

ATTACHMENT H: FINANCIAL ASSURANCE DEMONSTRATION
40 CFR 146.85

CTV I: Elk Hills 26R Project

Document Version History

Version	Revision Date	File Name	Description of Change
1	9/29/2023	Att H_Financial Responsibility_26R	Compilation of financial responsibility documents in one attachment

Facility Information

Facility name: CTV I: Elk Hills 26R

Facility contact: Travis Hurst / Project Manager
28590 Highway 119
Tupman, CA 93276
(661) 342-2409 / Travis.Hurst@crc.com

Well location: Elk Hills Oil Field, Kern County, CA
35.32802963 / -119.5449982

Financial Instruments

Carbon TerraVault (CTV) is providing financial responsibility information pursuant to 40 CFR 146.85. CTV is using the following financial instruments:

- Letter of Credit to cover the costs of corrective action, injection well plugging, post-injection site care, and site closure.
- Certificate of Insurance to cover costs of emergency and remedial response

The estimated costs of each of these activities, as provided by CTV, are presented in Table 1.

CTV has provided financial assurance for Emergency and Remedial Response by procuring an environmental insurance policy. If needed the limits will be re-determined by a reasonable estimate of the cost of these activities prior to the commencement of injection operations. The Elk Hills 26R project environmental insurance policy covers all emergency and remedial response activities arising from the assets. The selected insurance carrier has issued a financial assurance certificate in compliance with state and federal regulations that is provided below.

Table 1. Cost Estimates for Activities to be Covered by Financial Responsibility.

Activity	Instrument	Total Cost (\$)
Corrective Action	Letter of Credit	111,320
Plugging Injection Wells	Letter of Credit	1,197,840
Post-Injection Site Care	Letter of Credit	6,790,750
Site Closure	Letter of Credit	994,750
Emergency and Remedial Response	Certificate of Insurance	24,578,125

The following supporting information is provided below to satisfy Financial Responsibility requirements:

- Daniel B. Stephens & Associates, Inc. (DBS&A) third party cost estimate
- Deutsche Bank AG Irrevocable Standby Letter of Credit
- Irrevocable Standby Letter of Credit Notification Letter
- Bank of New York Mellon Standby Trust
- Letter of Credit Cost Estimate and Funding Value Summary
- Ascot Certificate of Insurance
- Insurance Endorsement
- Financial Strength Demonstration

DBS&A THIRD PARTY COST ESTIMATE

CLASS VI FINANCIAL RESPONSIBILITY DEMONSTRATION

COST ESTIMATE

CTV I 26R

Carbon TerraVault (CTV) had the following cost estimate prepared by third party contractor, Daniel B. Stephens & Associates, Inc., completed on 9/5/2023.

Table 1. Financial Responsibility Cost Summary

Activity	Estimated Cost	Reference
Corrective Action	\$ 111,320	Table 2
Injection Well Abandonment	\$ 1,197,840	Table 3
Post-Injection Site Care	\$ 6,790,750	Table 4
Site Closure	\$ 994,750	Table 5
Emergency and Remedial Response	\$ 24,578,125	Table 6
Total	\$ 33,672,785	

All values in 2022 dollars

Table 2. Costs, Corrective Action Total

Activity	Unit	Unit Cost	Total	Reference
Revise Numerical Model	400 hrs	\$ 220	\$ 88,000	-
Review CalGEM Well Database	40 hrs	\$ 220	\$ 8,800	-
Plug Deficient Wells	0 wells	-	\$ -	A
Project Management	1 each		\$ 14,520	B
		Total	\$ 111,320	

Notes

A: Per Attachment B, as required wells will be abandoned prior to injection as part of asset retirement obligations

B: 15% of project costs

Table 3. Costs, Injection Well Abandonment

Location	Unit Cost	Depth (ft)	Cost	Reference
Injector 4 345C-36R	30 \$/ft	8,680	\$ 260,400	A
Injector 1 373-35R	30 \$/ft	8,680	\$ 260,400	A
Injector 3 353XC-35R	30 \$/ft	8,680	\$ 260,400	A
Injector 2 363C-27R	30 \$/ft	8,680	\$ 260,400	A
Documentation, project management	1 each	-	\$ 156,240	B
			TOTAL \$ 1,197,840	

Notes

A: Abandonment costs from Driltek, 2021; well construction from Attachment G 'Injection Well 1 353XC-35R', Table

B: 15% of project costs

Table 4. Post Injection Site Care Costs

Activity	Unit	Events, 50 years	Unit Cost	Total	Reference
USDW geochemical monitoring/fluid sampling	1 well	50	\$ 6,000	\$ 300,000	A
Above Confining zone geochemical, pressure monitoring	1 well	50	\$ 5,600	\$ 280,000	A
Injection zone geochemical, pressure monitoring	3 well	50	\$ 5,600	\$ 840,000	A
Monitoring well O&M, Above confining zone	1 well	3	\$ 30,000	\$ 90,000	B
Injection zone monitoring well O&M	3 wells	10	\$ 84,000	\$ 2,520,000	-
Indirect Plume Monitoring (Pulsed neutron)	1 survey	10	\$ 37,500	\$ 375,000	C
Mechanical Integrity Test, Injection zone	3 well	10	\$ 50,000	\$ 1,500,000	B
Reporting/Project Management	1 each	-	\$ 885,750	\$ 885,750	D
			Total	\$ 6,790,750	

Notes:

A: Assumes 1 geochemical monitoring event per year per well and continuous pressure monitoring with automated gage; shallow groundwater well have a higher testing cost than the other monitoring wells due to the potential time required to obtain a stabilized sample from a reservoir with low water deliverability.

B: Patrick Engineering, 2013; assumes \$2,000 base cost + \$4.25/ft (+12%)

C: Zaluski et al., 2016; assumes 8 well survey (inflation adjusted); technology and frequency from PISC plan Table 4

D: 15% of project costs

Assumes:

1 USDW Monitoring Well (exempt or unsaturated)

1 Above Confining Zone Monitoring Well

3 Injection Zone Monitoring Wells

4 Injection wells

Table 5. Costs, Site Closure

Activity	Unit	Unit Cost	Total	Reference
Non-endangerment report	1 each	\$ 45,000	\$ 45,000	-
Injection zone monitoring well plugging	3 wells	\$ 200,000	\$ 600,000	A
Above-confining zone monitoring well plugging	1 wells	\$ 170,000	\$ 170,000	A
USDW Monitoring well plugging	1 well	\$ 50,000	\$ 50,000	
Plugging documentation, project management	1 each		\$ 129,750	B
			Total \$ 994,750	

Notes

A: Abandonment costs from Drltek, 2021

B: 15% of project costs

Assumes:

1 USDW Monitoring Well (exempt or unsaturated)

1 Above Confining Zone Monitoring Well

3 Injection Zone Monitoring Wells

4 injection wells

Table 6. Emergency Response

Groundwater Contamination Causal Investigation

Activity	Unit	Unit Cost	Total	Reference
Planning/permitting	1	each	\$ 1,381,875	\$ 1,381,875 B
Monitoring wells, depth 1,000 ft	5	well	\$ 385,000	\$ 1,925,000 A
Monitoring wells, depth 5,000 ft	3	well	\$ 1,925,000	\$ 5,775,000 A
Abandoned well investigation	51	well	\$ 27,500	\$ 1,402,500 D
Former Injection Well Investigation	4	well	\$ 27,500	\$ 110,000 -
Reporting/Project Management	1	each	\$ 921,250	\$ 921,250 C
Total			\$ 11,515,625	

Groundwater Contamination Remediation

Activity	Unit	Unit Cost	Total	Reference
Planning/permitting	1	each	\$ 1,567,500	\$ 1,567,500 B
Pumping well, depth 1,000 ft	4	well	\$ 350,000	\$ 1,400,000 A
Pumping well, depth 5,000 ft	4	well	\$ 1,925,000	\$ 7,700,000 A
Groundwater extraction	1	year	\$ 300,000	\$ 300,000 -
Above-ground CO ₂ removal (aeration)	1	unit	\$ 150,000	\$ 150,000 -
Former injection well repair	4	well	\$ 225,000	\$ 900,000 -
Reporting/Project Management	1	each	\$ 1,045,000	\$ 1,045,000 C
Total			\$ 13,062,500	

Total, Causal Investigation and Remediation	\$ 24,578,125
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Notes

A: Assumes \$385/ft for permitting, installation, field oversight, logging drilling, and waste

B: 15% of project costs

C: 10% of project costs separate from Planning/permitting

D: Assumes 25% of wellbores penetrating Reef Ridge Formation, Attachment B Table 9

References

Driltek, 2021: Personal communication with Driltek regarding well abandonment costs, California

Patrick Engineering, 2013: Third Party Cost Estimate for FutureGen Alliance UIC Class VI Permit Application

Zaluski et al., 2016. Monitoring technology ranking methodology for CO2-EOR sites using the Weyburn-Midale Field as a case study, IJGGC v.54, p.466 - 478

**DEUTSCHE BANK AG IRREVOCABLE STANDBY LETTER OF
CREDIT**

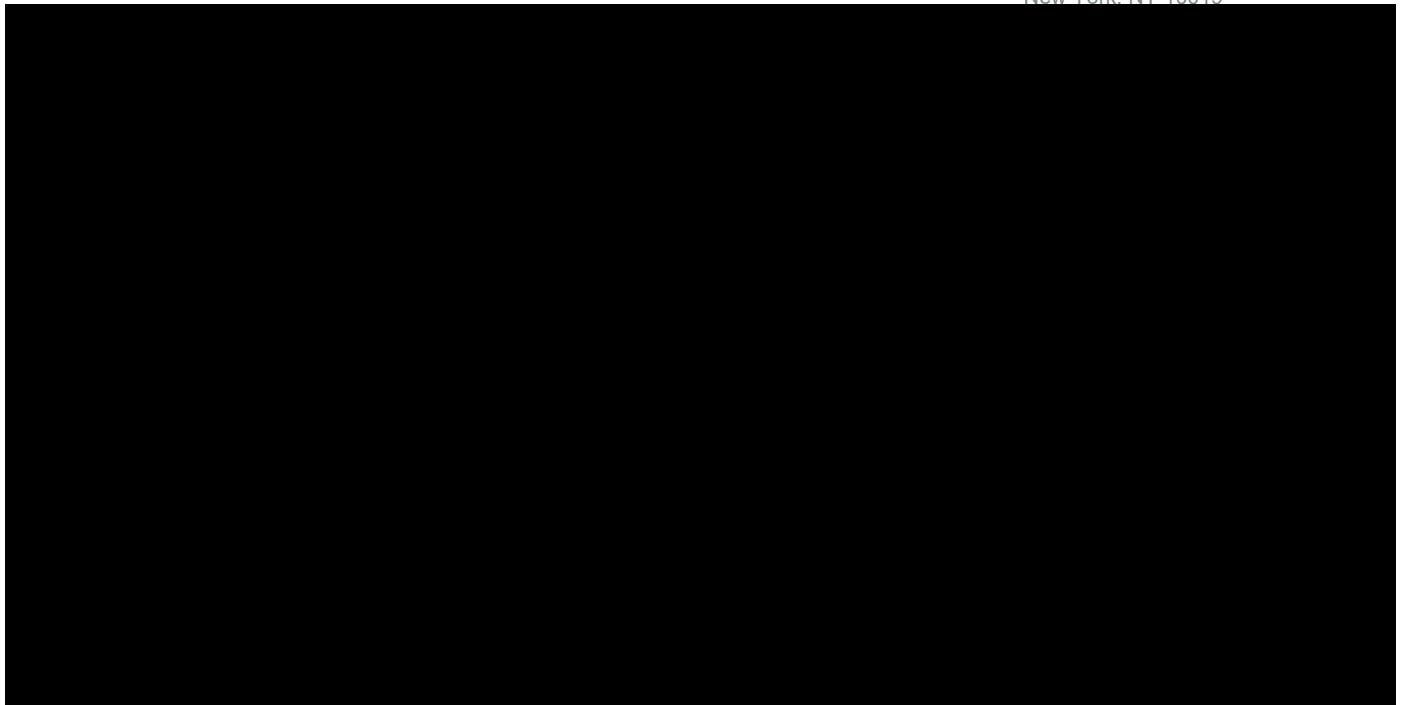
Deutsche Bank



Deutsche Bank AG New York Branch
Trade Finance & Lending
1 Columbus Circle, 17th Floor



Deutsche Bank AG New York Branch
Trade Finance & Lending
1 Columbus Circle, 17th Floor
New York, NY 10019



Very truly yours,
Deutsche Bank AG
New York Branch

[Signature(s) and title(s) of official(s) of issuing institution]

**IRREVOCABLE STANDBY LETTER OF CREDIT
NOTIFICATION LETTER**

September 6, 2023

United States Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, D.C. 20460
Attention: UIC Program Director

Re: EPA Identification Number: _____.

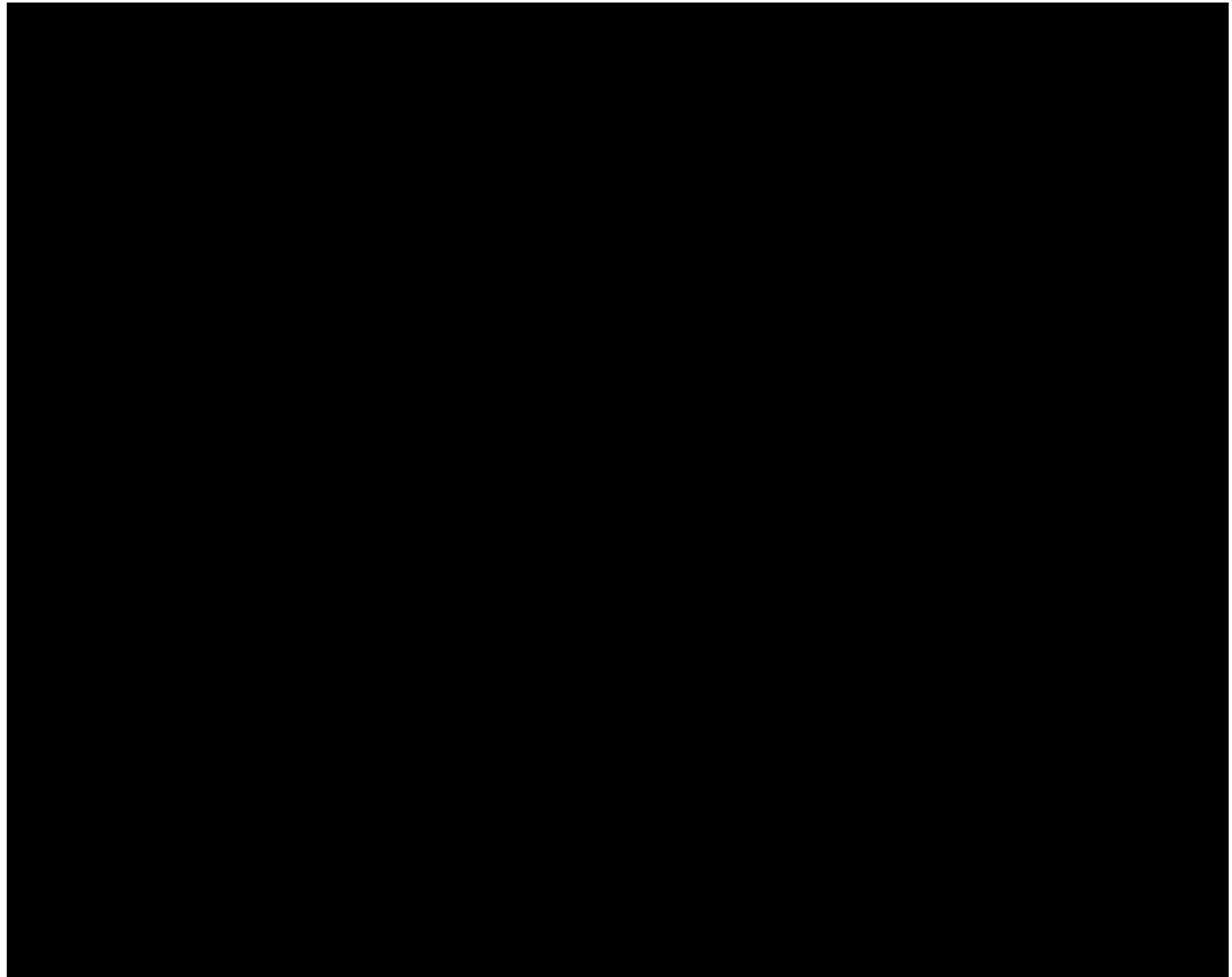
Dear UIC Program Director,

At our direction, effective _____, Deutsche Bank AG New York Branch issued a \$_____ Irrevocable Standby Letter of Credit No. _____ in your favor.

The Irrevocable Standby Letter of Credit was issued to meet the non-emergency response financial assurance requirements associated with the Elk Hills 26R Storage Project located at 28590 Highway 119, Tupman, CA 93276.

BANK OF NEW YORK MELLON STANDBY TRUST

Trust Agreement



**LETTER OF CREDIT COST ESTIMATE AND FUNDING
VALUE SUMMARY**

Schedule A

Facility	Cost Estimate		
	Corrective action	Injection well plugging	Post injection site care and site closure
EPA Identification number: Elk Hills 26R Storage Project 28590 Highway 119, Tupman, CA 93276	\$111,320.00	\$1,197,840.00	\$7,785,500.00

Schedule B

Facility	Funding Value for Activities
EPA Identification number: Elk Hills 26R Storage Project 28590 Highway 119, Tupman, CA 93276	Irrevocable Standby Letter of Credit No. [839BGC2300XXX] issued by Deutsche Bank AG New York Branch in the amount of [\$9,094,660.00].

ASCOT CERTIFICATE OF INSURANCE

V. Certificate of Insurance

A certificate of insurance, as specified in this chapter, may be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Certificate of Insurance for [emergency and remedial response]

Name and Address of Insured (herein called the “insured”): Carbon TerraVault 1 LLC
1 World Trade Center, Suite 1500, Long Beach, CA 90831

Name and Address of Insurer (herein called the “insurer”): Ascot Specialty Insurance
Company; 55 West 46th Street, 26th Floor, New York, New York 10036

Injection Wells covered: [list for each well: The EPA Identification Number, name, address, and the amount of insurance for [emergency and remedial response] (these amounts for all injection wells covered must total the face amount shown below).]

Underground Injection Control Class VI Permit Application Nos. R9UIC-CA6-FY22-1.1,
R9UIC-CA6-FY22-1.2, R9UIC-CA6-FY22-1.3 and R9UIC-CA6-FY22-1.4

Face Amount: \$25,000,000

Policy Number: ENPU2310001018-01

Effective Date: 05/18/2023

The insurer hereby certifies that it has issued to the Insured the policy of insurance identified above to provide financial assurance for [emergency and remedial response] for the injection wells identified above. The Insurer further warrants that such policy conforms in all respects with the requirements for the fulfillment of [emergency and remedial response] obligations described at 40 CFR 146.94, respectively, as applicable and as such regulations were constituted on the date shown immediately below. It is agreed that any provision of the policy inconsistent with such regulations is hereby amended to eliminate such inconsistency.

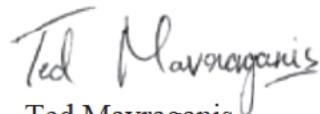
The insurer may cancel the policy only for failure to pay the premium and by sending notice of cancellation by certified mail to the owner or operator and to the UIC Program Director for the area in which the injection well(s) is (are) located. EPA requires that cancellation not become final for 120 days beginning on the date of receipt of the notice of cancellation by the UIC Program Director, as evidenced by the return receipts.

Whenever requested by the UIC Program Director, the Insurer agrees to furnish to the UIC Program Director a duplicate original of the policy listed above, including all endorsements thereon.

[Authorized signature of Insurer]

[Name of person signing]

[Title of person signing]



Ted Mavraganis

Senior Vice President

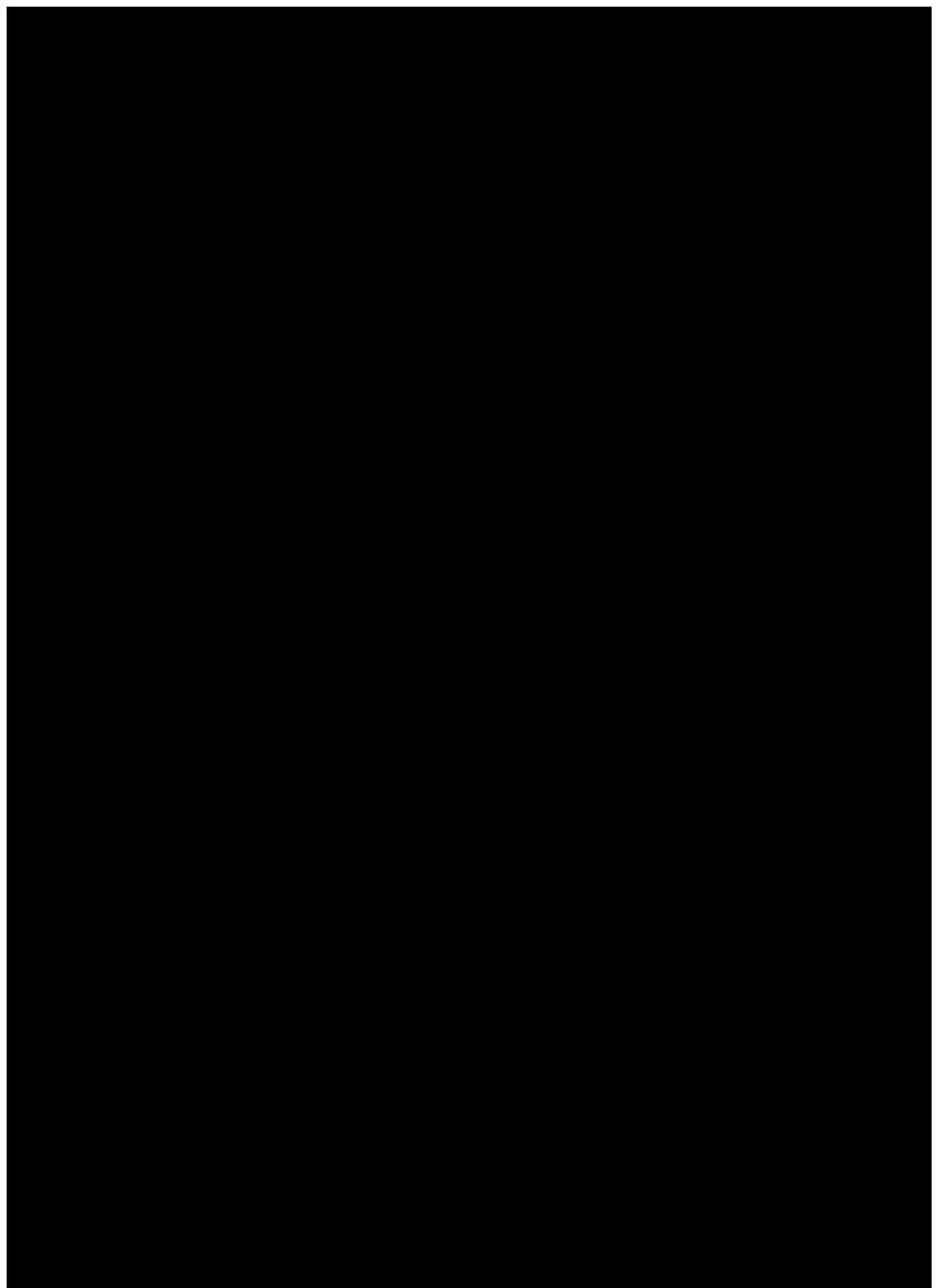


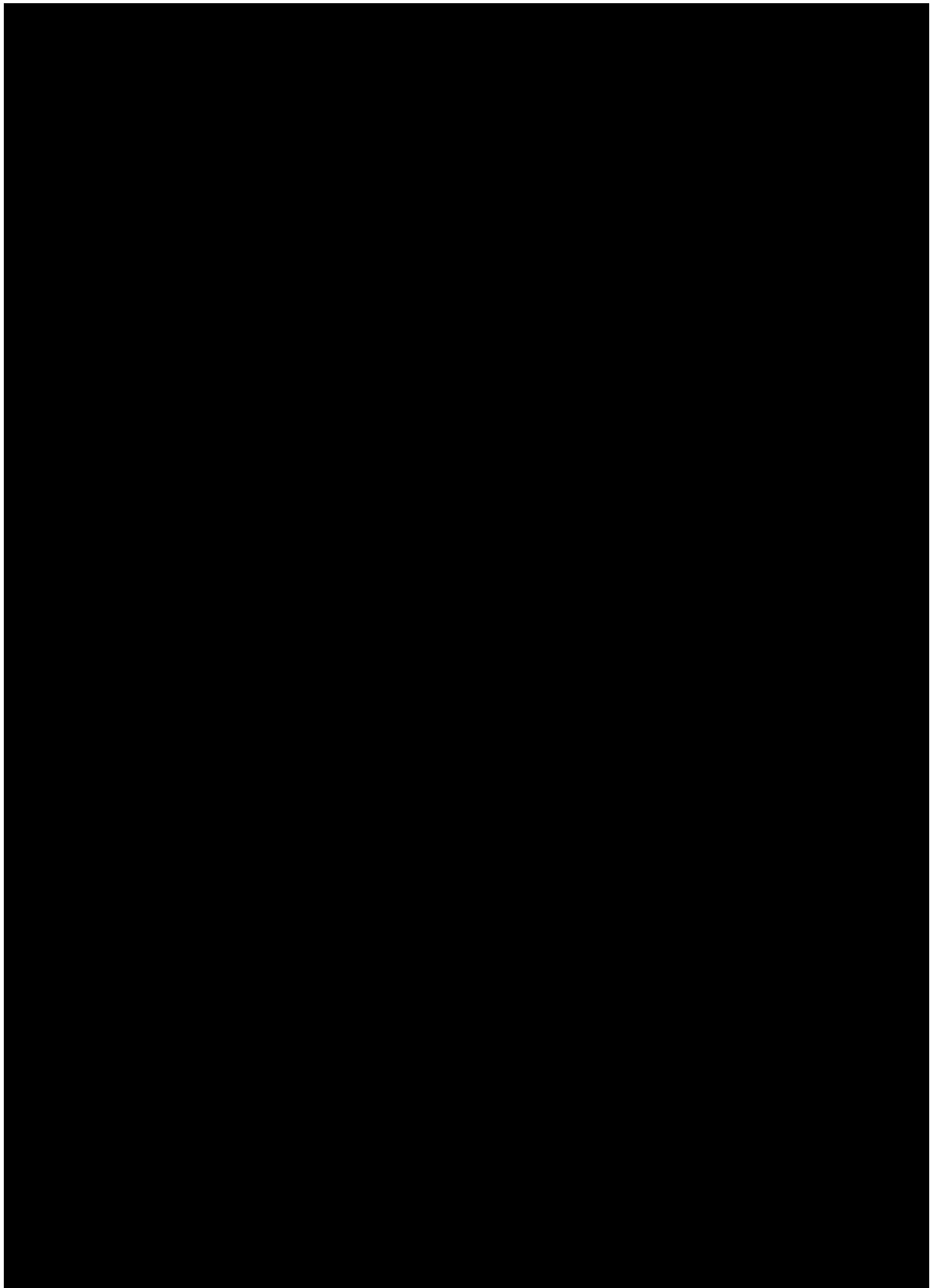
08/31/2023

[Signature of witness or notary:]

[Date]

INSURANCE ENDORSEMENT





FINANCIAL STRENGTH DEMONSTRATION

Under 40 CFR 146.85(a)(6)(ii), EPA requires that the owner or operator submit proof of the third party's financial strength. EPA recommends that the owner or operator submit the third party's credit rating or, if the Director determines that the credit rating alone does not sufficiently meet the financial strength requirement, submit the third party's credit rating plus its most recent bond rating and calculated financial ratios. EPA recommends that owners or operators demonstrate that third party providers have a credit rating in the top four categories from either Standard & Poor's or Moody's (i.e., AAA, AA, A, or BBB for Standard & Poor's and Aaa, Aa, A, or Baa for Moody's)

Bank of New York Mellon:

- Standard and Poor's rating: AA-

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Bank of New York Mellon (The)

Issuer Credit Rating

RATING TYPE	RATING	RATING DATE	LAST REVIEW DATE <small>?</small>	REGULATORY IDENTIFIERS	CREDITWATCH/OUTLOOK	CREDITWATCH/OUTLOOK DATE
Local Currency LT	AA- Regulatory Disclosures	29-Nov-2011	28-Sep-2022	EE UKE	Stable	11-Jun-2013

Deutsche Bank AG New York Branch:

- Standard and Poor's rating: A-

S&P Global
Ratings

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Deutsche Bank AG

Issuer Credit Rating

RATING TYPE	RATING	RATING DATE	LAST REVIEW DATE <small>?</small>	REGULATORY IDENTIFIERS	CREDITWATCH/OUTLOOK	CREDITWATCH/OUTLOOK DATE
Local Currency LT	A- Regulatory Disclosures	09-Nov-2021	17-May-2023	EE UK	Positive	17-May-2023