11 Fisheries Protection Plan

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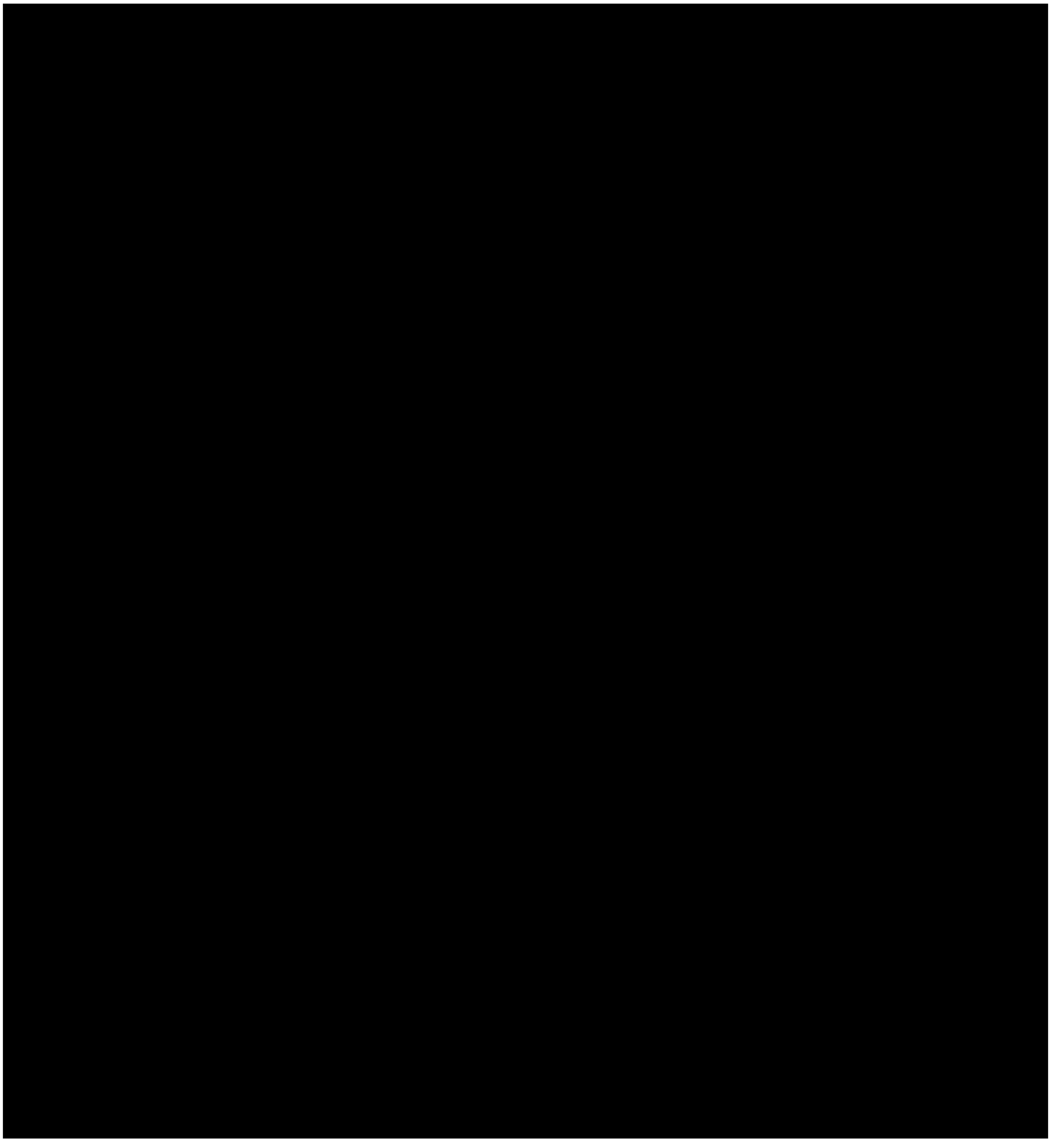
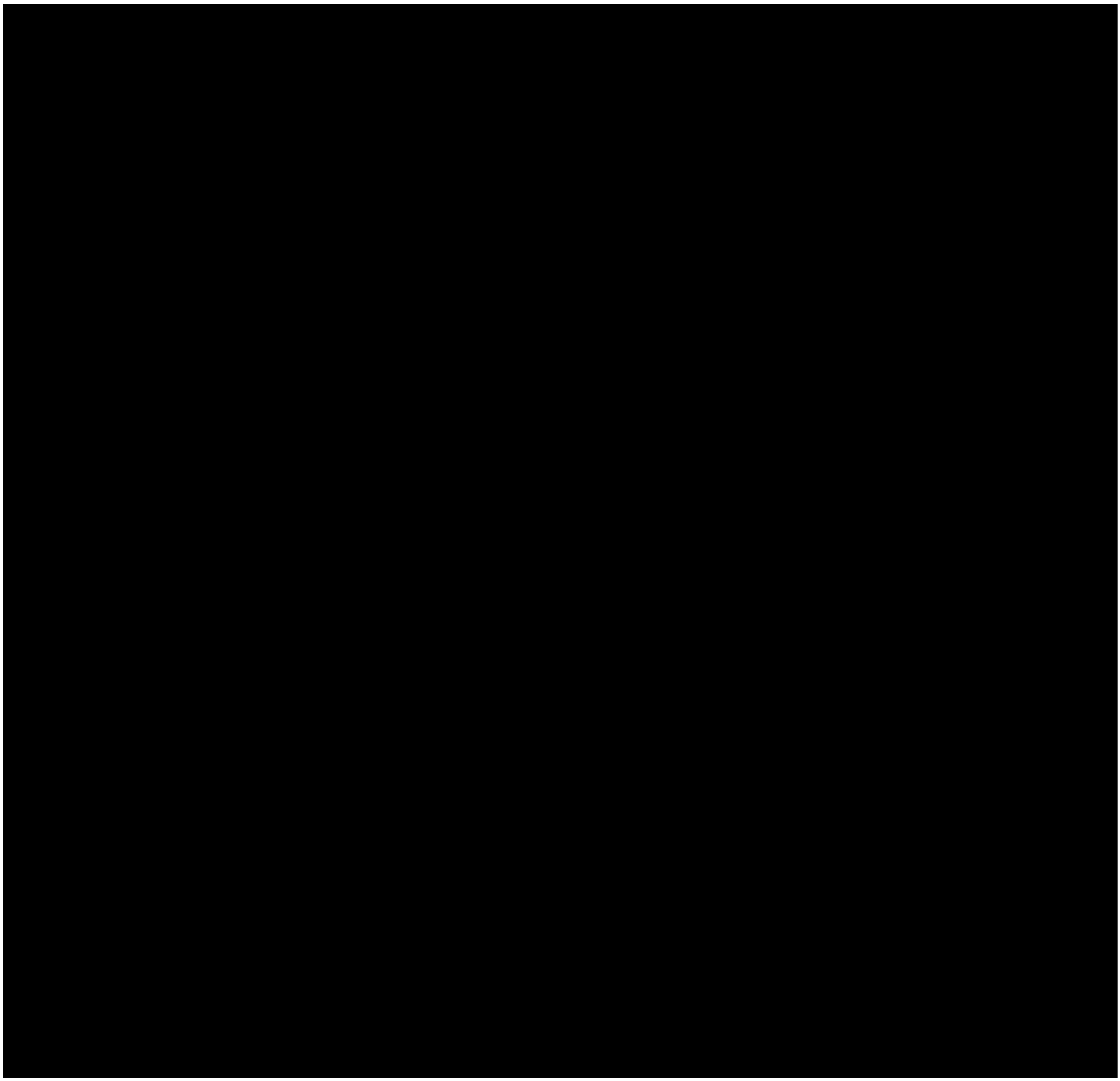
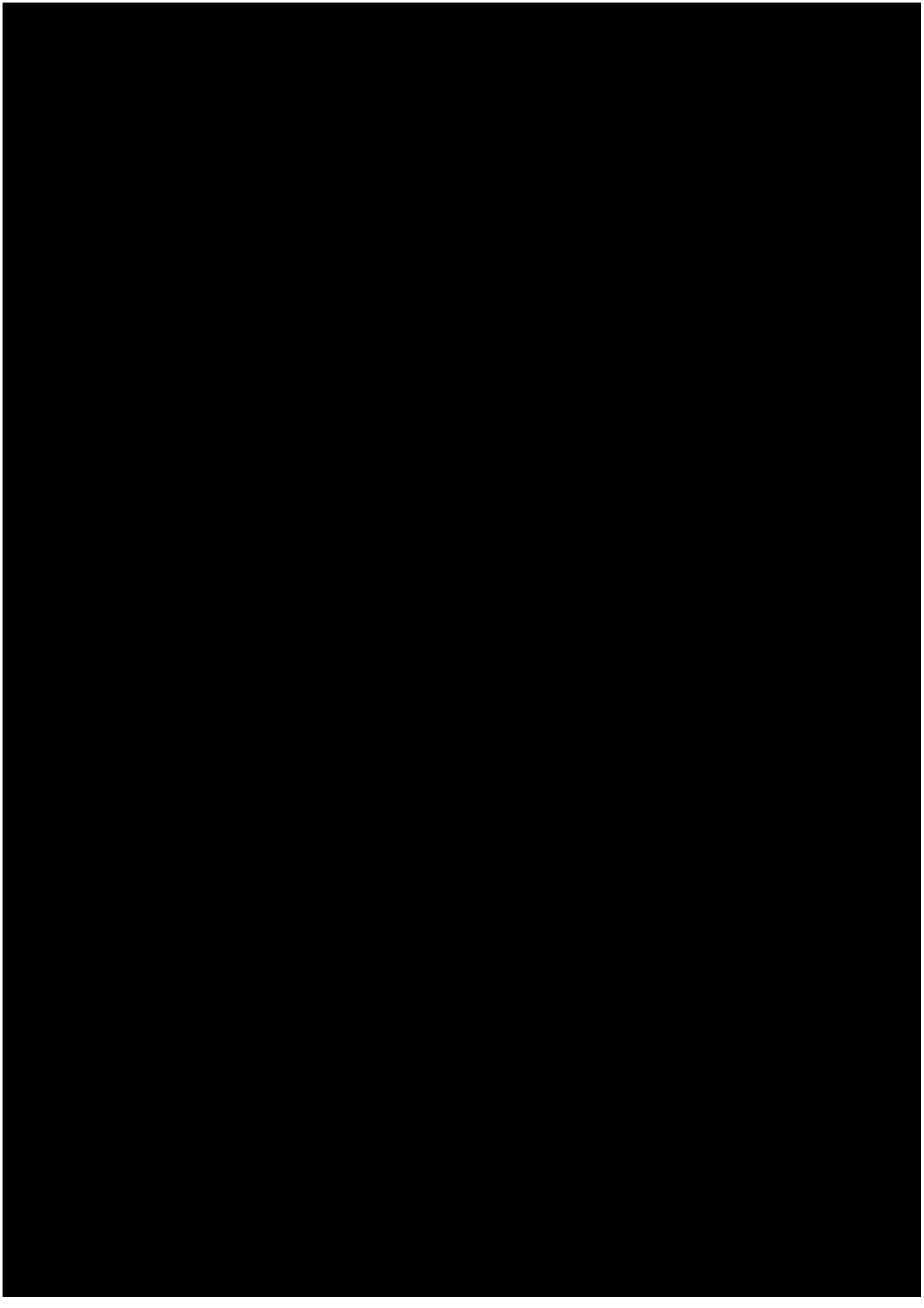
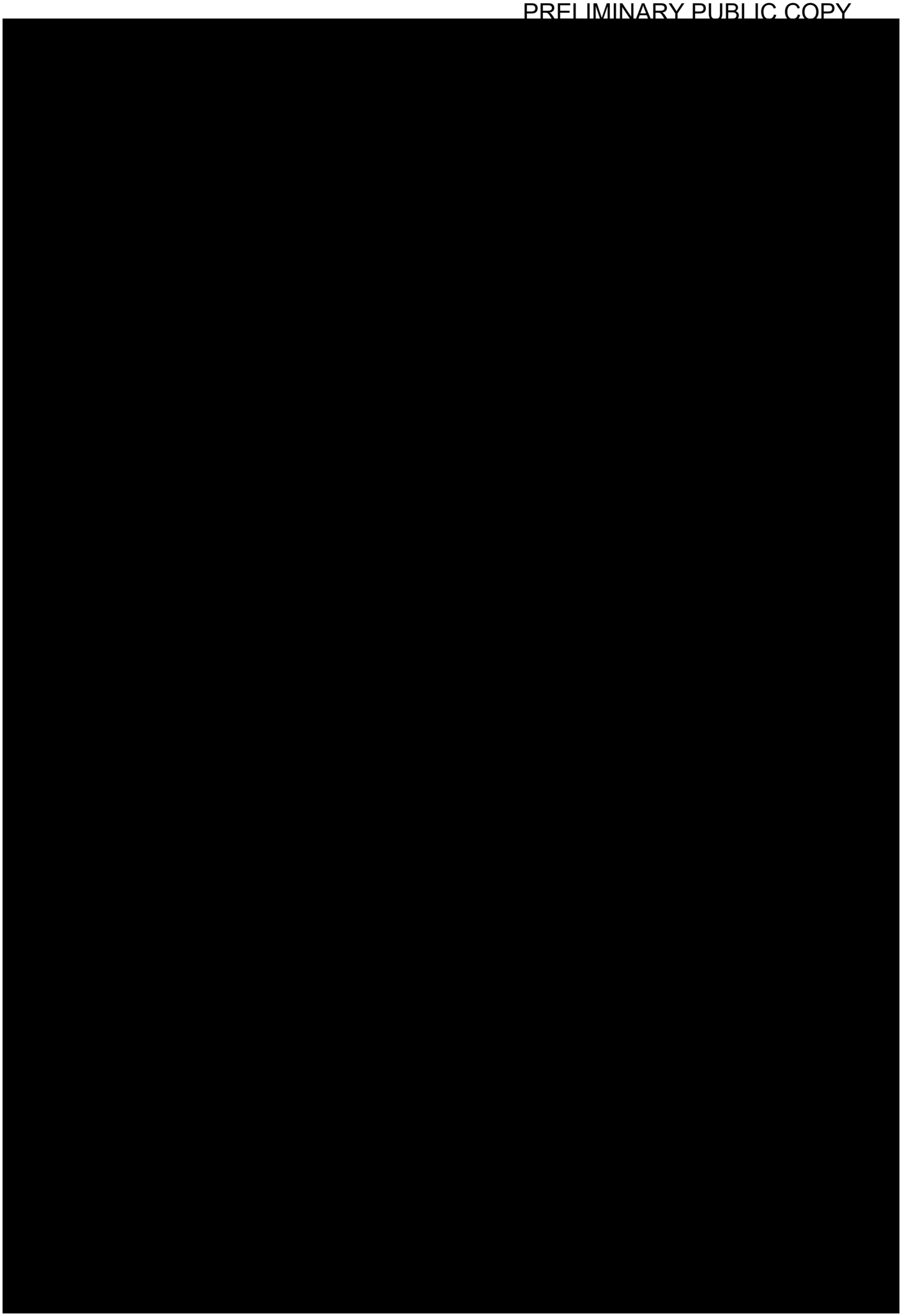
Appendix 11-1: Fisheries communication plan

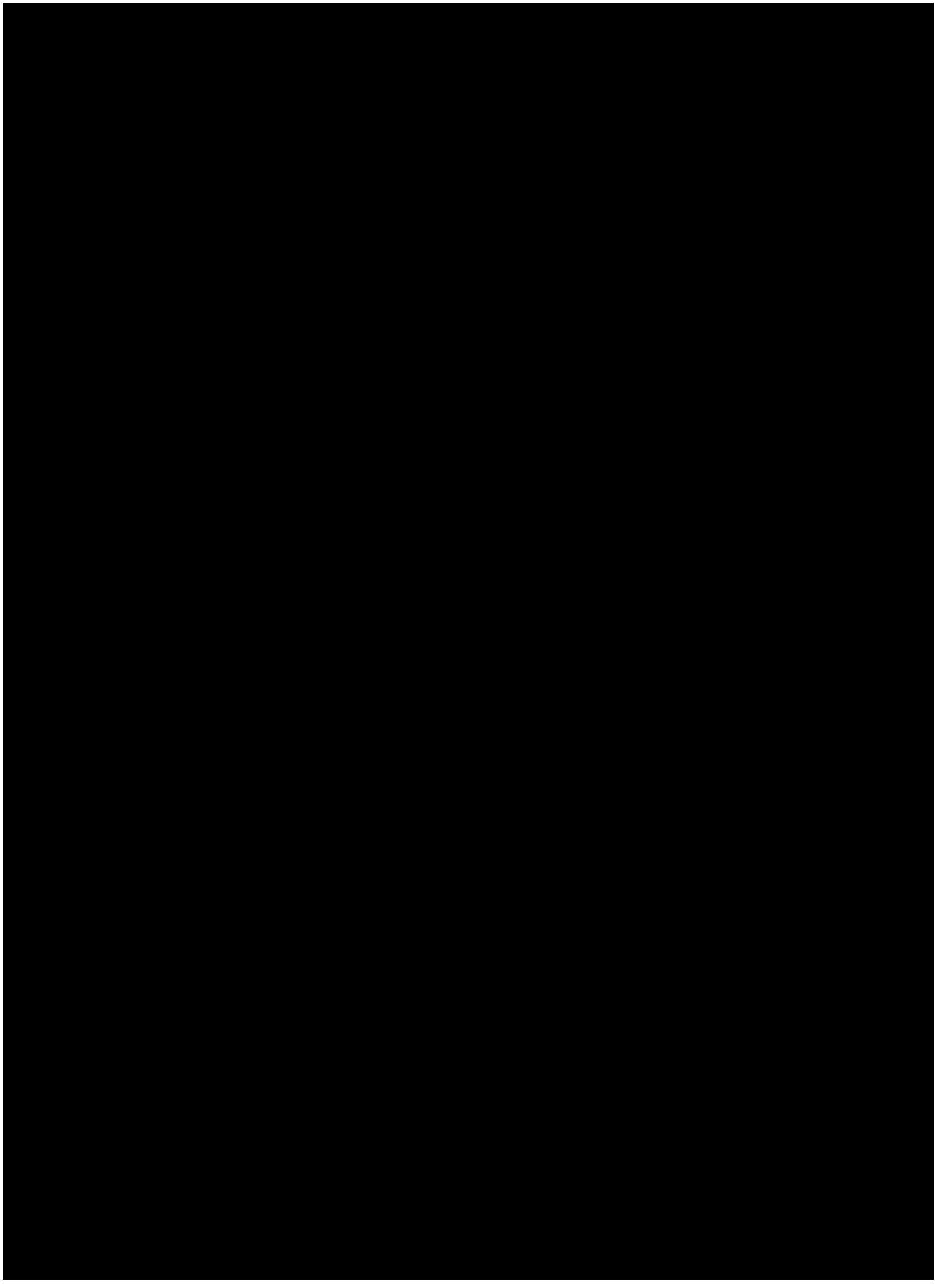
ATLANTIC SHORES
offshore wind

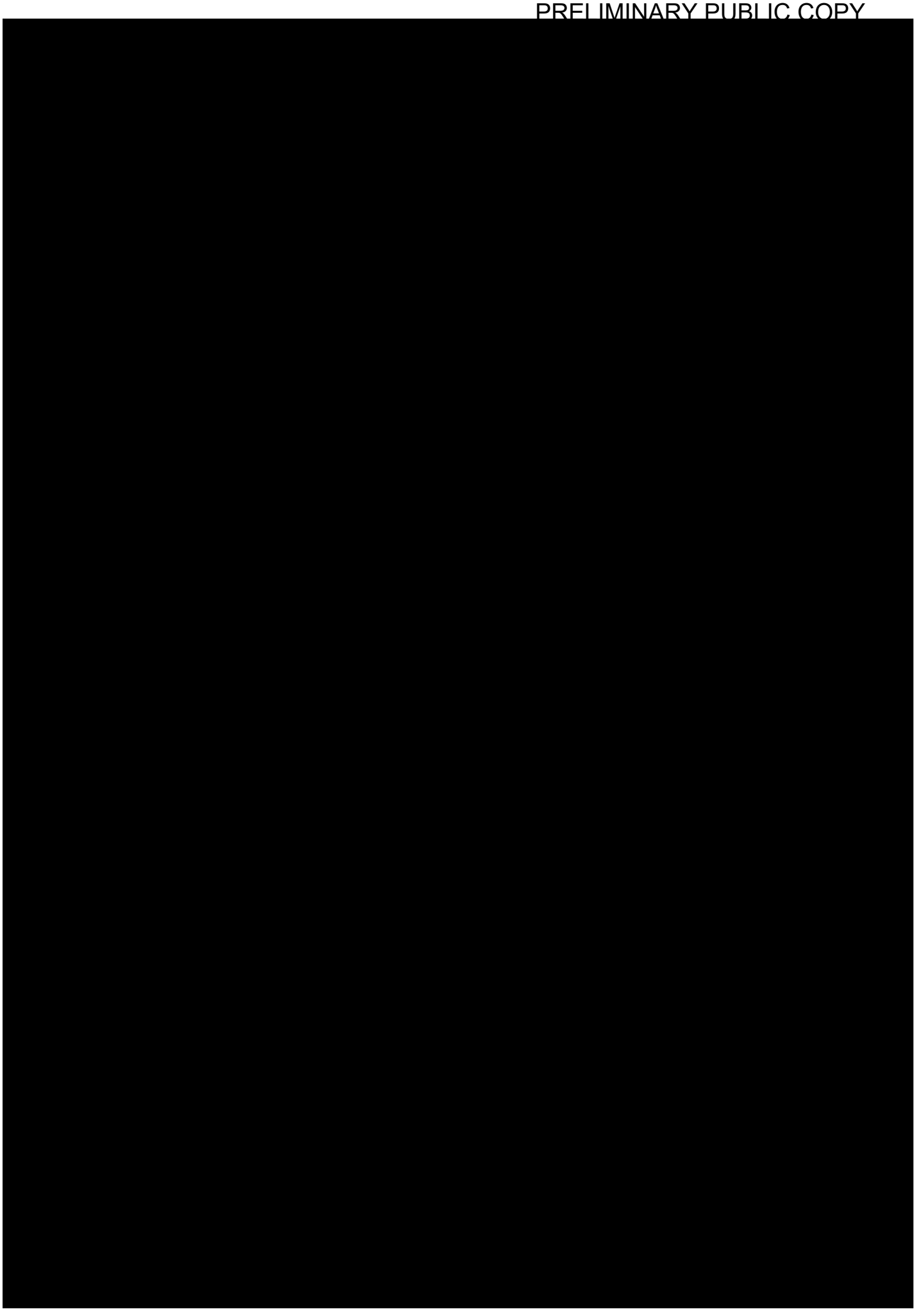


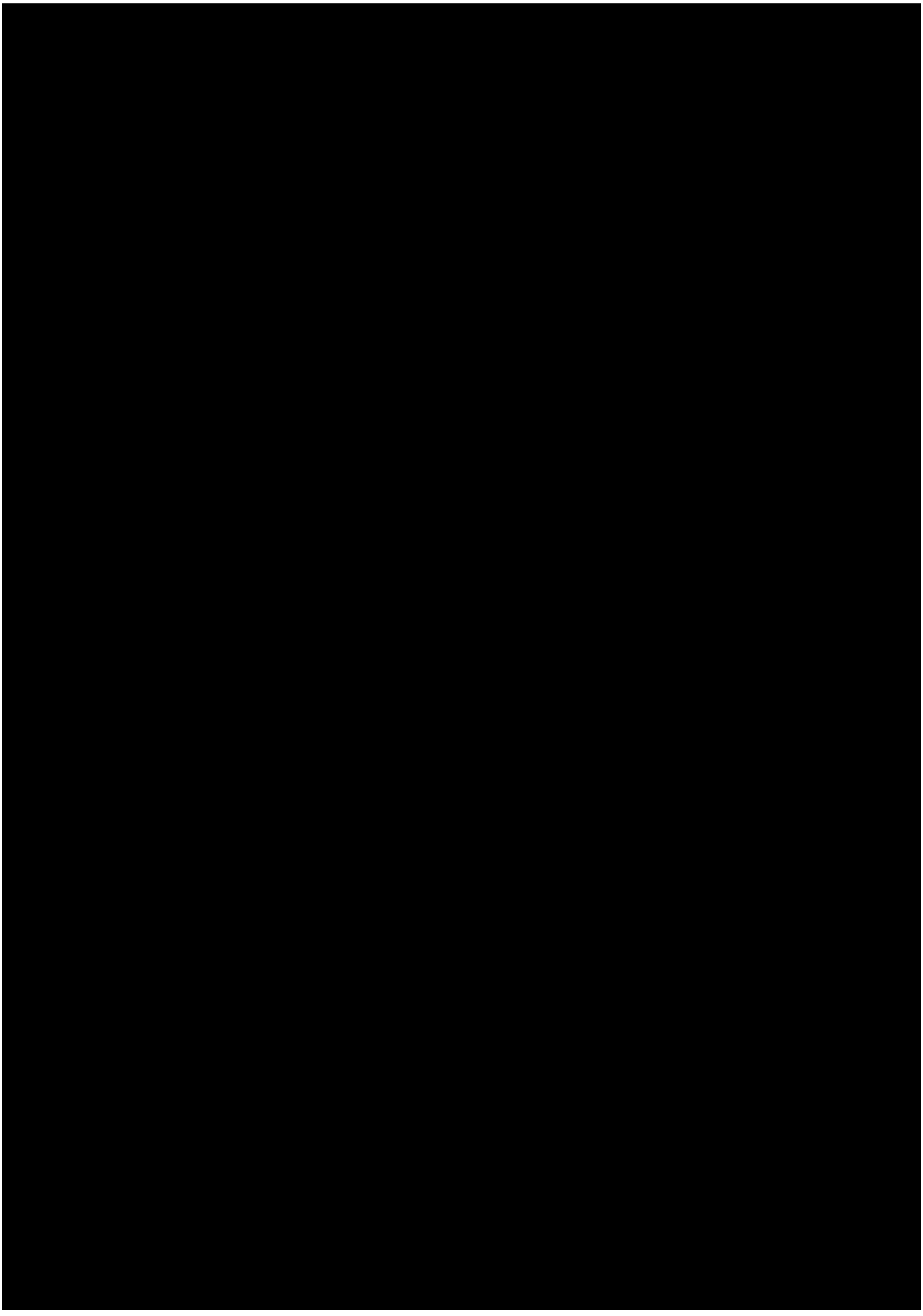


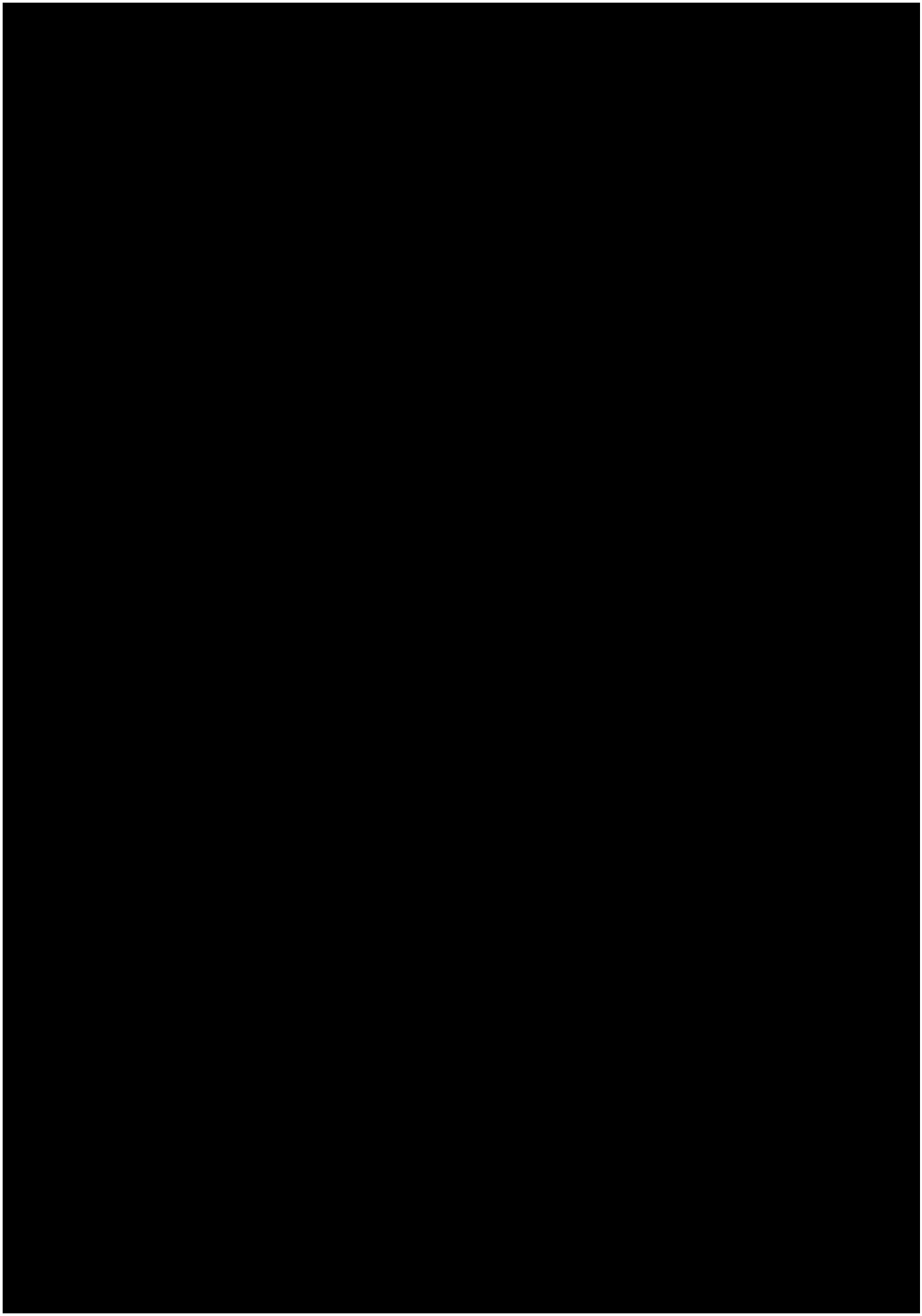


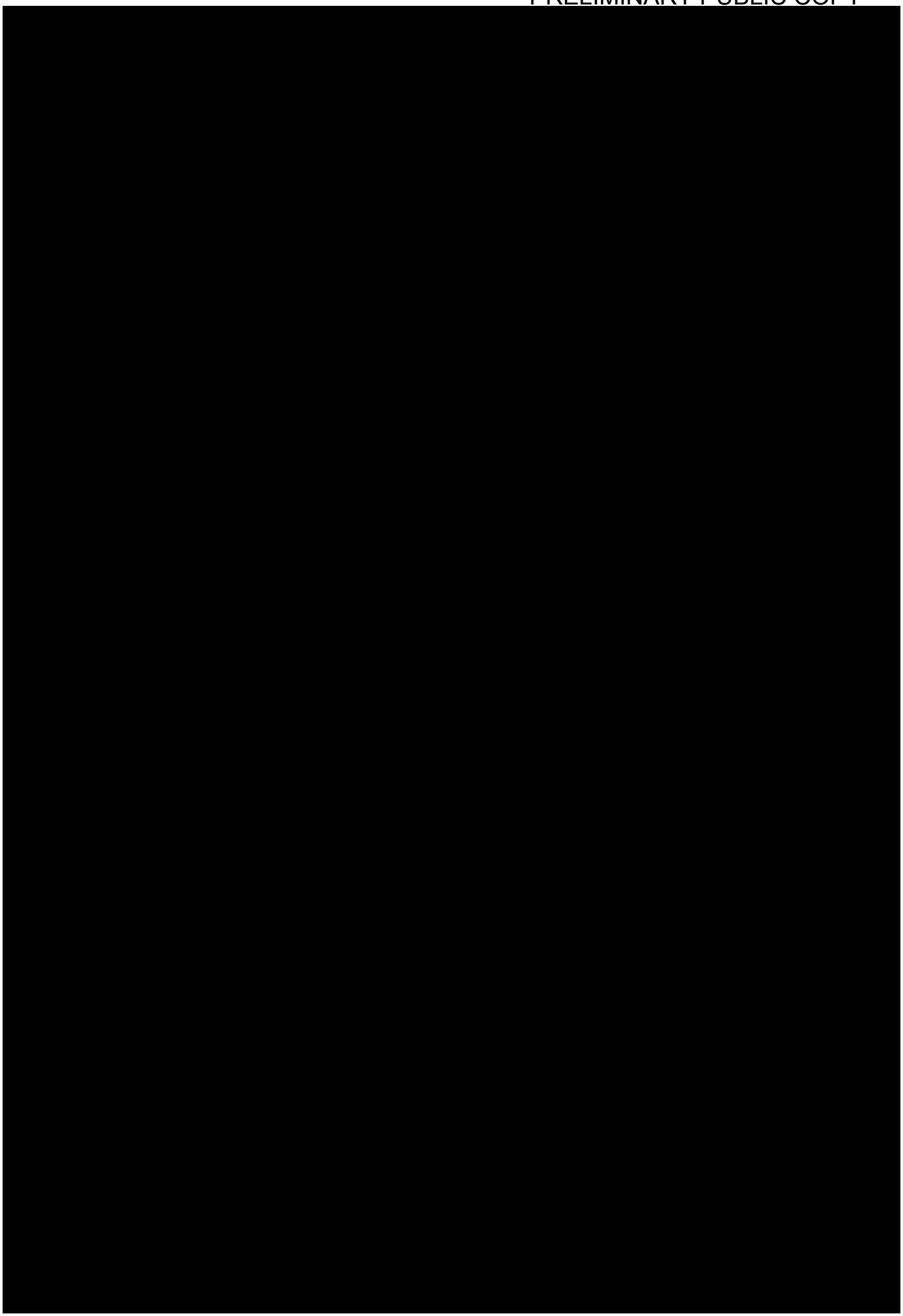


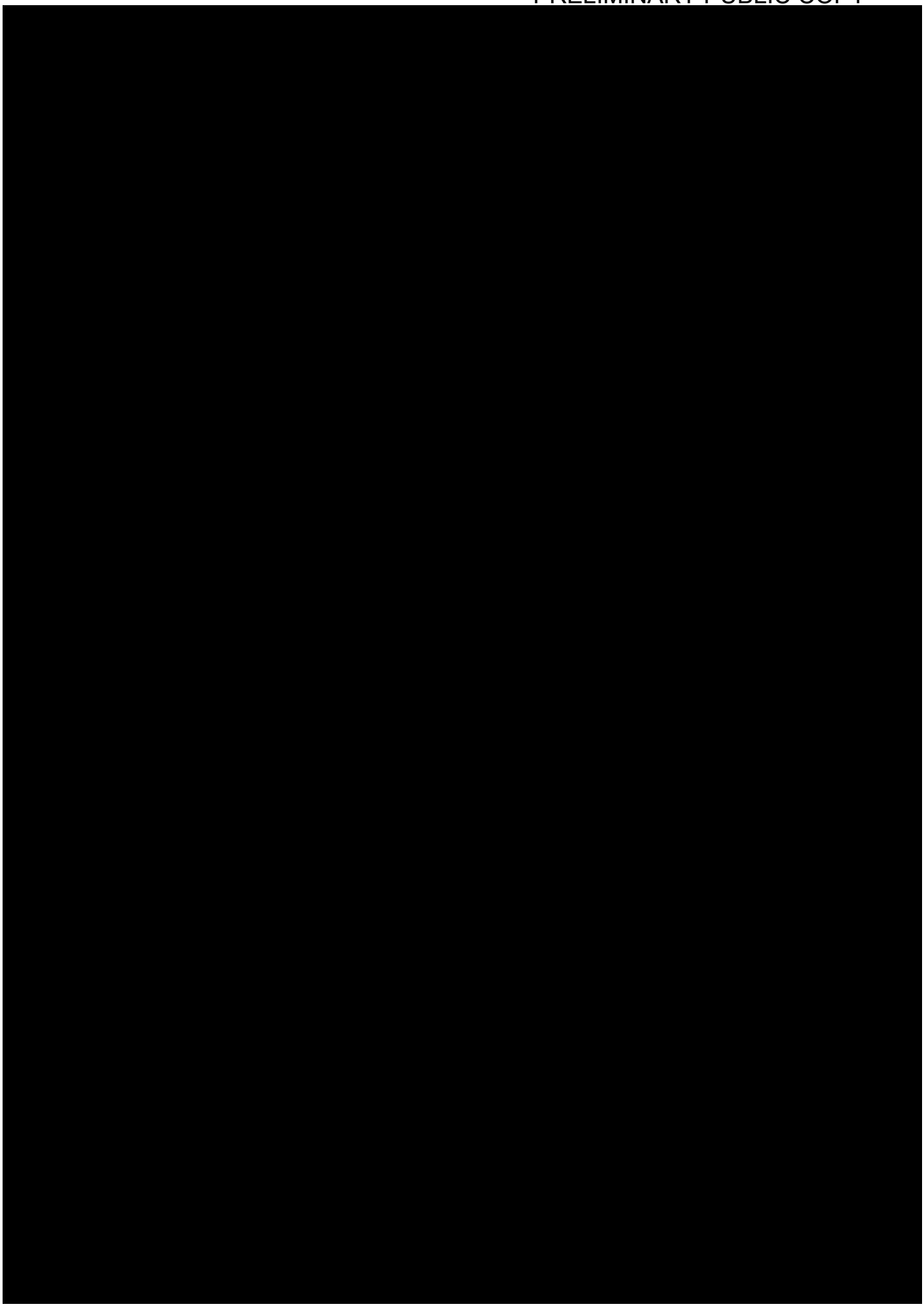


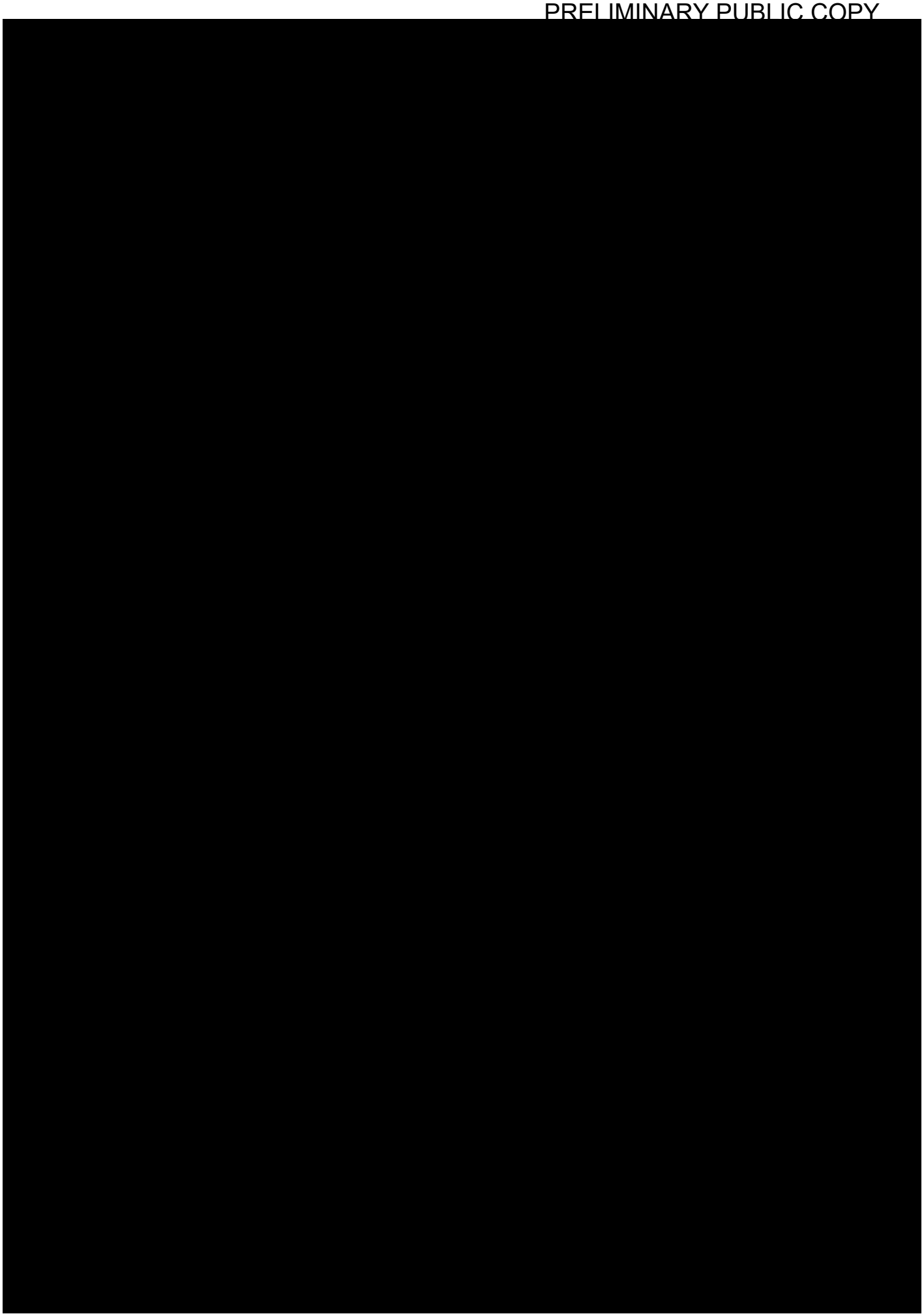


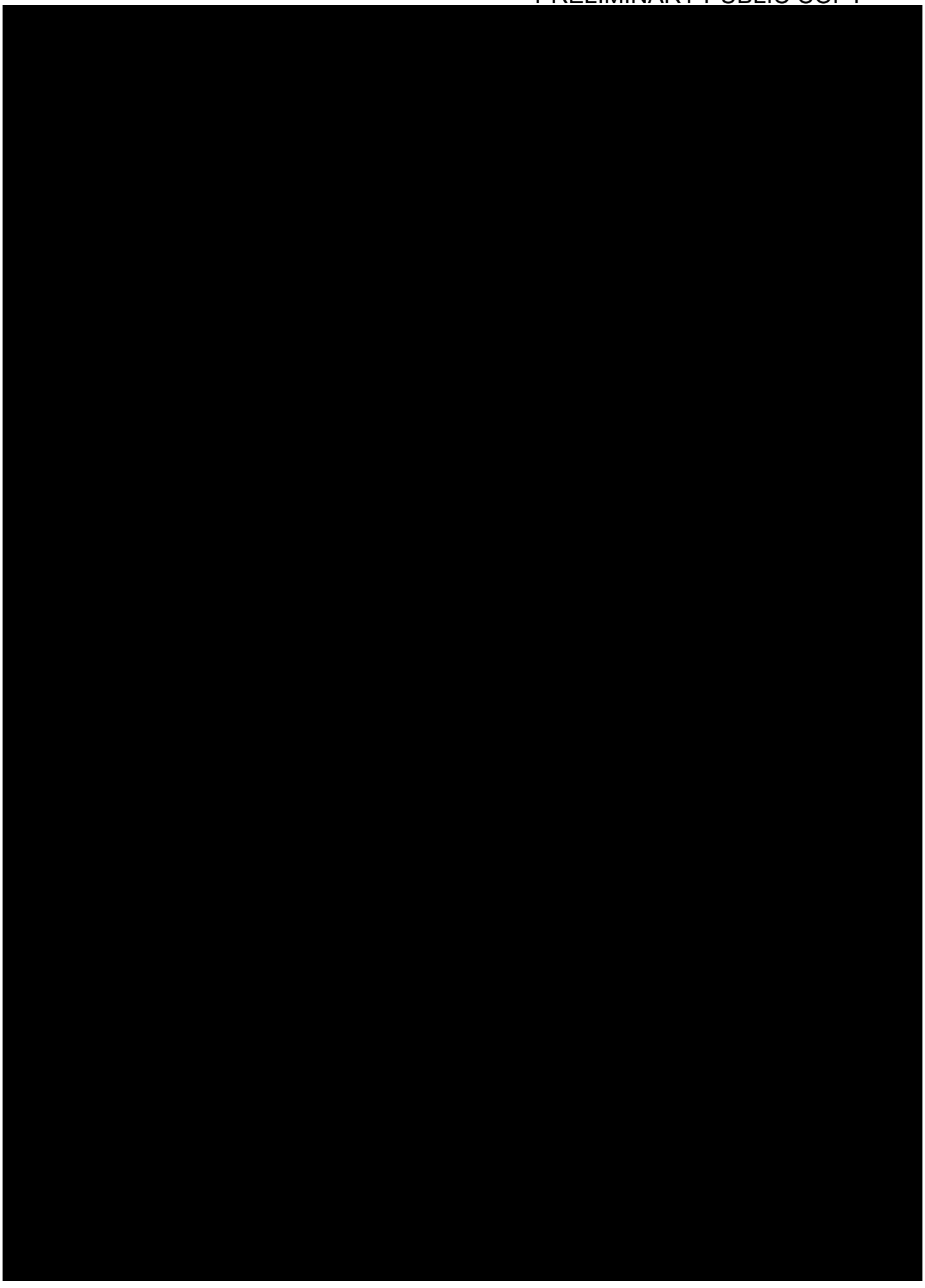


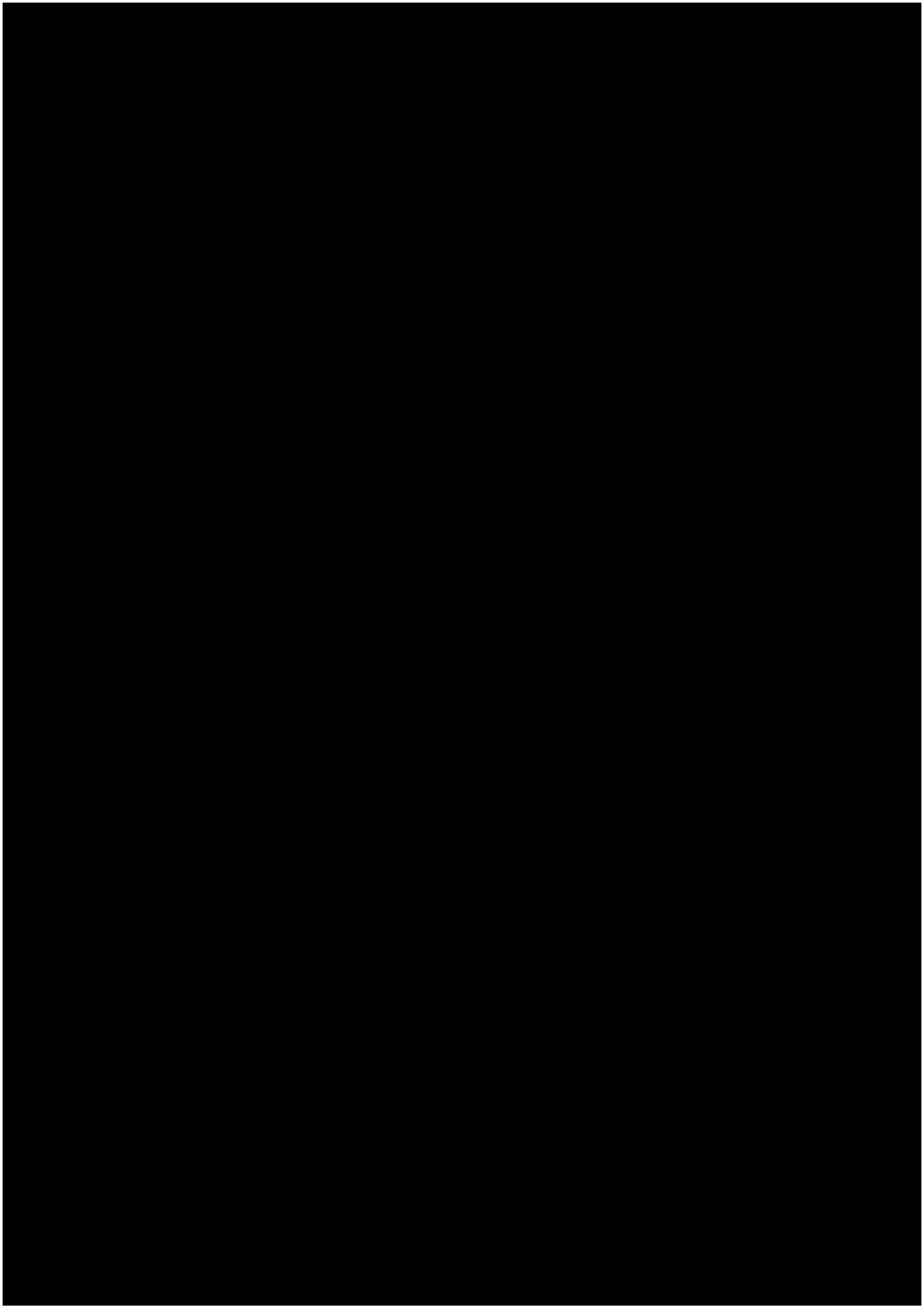


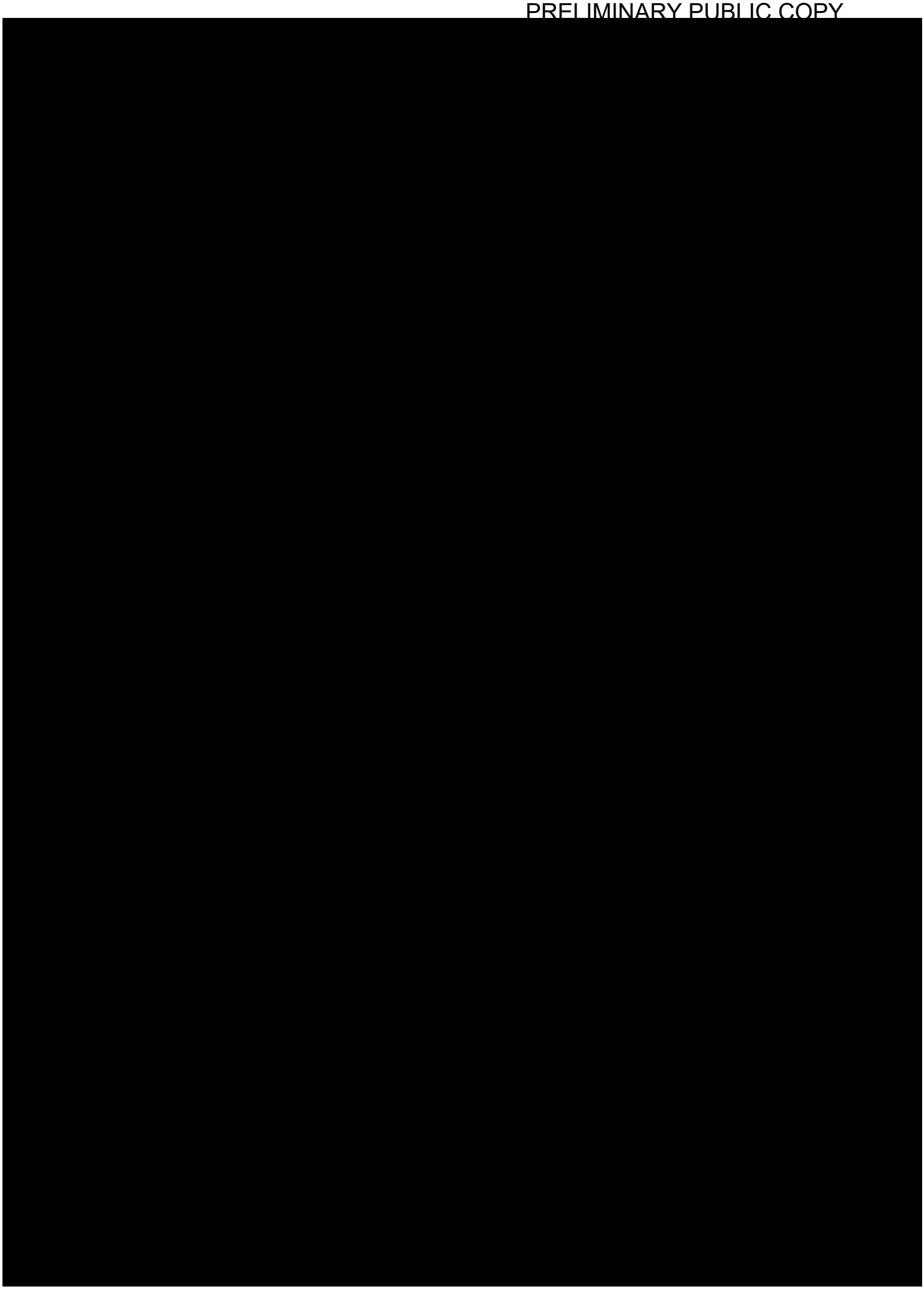


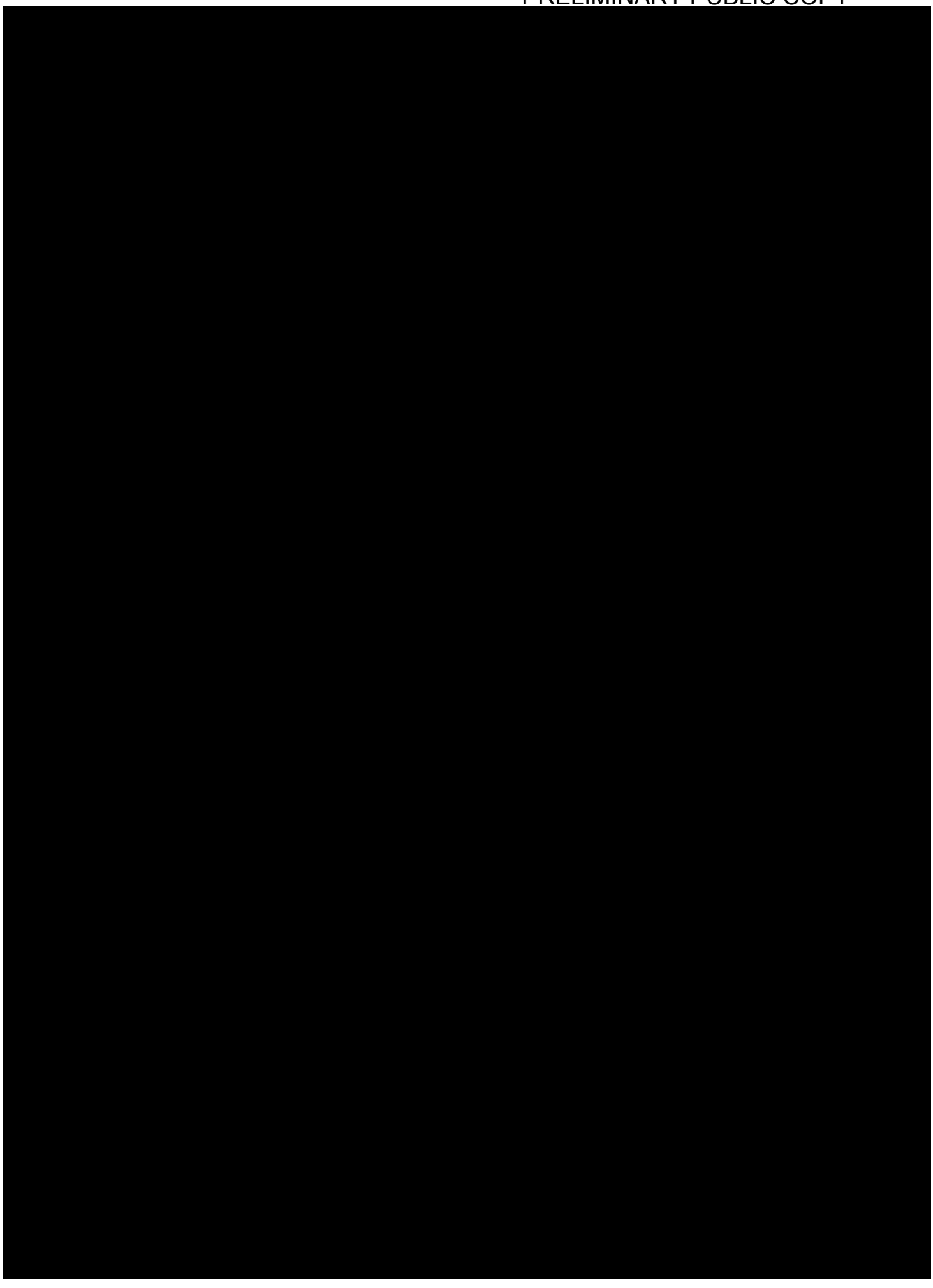












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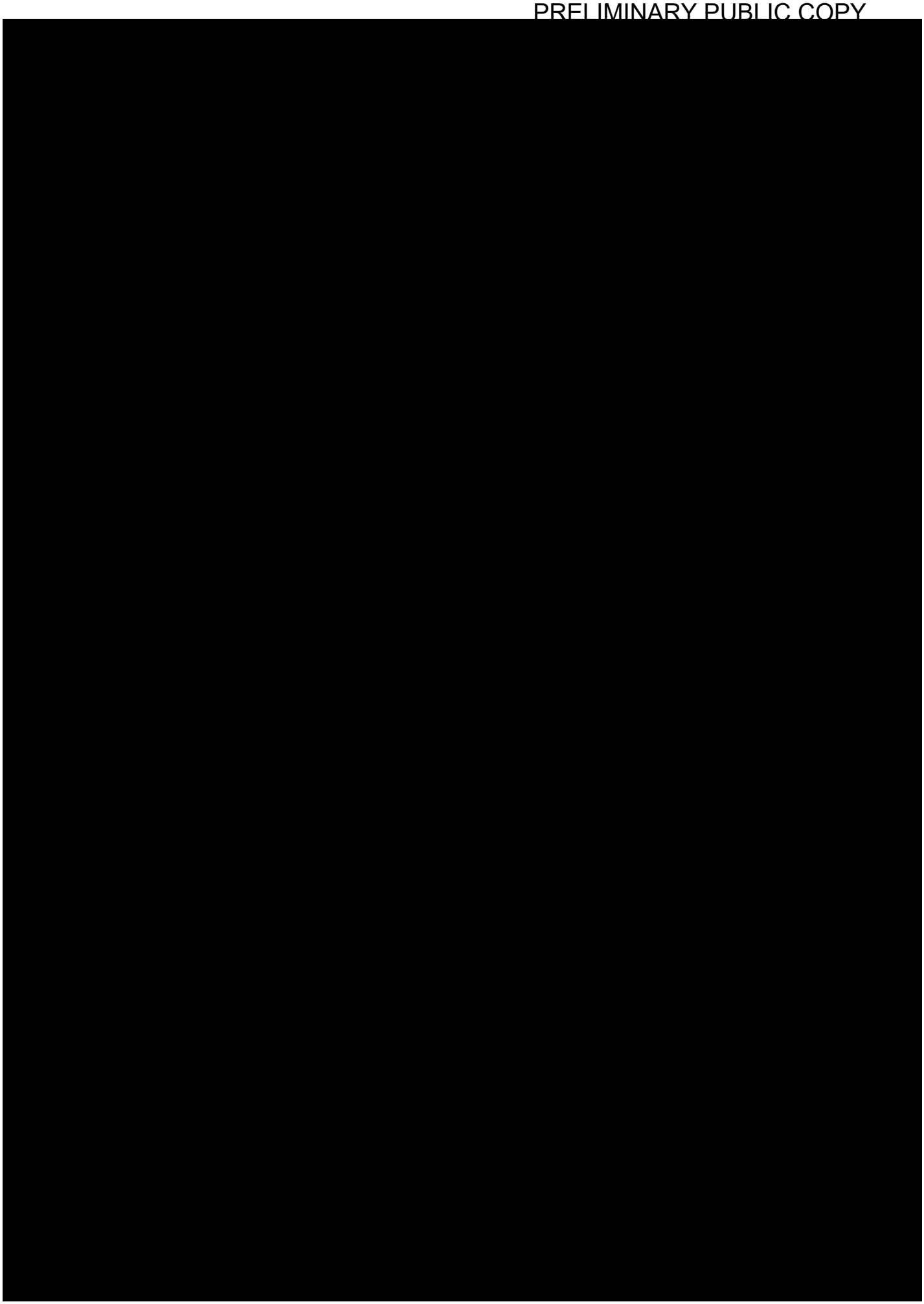
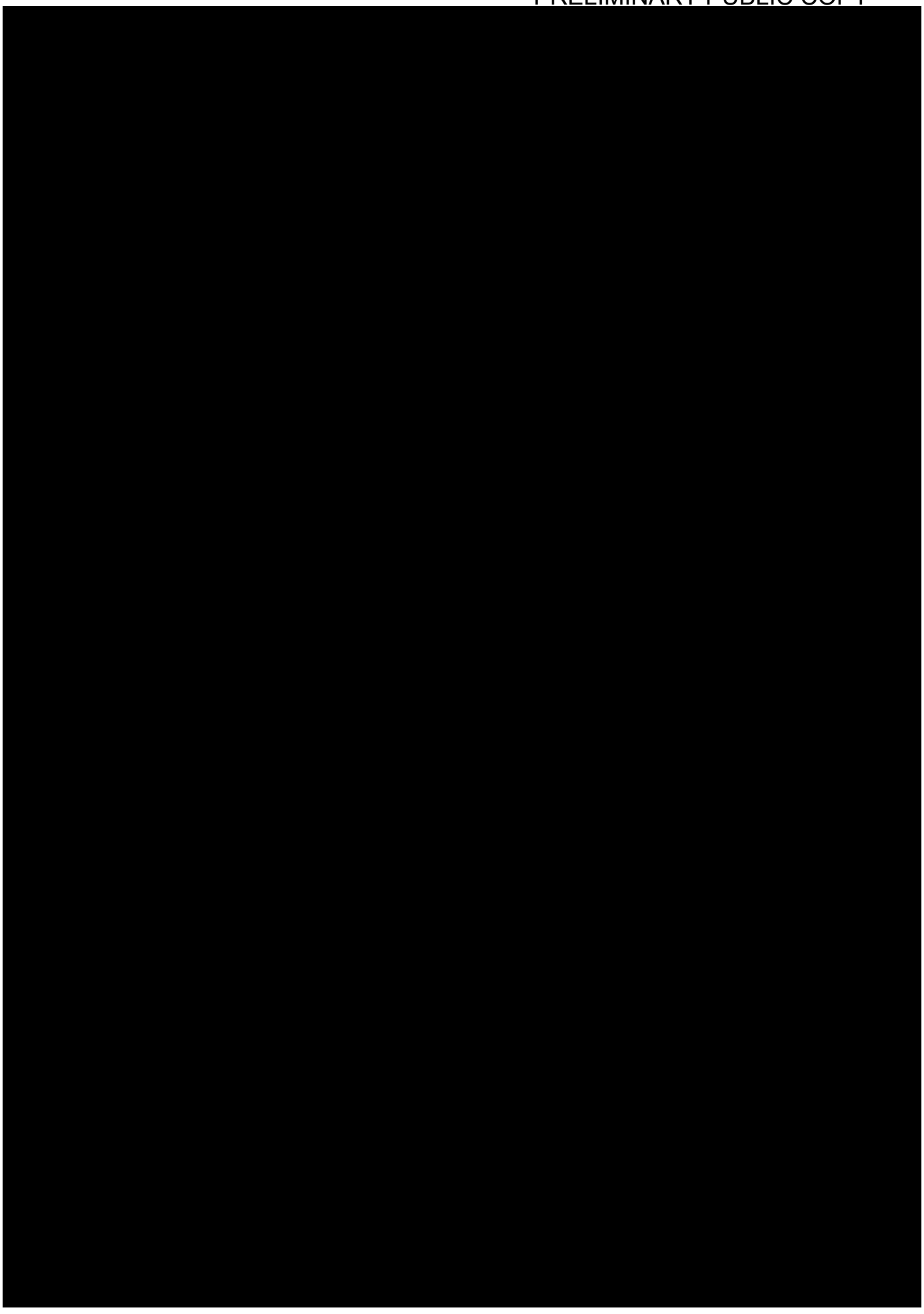
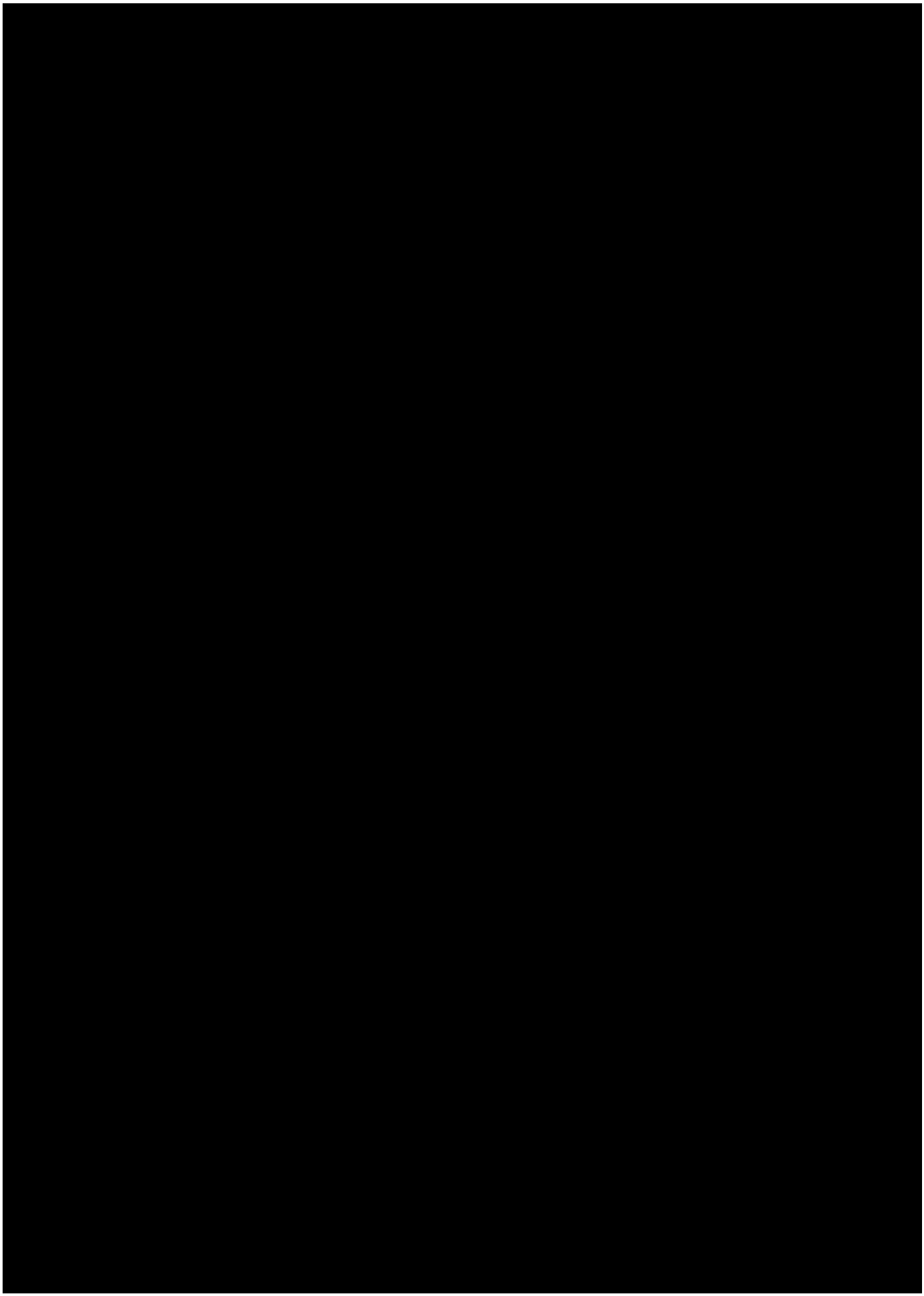
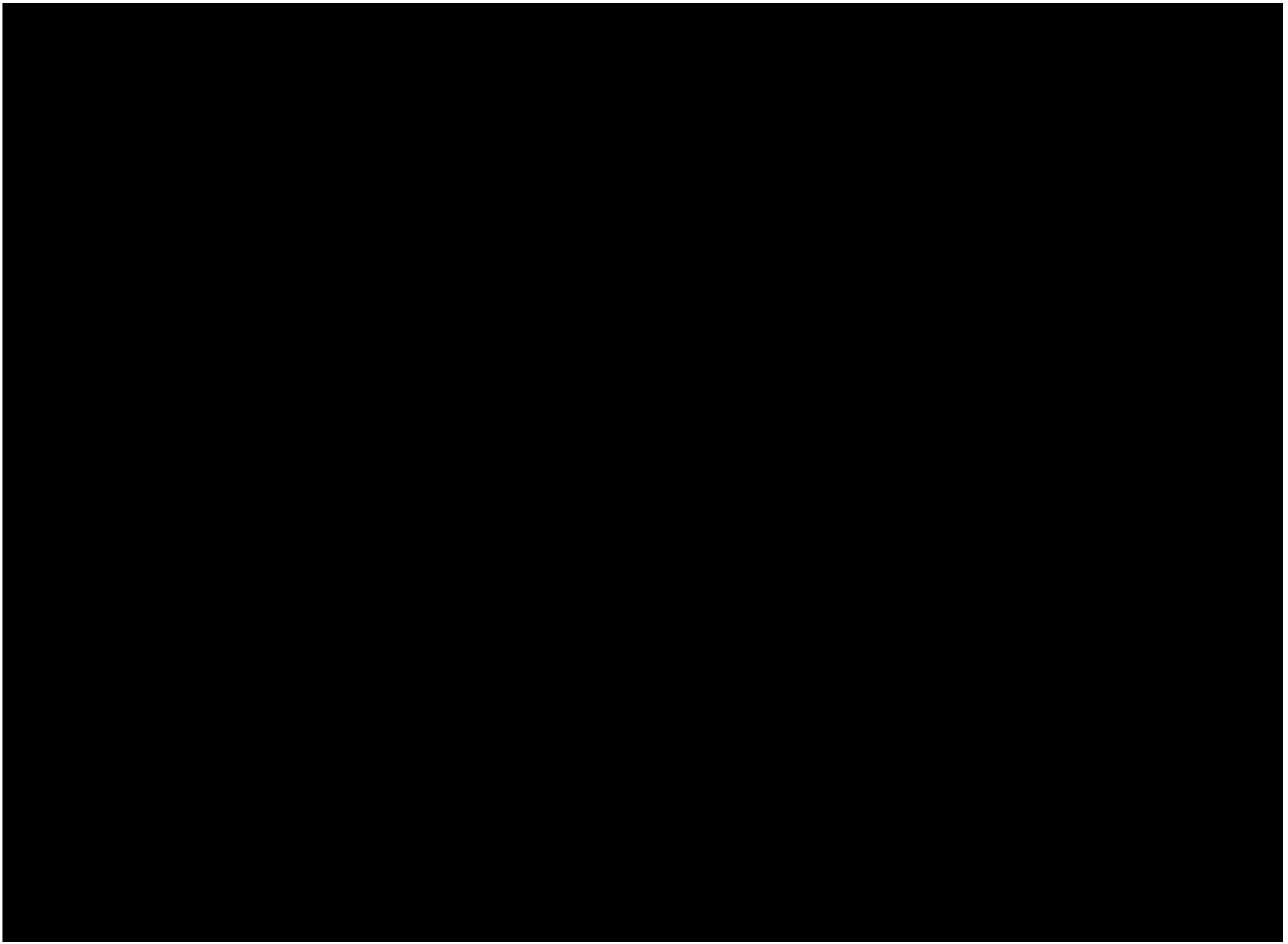
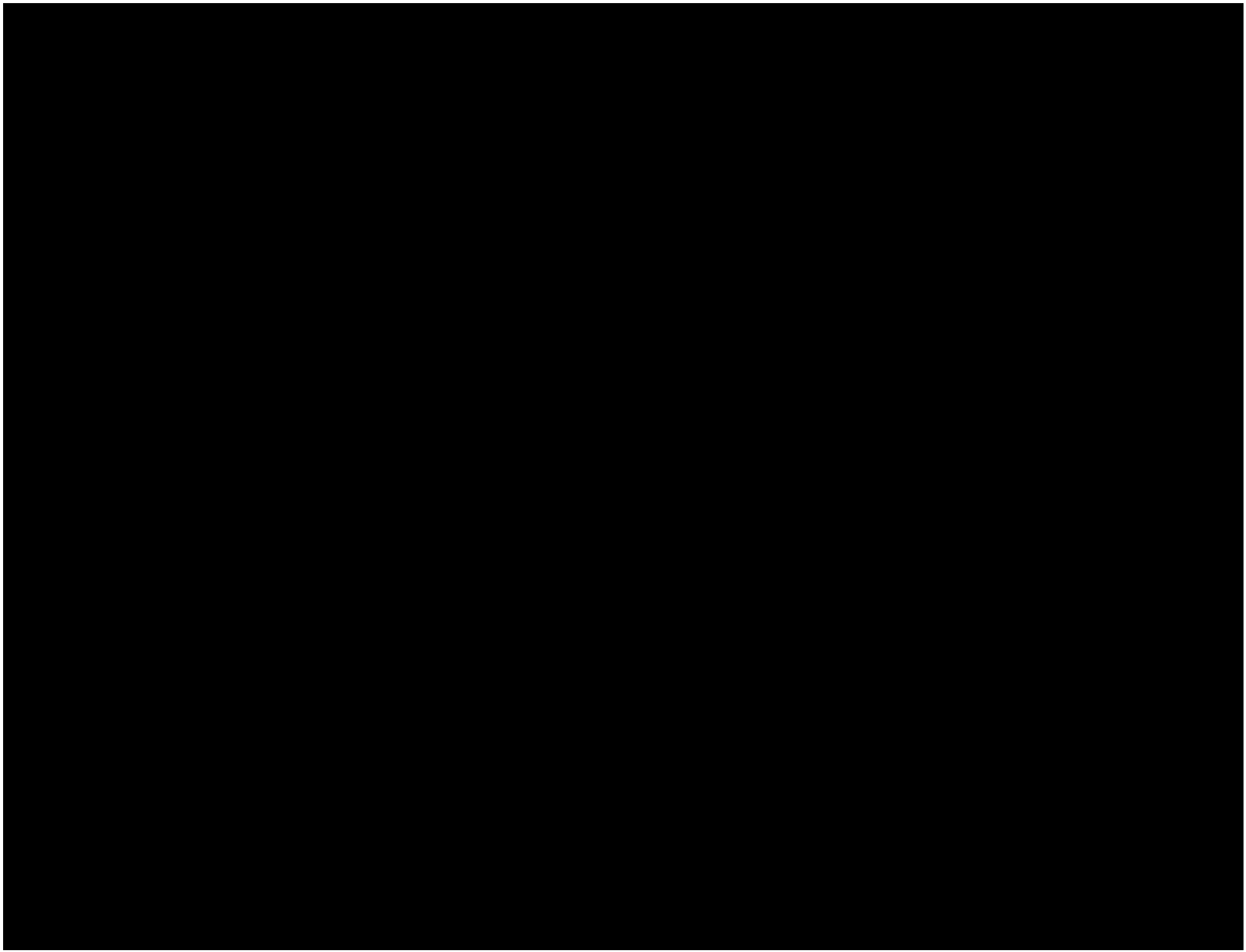


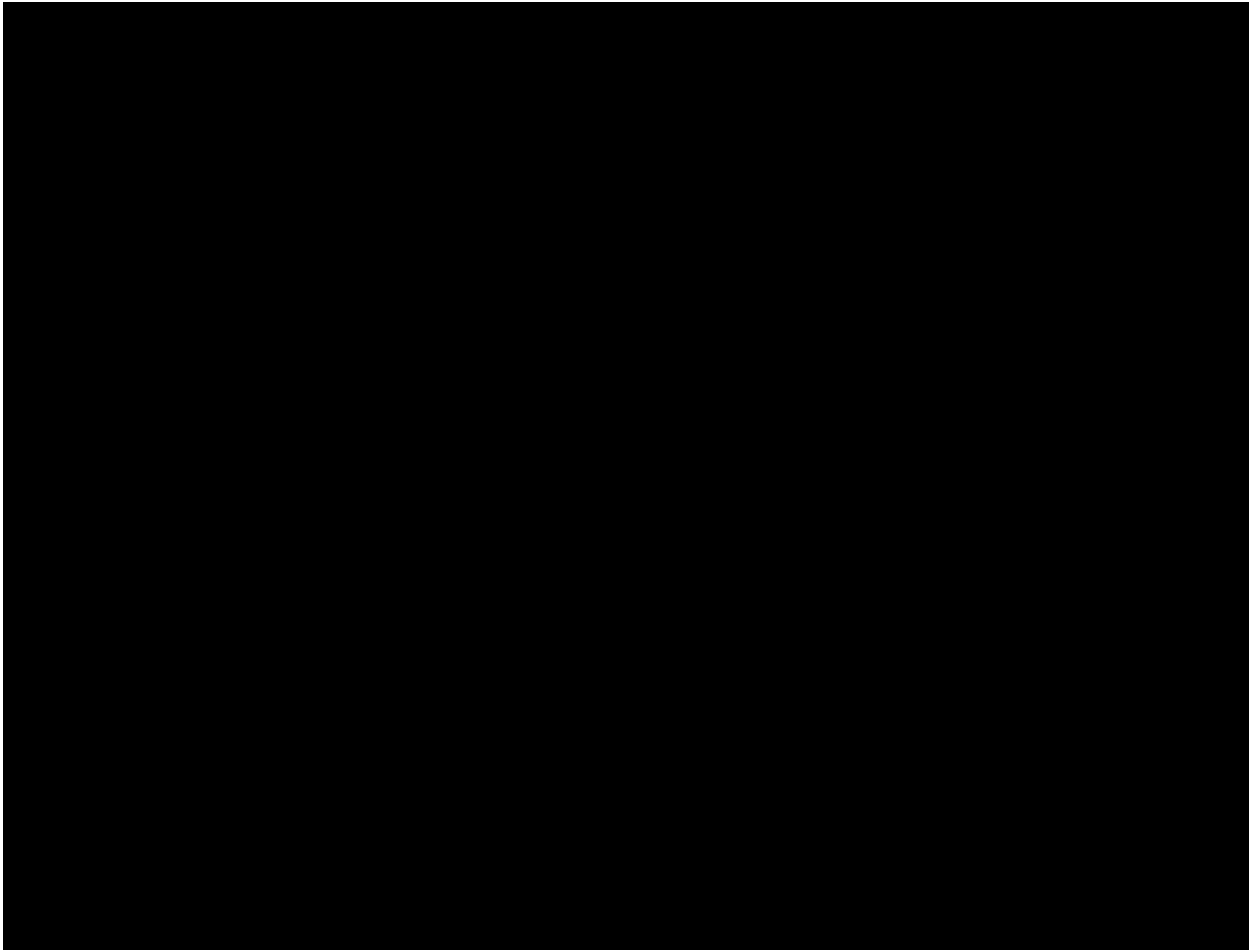


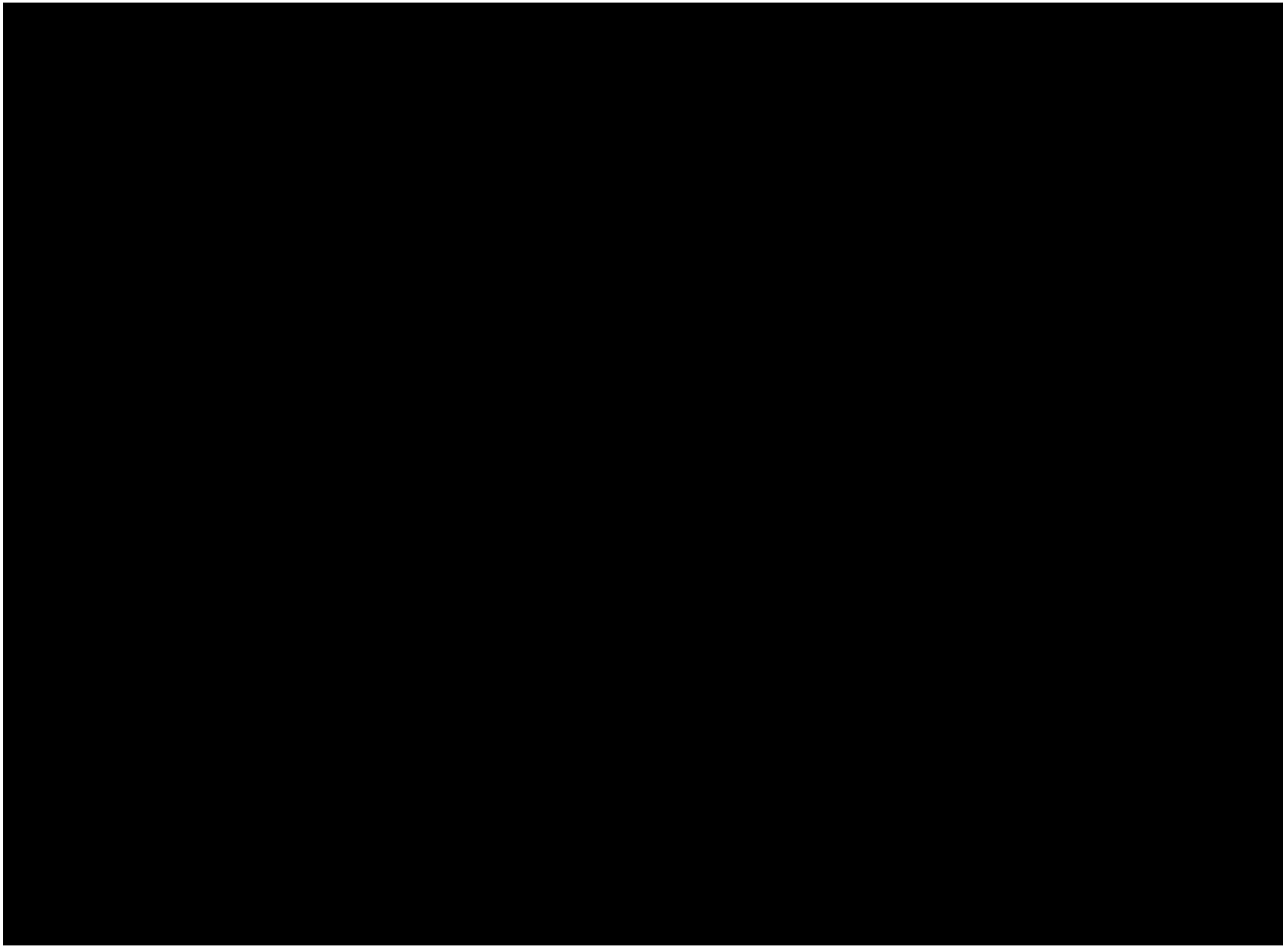


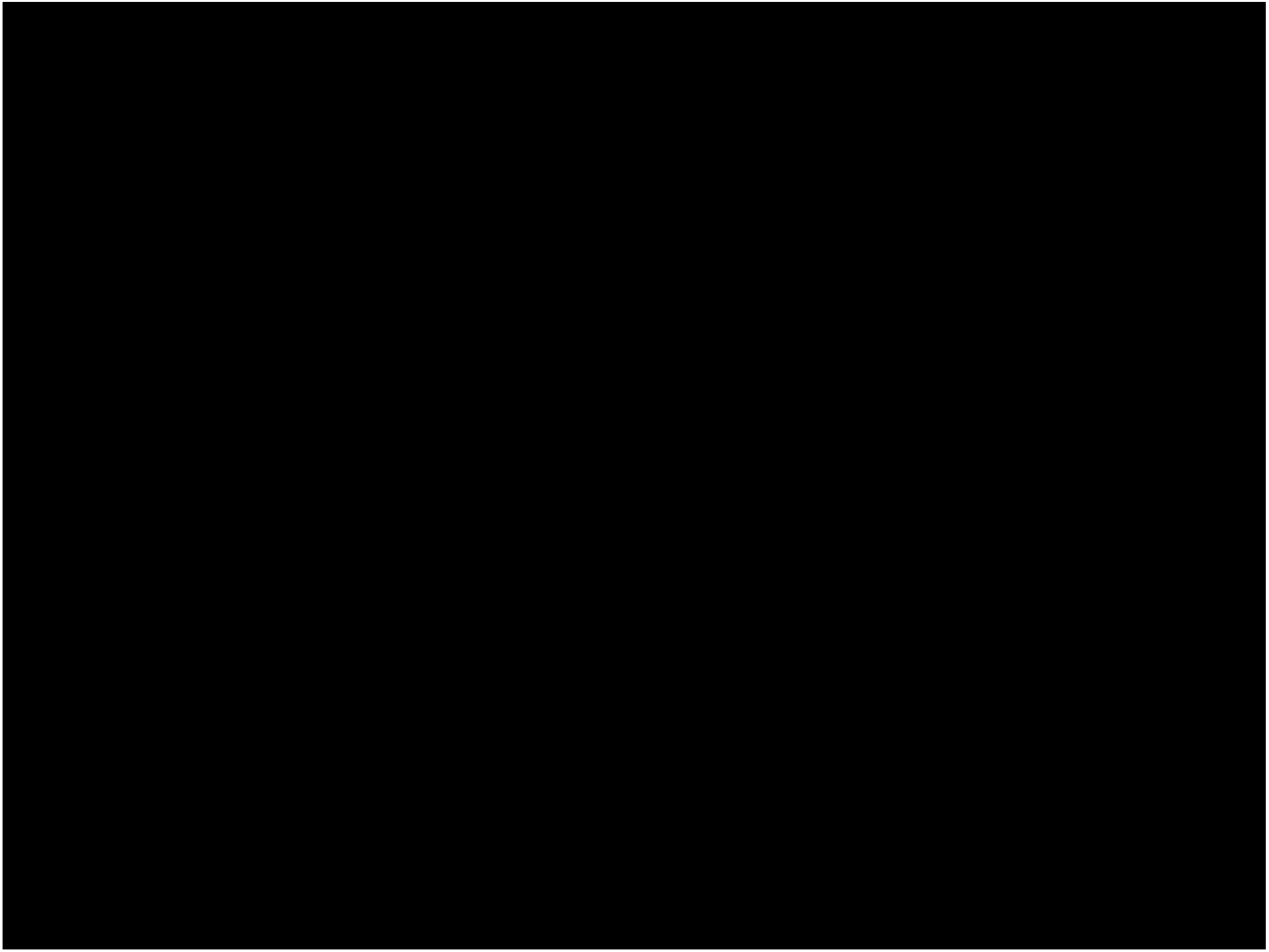
Appendix 11-2: Major fish and invertebrate species

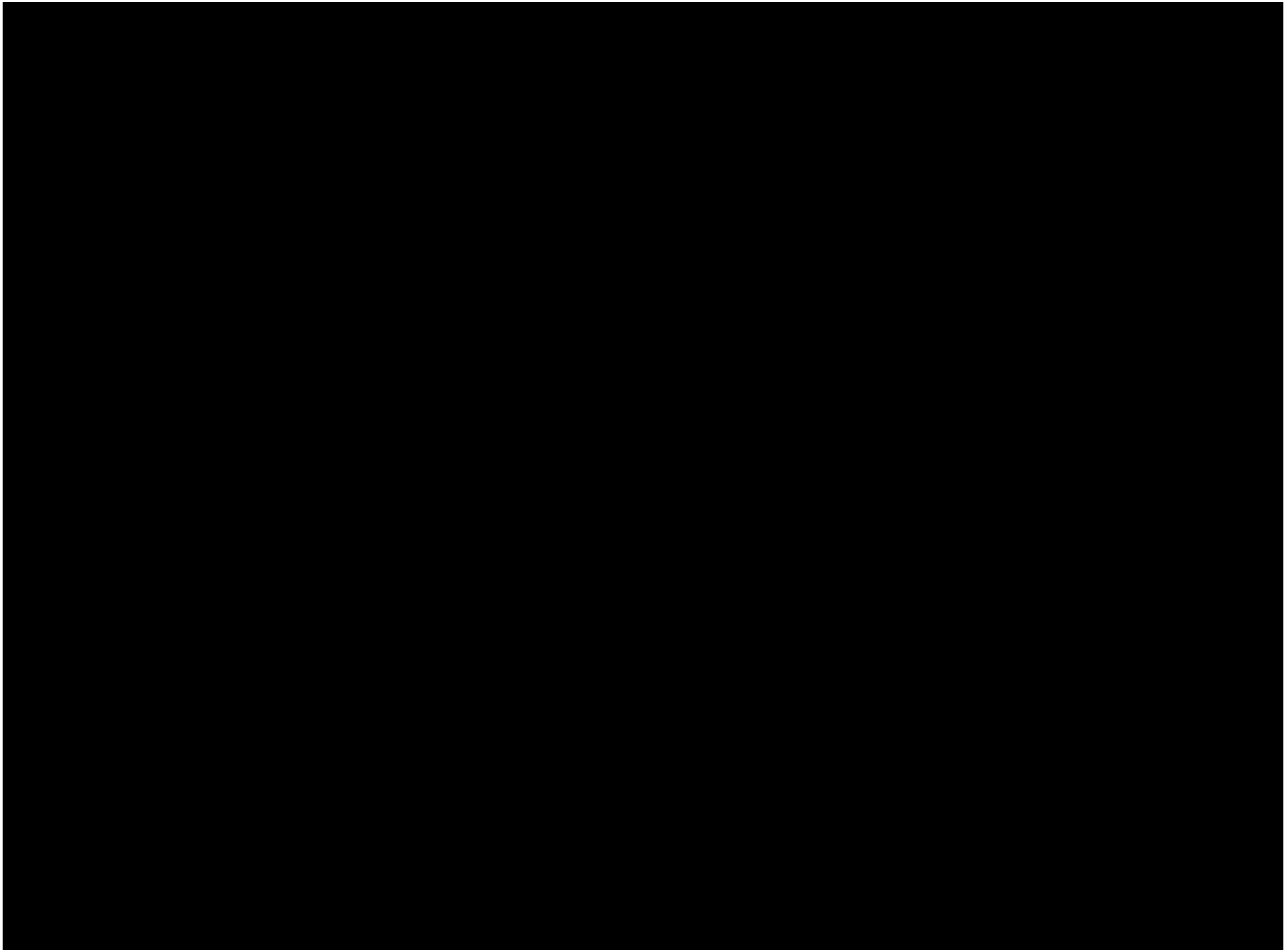












ATLANTIC SHORES offshore wind

Appendix 11-3: [redacted]

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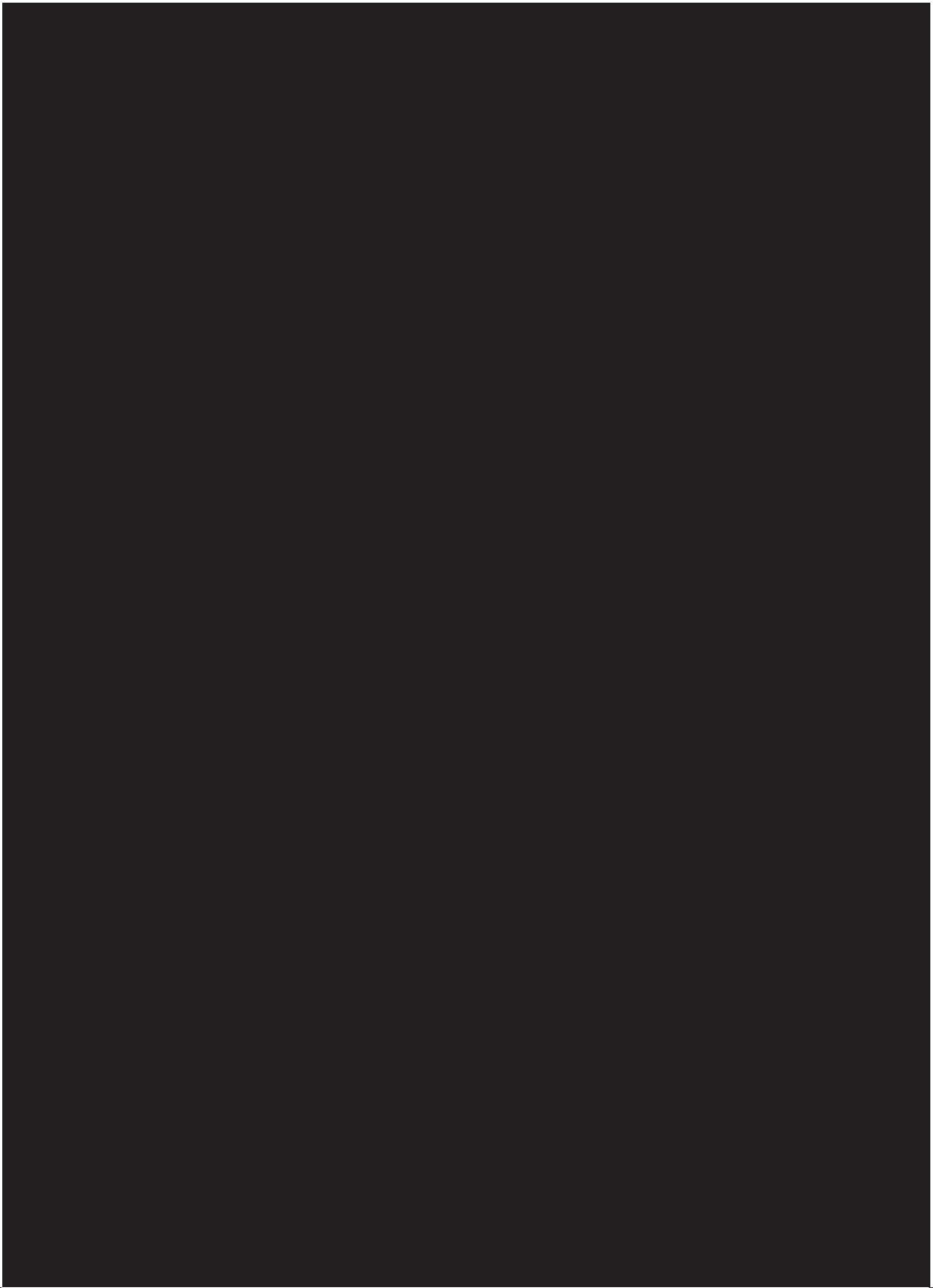
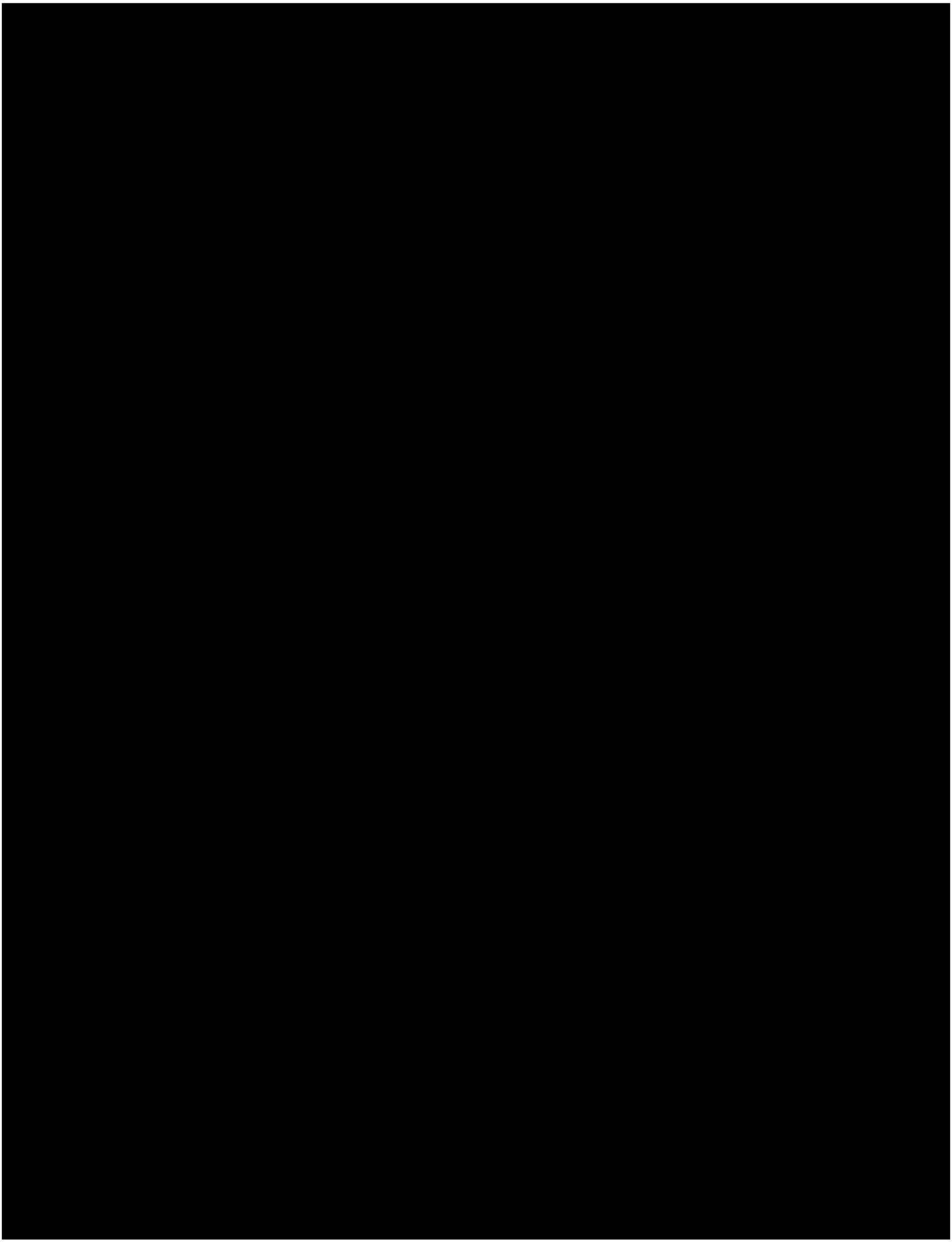


ATLANTIC SHORES offshore wind

Appendix 11-4: [redacted]

ATLANTIC SHORES offshore wind

Appendix 11-5: Letter of support from [redacted]



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ATLANTIC SHORES offshore wind

Appendix 11-6: Article published on GAIA

Embracing the digital transformation: Geodata engagement platform aids offshore wind development

This article was co-authored by Fugro/ASOW and published in Sea Technology

The energy transition is in full swing along the Atlantic Outer Continental Shelf. Seventeen projects in various phases of development now dot the Eastern Seaboard, from Maine to North Carolina. One of these projects, New Jersey-based Atlantic Shores Offshore Wind, recently met a major development milestone with submission of their Construction and Operations Plan (COP) to the U.S. Bureau of Ocean Energy Management (BOEM), which regulates offshore energy development in federal waters.

In addition to advancing their project with this formal proposal, Atlantic Shores is also helping to advance the offshore wind industry. Theirs is the first COP to supplement required static hardcopy maps and reports with live digital deliverables. Made available to BOEM through an innovative web-based geodata platform called Gaia.Hub, this lead-by-example embrace of digitalization supports multiple industry goals, including faster regulatory review, increased transparency, and improved public trust.

Big project, big data

The Atlantic Shores Offshore Wind lease spans 740 square kilometers and is located 10-20 miles off the coast of New Jersey between Atlantic City and Barnegat Light. The company's first project is expected to supply 1,510 megawatts of offshore wind energy to over 700,000 homes. It is the single largest offshore wind project in New Jersey to date, and the second biggest in the nation. Construction is targeted for 2024 with energy delivered by 2027.

In terms of assets, the project will comprise up to 200 wind turbine generators, 10 offshore substations, 710 kilometers of export cable, and 940 kilometers of inter-array cables buried 2 meters below the seabed.

Developing an offshore wind farm project of this size and scope requires a massive amount of geodata which must be integrated and communicated to an ever-growing audience of stakeholders. Operators, contractors, and regulators alike can quickly become bogged down by the volume and complexity of these information assets—especially when they are locked in multiple, siloed systems that challenge contextual decision-making and limit operational insights.

To improve the data delivery and discovery experience, Atlantic Shores worked with Fugro, a global geodata specialist and years-long contractor on the project, to apply their Gaia.Hub solution.

Answering the geodata challenge

Gaia.Hub is a cloud-hosted, web-based geodata engagement platform for accessing geospatial data and documents throughout the project life cycle. Evolving with the project, Gaia.Hub provides a single source of information for the project team and its stakeholders, allowing users to access geodata at any time, from any location in a simple, intuitive website.

Within a singular interface, Gaia.Hub provides a clear overview of the various types of geodata visualized in a spatial context, linked with associated documents. From this platform, users can readily access the project's evolving ground model, latest windfarm layout, site constraints, final geodata locations, processed datasets, and interpretive results in one interface.

Fugro began building the Atlantic Shores Gaia.Hub solution in April 2021 to support the COP. The system was designed to integrate public datasets and historical project data with new information being developed during ongoing field programs. As such, the platform enables real-time tracking of the site characterisation effort, along with an updated 'digital twin' of the project's developing ground model.

Gaia.Hub currently stores an impressive progression of geodata development, the highlights of which are summarized in the following timeline of activity:

2019: Reconnaissance surveys in support of seabed clearance of obstructions and buried archaeological resources for the installation of metocean buoys. Prior to this glance at the seabed, Atlantic Shores relied on nautical charts and limited public domain data of low-resolution bathymetry, historical seismic and sampling surveys, regional geomorphology, and charted wrecks, obstructions, and submarine cables for preliminary site understanding.

2020: Site characterization of the planned wind turbine corridors and export cable routes, with acquisition of high-resolution geophysical and geotechnical data to: develop a baseline for the soil stratigraphy and unitization for turbine foundations; determine the conductive properties of the shallow soils and understand the chemical effects of the soil-cable interface; and identify areas more susceptible to scour or sediment mobility; understand the native benthic environment at proposed infrastructure sites.

2021: Continued site characterization activities with additional high-resolution geophysical and geotechnical data acquisition and testing, this time focused on potential inter-array cable lay areas and extension and re-routes of the export cable corridors. The additional geophysical information allowed a more complete mapping of the subsurface data, particularly the extent of buried channels which could have implications on the strengths of the shallow soils as infrastructure is installed. The additional geotechnical samples and lab tests characterized the soil profiles on the order of weakest to strongest in terms of soil behavior under loading to understand the ground risk and optimal design.

To put this work in perspective, over the span of two-and-a-half years, these environmental, geophysical, and geotechnical surveys and assessments covered over 485 square kilometers of seabed, producing 45 terabytes of raw and processed geophysical data, 9,800 onshore and offshore lab tests, 550 minutes of benthic video, and daily wind and wave measurements from two lidar buoys. All of this information now resides in and is being managed through Gaia.Hub, with users accessing the data from interactive spatial displays to make informed decisions earlier in the development process.

Concrete examples of how Gaia.Hub supports faster decision-making includes the avoidance of magnetic anomalies, obstructions, and geohazards during data acquisition; the rerouting cables and adjusting of wind turbine locations in a single work season; the reduction of survey operations in unfavorable areas; the optimization of geotechnical investigations to target challenging stratigraphy; the adjustment of acquisition programs while survey work was ongoing. By employing Gaia.Hub early in the design phase, users benefit from the full picture of information.

High engagement, meaningful returns

The Atlantic Shores Gaia.Hub site has become a well utilized tool among the project team and its contractors. In fewer than nine months, the site has provided over 200 users access to over 45 terabytes of geodata and more than 11,000 documents and supporting files. These files, which are linked to discrete seabed locations, include geotechnical logs, prognosis charts, sample photos, sample videos, final reports, seismic images, etc.

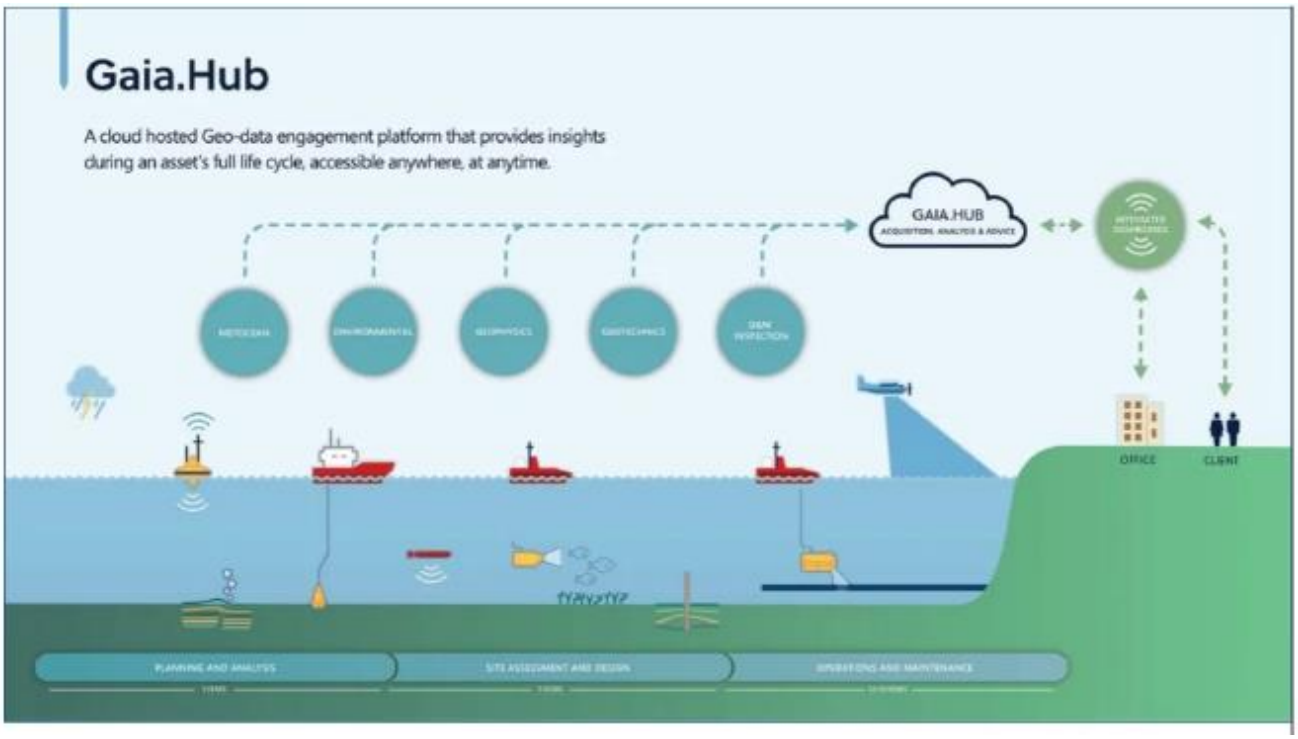
The growing user group for the Gaia.Hub site includes project managers, geotechnical engineers, marine archaeologists, geoscientists, biologists, ecologists, foundation engineers, cable engineers, and offshore field crew. As of January, BOEM staff have also joined the user community and can now directly access source geodata related to BOEM's hardcopy COP reporting requirements.

Advancing industry goals

As one of the world's largest energy markets, the US offers much offshore win potential, but so far has just one wind farm in operation, producing 125,000 megawatts of energy annually. Current US policy aims to significantly increase these energy resources, with the Biden administration issuing a goal to reach 30 gigawatts of installed wind energy by the year 2030.

Meeting this aggressive target will require all parties—operators, contractors, and regulators— to operate at maximum efficiency. The Atlantic Shores Gaia.Hub solution is an important step in this direction, accelerating the pace of project development through highly coordinated field programs that can adjust based on real-time geodata, and supplementing static, hardcopy reporting deliverables with access to source project geodata to allow faster regulatory review.

By making by making large datasets available through streaming, and complex datasets accessible through intuitive dashboards and web-based applications, Gaia.Hub allows regulators to view and manipulate the same information as project engineers, which increases transparency, builds public trust, and hopefully leads to streamlined review and construction.


Gaia.Hub
A cloud hosted Geo-data engagement platform that provides insights during an asset's full life cycle, accessible anywhere, at anytime.
GAIA.HUB
OFFICE
CLIENT

ATLANTIC SHORES offshore wind

Appendix 11-7: Letter of support from [redacted]

[redacted]

ATLANTIC SHORES offshore wind

Appendix 11-8: [redacted]