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Class VI Injection Well Application
Attachment 03: Financial Assurance Plan
40 CFR 146.85

Beargrass Project
Wabash County, Indiana

30 July 2024

Project Information

Project Name: Beargrass

Project Operator: Vault GSL CCS Holdings LP

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Beargrass Project Injection Well 1 (PNM INJ1) location:
Wabash County, Indiana
Latitude: 40.94407° N
Longitude: -85.77952° W

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3D	three-dimensional
ACZ	above confining zone
ADM	Arthur Daniels Midland
AoR	Area of Review
$CaCO_3$	calcium carbonate
CCS	carbon capture and sequestration
CCSvt model	CCS stochastic Monte Carlo model
CO_2	carbon dioxide
EPA	Environmental Protection Agency
ERR	Emergency and Remedial Response
IEc	Industrial Economics, Incorporated
MCLs	maximum contaminant levels
N/A	not applicable
O&G	oil and gas
P&A	Plugging and Abandonment
PAH	polycyclic aromatic hydrocarbons
PBI	proprietary business information
pH	acidity or alkalinity measurement
PISC	Post-injection Site Care and Site Closure
PNM ACZ1	Beargrass Project Above Confining Zone Monitoring Well 1
PNM INJ1	Beargrass Project Injection Well 1
PNM OBS1	Beargrass Project Deep Observation Well 1
PNM USDW1	Beargrass Project USDW Monitoring Well 1
RO	reverse osmosis
UIC	Underground Injection Control
US	United States
USD	US dollars
USDW	underground source of drinking water

1. Introduction

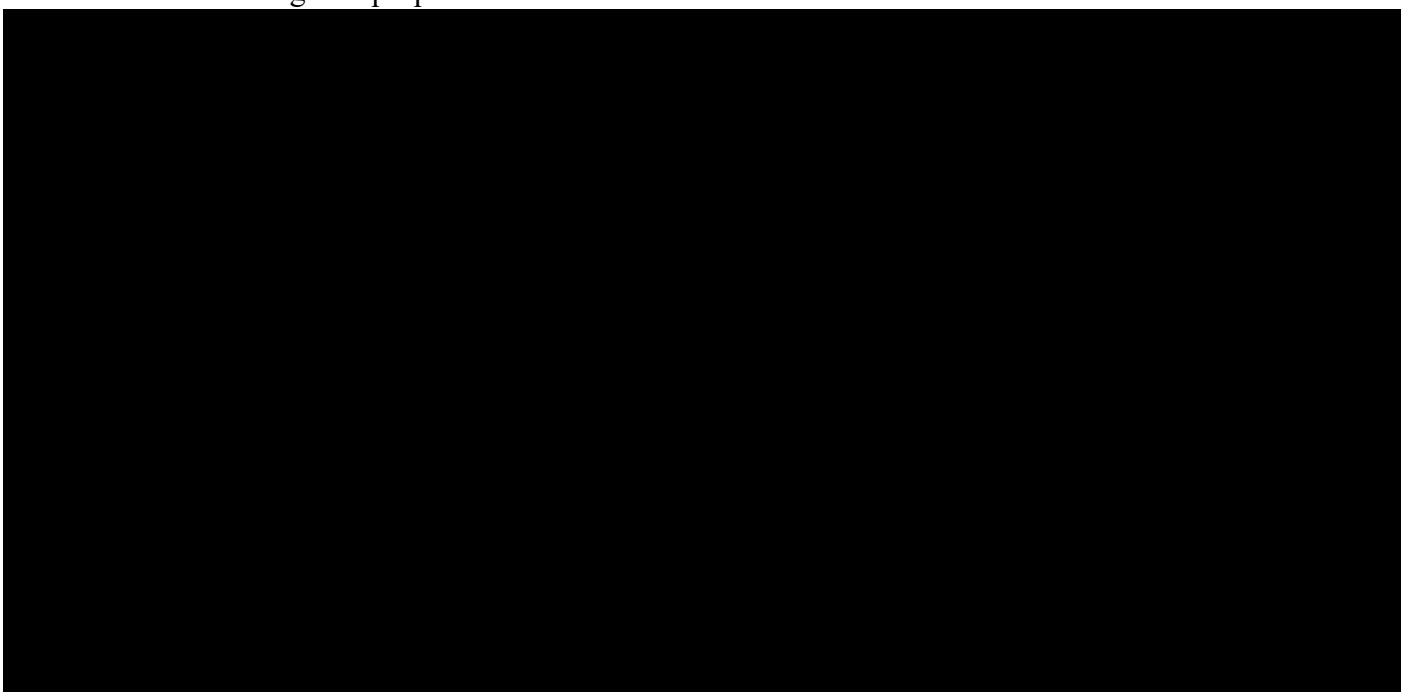
Consistent with the requirements set forth in 40 CFR 146.85 and the guidance set forth by the United States (US) Environmental Protection Agency (EPA), this document summarizes the financial assurances proposed by Vault GSL CCS Holdings LP for the Beargrass Project including the attendant type and value of financial assurance each of the following carbon capture and sequestration (CCS) activities (EPA, 2011).

Vault GSL CCS Holdings, LP has prepared this document to summarize the required financial assurance obligations, method of fulfilling, and estimation of costs. The financial assurance for Class VI projects consists of these four components:

1. Corrective Action,
2. Injection Well Plugging and Abandonment (P&A),
3. Post-injection Site Care and Site Closure (PISC), and
4. Emergency and Remedial Response (ERR).

Vault GSL CCS Holdings LP has independently estimated the amount of financial assurance necessary for Corrective Action, P&A, and PISC (hereinafter, "non-ERR costs"). Vault GSL CCS Holdings LP contracted with an independent, third-party purveyor, Industrial Economics Incorporated (IEc), to assist in estimating the amount of financial assurance necessary for ERR.

The remainder of this document summarizes the methodology applied to estimate the amount of financial assurance necessary by CCS activity, and the qualifying financial instruments Vault GSL CCS Holdings LP proposes to use to demonstrate financial assurance.



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Consistent with the EPA's July 2011 Guidance, Vault GSL CCS Holdings LP offers its financial assurance demonstration with the understanding that the financial instruments referenced herein will be updated and verified over time, as required by the EPA. Specifically, prior to beginning each CCS activity, Vault GSL CCS Holdings LP will ensure that the face value of all attendant financial assurance instruments is fully funded and sufficient to cover the required costs of the CCS activity.

2. Corrective Action

The estimated financial assurance value for corrective action consists of two components:

1. The cost to remediate any wells within the Area of Review (AoR) that penetrate the confining zone, and
2. The cost to reassess the AoR.

There are no wells within the AoR that currently require corrective action, as no wells within the AoR penetrate the confining zone (Attachment 02: AoR and Corrective Action Plan, 2024). As such, there is no immediate cost associated with remedial action for wells that penetrate the confining zone within the AoR.

[redacted]

3. Injection Well P&A

Attachment 07: Injection Well Plugging Plan, (2024) discusses the P&A Plan in detail. To summarize the P&A Program:

- Mechanical integrity logging will be performed prior to field mobilization or other P&A activities.
- CO_2-resistant materials and cement will be used to plug the storage interval of the well.
- In the section of the well where CO_2-resistant materials are deployed, cement retainers will be used. Balanced plugs will be used in the rest of the well.

4. PISC

The PISC plan is discussed in Attachment 08: Post-injection Site Care and Site Closure, (2024). It summarizes all activities that will occur following the conclusion of the injection activities. Vault GSL CCS Holdings LP does not plan to pursue an alternative PISC period. Table 3 summarizes the costs of individual activities within the PISC period.

4.1. Post-injection Monitoring

Consistent with the proposed activities in Attachment 08: Post-injection Site Care and Site Closure, (2024) several activities will be performed throughout the life of the PISC period. Table 3 summarizes the costs of individual monitoring activities within the PISC period.

4.2. Monitoring Well P&A

The Beargrass Project Deep Observation Well (PNM OBS1) and Above Confining Zone Monitoring Well (PNM ACZ1) will be plugged in a manner consistent with applicable EPA rules and regulations. Details on procedures, techniques, and materials used to plug each well are provided in the Site Closure section of the PISC (Attachment 08: Post-injection Site Care and Site Closure, 2024).

[redacted]

4.3. Shallow Groundwater Sampling

Prior to and throughout the injection phase of the project, shallow groundwater samples will be routinely taken to assess the water quality and to determine if there are any indicators that injection zone fluids have migrated into underground sources of drinking water (USDWs) during the operational and PISC phases of the project (Attachment 06: Testing and Monitoring, 2024; Attachment 08: Post-injection Site Care and Site Closure, 2024). Water quality will continue to be assessed throughout the PISC portion of the project. [redacted]

The financial assurance for the PISC period includes the cost to access the wells and take samples, as well as the transportation, holding, and testing of the samples. Specifications on methodology, storage, and transportation of the samples are within the QASP (Attachment 10: Quality Assurance and Surveillance Plan, 2024).

4.4. Breakdown of PISC Costs

Table 4 details the breakdown of financial assurance values for PISC by sub-activity. [redacted]

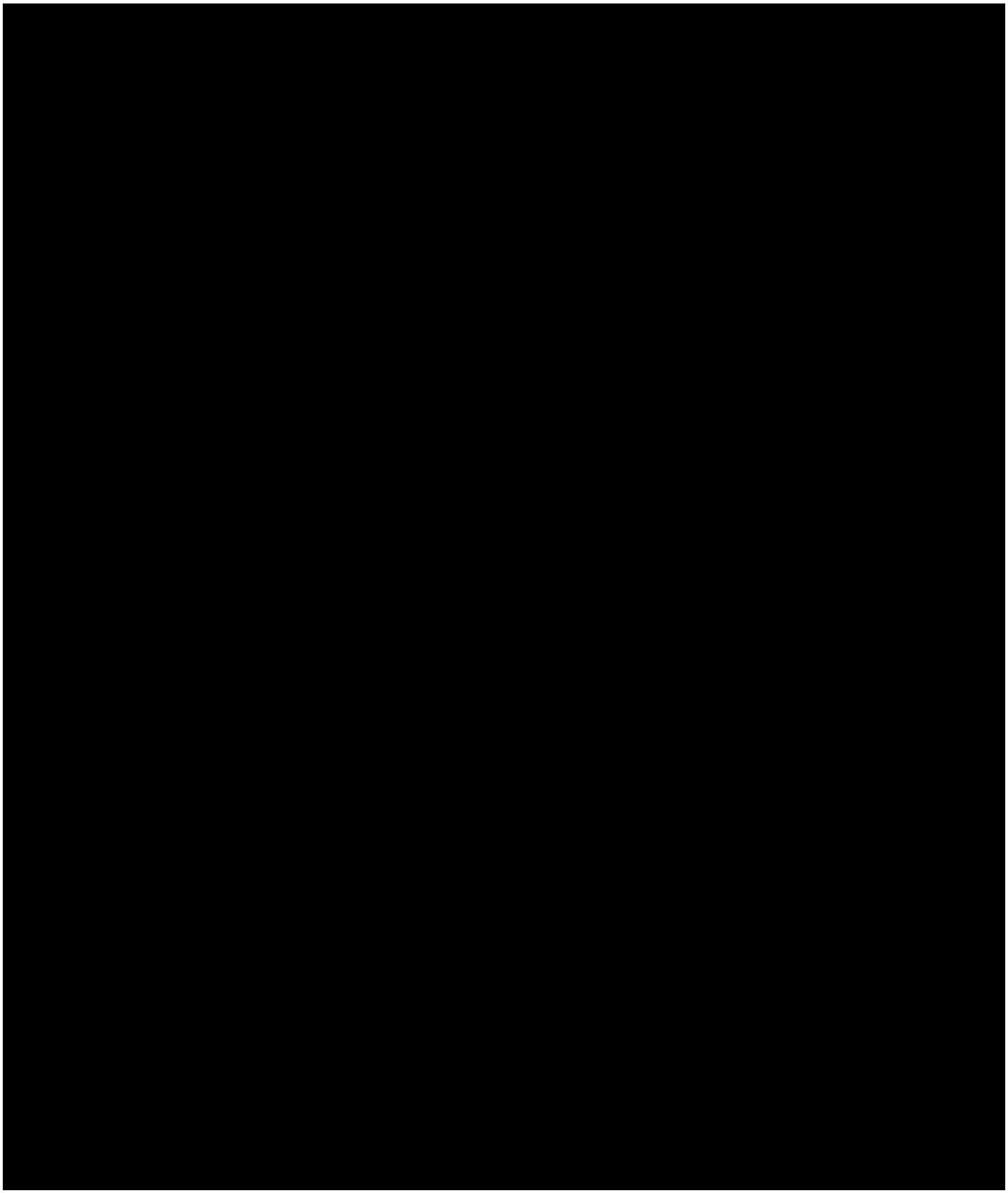
[redacted]

[redacted]

5. Emergency and Remedial Response Costs

This section summarizes estimates of ERR costs for the Vault GSL CCS Holdings LP's Beargrass Project. These estimates are consistent with the US EPA's Underground Injection Control (UIC) Program's Class VI regulatory requirements and are intended to inform the face value of financial assurances necessary to satisfy ERR actions.

Per 40 CFR 146.85(6)(c), during the active life of the CCS project, the cost estimate for ERR should be updated no less than annually to reflect changes in inflation. In addition, within 60 days of any amendments to the ERR plan, Vault GSL CCS Holdings LP will provide the Director written updates of cost estimate adjustments, including without limitation, any amendments that may arise as a result of any event that necessitates ERR during the life of the CCS project through site closure.



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5.1. USDW Non-endangerment

The Safe Drinking Water Act was established to protect the quality of drinking water in the United States. The law focuses on all above ground and underground sources of water designed for drinking use. The concept of 'endangerment' (as it relates to the UIC Program) is defined further in the federal code of regulations, which states: "No owner or operator shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR part 142 or may otherwise adversely affect the health of persons." ("EPA Drinking Water Standards")

National Primary Drinking Water Regulations establish mandatory water quality standards for drinking water contaminants (US EPA). These standards are referred to as maximum contaminant levels (MCLs), which are intended to protect the public against consumption of drinking water contaminants that present a risk to human health. An MCL is the maximum allowable amount of a contaminant in drinking water delivered to the consumer.

National Secondary Drinking Water Regulations set non-mandatory water quality standards for 15 contaminants. These standards are offered as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor. These contaminants are not considered to present a risk to human health at the secondary maximum contaminant level (U. S. Environmental Protection Agency).

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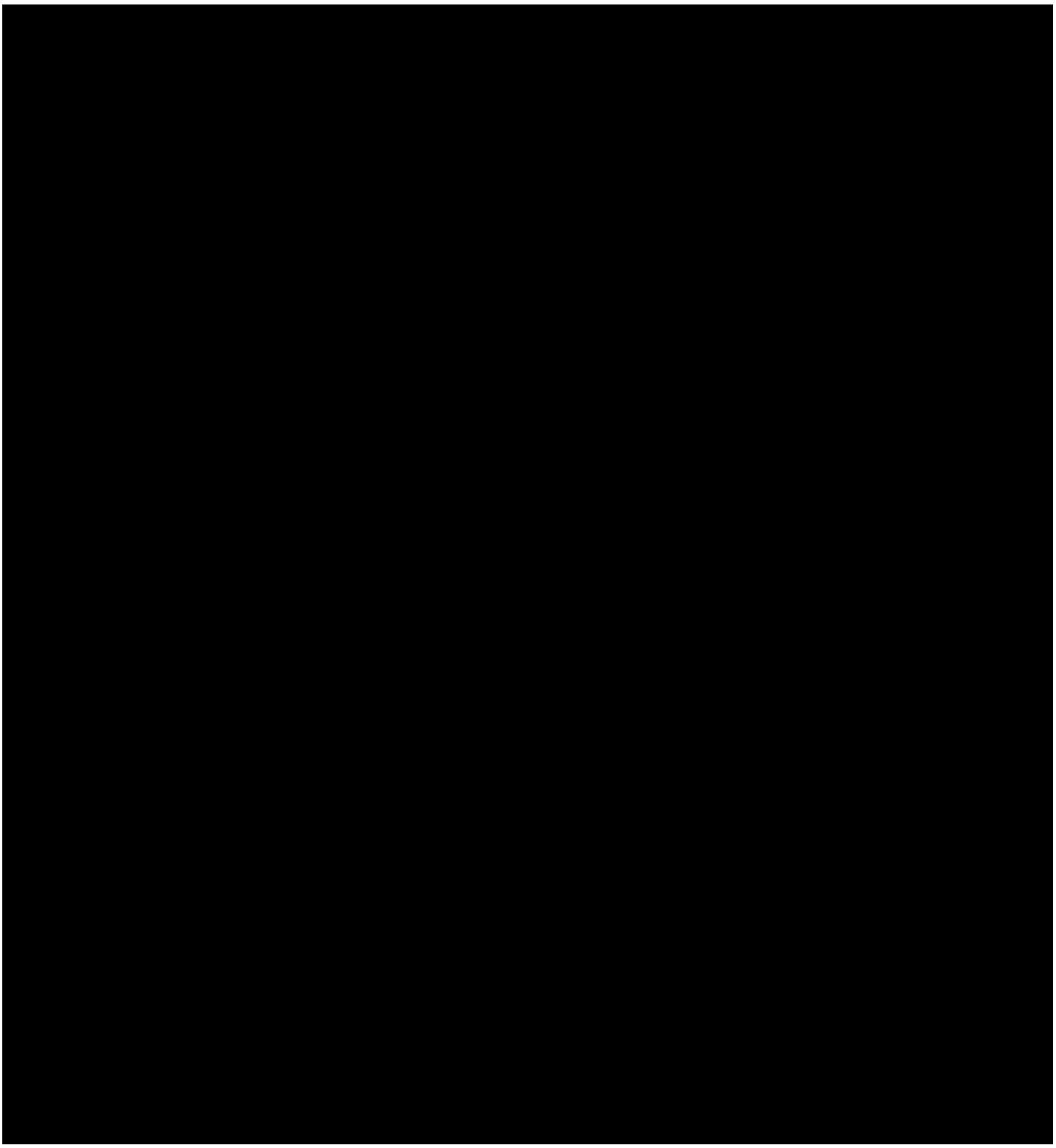
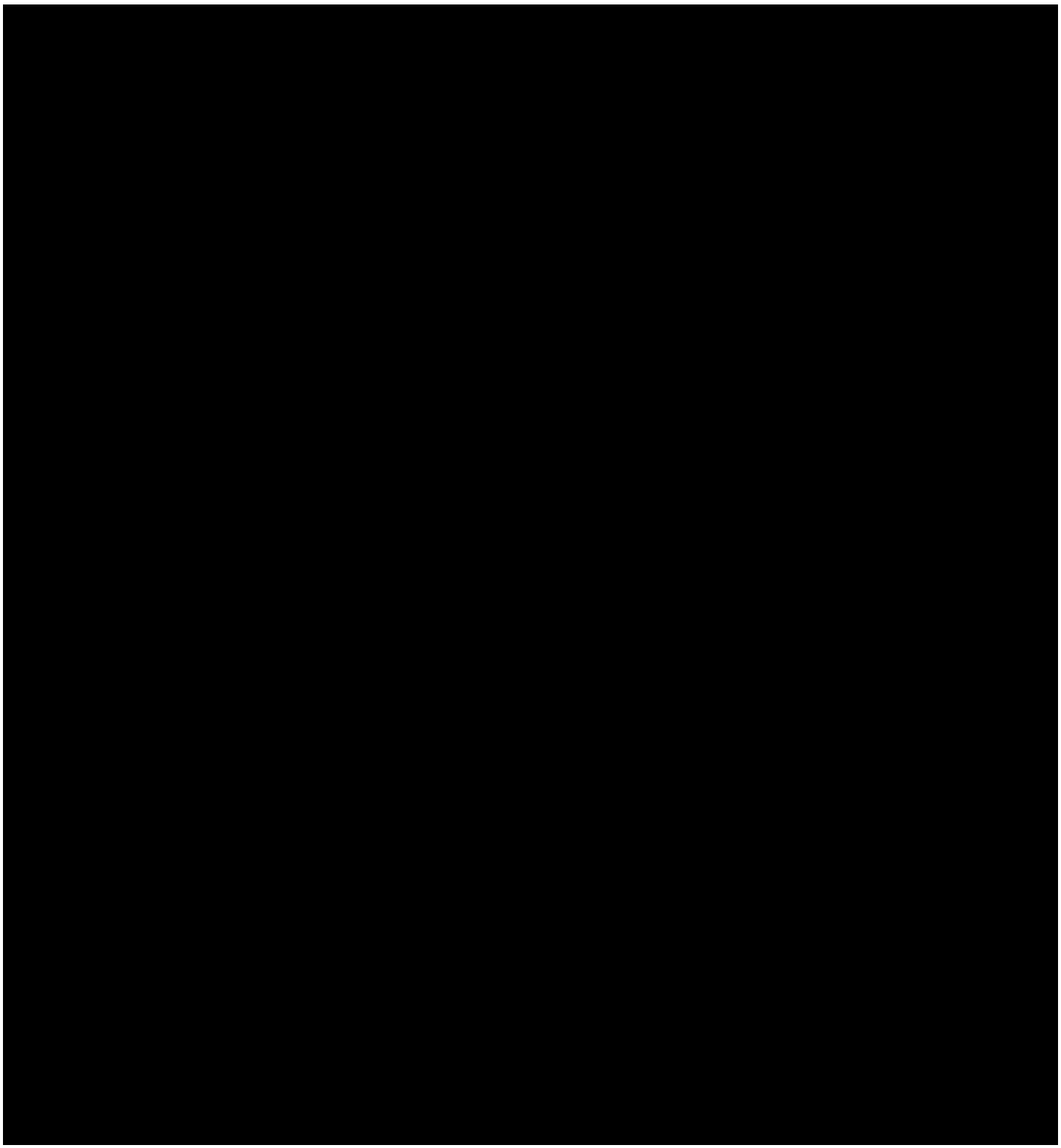
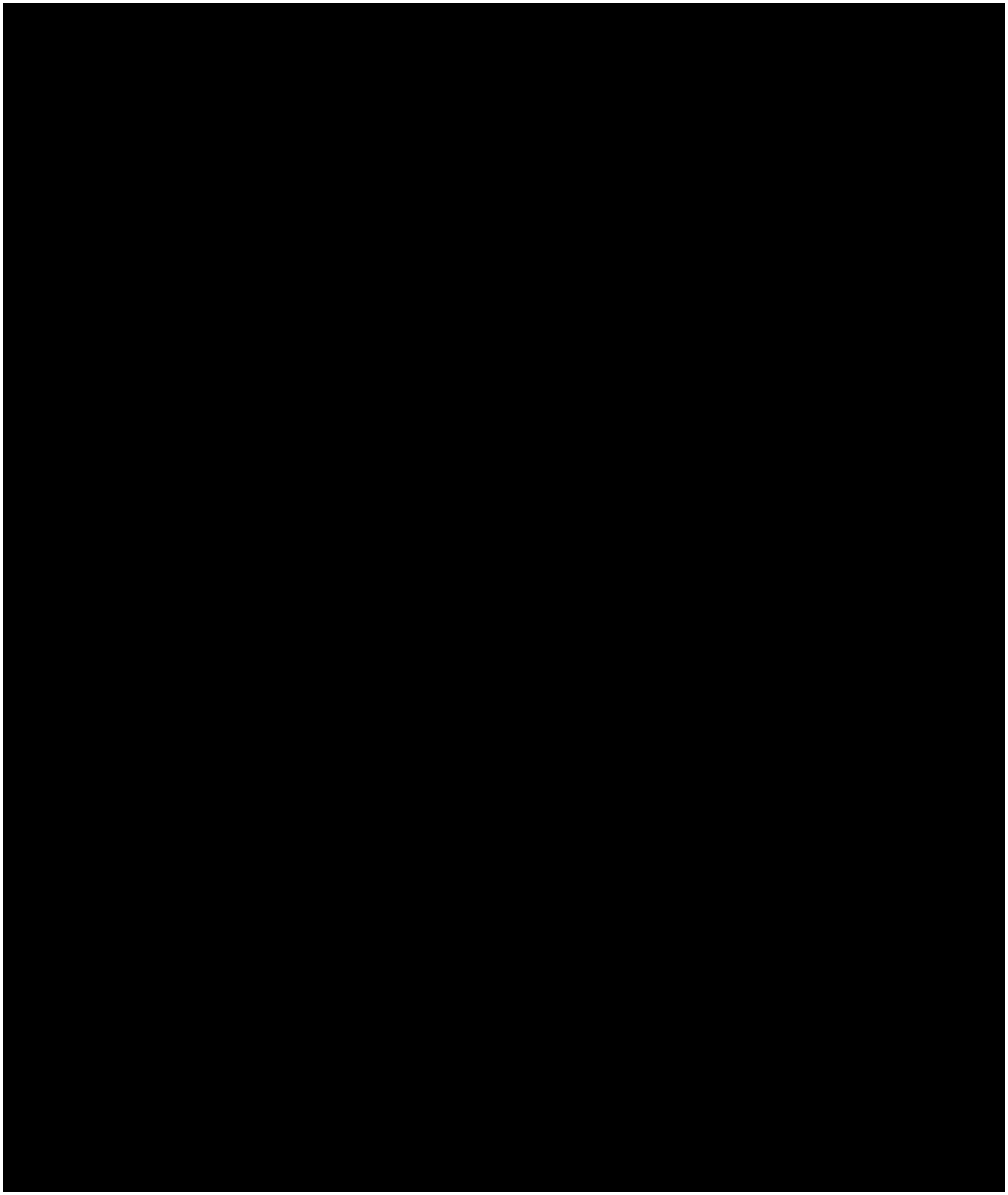
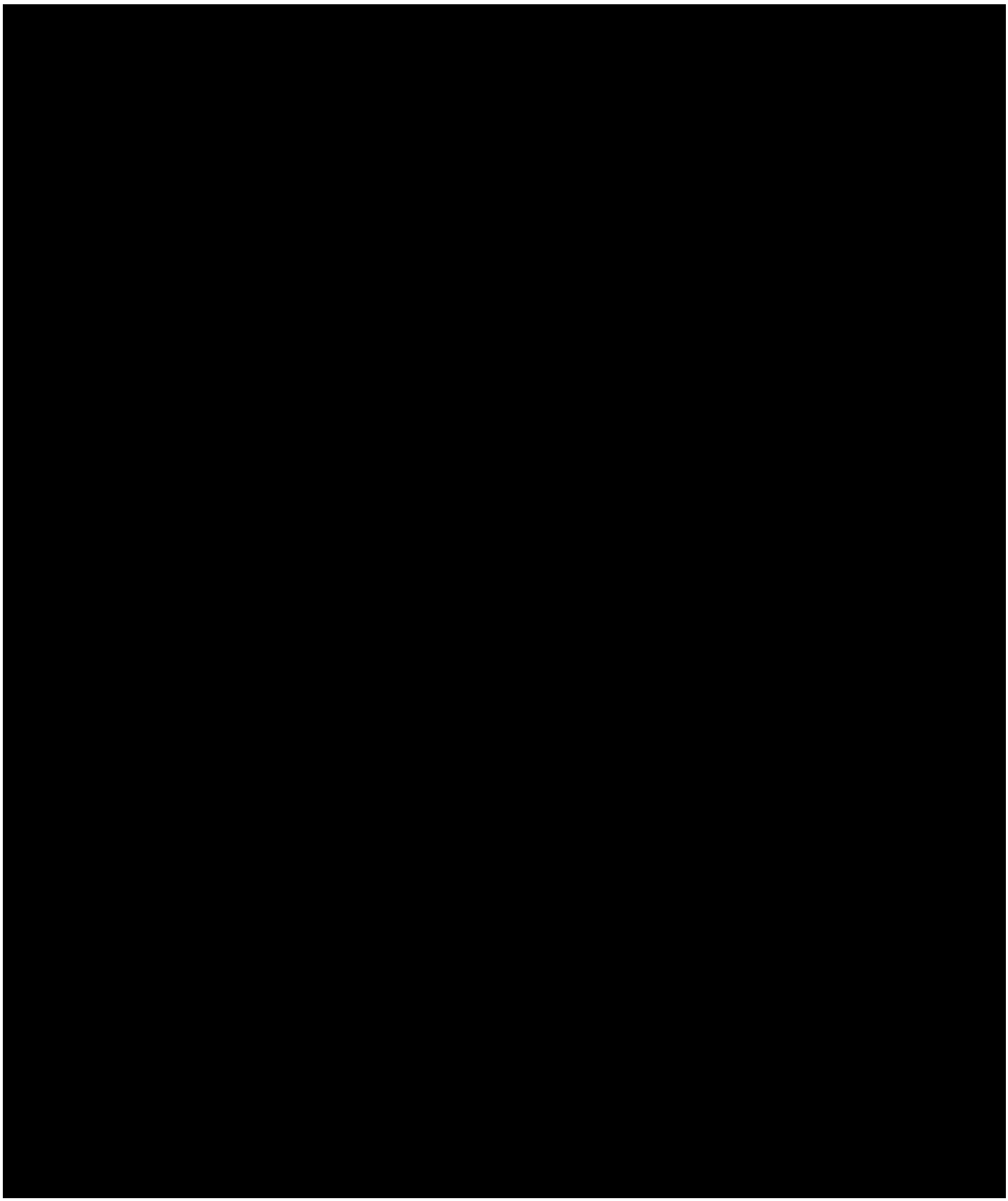
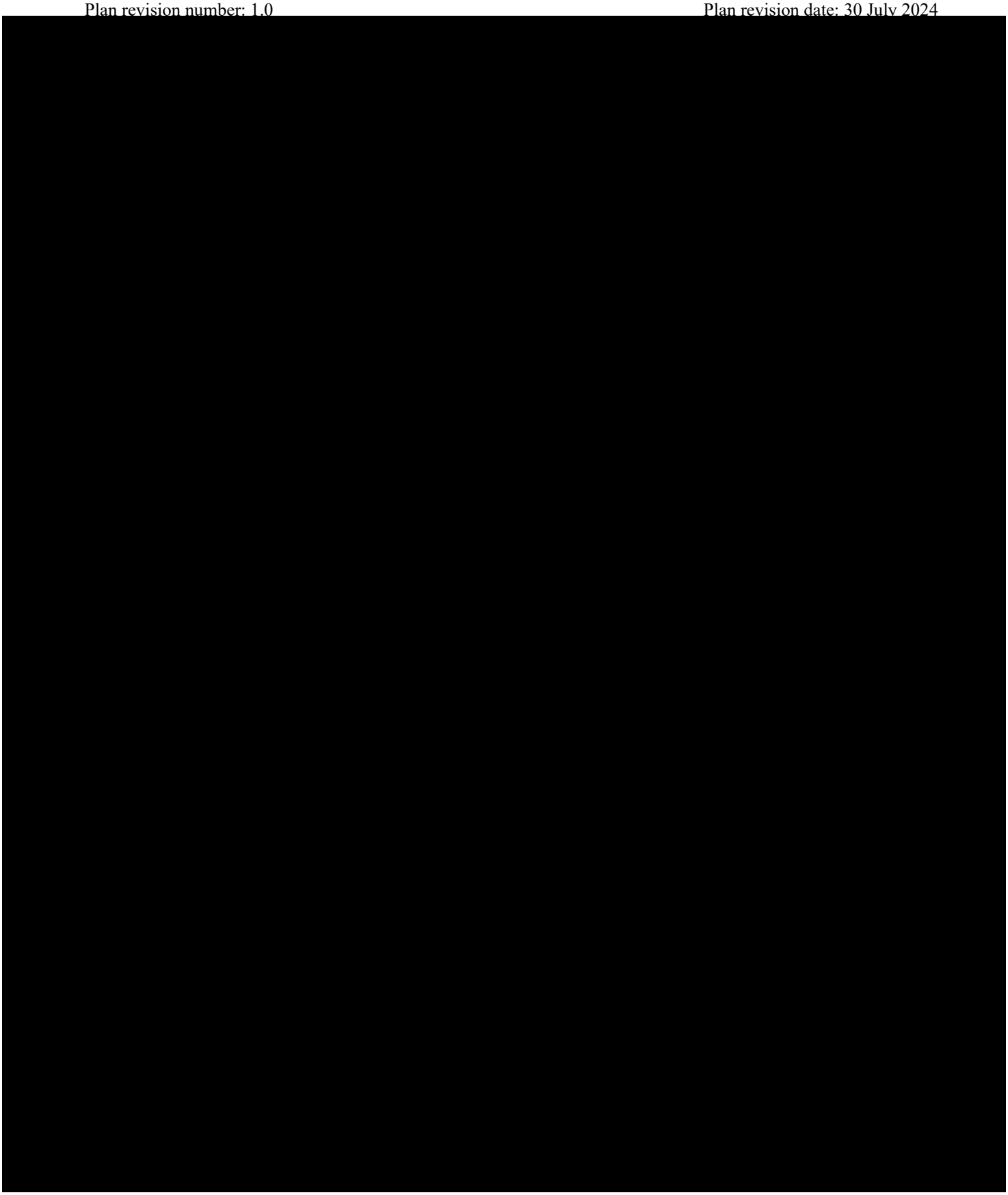




5.4. Risk Event Types and Probabilities







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5.5. *Duration of Injection and PISC Activities*

Vault GSL CCS Holdings LP cost estimation protocol reflects a 12-year CO_2 injection period and a 50-year PISC period. Consistent with these assumptions, [redacted]

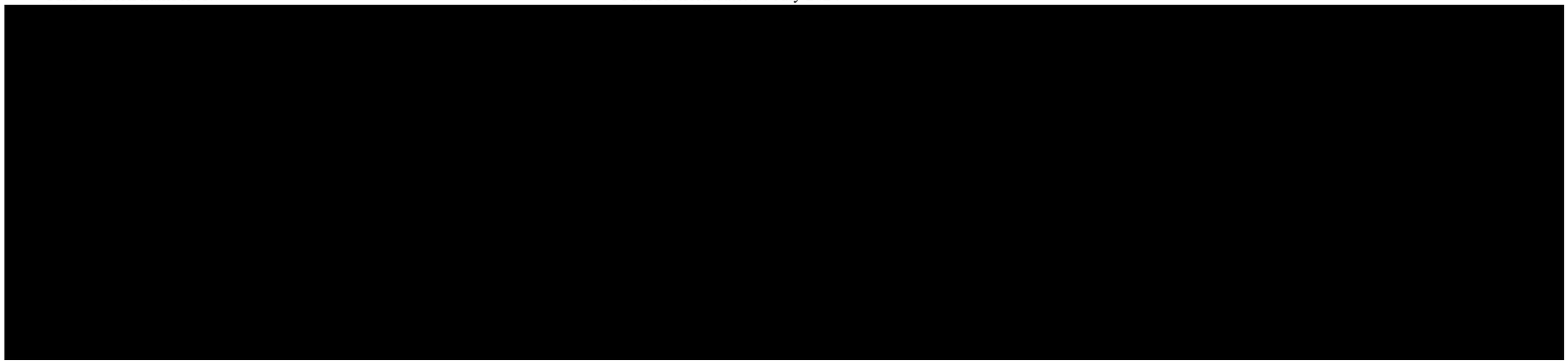
5.6. *Cost Distribution if a Release Occurs*

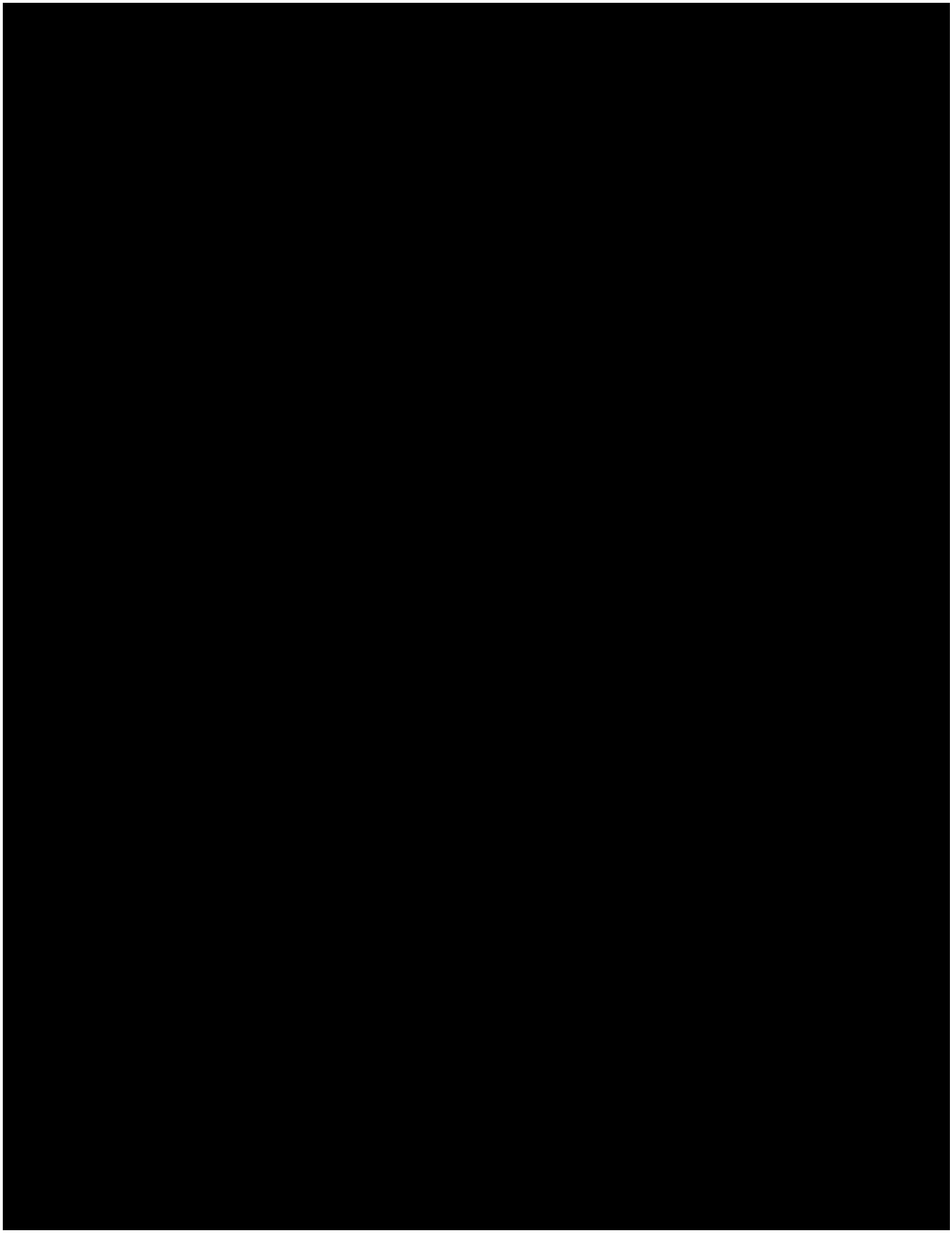
[redacted]

5.6.1. Well Repair Cost Distributions

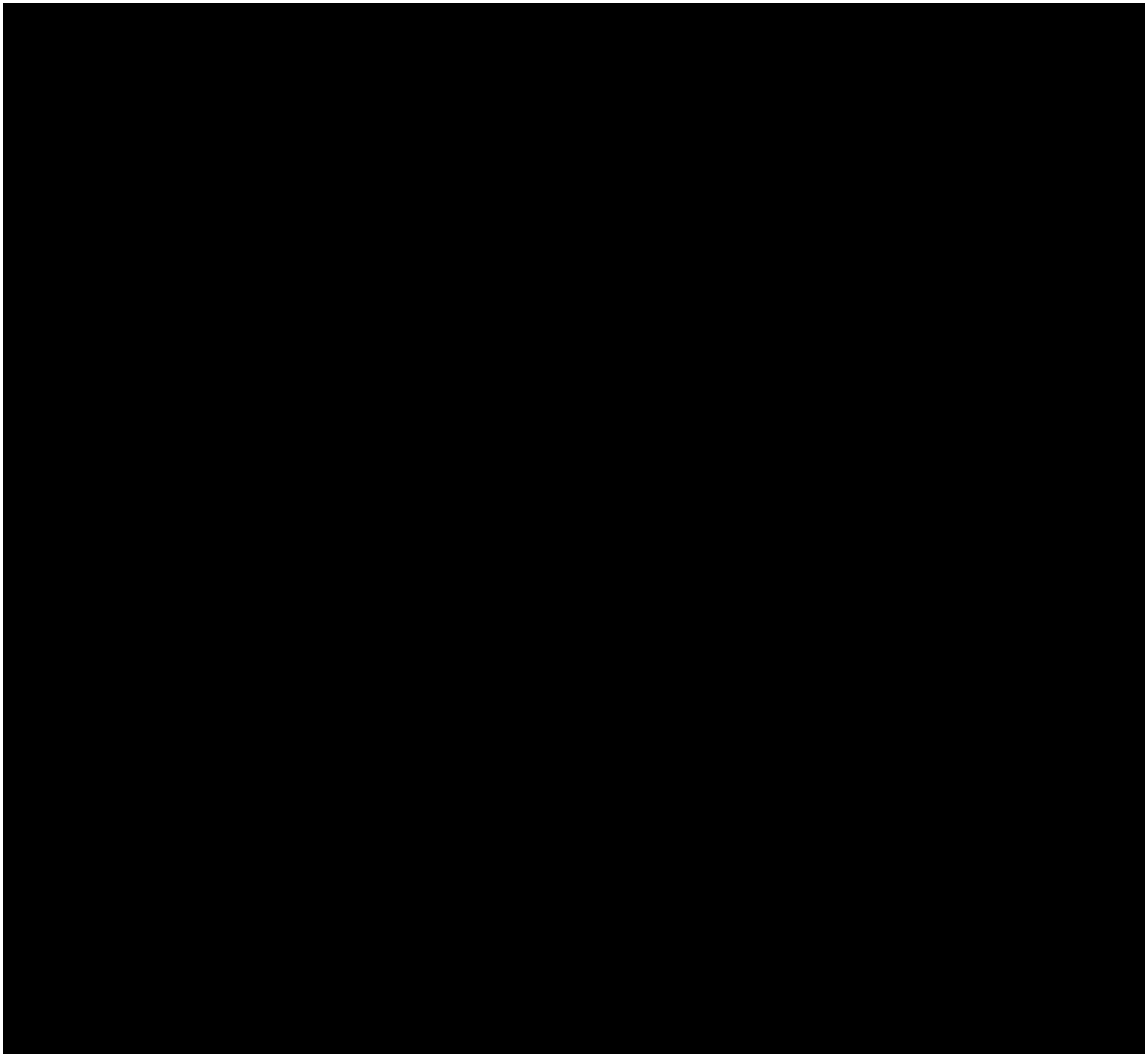
[redacted]

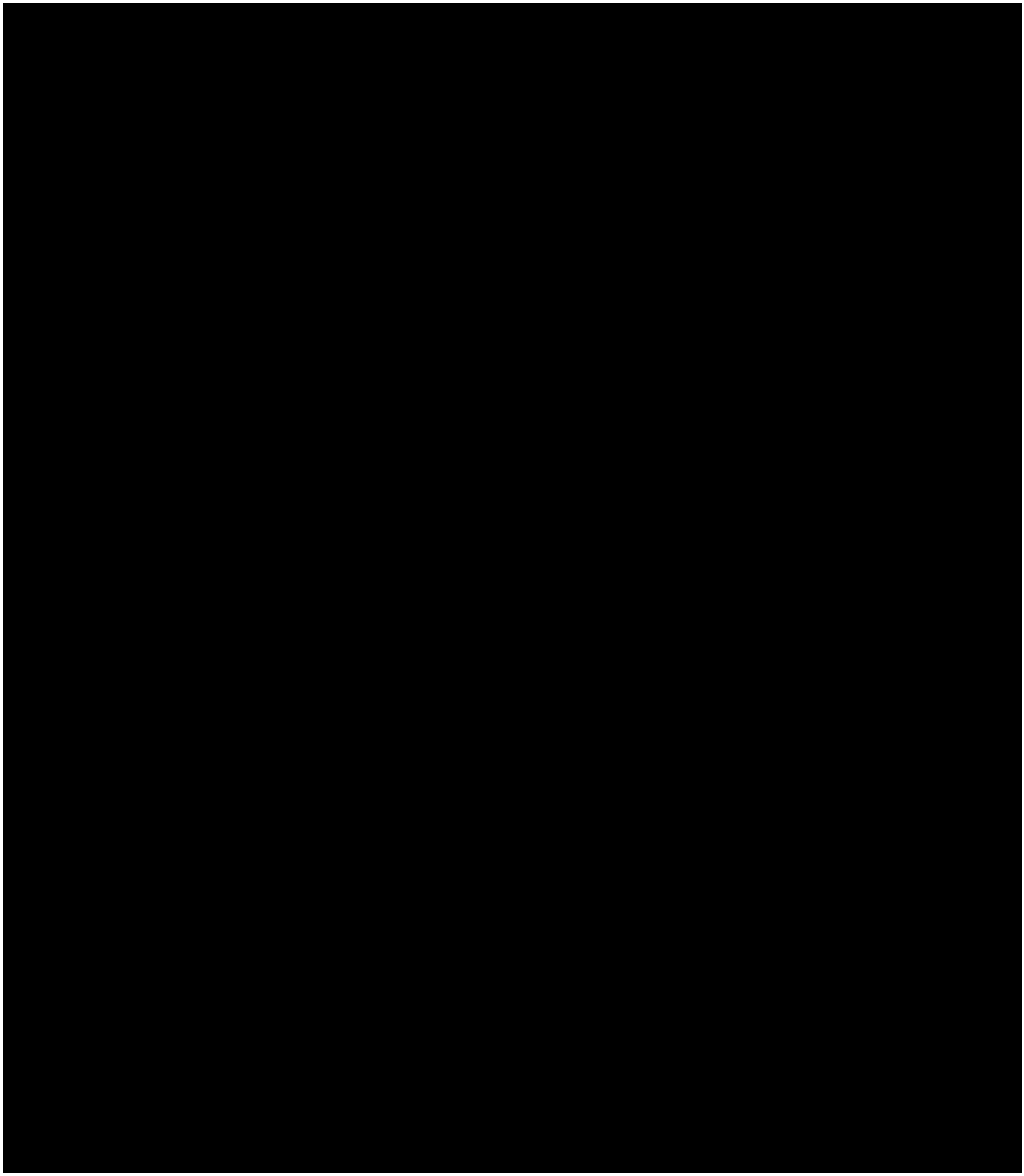
5.6.2. USDW Contamination Incident Cost Distribution





5.7. ERR Cost Estimation Results





6. Total Estimate Value of Financial Assurances for the Beargrass Project

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7. Method of Financial Assurance

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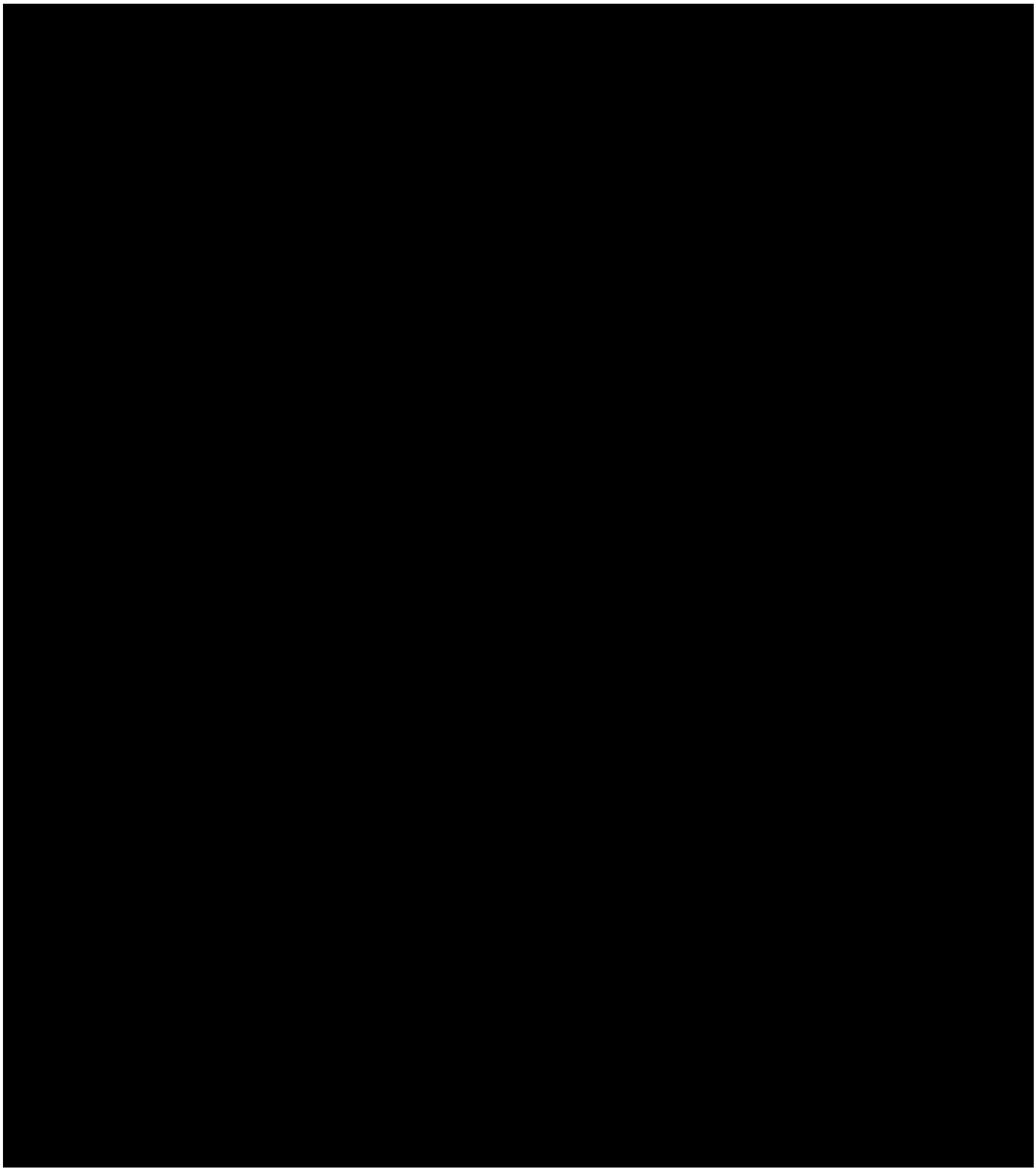

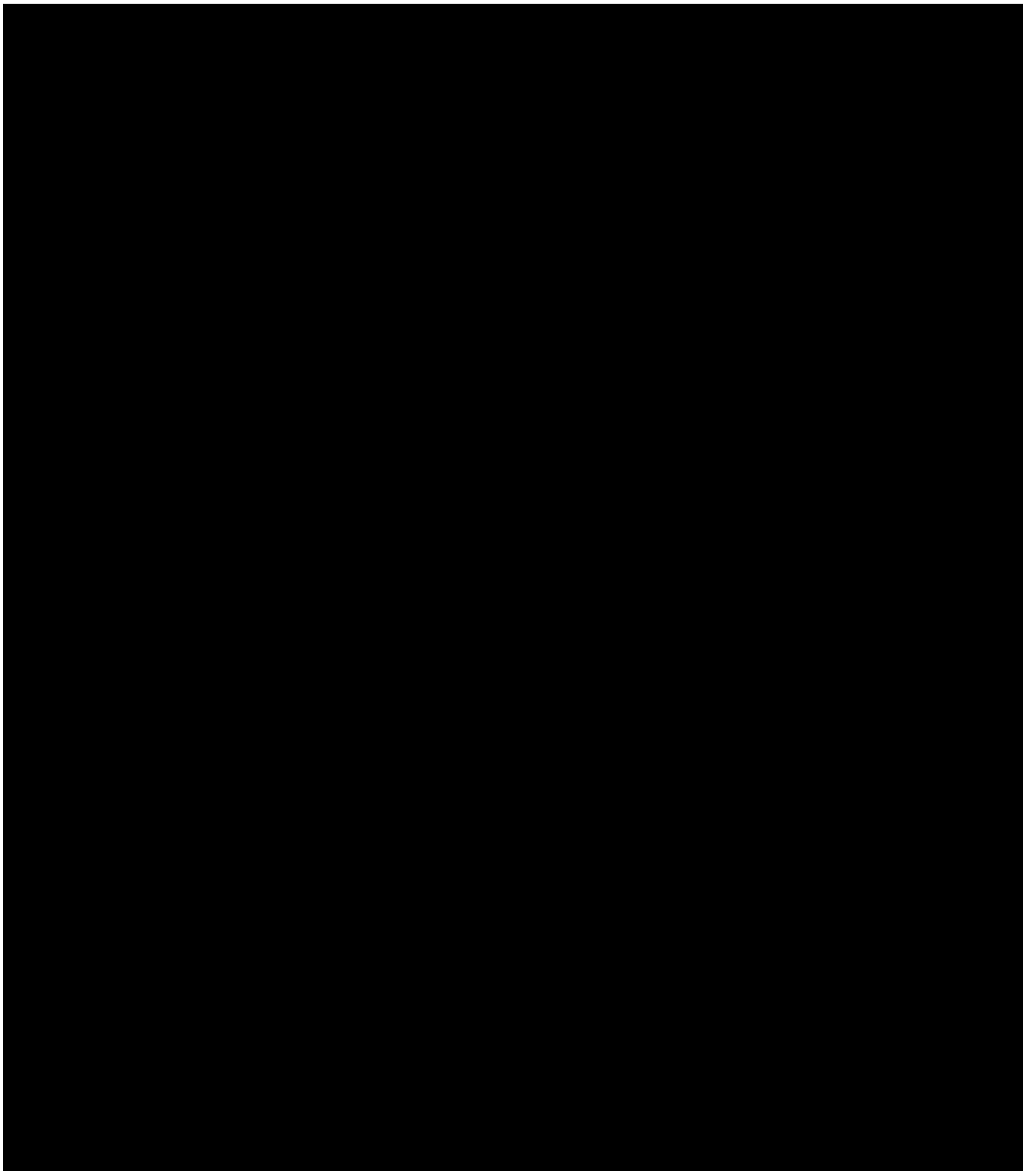

8. Reassessment of Financial Assurance

9. References

Attachment 01: Narrative, 2024, Underground Injection Control Class VI Permit Application: Beargrass Project.

Attachment 02: AoR and Corrective Action Plan, 2024, Underground Injection Control Class VI Permit Application: Beargrass Project.

Attachment 06: Testing and Monitoring, 2024, Underground Injection Control Class VI Permit Application: Beargrass Project.

Attachment 07: Injection Well Plugging Plan, 2024, Underground Injection Control Class VI Permit Application: Beargrass Project.

Attachment 08: Post-injection Site Care and Site Closure, 2024, Underground Injection Control Class VI Permit Application: Beargrass Project.

Attachment 09: Emergency and Remedial Response Plan, 2024, Underground Injection Control Class VI Permit Application: Beargrass Project.

Attachment 10: Quality Assurance and Surveillance Plan, 2024, Underground Injection Control Class VI Permit Application: Beargrass Project.

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