Department for Environment Food & Rural Affairs

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Appendix 2 – Call-Off Procedure:

for The Research, Development and Evidence Framework 1

Tender Reference: [redacted]

Date: 9 December 2022

1.0 Request for Proposal

1.1 The following document is to be used as a Call-Off template to be sent to all Contractors on a sub-lot by the Commercial Lead of the Contracting Authority for completion and return in accordance with the Call-Off procedures detailed in the Form of Agreement.

Research, Development and Evidence Framework REQUEST FOR PROPOSAL					
Project title:	WR1928: Direct Measurement of Landfill Methane Emissions				
Call off Reference:	[redacted]				
Atamis project ref (if applicable):	[redacted]				
Date:	**09/12/2022**				
Contracting Authority	Department for Environment, Food and Rural Affairs				
Commercial Contact (if applicable):	[redacted]				
Project Start Date	20/03/2023				
Project Completion Date	31/01/2025				
For any projects over the direct award threshold, full competition is required (i.e., all contractors on the Sub-Lot are invited to quote).	**Direct Award**		**Mini comp**	X	
Call off from Sub-Lot number	3.1				
Proposal return date:	24/01/2023 at 12:00				

Evaluation criteria		
Contractors: Failure to meet any minimum score threshold stated will result in the bid being removed from the process with no further evaluation regardless of other quality or price scores.		
Quality	**Weighting**	**70%**
Price	**Weighting**	**30%**
Quality Sub-Criteria Weightings: (Indicative only)		
Criteria	**Requirement**	**Weighting and Minimum Threshold**

E01 - Health and Safety Copy of Organisations Health and Safety policy/statement + a detailed explanation + Site Specific Risk Assessment (max. 2 A4 pages, Font 12)	Assurance of your organisation's commitment to health, safety and wellbeing while undertaking the work. To enable this assessment to be made, you must provide: • A copy of your Health & Safety policy/statement (noting that if this is a consortium bid or work will be sub-contracted, we will require this from each member of the consortium or sub-contractors) or, if you have five employees or fewer, provide information about how health and safety is assured in your organisation. • A recent example of a site-specific risk assessment that demonstrates the kinds of arrangements you would normally put into place for these types of studies. • A detailed explanation of the procedures and systems in place to protect members of the public, staff and visitors from the main health, safety and welfare hazards they are likely to face in projects of this nature. Please upload your Health & Safety policy with the file name "E01 _H&S Policy_Your Company Name", your site-specific risk assessment with the file name "E01_SSRA_Your Company Name", and your detailed explanation with the file name "E01_H&S detail_Your Company Name"	**Pass/Fail**
E02 - Sustainability Policy Copy of organisation's sustainability policy + project-specific sustainability plan (max. 2 pages A4, Font 12)	The Authority has set itself challenging commitments and targets to improve the environmental economic and social impacts of its estate management, operation, and procurement. These support the Government's green commitments. The policies are included in the Authority's sustainable procurement policy statement published at: https://www.gov.uk/government/publications/defra-s-sustainable-procurement-policy-statement Within this context, please briefly explain your approach to delivering the services and how you intend to reduce negative sustainability impacts. Please discuss the methods that you will employ to demonstrate and monitor the effectiveness of your organisation's approach for this requirement. To enable this assessment to be made, you must provide: • Provide a copy of your organisation's sustainability policy.	**Pass/Fail**

	• A project-specific sustainability plan. Please upload your Sustainability policy with the file name "E02_ Sustainability Policy_Your Company Name" and your project-specific plan with the file name "E02_Sustainability Plan_Your Company Name"	
Assessment of sub-criteria E03 - The proposal provides confidence in the tenderers understanding of the project need, context, aims and objectives.		
E03 - Understanding of the project need and context Max. 1-page A4, Font 12	Satisfactory assurance that you understand the need for the project and its context, to enable an appropriate project to be scoped and delivered. To enable this assessment to be made, you must provide: • Your understanding of the rationale and context for the project, including the questions it will be designed to answer and the needs it will be designed to meet. Original thoughts will score higher than copying sections from the ITT. Please upload your response "E03_Your Company Name".	**10%** (minimum score threshold of 50/100 will apply)
Assessment of sub-criteria E04: the proposal provides confidence in the tenderer's approach and methodology. It demonstrates that the tenderer has a detailed understanding of the project and the technical skills required to deliver the services specified. The response provides confidence that the tenderer has a well-developed appropriate methodology to delivering the outcomes in the Specification.		
E04 - Approach and Methodology Max. 5 pages A4, Font 12	Satisfactory assurance that your proposed methodology will meet or exceed the requirements of the project. To enable this assessment to be made, you must provide: • A detailed description of your proposed overarching methodology clearly demonstrating how each element will contribute to achieving the project objectives. • A detailed description of tasks and the way in which you will approach them; where a consortium or sub-contraction approach is proposed, this should highlight which consortium member or sub-contractor will lead and which others will be involved. • Your proposals on how you will design and implement a seasonal study which will deliver the aim, objective, and deliverables, ensuring data is viable for seasonal measurement, and suitable for future use in the national inventory.	**40%** (minimum score threshold of 50/100 will apply)

	This may include justification of the method you propose using, how you will create a robust (accurate and precise) seasonal data set. Although we are not stipulating the approach you should take note that the appropriateness of methods (cost effectiveness, practicality, and data quality) is pivotal. • A summary of the tools and equipment that you will use to successfully deliver the project, excluding staff, and an explanation of how their functionality will be maintained over the period of the project. Please upload your response "E04_Your Company Name".	
***Assessment of sub-criteria E05*: the proposal demonstrates that the project team includes staff with the relevant experience, appropriate technical expertise, qualifications, and experience to add significant value and confidently deliver the project outcomes. The proposal demonstrates that the team structure has appropriately experienced and qualified staff to undertake the work, with sufficient supervision and resources.**		
E05 - Skills, experience, and adequacy of technical staff resources Max. 4 pages A4, Font 12 +CV's (1 A4 page each) + Project examples	Satisfactory demonstration that your proposed team will bring the necessary skills and experience to deliver the project. To enable this assessment to be made, you must provide: • An organogram showing all the main project roles within each work package and the named individual(s) fulfilling them. • A description of each team member, including their organisation (if a consortium is proposed), along with details of their relevant skills and experience. • If a consortium or sub-contraction is proposed, please provide a diagram of the consortium showing the roles and responsibilities of each member, and how they will be managed to ensure coordinated delivery of the work. Please upload a document with the filename "E05_Your Company Name". Please additionally upload a single document containing CVs of all staff (excepting administrators) who will work on the project with a filename "E05_CVs_Your Company Name". In addition, please provide: • Up to 2 examples of recently delivered projects that demonstrate the skills and experience of the named individuals on your project team.	**30%** (minimum score threshold of 50/100 will apply)

	Please upload a document with the filename "E05_Project Examples_Your Company Name".	
Assessment of sub-criteria E06: the proposal demonstrates that key risks associated with all aspects of work have been appropriately assessed and appropriate control measures have been identified. A pro-active approach is evident to monitoring and managing risk for the project lifecycle. The programme provides confidence that the approach is both realistic and flexible, allowing appropriate time for each element to be completed to meet the contract/project milestone dates.		
E06 - Project Management Max. 2-page A4, Font 12 + Gantt Chart + Risk Register	Please outline how you will ensure that this project will be delivered on time and to the required quality. In addressing this question your response should cover, as a minimum: DATA QUALITY RISKS • What you perceive to be the main challenges and risks in delivering Defra's requirements, as set out in the aims and objectives. This should focus on data quality, quantity, appropriateness, and data robustness. You should explain how you will mitigate and manage the risks you identify. • A high-level risk register for the data quality, quantity, appropriateness, and precision risks, with mitigating actions, including pre and post mitigation scores. REPUTATIONAL RISKS • Confirm you have sufficient resource available to deliver the project on time and outline your contingency plans for unexpected absence or changes to key personnel to ensure minimal impact on the project delivery. PROJECT PLAN • An outline programme in the form of a Gantt chart identifying key milestones, dependencies, and critical path. QUALITY ASSURANCE • Description of the Quality Assurance procedures and systems which will deliver data and outputs of the required standard. CONTRACT MANAGEMENT • Details of the proposed approach to management of the contract, to ensure it is delivered on time and to budget, especially where sub-contracting is involved. • Details of your complaint's procedure with specific reference to the types of complaints most likely to arise in this project, including from members of the public.	**10%** (minimum score threshold of 50/100 will apply)

	LEGAL COMPLIANCE • A summary of what, if any, personal data will be collected and how you will comply with any implied GDPR requirements Please upload your response "E06_Your Company Name" plus additional "E06_Your Company Name_Risk register" and "E06_Your Company Name_Gantt chart"	

E07 – Social Value
 	
Max. 2 pages A4, Font 12
	Assurances that delivery of the programme of work will create social value aligned to the selected Government's priorities, and as set out in the Social Value Model[1].
	
	To enable the assessment to be made, please provide:
	• A series of specific, quantified commitments with respect to:
	  o Fighting climate change
	  o Improving material and environmental stewardship
	
	• Your method statement explaining how you will achieve your expected contributions.
	
	• Your timed project plan showing the steps you will take to implement your commitments.
	
	• An outline of your proposed approach to monitoring and reporting progress.
	
	All content to be considered must be in the document itself - no links/references to other documents will be considered.
	
	Please upload a document with the filename "E07_Your Company Name".
		10% (minimum score threshold of 50/100 will apply)

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/940826/Social-Value-Model-Edn-1.1-3-Dec-20.pdf

Specification

1. Description of work required – overall purpose & scope (including reporting requirements)

Context

Methane (CH_4) is an important Greenhouse Gas (GHG) with a 100-year Global Warming Potential (GWP) 25 times that of carbon dioxide (CO_2). Landfills are a major source of anthropogenic CH_4, fugitive emissions, which is estimated to account for approximately a third of the UK's methane emissions[2].

Within the UK National Atmospheric Emission Inventory (NAEI), the waste sector contributed 4.4% to overall GHG emissions in 2020. These emissions were dominated by methane (CH_4) from Solid Waste Disposal Sites (SWDS), which contributed 72.3% of total waste sector emissions. The remaining balance was from:

- Biological treatment of solid waste (combined Nitrous Oxide [N_2O] and CH_4 emissions contributing 10% of waste sector emissions).
- Waste incineration (combined CO_2, N_2O and CH_4 emissions contributing 1.6% of waste sector emission).
- Wastewater handling (combined CH_4 & N_2O contributing 15.3% of waste sector emissions)[2].

Within the UK NAEI, landfill CH_4 emissions reporting is based on modelled CH_4 *generation* (using The Methane Emissions from Landfill model [MELMod]; estimated generation 1325Kt CH_4 in 2020), minus CH_4 *captured* (sum of CH_4 used for power generation), CH_4 *flared* (from site-specific data from the Environment Agency [EA] at regulated sites; a total of 758kt CH_4 in 2020) and *residual* CH_4 oxidised (based on the Intergovernmental Panel on Climate Change [IPCC] default oxidation factor of 10% CH_4 remaining after the subtraction of the amount captured; estimated as 57kt CH_4 in 2020).This ultimately provides an amalgamated nationwide estimate of landfill methane emissions (of 511kt CH_4 in 2020 which is 39% of the CH_4 generated)[3].

Reliance on modelled CH_4 generation and emission rates means that uncertainty - relating to input parameters, and model assumptions - can have significant impact on the accuracy of estimates[3]. Although IPCC guidelines indicate that measurement of CH_4 emissions is necessary to validate models and provide confidence in country specific model parameters for waste management emissions, this has not been possible due to lack of a direct link between total emissions reported in the NAEI, and measured emissions of individual sites.

Historically, quantification of landfill methane emissions has been highly challenging. This has been due to variation in emissions associated with climatic, seasonal, and operational factors, alongside

[2] Brown P, Cardenas L, Choudrie S, Del Vento S, Karagianni E, MacCarthy J, Mullen P, Passant N, Richmond B, Thistlethwaite G, Thomson A, Wakeling D. 2022. UK Greenhouse Gas Inventory 1990 to 2020. Annual Report for Submission under the Framework Convention on Climate Change.

[3] Bourn M, Robinson R, Innocenti R, Scheutz C, 2019. Regulating landfills using measured methane emissions: An English perspective. Waste Management, 87, 860-869.

the age and biological activity of the deposited waste material[4,5,6,7]. However, recent studies, nationally and internationally (and including those supported collaboratively by the EA and Defra) have explored the application of distinct methodical approaches within this space (from early work on methane flux, through to the use of optical and trace gas dispersal methods for whole site quantification[8,9]), identifying methodological, logistical, and economic strengths and limitations of distinct approaches.

There is a current need to consolidate the work in this space ultimately producing standard methodologies that can be implemented on site (through continuous monitoring, seasonal or annual survey), and accompanied standard data analysis processes to provide robust annual emissions estimates. The aim of this is to ultimately, replace modelled estimates of landfill methane emissions in the NAEI with measurement evidence on empirical data, and to provide robust procedures that could be applied to regulatory settings.

Aims and Objectives

The focus this study will be the design and delivery of a robust and cost-effective survey approach (and underpinning standard operating procedures) as a step towards allowing the quantification of annual site-specific landfill methane emissions (and associated sources of variability) for operational and recently closed landfill sites.

This project will combine long term emission measurement (seasonal) with a series of discrete surveys to understand the survey approaches that would be necessary to provide this annual estimate (within a stated level of certainty). This will meet the data integrity required for measured landfill CH_4 emissions being reported within the UK National Inventory (and which are aligned with regulatory requirements) and will provide the basis for future regulatory work.

The project has the following 4 objectives:

1. Design sampling approach, regimes, and data analysis suitable for a robust seasonal study of landfill methane emissions at operational and closed sites and which can be utilised as the basis for development of standard methodologies.

2. Implement a four-season study of landfill methane emissions using an operational, and recently closed site (for non-hazardous biodegradable waste) utilising the developed methodologies and data analysis.

3. Provide statistical analysis, critical methodology analysis and recommendations of approaches, valid for use for NAEI recording purposes and regulatory purposes.

4. Creation of Standard Operating Procedure for sampling and analysis through development and utilisation of method protocols outlining any evidence gaps that will need to be addressed to finalise these for use operationally (within a future proof of concept study).

[4] Rees-White TC Monster J Beavan Rp Scheutz C. 2019. Measuring methane emissions from a UK landfill using the tracer dispersion method and the influence of operational and environmental factors. Waste management, 87, 870-882.
[5] Xu L, Lin X, Amen J, Welding K, McDermitt D, 2014. Impact of changes in barometric pressure on landfill methane emission. Global Biogeochemical Cycles 28 679-695.
[6] Innocenty F Robinson RA Gardiner TD Finlayson AJ Connor A Few J Scheutz C Monster J. 2016. WR1914- Landfill Methane Measurement Methods.
[7] Rees-White T & Beaven R. 2018. WR1920 – Trace Gas Dispersal: Final report.
[8] Innocenti F Robinson RA Gardiner TD Tompkins J Smith S Lowry D Fisher R. 2012.WR1125 – Measurement of Methane Emissions and Surface Methane Oxidation at Landfills.
[9] Innocenty F, Robinson RA, Gardiner TD, Tompkins J, Smith S, Lowry D, Fisher R. 2012. WR1906- Supplementary DIAL Survey of Methane Emissions and Surface Methane Oxidation at Landfills.

Work Packages

1. **Work Package 1 (WP1): Design of Sampling Regimes** (addresses objective 1)

   Within this work package, the Contractor should:

   1.1. Consolidate knowledge base

   Provide a concise review of knowledge of options to directly measure landfill methane emissions. This will build upon previous knowledge (rather than repeating this) focusing on recent and state of the art developments within this space (and can include use in other sectors applicable here). The Contractor should address methodological (including statistical), logistical and economic strengths and limitations of distinct approaches ensuring our knowledge base is updated.

   1.2. Design of sampling regimes

   1.2. Design an approach suitable for a robust and cost-effective seasonal study (for 4 consecutive seasons) of landfill methane emissions at operational and recently closed landfill sites. This should include the setup, use and application, and analysis of resulting data sets on methane emissions utilising both a continuous monitoring (using approaches like FEDS [Fugitive Emission Detection System]) and economically viable short term monitoring survey approach (TGD [Tracer Gas Dispersal]).

   It is anticipated that continuous monitoring will provide temporal validation of survey-based approach providing guidance; for example, on numbers of discrete surveys required per annum to calculate an annual emission within a pre-determined variance (this variance will be agreed during the work package), while the short-term survey approach will provide the level of detailed measurement required for reporting. This should include both the methodological approach required practically, and the statistical underpinning to ensure data is robust and viable for operational sites and closed sites.

   1.2. Outline how consideration will be made to: analysis of climatic and operational influencing factors on methane emissions within the context of understanding observed variability (and the analyses required to understand this); potential relationships between measured methane emissions and methane collected (data provided by operator/regulator) and how this might be utilised; and for example, whether methane oxidation should be considered in the study as a factor influencing emission variability[10]. Noting that contractors may identify other influencing factors.

   1.2. Consider the alignment of this project with existing thinking specifically (but not restricted to) inverse dispersion modelling, or methane balance approaches. With respect to inverse dispersion modelling and methane balance approaches members of the steering committee will provide link up with ongoing or recently completed projects and findings.

   1.2. Provide an anticipated trajectory of travel for this work moving towards standard method development - identifying challenges in doing this - and identification of any

[10] Bakkaloglu S. Lowry D. Fischer R.E. France J.L. Nisbet E.G. 2021. Carbon isotopic characterisation and oxidation of UK landfill methane emissions by atmospheric measurement. Waste management, 132, 162-175

experimental work (in addition to the following seasonal study) required to address barriers.

1.2. Liaise with Ricardo Energy and Environment, who maintain the UK National Atmospheric Emission Inventory (NAEI), about the suitability of protocols to meet National Inventory requirements. Estimates will be used to refine the National Inventory contribution of landfill methane emissions, so it is important that the methods are suitable for use within the National Inventory.

1.2. Work with the EA to identify a short list of specific operational and closed sites for implementation of the study and identify the specific needs of these sites. The EA will provide a list of potential sites for WP2 to support this requirement.

WP1 Dependencies

Before proceeding to WP2, Defra requires steering group sign-off of the proposed methodology and statistical aspects.

WP1 Deliverables

- Review of existing evidence (with focus on state of the art).
- Proposed plan of work, including statistical underpinning and methodology. This deliverable requires sign-off from a Defra led steering group.
- Implementation plan (adjusted to sites selected).
- Trajectory of travel towards standard method development.

2. **Work Package 2 (WP2): Implementation of Seasonal Study** (addresses objectives 2, 3 & 4)

Within this work package, the Contractor should:

2.1. Implementation

Implement the agreed methodological approach from WP1at the agreed sites (2-4 sites depending on alignment of budget with seasonal requirement) for a minimum of four seasons. Setting up analysis of methane emissions using continuous monitoring (e.g., FEDS) and economically viable short term monitoring survey approach (e.g., TGD) at an operational and recently closed site.

2.2. Initial set up and confirmation of viability

2.2 Initially confirm the operation and viability of the continuous monitoring process, and the short-term monitoring survey approach individually.

2.2 Initially confirm the operation and viability of the continuous monitoring process, and the short-term monitoring survey approach individually.

2.2 Conduct preliminary tests of the role of climatic and operational influencing factors on methane emissions within the context of understanding observed variability (and the analyses required to understand this), and potential relationships between measured methane emissions and methane collected (i.e., methane balance approach; data provided by operator/regulator).

2.2 Carry out preliminary assessment of the potential viability of using the continuous monitoring process to define numbers of discreet surveys required to provide representative survey-based coverage to calculate an annual emission (within a within a pre-determined variance).

2.2 Bring information together from 2.1 and 2.2 in your analyses, trial statistical approaches you intend on using in 2.3. and highlight any practical or data analysis refinements necessary prior to the seasonal study.

2.3. Seasonal Study

2.3 Implement the agreed methodological approach from WP 2.1 and 2.2 at the agreed sites for a minimum of four seasons. This will involve long term data collection and analysis of methane emissions using continuous monitoring and planned regular implementation of an economically viable short term monitoring survey approach(s) at an operational and a recently closed site (minimum of 1 of each, maximum of 2 of each), and delivering detailed measurements, statistical analyses, and interpretation on a quarterly basis.

This will demonstrate the robustness of the chosen method(s) in quantification of methane emissions (suitable for National Inventory reporting purposes and for use operationally), will build a data set which can be used to outline how many surveys will be needed per annum to provide an annual estimate of emissions (and the conditions/boundaries of conditions applicable for survey's to be taken). The output methodologies and analysis and will be presented as a draft Standard Operating Procedure for methane sampling and analysis that can be used at operational, and at recently closed landfill sites for non-hazardous biodegradable waste.

2.3 Carry out a seasonal assessment of the viability of using the continuous monitoring process to define numbers of discrete surveys (and potentially inverse dispersion modelling) required to provide representative survey-based coverage to calculate an annual emission (within a within a pre-determined variance).

2.3 Collect data on climatic and operational influencing factors on methane emissions across the seasonal study (carrying out multivariant analyses to uncover relationships) and define the implications for the robustness of annual estimates.

2.3 Analyse potential relationships between measured methane emissions and methane collected (i.e., methane balance approach) of data provided by the operator/regulator.

2.3 Report data quarterly with associated statistical analysis of findings and explanation of findings. Amalgamating data in a single workbook (at each reporting) with statistical analyses.

2.3 Produce a final report bringing together deliverables from WP1 and 2 and providing critical analysis of the developed approach, of the robustness of the data itself, and of its suitability for national inventory purposes, and operational/regulatory purposes. This must include:

- An overall statistical analysis of the measurement data to test the impact of individual and combinations of factors of observed variability.
- Implications for the validity of the results of future surveys under particular sets of conditions (it is recommended that this will be utilising a form of multivariate analysis).
- Identify if specific conditions need to be outlined for surveys to be representative.

WP2 Deliverables

- At the end of WP2.2. deliver preliminary findings in report form, present to steering group, and apply these (with Defra agreement) to ongoing seasonal work plan.
- Quarterly data set, including statistical analysis and associated findings.
- Draft report of findings with critical analysis.
- Final report of findings with critical analysis.
- Draft Standard Operating Procedures for sampling and analysis.
- Final Standard Operating Procedure for sampling and analysis
- Final report.

3. Work Package 3 (WP3): Project Governance and Management

3.1. The Contractor will be responsible for directing and managing the work packages and the project, ensuring communication and knowledge-sharing occurs across them.

The Contractor should:

- Put forward an experienced project manager to manage the research proposed. This person should be the main point of contact with the Defra project manager.
- Attend an inception meeting in the first week of the project to agree the detail of the project approach, method, and ways of working, and to meet key members of the Contractor's team and Defra steering group (consisting of the Defra project manager, evidence, and policy team members).
- Provide weekly email updates to the Defra project manager on progress.
- Arrange and attend monthly project management meetings between the Contractor and Defra's project manager to discuss the previous and the plans for the next month and update on the budget and risk register.
- Attend ad hoc, responsive meetings as issues arise and need to be dealt with, these may be called by either Defra or the Contractor.
- For draft documents to be provided at the stages agreed at inception with variance from this agreed in advance by Defra and the Contractor.
- If sub-contraction is used, to share clear management and quality assurance processes with Defra.

WP3 Deliverables

- Inception meeting.

- Proposed plan of work for WP1-2 (including methodology).
- Weekly email updates.
- Monthly project management meetings.
- Implementation plan (including quality control, risks, allocation of time, ways of working).
- Ad hoc responsive meeting.

Additional Work Packages

If during the lifetime of the contract it is identified that additional National Inventory specific work packages are required and they are within scope of the original requirement, this may be instructed through the variation procedure outlined in the contract.

Project Deliverables

Section 3 outlines project deliverables noting that this work will start in January 2023 and end in June 2024. Note that dates for each deliverable and milestone (as suggested by the Contractor and signed off by Defra) will be confirmed at inception. Some deliverables and work packages may be worked on in parallel rather than sequentially. At each stage where a deliverable is made there will be need for drafting, review, feedback/and sign off from Defra project manager (who will manage input from steering group where necessary) followed by final drafting.

2. Required skills / experience from the contractor and staff. Include any essential qualifications or accreditations required to undertake the work.

- Project management
  - There should be an experienced project manager put in place who has recent experience of delivering scientific projects to time and budget (and relevant project management qualifications e.g., through Chartered Management institute).
- Scientific
  - Scientists should have appropriate doctoral and post-doctoral research expertise to carry out the programme of work.
- Practical experience of implementing survey and continuous monitoring for methane emissions on landfill (or similar) sites.
- Experience of monitoring survey design, and continuous monitoring design, data analysis techniques and statistics (this can be in excel or using programming languages such as Python or R).
- Expertise in designing standards e.g., national, and international.
- Understanding of the UK National Atmospheric Emission Inventory.
- Written communication and presentation skills.
- Knowledge of the emission characteristics of landfill.

3. Proposed program of work and payment table. The proposed payment schedule should be completed by the Tenderer and submitted with their proposal.

Deliverables	Completion date	Payment schedule
WP1 - Review of existing evidence (with focus on state of the art)	March 2023 – January 2025 (22-months) Relative to our budget allocation, we require any capital spend to be made at the inception of the project. Specifically, on or before 31 March 2023.	See below
WP1 - Proposed plan of work (including methodology, statistical underpinning, and addressing each objective, deliverable and overall allocation of resource, governance) ** Note that this is both present in WP1 and in WP3 as a combined deliverable		
WP1 - Identification of potential sites from EA list with rational and adjustments to methodology		
WP1 - Implementation plan (adjusted to sites selected)		
WP1- Trajectory of travel towards standard method development (with anticipated milestones)		
WP2 – At the end of WP2.2. deliver preliminary findings in report form, present to steering group, and apply these (with Defra agreement) to ongoing seasonal work plan		
WP2 - Quarterly data sets, including statistical analysis and explanation of findings		

WP2 - Draft report of findings with critical analysis		
WP2 – Final report of findings with critical analysis		
WP2 – Draft Standard Operating Procedures for sampling and analysis		
WP2 – Final Standard Operating Procedure for sampling and analysis		
WP2 - Final report (including the findings and critical analysis, final standard operating procedure, gap analysis and recommended next steps (relative to the research, applicability to the national inventory, and future regulation)		
WP2 – Final presentation – to Defra steering group (and wider members of Defra as requested – but limited to a maximum of 2 presentations in total)		
WP3 – Inception meeting – set up by successful bid project manager		
WP3 - Proposed plan of work for WP1-2 (including methodology, statistical underpinning, and addressing each objective, deliverable, and overall allocation of resource, governance) ** Note that this is both present in WP1 and in WP3 as a combined deliverable		
WP3 – Weekly email updates on progress from bid project manager to Defra steering group and Defra project manager		
WP3 – Monthly project management meetings		
WP3 – Implementation plan (including quality control, risks, allocation of time, ways of working)		
WP3 – Ad hoc responsive meetings and site visits (agreed between Defra and successful bidder)		

We would like for interested contractors to propose their own milestone breakdown in line with budget requirements.

4. Risk

Note: *This section is to be used to detail any risks or key elements relevant to the project i.e., Programme deliverable dates, workshops or external requirements, data, consultees, stakeholders etc that could impact the success of the project if they are not managed.*

Defra will feed data we have from initial quarterly reports to the October 2023 NI programme. It could be that there is not enough data to make a compelling argument at this point, or that research we find out in the process is not suitable.

Access to sites (what if the sites suddenly become not accessible). We have addressed these risks by having good relationships with EA who in turn will negotiate ongoing site access (as they have in previous projects).

2.0 Proposal

2.1 The following document is to be used as a Call-Off template to be sent to all Contractors on a sub-lot for completion and return in accordance with the Call-Off procedures detailed in the Form of Agreement.

Research, Development and Evidence Framework 2 **PROPOSAL**
To be completed by the Contractor
Contractor's Name: NPL Management Ltd **Call off Reference:** [redacted] **Sub-Lot Number: 3.1** **Date: 24 January 2023**
Note: Do not make or append Caveats and Assumptions in your proposal – any points of uncertainty must be raised as a clarification point prior to submitting the proposal. Where assumptions are to be made, these will be stated by the Authority's Project Manager.
E01 - Health and Safety
Please upload your Health & Safety policy with the file name "E01 _H&S Policy_Your Company Name", your site-specific risk assessment with the file name "E01_SSRA_Your Company Name", and your detailed explanation with the file name "E01_H&S detail_Your Company Name"

Copy of Organisations Health and Safety policy/statement + A detailed explanation + Site Specific Risk Assessment (max. 2 pages A4, Font 12)
E02 - Sustainability Policy
Please upload your Sustainability policy with the file name “E02_ Sustainability Policy_Your Company Name” and your project-specific plan with the file name “E02_Sustainability Plan_Your Company Name” Copy of organisation’s sustainability policy + Project-specific sustainability plan (max. 2 pages A4, Font 12)
E03 - Understanding of the project need and context
Please upload your response “E03_Your Company Name”. Max. 1-page A4, Font 12
E04 - Approach and Methodology
Please upload your response “E04_Your Company Name”. Max. 5 pages A4, Font 12
E05 - Skills, experience, and adequacy of technical staff resources
Please upload a document with the filename “E05_Project Examples_Your Company Name”. Max. 4 pages A4, Font 12 + CV’s (1 A4 page each) + project examples
E06 - Project Management
Please upload your response “E06_Your Company Name” plus additional “E06_Your Company Name_Risk register” and “E06_Your Company Name_Gantt chart” Max. 2-page A4, Font 12 + Gantt Chart + Risk Register
E07 – Social Value

Please upload a document with the filename "E07_Your Company Name".

Max. 2 pages A4, Font 12

7. Cost Proposal
Please use day rates, including any applicable discounts, as agreed under the framework contract. A full cost schedule may be attached to support the costs summarised below.

Task No.	Name	Framework grade	Day rate	No. of Days or part thereof	Cost
				Total Staff Costs	
Expenses (please detail type i.e., travel, accommodation etc.)					
				Overall Costs	

By signing this form *National Physical Laboratory Limited* agree to provide the services stated cost set out in your Cost Proposal and in accordance with the Research, Development & Evidence Framework 1Conditions of Contract.

Contractor Project Manager:	
Signature:	
Date:	

3.0 Order Form

3.1 The following document is to be completed by the Contracting Authority and sent to the Contractor for counter signature to form a Call-Off contract.

Research, Development and Evidence Framework 2 **ORDER FORM**
To be completed by Contracting Authority Project Manager and sent to Contractor for countersignature

Project title: Direct Measurement of Landfill Methane Emissions

Call off Reference: [redacted]

Atamis Contract Reference: [redacted]

Date: 14 March 2023

THE Contracting Authority:	The Department for Environment Food and Rural Affairs (Defra), Nobel House, 17 Smith Square, London, SW1P 3HX.
THE CONTRACTOR:	National Physical Laboratory, Hampton Road, Teddington, Middlesex TW11 0LW.

APPLICABLE FRAMEWORK CONTRACT

This Order Form is for the provision of the Call-Off Deliverables and dated 14/03/2023. It's issued under the Research Development & Evidence Framework Agreement reference 30210 for the provision of Direct Measurement of Landfill Methane Emissions.

CALL-OFF SUB-LOT: 3.1

CALL-OFF INCORPORATED TERMS The following documents are incorporated into this Call-Off Contract. Where numbers are missing we are not using those schedules. If the documents conflict, the following order of precedence applies:

1. Defra Framework Terms and Conditions;
2. Request for Proposal;
3. Proposal;

No other Supplier terms are part of the Call-Off Contract. That includes any terms written on the back of, added to this Order Form, or presented at the time of delivery.

CALL-OFF START DATE: 20 March 2023

CALL-OFF EXPIRY DATE: 31 January 2025

CALL-OFF INITIAL PERIOD: 22-months

Signature on behalf of the Contractor:

[redacted]

Signature on behalf of the Authority:

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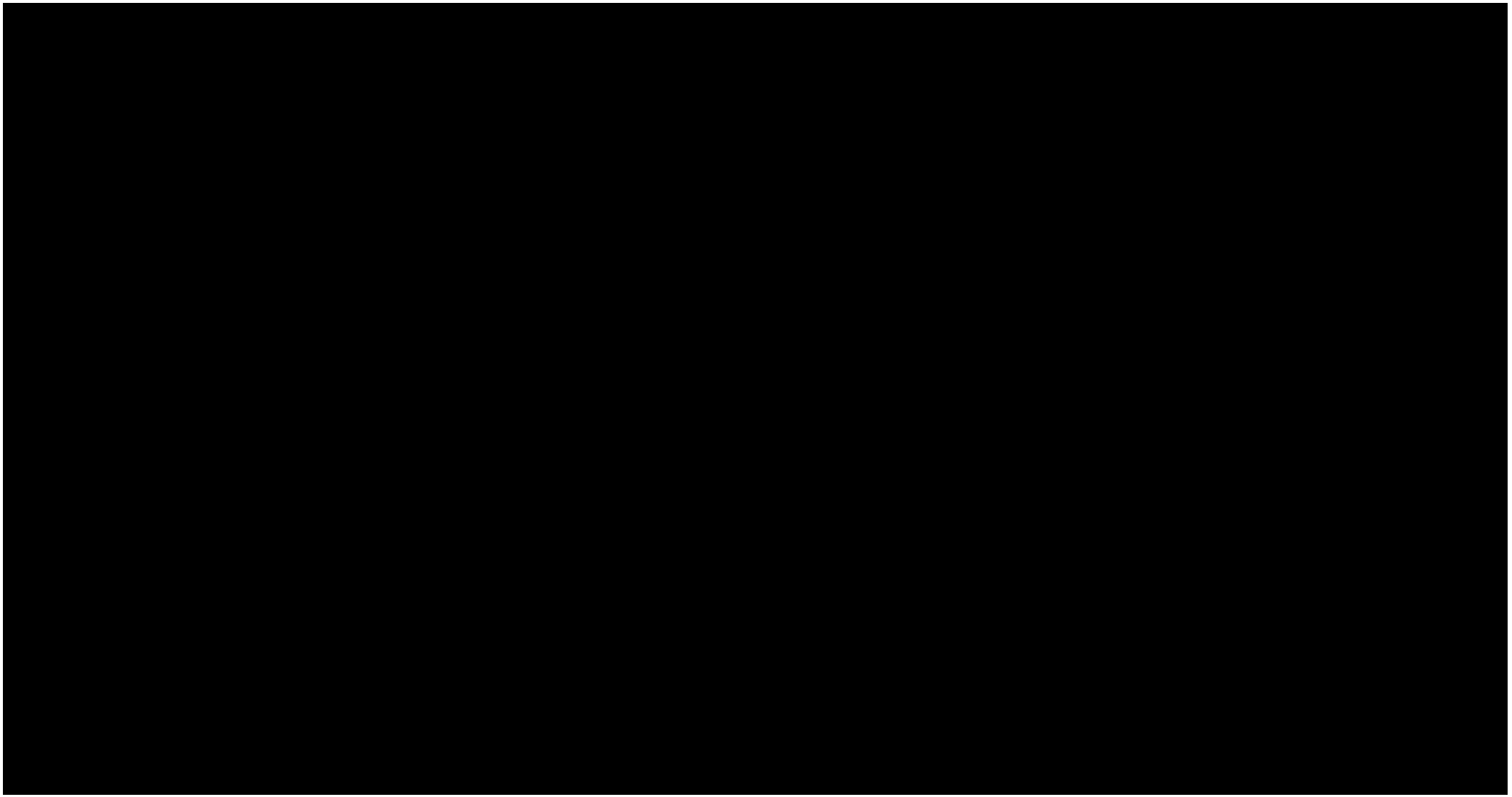

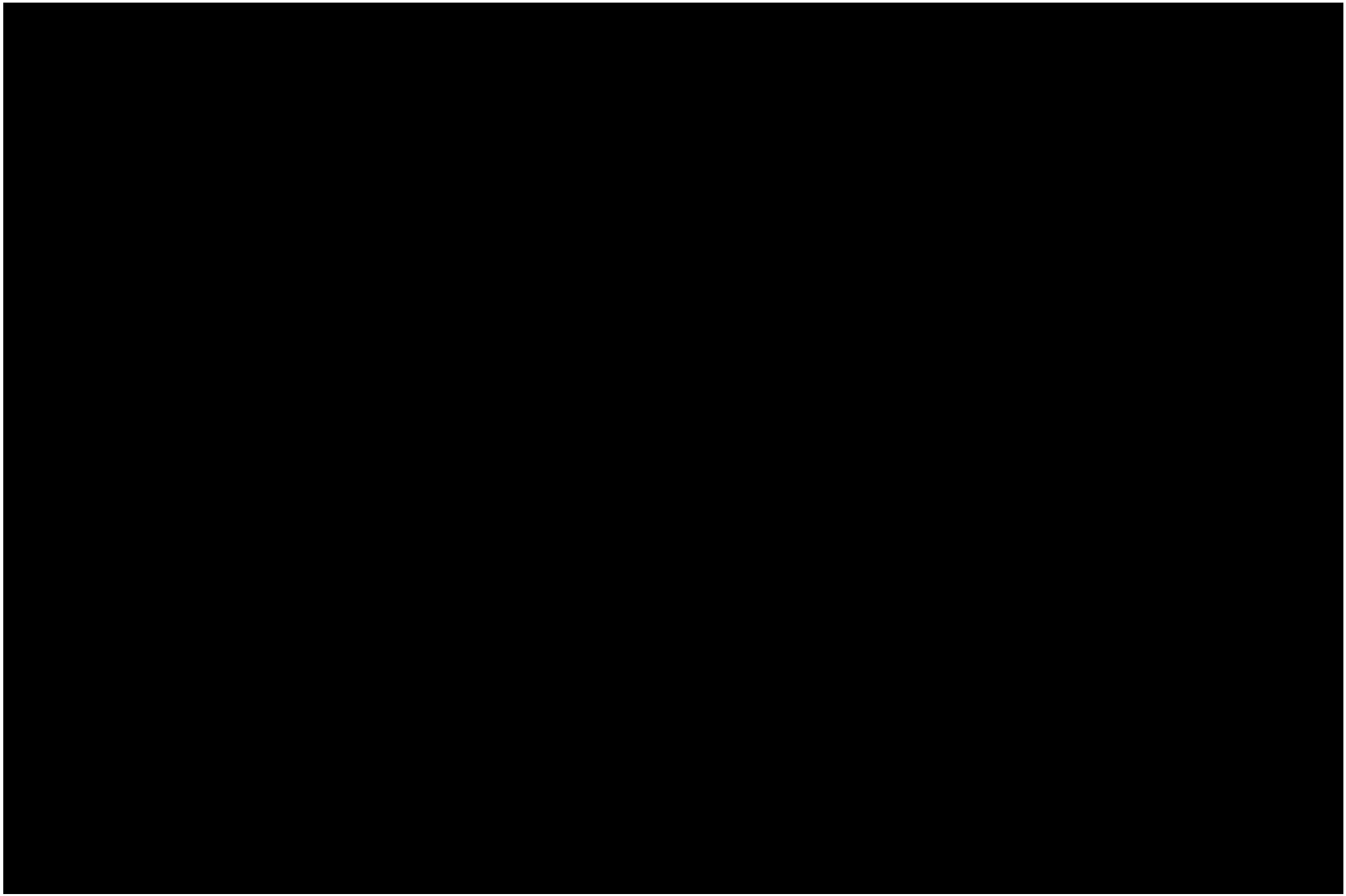

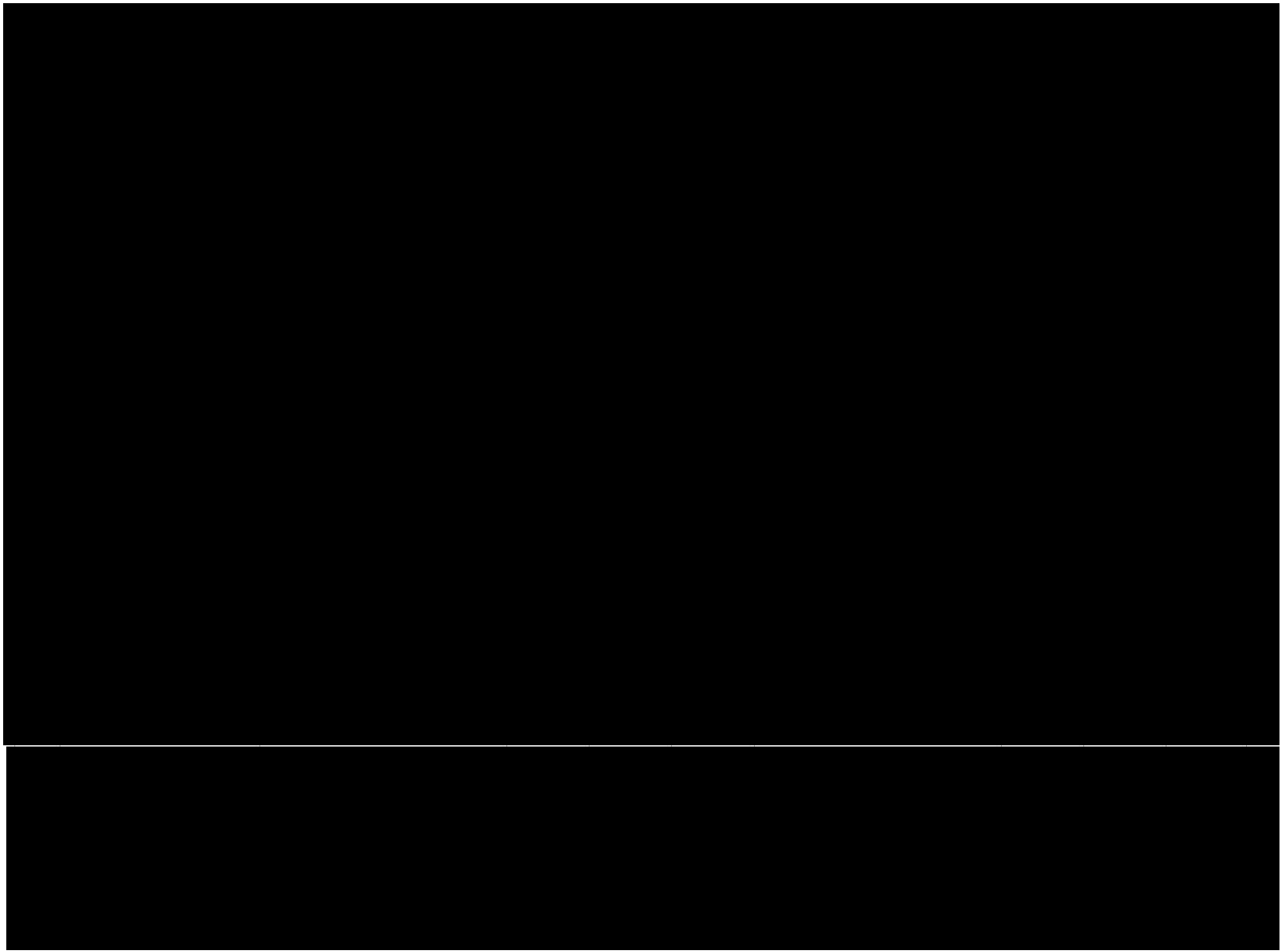

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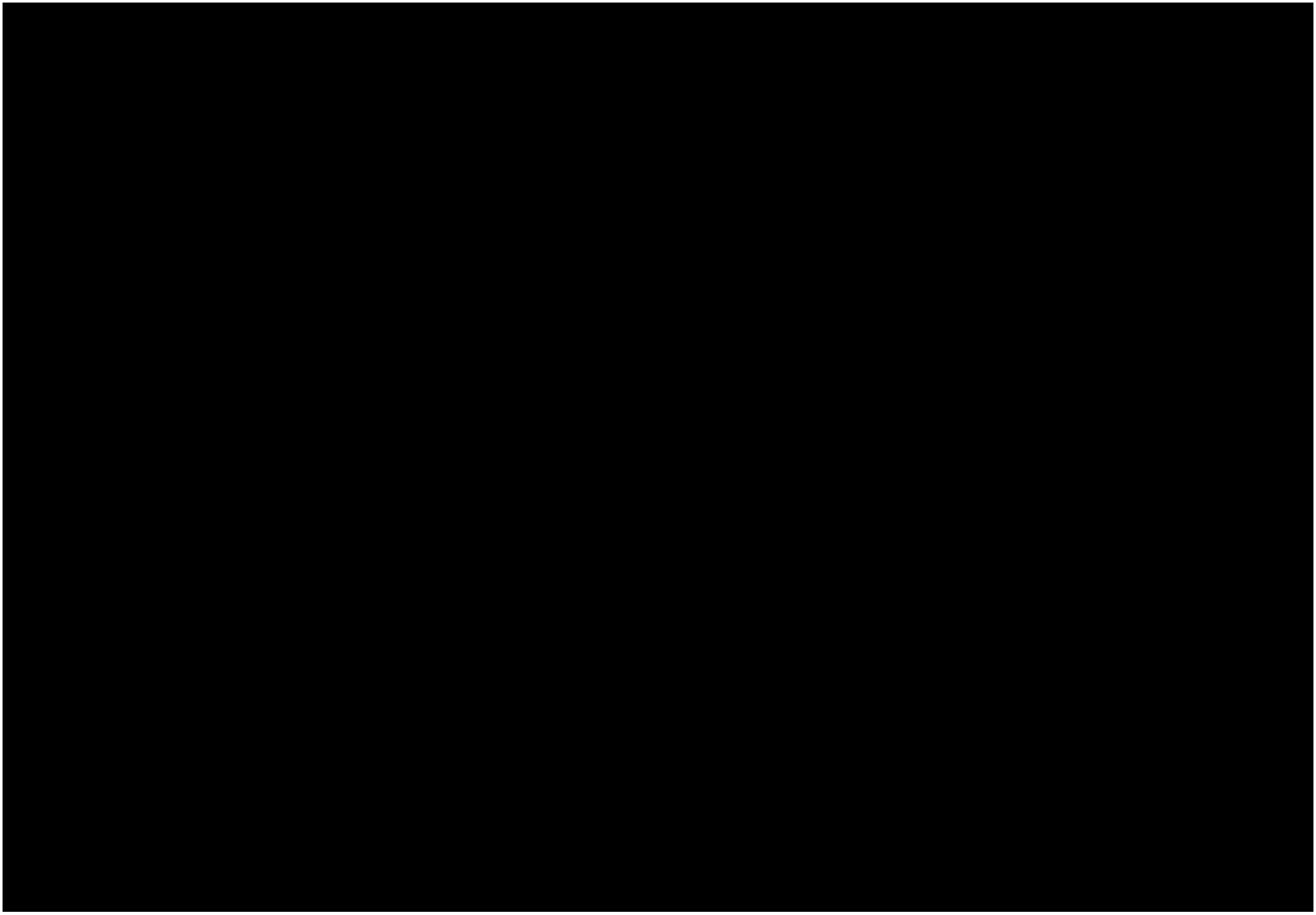

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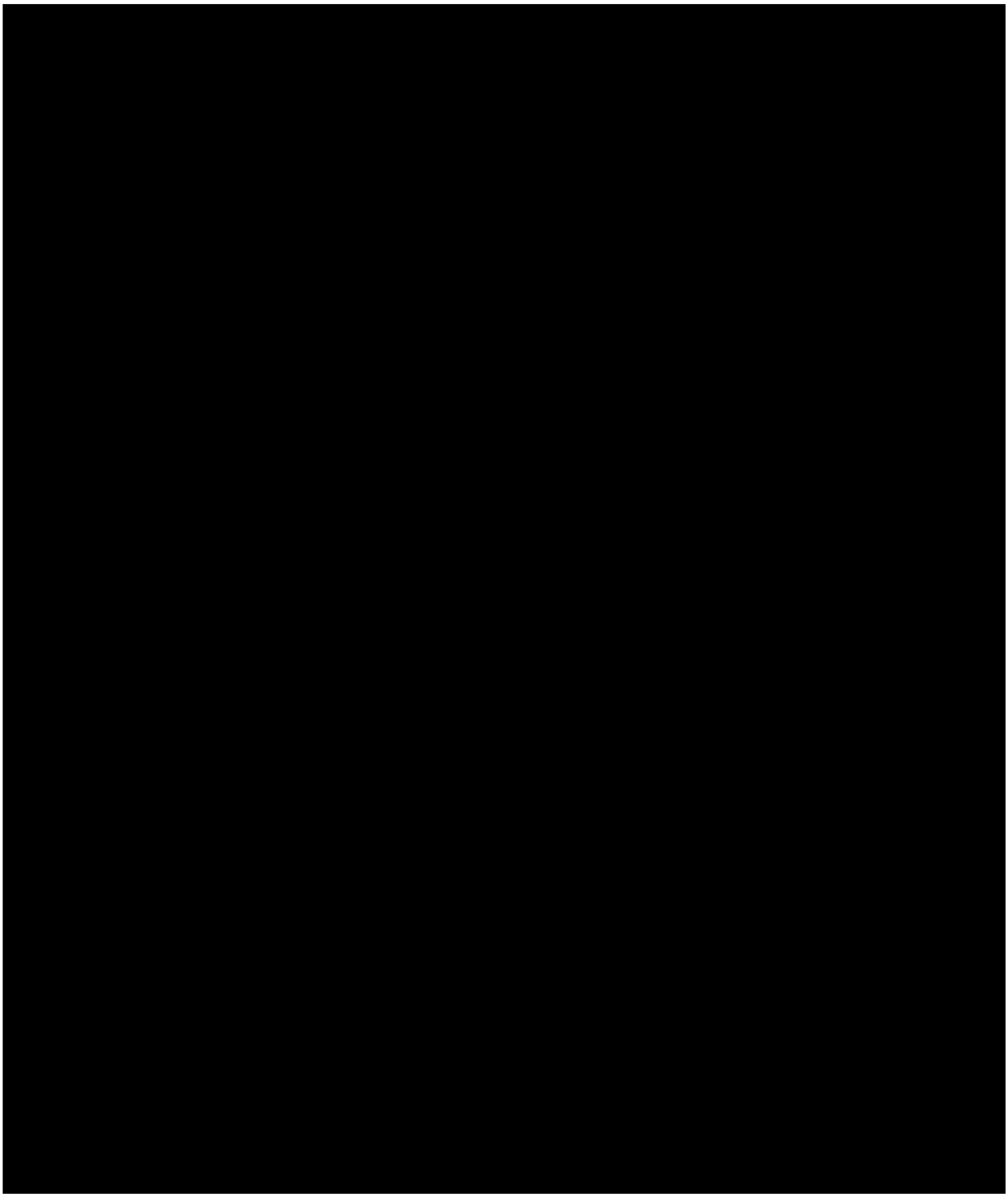

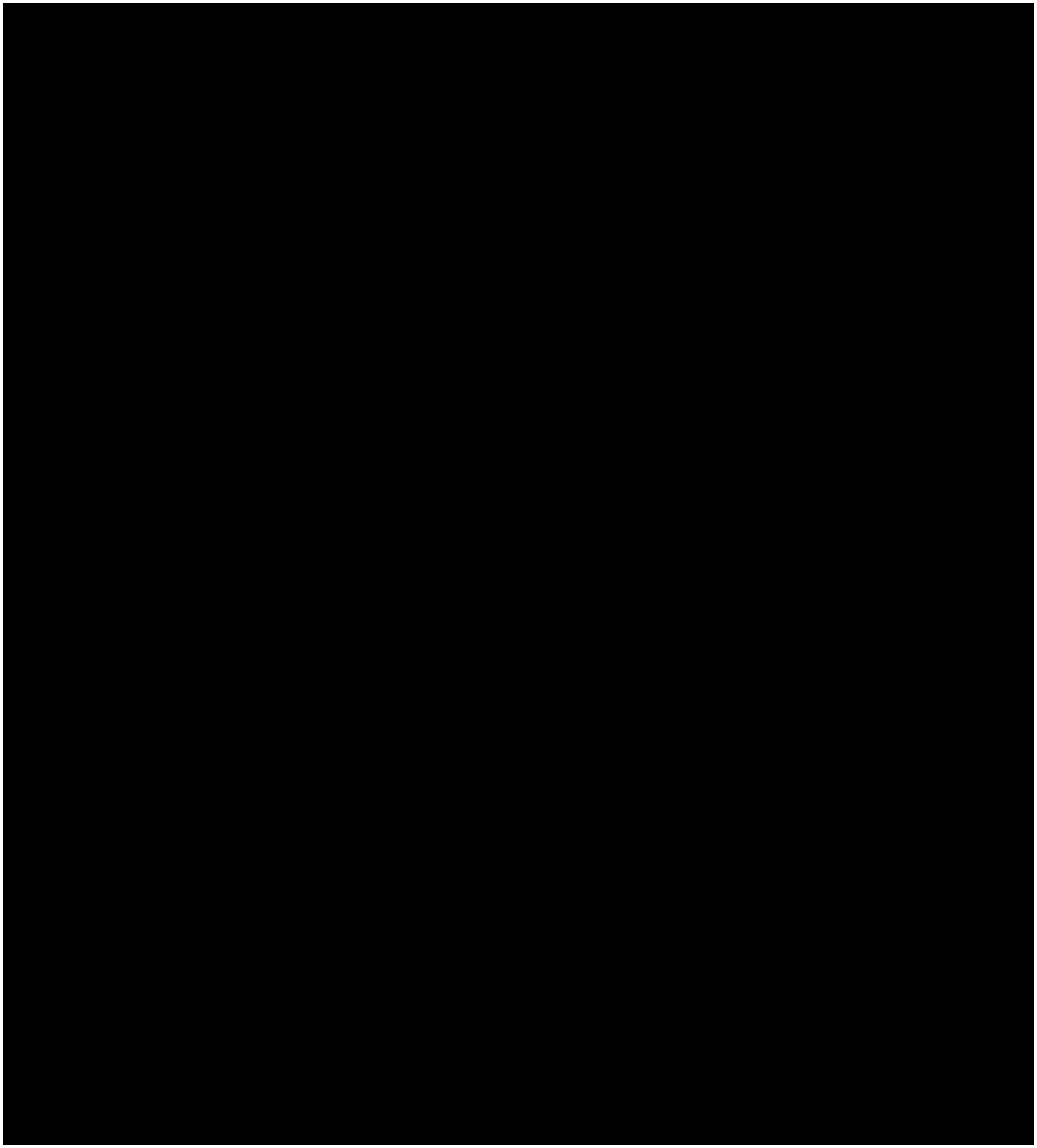

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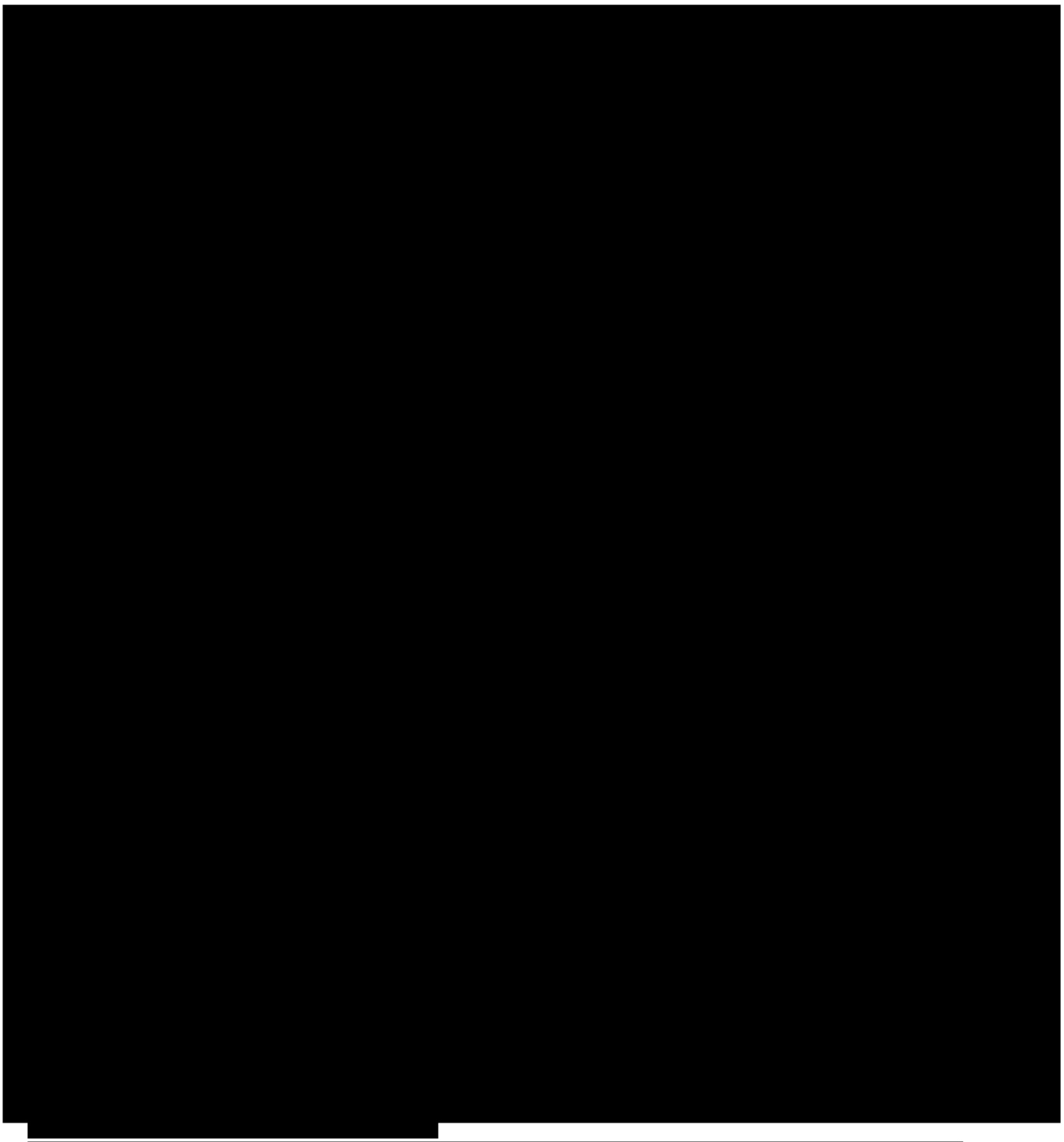

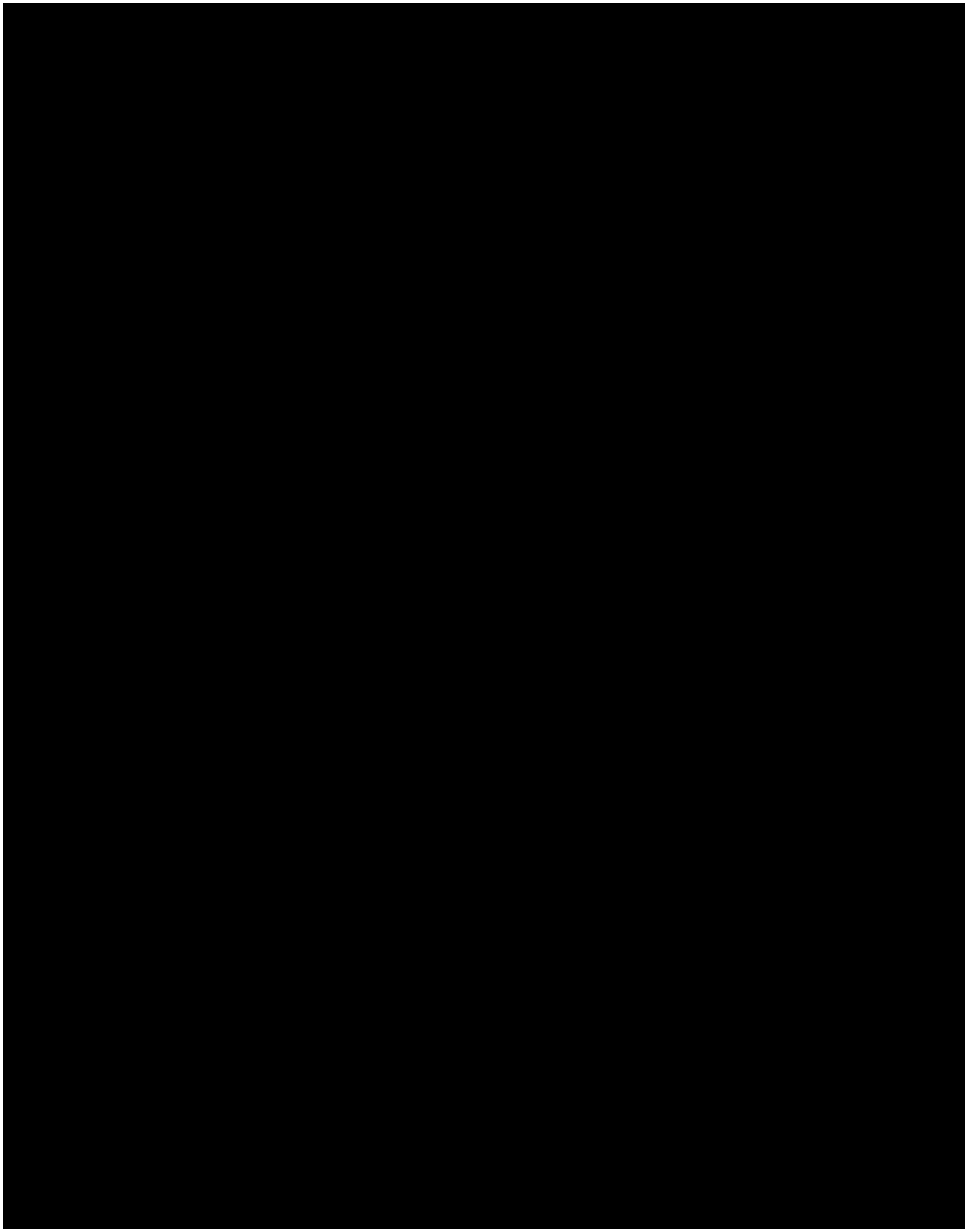

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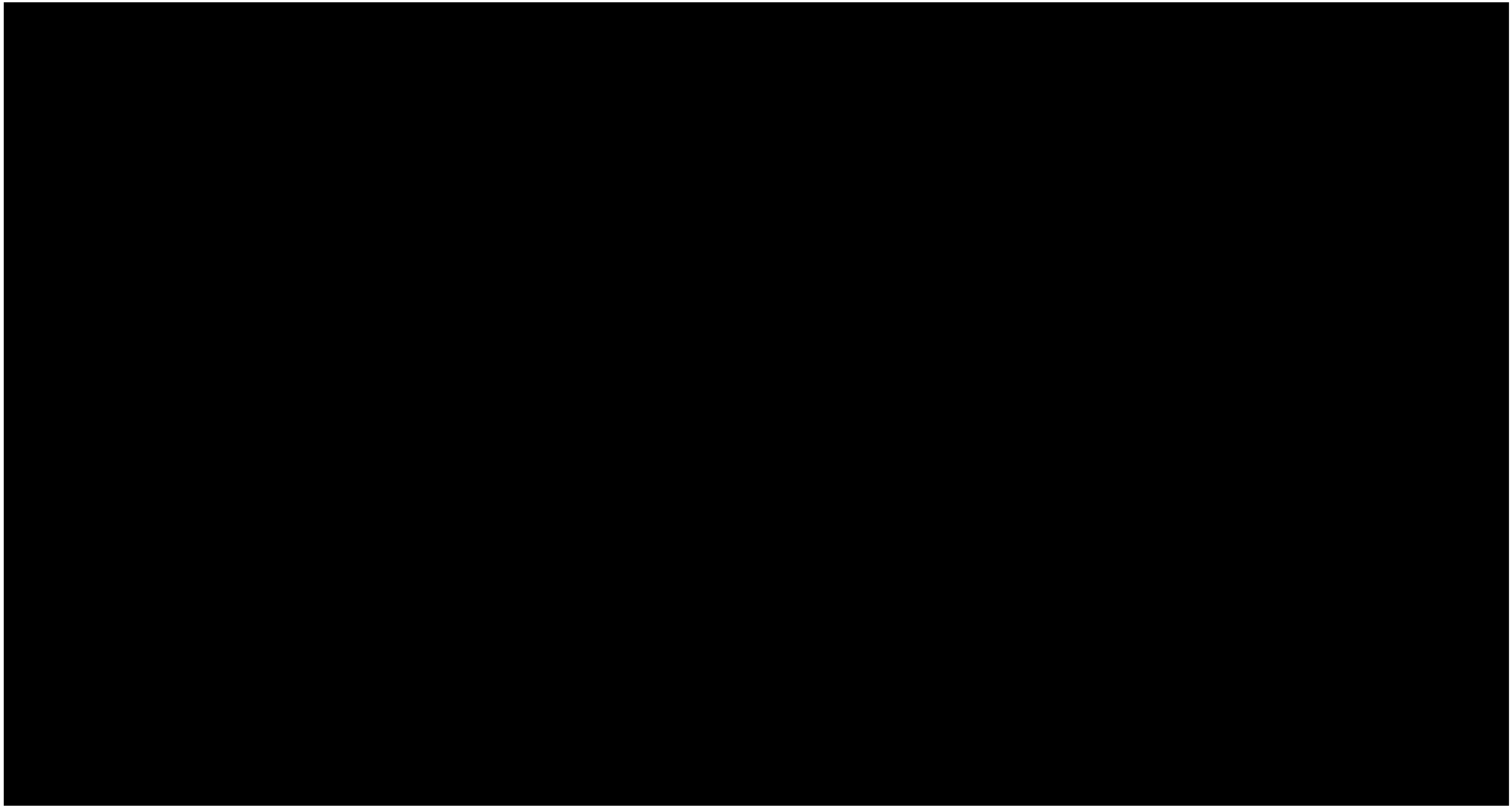

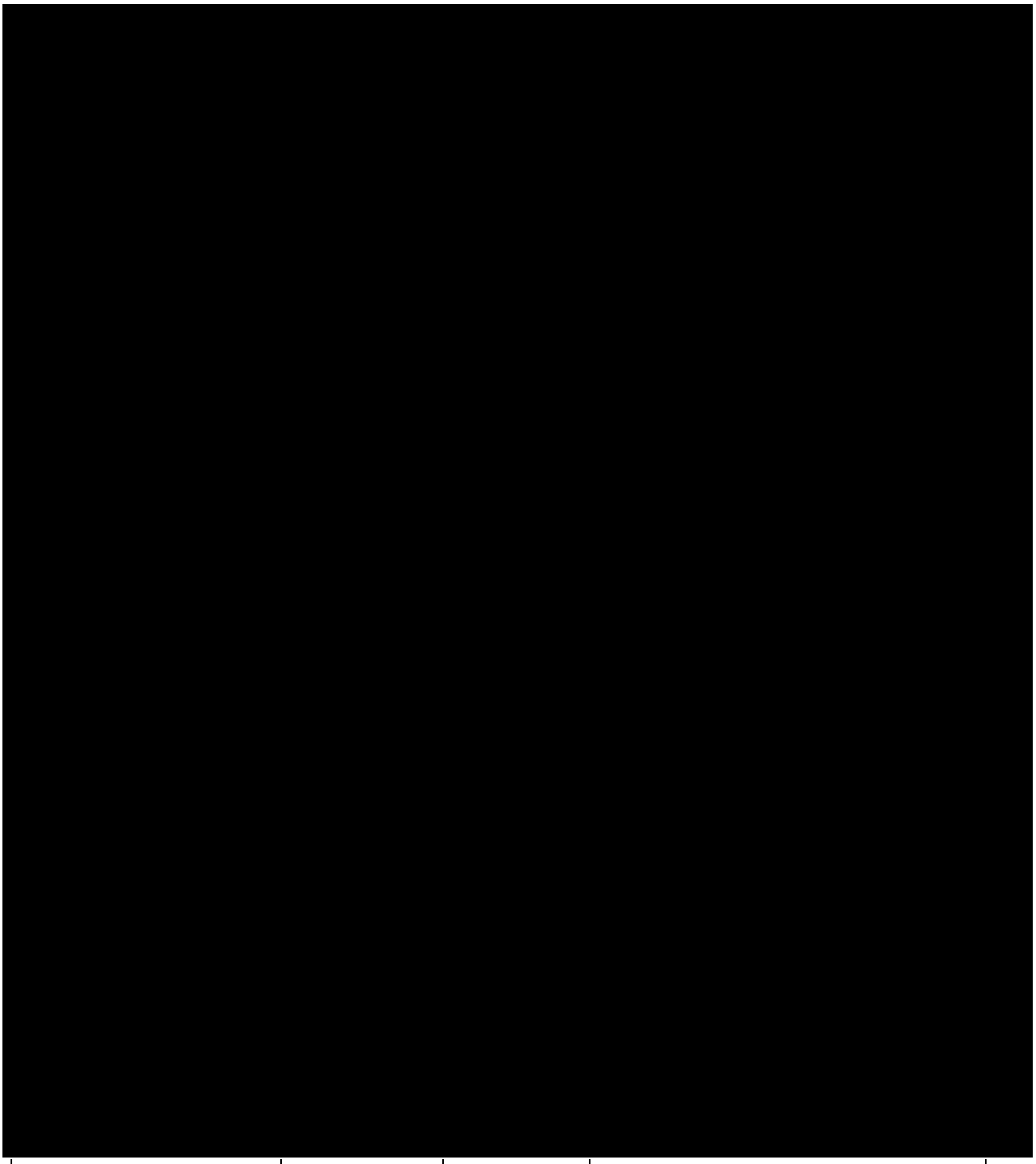

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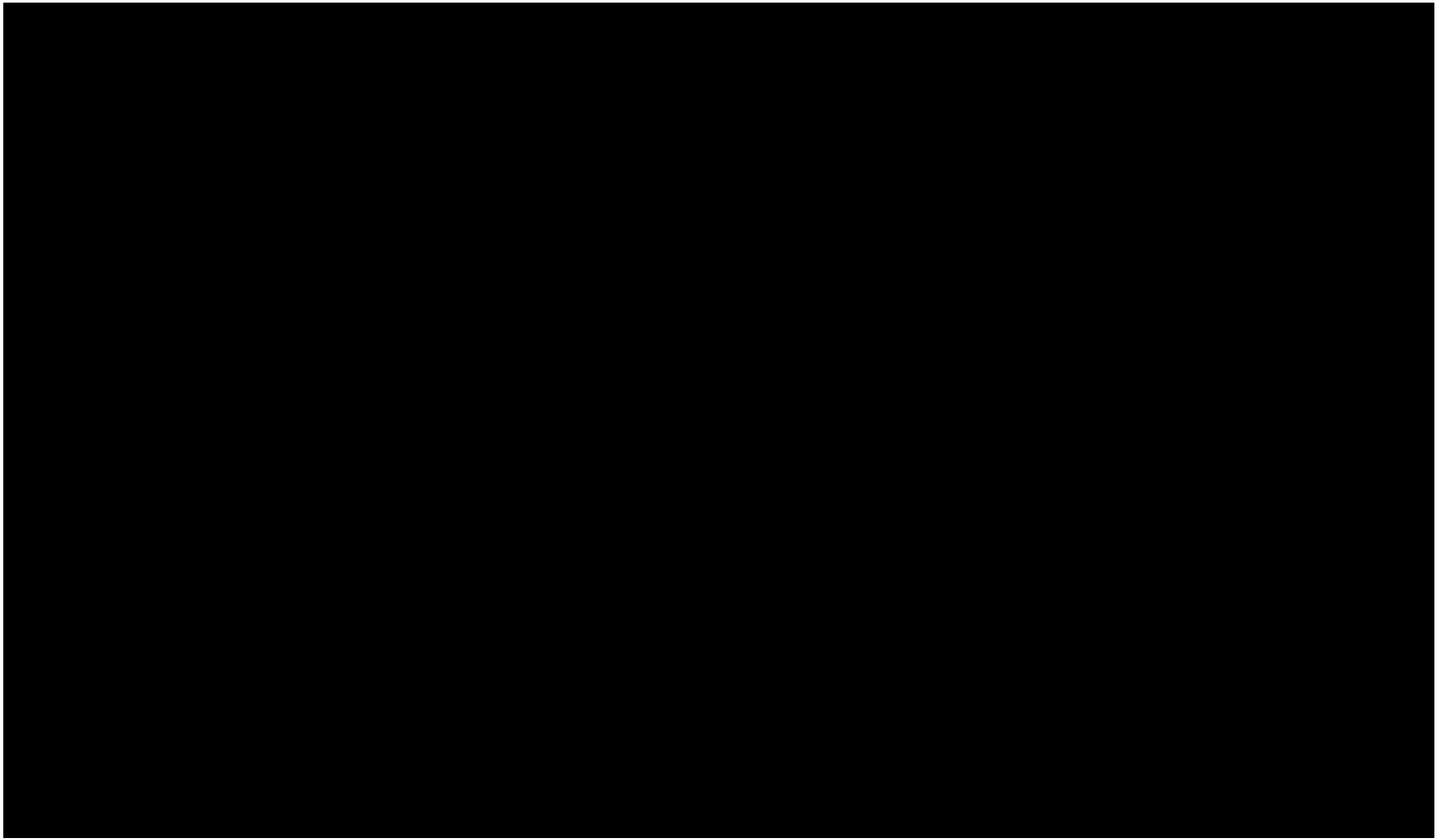

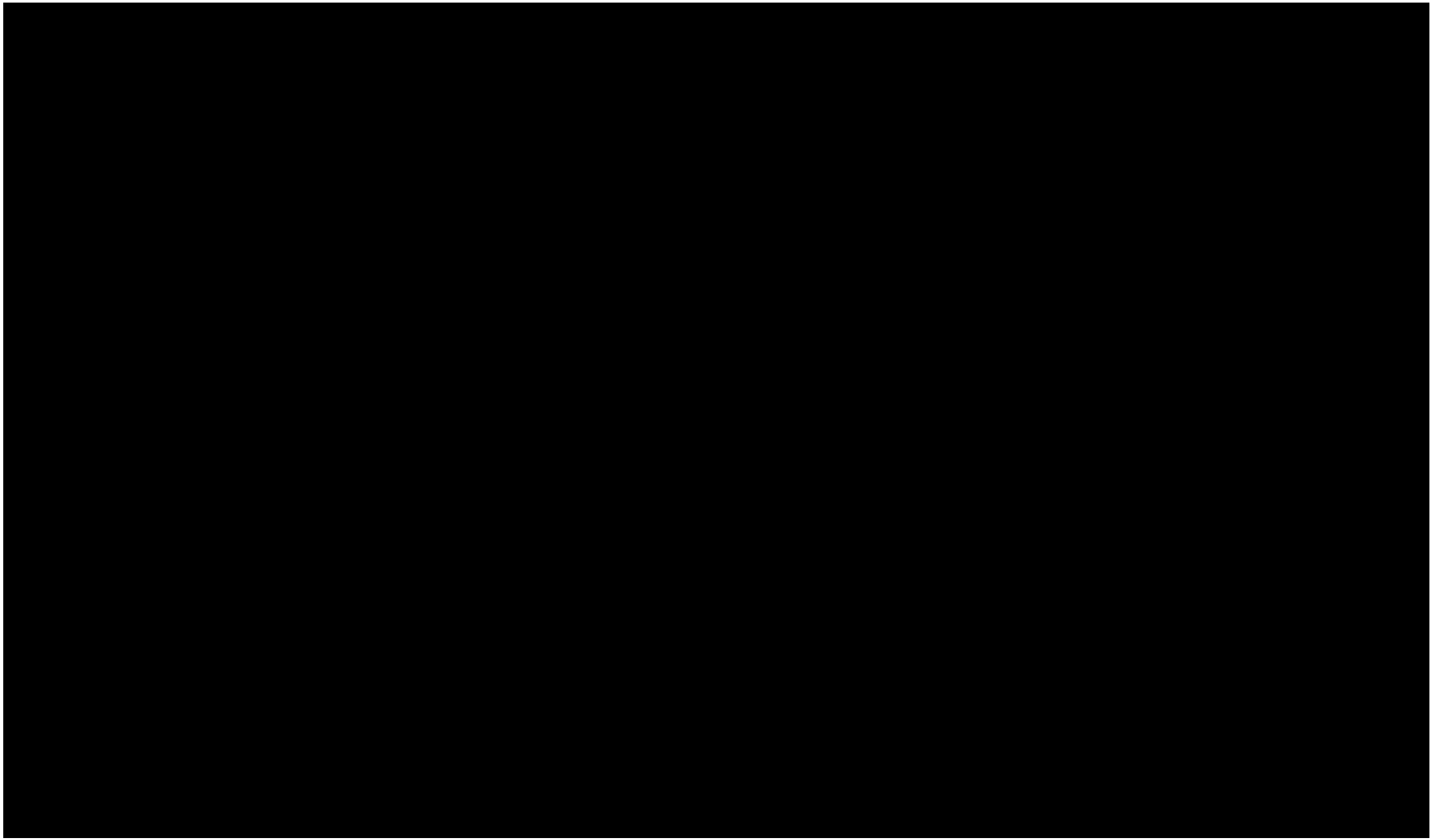

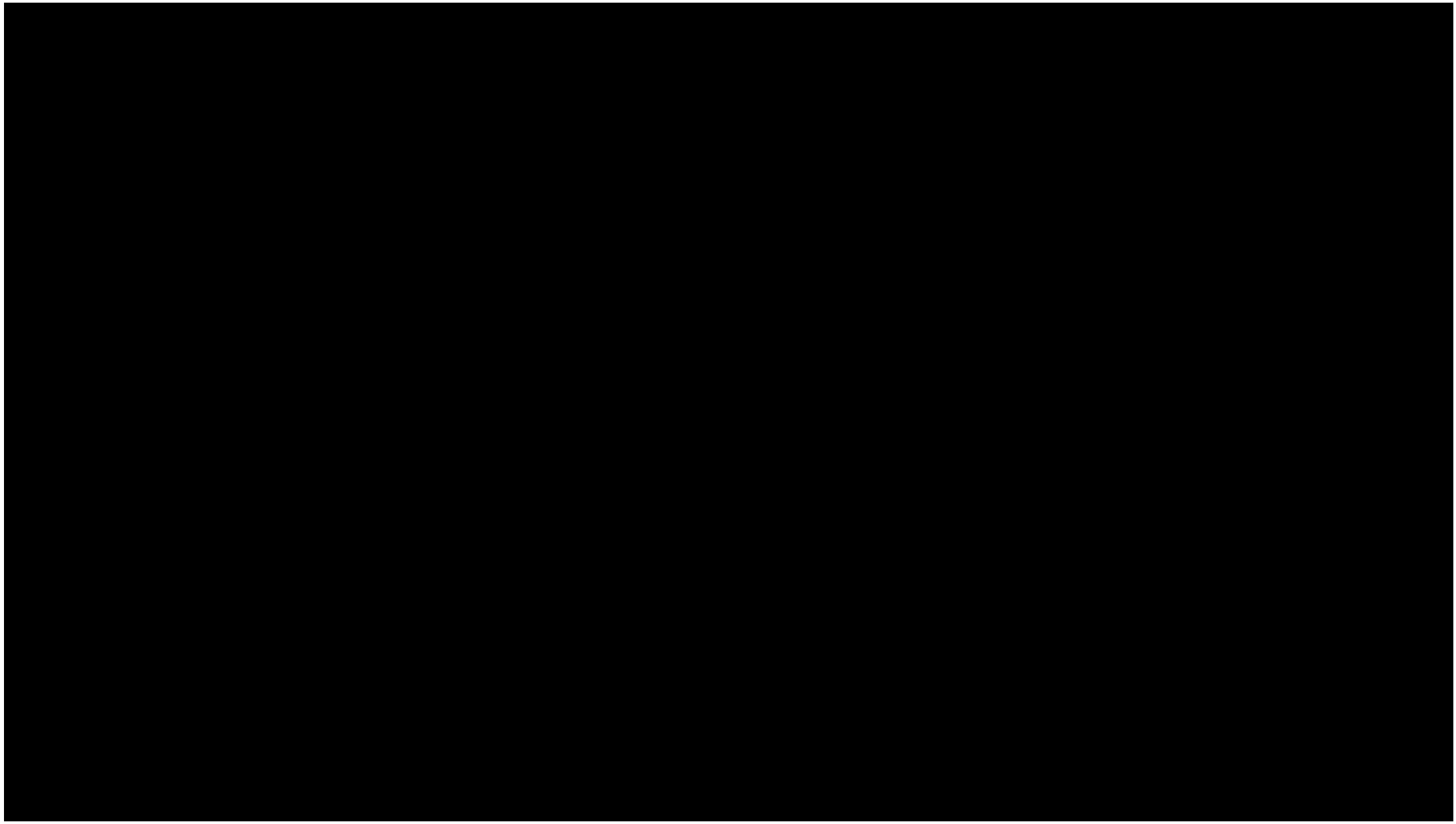

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