 | | | | SD in Original | Scale | 214.5 | | | | | SD ir | n Log Scale | 9.592 |
| 728 | | 95% | t UCL (assume | s normality of ROS | 6 data) | 51.66 | | | 95% | Per | centile Boo | otstrap UCL | 55.19 |
| 729 | | | | 95% BCA Bootstra | p UCL | 68.57 | | | | | 95% Boots | strap t UCL | 121 |
| 730 | | | | 95% H-UCL (Log | ROS) | 6.710E+16 | | | | | | | |
| 731 | | | | | | | | | | | | | |
| 732 | | | Statistic | s using KM estima | tes on | Logged Da | ata and As | ssuming | Lognorr | mal C | Distribution | | |
| 733 | | | | KM Mean (Ic | ogged) | -1.13 | | | | | KM | Geo Mean | 0.323 |
| 734 | | | | KM SD (lo | ogged) | 1.269 | | | 95% | o Criti | cal H Valu | e (KM-Log) | 2.427 |
| 735 | | | KM Standa | rd Error of Mean (Io | ogged) | 0.0945 | | | | ç | 95% H-UCL | . (KM -Log) | 0.901 |
| 736 | | | | KM SD (lo | ogged) | 1.269 | | | 95% | o Criti | cal H Valu | e (KM-Log) | 2.427 |
| 737 | | | KM Standa | rd Error of Mean (lo | ogged) | 0.0945 | | | | | | | |
| 738 | | | | | | | | | | | | | |
| 739 | | | | | | DL/2 Sta | tistics | | | | | | |
| 740 | | | DL/2 No | rmal | | | | | C | DL/2 | Log-Trans | formed | |
| 741 | | | | Mean in Original | Scale | 26.53 | | | | | Mean ir | n Log Scale | -1.703 |
| 742 | | | | SD in Original | Scale | 214.5 | | | | | SD ir | n Log Scale | 1.411 |
| 743 | | | 95% t l | JCL (Assumes norr | mality) | 51.78 | | | | | 95% I | H-Stat UCL | 0.639 |
| 744 | | | DL/2 is n | ot a recommended | d meth | od, provide | ed for com | parisons | and his | storic | cal reasons | 5 | |
| 745 | | | | | | | | | | | | | |
| 746 | | | | Nonpara | ametric | c Distributio | on Free U | CL Statis | stics | | | | |
| 747 | | | Detecte | d Data appear App | proxim | ate Lognor | mal Distri | buted at | 5% Sigi | nifica | ince Level | | |
| 748 | | | | | | | | | | | | | |
| 749 | | | | | SL | Iggested U | CL to Use | Ð | | | | | [|
| 750 | | | | KMH | 1-UCL | 0.901 | | | | | | | |
| 751 | | | | <u></u> | 0501 - | 0 | | 1. 2 | | | | | |
| 752 | No | ite: Sugges | tions regarding | the selection of a s | 95% U | CL are prov | /ided to he | eip the us | er to se | iect t | ne most ap | propriate 9 | 5% UCL. |
| 753 | | | Rec | ommendations are | pased | upon data | sıze, data | distributi | ion, and | skev | vness. | | (0000) |
| 754 | T | hese recon | nmendations ar | e based upon the re | esults | of the simu | lation stud | lies sumr | narized | ın Si | ngh, Maich | nie, and Lee | (2006). |
| 755 | Howe | ever, simula | ations results w | III not cover all Rea | ai Worl | d data sets | ; tor additi | onal insig | ght the u | user i | may want to | o consult a | statistician. |
| 756 | . | | | | | | | | | | | | |
| 757 | Ethylbenzene | | | | | | | | | | | | |
| 758 | | | | | | 0 | | | | | | | |
| 759 | | | . | Number (C) | - 41 | General S | tatistics | | N | | Diat : C | | 14 |
| 760 | | | Total | Number of Observ | ations | 19/ | | | Numbe | er of | UISTINCT OF | oservations | 14 |
| 761 | | | | Number of D | etects | 10 | | | | N | umber of N | on-Detects | 18/ |
| 762 | | | N | umber of Distinct D | etects | 10 | | | Numb | per o | r Distinct N | on-Detects | 4 |
| 763 | | | | Minimum I | Detect | 2./1 | | | | | winimum l | Non-Detect | 0.25 |
| 764 | | | | Maximum I | Detect | 903 | | | | | IVIAXIMUM I | Non-Detect | 1.25 |
| 765 | | | | Variance D | etects | 111403 | | | | | Percent N | on-Detects | 94.92% |
| 766 | | | | Mean D | etects | 204.7 | | | | | | SU Detects | 333.8 |
| 767 | | | | Median D | etects | 5/.6 | | | | | | UV Detects | 1.63 |
| 768 | | | | Skewness D | etects | 1./2 | | | | | Kurto | sis Detects | 1.506 |
| | | | | wean of Londed D | retects | i 3./56 | | | | | SD OT LODO | Jea Detects | 1 20/5 |
| | А | В | С | D | E | F | G | Н | I | J | K | L | | |
|------------|---|-----------|----------------|--------------------|------------------------|---|---|--------------------------|---------------------------------------|-------------------|----------|-------------------|--|--|
| 770 | | | | | NI | 00F T | | <u>.</u> | | | | | | |
| 771 | | | 9 | haniro Wilk Test | Normal Statistic | | Shapiro Wilk GOF Test | | | | | | | |
| 773 | | | 5% Sł | napiro Wilk Criti | 0.842 | Detected Data Not Normal at 5% Significance Level | | | | | | | | |
| 774 | | | | Lilliefors Test | t Statistic | 0.353 | Lilliefors GOF Test | | | | | | | |
| 775 | | | 59 | % Lilliefors Criti | cal Value | 0.262 | Detected Data Not Normal at 5% Significance Level | | | | | | | |
| 776 | | | | Detecte | d Data N | ot Normal | at 5% Sign | ificance L | evel. | | | | | |
| 777 | | | Kenten Me | | | | | | | | | | | |
| 778 | | | Kapian-Mei | er (KM) Statisti | CS USING I | Normal Cri | tical value | s and othe | er Nonpara | ametric UCLs | f Mean | 6 33 | | |
| 780 | | | | | KM SD | 84.29 | | | 1411 0 | 95% KM (BC/ | A) UCL | 22.96 | | |
| 781 | | | | 95% KN | A (t) UCL | 21.09 | 95% KM (Percentile Bootstrap) UCL 21.09 | | | | | | | |
| 782 | | | | 95% KN | 1 (z) UCL | 21.04 | | | 959 | % KM Bootstrap | ot UCL | 61.02 | | |
| 783 | | | 9 | 0% KM Chebys | hev UCL | 29.62 | | | 95% | 6 KM Chebyshe | ev UCL | 38.22 | | |
| 784 | | | 97 | .5% KIVI Chebys | inev UCL | 50.16 | | | 99% | 6 KIVI Chebyshe | ev UCL | /3.61 | | |
| 786 | Gamma GOF Tests on Detected Observations Only | | | | | | | | | | | | | |
| 787 | | | | A-D Test | t Statistic | 0.579 | | | Anderso | on-Darling GOF | Test | | | |
| 788 | | | | 5% A-D Criti | cal Value | 0.792 | Detecte | ed data ap | pear Gam | ma Distributed | at 5% S | ignificance Level | | |
| 789 | | | | K-S Test | t Statistic | 0.212 | | | Kolmog | orov-Smirnov | GOF | | | |
| 790 | | | | 5% K-S Criti | cal Value | 0.284 amma Diet | Detecte | ed data ap 5% Signifi | pear Gam | ma Distributed | at 5% S | ignificance Level | | |
| 791 | | | | | арреат Са | | | 570 Olgrilli | | 0 | | | | |
| 793 | | | | Ga | amma Sta | atistics on | Detected D | ata Only | | | | | | |
| 794 | | | | k h | at (MLE) | 0.417 | | | k star | (bias corrected | d MLE) | 0.359 | | |
| 795 | | | | Theta h | at (MLE) | 490.5 | | | Theta star | (bias corrected | d MLE) | 570.6 | | |
| 796 | | | | nu h Mean | (detects) | 8.347 | | | n | u star (bias cori | rected) | 7.176 | | |
| 797 | | | | Wedn | (uerecis) | 204.7 | | | | | | | | |
| 799 | | | | Gamma | a ROS Sta | atistics usi | ng Imputeo | l Non-Det | ects | | | | | |
| 800 | | | GROS may no | t be used when | data set h | as > 50% I | NDs with m | any tied o | bservation | s at multiple DI | S | | | |
| 801 | | GROS may | not be used wh | en kstar of dete | cts is sma | all such as | <1.0, espec | cially wher | n the samp | le size is small | (e.g., < | 15-20) | | |
| 802 | | | For su | uch situations, G | ROS met | thod may y | the complete | ct values | of UCLs ar | nd BTVs | | | | |
| 803 | | For dam | ma distributed | detected data F | especially STVs and | UCLs may | the comput | ed using o | nan. Iamma dis | tribution on KM | estimat | tes | | |
| 805 | | i oi guin | | | Minimum | 0.01 | be compar | ou uoing g | jannia alo | | Mean | 10.4 | | |
| 806 | | | | Ν | /laximum | 903 | | | | ١ | Median | 0.01 | | |
| 807 | | | | | SD | 84.53 | | | | | CV | 8.126 | | |
| 808 | | | | k h | at (MLE) | 0.121 | | | k star | (bias corrected | d MLE) | 0.123 | | |
| 809 | | | | I neta r | at (MLE) | 85.69 47.83 | | | I neta star | (blas corrected | I MLE) | 84.62 48.43 | | |
| 811 | | | Adjusted | Level of Signific | cance (β) | 0.0488 | | | | | rected) | -010 | | |
| 812 | | A | pproximate Chi | Square Value (| 48.43, α) | 33.46 | | Adjus | sted Chi So | quare Value (48 | 3.43, β) | 33.37 | | |
| 813 | | 95% Gamr | na Approximate | e UCL (use whe | n n>=50) | 15.06 | 959 | % Gamma | Adjusted | UCL (use when | n n<50) | 15.1 | | |
| 814 | | | | Fatimate | a of 0 am | ma Davan | atore volu | | | | | | | |
| 815 | | | | Estimate | ean (KM) | 10 63 | eters usinį | J KIM ESUR | nates | S | D (KM) | 84 29 | | |
| 817 | | | | Varia | nce (KM) | 7104 | | | | SE of Mea | n (KM) | 6.33 | | |
| 818 | | | | k | hat (KM) | 0.0159 | | | | k sta | ar (KM) | 0.019 | | |
| 819 | | | | nu | hat (KM) | 6.266 | | | | nu sta | ar (KM) | 7.504 | | |
| 820 | | | <u>000</u> | theta | hat (KM) | 668.3 | | | 0.0% a | theta sta | ar (KM) | 558.1 | | |
| 821 | | | 95% | amma percer | ntile (KM) | 22.39 | | | 90 % ga | amma percentil | e (KM) | 298.6 | | |
| 823 | | | | . <u>9</u> | | | | | | | - () | | | |
| 824 | | | | | Gamma K | Kaplan-Mei | er (KM) St | atistics | | | | | | |
| 825 | | 7 | Approximate Cl | ni Square Value | (7.50, α) | 2.451 | 0.561 6 | Adju | usted Chi S | Square Value (7 | 7.50, β) | 2.43 | | |
| 826 | 95 | % Gamma A | pproximate KN | 1-UCL (use whe | n n>=50) | 32.54 | 95% G | amma Adj | usted KM- | UCL (use when | n n<50) | 32.82 | | |
| ŏ∠/ 829 | | | | Loanorm | al GOF 1 | est on De | tected Ohe | ervations | Only | | | | | |
| 829 | | | S | hapiro Wilk Test | t Statistic | 0.916 | | | Shapi | ro Wilk GOF T | est | | | |
| 830 | | | 5% Sł | napiro Wilk Criti | cal Value | 0.842 | De | tected Dat | ta appear l | ognormal at 59 | % Signif | icance Level | | |
| 831 | | | | Lilliefors Test | Statistic | 0.212 | | | Lilli | efors GOF Tes | t | | | |
| 832 | | | 59 | % Lilliefors Criti | cal Value | 0.262 | De | tected Dat | ta appear l | ognormal at 59 | % Signif | icance Level | | |
| 833 | | | | Detected | vata appe | ar Lognorr | nai at 5% S | significanc | e levei | | | | | |
| 835 | | | | Lognorm | al ROS S | tatistics U | sing Impute | ed Non-De | etects | | | | | |
| 836 | | | | Mean in Origi | nal Scale | 10.44 | | | | Mean in Log | g Scale | -9.87 | | |
| 837 | | | | SD in Origi | nal Scale | 84.52 | | | | SD in Log | g Scale | 6.554 | | |
| 838 | | 95% 1 | t UCL (assume | s normality of R | OS data) | 20.4 | | | 95% Per | centile Bootstra | ap UCL | 21.39 | | |
| 839 | | | | 95% HLICI / | | 26.9 | | | | 95% Bootstrap | DT UCL | 83.92 | | |
| 840 841 | | | | 3370 H-UUL (L | .uy nuo) | 3070035 | | | | | | | | |
| 842 | | | Statistics | s using KM esti | mates on | Logged Da | ata and As | suming Lo | ognormal [| Distribution | | | | |
| 843 | | | | KM Mean | (logged) | -1.125 | | | · · · · · · · · · · · · · · · · · · · | KM Geo | o Mean | 0.325 | | |
| 844 | | | | KM SD | (logged) | 1.213 | | | 95% Crit | ical H Value (Kl | M-Log) | 2.371 | | |
| 845 | | | KM Standar | d Error of Mean | (logged) | 0.0911 | | | 0501 0 1 | 95% H-UCL (KN | И -Log) | 0.832 | | |
| 846 | | | KM Ctand- | KM SD | (logged) | 1.213 | | | 95% Crit | ical H Value (Kl | M-Log) | 2.3/1 | | |
| 047 | | | | | (iogged) | 0.0911 | | | | | | | | |

| | A B C D E | F | G H I J K | L | | | | | | | | | |
|--|--|---|---|--|--|--|--|--|--|--|--|--|--|
| 848 | | | | | | | | | | | | | |
| 849 | | DL/2 Sta | tistics | | | | | | | | | | |
| 850 | DL/2 Normal | 40.50 | Mean in Log Scale 1 600 | | | | | | | | | | |
| 851 | Mean in Original Scale | 10.53 | SD in Log Scale 1.699 | | | | | | | | | | |
| 852 | 95% t LICL (Assumes normality) | 20.48 | 95% H-Stat LICI | 0.591 | | | | | | | | | |
| 854 | DL/2 is not a recommended meth | od. provide | ed for comparisons and historical reasons | 0.001 | | | | | | | | | |
| 855 | | | | | | | | | | | | | |
| 856 | Nonparametric | c Distributi | on Free UCL Statistics | | | | | | | | | | |
| 857 | Detected Data appear G | iamma Dist | ributed at 5% Significance Level | | | | | | | | | | |
| 858 | | | | | | | | | | | | | |
| 859 | Su | uggested U | CL to Use | | | | | | | | | | |
| 860 | 95% KM Approximate Gamma UCL | 32.54 | | | | | | | | | | | |
| 861 | Note: Suggestions regarding the selection of a 95% [] | CL are prov | vided to help the user to select the most appropriate 95 | % UCI | | | | | | | | | |
| 863 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | | |
| 864 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | | |
| 865 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | | |
| 866 | | | | | | | | | | | | | |
| 867 | Lead | | | | | | | | | | | | |
| 868 | | | | | | | | | | | | | |
| 869 | Total Number of Observations | General S | tatistics | 15 | | | | | | | | | |
| 6/U 871 | Number of Detects | 7 | Number of Non-Detects | 190 | | | | | | | | | |
| 872 | Number of Distinct Detects | 7 | Number of Distinct Non-Detects | 8 | | | | | | | | | |
| 873 | Minimum Detect | 1.54 | Minimum Non-Detect | 1.5 | | | | | | | | | |
| 874 | Maximum Detect | 5.3 | Maximum Non-Detect | 3 | | | | | | | | | |
| 875 | Variance Detects | 2.118 | Percent Non-Detects | 96.45% | | | | | | | | | |
| 876 | Mean Detects | 3.079 | SD Detects | 1.455 | | | | | | | | | |
| 877 | Median Detects | 2.18 | CV Detects | 0.473 | | | | | | | | | |
| 878 | Skewness Detects | 0.612 | Kurtosis Detects | -1.534 | | | | | | | | | |
| 8/9 | Mean of Logged Detects | 1.029 | SD of Logged Detects | 0.47 | | | | | | | | | |
| 881 | Normal | GOF Test | on Detects Only | | | | | | | | | | |
| 882 | Shapiro Wilk Test Statistic | 0.871 | Shapiro Wilk GOF Test | | | | | | | | | | |
| 883 | 5% Shapiro Wilk Critical Value | 0.803 | Detected Data appear Normal at 5% Signific | ance Level | | | | | | | | | |
| 884 | Lilliefors Test Statistic | 0.303 | Lilliefors GOF Test | | | | | | | | | | |
| 885 | 5% Lilliefors Critical Value | 0.304 | Detected Data appear Normal at 5% Signific | ance Level | | | | | | | | | |
| 886 | Detected Data app | bear Norma | al at 5% Significance Level | | | | | | | | | | |
| 887 | Kanlan-Meier (KM) Statistics using | Normal Cri | tical Values and other Nonnarametric LICI s | | | | | | | | | | |
| 889 | KM Mean | 1.556 | KM Standard Error of Mean | 0.0298 | | | | | | | | | |
| 890 | KM SD | 0.387 | 95% KM (BCA) UCL | 1.617 | | | | | | | | | |
| 891 | 95% KM (t) UCL | 1.606 | 95% KM (Percentile Bootstrap) UCL | 1.607 | | | | | | | | | |
| 892 | 95% KM (z) UCL | 1.606 | 95% KM Bootstrap t UCL | 1.62 | | | | | | | | | |
| 893 | 90% KM Chebyshev UCL | 1.646 | 95% KM Chebyshev UCL | 1.687 | | | | | | | | | |
| 894 | 97.5% KWI Chebyshev OCL | 1.743 | 99% KW Chebyshev OCL | 1.000 | | | | | | | | | |
| 896 | Gamma GOF Te | sts on Det | ected Observations Only | | | | | | | | | | |
| 897 | A-D Test Statistic | 0.507 | Anderson-Darling GOF Test | | | | | | | | | | |
| 898 | 5% A-D Critical Value | 0.71 | Detected data appear Gamma Distributed at 5% S | ignificance Level | | | | | | | | | |
| 899 | K-S Test Statistic | 0.301 | Kolmogorov-Smirnov GOF | | | | | | | | | | |
| 900 | 5% K-S Critical Value | 0.313 | Detected data appear Gamma Distributed at 5% S | ignificance Level | | | | | | | | | |
| 901 | Detected data appear G | amma Dist | Indred at 5% Significance Level | | | | | | | | | | |
| 902 | Gamma Str | atistics on | Detected Data Only | | | | | | | | | | |
| 904 | k hat (MLE) | 5.41 | k star (bias corrected MLE) | 3.187 | | | | | | | | | |
| 905 | Theta hat (MLE) | 0.569 | Theta star (bias corrected MLE) | 0.966 | | | | | | | | | |
| 906 | nu hat (MLE) | 75.74 | nu star (bias corrected) | 44.61 | | | | | | | | | |
| 907 | Mean (detects) | 3.079 | | | | | | | | | | | |
| 908 | | atlation | ng Imputed New Detrate | | | | | | | | | | |
| 909 | Gamma ROS St | | ny imputed Non-Detects | | | | | | | | | | |
| | GROS may not be used when data and h | 10000 | too man many aca observations at multiple DLS | | | | | | | | | | |
| 910 | GROS may not be used when data set h GROS may not be used when kstar of detects is sma | all such as | <1.0, especially when the sample size is small (e.g. < | 15-20) | | | | | | | | | |
| 910 911 912 | GROS may not be used when data set h GROS may not be used when kstar of detects is sma For such situations, GROS me | all such as thod may y | <1.0, especially when the sample size is small (e.g., < ield incorrect values of UCLs and BTVs | 15-20) | | | | | | | | | |
| 910 911 912 913 | GROS may not be used when data set h GROS may not be used when kstar of detects is sma For such situations, GROS me This is especially | all such as thod may y true when | <1.0, especially when the sample size is small (e.g., < ield incorrect values of UCLs and BTVs the sample size is small. | 15-20) | | | | | | | | | |
| 910 911 912 913 914 | GROS may not be used when data set h GROS may not be used when kstar of detects is sma For such situations, GROS me This is especially For gamma distributed detected data, BTVs and | all such as thod may y true when UCLs may | <1.0, especially when the sample size is small (e.g., < eld incorrect values of UCLs and BTVs the sample size is small. be computed using gamma distribution on KM estimat | 15-20) es | | | | | | | | | |
| 910 911 912 913 914 915 | GROS may not be used when data set h GROS may not be used when kstar of detects is sma For such situations, GROS me This is especially For gamma distributed detected data, BTVs and Minimum | all such as thod may y y true when UCLs may | <1.0, especially when the sample size is small (e.g., < ield incorrect values of UCLs and BTVs the sample size is small. be computed using gamma distribution on KM estimat Mean | es 0.133 | | | | | | | | | |
| 910 911 912 913 914 915 916 | GROS may not be used when data set f GROS may not be used when kstar of detects is sma For such situations, GROS me This is especially For gamma distributed detected data, BTVs and Minimum Maximum | all such as thod may y true when UCLs may 0.01 5.3 | <1.0, especially when the sample size is small (e.g., < ield incorrect values of UCLs and BTVs the sample size is small. be computed using gamma distribution on KM estimat Mean Median | es 0.133 0.01 | | | | | | | | | |
| 910 911 912 913 914 915 916 917 | GROS may not be used when data set f GROS may not be used when kstar of detects is sma For such situations, GROS me This is especially For gamma distributed detected data, BTVs and Minimum Maximum | all such as thod may y y true when UCLs may 0.01 5.3 0.63 | <1.0, especially when the sample size is small (e.g., < ield incorrect values of UCLs and BTVs the sample size is small. be computed using gamma distribution on KM estimat Mean Median CV | es 0.133 0.01 4.72 0.290 | | | | | | | | | |
| 910 911 912 913 914 915 916 917 918 910 | GROS may not be used when data set f GROS may not be used when kstar of detects is sma For such situations, GROS me This is especially For gamma distributed detected data, BTVs and Minimum Maximum SD k hat (MLE) | all such as thod may y y true when UCLs may 0.01 5.3 0.63 0.301 0.444 | <1.0, especially when the sample size is small (e.g., < ield incorrect values of UCLs and BTVs the sample size is small. be computed using gamma distribution on KM estimat Mean Median CV k star (bias corrected MLE) Theta star (bias corrected MLE) | es 0.133 0.01 4.72 0.299 0.445 | | | | | | | | | |
| 910 911 912 913 914 915 916 917 918 919 920 | GROS may not be used when data set f GROS may not be used when kstar of detects is sma For such situations, GROS me This is especially For gamma distributed detected data, BTVs and Minimum Maximum SD khat (MLE) Theta hat (MLE) nu hat (MLE) | all such as thod may y y true when UCLs may 0.01 5.3 0.63 0.301 0.444 118.5 | <1.0, especially when the sample size is small (e.g., < ield incorrect values of UCLs and BTVs the sample size is small. be computed using gamma distribution on KM estimat Median Median CV k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected MLE) | es 0.133 0.01 4.72 0.299 0.445 118 | | | | | | | | | |
| 910 911 912 913 914 915 916 917 918 919 920 921 | GROS may not be used when data set f GROS may not be used when kstar of detects is sma For such situations, GROS me This is especially For gamma distributed detected data, BTVs and Minimum Maximum SD k hat (MLE) Theta hat (MLE) nu hat (MLE) Adjusted Level of Significance (β) | all such as thod may y y true when UCLs may 0.01 5.3 0.63 0.301 0.444 118.5 0.0488 | <1.0, especially when the sample size is small (e.g., < ield incorrect values of UCLs and BTVs the sample size is small. be computed using gamma distribution on KM estimat Median Median CV k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected) | es 0.133 0.01 4.72 0.299 0.445 118 | | | | | | | | | |
| 910 911 912 913 914 915 916 917 918 919 920 921 922 | GROS may not be used when data set f GROS may not be used when kstar of detects is sma For such situations, GROS me This is especially For gamma distributed detected data, BTVs and Minimum Maximum SD k hat (MLE) Theta hat (MLE) nu hat (MLE) Adjusted Level of Significance (β) Approximate Chi Square Value (118.00, α) | all such as thod may y y true when UCLs may UCLs may 0.01 5.3 0.63 0.301 0.444 118.5 0.0488 93.92 | <1.0, especially when the sample size is small (e.g., < ield incorrect values of UCLs and BTVs the sample size is small. be computed using gamma distribution on KM estimat Median Median CV k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected MLE) Adjusted Chi Square Value (118.00, β) | es 0.133 0.01 4.72 0.299 0.445 118 93.76 | | | | | | | | | |
| 910 911 912 913 914 915 916 917 918 919 920 921 922 923 | GROS may not be used when data set f GROS may not be used when kstar of detects is sma For such situations, GROS me This is especially For gamma distributed detected data, BTVs and Minimum Maximum SD k hat (MLE) Theta hat (MLE) nu hat (MLE) Adjusted Level of Significance (β) Approximate Chi Square Value (118.00, α) 95% Gamma Approximate UCL (use when n>=50) | las 2 000 l all such as thod may y v true when UCLs may 0.01 5.3 0.63 0.301 0.444 118.5 0.0488 93.92 0.168 | <1.0, especially when the sample size is small (e.g., < ield incorrect values of UCLs and BTVs the sample size is small. be computed using gamma distribution on KM estimat Median Median CV k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected MLE) Adjusted Chi Square Value (118.00, β) 95% Gamma Adjusted UCL (use when n<50) | es 0.133 0.01 4.72 0.299 0.445 118 93.76 0.168 | | | | | | | | | |

| | A B C D E | F | G H I J K | L | | | | | |
|------------|--|-----------------------------------|--|--------------|--|--|--|--|--|
| 925 | Estimates of Gam | nma Param | eters using KM Estimates | | | | | | |
| 926 | Mean (KM) | 1.556 | SD (KM) | 0.387 | | | | | |
| 927 | Variance (KM) | 0.15 | SE of Mean (KM) 0.0298 | | | | | | |
| 928 | k hat (KM) | 16.14 | k star (KM) 15.9 | | | | | | |
| 929 | nu hat (KM) | 6360 | nu star (KM) | 6265 | | | | | |
| 930 | theta hat (KM) | 0.0964 | theta star (KM) 0.0979 | | | | | | |
| 931 | 80% gamma percentile (KM) | 1.872 | 90% gamma percentile (KM) 2 073 | | | | | | |
| 932 | 95% gamma percentile (KM) | 2.249 | 99% gamma percentile (KM) | 2.605 | | | | | |
| 033 | 3 () | | ••••• 5 •••••• F ••••••• (•••••) | | | | | | |
| 03/ | Gamma k | Kanlan-Mei | anlan-Maiar (KM) Statistics | | | | | | |
| 025 | Approximate Chi Square Value (N/A, q) | 6082 | Adjusted Chi Square Value (N/A_B) | 6080 | | | | | |
| 026 | 95% Gamma Approximate KM-LICL (use when n>=50) | 1 603 | 95% Gamma Adjusted KM-UCL (use when n<50) | 1 604 | | | | | |
| 930 | | 1.000 | 503 95% Gamma Adjusted KM-OCL (use When II<50) 1.604 | | | | | | |
| 937 | Lognormal GOF 1 | est on Detected Observations Only | | | | | | | |
| 930 | Shapiro Wilk Test Statistic | 0 807 Shanira Wilk COE Tant | | | | | | | |
| 939 | 5% Shapiro Wilk Critical Value | 0.007 | Detected Data appear Lognormal at 5% Signif | icance Level | | | | | |
| 940 | Lilliefors Test Statistic | 0.003 | Lilliefore GOE Test | | | | | | |
| 941 | 5% Lilliefors Critical Value | 0.274 | Detected Data appear Lognormal at 5% Signif | icance Level | | | | | |
| 942 | Detected Data appa | | nel at 5% Significance Level | | | | | | |
| 943 | Delected Data appe | ai Lughun | | | | | | | |
| 944 | Lognormal POS S | tatistics | sing Imputed Non Detects | | | | | | |
| 945 | Logioninal Ross | 0 200 | Moon in Log Social | 2 262 | | | | | |
| 940 | SD in Original Scale | 0.290 | SD in Log Scale | -2.202 | | | | | |
| 947 | 95% t LICL (accumes normality of POS data) | 0.043 | 05% Dereentile Restatron LICL | 0.276 | | | | | |
| 948 | 05% RCA Restation UCI | 0.374 | 05% Rootetrop + UCL | 0.070 | | | | | |
| 949 | | 0.4 | 93% DOUISITAP T UCL | 0.400 | | | | | |
| 950 | 95% H-UCL (LUG RUS) | 0.369 | | | | | | | |
| 951 | Statistics using KM estimates on | Loggod D | ate and Assuming Lagnarmal Distribution | | | | | | |
| 952 | Statistics using Kin estimates on | | KM Coo Moon | 1 524 | | | | | |
| 953 | KM SD (logged) | 0.420 | 95% Critical H Value (KM Log) | 1.534 | | | | | |
| 954 | KM Standard Error of Maan (logged) | 0.142 | | 1.075 | | | | | |
| 955 | KW Standard Error of Mean (logged) | 0.0109 | 95% Critical H Value (KM Log) | 1.570 | | | | | |
| 956 | KM Standard Error of Moon (logged) | 0.142 | 95 % Childai H Value (Rivi-Log) | 1.075 | | | | | |
| 957 | KWI Standard Error of Mean (logged) | 0.0109 | | | | | | | |
| 958 | | | tistico | | | | | | |
| 959 | DI /2 Normal | DDZ Sta | DL/2 Log Transformed | | | | | | |
| 960 | DL/2 Normal Moon in Original Socia | 0.974 | DL/2 Log- I ransionned | 0.100 | | | | | |
| 961 | Mean In Original Scale | 0.074 | Mean III Log Scale | -0.199 | | | | | |
| 962 | SD in Original Scale | 0.516 | | 0.280 | | | | | |
| 963 | 95% LOCE (Assumes normainly) | 0.935 | | 0.000 | | | | | |
| 964 | | ioa, proviae | | | | | | | |
| 965 | Nonnoromotri | o Diotributi | on Fron LICL Statistics | | | | | | |
| 966 | Detected Data annear N | lormal Diet | ributed at 5% Significance Level | | | | | | |
| 967 | Delected Data appear N | | induted at 5% Significance Level | | | | | | |
| 968 | | Independent | | | | | | | |
| 969 | 95% KM (t) LIC | | | | | | | | |
| 970 | 35 % KM (t) OCL | 1.000 | | | | | | | |
| 971 | Note: Suggestions regarding the selection of a 95% L | | vided to help the user to select the most appropriate 95 | 5% LICI | | | | | |
| 972 | Recommendations are based | unon data | size data distribution and skewness | 770 OOL. | | | | | |
| 973 | These recommendations are based upon the results | of the simu | lation studies summarized in Singh Maichle and Lee | (2006) | | | | | |
| 075 | However simulations results will not cover all Real Worl | d data sets | : for additional insight the user may want to consult as | statistician | | | | | |
| 976 | | | | lationalia | | | | | |
| 977 | Naphthalene | | | | | | | | |
| 978 | • • • • | | | | | | | | |
| 979 | | General S | tatistics | | | | | | |
| 980 | Total Number of Observations | 197 | Number of Distinct Observations | 13 | | | | | |
| 981 | Number of Detects | 9 | Number of Non-Detects | 188 | | | | | |
| 982 | Number of Distinct Detects | 9 | Number of Distinct Non-Detects | 4 | | | | | |
| 983 | Minimum Detect | 0.938 | Minimum Non-Detect | 0.25 | | | | | |
| 984 | Maximum Detect | 35 | Maximum Non-Detect | 1.25 | | | | | |
| 985 | Variance Detects | 139.7 | Percent Non-Detects | 95.43% | | | | | |
| 986 | Mean Detects | 9.975 | SD Detects 11.82 | | | | | | |
| 987 | Median Detects | 4.88 | CV Detects 1 185 | | | | | | |
| 988 | Skewness Detects | 1.555 | Kurtosis Detects 1.57 | | | | | | |
| 980 | Mean of Loaded Detects | 1.639 | SD of Loaged Detects 1 273 | | | | | | |
| 990 | | | | | | | | | |
| QQ1 | Normal | GOF Test | on Detects Only | | | | | | |
| 992 | Shapiro Wilk Test Statistic | 0.782 | Shapiro Wilk GOF Test | | | | | | |
| 002 | 5% Shaniro Wilk Critical Value | 0.829 | Detected Data Not Normal at 5% Significan | nce Level | | | | | |
| 993 | Lilliefors Test Statistic | 0.27 | Lilliefors GOF Test | | | | | | |
| 994 005 | 5% Lilliefors Critical Value | 0.274 | Detected Data appear Normal at 5% Signific | ance Level | | | | | |
| 392 | Detected Data appear Ar | Doroximete | Normal at 5% Significance Level | | | | | | |
| 390 | | -Pi Shinate | | | | | | | |
| 391 | | | | | | | | | |

| | A B C D E | F | G H I J K | L | | | | | | |
|------|---|--------------|---|-------------------|--|--|--|--|--|--|
| 998 | Kaplan-Meier (KM) Statistics using | Normal Cr | itical Values and other Nonparametric UCLs | | | | | | | |
| 999 | KM Mean | 0.694 | KM Standard Error of Mean | 0.237 | | | | | | |
| 1000 | KM SD | 3.13 | 95% KM (BCA) UCL 1.116 | | | | | | | |
| 1001 | 95% KM (t) UCL | 1.085 | 95% KM Bootstran t UCI 1 735 | | | | | | | |
| 1002 | 90% KM Chebyshey LICL | 1.003 | 95% KM Chebyshev UCI 1.735 | | | | | | | |
| 1003 | 97.5% KM Chebyshev UCL | 2.172 | 95% KM Chebyshev UCL 1.725 | | | | | | | |
| 1001 | · · · · · · · · · · · · · · · · · · · | | ···· · · · · · · · · · · · · · · · · · | | | | | | | |
| 1006 | Gamma GOF Te | sts on Det | ected Observations Only | | | | | | | |
| 1007 | A-D Test Statistic | 0.307 | Anderson-Darling GOF Test | | | | | | | |
| 1008 | 5% A-D Critical Value | 0.747 | Detected data appear Gamma Distributed at 5% Si | ignificance Level | | | | | | |
| 1009 | K-S Test Statistic | 0.152 | Kolmogorov-Smirnov GOF | | | | | | | |
| 1010 | Detected data appear G | amma Dist | ributed at 5% Significance Level | ignificance Level | | | | | | |
| 1011 | | | | | | | | | | |
| 1013 | Gamma Sta | atistics on | Detected Data Only | | | | | | | |
| 1014 | k hat (MLE) | 0.886 | k star (bias corrected MLE) | 0.664 | | | | | | |
| 1015 | Theta hat (MLE) | 11.26 | Theta star (bias corrected MLE) | 15.01 | | | | | | |
| 1016 | nu hat (MLE) | 15.94 | nu star (bias corrected) | 11.96 | | | | | | |
| 1017 | Mean (detects) | 9.975 | | | | | | | | |
| 1018 | Gamma BOS St | atistics usi | ng Imputed Non-Detects | | | | | | | |
| 1013 | GROS may not be used when data set h | nas > 50% | NDs with many tied observations at multiple DLs | | | | | | | |
| 1021 | GROS may not be used when kstar of detects is sma | all such as | <1.0, especially when the sample size is small (e.g., < | 15-20) | | | | | | |
| 1022 | For such situations, GROS me | thod may y | ield incorrect values of UCLs and BTVs | | | | | | | |
| 1023 | This is especially | / true when | the sample size is small. | | | | | | | |
| 1024 | For gamma distributed detected data, BTVs and | UCLs may | be computed using gamma distribution on KM estimat | es | | | | | | |
| 1025 | Minimum Maximum | 0.01 | Mean | 0.405 | | | | | | |
| 1026 | SD | 3.171 | CV | 6.815 | | | | | | |
| 1027 | k hat (MLE) | 0.206 | k star (bias corrected MLE) | 0.206 | | | | | | |
| 1029 | Theta hat (MLE) | 2.258 | Theta star (bias corrected MLE) | 2.255 | | | | | | |
| 1030 | nu hat (MLE) | 81.19 | nu star (bias corrected) | 81.28 | | | | | | |
| 1031 | Adjusted Level of Significance (β) | 0.0488 | | | | | | | | |
| 1032 | Approximate Chi Square Value (81.28, α) | 61.51 | Adjusted Chi Square Value (81.28, β) | 61.38 | | | | | | |
| 1033 | 95% Gamma Approximate OCL (use when h>-50) | 0.015 | 95% Gamma Aujusted OCL (use when h<50) | 0.010 | | | | | | |
| 1034 | Estimates of Gam | ma Param | eters using KM Estimates | | | | | | | |
| 1036 | Mean (KM) | 0.694 | SD (KM) | 3.13 | | | | | | |
| 1037 | Variance (KM) | 9.798 | SE of Mean (KM) | 0.237 | | | | | | |
| 1038 | k hat (KM) | 0.0492 | k star (KM) | 0.0518 | | | | | | |
| 1039 | nu hat (KM) thete het (KM) | 19.39 | nu star (KM) | 20.42 | | | | | | |
| 1040 | 80% gamma percentile (KM) | 0 107 | 90% gamma percentile (KM) | 1 11 | | | | | | |
| 1041 | 95% gamma percentile (KM) | 3.739 | 99% gamma percentile (KM) | 14.89 | | | | | | |
| 1043 | | | | | | | | | | |
| 1044 | Gamma H | Kaplan-Mei | er (KM) Statistics | | | | | | | |
| 1045 | Approximate Chi Square Value (20.42, α) | 11.16 | Adjusted Chi Square Value (20.42, β) | 11.11 | | | | | | |
| 1046 | 95% Gamma Approximate KM-UCL (use when n>=50) | 1.27 | 95% Gamma Adjusted KM-UCL (use when n<50) | 1.276 | | | | | | |
| 1047 | Lognormal GOF | Test on De | tected Observations Only | | | | | | | |
| 1049 | Shapiro Wilk Test Statistic | 0.956 | Shapiro Wilk GOF Test | | | | | | | |
| 1050 | 5% Shapiro Wilk Critical Value | 0.829 | Detected Data appear Lognormal at 5% Signif | icance Level | | | | | | |
| 1051 | Lilliefors Test Statistic | 0.119 | Lilliefors GOF Test | | | | | | | |
| 1052 | 5% Lilliefors Critical Value | 0.274 | Detected Data appear Lognormal at 5% Signifi | icance Level | | | | | | |
| 1053 | Detected Data appe | ar Lognori | nai at 3% Significance Level | | | | | | | |
| 1054 | Loanormal ROS S | statistics U | sing Imputed Non-Detects | | | | | | | |
| 1056 | Mean in Original Scale | 0.486 | Mean in Log Scale | -7.125 | | | | | | |
| 1057 | SD in Original Scale | 3.17 | SD in Log Scale | 4.122 | | | | | | |
| 1058 | 95% t UCL (assumes normality of ROS data) | 0.859 | 95% Percentile Bootstrap UCL | 0.891 | | | | | | |
| 1059 | 95% BCA Bootstrap UCL | 1.044 | 95% Bootstrap t UCL | 1.533 | | | | | | |
| 1060 | 95% H-UCL (Log ROS) | 22.61 | | | | | | | | |
| 1067 | Statistics using KM estimates on | Logaed D | ata and Assuming Lognormal Distribution | | | | | | | |
| 1063 | KM Mean (loaded) | -1.248 | KM Geo Mean | 0.287 | | | | | | |
| 1064 | KM SD (logged) | 0.682 | 95% Critical H Value (KM-Log) | 1.927 | | | | | | |
| 1065 | KM Standard Error of Mean (logged) | 0.0515 | 95% H-UCL (KM -Log) | 0.398 | | | | | | |
| 1066 | KM SD (logged) | 0.682 | 95% Critical H Value (KM-Log) | 1.927 | | | | | | |
| 1067 | KM Standard Error of Mean (logged) | 0.0515 | | | | | | | | |
| 1068 | | | atistics | | | | | | | |
| 1009 | DL/2 Normal | 222.00 | DL/2 Log-Transformed | | | | | | | |
| 1071 | Mean in Original Scale | 0.592 | Mean in Log Scale | -1.818 | | | | | | |
| 1072 | SD in Original Scale | 3.153 | SD in Log Scale | 0.838 | | | | | | |
| 1073 | 95% t UCL (Assumes normality) | 0.964 | 95% H-Stat UCL | 0.261 | | | | | | |
| 1074 | DL/2 is not a recommended meth | od, provide | ed for comparisons and historical reasons | | | | | | | |

| | A B C D E | F | G H I J K | L |
|--------------|---|---------------|--|------------------|
| 1075 | Nonperametric | - Dietributi | on Free LICL Statistics | |
| 1076 | Detected Data appear Approxi | mate Norm | nal Distributed at 5% Significance Level | |
| 1077 | | | | |
| 1079 | Su | uggested U | JCL to Use | |
| 1080 | 95% KM (t) UCL | 1.085 | | |
| 1081 | When a data set follows an approxima | ate (e.g., no | ormal) distribution passing one of the GOF test | |
| 1083 | When applicable, it is suggested to use a UCL base | ed upon a d | istribution (e.g., gamma) passing both GOF tests in Prol | UCL |
| 1084 | Note: Suggestions reporting the selection of a 05% LL | | vided to help the upper to called the meet appropriate QE% | |
| 1085 | Recommendations are based | upon data | size, data distribution, and skewness. | OCL. |
| 1087 | These recommendations are based upon the results | of the simu | lation studies summarized in Singh, Maichle, and Lee (2 | 2006). |
| 1088 | However, simulations results will not cover all Real Worl | d data sets | ; for additional insight the user may want to consult a sta | atistician. |
| 1089 | Toluene | | | |
| 1091 | | | | |
| 1092 | | General S | itatistics | |
| 1093 | Total Number of Observations Number of Detects | 197 | Number of Distinct Observations Number of Non-Detects | <u>9</u> 192 |
| 1095 | Number of Distinct Detects | 5 | Number of Distinct Non-Detects | 4 |
| 1096 | Minimum Detect | 0.308 | Minimum Non-Detect | 0.25 |
| 1097 | Maximum Detect | 2880 | Maximum Non-Detect | 1.25 |
| 1098 | Mean Detects | 1372 | SD Detects | 1386 |
| 1100 | Median Detects | 561 | CV Detects | 1.01 |
| 1101 | Skewness Detects | 0.48 | Kurtosis Detects | -3.099 |
| 1102 | Mean of Logged Delects | 3.401 | | 5.611 |
| 1104 | Normal | GOF Test | on Detects Only | |
| 1105 | Shapiro Wilk Test Statistic | 0.793 | Shapiro Wilk GOF Test | |
| 1106 | Lilliefors Test Statistic | 0.702 | Lilliefors GOF Test | |
| 1108 | 5% Lilliefors Critical Value | 0.343 | Detected Data appear Normal at 5% Significant | nce Level |
| 1109 | Detected Data app | bear Norma | al at 5% Significance Level | |
| 1110 | Kaplan-Meier (KM) Statistics using | Normal Cri | itical Values and other Nonparametric UCLs | |
| 1112 | KM Mean | 35.07 | KM Standard Error of Mean | 23.3 |
| 1113 | KM SD | 292.5 | 95% KM (BCA) UCL | 73.24 |
| 1114 | 95% KM (t) UCL 95% KM (z) UCL | 73.59 | 95% KM (Percentile Bootstrap) UCL 95% KM Bootstrap t UCL | 76.08 |
| 1116 | 90% KM Chebyshev UCL | 105 | 95% KM Chebyshev UCL | 136.6 |
| 1117 | 97.5% KM Chebyshev UCL | 180.6 | 99% KM Chebyshev UCL | 266.9 |
| 1118 | Gamma GOF Te | sts on Det | ected Observations Only | |
| 1120 | A-D Test Statistic | 0.613 | Anderson-Darling GOF Test | |
| 1121 | 5% A-D Critical Value | 0.728 | Detected data appear Gamma Distributed at 5% Sig | inificance Level |
| 1122 | K-S Test Statistic 5% K-S Critical Value | 0.331 | Colmogorov-Smirnov GOF Detected data appear Gamma Distributed at 5% Sig | nificance Level |
| 1124 | Detected data appear G | amma Dist | tributed at 5% Significance Level | |
| 1125 | | | | |
| 1126 | k hat (MLE) | 0.381 | k star (bias corrected MLE) | 0.286 |
| 1128 | Theta hat (MLE) | 3606 | Theta star (bias corrected MLE) | 4806 |
| 1129 | nu hat (MLE) | 3.805 | nu star (bias corrected) | 2.855 |
| 1130 | Mean (detects) | 13/2 | | |
| 1132 | Gamma ROS St | atistics usi | ing Imputed Non-Detects | |
| 1133 | GROS may not be used when data set h | nas > 50% I | NDs with many tied observations at multiple DLs | 5 20) |
| 1134 | For such situations, GROS me | thod may y | ield incorrect values of UCLs and BTVs | J-20j |
| 1136 | This is especially | true when | the sample size is small. | |
| 1137 | For gamma distributed detected data, BTVs and | UCLs may | be computed using gamma distribution on KM estimate | S |
| 1138 | Minimum Maximum | 2880 | Mean | 0.01 |
| 1140 | SD | 293.3 | CV | 8.419 |
| 1141 | k hat (MLE) | 0.102 | k star (bias corrected MLE) | 0.104 |
| 1142 1143 | i neta nat (MLE) nu hat (MLF) | 40.38 | nu star (bias corrected MLE) | 41.1 |
| 1144 | Adjusted Level of Significance (β) | 0.0488 | | |
| 1145 | Approximate Chi Square Value (41.10, α) | 27.4 | Adjusted Chi Square Value (41.10, β) | 27.32 |
| 1146 1147 | ອວ‰ Gamma Approximate UCL (use when n>=50) | 52.25 | 95% Gamma Adjusted UCL (use when n<50) | JZ.4 |
| 1148 | Estimates of Gam | ma Param | eters using KM Estimates | |
| 1149 | Mean (KM) | 35.07 | SD (KM) | 292.5 |
| 1150 | Variance (KM) | 85584 | SE of Mean (KM) | 23.3 |
| 1152 | nu hat (KM) | 5.663 | nu star (KM) | 6.91 |
| 1153 | theta hat (KM) | 2440 | theta star (KM) | 2000 |
| 1154 | 80% gamma percentile (KM) | 0.0034 | 90% gamma percentile (KM) | 2.806 |
| 1100 | | 00.00 | | |

| | A B C D E | F | G H I J K | L | | | | | | | | | |
|--|--|---|--|--|--|--|--|--|--|--|--|--|--|
| 1156 | · · · · | | | | | | | | | | | | |
| 1157 | Gamma I | Kaplan-Mei | er (KM) Statistics | | | | | | | | | | |
| 1158 | Approximate Chi Square Value (6.91, α) | 2.121 | Adjusted Chi Square Value (6.91, β) | 2.102 | | | | | | | | | |
| 1159 | 95% Gamma Approximate KM-UCL (use when n>=50) | 114.2 | 95% Gamma Adjusted KM-UCL (use when n<50) | 115.3 | | | | | | | | | |
| 1160 | L ognormal GOE | Feet on De | tected Observations Only | | | | | | | | | | |
| 1161 | Shaniro Wilk Test Statistic | 0 721 | Shaniro Wilk GOF Test | | | | | | | | | | |
| 1163 | 5% Shapiro Wilk Critical Value | 0.721 | Detected Data Not Lognormal at 5% Signific | ance Level | | | | | | | | | |
| 1164 | Lilliefors Test Statistic | 0.388 | Lilliefors GOF Test | | | | | | | | | | |
| 1165 | 5% Lilliefors Critical Value | 0.343 | Detected Data Not Lognormal at 5% Signific | ance Level | | | | | | | | | |
| 1166 | Detected Data No | t Lognorma | al at 5% Significance Level | | | | | | | | | | |
| 1167 | | | | | | | | | | | | | |
| 1168 | Lognormal ROS S | statistics U | sing Imputed Non-Detects | 01.11 | | | | | | | | | |
| 1169 | Mean in Original Scale | 34.84 | Mean in Log Scale | -21.41 | | | | | | | | | |
| 1171 | 95% t LICL (assumes normality of BOS data) | 69.38 | 95% Percentile Bootstran LICL | 69.76 | | | | | | | | | |
| 1172 | 95% BCA Bootstrap UCL | 93.02 | 95% Bootstrap t UCL | 186.8 | | | | | | | | | |
| 1173 | 95% H-UCL (Log ROS) | N/A | | | | | | | | | | | |
| 1174 | | • | | | | | | | | | | | |
| 1175 | Statistics using KM estimates on | Logged D | ata and Assuming Lognormal Distribution | | | | | | | | | | |
| 1176 | KM Mean (logged) | -1.212 | KM Geo Mean | 0.298 | | | | | | | | | |
| 1177 | KM SD (logged) | 1.209 | 95% Critical H Value (KM-Log) | 2.367 | | | | | | | | | |
| 1178 | KM Standard Error of Mean (logged) | 1 200 | 95% H-UCL (KM -Log) 95% Critical H Value (KM Log) | 0.758 | | | | | | | | | |
| 1180 | KM Standard Error of Mean (logged) | 0.0963 | 33 % Childai H Valde (Kivi-Log) | 2.507 | | | | | | | | | |
| 1181 | | 0.0000 | | | | | | | | | | | |
| 1182 | | DL/2 Sta | itistics | | | | | | | | | | |
| 1183 | DL/2 Normal | | DL/2 Log-Transformed | | | | | | | | | | |
| 1184 | Mean in Original Scale | 34.97 | Mean in Log Scale | -1.782 | | | | | | | | | |
| 1185 | SD in Original Scale | 293.3 | SD in Log Scale | 1.321 | | | | | | | | | |
| 1186 | 95% t UCL (Assumes normality) | 69.51 | 95% H-Stat UCL | 0.509 | | | | | | | | | |
| 1187 | DL/2 is not a recommended meth | od, provide | ed for comparisons and historical reasons | | | | | | | | | | |
| 1188 | Nonparametri | - Dietributi | on Free LICI Statistics | | | | | | | | | | |
| 1109 | Detected Data appear N | lormal Dist | ributed at 5% Significance Level | | | | | | | | | | |
| 1191 | | | | | | | | | | | | | |
| 1192 | Si | uggested L | ICL to Use | | | | | | | | | | |
| 1193 | 95% KM (t) UCL | 73.59 | | | | | | | | | | | |
| 1194 | | | | | | | | | | | | | |
| 1195 | Note: Suggestions regarding the selection of a 95% U | CL are prov | vided to help the user to select the most appropriate 95 | 5% UCL. | | | | | | | | | |
| 1196 | Recommendations are based | of the simu | size, data distribution, and skewness. | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | |
| 1197 | I here recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | | |
| 1198 | However, simulations results will not cover all Real Worl | d data sets | ; for additional insight the user may want to consult a s | (2006). statistician. | | | | | | | | | |
| 1198 1199 | However, simulations results will not cover all Real Wor | d data sets | ; for additional insight the user may want to consult a s | (2006). statistician. | | | | | | | | | |
| 1198 1199 1200 | However, simulations results will not cover all Real Worl Xylenes (total) | d data sets | ; for additional insight the user may want to consult a s | (2006). statistician. | | | | | | | | | |
| 1198 1199 1200 1201 | However, simulations results will not cover all Real Worl Xylenes (total) | d data sets | ; for additional insight the user may want to consult a s | (2006). statistician. | | | | | | | | | |
| 1198 1199 1200 1201 1202 | However, simulations results will not cover all Real Worl Xylenes (total) Total Number of Observations | d data sets General S | tatistics | (2006). statistician. | | | | | | | | | |
| 1198 1199 1200 1201 1202 1203 1204 | However, simulations results will not cover all Real Worl Xylenes (total) Total Number of Observations Number of Detects | d data sets General S 197 5 | tatistics summarized in ongri, matching, and tee sign additional insight the user may want to consult a statistics Number of Distinct Observations Number of Non-Detects | (2006). statistician. | | | | | | | | | |
| 1198 1199 1200 1201 1202 1203 1204 1205 | However, simulations results will not cover all Real Worl Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects | d data sets General S 197 5 5 | tatistics tatistics tatistics tatistics Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects | (2006). statistician. 9 192 4 | | | | | | | | | |
| 1198 1199 1200 1201 1202 1203 1204 1205 1206 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Minimum Detect | General S 197 5 5 16.4 | tatistics tatistics tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects Ninimum Non-Detect | (2006). statistician. 9 192 4 0.75 | | | | | | | | | |
| 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Minimum Detect Maximum Detect | General S 197 5 5 16.4 537 | tatistics tatistics tatistics tatistics Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detect Minimum Non-Detect Maximum Non-Detect | (2006). statistician. 9 192 4 0.75 3.75 | | | | | | | | | |
| 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Minimum Detect Maximum Detect Variance Detects | General S 197 5 5 16.4 537 63645 | tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Maximum Non-Detect Percent Non-Detects | (2006). statistician. 9 192 4 0.75 3.75 97.46% | | | | | | | | | |
| 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Minimum Detect Variance Detects Mean Detects | d data sets General S 197 5 16.4 537 63645 263 163 | tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Maximum Non-Detects SD Detects | (2006). statistician. 9 192 4 0.75 3.75 97.46% 252.3 | | | | | | | | | |
| 1199 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 121 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Minimum Detect Maximum Detects Mean Detects Median Detects Otenees Detects | d data sets General S 197 5 5 16.4 537 63645 263 132 0 401 | tatistics tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Percent Non-Detects SD Detects CV Detects | (2006). statistician. 9 192 4 0.75 3.75 97.46% 252.3 0.959 2.12 | | | | | | | | | |
| 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Minimum Detect Maximum Detect Variance Detects Mean Detects Skewness Detects Nean of Logged Detects Mean of Logged Detects Mean of Logged Detects | d data sets General S 197 5 5 16.4 537 63645 263 132 0.481 4.961 | tatistics tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects Percent Non-Detects SD Detects CV Detects Kurtosis Detects SD of L aroan Detects | (2006). statistician. 9 192 4 0.75 3.75 97.46% 252.3 0.959 -3.12 1.445 | | | | | | | | | |
| 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1212 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Minimum Detect Maximum Detect Variance Detects Mean Detects Median Detects Skewness Detects Mean of Logged Detects | d data sets General S 197 5 5 16.4 537 63645 263 132 0.481 4.961 | tatistics tatistics tatistics Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects SD Detects CV Detects Kurtosis Detects SD of Logged Detects | (2006). statistician. 9 192 4 0.75 3.75 97.46% 252.3 0.959 -3.12 1.445 | | | | | | | | | |
| 1198 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Minimum Detect Maximum Detect Variance Detects Mean Detects Median Detects Skewness Detects Mean of Logged Detects Normal Normal | d data sets General S 197 5 5 16.4 537 63645 263 132 0.481 4.961 GOF Test | tatistics tatistics tatistics Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects SD Detects CV Detects SD of Logged Detects on Detects Only | (2006). statistician. 9 192 4 0.75 3.75 97.46% 252.3 0.959 -3.12 1.445 | | | | | | | | | |
| 1198 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1211 1212 1213 1214 1215 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Number of Distinct Detects Maximum Detect Variance Detects Mean Detects Median Detects Skewness Detects Median Detects Nean of Logged Detects Normal Shapiro Wilk Test Statistic | d data sets General S 197 5 5 16.4 537 63645 263 132 0.481 4.961 GOF Test 0.802 | tatistics tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects SD Detects CV Detects CV Detects SD of Logged Detects on Detects Only Shapiro Wilk GOF Test | (2006). statistician. 9 192 4 0.75 3.75 97.46% 252.3 0.959 -3.12 1.445 | | | | | | | | | |
| 1199 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1211 1212 1213 1214 1215 1216 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Number of Distinct Detects Maximum Detect Variance Detects Mean Detects Median Detects Skewness Detects Needian Detects Nean of Logged Detects Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value | General S 197 5 5 16.4 537 63645 263 132 0.481 4.961 GOF Test 0.802 0.762 | tatistics tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects SD Detects CV Detects CV Detects SD of Logged Detects on Detects Only Shapiro Wilk GOF Test Detected Data appear Normal at 5% Signific | (2006). statistician. 9 192 4 0.75 3.75 97.46% 252.3 0.959 -3.12 1.445 | | | | | | | | | |
| 1198 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Number of Distinct Detects Maximum Detect Maximum Detect Median Detects Median Detects Skewness Detects Nean of Logged Detects Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Lilliefors Test Statistic | General S 197 5 16.4 537 63645 132 0.481 4.961 GOF Test 0.802 0.762 0.298 | tatistics tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detect Maximum Non-Detect Percent Non-Detects SD Detects CV Detects CV Detects SD of Logged Detects On Detects Only Shapiro Wilk GOF Test Detected Data appear Normal at 5% Signific Lilliefors GOF Test | (2006). statistician. 9 192 4 0.75 3.75 97.46% 252.3 0.959 -3.12 1.445 ance Level | | | | | | | | | |
| 1198 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Number of Distinct Detects Maximum Detect Variance Detects Median Detects Median Detects Skewness Detects Nean of Logged Detects Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value | General S 197 5 5 16.4 537 63645 132 0.481 4.961 GOF Test 0.802 0.762 0.298 0.343 | tatistics tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects SD Detects CV Detects CV Detects SD of Logged Detects On Detects Only Shapiro Wilk GOF Test Detected Data appear Normal at 5% Signific Lilliefors GOF Test Detected Data appear Normal at 5% Signific | (2006). statistician. 9 192 4 0.75 3.75 97.46% 252.3 0.959 -3.12 1.445 ance Level ance Level | | | | | | | | | |
| 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Number of Distinct Detects Maximum Detect Variance Detects Median Detects Median Detects Skewness Detects Nean of Logged Detects Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data app | General S 197 5 16.4 537 63645 263 132 0.481 4.961 GOF Test 0.802 0.762 0.298 0.343 | tatistics tatistics Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Maximum Non-Detect Percent Non-Detects SD Detects CV Detects SD Detects SD of Logged Detects SD of Logged Detects Detected Data appear Normal at 5% Signific Lilliefors GOF Test Detected Data appear Normal at 5% Signific | (2006). statistician. 9 192 4 0.75 3.75 97.46% 252.3 0.959 -3.12 1.445 ance Level ance Level | | | | | | | | | |
| 1198 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1220 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Number of Distinct Detects Maximum Detect Maximum Detect Maximum Detects Median Detects Median Detects Skewness Detects Nean of Logged Detects Normal Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data ap | General S 197 5 16.4 537 63645 132 0.481 4.961 GOF Test 0.802 0.762 0.298 0.343 sear Normal | tatistics tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Percent Non-Detects SD Detects CV Detects CV Detects SD of Logged Detects SD of Logged Detects On Detects Only Shapiro Wilk GOF Test Detected Data appear Normal at 5% Signific Lilliefors GOF Test Detected Data appear Normal at 5% Signific al at 5% Significance Level | (2006). statistician. 9 192 4 0.75 3.75 97.46% 252.3 0.959 -3.12 1.445 | | | | | | | | | |
| 1198 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1221 1221 1221 1221 1212 1213 1214 1215 1216 1217 1218 1219 1221 1221 1221 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Number of Distinct Detects Maximum Detect Variance Detects Mean Detects Mean Detects Skewness Detects Keapar of Logged Detects Normal Shapiro Wilk Test Statistic S% Shapiro Wilk Critical Value Lilliefors Test Statistic S% Lilliefors Critical Value Detected Data ap Kaplan-Meier (KM) Statistics using | General S 197 5 5 16.4 537 63645 263 132 0.481 4.961 GOF Test 0.802 0.762 0.298 0.343 sear Normal Cri 7.405 | tatistics tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects Number of Distinct Non-Detects SD Detects CV Detects CV Detects SD of Logged Detects SD of Logged Detects SD of Logged Detects CLillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Kurtosis Detects Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Kurtosis Detects Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data appear Normal at 5% Signific Lillefors GOF Test Detected Data Appear Normal at 5% Signific Lillefors GOF Test Detected Data Appear Normal Appear Detected Data Appear Normal Appear Detected Data Appear Detected Data Appear Normal Appear Detected Data Appear Detected Data Appear Detected Data Appear Detected | (2006). statistician. 9 192 4 0.75 3.75 97.46% 252.3 0.959 -3.12 1.445 ance Level ance Level 4.358 | | | | | | | | | |
| 1198 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1221 1221 1221 1221 1212 1213 1214 1215 1216 1217 1218 1219 1221 1222 1222 1222 1222 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Number of Distinct Detects Number of Distinct Detects Naximum Detect Wariance Detects Mean Detects Mean Detects Skewness Detects Kean of Logged Detects Normal Shapiro Wilk Test Statistic S% Shapiro Wilk Critical Value Lilliefors Test Statistic S% Lilliefors Critical Value Detected Data ap Kaplan-Meier (KM) Statistics using KM Mean KM SD | General S 197 5 5 16.4 537 63645 263 132 0.481 4.961 GOF Test 0.802 0.762 0.298 0.343 Dear Normal Cri 7.405 54.71 | tatistics tatistics tatistics Number of Distinct Observations Number of Non-Detects Number of Distinct Non-Detects SD Detects CV Detects CV Detects SD of Logged Detects SD of Logged Detects SD of Logged Detects Detected Data appear Normal at 5% Signific Lilliefors GOF Test Detected Data appear Normal at 5% Signific al at 5% Significance Level KM Standard Error of Mean 95% KM (BCA) UCL | (2006). statistician. 9 192 4 0.75 3.75 97.46% 252.3 0.959 -3.12 1.445 ance Level ance Level 4.358 15.05 | | | | | | | | | |
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| 1198 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 1213 1214 1215 1216 1221 1223 1224 1225 1226 1227 1228 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Number of Distinct Detects Number of Distinct Detects Naximum Detect Naximum Detect Skewness Detects Keen of Logged Detects Normal Shapiro Wilk Test Statistic S% Shapiro Wilk Critical Value Lilliefors Test Statistic S% Lilliefors Critical Value Detected Data app Kaplan-Meier (KM) Statistics using KM Mean KM SD 95% KM (t) UCL 90% KM Chebyshev UCL | General S 197 5 16.4 537 63645 263 132 0.481 4.961 GOF Test 0.802 0.762 0.298 0.343 oear Normal Cri 7.405 54.71 14.61 14.57 20.48 34.62 | tatistics tatistics Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Minimum Non-Detect Maximum Non-Detect OPECATION SD Detects CV Detects SD Detects SD Detects SD of Logged Detects SD Detects Only Shapiro Wilk GOF Test Detected Data appear Normal at 5% Signific Lilliefors GOF Test Detected Data appear Normal at 5% Signific Lilliefors GOF Test Detected Data appear Normal at 5% Signific Lilliefors GOF Test Detected Data appear Normal at 5% Signific Lilliefors GOF Test Detected Data appear Normal at 5% Signific Lilliefors GOF Test Detected Data appear Normal at 5% Signific Standard Error of Mean 95% KM (BCA) UCL 95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL | (2006). statistician. 9 192 4 0.75 3.75 97.46% 252.3 0.959 -3.12 1.445 ance Level 4.358 15.05 N/A 20.14 26.4 50.77 | | | | | | | | | |
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| 1198 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1220 1221 1221 1221 1221 1221 1221 1221 1221 1221 1221 1221 1221 1222 1221 1222 1222 1222 1221 1222 1222 1223 1224 1225 1226 1227 1228 1229 | However, simulations results will not cover all Real Work Xylenes (total) Total Number of Observations Number of Detects Number of Distinct Detects Number of Distinct Detects Naximum Detect Wariance Detects Mean Detects Keeness Detects Keeness Detects Keeness Detects Normal Shapiro Wilk Test Statistic S% Shapiro Wilk Test Statistic S% Shapiro Wilk Critical Value Lilliefors Critical Value Detected Data app Kaplan-Meier (KM) Statistics using KM Mean KM SD 95% KM (t) UCL 90% KM Chebyshev UCL 97.5% KM Chebyshev UCL Camma GOF Te A-D Test Statistic | General S 197 5 16.4 537 63645 263 132 0.481 4.961 GOF Test 0.802 0.762 0.298 0.343 54.71 14.61 14.57 20.48 34.62 sts on Det 0.379 0.622 | tatistics Number of Distinct Observations Number of Distinct Observations Number of Distinct Non-Detects Number of Distinct Non-Detects Minimum Non-Detect Maximum Non-Detect Maximum Non-Detect Percent Non-Detects SD Detects CV Detects SD Detects SD of Logged Detects SD Detects Only Shapiro Wilk GOF Test Detected Data appear Normal at 5% Signific Lilliefors GOF Test Detected Data appear Normal at 5% Signific Lilliefors GOF Test Detected Data appear Normal at 5% Signific Lilliefors GOF Test Detected Data appear Normal at 5% Signific Lilliefors GOF Test Detected Data appear Normal at 5% Signific Stadard Error of Mean 95% KM (BCA) UCL 95% KM (BCA) UCL 95% KM Chebyshev UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL </th <th>(2006). statistician. 9 192 4 0.75 3.75 97.46% 252.3 0.959 -3.12 1.445 ance Level 4.358 15.05 N/A 20.14 26.4 50.77</th> | (2006). statistician. 9 192 4 0.75 3.75 97.46% 252.3 0.959 -3.12 1.445 ance Level 4.358 15.05 N/A 20.14 26.4 50.77 | | | | | | | | | |
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| | А | | В | С | D | E | F | G | Н | | I | J | K | L | |
|---------|--------------------|-----|-------------|-------------------|----------------------|--------------|--------------|---------------------------------------|--------------|----------------|--------|---------------|---------------|---------------|--|
| 1236 | | | | | C | Gamma Sta | atistics on | Detected I | Data Only | 1 | | | | | |
| 1237 | | | | | k | hat (MLE) | 0.95 | | | k | < star | r (bias corre | ected MLE) | 0.513 | |
| 1238 | | | | | Theta | hat (MLE) | 276.7 | Theta star (bias corrected MLE) 512.1 | | | | | | | |
| 1239 | | | | | nu | hat (MLE) | 9.503 | nu star (bias corrected) 5.135 | | | | | | | |
| 1240 | | | | | Mea | n (detects) | 263 | | | | | | | | |
| 1241 | | | | | | | | | | | | | | | |
| 1242 | | | | | Gamn | na ROS St | atistics usi | ng Impute | d Non-De | tects | | | | | |
| 1243 | | | | GROS may no | t be used wher | n data set h | as > 50% | NDs with r | nany tied | observ | ation | s at multipl | e DLs | | |
| 1244 | | G | ROS may | not be used wh | nen kstar of det | tects is sma | all such as | <1.0, espe | ecially whe | en the s | samp | ole size is s | mall (e.g., • | <15-20) | |
| 1245 | | | | For si | uch situations, | GROS met | thod may y | ield incorr | ect values | of UC | Ls ar | nd BTVs | | | |
| 1246 | | | | | This is | s especially | true when | the samp | le size is s | small. | | | | | |
| 1247 | | | For gam | ma distributed | detected data, | BTVs and | UCLs may | be compu | ited using | gamma | a dis | tribution on | KM estima | ites | |
| 1248 | | | | | | Minimum | 0.01 | | | | | | Mean | 6.684 | |
| 1249 | Maximum 537 Mediar | | | | | | | | | | | | 0.01 | | |
| 1250 | SD 54.94 CV | | | | | | | | | | | 8.219 | | | |
| 1251 | | | | k | | k | < star | r (bias corre | ected MLE) | 0.127 | | | | | |
| 1252 | | | | | Theta | hat (MLE) | 53.12 | | | Theta | a star | r (bias corre | ected MLE) | 52.51 | |
| 1253 | | | | | nu | hat (MLE) | 49.57 | | | | n | u star (bias | corrected) | 50.15 | |
| 1254 | | | | Adjusted | Level of Signi | ficance (β) | 0.0488 | | | | | | | | |
| 1255 | | | A | pproximate Ch | i Square Value | e (50.15, α) | 34.89 | | Adju | usted C | hi So | quare Value | e (50.15, β) | 34.8 | |
| 1256 | | | 95% Gam | ma Approximat | e UCL (use wh | ien n>=50) | 9.607 | 95 | 5% Gamm | a Adju | sted | UCL (use v | vhen n<50) | 9.633 | |
| 1257 | 7 | | | | | | | | | | | | | | |
| 1258 | | | | | Estimat | tes of Gam | ma Param | eters usin | ig KM Est | imates | ; | | | - | |
| 1259 | | | | | 1 | Mean (KM) | 7.405 | | | | | | SD (KM) | 54.71 | |
| 1260 | | | | | Vari | ance (KM) | 2993 | | | | | SE of | Mean (KM) | 4.358 | |
| 1261 | | | | | | k hat (KM) | 0.0183 | | | | | | k star (KM) | 0.0214 | |
| 1262 | | | | | n | u hat (KM) | 7.218 | | | | | n | u star (KM) | 8.442 | |
| 1263 | | | | | thet | a hat (KM) | 404.2 | | | | | theta | a star (KM) | 345.6 | |
| 1264 | | | | 80% | 6 gamma perce | entile (KM) | 0.00592 | | | 90 |)% ga | amma perc | entile (KM) | 1.451 | |
| 1265 | | | | 95% | 6 gamma perce | entile (KM) | 19 | | | 99 | 9% ga | amma perc | entile (KM) | 205.1 | |
| 1266 | | | | | | | | | | | | | | | |
| 1267 | | | | | | Gamma K | (aplan-Mei | ier (KM) S | tatistics | | | | | | |
| 1268 | | | | Approximate C | hi Square Valu | ie (8.44, α) | 2.994 | | Adj | justed | Chi S | Square Valu | Je (8.44, β) | 2.97 | |
| 1269 | ç | 95% | Gamma A | Approximate KN | И-UCL (use wh | ien n>=50) | 20.88 | 95% 0 | Gamma Ac | djusted | KM- | UCL (use v | vhen n<50) | 21.05 | |
| 1270 | | | | | - | | | | | | | | | | |
| 1271 | | | | | Lognor | mal GOF 1 | Fest on De | tected Ob | servation | s Only | | | | | |
| 1272 | | | | 5 | napiro wiik Te | st Statistic | 0.896 | | | 5 | snapi | IO WIIK GU | PF Iest | Gamma Lawal | |
| 1273 | | | | 5% 51 | hapiro wiik Cri | | 0.762 | D | etected Da | ата арр | ear L | Lognormal a | at 5% Signi | ficance Level | |
| 12/4 | | | | 5 | Lilliefors Cri | tical Value | 0.219 | D | | ata ann | | | t E% Signi | ficance Loval | |
| 1275 | | | | 5 | Detected | Data anne | ar Lognor | nal at 5% | Significan | ata app | | | at 5 % Signi | | |
| 1270 | | | | | 20100104 | Data appo | ar Lognon | | olgrinioan | 100 201 | | | | | |
| 1277 | | | | | Loanor | mal ROS S | tatistics U | sina Impu | ted Non-D | Detects | ; | | | | |
| 1270 | | | | | Mean in Orio | inal Scale | 6.971 | | | | - | Mean in | Log Scale | -7.34 | |
| 1280 | | | | | SD in Orig | ginal Scale | 54.92 | | | | | SD in | Log Scale | 5.229 | |
| 1281 | | | 95% | t UCL (assume | s normality of | ROS data) | 13.44 | | | 95% | Per | centile Boo | tstrap UCL | 13.49 | |
| 1282 | | | | | 95% BCA Boot | tstrap UCL | 18.27 | | | | | 95% Boots | strap t UCL | 39.41 | |
| 1283 | | | | | 95% H-UCL | (Log ROS) | 8863 | | | | | | | | |
| 1284 | | | | | | | | | | | | | | | |
| 1285 | | | | Statistic | s using KM es | timates on | Logged Da | ata and As | ssuming L | .ognori | mal [| Distribution | | | |
| 1286 | | | | | KM Mea | an (logged) | -0.154 | | | | | KM | Geo Mean | 0.857 | |
| 1287 | | | | | KM S | D (logged) | 0.851 | | | 95% | Crit | ical H Value | e (KM-Log) | 2.052 | |
| 1288 | | | | KM Standa | rd Error of Mea | an (logged) | 0.0678 | | | | ç | 95% H-UCL | . (KM -Log) | 1.394 | |
| 1289 | | | | | KM S | D (logged) | 0.851 | | | 95% | Crit | ical H Value | e (KM-Log) | 2.052 | |
| 1290 | - | | | KM Standa | rd Error of Mea | an (logged) | 0.0678 | | | | | | | | |
| 1291 | | | | | | | | | | | | | | | |
| 1292 | | | | | | | DL/2 Sta | tistics | | | | | | | |
| 1293 | | | | DL/2 No | rmal | | | | | C | DL/2 | Log-Transf | formed | | |
| 1294 | | | | | Mean in Orig | ginal Scale | 7.099 | | | | | Mean in | Log Scale | -0.726 | |
| 1295 | | | | | SD in Orig | ginal Scale | 54.89 | | | | | SD in | Log Scale | 0.979 | |
| 1296 | | | | 95% t l | JCL (Assumes | normality) | 13.56 | | | | | 95% H | H-Stat UCL | 0.908 | |
| 1297 | | | | DL/2 is n | ot a recomme | naed meth | oa, provide | ed for com | parisons | and his | storio | cal reasons | 5 | | |
| 1298 | | | | | N | | Distal | | | lec | | | | | |
| 1299 | | | | | Nor Detected Date | iparametric | ormal Dist | un rree U | | uCS Fiocers | 1 | rol . | | | |
| 1300 | | | | | Delected Data | a appear N | ormai Dist | inputed at | 070 SIGNI | ncance | , LGA | 61 | | | |
| 1301 | | | | | | | agente d' | | | | | | | | |
| 1302 | | | | | 050/ 1 | | | | 7 | | | | | 1 | |
| 1303 | | | | | 95% ł | VIVI (t) UCL | 14.01 | | | | | | | | |
| 1304 | | Na | to: Succe- | tions reactive- | the coloction | of a 050/ 14 | | vided to k | ln tha | or to ac | loot t | he most an | propriete 0 | 5% LICI | |
| 1305 | | 110 | ie. Sugges | uons regarding | ommondation | | | | distribut: | | ect t | me most ap | propriate 9 | 5 /0 UCL. | |
| 1306 | | TL | 000 r000 | Kec | ommenuations | | upon data | size, data | | Ju, and | SKel | wiless. | lo ond | (2006) | |
| 1307 | | 11 | ver cimer | ations recults an | e paseu upon t | | | for addit | | ht the | 111 51 | may want to | | statisticion | |
| 1.3(18) | HC | Jwe | ver, simula | auons results w | in not cover all | | u uala sels | , iui additi | unai msigi | m uie t | 196L | may want to | o consult a | รเสแรนเปลี่ไ. | |
| 1000 | | | | | | | | | | | | | | | |