# KANSAS UNDERGROUND INJECTION CONTROL PERMIT
# CLASS I NON-HAZARDOUS WASTE INJECTION WELL

Pursuant to the provisions of Kansas Statutes Annotated (K.S.A) 65-164, 65-165, 65-166, 65-170g and 65-171d and Kansas Administrative Regulations (K.A.R) Chapter 28, Article 46, the undersigned is authorized to inject approved on-site and off-site non-hazardous liquid wastes in accordance with the construction, operation, monitoring and reporting requirements as set forth herein.

| | |
|---|---|
| Owner: | Underground Cavern Stabilization, LLC<br>P.O. Box 225<br>Great Bend, KS 67530 |
| Operator: | Advantek Cavern Solutions, LLC<br>11000 Richmond Ave Suite 190<br>Houston, TX 77042 |
| Facility: | Advantek Cavern Solutions<br>7513 South K-14 Highway<br>Hutchinson, KS 67501 |
| Facility Contact: | Steve Pangburn – Facility Director<br>Jay Cecil – Vice President of Operations |
| Facility Telephone Number: | (620) 662-6367 |
| Well Identification: | AMDW #2 |
| Well Location: | Latitude: 37.9647694, Longitude: -97.9502389<br>Section 14, Township 24 South, Range 6 West<br>Reno County, Kansas |
| Receiving Formation: | Arbuckle |

The permittee shall comply with all conditions in this permit, federal, and state regulations governing Underground Injection Control (UIC) Class I wells and the requirements of the Kansas Department of Health and Environment (KDHE).

This permit shall become effective August 24, 2023 and expires August 24, 2033.

Janet Stanek

Janet Stanek, Secretary
Kansas Department of Health and Environment

August 24, 2023
Date

## FACILITY DESCRIPTION

The Advantek Cavern Solutions (ACS) facility is located in South Hutchinson (Fig. 1) and currently operates under one UIC Class V permit (KS-05-155-002) for the emplacement of approved beneficial reuse materials and one UIC Class I permit (AMDW #2) dedicated for brine disposal related to the emplacement operation.

This Class I permit authorizes ACS to inject KDHE approved on-site and off-site non-hazardous liquid waste into the Arbuckle Formation. On-site waste fluids shall be defined as fluids generated by the ACS facility. Off-site waste fluids shall be defined as any injected fluid not generated by the ACS facility and are transported to the facility for disposal. All wastes to be injected into AMDW #2 shall meet all acceptance criteria set forth in the Waste Analysis Plan (WAP) approved by KDHE (Attachment II).

## FACILITY LOCATION MAP

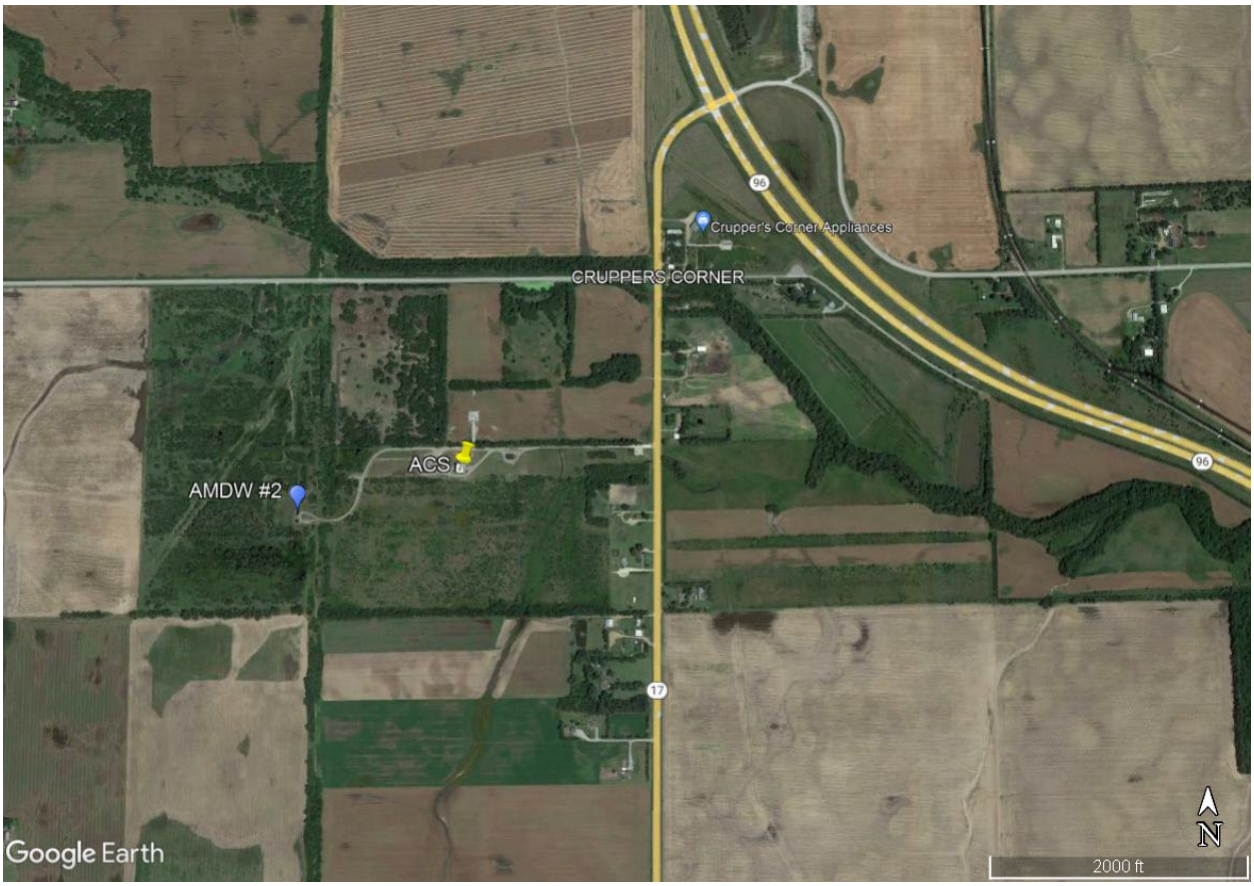



Figure 1 | ACS AMDW #2 Location
(Map courtesy Google Earth)

## SECTION I
## CONSTRUCTION REQUIREMENTS

A. General Construction Requirements: The permittee shall design, construct, maintain, and operate the permitted well to prevent the possibility of injected fluids being introduced into a useable aquifer or any underground source of drinking water ensuring that injection fluids or other formation fluids do not cause deterioration of the water quality of fresh and/or usable water zones. The well shall be cased and cemented such that it must prevent the loss of fresh and/or usable water due to downward migration and constructed as to prohibit the release of injection fluids into an unauthorized zone. Construction shall also include adherence to operating conditions and procedures, and emergency shutdown procedures specified in the permit application and in this permit.

Table 1 presents borehole, casing, tubing, and cement specifications reflective of the existing permitted well.

B. Injection Zone: Arbuckle formation through open hole from 4214’ to 4746’(TD).

C. Packer Type and Seating Depth: Baker 9-5/8” x 3-1/2” Compression Packer. Packer Seating Depth at 4192’.

D. Annulus Fluids: Fresh water with Baker Petrolite CRW-37 corrosion inhibitor plus mineral oil cap.

E. Minimum Annulus Pressure: Annulus pressure shall be continuously monitored and have an absolute minimum pressure of 60 psig. If the annulus pressure drops below 60 psig, the permittee shall contact KDHE as specified in Attachment I, paragraph O.

F. Spill prevention and containment: The brine injection storage/surge tank is located within an artificially lined containment structure. The permittee shall maintain an updated Spill Response Plan at the facility and shall make the plan available to KDHE upon request.

**Table 1: Proposed borehole, casing, tubing, and cement specifications for disposal well:**

| Borehole Size | Casing or Tubing Size & Material | Weight lbs/ft | Casing Seat Depth | Type of Cement & Additives | Number of Sacks of Cement |
|---|---|---|---|---|---|
| 24" | 18" Steel | Unknown | 208' | 50/50 Pozmix w/4% gel and 3% $CaCl_2$ | 400 |
| 17 1/4" | 13 3/8" Steel | 48.0 | 998’ | 50/50 pozmix, 2% gel, 12% salt<br>50/50 pozmix, 2% gel, 3% CaCl | 700<br>100 |
| 12 ¼” | 9 5/8" Steel | 40.0 & 36.0 | 4214' | Howco Lite<br>50/50 pozmix, 2% gel, 2% CaCl<br>Howco Lite | 550<br>125<br>675 |
| N/A | 4-1/2" or 5-1/2” Ceram-Kote disposal tubing (4261 feet long) | | | N/A | N/A |

N/A = Not Applicable

Note that within 30 days of completing any well modifications, the permittee shall submit a request for permit modification, in accordance with K.A.R. 28-46-17, to reflect the final well construction as specified in Section I, Table 1.

## SECTION II
## INJECTION LIMITATIONS, MONITORING, REPORTING, AND TESTING REQUIREMENTS

The permittee is authorized to inject on-site and off-site non-hazardous liquid waste which will be characterized and processed according to the KDHE approved WAP (Attachment II). The permittee is responsible for ensuring the WAP is fully implemented. Any revisions to the plan must be approved by KDHE prior to implementation.

No substances other than those identified and deemed acceptable for receipt and defined as non-hazardous shall be injected. Waste that is identified and regulated as a hazardous waste under 40 Code of Federal Regulations (CFR) Section 261.3 shall not be injected. Other prohibited wastes include:

- Radioactive wastes;
- PCB wastes as defined in the federal Toxic Substances Control Act (TSCA),
- Any hazardous waste resulting from an action taken under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or the Superfund Amendments and Reauthorization Act (SARA),
- Non-infectious medical wastes;
- Explosives;
- Military or civilian ordnance;
- Gaseous wastes in high pressure cylinders; or
- Waste of unknown origin.

The permittee shall submit a certified statement attesting to compliance with this requirement annually.

A. Monitoring data: All monitoring data required for reports shall be submitted to KDHE via the Kansas Online Automated Reporting (KOLAR) website hosted by the Kansas Geological Survey (KGS). Monitoring data (Table 2) is required to be submitted to KDHE via KOLAR monthly and shall be submitted no later than 28 days after the last day of the month for which the monitoring data are being reported. Quarterly reporting data (Table 3) is required to be submitted to KDHE via KOLAR on a quarterly basis and shall be submitted no later than 28 days after the last day of the calendar quarter for which monitoring data are being reported.

B. Permit Limits and Inspection Reporting: Inspection readings of injection flow rate and volume, pH, chlorides, temperature, wellhead annulus pressure, wellhead injection pressure and seal pot liquid level (Table 2) shall be made daily and reported in the monthly monitoring report submitted to KDHE via KOLAR. The inspection readings for wellhead annulus pressure and injection pressure shall include readings of both the gauge and the continuous recording device. Each permittee shall record the date and time readings are taken and include the initials of the person taking the readings in the monthly monitoring report.

   The monthly average, maximum and minimum values for the daily inspection readings of flow rates, volumes, and wellhead pressures for the month shall also be reported in the

monthly monitoring report submitted to KDHE via KOLAR. The monthly average flow rates and volumes shall be calculated using only the number of days for which injection occurred during the month. The total volume of fluid injected for the month shall also be reported in the monthly monitoring report submitted to KDHE via KOLAR.

The maximum and minimum values determined from the continuous recording data for the entire month for well annulus and injection pressure shall be reported in the monthly monitoring report submitted to KDHE.

Quarterly report: A written quarterly report indicating the type and volume of each on-site and off-site waste stream accepted and injected into AMDW #2 shall be submitted to KDHE via KOLAR.

Annual report: An annual comprehensive report shall be submitted to KDHE. The annual report shall include a summary of facility operating practices, impacts on the facility, results of any evaluations, a detailed summary of each injected waste stream including characteristics, a summary of monthly inspections and any action items implemented, and an evaluation of the past year's operations, and any proposed changes for the next year's operations, including monitoring or reporting.

**Table 2**: Permittee Sampling Schedule: Measure Daily, Report Monthly

| Sample Daily, Report Monthly | | |
|---|---|---|
| Injection and Operational Parameters | Injection or Parameter Limitation | Sample or Measurement Type |
| Injection Pressure (Inches Hg (inHg) or psig) | Gravity flow, no pump pressure allowed | Gauge and Continuous Recording Device ** |
| Injection Rate (gpm) | Monitor | Meter or Continuous Recording Device ** |
| Maximum Daily Injection Volume | 840,000 gpd (20,000 bpd) | Meter or Continuous Recording Device ** |
| Minimum Allowable Operating Annulus Pressure | 60 psig | Gauge and Continuous Recording Device ** |
| Seal Pot Liquid Level (in) | Liquid level must be visible in sight glass | Sight Glass** |
| pH | 2.5 - 11.0 | Meter or Continuous Recording Device ** |
| Specific Gravity | Monitor | Meter or Continuous Recording Device ** |
| Temperature (°F) | Monitor | Meter or Continuous Recording Device ** |
| Chloride (mg/l) | Monitor | Meter or Continuous Recording Device ** |

**The gauge, meter, and continuous recording device shall at all times be maintained, operational and shall at all times be located to properly measure the activity being monitored.

**Table 3**: Permittee Sampling Schedule for Injectate: Sample Monthly, Report Quarterly

| Sample Monthly, Report Quarterly | |
|---|---|
| Ammonia (mg/l) | Monitor |
| Benzene (mg/l) | <0.5 |
| Calcium (mg/l) | Monitor |
| Chromium (mg/l) | <5 |
| Conductivity (mmhos/cm) | Monitor |
| Ethylbenzene (mg/l) | <68 |
| Iron (mg/l) | Monitor |
| Magnesium (mg/l) | Monitor |
| Oil and Grease (mg/l) | Monitor |
| Sodium (mg/l) | Monitor |
| Sulfate (mg/l) | Monitor |
| Toluene (mg/l) | <200 |
| Total Alkalinity as CaCO3 (mg/l) | Monitor |
| Total Dissolved Solids (mg/l) | Monitor |
| Total Hardness as CaCO3 (mg/l) | Monitor |
| Total Organic Carbon | Monitor |
| Total Suspended Solids (mg/l) | Monitor |
| Xylene (mg/l) | <44 |
| Other parameters as requested by KDHE | |

C. Waste Analysis Plan (WAP):

1. **WAP submittal**: The permittee shall submit a WAP to KDHE for review and consideration for approval. No off-site waste shall be accepted by the facility or injected in AMDW #2 until the WAP is approved by KDHE and no wastes other than those identified in the WAP shall be injected into AMDW #2. The permittee shall maintain the WAP at the facility and shall make the WAP available for inspection by KDHE upon request.

2. **Waste Sampling**: The permittee shall sample all waste to be injected as specified in Table 3 and shall obtain representative samples according to Appendix I and II of 40 CFR Part 261 or an equivalent sampling procedure approved by KDHE. The sampling and analyses shall be performed in a manner protective of human health, safety, and the environment and shall produce results representative of the chemical composition of the waste stream and that will identify incompatible wastes. At a minimum, the WAP shall include:

   a. A description of how wastes identified as chemically incompatible will be handled and stored so as to prevent the release of the waste or reaction products outside of the tanks, pipes, or other containment structures at the facility.

   b. A demonstration that:

      1. The waste stream and its anticipated reaction products will not alter the permeability, thickness or other relevant characteristics of the confining or injection zones as referenced in KDHE Procedure #UIC1-10: Procedure for Conducting a Compatibility Study for Class I Disposal Wells; and

      2. the waste stream will be compatible with the well materials with which the waste is expected to come into contact.

   c. A description of the methodology used to make the compatibility demonstrations required pursuant to KDHE Procedure #UIC1-10: Procedure for Conducting a Compatibility Study for Class I Disposal Wells.

3. **Tests and Methods Identification**: The permittee shall identify the types of tests and methods used to generate the monitoring data as specified in the KDHE approved WAP.

4. **WAP Updates**: The permittee shall ensure that the WAP remains accurate, and the analyses of any fluid sampled remain representative. Any changes or revisions to the WAP shall be submitted to KDHE for review and consideration for approval before implementation.

5. **On-site records:** The permittee shall maintain a complete set of records and waste analyses for each waste generator at the facility and shall make records

available for inspection by KDHE upon request. This information shall include at a minimum:

- Waste Profile Sheets
- Pre-qualification analysis
- Safety Data Sheets
- Generator laboratory analyses (if available)
- Sampling log sheets
- Copies of manifests
- Records of all analyses performed by the permittee for each waste sampled/analyzed. The permittee shall maintain the following records:
    - Copies of all Chain-of-Custody records
    - Copies of all applicable analytical and test results and lab reports
    - Copies of original incoming manifests
    - Documentation of any discrepancies identified by verification analyses
    - If applicable, copies of any written correspondence with the waste generator or KDHE

6. **New waste streams:** The permittee shall submit to the KDHE for review and consideration for approval, a report describing any new waste stream 180 days prior to injection per Attachment I, Standard Conditions for Underground Injection Control Permits. If KDHE notifies the permittee that a waste stream is inappropriate for the permitted operations, injection of that waste stream shall not be allowed until specific authorization has been received from KDHE for injection of that waste stream.

D. Analytical Data: The analytical results of representative wastewater samples for all waste streams required by this permit shall be reported in the monitoring reports submitted to KDHE (Table 3) via KOLAR. The wastewater samples shall be collected at least monthly from the waste stream during a time that the well is being used for injection. The data reported shall include the date the sample was collected, the date the sample was analyzed, analytical results, the name of the laboratory conducting the analyses and the laboratory certification number. All analyses of wastewater required by this permit shall be conducted by a Kansas certified laboratory.

For all waste streams, the injection fluids shall be analyzed in accordance with the KDHE approved WAP (Attachment II). Results of the most recent analyses shall be submitted with each monthly monitoring report. The report shall include statements demonstrating that the permittee is in compliance with the requirement that no substances other than those identified and deemed acceptable for receipt and defined as non-hazardous shall be injected. Any waste that is identified and regulated as a hazardous waste under 40 CFR Section 261.3 or listed as prohibited in Section II of this permit shall not be accepted into the facility.

E. Submittals: Any and all other reporting and information required by this permit; including but not limited to those detailed below shall be directed to the address below or as otherwise indicated by KDHE.

Kansas Department of Health and Environment
Bureau of Water - Geology and Well Technology
1000 SW Jackson St. Suite 420
Topeka, Kansas 66612-1367

F. Other reporting: The following shall also be reported to KDHE by the permittee:

1. A well treatment plan or workover plan shall be submitted to KDHE for review and consideration of approval prior to beginning a well treatment or workover. No well treatment or workover shall begin until the permittee has obtained approval for the plan from KDHE. Any well treatment procedures used, including those associated with normal maintenance and malfunction correction, and all well workovers shall be reported to KDHE within 30 days of completion.

2. Immediate notification to KDHE of all spills associated with the operation of the injection well or well system. Spills that do not require notification to the state are spills within containment structures that do not threaten public health, safety, or the environment and that do not impact the soils or waters of the state.

3. Notification to KDHE of any well malfunction or failure within 24 hours of becoming aware of the circumstances.

4. The results and interpretation of mechanical integrity tests and any other test or logs of the injection well or injection zone within 30 days of completion.

5. A written description and explanation of any noncompliance with the operating limitations as specified by this permit for wellhead injection pressure, injection flow volume, or injection limits occurring during the month being reported shall be submitted with the monthly monitoring report.

6. Any addition of liquid to the annulus seal pot shall be reported in the monthly monitoring report. The date the liquid was added, and the volume added shall be included in the monthly monitoring report.

7. When the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any other report to KDHE, the permittee shall submit such facts or corrected information to KDHE within five days of becoming aware of the circumstances.

G. Annual Testing: Monitoring pressure buildup in the injection zone shall be conducted annually including, at a minimum, a shutdown of a UIC Class I well located at this facility for a time sufficient to conduct a valid observation of the pressure fall-off curve. A plan for this test shall be submitted to KDHE for review and consideration for approval at least 30 days prior to conducting the test. The test shall not begin until the test plan has been

approved by KDHE. The test results and interpretation of the test shall be submitted to KDHE within 30 days of test completion. The static fluid level of the injection interval shall also be measured once a year, the method being previously approved by KDHE. Results shall be reported to KDHE within 30 days of completion of the measurement and include a comparison with previous fluid measurements since effective date of the permit.

H. Mechanical Integrity Testing:

1. A two-part mechanical integrity test (MIT) to check for internal and external mechanical integrity shall be conducted at least once every five years. The internal MIT is to check for significant leakage in the casing, tubing, and packer and the external MIT is to check for significant fluid movement through vertical channels adjacent to the wellbore. Whenever KDHE believes that because of a downhole problem the continued use of the well constitutes a threat to human health, or the fresh and/or usable waters or the soils of the state, or the release of injected fluid into an unauthorized zone is occurring, the permittee shall be required to immediately cease injection and conduct a MIT. If determined necessary by KDHE, a MIT shall be conducted when there has been a well workover. A MIT plan shall be submitted to KDHE for review and approval prior to conducting any MIT. The MIT plan shall be submitted to KDHE for review and approval at a minimum of 30 days prior to conducting the test. No MIT work shall commence until approval of the MIT has been obtained from KDHE. The internal MIT shall be witnessed by KDHE. If the well fails a MIT, the requirements of Section II.I.2. of this permit shall be implemented by the permittee. The results and interpretation of a MIT shall be submitted to KDHE within 30 days of test completion.

I. Annulus pressure decline, annulus liquid loss, anomalous operational data, loss of mechanical integrity:

1. If the annulus pressure declines below 60 psig, or loss of annulus liquid indicating a loss of mechanical integrity occurs, or anomalous operational data indicating a loss of mechanical integrity occurs, the permittee shall 1) immediately investigate and identify the cause of the annulus pressure decline, annulus liquid loss or anomalous operational data and 2) notify KDHE within 24 hours of becoming aware of the circumstances. The results of this investigation shall be reported to KDHE within 24 hours of completion. If the well appears to be lacking mechanical integrity, the permittee shall:

   a. Immediately cease injection of waste fluids.

   b. Take all steps required by KDHE to determine the presence or absence of mechanical integrity. If the well is determined to have mechanical integrity, injection may resume after the permittee has obtained authorization from KDHE.

2. If a loss of mechanical integrity is determined pursuant to Section II.H.1. of this permit or as the result of a MIT, the permittee shall:

a. Immediately cease injection of waste fluids.

b. Notify KDHE within 24 hours of the determination.

c. Take all steps determined necessary by KDHE to determine whether there may have been a release of waste into any unauthorized zone. If there is evidence there may have been a release into an unauthorized zone, the permittee shall orally notify KDHE within 24 hours of the determination. A written notice shall also be provided to KDHE within five days of the determination including a description of the release.

d. Comply with any immediate corrective or remedial action specified by KDHE. If determined necessary by KDHE, the permittee shall submit to KDHE a remediation and corrective action plan and implementation schedule for review and approval. Work shall not commence until approval of the remediation and corrective action plan has been obtained from KDHE.

e. Restore and demonstrate mechanical integrity to the satisfaction of KDHE. A plan for any well workover or MIT shall be submitted to KDHE for review and approval. Work shall not commence until the permittee has obtained approval of the workover or MIT plan from KDHE.

f. Injection shall resume only upon authorization from KDHE.

## SECTION III
## WASTE MINIMIZATION PLAN

A. Planning: The permittee must record and maintain in the facility operating record, at least annually, a waste minimization program which addresses the wastes and wastewater being directed to the permitted well. The permit holder will submit to KDHE an annual report detailing the on-going waste and waste water minimization efforts.

B. Reporting: The report will identify the programs and practices in place to reduce the volume of wastewater injection, a description of the administrative process and structure in place to develop and implement such a program; a description of past, current and future projects, including the results of projects. Appropriate diagrams, graphs, tables, etc. should be included in the report to describe projects and their effectiveness.

## SECTION IV
## CONVERSION

A request to convert the well to a use other than on-site and off-site waste injection as authorized by this permit shall be submitted to KDHE at least 60 days prior to conversion. A conversion plan shall be submitted with the notice to KDHE for review and consideration for approval. The well shall not be converted until KDHE has approved the plan.

## SECTION V
## PLUGGING AND ABANDONMENT

The well shall be plugged and abandoned upon reaching the end of its useful life or when determined necessary by KDHE to protect human health or the fresh and/or usable waters or the soils of the state. The permittee shall conform to all plugging and abandonment requirements of state and federal regulations. The well shall be plugged in a manner which will not allow the movement of fluids into or between sources of fresh and/or usable water or allow the movement of injected fluids out of the injection zone.

The permittee currently has a plugging and abandonment plan on file with KDHE. The permittee shall revise and update the plugging and abandonment plan when required by KDHE. The permittee shall notify KDHE at least 60 days prior to plugging and abandonment of the well. With the notice, the permittee shall submit a revised and updated plugging and abandonment plan to KDHE for review and consideration of approval. Plugging and abandonment work shall not begin until KDHE has approved the plugging and abandonment plan.

The report of plugging and abandonment and related information shall be submitted to KDHE within 30 days after completion of the plugging operation on forms provided by KDHE.

## SECTION VI
## FINANCIAL ASSURANCE

The permittee shall maintain financial responsibility and financial resources to close, plug, and abandon the UIC Class I well and other appurtenances in a manner required by KDHE. The permittee shall show evidence of financial responsibility to KDHE by the submission of a surety bond or other adequate financial assurance such as financial statements or other materials acceptable to KDHE. Financial assurance documents and cost estimates shall be revised and updated when required by KDHE. The permittee must notify KDHE by certified mail of the commencement of voluntary or involuntary proceedings under Title 11 (Bankruptcy), U.S. Code, naming the owner or operator as debtor, within ten business days after the commencement of the proceeding. A guarantor of a corporate guarantee must make such notification if named as debtor, as required under the terms of the guarantee.

## SECTION VII
## STANDARD CONDITIONS – ATTACHMENT I

In addition to the specified conditions stated herein, the permittee shall comply with the provisions of Attachment I.

## SECTION VIII
## FACILITY SUBMISSION SUMMARY

The following is a summary of the required submissions/reporting pursuant to this permit:

| SUBMISSION REQUIREMENTS | DUE DATE | PERMIT CONDITION |
|---|---|---|
| Well Malfunction or Spills | Immediate contact; 24 hr written | II.E.2.<br>II.E.3. |
| Testing Malfunction or Other Emergency Reporting | Contact within 24 hrs, written contact within five days | II.I.<br>Attachment I.O. |
| Monthly Monitoring and Reports | No later than 28 days after the last day of the month for which the data are being reported | II.A.<br>II.B.<br>II.C.<br>II.D. |
| Quarterly Monitoring and Reports | No later than 28 days after the last day of the calendar quarter for which the data are being reported | II.A.<br>II.B.<br>II.C.<br>II.D. |
| Annual Report | March 31 of the following year | II.B.<br>III.A. |
| Fall-Off Testing and Static Fluid Level Testing Plans | 30 days minimum prior to proposed annual test date | II.F.<br>II.G. |
| MIT Plan | 30 days minimum prior to each five-year test date | II.H. |
| Fall-Off Testing, Static Fluid Level Testing and MIT Reporting | 30 days after the completion of each test | II.F.<br>II.G.<br>II.H. |
| Treatment or Work Over Reporting | 30 days after the completion of each test | II.E.1. |
| Permit Renewal | 180 days prior to permit expiration date | Attachment I.B. |
| Permit Transfer Request | 30 days prior to proposed transfer | Attachment I.N. |
| Waste Stream Changes | 180 days prior to proposed changes | Attachment I.S. |
| Waste Minimization Plan | Annually on permit issuance date | III. |
| Conversion Request | 60 days minimum prior to proposed conversion | IV. |
| Plugging and Abandonment Plan | 60 days minimum prior to proposed plugging and abandonment plan | V. |
| Plugging and Abandonment Report | 30 days after completion of plugging operations | V. |
| Financial Assurance | As requested by KDHE | VI. |
| Any Corrections to Submittals | Within five days of becoming aware of the circumstance | II.E.7. |

Effective April 3, 2021

ATTACHMENT I

STANDARD CONDITIONS FOR
UNDERGROUND INJECTION CONTROL PERMITS

CLASS I NON-HAZARDOUS WASTE INJECTION WELLS

CONDITIONS APPLICABLE TO ALL PERMITS

A. Duty to Comply: The permittee shall comply with all conditions of the permit, federal and state laws and regulations. Any permit noncompliance constitutes a violation of the appropriate act or regulations and is grounds for enforcement action; for permit termination, revocation and reissuance, modification or denial of a permit renewal application.

B. Duty to Reapply: If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall submit a complete application for a new permit at least 180 days before this permit expires, unless permission for a later submission date has been granted by the Secretary.

C. Duty to Halt or Reduce Activity: It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate: In the event of noncompliance with the permit, the permittee shall take all reasonable steps to minimize releases to the environment and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment.

E. Proper Operation and Maintenance: The permittee shall at all times properly operate and maintain all facilities and systems of monitoring, treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance shall include effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems when necessary to maintain compliance with the conditions of the permit.

F. Permit Modifications and Terminations: After notice and opportunity for a hearing, this permit may be modified, suspended or revoked, or terminated in whole or in part during its term for cause as provided, but not limited to those set forth in K.A.R. 28-46-15 and K.A.R. 28-46-16 or if the KDHE or the U.S. Environmental Protection Agency standards or regulations on which the permit was based have been changed by promulgation of new or amended codes, statutes, regulations or standards or by judicial decision after the permit was issued. The permittee shall furnish to KDHE, within a reasonable amount of time, any information which KDHE may request to determine whether cause exists for

modifying, revoking and reissuing or terminating this permit or to determine compliance with this permit. The permittee shall also furnish, upon request, copies of all records required to be kept by this permit.

G. Property Rights: This permit does not convey any property rights of any sort, or any exclusive privilege.

H. Duty to Provide Information: The permittee shall provide to KDHE within a time period specified by the Secretary, any information which KDHE may request to determine whether cause exists for modifying, revoking, reissuing or terminating the permit, or to determine compliance with this permit. The permittee shall also furnish to KDHE, upon request, copies of reports and information required to be maintained by this permit.

I. Inspection and Entry: The permittee shall allow the Secretary, or any authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor for the purpose of assuring permit compliance or as otherwise authorized by the appropriate Act, any substances or parameters at any location.

J. Samples, Measurements and Records:

1. Samples and measurements taken, to comply with this permit, for the purpose of monitoring shall be representative of the monitored activity.

2. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for at least three years for the date of sample, measurement, report or application. This period may be extended by request of KDHE at any time and is automatically extended during the course of any unresolved enforcement action regarding this facility.

3. The permittee shall retain records concerning the nature and composition of all injected fluids at least three years after the completion of any plugging and abandonment procedures. KDHE may request the permittee to deliver the records to KDHE at the conclusion of the retention period.

4. Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. The date(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical sampling, and sample preservation techniques or methods used; and

f. The results of such analyses.

K. Signatory Requirements: All permit applications, reports required by this permit, or other information requested by KDHE shall be signed and certified in accordance with the requirements of K.A.R. 28-46-22.

L. Reporting Requirements:

1. Except for all new wells authorized by an area permit under K.A.R. 28-46-18, a new injection well may not begin injection until construction is complete, and:

a. The permittee has submitted notice of completion of construction to KDHE; and

b. 1) KDHE has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of the permit; or

2) The permittee has not received notice from KDHE expressing the intent to inspect or otherwise review the new injection well within 14 days of the date of the receipt of the notice in paragraph a. of this section, in which case prior inspection or review is waived and the permittee may commence injection. KDHE shall allow for a reasonable time period in which the well shall be inspected.

M. Anticipated Noncompliance: If for any reason, the permittee will be unable to comply with permit requirements, the permittee shall give advance notice to KDHE. The notice shall include the reason for the anticipated noncompliance and a description of steps taken to reduce, eliminate and prevent reoccurrence of the noncompliance. Upon receiving proper notice from the permittee KDHE may grant for a specified time a temporary waiver to a permit requirement for the purpose of testing or treating the well or for conducting a well workover or to protect human health or the environment.

N. Transfer of Permit: This permit shall not transfer to any person or entity except after notice and approval by KDHE. KDHE may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the appropriate regulations. The current owner shall notify KDHE at least 30 days in advance of the proposed transfer date. The procedure for transferring ownership is provided on the KDHE website. The new permittee shall submit to KDHE at least 30 days prior to the proposed transfer date a new permit application including the financial assurance documents guaranteeing resources are available to properly plug and abandon the well.

O. Emergency Reporting: The permittee shall report to the Secretary any noncompliance with the permit which may endanger health or the environment. Any such information

shall be reported orally within 24 hours from the time the permittee becomes aware or reasonably should have become aware of the circumstances. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and cause for the period of noncompliance, including exact dates and times of the incident, corrective action taken, if the noncompliance has not been corrected, the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The permittee shall comply with any corrective or remedial action required by KDHE.

P. Permit Expiration: This permit shall be effective for a fixed term not to exceed 10 years. As long as KDHE is the permit-issuing authority, this permit and all conditions herein will remain in effect beyond the permit's expiration date per state law K.S.A. 77-511 (d), which states; If a timely and sufficient application has been made for renewal of a license with reference to any activity of a continuing nature, the existing license does not expire until the state agency has taken final action upon the application for renewal or, if the state agency's action is unfavorable, until the last day for seeking judicial review of the state agency's action or a later date fixed by the reviewing court.

Q. Severability: The provisions of this permit are severable and if any provision of this permit and any circumstance is held invalid, the application of such provision to other circumstances and the remainder of the permit shall not be affected thereby.

R. Operational Requirements:

1. The permittee shall not allow the movement of fluid containing any contaminant into any formation or aquifer not permitted to receive fluid by this permit. The permittee shall have the burden of showing the requirements of this paragraph are met.

2. If any water quality monitoring of an aquifer indicates the movement of any contaminant into any formation or aquifer not permitted to receive fluids by this permit or into any uncontaminated part of the formation permitted to receive fluid by this permit, the permittee shall take such action as required by KDHE, including taking the well out of service, closure of the well or plugging and abandonment of the well.

S. Change in Waste Stream: Any facility changes or process modifications which may result in new, different or altered injection streams or an increase in injection volumes or an increase in concentration of waste constituents shall be reported to KDHE at least 180 days prior to such changes at which point KDHE will consider approving a variance to the permitted injection volumes.

T. Penalties: Failure to comply with the terms of this permit may subject the permittee to an administrative and/or civil penalty, a criminal penalty and/or an action to suspend, revoke, or terminate this permit. Failure to minimize or mitigate any adverse impact on the environment resulting from noncompliance may serve to increase the severity of such penalties.

U. Permit Actions: The filing of a request by the permittee for a permit modification, a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

V. Other Conditions:

1. The permit holder shall maintain a copy of the permit and its modifications or revisions in the facility records. A copy of the permit shall also be located at the facility and accessible to those who operate the injection well.

2. Within 30 days of well construction, the permit holder shall submit a Permit Modification request, in accordance with K.A.R. 28-46-17, to reflect the construction details as specified in Section I Table 1.

ATTACHMENT II

ADVANTEK CAVERN SOLUTIONS

WASTE ANALYSIS PLAN

AMDW #2

Advantek
Cavern Solutions

# AMDW #2
# NW/4 Sec. 14, T24S, R6W
# Reno County, Kansas
# Hutchinson, KS Facility
# Permit # KS-01-155-012

## ATTACHMENT II Waste Analysis Plan

## WASTE ANALYSIS PLAN

### 1.1: Purpose

The purpose of this Waste Analysis Plan (WAP) is to characterize any non-hazardous waste water generated off-site designated for injection into Advantek Cavern Solutions' (ACS) AMDW #2, Class I disposal well at the South Hutchinson facility. ACS will be responsible for ensuring this WAP is implemented. AMDW #2 is currently operated as a non-hazardous, Class I disposal well dedicated for brine disposal as related to ACS's emplacement operation. This brine is displaced fluid produced from the emplacement of approved beneficial reuse non-hazardous materials into cavern wells. This Waste Analysis Plan document applies to the injection of off-site waste fluids and on-site generated waste fluids disposed down ACS's AMDW #2 Class I well. Off-site waste fluids are to be considered any injected waste fluids not generated by ACS at the South Hutchinson facility and that are brought to the facility in transports and disposed of by ACS into AMDW #2. On-site waste fluids are excess displaced brine produced by the emplacement of solids in caverns.

ACS presently operates AMDW #2 in accordance with KDHE regulations which require Class I injection well operators to monitor and analyze the fluids injected into the well to meet compliance. A copy of this WAP plan will be available at the facility at all times.

AMDW #2 currently operates as a Class I well under KDHE permit #KS-01-155-012. This permit requires ACS monitor the injection fluids for: Chlorides, pH, temperature, calcium, conductivity, iron, magnesium, sulfates. total alkalinity as CaCO3, total dissolved solids, and total hardness as CaCO3.

Well operational parameters monitored and reported are: Injection pressure (vacuum), injection rate, injection volume (gallons per day), annulus pressure (minimum is 60 psig), and seal pot fluid level. AMDW #2 is permitted for a maximum injection volume of 840,000 gallons/day (20,000 barrels/day).

### 1.2: Acceptable Wastes

This section pertains to off-site sources for Class I non-hazardous waste fluids to be injected into AMDW #2. This section is not intended to address existing cavern emplacement operations where surplus brine is disposed into AMDW #2.

All unloaded waste fluids will be placed initially in a pre-mix batch settling tank and/or filtered so most suspended solids can be removed before disposal to avoid any plugging or damage to the disposal zone. The pre-mix batch tank will also be utilized to treat any incoming waste fluids in order to meet permit requirements if needed. Fluids that will be accepted include, but are not limited to:

- Class II produced water
- Class II flowback water
- Class II wastewater
- Pipeline test water
- Refinery waste fluid
- Crude oil train terminal wastewater
- Oil terminal runoff
- Non-hazardous pesticide waste fluid
- Unused fracturing fluids or acids

- Gas plant cooling tower cleaning waste fluid
- Waste compressor oil, filters, and blowdown
- Used hydraulic fracturing fluid
- Waste fluid in transportation pipeline-related pits
- Boiler cleaning waste fluid
- Landfill leachate
- Vacuum truck and drum rinsate from trucks and drums transporting or containing non-RCRA exempt and non-hazardous waste fluid
- Any other KDHE approved non-hazardous waste fluid

New sources of Class I non-hazardous waste fluids will be screened based on process knowledge and tested to demonstrate the non-hazardous nature of the waste fluids prior to injection in AMDW #2. ACS will require any off-site waste generator to certify the non-hazardous nature of each waste fluid stream being transported to the South Hutchinson disposal well site.

Upon submittal of waste fluid approval requests, the KDHE reviews pre-approval characterization data and approves new waste fluid sources, including approval of waste-specific analytical test parameter requirements for each waste fluid being considered for approval. These parameters will vary on a case-by-case basis. Waste fluid analysis will be required for each approved source both annually and quarterly, unless a different frequency is specified in the KDHE approval letter.

**1.3: Prohibited or Non Acceptable Wastes**

ACS will **NOT** accept, for treatment or disposal, any production waste or outdated products which are listed as hazardous wastes by the U.S. EPA.

ACS will not accept:

- Sewage
- Infectious waste
- Radioactive waste
- PCB wastes, as defined by TSCA (Toxic Substances Control Act).
- The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) wastes.
- Medical wastes.
- Explosives.
- Military or civilian ordnance.
- Gaseous wastes in high-pressure cylinders
- Wastes from unknown origin.

Specifically, this plan delineates the following:

- Pre-Acceptance Procedures-Section 2 outlines the procedural steps ACS will take to evaluate the acceptability of a candidate waste stream pursuant to permit conditions and management at the site, including re-evaluation frequency.
- Acceptable Waste Codes-Section 3 summarizes the wastes that the ACS facility is approved to accept.

- Waste Analyses Performed by ACS Facility-Section 4 describes the analyses performed on incoming shipments and wastes in process operations.
- Restricted Wastes-Section 5 summarizes wastes that ACS facility is not approved to accept.
- Rejection Policy-Section 6 discussed the policy and procedures that ACS will use for the acceptance or rejection of waste received by the facility.
- Discrepancy Policy-Section 7 discusses ACS facility's procedures for resolving manifest discrepancies and discrepancies between incoming waste shipments and their waste profile.
- Sampling Methodology-Section 8 outlines the proper sampling method(s) for a given waste type (solid, sludge, liquid) and containment (drum, tank, impoundment pile, etc.).
- ACS personnel can then obtain waste identification samples to help ensure accurate analytical results when a waste is analyzed.
- Analytical Parameters, Techniques and Rationale-Section 9 outlines the parameters, rationale and methods ACS will utilize to determine or identify certain waste properties to ensure proper management of the waste at the site.
- Quality Control Policy-Section 10 outlines the quality control policy this site will follow to achieve high quality analytical results.
- Data Reporting-Section 11 identifies the data that ACS will supply to regulatory agencies under this WAP.
- Record Keeping-Section 12 identifies the records that ACS will retain on site related to waste analyses performed under this WAP.
- Corrective Action-Section 13 describes the procedures that ACS will take to resolve issues, needs or problems that may arise in connection with its laboratory operations.

The Operations Manager, or his/her designees, are individually and collectively herein referred to as "ACS site management".

**Section 2: Pre-Acceptance Procedure**

ACS has developed informational protocols and analytical procedures to determine the acceptability of specific wastes for management at the site, referred to as the "Pre-acceptance Procedure." The Pre-Acceptance Procedure includes the following steps:

- **Obtain Waste Generator Supplied Information (Section 2.1). This includes a Waste Profile Sheet (WPS) which contains pertinent chemical and physical data (Attachment C).**
- **Initial Review and Analysis (Section 2.2). After review of generator supplied information, a determination is made if further analysis by the generator or ACS is required.**
- **Disposal Decision Process (Section 2.3). After review of generator supplied information and any appropriate analysis is complete, ACS will make a disposal decision.**
- **Re-Evaluation Process. If necessary, a waste profile re-evaluation will be conducted as stated under Section 2.4.**

Information concerning the source of waste material and the variability of parameters which contribute to the need to dispose of the material via underground injection are critical to properly characterizing the

appropriateness/acceptability and possible management of a candidate waste stream. Paramount to the acceptability of the waste stream by ACS, it is important to determine that the material is not classified as or determined to be a hazardous waste as specified by KDHE Procedure #UICI-17 listed under **(Attachment G)**, 129 Priority Pollutants **(Attachment H)**, Toxicity Characteristic Leaching Procedure (TCLP) Requirement **(Attachment I)**, and Geochemicals **(Attachment J)**.

The generator of a waste stream is the entity legally obligated to properly characterize all of the waste materials it produces prior to arranging for disposal or management of those wastes by a third-party. The management of ACS has significant experience in the regulatory framework of waste classification and the analytical procedures used to confirm the generator's waste classification. The criteria and process to be used by ACS is outlined in Attachment B "Flow Chart of Waste Fluid Acceptance and Verification Procedures".

**Section 2.1: Generator-Supplied Information**

The waste generator will supply ACS with the following information and materials for each new proposed waste stream, except where noted herein. Each generator must provide documentation demonstrating that each of their waste streams are classified correctly as non-hazardous under federal and state regulations. Generators shall provide documentation through submittal of a Waste Profile Sheet (WPS) to ACS prior to shipping the waste.

- Waste Profile Sheet, (WPS), which will contain pertinent chemical and physical data. This document is **"Attachment C"** "Sample Generator Qualification". At a minimum, the generator supplies all the information required by 40 CFR § 264.13(a)(l) needed to characterize the waste for proper treatment, storage, and disposal. ACS may assist the generator in completing information provided by the generator based on its evaluation. The complete package is reviewed and approved by the generator at the completion of the approval process. Additionally, **"Attachment F"** "Non-Hazardous Water Certification Statement" is required.
- Generating process. The generating process should be described in sufficient specificity. For example, for leachate, this would include an indication of type of leachate (municipal, industrial, etc.) and a narrative description of the generating process and materials deposited.
- Raw ingredients used in the generating process. The waste profile should include a complete list of the ingredients used in the process that generates the waste, and
- Other supporting documentation such as additional analytical results or a safety data sheet (SDS), as necessary to provide additional waste characterization.

A representative sample may not be required of all waste streams. Samples may be required on a case-by-case basis to determine suitability for treatment or additional waste characterization parameters.

**Section 2.2: Initial Review and Analysis**

Once ACS receives the generator-supplied information and it is reviewed, a determination will be made if further analyses by the generator or ACS are required. The fluid shipment should include **"Attachment D"** "Waste Manifest".

All waste samples will be subjected to the analyses identified in Section 4, as appropriate. Additional testing may also be requested by the site management if needed.

If during the pre-acceptance procedure, ACS determines that the waste information indicated by the testing does not completely conform to the information on the WPS, the generator is notified of the apparent inconsistency. If the inconsistency is resolved, the pre- acceptance procedure continues.

The waste may be rejected or accepted during this phase of the procedure.

**Section 2.3: Disposal Decision Process**

The pre-acceptance procedure is concluded when the review of the generator supplied information and any appropriate mandatory analyses is complete. At this time, ACS makes a "disposal decision" on the proposed waste. Disposal decisions are based on:

- Management methods available
- Conditions or limitations of existing permits and regulations
- Capability to safely manage the waste
- WPS description of the process generating the waste.
- Knowledge of the waste generating process.
- WPS description of the chemical and physical properties of the waste.
- Any additional documentation supplied by the generator (for example: SDS's).
- Results of any verification analyses.
- Results of any analyses of process operations procedures.
- Management's technical experience and judgment.

**Section 2.4: Re-Evaluation Process**

A waste profile re-evaluation will be conducted when one of the following occurs:

- A generator notifies ACS that the process generating the waste has changed;
- The results of inspection or analysis indicate that the waste received at the facility does not match the identity of the waste designated on the accompanying manifest (of shipping paper) or pre- acceptance documentation (See Discrepancy Policy in Section 7); or
- ACS will send all WPS's to the generators biennially for their review, revisions if needed, and re-certification. Generators will be asked to re-evaluate each WPS to determine if the generation process (for example: raw ingredients, generating process) or other parameters (for example: waste codes) have changed such that a new or revised WPS is needed.

**Section 3: Acceptable Waste Class**

The ACS facility accepts only materials not subject to identification and regulation under **"Attachment G"** "KDHE Procedure UICI-17" and "40 CFR § 261.3 (Definition of hazardous waste)" in the facility.

Waste characterized by codes or descriptions assigned by local/state regulations that do not meet the criteria as defined in KDHE Procedure #UICI-17 may be accepted on a case-by-case basis.

**Section 4: Waste Acceptance and Processing Analyses**

Verification activities include container receipt inspection, visual inspection and physical and chemical screening according to the parameters identified in Table A-1.

Any discrepancies between the verification results and the waste profile must be resolved in accordance with the Discrepancy Policy discussed in Section 7 before the shipment can be accepted at the facility.

In addition, process evaluation procedures are performed to ensure that the waste is managed safely and in accordance with applicable regulations.

Table A-1 summarizes the parameters that are examined for each of these screening analyses. Parameters for waste analysis during pre-acceptance are also shown in Column 2.

Once the waste is approved during pre-acceptance, all incoming shipments are subjected to mandatory verification, including inspections and chemical screening (Column 3A).

Finally, analyses are performed as necessary for process operations that are conducted onsite (Columns 3B).

**TABLE A-1: Analyses Performed by ACS South Hutchinson Facility or an independent State Certified Lab**

| 1. Analysis | 2.Pre-Acceptance | 3. Incoming Shipments | |
|---|---|---|---|
| | | A. Mandatory Verification | B. Process Evaluation |
| Physical Description | X | X | NA |
| Specific Gravity | X | X | NA |
| pH Screening | X | X | NA |
| Water Compatibility | X | X | NA |
| Filtration Screening | X | ✓ | ✓ |
| Total Suspended Solids | ✓ | ✓ | ✓ |
| Flammability Potential | ✓ | ✓ | NA |
| Flash Point | ✓ | ✓ | NA |
| TCLP Toxics | ✓ | ✓ | NA |
| Radioactivity | ✓ | ✓ | NA |
| Reactives-Sulfides/Cyanides | ✓ | ✓ | NA |
| PCB's | ✓ | ✓ | NA |

X = Mandatory, ✓ If necessary, NA =Not applicable

### Section 4.1: Sampling of Incoming Shipments

Sampling of incoming shipments involves inspection of containers, and obtaining representative samples as appropriate.

### Section 4.1.1: Containerized Waste

Container receipt inspection is a mandatory element of the confirmation process.
Therefore, every incoming shipment is inspected and physically verified to ensure the waste containers are those referenced and indicated on the documentation.

At least one container from each individually profiled waste in a shipment will be sampled, and its contents will be visually inspected to confirm it matches the physical description on its profile. If more than 10 containers of an individually profiled waste stream are received, one additional sample from each 10 additional containers will be taken for verification screening.

### Section 4.1.2: Bulk Shipments

Each bulk transport will contain only one profiled waste stream. A sample of each bulk container is sampled prior to receipt at the ACS facility.

### Section 4.2: Verification of Incoming Shipments

Verification of incoming shipments involves inspection of containers, physical properties and chemical screening. As part of the facility's training program, the ACS personnel will be taught how to perform the verification procedures effectively and safely.

### Section 4.2.1: Visual Inspection

Container receipt inspection is a mandatory element of the confirmation process. Therefore, 100 percent of the incoming shipments are inspected and physically verified to ensure the waste containers are those indicated on the documentation.

This activity *is* a mechanism for identifying any document discrepancies or damaged containers before acceptance.

The container receipt inspection is performed by ACS management, or authorized personnel, who will ensure that the shipment:

- Is received in good condition and does not include bulging, leaking, or other irregularities,
- Is the waste indicated on the manifest or shipping papers, and
- Is complete.

In addition, at least one container from each profiled waste in a shipment will be sampled and its contents will be visually inspected to confirm it matches the physical description on its profile. The visual inspection will address color, viscosity, and waste form (for example: liquid, sludge), at a minimum.

**Section 4.2.2: Chemical Screening**

While chemical screening is considered an additional verification element, Specific Gravity, pH and Water Compatibility will be performed on all receipt samples. Selection and interpretation of other additional chemical screening method(s) are conducted by ACS personnel who are trained and qualified.

The objective of chemical screening is to obtain reasonable assurance that the waste received by the facility is consistent with the description of the waste on the waste profile, and to provide information that will be used to safely manage the incoming waste at the facility.

Some chemical screening parameters may be accomplished by analyses performed and supplied by the generator at time of shipment. TCLP toxics and PCBs analyses will be completed by an independent State certified laboratory.

**Section 4.2.3: Discrepancy Resolution**

Discrepancy issues identified during verification of any shipment (for example: bulk or container) could result in a waste container that does not meet ACS waste acceptance criteria. If a possible discrepancy issue is identified, the actions described in Section 7 of this WAP must be taken.

**Section 4.2.4: Supplemental Verification**

If the mandatory verification of incoming shipments identifies a discrepancy with the WPS, and the discrepancy cannot be resolved by the generator, then ACS will perform supplemental analysis of the waste, reject the waste back to the generator, or inform the generator to ship the waste to an alternate treatment, storage, or disposal facility. A supplemental analysis includes tests for the parameters shown in Table A-1.

Any waste that is subject to a supplemental analysis will be quarantined until the discrepancy with the WPS is resolved.

Supplemental analysis will be subcontracted to an independent State certified laboratory that uses ASTM and/or SW-846 analytical and test methods. The results of all supplemental analyses will be documented in a log maintained as part of the facility operating record. ACS has used SDK Laboratories, 1000 Corey Road, Hutchinson, Kansas 67504 to provide analysis services for waste fluid characterization in the past. ACS reserves the option to choose alternate laboratories for testing providing equivalent QA/QC standards are met.

**Section 4.2.5: Final Acceptance**

Upon verification that a containerized waste or bulk waste is consistent with the corresponding WPS, the waste will be moved from the receiving area to an appropriate storage tank.

Movement to an appropriate storage tank shall occur within the time limitations required by the current regulations (for example: 24 hours) after off-loading waste from the transport vehicle.

Any waste that does not conform to the corresponding WPS will be quarantined until the discrepancy is resolved with the generator. Upon resolution of the discrepancy, the waste will be moved to an appropriate storage cell by the end of the work shift.

**Section 5: Restricted Wastes**

ACS does **NOT** accept, for treatment or disposal, any current production waste or outdated products which are listed as hazardous waste by EPA.

ACS also does not accept:

- Sewage
- Infectious Waste
- Radioactive Waste
- PCB wastes, as defined by TSCA
- CERCLA wastes
- Medical wastes
- Explosives
- Military or civilian ordnance
- Gaseous wastes in high-pressure cylinders
- Waste from unknown origin

**Section 6: Rejection Policy**

The purpose of this section is to set forth the policy and procedures that ACS will use for the acceptance or rejection of waste received by the facility.

**Section 6.1: Authority**

ACS site management has the responsibility of insuring that the appropriate testing of each incoming shipment of waste has been performed. ACS has the authority for acceptance or rejection of each shipment.

**Section 6.2: Safety**

The transporter delivering waste to the facility will abide by ACS's safety and operational rules and regulations. Transporters will use trucks equipped with safety items and other necessary equipment so the unloading of the materials can be accomplished safely. Inadequate or unsafe equipment is a key reason for rejection of any shipment.

**Section 6.3: Scheduling**

All incoming shipments must be scheduled with ACS in advance. A shipment arriving without the necessary pre-scheduling may be rejected or significantly delayed.

**Section 6.4: Documentation**

As used in this WAP, a "manifest" may include an appropriate Bill of Lading if allowed by law.

All shipments of incoming waste materials may be accompanied by:

- A manifest that complies with state and federal hazardous waste regulations.
- Any other documentation required for the transport of referenced materials to the facility.
- Incoming shipments arriving without the necessary documentation may be rejected. Exceptions to this case may exist if the approved incoming waste material handled is shipped by rail and the manifest is mailed separately.

**Section 6.5: Notification**

In the event that an Incoming shipment must be rejected, the onsite personnel will give notification to the following entities:

- ACS Site Management
- Customer
- Generator
- Transporter
- KDHE

**Section 6.6: Rejection**

A rejected shipment at ACS's facility shall be returned to the generator or the generator's designated alternate facility. The generator will be notified that the shipment has been rejected. It is the generator's responsibility to handle their rejected waste upon rejection by ACS.

## Section 7: Discrepancy Resolution

As used in this WAP, a "discrepancy" is either:

- A manifest discrepancy, which includes significant differences between the quantity or type of waste designated on the manifest or shipping paper, and the quantity or type of waste the facility actually receives (described further below); rejected waste; and container residues. Significant differences include:
  - For bulk wastes, variations >10% difference in weight.
  - For containerized waste, variation in piece count.
  - Variations in type discovered by inspection or waste analysis.
  - A discrepancy between the chemical or physical properties of a waste received at the facility and its waste profile (for example: pH that falls outside of its tolerance limits, flammability, etc.). Refer to Section 9 of this WAP for information on the parameters verified for incoming shipments and examples of discrepancies.

### Section 7.1: Manifest Discrepancy

All attempts will be made to resolve manifest discrepancy issues with the generator. Resolution will be noted in the operating record.

Unresolved discrepancies will be submitted to appropriate state regulatory agencies within 15 days as required by state law.

There may be situations where ACS will accept un-manifested waste shipments; however, proper approval must be warranted by ACS management.

### Section 7.2: Waste Characteristics Discrepancy

If a discrepancy between the waste received at the facility and its waste profile is identified, ACS will perform the following before acceptance:

- The generator is notified and requested to supply additional knowledge to assist in the resolution of the concern(s). If the generator supplies information that alleviates the concern(s) identified, no further action is required.
- The ACS site management and the generator must discuss the discrepancy issue and identify the appropriate course of action to resolve the container/shipment in question; for example, pick another sample set, return the container/shipment, divert the container/shipment to another approved site facility that can accept the container /shipment and resolve the issue, or the generator resolves the issue at the approved site facility.

## Section 8: Sampling Methodology

Sampling is performed by ACS personnel and by (or as directed by) the waste generator at the generator's facility. Specific sampling procedures are dependent on both the nature of the material and the type of containment. A less comprehensive sampling approach may be appropriate if information regarding the distribution of waste components is known or assumed. This section presents sampling methodologies to be utilized on-site by ACS personnel.

When a waste arrives at the ACS facility for handling, a determination has previously been made by the generator that the waste is a non-hazardous waste.

The generator-supplied characterization provides ACS with information concerning both the distribution and nature of the waste components (see Section 2 for discussion regarding the information or data to be supplied by the generator). The purpose of the inspection, sampling or analysis when the incoming waste material arrives at the site is to ensure that the shipped waste matches the description of the waste designated on the accompanying manifest or shipping documents and WPS.

Therefore, ACS can often use a less comprehensive sampling approach, as described in Sections 8.2.1, to yield a waste identification sample (see U.S. EPA documents SW-846 "Test Methods for Evaluating Solid Waste", Third Edition, September 1986, Chapter Nine).

### Section 8.1: General Methods and Equipment

As practicable, the sampling techniques used for specific Physical types of waste correspond to those referenced in 40 CFR § 261, Appendix f and presented in Table A-2.

ACS may modify the technique as necessary to obtain a representative sample. The sampling equipment and procedures described in this WAP represent the facility's recommended sampling protocol for general types of liquid waste material and containment.

Specific liquid waste materials or shipments may require different sampling techniques. Therefore, deviations from the recommended protocol do not constitute an excursion from acceptable sampling practices or the conditions of this WAP. All methodologies will be updated and revised as the references are updated and revised.

### Section 8.2: Specific Methods and Equipment

In addition to ASTM and U.S. EPA sampling procedures, ACS has instituted specific methodologies for taking samples from various containment sources. The type of container may be transportable, portable transport units and tanker or dump trucks. The sampling devices are selected depending on the size and type of containment and on the specific material involved. The device to be used in each situation is described below.

Access to any type of container will influence the location within the container from which samples can be withdrawn. Samples will be taken to address vertical variations in the liquid waste because there is a much greater tendency for wastes to be heterogeneous in a vertical rather than a horizontal direction, and horizontal variations are generally easier to detect if examination indicates strata in the waste, then each layer may be composited in proportion to its estimated volume or sampled individually.

TABLE A-2: Sampling Methods and Equipment

| **Material (or waste type)** | **Equipment** |
|---|---|
| Liquids | Open tube<br>Coliwasa (composite liquid waste sampler) |
| Extremely viscous liquids | Open tube<br>Coliwasa (composite liquid waste sampler) |
| Sludges | Not acceptable for disposal |
| Crushed or powdered material | Not acceptable for disposal |
| Soil-like material | Not acceptable for disposal |
| Fly ash-like material | Not acceptable for disposal |

**Section 8.2.1: Containers and Tanks**

A container is a portable device in which a liquid waste material is stored, transported, treated, disposed of, or otherwise handled. Most fluids for disposal in ACS's Class I disposal well will arrive in tanker trucks with varying capacities from 50 to 130+ barrels.

For flowable materials, the sampling device of choice is either an open tube Coliwasa or open tube sampler, which is used to draw a full vertical section.

Bulk liquid containers are sampled with a Coliwasa of appropriate length to obtain a full column of liquid.

Solids or sludges will not be accepted.

**Section 9: Parameters and Analytical Methods**

The parameters which constitute the analyses performed by the ACS facility will follow SW-846 or ASTM methods for each parameter.

ACS has its own laboratory SOP's which the laboratory follows. The analytical parameters and techniques used by ACS through its operating experience have been chosen for their ability and to provide the information required to properly manage a waste.

**TABLE A-3: Analytical Parameters, Reference Methods, ACS Method, and Rationale**

| Parameters | Reference Methods | ACS Method | Reason |
|---|---|---|---|
| Physical Description | Not Applicable | Visual inspection | Verification and system compatibility |
| pH Screening | SW-846 9045 ASTM 04980 | Attachment C, D, F | Verification and system compatibility |
| Filtration Screening | | Attachment C, D, F | Verification and system compatibility |
| Water Compatibility | | Attachment C, D, F | Verification and system compatibllity |
| Flammability Potential | ASTM 04982 | Attachment C, D, F | Verification and system compatibility |
| Flash Point | SW-846 10208 ASTM 03278 | | Prohibited Material |
| PCB Screening | SW-846 3580/8000/ 8082 | | Prohibited Material |
| TCLP Toxics | SW-846 Various | | Prohibited Material |
| Reactives Screening | Various | | Prohibited Material |

The following is a discussion of the method(s) and rationale for each parameter:

**Physical Description** is used to determine the general physical characteristics of the waste (for example: color, waste form). This facilitates subjective comparison of the waste with prior waste descriptions or samples.

**pH Screening** is undertaken to indicate the pH range and the general corrosive nature of the incoming liquid waste materials. pH screening may not apply to certain waste types (for example: organic waste,

or insoluble solid waste). For each approved waste stream, tight tolerance limits (for example: +/- 2 pH unit change) will be established based on the operating requirements of the relevant treatment and disposal systems at the facility and other relevant considerations. If the pH of an incoming shipment falls outside of this range, re-qualification will take place to review the liquid waste and update its WPS.

**PCB Screening** is used to ensure that no materials are stored or used at the facility that would require a Toxic Substances Control Act permit. PCB wastes, as defined by TSCA will not be accepted at the facility. Non-TSCA PCB's greater than 35 ppm will not be accepted at the facility.

**Water Compatibility Screening** is used to determine whether the incoming approved liquid waste has a potential to vigorously react with water to form gases or other hazardous products, or whether it generates significant heat. This testing does not apply to wastes that are already in contact with excess water, or for which sufficient analytical data exist that indicate no potential reactivity with water.

**Flammability Potential Screening** is used to indicate the fire-producing potential of the liquid waste. This testing can be applied to all waste liquids, semi-solids, but need not be applied if other information (for example: WPS in conjunction with the results of the other screens, SOS, etc.) indicates the waste is not ignitable.

**Flash Point** is used to verify the material does not meet the regulatory criteria of characteristic hazardous waste.

**Reactives Screening** is used to verify the material does not meet the regulatory criteria of characteristic hazardous waste.

**Toxicity Characteristics** are used to verify the material does not meet the regulatory criteria of characteristic hazardous waste.

**Section 10: Quality Assurance /Quality Control**

The following Quality Assurance/Quality Control (QA/QC) information for the ACS facility is in accordance with the following U.S. EPA guidance documents.

QA/QC procedures are applicable to both sampling procedures and analytical techniques.

QA/QC information for these two elements of the waste analysis program has been included in this Waste Analysis Plan (WAP) as recommended in the waste analysis plan guide manual.

This section does not provide specific performance standards or quality control procedures for individual sampling and analysis techniques.

The specific performance standards are dynamic and are revised as warranted to reflect technological advances in sampling and analytical techniques.

**Section 10.1: Sampling Program**

Sampling procedures for specific facility operations are described in Section 8 of the WAP. The selection of the sample collection device depends on the type of sample, the sample container, and the sampling location. The selection and use of the sampling device is supervised by the ACS Manager or delegate, who is thoroughly familiar with both the sampling and analytical requirements. The type of device to be used in the various sampling situations is specified in Section 8.2, Specific Methods and Equipment.

Sampling equipment is constructed of non-reactive materials such as glass, PVC plastic, aluminum, or stainless steel. Care is taken in the selection of equipment to prevent contamination of the sample and to ensure compatibility of materials. The specific material of construction to be used for each sampling activity is specified in Section 8.2.

Sampling is performed for each waste stream in a manner that ensures the samples are as representative as possible under the conditions of the sampling event. Full vertical sections are drawn from tanks and containers, where appropriate and where access allows, as described in Section 8.2.

With few exceptions, all bulk and containerized waste loads will be sampled (see Section 4).

Container samples that are related to one generator and waste profile may be composited prior to analysis, provided that individual samples are similar in physical appearance.

All samples must be appropriately labeled. Labels corresponding to the ACS receipt ticket are applied to each sample. Anything unusual noted during sampling would be noted in the comments area of the receipt ticket.

No chain of custody form is employed within the ACS facility. The samples are turned directly into the selected laboratory.

A chain-of-custody will accompany any sample being sent to a contract licensed laboratory. Sampling information is entered into the facilities operating record.

ACS will require all waste samples to be analyzed by an independent state certified laboratory. ACS has used SDK Laboratories, 1000 Corey Road, Hutchinson, Kansas 67504 to provide analysis services for waste fluid characterization in the past. ACS reserves the option to choose alternative state certified laboratories for testing providing equivalent QA/QC standards are met.

**Section 11: Data Reporting**

ACS will report regulatory discrepancies to the appropriate authority if they are not resolved within the timeframes specified by applicable regulations.

In addition, ACS will supply any analytical data when requested. This includes the following information, which must be kept at the facility:

- Receiving Papers-Date, time, sample ID, customer name, stream ID, and sample receipt/delivery.
- Worksheet Raw Results-For each test (instrument readings, sample weights, etc.), date, initials of analyst, and sample ID.
- Sample Master Logbook-Date, sample ID, type, initials, result, etc.
- Calibration and Performance Sample Results-Initials, result, results of calibrations, duplicates, known standards, blanks, blind samples, and reference samples.

Reports to the KDHE will contain results, data and sampling descriptions regarding the accuracy, completeness and repeatability of the reported analytical results. The report will contain a table which specifies the type of sample (blank, waste, etc.), sampling date, sampling location, analytical method, method detection limit and analytical result. The results of the analysis and all accompanying data, including chain-of-custody forms, will be reported to the KDHE with the next monthly operating report submitted to the KDHE after the receipt of the final sample analysis report from the laboratory. This submittal to the KDHE will typically be within sixty (60) days of the sampling event, unless prior arrangements have been made with the KDHE due to conditions beyond the control of the operator that prohibit such reporting.

**Section 12: Recordkeeping**

ACS maintains an in-house data management system to facilitate the waste disposal process.

The record keeping system is used to capture the major aspects of waste profiling, receipt, treatment and disposal. Waste tracking, data management and process control interfaces are major components of waste disposal that are tracked. All waste analysis records will be kept as a part of the facility operating record and will be maintained as required by KDHE to remain in compliance.

A complete set of records will be maintained at the facility for each generator, including information generated during pre-acceptance, acceptance, and waste treatment. This information will include, but not be limited to:

- WPS
- Pre-qualification analysis
- SDS's (if available)
- Generator laboratory analysis (if available)
- Sample log sheets
- Photocopy of each manifest or bill of lading
- Records documenting ACS's efforts to resolve discrepancies between an incoming waste and its waste profile.

- Records demonstrating compliance with, and decisions made under the analyses performed by ACS. In particular, a record of all analyses will be maintained by ACS for each waste sampled/analyzed, as part of the facility operating record. The mandatory and supplemental analyses records may include:
    1. A copy of the chain of custody document
    2. Copies of all applicable analytical and test results and lab reports including the results of the mandatory analysis
    3. A copy of the original (incoming) manifest
    4. A copy of the original and revised WPS, if applicable
    5. Documentation of any discrepancies identified by verification analyses
    6. If applicable, a copy of any written or correspondence with the generator related to resolving a WPS discrepancy and documentation of relevant conversations with the generator regarding same.
    7. If applicable, copies of any written correspondence with the generator and regulatory authorities related to resolving a manifest discrepancy and documentation of relevant conversations with the generator or regulatory authorities regarding same.

**Section 13: Corrective Action**

While the goal of the ACS QA/QC program is to provide sufficient training, equipment, facilities, technical support, and supervisory oversight to avoid inadequate measurements or data, it is recognized that data quality can fall outside established limits for a variety of reasons.

The program provides for reporting and reviewing procedures that permit early and effective corrective action should it be needed. In order to adhere to this step, ACS will follow the below mentioned directives:

- All samples are registered and tracked via an electronic laboratory data management system or equivalent to ensure that the necessary analyses are performed,
- Data generated each day are entered into appropriate logbooks or other equivalent tracking system necessary to track each sample. These systems provide an opportunity for quick review of the data to see if the various results are internally consistent. Apparent discrepancies are brought to the attention of site management.
- The ACS site management personnel reviews completed data information on all samples prior to shipment receipt. This data is then filed for future reference.

If problems are found, several corrective actions are considered depending on the apparent source. These include, but are not limited to the following:

> Re-sampling
> Re-analysis of the sample
> Performance audit of the analyst
> Systems audit
> Inter-laboratory comparison study
> Review of Standard Operating Procedure for error or inadequacy

## Attachment A: Hazardous Waste Identification

RCRA Section 3001 provides EPA with the authority to develop criteria for the identification of hazardous wastes. Under Section 1004(5) of RCRA, a hazardous waste is defined as:

*"a solid waste, or a combination of solid wastes which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may cause, or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed, or otherwise managed."*

The regulatory definition of a hazardous waste (40 CFR 261.3) defines two ways that a waste may be hazardous.

1. First, solid wastes are hazardous wastes if EPA lists them as hazardous wastes; the lists of hazardous wastes are found in Part 261, Subpart D. Wastes listed by EPA as hazardous contain hazardous constituents, are acutely hazardous, and/or exhibit the characteristics of ignitability, corrosivity, reactivity, or toxicity.
2. Second, EPA identifies four characteristics of a hazardous waste. Accordingly, solid wastes are hazardous if they exhibit any of the following four characteristics of a hazardous waste: ignitability, corrosivity, reactivity, or toxicity (based on the results of the TCLP). Definitions of these hazardous waste characteristics are found in Part 261, Subpart C. Exclusions to the regulatory definitions of solid waste and hazardous waste are found in §261.4.

Generators must conduct a hazardous waste determination according to the approach specified in §262.11. Figure A-1 can be used to assist in making this hazardous waste determination, and can serve as a roadmap when reviewing the rest of Appendix *A*. Persons who generate a solid waste first must determine if the solid waste is excluded from the definition of hazardous waste under the provisions of §261.4. If the waste is not excluded, the generator must determine if it is listed as a hazardous waste; if the waste is not listed, or for the purposes of complying with the LDR requirements in Part 268, the generator must determine if the waste exhibits a characteristic of a hazardous waste, either by testing the waste or by utilizing acceptable knowledge about the waste or process or materials used to generate the waste.

### Listing Determination

Once the generator determines that a solid waste is not excluded from regulation as hazardous, then he/she must determine if the waste meets one or more of the hazardous waste listing descriptions. The hazardous waste lists include wastes from nonspecific sources (termed "F-listed wastes,") and specific sources (for example: K listed wastes). F-listed wastes consist primarily of spent solvents, electroplating wastes, and dioxin-bearing wastes. The K-listings include wastes from wood preserving operations, organic and inorganic chemical production, pesticide formulation, explosives manufacturing, petroleum refining, iron and steel production, pharmaceutical manufacturing, and the lead, zinc, copper, and aluminum industries. The third group of hazardous waste listings includes discarded unused commercial chemical products, off-specification products, and spill residues of such products (for example: P- and U-listed wastes).

The hazardous waste listings also apply to certain mixtures of solid wastes. Under the "mixture rule" in 40 CFR 261.3(a)(2)(iii) and (iv), mixtures of listed hazardous wastes and solid non-hazardous wastes are defined as hazardous wastes and retain their listing designations unless the hazardous waste in the mixture is listed solely based on a particular characteristic (such as, ignitability [I], corrosivity [C], or reactivity [R]) and the mixture no longer exhibits any of these hazardous waste characteristics. For example, a mixture of a spent methylene chloride formulation (listed as F002 because of its hazardous constituent's toxicity) and used oil would be defined as a hazardous waste and be designated as F002 whether or not the mixture exhibited a hazardous waste characteristic. The mixture remains a hazardous waste unless the generator successfully petitions to delist the waste according to procedures outlined in §260.22.

The hazardous waste listings also apply to solid wastes derived from the treatment, storage, or disposal of a listed hazardous waste. The "derived-from rule" (§261.3(c)(2)) defines residual solid wastes derived from the treatment, storage, or disposal of a listed hazardous waste as a hazardous waste and retain their listing designations unless the hazardous waste is listed solely based on a particular characteristic and the derived-from wastes no longer exhibits any of the hazardous waste characteristics. Examples of wastes defined as hazardous through the derived-from rule include ash resulting from the incineration of off-specification toluene (U220), and leachate resulting from the disposal of API separator sludge from the petroleum refining Industry (KO51) in a landfill. As with the mixture rule, a generator may petition EPA to delist a waste that is derived from a listed waste. EPA also regulates mixtures of hazardous wastes and other materials that are not solid wastes. The "contained-in policy" states that materials containing a listed hazardous waste must be managed as hazardous wastes until the other material no longer contains the listed waste. This provision mainly applies to mixtures of listed hazardous wastes and environmental media (e.g., contaminated ground water, contaminated soil). An example of a waste regulated under the contained-in policy is soil contaminated with cyanides that has been excavated from under a tank that contains spent cyanide plating bath solutions from an electroplating operation (F007); this soil would be managed as F007.

The U.S. EPA has upheld determinations that specific media no longer "contains" hazardous waste constituents if the constituents for which the waste in the mixture was listed are present in concentrations below healthbased limits for that constituent. In the F007 example provided above, the federal drinking water standard for arsenic is 0.01mg/l. Groundwater that contains arsenic, due to unintentional releases of waste that was listed solely based on its arsenic toxicity, at concentrations of less than 0.01mg/l can be "delisted" without formal EPA concurrence.

**Characteristics Determination**

A solid waste that is not excluded from regulation and does not meet a listing description of a hazardous waste must be evaluated by the generator to determine if it exhibits a characteristic of a hazardous waste. A generator must evaluate representative samples of such wastes to determine if they exhibit any of the four characteristics of a hazardous waste: ignitability, corrosivity, reactivity, and toxicity. This evaluation involves testing the waste or using acceptable knowledge of the process or materials used to produce the waste.

The characteristic of **Ignitability** is described in 40 CFR 261.21. A waste is ignitable if it is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume and has flash point less than 60 degrees Celsius (140 °F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D 93-79 or D 93-80, or a Setaflash Closed Cup Tester, using the test method specified in ASTM Standard D 3278-78. In addition, a waste is ignitable if it is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard. Further, a waste is ignitable if it is an ignitable compressed gas meeting the criteria at §261.21(a)(3) (e.g., any material or mixture having in the container an absolute pressure exceeding 40 p.s.i. at 70 °F or, regardless of the pressure at 70 °F, having an absolute pressure exceeding 104 p.s.i. at 130 °F). Finally, a waste is ignitable if it is an oxidizer meeting the criteria at §261.21(a)(4). For purposes of the ignitability characteristic, an oxidizer is a substance such as a chlorate, permanganate, inorganic peroxide, or a nitrate, that yields oxygen readily to stimulate the combustion of organic matter. Wastes that are ignitable are classified as EPA Hazardous Code 0001. Examples of ignitable wastes are certain spent solvents (e.g., mineral spirits), off-specification jet fuels, or perchlorates.

The characteristic of **corrosivity** is described in §261.22. A waste is corrosive if it is aqueous (defined as amenable to pH measurement) and its pH is less than or equal to 2 or greater than or equal to 12.5. The test used for this pH determination is EPA Test Method 9040C in SW-846 (pH Electrometric Measurement). A waste is also corrosive if it is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55 degrees Celsius (130 °F) as determined by Method 1110A in SW-846 (Corrosivity Toward Steel). Corrosive wastes are designated as EPA Hazardous Waste Code 0002. Corrosive wastes include spent sulfuric acid and concentrated waste sodium hydroxide solutions. Note that, under the federal program, corrosive solids are not included in the corrosivity definition and so are not hazardous wastes.

A waste exhibits the characteristic of reactivity if it meets any of the criteria in §261.23:

- It is normally unstable and readily undergoes violent change without detonating.
- It reacts violently with water.
- It forms potentially explosive mixtures with water.
- When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.
- It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.
- It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.
- It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.
- It is a forbidden explosive as defined in 49 CFR 173.54, or is a Division 1.1, 1.2 or 1.3 explosive as defined in 49 CFR 173.50 and 173.53.
- Wastes that exhibit the characteristic of reactivity are classified as EPA Hazardous Wastes Code D003.

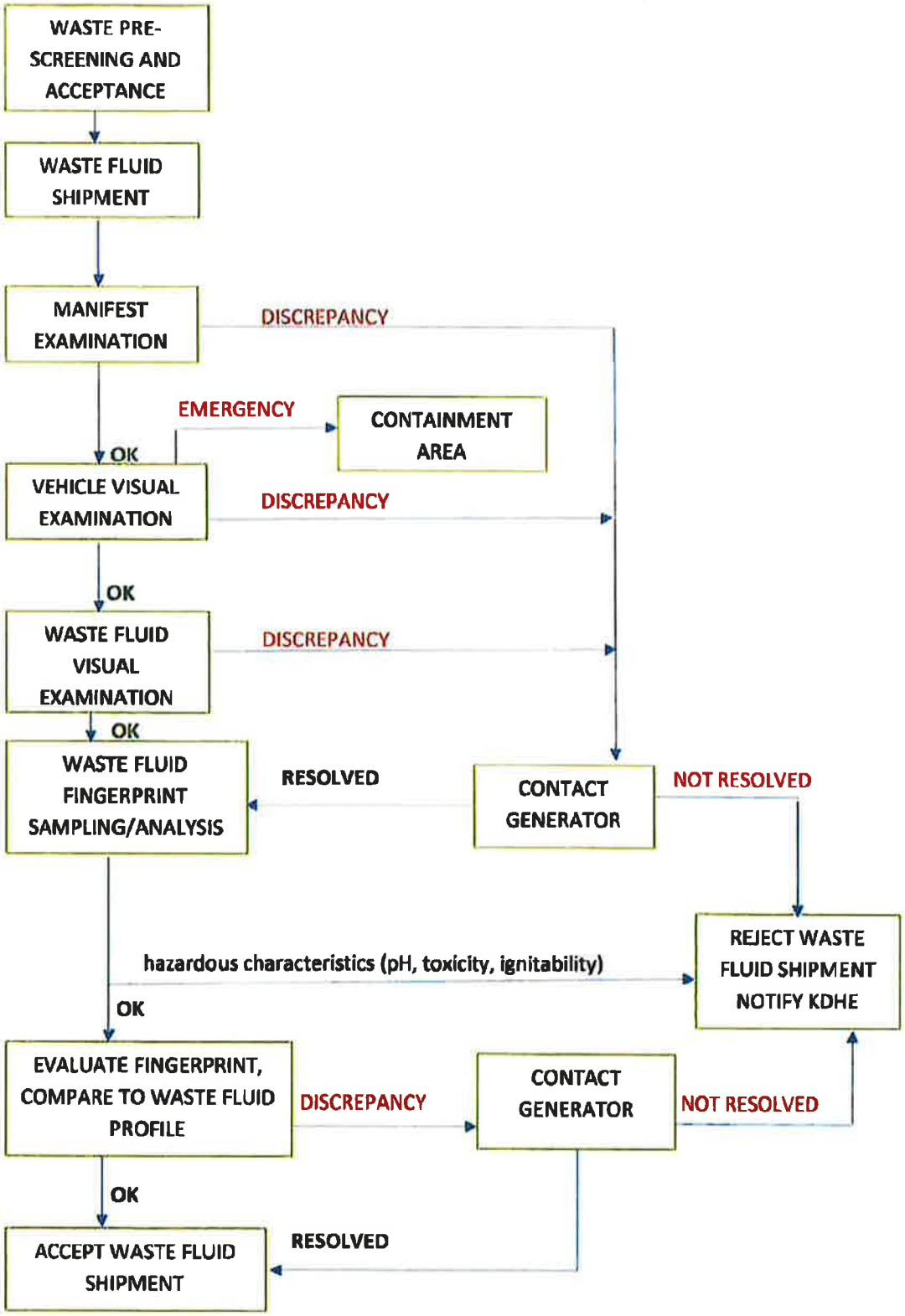
The toxicity characteristic (TC) is described at §261.24. To test the waste, generators must obtain an extract of the waste using Test Method 1311 (the Toxicity Characteristic Leaching Procedure TCLP). The extract is subsequently analyzed using the appropriate test methods to determine the level of TC constituents. The results are compared to regulatory thresholds for the TC constituents at §261.24. Determinative methods in this step may include, but are not limited to, the following:

- EPA Test Methods 3010 and 6010- for arsenic, barium, cadmium, chromium, lead, silver, and selenium.
- EPA Test Method 7470 – mercury.
- EPA Test Methods 3510 and 8080- pesticides.
- EPA Test Methods 5030 and 8260- for volatile organics.
- EPA Methods 3510 and 8270- semi volatile organics.
- EPA Test Method 8151 - herbicides.

Note: Additional options for sample preparation and analysis can be found in the most recent version of SW-846 Chapter Two.

## ATTACHMENT B

## FLOW CHART OF WASTE FLUID ACCEPTANCE & VERIFICATION PROCEDURES



**Attachment C: Sample Generator Qualification**

Advantek
Cavern Solutions

Waste Source ID Number: _____

**APPLICATION FOR DISPOSAL OF NON-HAZARDOUS WASTE FLUID IN CLASS I DISPOSAL WELL**
**ACS-South Hutchinson Facility**

**GENERAL INFORMATION**

**Generator:**
Company Identification Number (if any): _____

U.S. EPA and/or KDHE Identification Numbers (if any): _____

Generator Name: _____

Generator Mailing Address: _____

Generator Contact Name/Title: _____

Physical address of waste stream source: _____

Latitude / longitude of waste steam source: _____
**Waste:**
Description/Type of Waste: _____

_____

Quantity: O Tons O Gallons O Barrels O other: _____
Load Frequency: O One Time O Monthly O Weekly O Daily: O Other: _____
Source of waste: _____
What methods or techniques have been used to classify the waste? _____

_____
(If tested, attach results; if process knowledge, attach details)
General fingerprint parameters: _____
Visual / Physical examination: Check color, odor, and look for debris in fluid.

| | |
|---|---|
| Specific Gravity: | |
| TDS (mg/l): | |
| TSS (mg/l): | |
| pH: | |
| Conductivity (Mmhos/cm): | |

Additional analytical parameters to be included in quarterly fingerprint testing:

Generator/Operator Contact: Phone: _____ Email: _____
Transporter Contact: Phone: _____ Email: _____

**Attachment D: Sample Waste Manifest**


Waste Source ID Number: _____

**WASTE MANIFEST FOR DISPOSAL OF NON-HAZARDOUS WASTE FLUID IN CLASS I DISPOSAL WELL**
**ACS-South Hutchinson Facility**

**Generator:**

Company Identification Number (if any): _____

U.S. EPA and/or State Identification Numbers (if any): _____

Generator Name: _____

Generator Mailing Address: _____

Generator Contact Name/Title: _____

Physical address of waste stream source: _____

Latitude / longitude of waste stream source: _____

**Waste:**

Description/Type of Waste: _____

_____

Quantity: O Tons O Gallons O Barrels O other: _____

Load Frequency: O One Time O Monthly O Weekly O Daily O other: _____

Source of waste: _____

Authorized Generator Signature: _____ Date: _____

Name & Title: _____

**Transporter:**

U.S. EPA, KDHE, and/or DOT Identification Numbers (if any): _____

Vehicle and Driver Identification: _____

Transporter Name: _____

Transporter Address: _____

**Attachment E: All Incoming Waste Fluid Material Must Receive Approval by ACS Authorized Personnel**


Waste Source ID Number: _____

**ALL INCOMING WASTE FLUID MATERIAL MUST RECEIVE APPROVAL BY ACS AUTHORIZED PERSONNEL**

Non-Process Knowledge Material

- All non-process knowledge material (s) must be tested by a certified state of Kansas laboratory. The testing must include the following: VOC's, TPH's, heavy metals, chlorides, temperature, conductivity, and pH. The laboratory results must be included with this Form.

Instructions for Form

General Information

- Generator/Operator Name- Company or individual generating beneficial reuse material.
- Generator/Operator Address- Address of generator/ company or individual.
- Billing Name- Company or individual to receive bills for services provided.
- Billing Address- Address of company or individual to receive bills for services provided.
- Quantity- Indicate estimated quantity of material to be disposed in tons, gallons, or drums.
- Frequency of emplacement- Indicate estimated frequency of delivery of material to the facility
- Generator/Operator Contact- Name, phone and fax number of generator/operator contact
- Transport Contact- Name, phone and fax number of transport contact

Physical Characteristic and Documentation

- Physical state- Check the physical state of the waste fluid by sight, odor and color. Are there suspended solids in the fluid?
- Additional Information- Check all that apply.

It should be noted that if a waste fluid material is classified as anything other than non-hazardous mineralized water, the Generator/Operator will be notified that the load will be rejected.

**Attachment F: Non-Hazardous Water Certification Statement**


Non-Hazardous Waste Fluid Approval Number: _____

## NON-HAZARDOUS WATER CERTIFICATION STATEMENT

I, hereby, certify that all information contained herein is true and correct, and the waste fluid material described is properly identified, classified, packaged, labeled, and prepared as indicated. I certify this waste fluid material is not hazardous or dangerous as defined by the U.S. EPA, or the state or province of origin. I certify this waste fluid material does not contain any regulated radioactive materials. I certify that all samples used for this analysis are representative of the waste fluid materials described herein. I will notify the company if there is a change in the composition of, or process generating this waste fluid material.

_____ _____

*Name* (print) *Authorized representative's signature*

_____ _____

*Title* *Date*

# Attachment G: KDHE Procedure UICI-17

Reply to: (785) 296-5524 FAX (785) 296-5509
Bureau of Water - Geology Section
1000 S. W. Jackson, Ste. 420
Topeka, KS 66612-1367

Kansas
Department of Health and Environment

# PROCEDURE FOR SUBMITTING A PROPOSAL TO ADD A NEW OR DIFFERENT WASTE TO A CLASS I UIC INDUSTRIAL WASTE INJECTION WELL PERMIT

**Procedure #: UICI-17**
**(4/11)**

Narrative:

The UIC permit for a Class I Industrial Waste Injection well lists the wastes permitted for disposal into the well. In order for a new or different waste to be legally injected, the UIC permit must be modified to include the new or additional waste. The UIC permit also requires that the permittee notify KDHE of any facility changes or process modifications which may result in new, different or altered wastestreams, an increase in wastestream volumes, or an increase in concentration of pollutants at least one hundred eighty (180) days before such changes. It is recommended KDHE approval to dispose of the waste into the injection well be obtained before commencing any construction. The proposal to add a new or different waste will be evaluated by KDHE to determine if disposal into an injection well is feasible and, if feasible, determine what additional monitoring, testing or reporting requirements need will incorporated into the UIC permit. The minimum elements to be included in the proposal are listed in the guideline section below.

Procedure:

The proposal to add a new or different wastestream to the Class I UIC permit must be made in writing and include the following:

1. An analysis of a representative sample of the waste for the constituents listed on Attachment "A" 129 Priority Pollutants.

2. An analysis of a representative sample of the waste using the Toxic Characteristics Leaching Procedure for the constituents listed on Attachment "B".

3. An analysis of a representative sample of the waste for the minerals listed on Attachment "C", pH, oil and grease and total suspended solids.

4. Any additional analysis or tests for constituents which would be expected to be found in the waste or that are necessary to properly characterize the waste.

5. A Kansas certified laboratory certified to analyze for the required constituents shall be used. A list of certified laboratories is attached.

6. MSDS for any additives used.

7. A report describing the compatibility of the new wastestream with the existing wastestream, well components, injection interval, confining interval and the results of tests or studies conducted to evaluate compatibility.

8. Volume of waste to be generated.

9. A report describing why injection into a subsurface geologic formation is the most feasible method of disposal. This report should follow the format of the enclosed KDHE policy for determining the types of wastes that are eligible for disposal into an injection well. This report should include an evaluation of options including waste minimization and waste recycling technologies, discharge to a public owned treatment works, discharge to a total retention lagoon for evaporation, irrigation, or recycle, or NPDES discharge to surface water. Ponds must be constructed in accordance with the attached Industrial Wastewater Pond Liner policy.

10. Confirmation by appropriate calculations that UIC permit injection limits will not be exceeded.

11. Detailed diagrams, schematics and specifications describing the pipes and tanks or basins to be used to transfer, handle, collect, store, and subsequently direct the waste to the injections wells. Include a flow diagram.

db
Procedure UICI-17
4/19/2011

## ATTACHMENT "H"
## PRIORITY POLLUTANTS

**1. VOLATILE ORGANIC COMPOUNDS** (Method 624-Purge & Trap GC/MS) Detection limits nominally 10 ug/L for Acrolein and Acrylonitrile at 100 ug/L

Acrolein
Acrylonitrile
Benzene
Bromomethane
Bromodichloromethane
Bromoform
Carbon Tetrachloride
(Tetrachloromethane)
Chlorobenzene
Chloroethane
2-Chloroethylvinyl ether
Chloroform
Chloromethane (Methylchloride)
Dibromochloromethane
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethene
trans-1,2-Dichloroethane
1,2-Dichloropropane
cis-1,3-Dichloropropane
trans-1,3-Dichloropropane
Ethylbenzene
Methylene chloride
(dichloroemethane)
1,1,2,2-Tetrachloroethane
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethene
Trichlorofluoromethane
Toluene
Vinyl Chloride

**2. ACID ORGANIC COMPOUNDS** (Method 625-Extractions GC-MS Detection limits nominally 25 ug/L except for dinitro compounds at 250 ug/L

4-Chloro-3-methylphenol
2-Chlorophenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2-Methyl-4,6- dinitrophenol
2-Nitrophenol
4-Nitrophenol
Pentachlorophenol
Phenol
2,4,6-Trichlorophenol

**3. BASE/NEUTRAL ORGANIC COMPOUNDS** (Method 625-Extraction GC/MS) Detection limits nominally 10 ug/L

A.Polynuclear Aromatics
Acenaphthene
Acenaphthylene
Anthracene
Benzo (a) anthracene
Benzo (b) fluoranthene
Benzo (a) fluoranthene
Benzo (a) pyrene
Benzo (g,h,i) perylene
Chrysene
Dibenzo (a,h) anthracene
Fluoranthane
Fluorene
Indeno (1,2,3-cd) pyrene
Naphthalene
Phenanthrene
Pyrene
B. Ethers & Esters
Bis (2-chloroethyl) ether
Bis (2-chloroethoxy) methane
Bis (2-ethylhexyl) phthalate
Bis (2-chloroisopropyl) ether
4-Bromophenyl phenyl ether
Butyl benzyl phthalate
4-Chlorophenyl phenyl ether
Diethylphthalate
Dimethylphthalate
Dioctylphthalate
Di-n-butylphthalate
Isophorone
C. Nitrogen Containing
Compounds
Benzidine
2,4-Dineltrotoluene
2,6- Dinitrothlune
1,2- Diphenylhydrazine
Nitrobenzene
N-Nitrosodimethylamine
N-Nitrosodi-n-proplamine
N-Nitrosodiphenylamine
D. Chlorinated Hydrocarbons
2-Chloronaphthalene
1,3-Dichloronbenzene
1,4-Dichloronbenzene
1,2-Dichloronbenzene
3,3-Dichloronbenzidine
Hexachlorobenzene
Hexachlorobenzidine
Hexachloroethane
Hexachlorocyclopentadiene
2,3,7,8-Tetrachlorodibenzo-p- dioxin
1,2,4-Trichlorobenzene

**4. PESTICIDE COMPOUNDS** (Method 625-Extraction GC/EC) Detection limits nominally 0.01ug/L

Aldrin
a-BHC
ß-BHC
d-BHC
?-BHC
Chlorodane
4,4'-DDD
4,4'DDD
4,4'DDT
Dieldrin
Endosulfan I
Endosulfan II
Endosulfan Sulfate
Endrin
Endrin Aldehyde
Heptachlor Expoxide
Toxaphene
PCB-1016
PCB-1221
PCB-1232
PCB-1242
PCB-1248
PCB-1254
PCB-1260

**5. HEAVY METALS**
Antimony
Arsenic
Beryllium
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Selenium
Silver
Thallium
Zinc

**6. MISCELLANEOUS**
Cyanides
Phenols

## ATTACHMENT "I"
## TCLP REQUIREMENTS

The following constituents are regulated under the Toxicity Characteristic rule. The Waste Stream must be analyzed for these constituents using the Toxicity Characteristic Leaching Procedure (TCLP).

Benzene
Carbon tetrachloride
Chlordane
Chlorobenzene
Chloroform
m-Cresol
o-Cresol
p-Cresol
1,4- Dichlorobenzene
1,2- Dichloroethane
1,1 Dinitrotoluene
2,4- Dinitrotoluene
Heptachlor (and its hydroxide)
Hexachloro-1,3-butadiene
Hexachlorobenzene
Hexachloroethane
Methylethylketone
Nitrobenzene
Pentachlorophenal
Pyridine
Tertachloroethylene
Trichloroethylene
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
Vinyl chloride
Arsenic
Barium
Cadmium
Chromium
Lead
Mercury
Selentum
Silver
Endrin
Lindane
Methoxchlor
Toxaphene
2,4-Dichlorophenoxycetic acid
2,4,5-Trichlorophenoxpropionic acid

**ATTACHMENT "J"**
**GEOCHEMICALS**

## 7. GEOCHEMICALS

**Total Hardness (CaCO3)**

**Calcium**
**Sodium**
Magnesium
**Potassium**
**Total Alkalinity**
**Chloride**
**Sulfate**
**Fluoride**
**Nitrate**
**Iron**
**Manganese**
**Ammonia**
**Phosphate**
**Silica**
**Specific Conductance**
**Total Dissolved Solids**
**Total Suspended Solids**
**Oil and Grease**

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Procedure.UICI-17
4/19/2011

# DISCLAIMER

This work and the opinion, interpretations and analysis contained therein, are based upon the author's examination and interpretation of data acquired at Advantek Cavern Solutions, LLC located at the Reno County, Kansas facility, and in part data provided by Advantek Cavern Solutions, LLC, their logging subcontractor(s) and KDHE records and files. The undersigned of this report is not responsible for any extractions, extrapolations, or other use of this report not specifically authorized by the author and in no event shall the author be liable for any loss or damage resulting from the use of or reliance upon this study. The undersigned of this report is not responsible for the accuracy of any information directly obtained from any logs where such log information was obtained from a third party logging contractor using said logging contractor's logging tools and instruments and where said log information is used in and attached to this work report.

I, Wayne Jenkinson, a professional geologist in the state of Kansas, do hereby affirm and acclaim that I thoroughly reviewed the 2022 Class I Waste Analysis Plan for the AMDW #2 existing permit at the Advantek Cavern Solutions, LLC Reno County, Kansas facility, as well as any and all attachments included herewith, and do hereby approve the same.

Wayne Jenkinson

Wayne Jenkinson
Professional Geologist