DETERMINATION REPORT

VEMA S.A.

DETERMINATION OF THE

DEVELOPMENT AND IMPROVEMENT OF WATER SUPPLY SYSTEM, DRAINAGE SYSTEM AND WASTEWATER TREATMENT OF CITY COMMUNAL ENTERPRISE "MYKOLAYIVVODOKANAL"

REPORT №UKRAINE-DET/0477/2012

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DETERMINATION REPORT

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VEMA S.A.	Fabian Knodel

Summary:
Bureau Veritas Certification has made the determination of the «Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal" project, located in Mykolayiv city , Ukraine, on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria (but for the crediting period) refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

The determination scope is defined as an independent and objective review of the project design document, the study of project's baseline, monitoring plan and other relevant documents. It consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final determination report and opinion. The overall determination, from Contract Review to Determination Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the determination process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A. Taking into account these requests, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies baseline and monitoring methodology developed on the basis of "Guidance on criteria for baseline setting and monitoring" and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

Report:	Subject Group:
UKRAINE-det/0477/2012	JI

Project title:
«Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal"

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Table of Contents ***Page***

1 INTRODUCTION

VEMA S.A. has commissioned Bureau Veritas Certification to determine its JI project «Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise «Mykolayivvodokanal» (hereafter called "the project"), located in Mykolayiv region, Ukraine.

This report summarizes the findings of the determination of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The determination serves as project design verification and is a requirement to all projects. The determination is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are determined in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. Determination is a requirement for all JI projects and is seen as necessary and obligatory to provide assurance to stakeholders of the quality of the project and its intended generation of emissions reductions units (ERUs).

UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

1.2 Scope

The determination scope is defined as an independent and objective review of the project design document, the project's baseline, the monitoring plan and other relevant documents. The information in these documents meets the Kyoto Protocol requirements, UNFCCC rules and associated interpretation.

The determination is not meant to provide any consulting towards clients. However, stated requests for clarifications and/or corrective, forward action requests may provide input for improvement of the project design.

1.3 Determination team

The determination team consists of the following personnel:

Oleg Skoblyk – Bureau Veritas Certification Team Leader, Climate Change Lead Verifier
Viacheslav Yeromin - Bureau Veritas Certification Team Member, Climate Change Lead Verifier

This determination report was reviewed by:

Ivan Sokolov
Bureau Veritas Certification Internal technical reviewer

2 METHODOLOGY

The overall determination, from Contract Review to Determination Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a determination protocol was customized for the project, according to the version 01 of the "Joint Implementation Determination and Verification Manual", issued by the Joint Implementation Supervisory Committee at its 19th meeting on 04/12/2009. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from determining the identified criteria.

The determination protocol serves the following purposes:

- It describes and clarifies the requirements a JI project is expected to meet;
- It ensures a transparent determination process where the determiner will document how a particular requirement has been determined and the result of the determination.

The determination protocol consists of two tables and is enclosed in Appendix A to this report.

2.1 Review of Documents

The Project Design Document (PDD version 01 dated 13/12/2011) together with such additional documents related to the project design, baseline and monitoring plan, as: host country Law, Guidelines for users of the joint implementation project design document form, Approved CDM methodology and Guidance on criteria for baseline setting and monitoring, the Kyoto Protocol, Clarifications on Determination Requirements to be checked by an Accredited Independent Entity, were submitted by VEMA S.A.

To address Bureau Veritas Certification corrective action, forward action and clarification requests, VEMA S.A. revised the PDD and prepared in response the PDD version 02 dated 21/02/2012 and the PDD version 03 dated 02/04/2012.

The determination findings presented in this report relate to the project as described in the PDD versions 01 dated 13/12/2011, 02 dated 21/02/2012 and 03 dated *02*/*04*/2012.

2.2 Follow-up Interviews

19/03/2012 Bureau Veritas Certification performed on-site interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of CCE «Mykolayivvodokanal» and VEMA S.A. were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1. Interview topics

Interviewed organization	Interview topics
CCE «Mykolayivvodokanal»	➢ Project History ➢ Project approach ➢ Project boundary ➢ Schedule of implementation ➢ Organizational Structure ➢ Responsibilities and obligations ➢ Training ➢ Quality control procedures and technologies ➢ Modernization / installation of equipment (records) ➢ Control over metering equipment ➢ The system of keeping records of measurements, the database ➢ Technical Documentation ➢ Monitoring Plan and procedures ➢ Permits and licenses ➢ Environmental Impact Assessment ➢ Answers of stakeholders
VEMA S.A.	➢ Baseline methodology ➢ Monitoring Plan ➢ Additionality proofs ➢ The calculations of emission reductions ➢ Project design ➢ Legal issues relating to the project ➢ Environmental Impacts ➢ Approval of the host party

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the determination is to raise the requests for corrective actions and forward actions as well as clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the project design.

Corrective Action Request (CAR) is issued, where:

(a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;

(b) The JI requirements were not met;

(c) There is a risk that it will be impossible to monitor or calculate emission reductions.

The determination team may also issue Clarification Request (CL), if information is insufficient or not detailed enough to determine whether the applicable JI requirements have been met.

The determination team may also issue Forward Action Request (FAR), informing the project participants of an issue the adjustment of which will be reviewed during the verification.

To guarantee the transparency of the determination process, the concerns raised are documented in more detail in the determination protocol in Appendix A.

3 PROJECT DESCRIPTION

CCE “Mykolayivvodokanal” is one of Ukrainian companies with typical water supply, drainage and wastewater treatment systems that are usually operated in an unsatisfactory technical state.

Power consumption by CCE “Mykolayivvodokanal” for lifting and pumping-over of water, drainage and treatment of wastewater in the baseline period is high. This results in ineffective consumption of energy resources and significant financial costs.

The project’s main purpose is reduction of electric energy consumption by modernization and development of centralized water supply, drainage and wastewater treatment systems. This includes replacement and modernization of pumps, water distribution and drainage networks, installation of frequency regulators, optimization of the technological process of water pumping, introduction of mini hydropower plant in the city of Mykolayiv. The implementation of the abovementioned technologies will allow for reduction of greenhouse gas (CO_2) emissions and promote sustainable development of the city.

The project provides for GHG emission reductions due to:

- modernization of pumping equipment;
- replacement of pumping equipment;

- optimization of the technological process of water pumping, i.e. change of operation modes of pumping plants;
- replacement of water supply and drainage networks;
- replacement of shut-off and control valves;
- installation of a new group of metering devices;
- modernization of water treatment technology;
- installation of frequency regulators;
- modernization of aerotanks;
- implementation of the mini hydroelectric power plant (MHEPP).

Due to reduction of the amount of consumed electric energy from the power grid of Ukraine used by pumping plants, combustion of fossil fuel for electric energy generation to the grid will be decreased.
Due to the free flow of water at installed turbines, which takes place at main conduits, the transformation of kinetic energy of water into electric energy will take place. The electric energy will be used for the company's own purposes and this will result in reduced use of electric energy from the national grid of Ukraine.
These measures will be implemented after the project implementation, when servicing in the sphere of water supply, drainage becomes more effective.
The project may promote sustainable development of CCE "Mykolayivvodokanal" in the following aspects:

- decrease of national economy's dependence on import of energy and increase of country's energy security;
- high rates of labor and health protection;
- improvement of the global ecology state (counteraction in response to global climate change by means of reduction of greenhouse gas (GHG) emissions into the atmosphere).

The determination protocol includes CARs, CLs та FARs for PDD versions 01, 02 and 03.

4 DETERMINATION CONCLUSIONS

In the following sections, the conclusions of the determination are stated.

The findings from the desk review of the initial project design document and the findings from interviews during the follow up visit are described in the Determination Protocol in Appendix A.

The Clarification Requests, Corrective Action Requests and Forward Action Requests are stated, where applicable, in the following sections and are further documented in the Determination Protocol in Appendix A. The determination of the Project resulted in 52 Corrective Action Requests, 13 Clarification Requests and 1 Forward Action Request.

The number between brackets at the end of each section corresponds to the DVM paragraph.

4.1 Project approvals by Parties involved (19-20)

Upon completion of the Determination Report the project design document will be submitted to the State Environmental Investment Agency of Ukraine for receiving a Letter of Approval.

As the project has no approvals by the Parties involved, FAR 01 remains pending and will be closed after report finalizing (see Appendix A).

The identified areas of concern as to the project approvals by the Parties involved, project participants response and Bureau Veritas Certification's conclusion are described in Appendix A to the Determination Report (refer to FAR 01, CAR 17).

4.2 Authorization of project participants by Parties involved (21)

The participation for each of the legal entities listed as project participants in the PDD will be authorized by the Parties involved, through the written Letters of Approval (from the government of Switzerland as the country-investor and from Ukraine as the host party). Refer to Section 4.1 of this report.

4.3 Baseline setting (22-26)

The PDD explicitly indicates that using a methodology for baseline setting and monitoring developed in accordance with the requirements of Appendix B of the JI Guidelines (hereinafter referred to as "specific approach") with selected elements of approved CDM baseline and monitoring methodologies AM0020 «Baseline methodology for water pumping efficiency improvements» Version 02, was the selected approach for setting the baseline (in accordance with paragraph 11 of the Guidance on criteria for baseline setting and monitoring (Version 03)).

The PDD provides a detailed description in a complete and transparent manner, as well as justification, that the baseline was set:

(a) By listing and describing the following plausible future scenarios on the basis of conservative assumptions and selecting the most plausible one:

a. Operation of existing equipment will continue (continuation of the current situation), and electricity consumption will increase.

b. Modernization (the proposed project activity) without the use of the joint implementation mechanism;

c. Reduction of the project activities, the exclusion of any non-key activities from the project, for example, exclusion of frequency control from the project implementation, etc.

(b) Taking into account relevant national and/or sectoral policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector. In this context, the following key factors that affect a baseline are taken into account:

a. The role of energy sector is absolute and crucial for Ukraine. Power sector is a political factor of sovereignty in Ukraine. Ukrainian economy is considered to be one of the most energy intensive in the world in terms of the consumption of primary energy per gross domestic product unit. On March 15, 2006 the Cabinet of Ministers of Ukraine adopted “Energy Strategy of Ukraine till 2030”. The Energy strategy considers exploration of alternative and renewable energy sources as a significant factor in increasing the level of energy safety, decrease of energy anthropogenic affect on the environment and counteractions against global climate change.

b. Most companies in the water supply and drainage sector currently operating in Ukraine exploit equipment that was installed in the times of the Soviet Union. It should be noted that there is no local legislation in relation to the period of replacement of pumps, aerotanks and their maximal period of operation. Customary practice is exploitation of pumps installed in the seventies and even sixties-fifties.

c. Existing tariffs for water supply and drainage are regulated by the state and do not include depreciation and investment needs of water suppliers. This situation leads to a constant shortage of funds and the inability to timely repair equipment, invest in modernization and development of water supply infrastructure.

d. State support in the field of drinking water and drinking water supply is provided in amounts of funds stipulated by the law of Ukraine on State Budget of Ukraine for the relevant year, and intended for the financing of construction and reconstruction of the drinking water supply, drainage and wastewater treatment, of national or inter-regional significance and for research to improve drinking water supply and ensure cost effective use of resources. Technological rules of the water supply and drainage sector of Ukraine don't require the introduction of new technologies.

e. Ukraine already has experience in mini hydroelectric plant implementation at water supply and drainage companies, but it is not a current practice. The cost of mini hydroelectric power plants is the main barrier to installing this equipment. The implementation of this measure is not possible without additional external financing, but the Ukrainian government does not have enough money for this.
Construction of mini hydroelectric power plants without additional investment, for example, the one received from the sale of ERUs, is extremely difficult for water and wastewater enterprises in Ukraine.

f. Ukraine is implementing a JI project entitled "Reconstruction of water supply and drainage system "Luganskvoda Ltd." due to the sale of emission reduction units.

g. The Law of Ukraine "On the National Program "Drinking Water of Ukraine" for 2006-2020" provides for reconstruction and development of systems for drinking water supply and drainage in Ukraine. But so far the companies have not received funds to implement the measures specified in the National Program.

The PDD provides a detailed description in a complete and transparent manner, as well as justification, that the baseline was duly set.

The methods of calculation used to determine the expected and actual baseline emissions, are sufficiently described in sections E and D of the PDD, respectively.
Specific electricity consumption in the baseline scenario is calculated, taking into account the fact of its linear increase in course of time. This happens for several reasons:

- steady reduction of efficiency factors of pumping equipment over time and efficiency factor of the pumping plant as a whole;
- steady increase in losses in water supply and drainage networks.

This linear relationship is built on historical data for the period from 2001 to 2005 by using the method of the least squares. Details are provided in Section D.1. of the PDD.

The identified areas of concern as to the baseline, project participants response and Bureau Veritas Certification's conclusion are described in Appendix A to the Determination Report (refer to CAR 18 – CAR 29; CL 05).

4.4 Additionality (27-31)

The most recent version of the "Tool for the demonstration and assessment of additionality" approved by the CDM Executive Board was used, in accordance with the JI specific approach, defined in paragraph 2 (c) of annex I to the "Guidance on criteria for baseline setting and monitoring". All explanations, descriptions and analyses are made in accordance with the selected tool or method.

PDD provides justification for applicability of the approach with a clear and transparent description under clause 4.3 above.

The developer of the project proved that anthropogenic emissions under the project are lower than the emissions that would take place in the absence of the project activity.

The PDD of the last version demonstrated that there are several barriers that hinder the proposed project activity.
Additionality proofs are provided. Three plausible and realistic alternative scenarios for each type of modernization stated in the project were identified:

- Continuation of current situation (no project activity or other alternatives), i.e. the scenario "business-as-usual" with carrying out of minimal repair works against the background of total degradation of the water supply, drainage and wastewater treatment system (Alternative 1.1 and Alternative 2.1)

- Modernization (the proposed project activity) without the use of the Joint Implementation mechanism (Alternative 1.2 and Alternative 2.2);

- Reduction of the project activities, the exclusion of any non-key activities from the project, for example, exclusion of frequency control from the project implementation, etc. (Alternative 1.3)

and the scenarios mandatory compliance with the laws and legal acts was demonstrated.

Such potential barriers as investment barriers (additional costs on implementation of measures planned under the project), technological barriers (lack of experience and qualified personnel to operate modern equipment that is new to Ukraine) and organizational barriers (lack of experience in JI project implementation management) that hinder the implementation of the project scenario without additional income from the project under the joint implementation mechanism and in fact don't allow for the implementation of any alternative other than the baseline scenario, were described and justified in a proper manner. There are no barriers to baseline alternative, which is the continuation of the "business as usual".

Thus, the overall conclusion is that the project activity meets the criteria of additionality, is not a baseline scenario and is additional.

Additionality is demonstrated properly, as a result of the analysis, which is used by the approach chosen.

The identified areas of concern as to the additionality, project participants response and Bureau Veritas Certification's conclusion are described in Appendix A to the Determination Report (refer to CAR 30, CAR 31, CL 06, CL 07, CL 08).

4.5 Project boundary (32-33)

The project boundary defined in the PDD, which is, in accordance with the applied methodology AM0020 «Baseline methodology for water pumping efficiency improvements» (version 02), delineated by the physical, geographical location of the project equipment of the water supply, drainage and wastewater treatment systems, encompasses all anthropogenic emissions by sources of greenhouse gases (GHG) that are:

(i) Under the control of the project participants, such as:
- CO_2 emissions from power plant(s), which occur as a result of electricity generation for the national power grid;

(ii) Reasonably attributable to the project, such as:
- CO_2 emissions, which occur as a result of consumption of electricity, which will be replaced by electric energy generated by mini hydroelectric power plant.

(iii) Significant, i.e., as a rule of thumb, would by each source account on average per year over the crediting period for more than 1 per cent of the annual average anthropogenic emissions by sources of GHGs, or exceed an amount of 2,000 tonnes of CO_2 equivalent, whichever is lower.

The delineation of the project boundary and the gases and sources included are appropriately described and justified in the PDD.
The identified areas of concern as to the project boundary, project participants response and Bureau Veritas Certification's conclusion are described in Appendix A to the Determination Report (refer to CAR 32).

4.6 Crediting period (34)

The PDD states the starting date of the project as the date on which the participants of CCE «Mykolayivvodokanal» made a decision about the start of the JI project implementation and implementation or real actions under the project began, and the starting date is 06/12/2005, which is after the beginning of 2000.

The PDD states the expected operational lifetime of the project in years and months, which is 15 years or 180 month from December 6, 2005 to 31 December 2020.

The PDD states the length of the crediting period in years and months, which is from January 1, 2006 to December 31, 2020 (15 years or 180 months).

The PDD states the length of the Kyoto crediting period in years and months, which is from January 1, 2008 to December 31, 2012 (5 years or 60 months).

The date on which the first emission reductions are expected to be generated was taken as the starting date of the crediting period, namely January 1, 2006. The end of the crediting period will be the final date of commitments to the buyer under the purchase and sales contract, under which the project owner must deliver to the buyer approved greenhouse gases anthropogenic emission reductions resulting from this project, namely, December 31, 2020.

If after the first commitment period under the Kyoto Protocol its validity is prolonged, the crediting period under the project will be prolonged by 8 years/96 months (January 1, 2013 - December 31, 2020).

The PDD states that the extension of its crediting period beyond 2012 is subject to the host Party approval, and the estimates of emission reductions or enhancements of net removals are presented separately for those until 2012 and those after 2012 in all relevant sections of the PDD.

The identified areas of concern as to the crediting period, project participants response and Bureau Veritas Certification's conclusion are described in Appendix A to the Determination Report (see CAR 33, CAR 34, CAR 35, CAR 36).

4.7 Monitoring plan (35-39)

The PDD, in its monitoring plan section, explicitly indicates that a specific JI approach with the elements of approved CDM methodology AM0020 «Baseline methodology for water pumping efficiency improvements» (version 02) was selected.

The monitoring plan describes all relevant factors and key characteristics that will be monitored, and the period in which they will be monitored, in particular also all decisive factors for the control and reporting of project performance, such as reporting forms, the operating structure and management structure of the enterprise, that will be applied when implementing the monitoring plan.

The monitoring plan specifies the parameters, constant values and variables that are reliable (is consistent and accurate values), dependable (that is clearly related to results that are measured) and provide a clear picture of emission reductions that are subject to monitoring, such as: volume of water supplied to consumers by the water supply system, the total volume of wastewater drained by the drainage system to the system of aerotanks; the amount of electricity needed to transport water by the WPP and wastewater by the DPP as well as to treat wastewater by the system of aerotanks; the amount of electricity generated by the mini hydroelectric power plant.

The monitoring plan has properly given a list of standard variables that are contained in Appendix B to the "Guidance on criteria for baseline setting and monitoring," developed by the JISC, including: baseline emissions (BE_y), project emissions (PE_y), electricity consumption (EC_y), carbon dioxide emission factor for consumption of electricity from the Ukrainian national power grid ($EF_{CO2,ELEC,y}$), specific electricity consumption ($SEC_{xx,yy}$), year (y).

According to the Guidelines for users of the JI PDD form, revision # 04, the described approach to monitoring clearly states:

a) Data and parameters that are not monitored throughout the crediting period, but are determined only once, and that are available already at the stage of the PDD development:

$EC^{j}_{b,\,w}$	Total amount of electric energy, used by water supply system *«w»* in period *"j",* in the baseline scenario, kWh
$EC^{j}_{b,\,m}$	Total amount of electric energy used by drainage system *«m»,* in period *"j"*, in the baseline scenario, kWh
$EC^{j}_{b,\,t}$	Total amount of electric energy, used by system of aerotanks *"t"* in period *"j",* in the baseline scenario, kWh

$EC^{y}_{b,g}$	Total amount of electric energy, generated by the mini hydroelectric power plant, in period *"y"*, in the baseline scenario, kWh
$V^{j}_{b,w}$	Total volume of water pumped by water supply system *«w»* in period *"j"*, in the baseline scenario, m^3
$V^{j}_{b,m}$	Total volume of wastewater pumped by drainage system *«m»* in period *"j"*, in the baseline scenario, m^3
$V^{j}_{b,t}$	Total volume of wastewater treated by system of aerotanks *«t»* in period *"j"*, in the baseline scenario, m^3

b) Data and parameters that are not monitored throughout the crediting period, but are determined only once, but that are not already available at the stage of the PDD development: none

c) Data and parameters that are monitored thoughout the crediting period:

EF_y	Carbon dioxide emission factor for consumption of electricity from the Ukrainian national power grid, in period *"y"***Ошибка! Закладка не определена.**, t CO_{2e}/MWh
EF_g	Carbon dioxide emission factor for the Ukrainian power grid when electric energy is generated by mini hydroelectric power plant, in period *"y"*, t CO_{2e}/MWh
$V^{y}_{r,w}$	Total volume of water pumped by water supply system *«w»* in period *"y"*, in the project scenario, m^3
$V^{y}_{r,m}$	Total volume of wastewater pumped by drainage system *«m»* in period *"y"*, in the project scenario, m^3
$V^{y}_{r,t}$	Total volume of wastewater treated by system of aerotanks *«t»* in period *"y"*, in the project scenario, m^3
$EC^{y}_{r,w}$	Total amount of electric energy, used by water supply system *«w»* in period *"y"*, in the project scenario, kWh
$EC^{y}_{r,m}$	Total amount of electric energy used by drainage system *«m»*, in period *"y"*, in the project scenario, kWh
$EC^{y}_{r,t}$	Total amount of electric energy, used by system of aerotanks *"t"* in period *"y"*, in the project scenario, kWh
$EC^{y}_{r,g}$	Total amount of electric energy, generated by the mini hydroelectric power plant, in period *"y"*, in the project scenario, kWh

The monitoring plan describes the methods employed for data monitoring (including its frequency) and recording, such as direct measurement by electricity meters and water flow meters, electricity bills and invoices for the consumption (use) of water.

The most objective and cumulative factors that provide a clear picture of whether the emission reductions took place:

1) Energy savings. It can be defined as the difference between the baseline electric energy consumption, and electric energy consumption after the project implementation. If the equipment of pumping plants and the equipment of wastewater treatment system (aeration systems in aerotanks) consume electric energy at the project level, all other factors, for example, such as efficiency of new pumps, and water loss in water distribution networks are adequate;

2) The total amount of electric energy that will be replaced by electric energy generated by the mini hydroelectric power plant;

The monitoring plan develops all the algorithms and formulae used to estimate / calculate baseline emissions and project emissions:

Formulae used to estimate project emissions (for each gas, source etc.; emissions in units of CO_2 equivalent):

$$E_r^y = E_{r,e}^y + E_{r,g}^y, \quad (1)$$

Where:

E_r^y - GHG emissions that occur in period "y" in the project scenario, t CO_{2e};

$E_{r,e}^y$ - GHG emissions, due to electric energy consumption by pumping and treatment equipment in period «*y*» in the project scenario, t CO_2e;

$E_{r,g}^y$ - GHG emissions, due to electric energy consumption that will be substituted with electric energy generated by mini hydroelectric power plant in period «*y*», in the project scenario, *t* CO_2e;

$[e]$ - electric energy consumption system;

$[g]$ - mini hydroelectric power plant system;

$[y]$ - monitoring period;

$[r]$ - relates to reporting year.

$$E_{r,e}^y = E_{r,w}^y + E_{r,m}^y + E_{r,t}^y, \quad (2)$$

Where:

$E_{r,w}^y$ - GHG emissions due to electric energy consumption by water supply system *"w"* in period «y», in the project scenario, t CO_2e;

$E_{r,m}^y$ - GHG emissions due to electric energy consumption by drainage system *«m»,* in period «y», in the project scenario, t CO_2e;

$E_{r,t}^y$ - GHG emissions due to electric energy consumption by wastewater treatment system (aerotanks) *"t"*, in period «y», in the project scenario, t CO_2e;

$[w]$ - water supply system;

$[m]$ - drainage system;

$[t]$ - system of aerotanks;

$[y]$ - monitoring period;

$[r]$ - relates to reporting year.

GHG emissions due to electric energy consumption by pumping equipment, which is used by water supply system *"w"*

$$E^{y}_{r,w} = EC^{y}_{r,w} * EF_{y}, \quad (3)$$

where:

EF_{y} - Carbon dioxide emission factor for consumption of electricity from the Ukrainian national power grid, in period *"y"*, t CO_2e/MWh;

$EC^{y}_{r,w}$ - total amount of electric energy, that is consumed by water supply system *«w»* in period «*y»,* in the project scenario, kWh.;

$[w]$ - water supply system;

$[y]$ - monitoring period;

$[r]$ - relates to reporting year.

GHG emissions, due to consumption of electric energy which is used by drainage system *«m»*

$$E^{y}_{r,m} = EC^{y}_{r,m} * EF_{y}, \quad (4)$$

Where:

EF_{y} - Carbon dioxide emission factor for consumption of electricity from the Ukrainian national power grid, in period *"y"*, tCO_2e/MWh;

$EC^{y}_{r,m}$ - total amount of electric energy, that is consumed by drainage system *«m»* in period «*y»,* in the project scenario, kWh;

$[m]$ - drainage system;

$[y]$ - monitoring period;

$[r]$ - relates to project year.

GHG emissions due to consumption of electric energy which is used by wastewater treatment system *«t»* (aerotanks)

$$E^{y}_{r,t} = EC^{y}_{r,t} * EF_{y}, \quad (5)$$

where:

EF_{y} - Carbon dioxide emission factor for consumption of electricity from the Ukrainian national power grid, in period *"y"*, t CO_2e/MWh;

$EC^{y}_{r,t}$ - total amount of electric energy, that is consumed by system of aerotanks *«t»* in period «*y»,* in the project scenario, kWh.;

$[t]$ - system of aerotanks;

$[y]$ - monitoring period;
$[r]$ - relates to project year.

GHG emissions due to consumption of electric energy which will be generated by the mini hydroelectric power plant

$$E_{r,g}^{y} = EC_{r,g}^{y} * EF_{g}, \quad (6)$$

Where:

$EC_{r,g}^{y}$ - total amount of electric energy generated by plant (mini hydroelectric power plant), in period «y», in the project scenario, kWh;

EF_{g} - Carbon dioxide emission factor for the power grid in Ukraine when electric energy is generated by hydroelectric power plant, t CO_2e/MWh;

$[g]$ - mini hydroelectric power plant system;

$[y]$ - monitoring period of project scenario;

$[r]$ - relates to project monitoring period.

Formulae formulae used to estimate baseline emissions (for each gas, source etc.; emissions in units of CO_2 equivalent):

$$E_{b}^{y} = E_{b,e}^{y} + E_{b,g}^{y}, \quad (7)$$

Where:

E_{b}^{y} - GHG emissions that occur in period *"y",* in the baseline scenario, t CO_{2e};

$E_{b,e}^{y}$ - GHG emissions, due to electric energy consumption by pumping and treatment equipment in period «*y»,* in the baseline scenario, t CO_2e;

$E_{b,g}^{y}$ - GHG emissions, due to consumption of electric energy that will be substituted with electric energy generated by the mini hydroelectric power plant in the baseline scenario, in period «*y», t* CO_2e;

$[e]$ - electric energy consumption system;

$[g]$ - mini hydroelectric power plant system;

$[y]$ - monitoring period;

$[b]$ - relates to the baseline period.

$$E_{b,e}^{y} = E_{b,w}^{y} + E_{b,m}^{y} + E_{b,t}^{y}, \quad (8)$$

Where:

$E^{y}_{b,w}$- GHG emissions, due to electric energy consumption by water supply system *«w»* in period «*y»,* in the baseline scenario, t CO_2e;

$E^{y}_{b,m}$- GHG emissions, due to electric energy consumption by drainage system *«m»* in period «*y»,* in the baseline scenario, t CO_2e;

$E^{y}_{b,t}$ - GHG emissions, due to electric energy consumption by wastewater treatment system *«t»* (aerotanks) in period «*y»,* in the baseline scenario, t CO_2e;

$[e]$ - electric energy consumption system;

$[w]$ - water supply system;

$[m]$ - drainage system;

$[t]$ - system of aerotanks;

$[y]$ - monitoring period;

$[b]$ - relates to baseline period.

GHG emissions due to electric energy consumption by pumping equipment, which is used by water supply system *"w"*

$$E^{y}_{b,w} = V^{y}_{r,w} * SEC^{y}_{b,w} * EF_{y}, \quad (9)$$

Where:

$SEC^{y}_{b,w}$ - Specific consumption of electric energy used by water supply system "*w*" in period «*y*», in the baseline scenario, kWh/m^3;

EF_y - Carbon dioxide emission factor for consumption of electricity from the Ukrainian national power grid, in period *"y"*, t CO_{2e}/MWh;

$V^{y}_{r,w}$ - Total volume of water pumped by water supply system *«w»* in period "y", in the project scenario, m^3;

$[w]$ - water supply system;

$[y]$ - monitoring period;

$[b]$ - relates to baseline period;

$[r]$ - relates to project period.

Specific electric energy consumption in the baseline scenario is calculated based on the assumption of its linear growth with time. This linear dependence is based on historical data for the period of 2001-2005 by using the method of least squares. Specific electric energy consumption in the baseline scenario in period *"y"* is calculated according to formulae:

$$SEC^{y}_{b,w} = a \cdot y + b, \quad (9.1)$$

$$a = \frac{5\sum_{j}(SEC_{b,w}^{j} \cdot j) - \sum_{j} SEC_{b,w}^{j} \cdot \sum_{j} j}{5\sum_{j} j^2 - (\sum_{j} j)^2}, \quad (9.2)$$

$$b = \frac{\sum_{j} SEC_{b,w}^{j} - a \cdot \sum_{j} j}{5}, \quad (9.3)$$

Where:

$SEC_{b,w}^{y}$ - Specific consumption of electric energy used by water supply system "*w*" in period «*y*», in the baseline scenario, kWh/m^3;

a - linear dependence coefficient;

b - linear dependence coefficient;

$[w]$ - water supply system;

$[j]$ - historical period $j \in \{2001, 2002, 2003, 2004, 2005\}$;

$[5]$ - number of years in historical period;

$[y]$ - monitoring period;

$[b]$ - relates to baseline period.

In these formulae specific consumption in year «*j*» is calculated as follows:

$$SEC_{b,w}^{j} = EC_{b,w}^{j} / V_{b,w}^{j},$$

Where:

$EC_{b,w}^{j}$ - total amount of electric energy, used by water supply system "*w*" in period "*j*", in the baseline scenario, kWh;

$V_{b,w}^{j}$ - total volume of water pumped by water supply system «*w*» in period "*j*", in the baseline scenario, m^3;

$[w]$ - water supply system;

$[j]$ - historical period $j \in \{2001, 2002, 2003, 2004, 2005\}$;

$[b]$ - relates to baseline period.

GHG emissions, due to electric energy consumption which is used by drainage system «*m*»

$$E^{y}_{b,m} = V^{y}_{r,m} * SEC^{y}_{b,m} * EF_{y}\ , \qquad (10)$$

Where:

$SEC^{y}_{b,m}$ - Specific consumption of electric energy used by drainage system "*m*" in period «*y*», in the baseline scenario, kWh/m^3;

EF_{y} - Carbon dioxide emission factor for consumption of electricity from the Ukrainian national power grid, in period *"y"*, t CO_{2e}/MWh;

$V^{y}_{r,m}$ - Total volume of wastewater pumped by drainage system «*m*» in period "*y*", in the project scenario, m^3;

$[m]$ - drainage system;

$[y]$ - monitoring period;

$[b]$ - relates to baseline period;

$[r]$ - relates to project period.

Specific electric energy consumption in the baseline scenario is calculated based on the assumption of its linear growth with time. This linear dependence is based on historical data for the period of 2001-2005 by using the method of least squares. Specific electric energy consumption in the baseline scenario in period *"y"* is calculated according to formulae:

$$SEC^{y}_{b,m} = a \cdot y + b, \qquad (10.1)$$

$$a = \frac{5\sum_{j}(SEC^{j}_{b,m} \cdot j) - \sum_{j} SEC^{j}_{b,m} \cdot \sum_{j} j}{5\sum_{j} j^2 - (\sum_{j} j)^2}, \qquad (10.2)$$

$$b = \frac{\sum_{j} SEC^{j}_{b,m} - a \cdot \sum_{j} j}{5}, \qquad (10.3)$$

Where:

$SEC^{y}_{b,m}$ - Specific consumption of electric energy used by drainage system "*m*" in period «*y*», in the baseline scenario, kWh/m^3;

a - linear dependence coefficient;

b - linear dependence coefficient ;

$[m]$ - drainage system;

$[j]$ - historical period $j \in \{2001, 2002, 2003, 2004, 2005\}$;

$[5]$ - number of years in historical period;

$[y]$ - monitoring period of project scenario;

$[b]$ - relates to baseline period.

In these formulae specific consumption in year «*j*» is calculated as:

$$SEC^{j}_{b,m} = EC^{j}_{b,m} / V^{j}_{b,m}, \quad (10.4)$$

Where:

$EC^{j}_{b,m}$ - total amount of electric energy, used by drainage system "*m*" in period "*j*", in the baseline scenario, kWh;

$V^{j}_{b,m}$ - total volume of wastewater pumped by drainage system «*m*» in period "*j*", in the baseline scenario, m^3;

$[m]$ - drainage system;

$[j]$ - historical period $j \in \{2001, 2002, 2003, 2004, 2005\}$;

$[b]$ - relates to baseline period.

GHG emissions, due to consumption of electric energy which is used by wastewater treatment system «*t*» (aerotanks)

$$E^{y}_{b,t} = V^{y}_{r,t} * SEC^{y}_{b,t} * EF_{y}, \quad (11)$$

Where:

$SEC^{y}_{b,t}$ - Specific consumption of electric energy used by system of aerotanks "t" in period «*y*», in the baseline scenario, kWh/m^3;

EF_{y} - Carbon dioxide emission factor for consumption of electricity from the Ukrainian national power grid, in period *"y"*, t CO_{2e}/MWh;

$V^{y}_{r,t}$ - total volume of wastewater treated by system of aerotanks «*t*» in period "*y*", in the project scenario, m^3;

$[t]$ - system of aerotanks;

$[y]$ - monitoring period;

$[b]$ - relates to baseline period;

$[r]$ - relates to project period.

Specific electric energy consumption in the baseline scenario is calculated based on the assumption of its linear growth with time. This linear dependence is based on historical data for the period of 2001-2005 by using the method of least squares. Specific electric energy consumption in the baseline scenario in period *"y"* is calculated according to formulae:

$$SEC_{b,t}^{y} = a \cdot y + b, \quad (11.1)$$

$$a = \frac{5\sum_{j}(SEC_{b,t}^{j} \cdot j) - \sum_{j} SEC_{b,t}^{j} \cdot \sum_{j} j}{5\sum_{j} j^{2} - (\sum_{j} j)^{2}}, \quad (11.2)$$

$$b = \frac{\sum_{j} SEC_{b,t}^{j} - a \cdot \sum_{j} j}{5}, \quad (11.3)$$

Where:

$SEC_{b,t}^{y}$ - Specific consumption of electric energy used by system of aerotanks *"t"*, in period «*y*», in the baseline scenario, kWh./m^3;

a - linear dependence coefficient;

b - linear dependence coefficient;

$[t]$ - system of aerotanks;

$[j]$ - historical period $j \in \{2001, 2002, 2003, 2004, 2005\}$;

$[5]$ - number of years in historical period;

$[y]$ - monitoring period of project scenario;

$[b]$ - relates to baseline period.

In these formulae specific consumption in year «*j*» is calculated as follows:

$$SEC_{b,t}^{j} = EC_{b,t}^{j} / V_{b,t}^{j}, \quad (11.4)$$

Where:

$EC_{b,t}^{j}$ - total amount of electric power, used by system of aerotanks *"t"* in period "*j*", in the baseline scenario, kWh;

$V_{b,t}^{j}$ - total volume of wastewater treated by system of aerotanks *«t»* in period "*j*", in the baseline scenario, m^3;

$[t]$ - system of aerotanks;

$[j]$ - historical period $j \in \{2001, 2002, 2003, 2004, 2005\}$;

$[b]$ - relates to baseline period;

GHG emissions due to electric energy consumption which will be generated by the mini hydroelectric power plant in the baseline scenario

$$E_{b,g}^{y} = EC_{b,g}^{y} * EF_{g}, \quad (12)$$

Where:

$EC_{b,g}^{y}$ - total amount of electric energy generated by the plant (the mini hydroelectric power plant), in period «y» in the baseline scenario, kWh;

EF_{g} - Carbon dioxide emission factor for the power grid of Ukraine when electric energy is generated by mini hydroelectric power plant, in period *"y"*, t CO_2e/MWh;

$[g]$ - system of mini hydroelectric power plant;

$[y]$ - monitoring period of project scenario;

$[b]$ - relates to baseline monitoring period.

Quantity of Emission Reduction Units (ER), t CO_{2e}:

$$ER^{y} = E_{b}^{y} - E_{r}^{y}, \quad (13)$$

where:

ER^{y} - amount of emission reduction units, t CO_2e;

E_{b}^{y} – GHG emissions in period «*y*» in the baseline scenario, t CO_2e;

E_{r}^{y} – GHG emissions in period «*y*» in the project scenario, t CO_2e;

$[y]$ - monitoring period;

$[b]$ - relates to baseline monitoring period.

$[r]$ - relates to project monitoring period.

The monitoring plan presents the quality assurance and control procedures for the monitoring process, which are sufficiently described in tabular form in sections of the PDD D.1.1.1., D.1.1.3. and D.2. This includes, as appropriate, provision and submission on request of information about calibration, as well as information about how data are recorded and / or how the applicability of the method and accuracy of data are assured.

The monitoring plan clearly identifies the responsibilities and the authority regarding the monitoring activities. Collection of all the key parameters necessary for monitoring and calculation of greenhouse gas emission reductions is constantly carried out according to the practice, established at CCE «Mykolayivvodokanal». Monitoring under the project does not require any changes in existing data recording and collection system.

On the whole, the monitoring report reflects good monitoring practices appropriate to the project type.

The monitoring plan provides, in tabular form, a complete compilation of the data that need to be collected for its application, including data that are measured or sampled and data that are collected from other sources (e.g. official statistics, expert judgment, proprietary data, IPCC, commercial and scientific literature etc.) but not including data that are calculated with equations

The monitoring plan indicates that the data monitored and required for verification are to be kept for two years after the last transfer of ERUs for the project.

The identified areas of concern as to the monitoring plan, project participants response and Bureau Veritas Certification's conclusion are described in Appendix A to the Determination Report (see CAR 37 – CAR 49; CL 09, CL 10).

4.8 Leakage (40-41)

The PDD appropriately describes an assessment of the potential leakage of the project and appropriately explains which sources of leakage are to be calculated, and which can be neglected.

Under the approved methodology AM0020 «Baseline methodology for water pumping efficiency improvements» (version 02), used in this project together with a JI specific approach, there are no potential sources of leakages from the project activities.

The project activity does not provide for the use of equipment from another activity. No leakages are expected.

4.9 Estimation of emission reductions or enhancements of net removals (42-47)

The PDD provides estimates of emissions in the baseline scenario and project scenario as the selected approach for calculation of emission reductions generated by the project.

PDD provides projected estimates:

(a) emissions in the project scenario (within the project boundary), which are 104 743 tonnes CO_2e in 2006-2007, 294 641 tonnes CO_2e in 2008-2012, 467 968 tonnes CO_2e in 2013-2020;

(b) leakage, as appropriate, are equal to zero tonnes of CO_{2e};

(c) emissions for the baseline scenario (within the project boundary), which are 175 795 tonnes CO_2e in 2006-2007, 637 911 tonnes CO_2e in 2008-2012, 1 066 688 tonnes CO_2e in 2013-2020;

(d) reduction of emissions adjusted by leakages (based on the above (a) - (c)) that make up 71 052 tonnes CO_2e in 2006-2007, 343 270 tonnes CO_2e in 2008-2012, 598 720 tonnes CO_2e in 2013-2020.

The estimates referred to above are given:

(a) on an annual basis;

(b) from 01/01/2006 to 31/12/2020, covering the whole crediting period;

(c) On a source-by-source basis;

(d) for each GHG, which is CO_2;

(e) In tonnes of CO_2 equivalent, using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 5 of the Kyoto Protocol.

Formulae for calculating the above estimations are given in section 4.7. All formulae are consistent throughout the PDD.
For calculating the estimates referred to above such key factors as the Ukrainian environmental legislation and other national legislation, as well as key relevant factors such as availability of funds for implementation of measures envisaged by the project, tariffs that are set by the state, modern technology and the ability to implement know-how in water supply, drainage and wastewater treatment spheres, influencing the baseline emissions and the activity level of the project and the emissions as well as risks associated with the project were taken into account, as appropriate.

Data sources used for calculating the estimates referred to above such as documents and archival data of the enterprise, standards and statistical forms, etc. are clearly defined, reliable and transparent.

Emission factors, carbon dioxide emission factor for the power grid of Ukraine when generating electric energy by mini hydroelectric power plant (EF_g) and Carbon dioxide emission factor for consumption of electricity from the Ukrainian national power grid (EF_y), were selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice.

The estimation referred to above is based on conservative assumptions and the most plausible scenarios in a transparent manner.

The estimates referred to above are consistent throughout the PDD.

The annual average of estimated emission reductions over the crediting period is calculated by dividing the total estimated emission reductions over the crediting period by the total months of the crediting period, and multiplying by twelve.

Detailed algorithms of calculations and their results are described in sections D, E and Accompanying document 1 to the PDD.

The identified areas of concern as to the estimation of emission reductions, project participants response and Bureau Veritas Certification's conclusion are described in Appendix A to the Determination Report (see CAR 50, CAR 51).

4.10 Environmental impacts (48)

Sections F.1. and F.2. of the PDD provide information about the documentation that contains the analysis of environmental impacts caused by the project, including the transboundary impact, in accordance with procedures defined by the Host Party.

The PDD states that modernization of pumping equipment, replacement of water supply and drainage networks are not the objects of particular environmental hazard and are not subject to state examination in accordance with Resolution # 554 as of July 27, 1995 "List of activities and facilities of high environmental hazard" and Art. 14 of the Law of Ukraine "On ecological expertise". Section F.1. presents information about the impact on air and water environment, land use.

Project documentation for the implementation of the mini hydroelectric power plant (according to state building standards of Ukraine A.2.2-1-2003), which includes environmental impact assessment (EIA) is under development and will be provided during the implementation period.

CCE "Mykolayivvodokanal" has all permits, including limits on the formation and disposal of waste, as well as relevant standards in the process of execution of reporting documents on the use of energy resources:

- Permit for special water use;
- The limit on the formation and disposal of waste CCE "Mykolayivvodokanal";
- Form 2-TP (VODHOSP), Report on water use;
- Form 11-MTP, report on the fuel, heat and electricity consumption.

It is clear that the project doesn't generate any adverse environmental impact, but rather has a positive impact on the environment. It is expected that reducing electricity consumption by the water supply, drainage and wastewater treatment system, (first of all, pumping equipment) from the national power grid of Ukraine, CO_2 emissions will be reduced.

The only environmental impact is dismantled equipment. It is a state property and will be stored at the company's storage buildings.

The PDD provides conclusion and all references to supporting documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party.

The identified areas of concern as to the environmental impacts, project participants response and Bureau Veritas Certification's conclusion are described in Appendix A to Determination Report (see CAR 52, CL 11, CL 12).

4.11 Stakeholder consultation (49)

Since the project activities do not imply any negative environmental impact and negative social effect, special public discussions were not necessary. However, CCE "Mykolayivvodokanal" constantly informs the public about the implementations and modernization that are implemented or planned to be implemented, and the stages of their implementation at the official website of the company. Stakeholders may provide their comments and take part in the discussion of these issues. No comments have been received so far.

The identified areas of concern as to the stakeholder consultation, project participants response and Bureau Veritas Certification's conclusion are described in Appendix A to Determination Report (see CL 13).

4.12 Determination regarding small-scale projects (50-57)

Not applicable.

4.13 Determination regarding land use, land use change and forestry projects (58-64)

Not applicable.

4.14 Determination regarding programmes of activities (65-73)

Not applicable.

5 SUMMARY AND REPORT OF HOW DUE ACCOUNT WAS TAKEN OF COMMENTS RECEIVED PURSUANT TO PARAGRAPH 32 OF THE JI GUIDELINES

No comments, pursuant to paragraph 32 of the JI Guidelines, were received.

6 DETERMINATION OPINION

Bureau Veritas Certification has performed a determination of the «Development and improvement of water supply system, drainage system and wastewater treatment of CCE «Mykolayivvodokanal». The determination was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The determination consisted of the following three phases:

i) a desk review of the project design and the baseline and monitoring plan;
ii) follow-up interviews with project stakeholders;
i) the resolution of outstanding issues and the issuance of the final determination report and opinion.

The project participants used the latest tool for demonstration and assessment of additionality. According to this tool the PDD contains analysis of barriers, investment analysis and common practice analysis to determine that the project activity isn't the baseline scenario.

Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented and maintained as designed, the project is likely to achieve the estimated amount of emission reductions.

The determination revealed one pending issue related to the current determination stage of the project: the written approval of the project by the host Country (Ukraine) wasn't obtained. If the written approval by the host Country is provided, it is our opinion that the project as described in the Project Design Document, versions 03 as of 02/04/2012 meets all the relevant UNFCCC requirements for the determination stage and the relevant host Country criteria as well as expectations of the stakeholders.

The determination is based on the information made available to us and the engagement conditions detailed in this report.

7 REFERENCES

Category 1 Documents:

Documents provided by VEMA S.A. that relate directly to the GHG components of the project.

/1/	PDD «Development and improvement of water supply system, drainage system and wastewater treatment of CCE "Mykolayivvodokanal", version 01 on 13/12/2011
/2/	PDD «Development and improvement of water supply system, drainage system and wastewater treatment of CCE "Mykolayivvodokanal", version 02 on 21/02/2012;
/3/	PDD «Development and improvement of water supply system, drainage system and wastewater treatment of CCE "Mykolayivvodokanal", version 03 on 02/04/2012;
/4/	Accompanying document 1 to the PDD of the JI Project «Development and improvement of water supply system, drainage system and wastewater treatment of CCE "Mykolayivvodokanal", «Calculation of estimated greenhouse gas emissions».
/5/	Accompanying document 2 to the PDD of the JI Project «Development and improvement of water supply system, drainage system and wastewater treatment of CCE "Mykolayivvodokanal", «Project and monitoring equipment».
/6/	Accompanying document 3 to the PDD of the JI Project «Development and improvement of water supply system, drainage system and wastewater treatment of CCE "Mykolayivvodokanal", «Replacement of water supply and drainage networks in 2006-2012».
/7/	Guidelines for users of the JI PDD form. Version 04, JISC
/8/	AM0020 «Baseline methodology for water pumping efficiency improvements», version 02)
/9/	The Kyoto Protocol
/10/	Marrakesh Agreement, JI Methods
/11/	National report on the emissions inventory and removals of greenhouse gases in Ukraine for the period 1990-2004
/12/	Third National Communication of Ukraine on climate change under the Kyoto Protocol
/13/	Fourth National Communication of Ukraine on climate change under the Kyoto Protocol
/14/	Fifth National Communication of Ukraine on climate change under the Kyoto Protocol
/15/	Resolution of the Cabinet of Ministers of Ukraine dated 01/03/1999 № 303 "Procedure for establishment of standard fees for the environmental pollution and collection of this fee»
/16/	Law of Ukraine "On Ecological Expertise"

/17/	Law of Ukraine "On licensing of certain types of entrepreneurial activities"
/18/	JI guidelines. Appendix to decision 9/CDM.1.
/19/	JI Determination and Verification Manual, Version 01
/20/	Guidance on criteria for baseline setting and monitoring, JISC. Version 03.

Category 2 Documents:

Background documents related to the design and/or methodologies employed in the design or other reference documents

/1/	Certificate of the cost of construction works performed and expenses, March 2011
/2/	Certificate of the cost of construction works performed and expenses, 2011
/3/	Certificate of the cost of construction works performed and expenses, October 2011
/4/	Certificate of the cost of subcontract works performed, February 2010
/5/	Certificate of the cost of construction works performed and expenses, April 2010
/6/	Certificate of the cost of construction works performed and expenses, July 2010
/7/	Certificate of the cost of construction works performed and expenses, March 2010
/8/	Certificate of the cost of construction works performed and expenses, March-2 2010
/9/	Certificate of the cost of construction works performed and expenses, April 2010
/10/	Certificate of the cost of construction works performed and expenses, July 2010
/11/	Certificate of the cost of construction works performed and expenses, August 2010
/12/	Certificate of the cost of construction works performed and expenses, 2010
/13/	Certificate of the cost of subcontract works performed, July 2009
/14/	Certificate of the cost of subcontract works performed, August 2009
/15/	Certificate of the cost of subcontract works performed, July 2009
/16/	Certificate of the cost of subcontract works performed, 2009

/17/	Certificate of the cost of subcontract works performed, December 2009
/18/	Certificate of the cost of subcontract works performed, August 2009
/19/	Certificate of the cost of subcontract works performed, June 2009
/20/	Certificate of the cost of subcontract works performed, July 2009
/21/	Certificate of the cost of subcontract works performed, December 2009
/22/	Certificate of the cost of subcontract works performed, October 2008
/23/	Certificate of the cost of subcontract works performed, November 2008
/24/	Certificate of the cost of subcontract works performed, October 2008
/25/	Certificate of the cost of subcontract works performed, September 2008
/26/	Certificate of the cost of subcontract works performed, August 2008
/27/	Certificate of the cost of subcontract works performed, June 2008
/28/	Certificate of the cost of subcontract works performed, January 2007
/29/	Certificate of the cost of subcontract works performed, December 2007
/30/	Certificate of the cost of subcontract works performed, November 2007
/31/	Certificate of the cost of subcontract works performed, October 2007
/32/	Certificate of the cost of subcontract works performed, September 2007
/33/	Certificate of the cost of subcontract works performed, August 2007
/34/	Certificate of the cost of subcontract works performed, June 2007
/35/	Certificate of the cost of subcontract works performed, July 2007
/36/	Certificate of the cost of subcontract works performed, June 2007
/37/	Certificate of the cost of subcontract works performed, May 2007
/38/	Certificate of the cost of subcontract works performed, March 2007
/39/	Certificate of the cost of subcontract works performed, April 2007
/40/	Certificate of the cost of subcontract works performed, February 2007
/41/	Certificate of the cost of subcontract works performed, January 2007

/42/	Certificate of the cost of subcontract works performed, January 2007
/43/	Certificate of the cost of subcontract works performed, January 2007
/44/	Certificate of the cost of subcontract works performed, February 2007
/45/	Certificate of the cost of subcontract works performed, March 2007
/46/	Certificate of the cost of subcontract works performed, March 2007
/47/	Certificate of the cost of subcontract works performed, April 2007
/48/	Certificate of the cost of subcontract works performed, March 2007
/49/	Certificate of the cost of subcontract works performed, April 2007
/50/	Certificate of the cost of subcontract works performed, May 2007
/51/	Certificate of the cost of subcontract works performed, April 2007
/52/	Certificate of the cost of subcontract works performed, May 2007
/53/	Certificate of the cost of subcontract works performed, June 2007
/54/	Certificate of the cost of subcontract works performed, July 2007
/55/	Certificate of the cost of subcontract works performed, August 2007
/56/	Certificate of the cost of subcontract works performed, September 2007
/57/	Certificate of the cost of subcontract works performed, October 2007
/58/	Certificate of the cost of subcontract works performed, December 2007
/59/	Certificate of the cost of subcontract works performed, October 2006
/60/	Certificate of the cost of subcontract works performed, November 2006
/61/	Certificate of the cost of subcontract works performed, November 2006
/62/	Minutes of the meeting on 06/12/2005
/63/	Certificate on water intake CCE "Mykolayivvodokanal" for the period 2005-2010
/64/	Report on the results of fuel, heat energy and electricity consumption, January 2011
/65/	Invoice for electricity consumption № 44/80/12 dated 01/12/2008
/66/	Invoice for electricity consumption № 44/85/12 dated 01/12/2008
/67/	Invoice for electricity consumption № 44/80/12/1 dated 01/12/2008

/68/	Notification about power cut № 44/85/12 dated 01/12/2008
/69/	Notification about power cut № 44/80/12/1 dated 01/12/2008
/70/	Act of acceptance of work № 50*1632
/71/	Invoice for electricity consumption № 20.1 dated 14/11/2008
/72/	Invoice for electricity consumption № 59381304 від 30/11/2008
/73/	Report on fuel, heat energy and electricity consumption for January-December 2010
/74/	Report on fuel, heat energy and electricity consumption for January-December 2008
/75/	Invoice for electricity consumption № 44/80/06 dated 02/06/2008
/76/	Invoice for electricity consumption № 44/80/6/1 dated 02/06/2008
/77/	Notification about power cut № 44/80/6/1 dated 02/06/2008
/78/	Invoice for electricity consumption № 44/0/85/6 dated 02/06/2008
/79/	Notification about power cut № 44/0/85/6 dated 02/06/2008
/80/	Invoice for electricity consumption № 20.1 dated 15/05/2008
/81/	Invoice for electricity consumption № 30471304 dated 31/05/2008
/82/	Invoice for electricity consumption № 2618 dated 22/05/2008
/83/	Invoice for electricity consumption № 44/80/2 dated 03/03/2008
/84/	Notification about power cut № 44/80/2 dated 03/03/2008
/85/	Invoice for electricity consumption № 44/80
/86/	Notification about power cut № 44/80/
/87/	Invoice for electricity consumption № 44/80/2/1 dated 29/02/2008
/88/	Notification about power cut № 44/80/2/1 dated 29/02/2008
/89/	Invoice for electricity consumption № 44/0/85/3 dated 03/03/2008
/90/	Notification about power cut № 44/0/85/3 dated 03/03/2008
/91/	Act of service performed (works performed) № 10731304 dated 29/02/2008
/92/	Invoice for electricity consumption № 2618 dated 22/02/2008
/93/	Invoice for electricity consumption № 20.1 dated 15/02/2008
/94/	Invoice for electricity consumption № 46/6/2 dated 01/02/2011p. issued as of 02/02/2011
/95/	Invoice for electricity consumption № 03511304 dated 31/01/2011

/96/	Invoice for electricity consumption № 2618 dated 28/01/2011
/97/	Invoice for electricity consumption 20.1 dated 17/01/2011
/98/	Invoice for electricity consumption № 44/80/8 dated 03/08/2009
/99/	Invoice for electricity consumption № 44/0/85/8 dated 03/08/2009
/100/	Invoice for electricity consumption № 38/6/8 dated 03/08/2009
/101/	Invoice for electricity consumption № 20.1 dated 15/07/2009
/102/	Invoice for electricity consumption № 2618 dated 28/07/2009
/103/	Invoice for electricity consumption № 37271304 dated 31/07/2009
/104/	Invoice for electricity consumption № 46/6/7 dated 01/08/2010 issued 03/08/2010
/105/	Invoice for electricity consumption 20.1 dated 15/07/2010
/106/	Invoice for electricity consumption № 2618 dated 28/07/2010
/107/	Invoice for electricity consumption № 44671304 dated 31/07/2010
/108/	Invoice for electricity consumption № 44/80/4/1 від 05/05/2010
/109/	Invoice for electricity consumption № 44/80/4/1 від 05/05/2010
/110/	Invoice for electricity consumption № 38/6/4/1 від 30/04/2010
/111/	Invoice for electricity consumption № 44/80/4
/112/	Invoice for electricity consumption № 44/80/4/1
/113/	Invoice for electricity consumption № 44/0/85/4
/114/	Invoice for electricity consumption № 38/6/4 dated 01/04/2010
/115/	Invoice for electricity consumption № 38/6/4/1 dated 01/04/2010
/116/	Invoice for electricity consumption № 16571304 dated 31/03/2010
/117/	Account 2618 dated 29/03/2010
/118/	Invoice for electricity consumption № 20.1 dated 15/03/2010
/119/	Invoice for electricity consumption № 44/80/3 dated 02/04/2010
/120/	Invoice for electricity consumption № 44/80/3/1 dated 02/04/2010
/121/	Invoice for electricity consumption № 44/80/2 dated 02/03/2010
/122/	Invoice for electricity consumption № 44/80/2/1 dated 02/03/2010
/123/	Invoice for electricity consumption № 44/80/3
/124/	Invoice for electricity consumption № 44/0/85/3

/125/	Invoice for electricity consumption № 44/80/3/1
/126/	Invoice for electricity consumption № 38/6/3 dated 01/03/2010
/127/	Invoice for electricity consumption № 38/6/3/1 dated 01/03/2010
/128/	Invoice for electricity consumption № 20.1 dated 15/02/2010
/129/	Invoice for electricity consumption 2618 dated 25/02/2010
/130/	Invoice for electricity consumption № 08281304 dated 28/02/2010
/131/	Invoice for electricity consumption № 44/80/2/1
/132/	Notification about power cut № 44/80/2/1 dated 01/02/2010
/133/	Invoice for electricity consumption № 44/80/2/1 dated 01/02/2010
/134/	Invoice for electricity consumption № 38/6/2 dated 01/02/2010
/135/	Invoice for electricity consumption № 46/6/5 dated 31/05/2011p. issued 01/06/2011
/136/	Invoice for electricity consumption № 26151304 dated 31/05/2011
/137/	Invoice for electricity consumption № 2618 dated 27/05/2011
/138/	Invoice for electricity consumption № 20.1 dated 16/05/2011
/139/	Invoice for electricity consumption № 46/6/5 dated 30/04/2011p. issued as of 04/05/2011
/140/	Invoice for electricity consumption № 20.1 dated 15/04/2011
/141/	Invoice for electricity consumption № 2618 dated 27/04/2011
/142/	Invoice for electricity consumption № 22241304 dated 30/04/2011
/143/	Invoice for electricity consumption № 44/80/2/1 dated 01/02/2008
/144/	Invoice for electricity consumption № 44/80/2/2 dated 01/02/2008
/145/	Invoice for electricity consumption № 20.1 dated 15/01/2008
/146/	Invoice for electricity consumption № 2618 dated 22/01/2008
/147/	Invoice for electricity consumption № 02271304 dated 31/01/2008
/148/	A copy of accounting records of electricity consumption at DPP, 2008.
/149/	A copy of accounting records of electricity consumption at DPP, 2009.
/150/	A copy of accounting records of electricity consumption at DPP, 2010.
/151/	A copy of accounting records of electricity consumption at DPP, 2011.

/152/	Copy of logbook with data records of pumped wastewater volumes which is filled in at wastewater treatment plants (per day or per month), 2011
/153/	Act on metering devices replacement in networks of 0.4 kV dated 07/2008
/154/	Act on metering devices replacement in networks of 0.4 kV dated 09/07/2009
/155/	Act on energy consumption by Inguletskiy water pipeline in December 2008.
/156/	Act on consumption of electricity by station GOSK (RP-104) in December 2008.
/157/	Act on metering devices replacement in networks of 0.4 kV dated 14/07/2009
/158/	Act on electricity consumption by station GOSK (RP-104), May 2008.
/159/	Act on energy consumption by Inguletskiy water pipeline, May 2008.
/160/	Act on energy consumption by Inguletskiy water pipeline, March 2008.
/161/	Act on electricity consumption by station GOSK (RP-104), March 2008.

Persons interviewed:
List of persons interviewed during the determination or persons that contributed with other information that are not included in the documents listed above.

	Name	Organization	Title
/1/	Tantsyura Larysa Semenivna	CCE «Mykolayivvodokanal»	Head of water supply service
/2/	Shapoval Tamara Vasylivna	CCE «Mykolayivvodokanal»	Head of production and technical department
/3/	Ababilov Oleksiy Valeriyovych	CCE «Mykolayivvodokanal»	Chief power engineer
/4/	Zubov Oleksandr Mykoyovych	CCE «Mykolayivvodokanal»	Chief mechanic
/5/	Misyura Andriy Valeriyovych	CCE «Mykolayivvodokanal»	Deputy director
/6/	Deli Oleksandr Afanasiyovych	CCE «Mykolayivvodokanal»	Chief engineer
/7/	Penov Ivan Stepanovych	CCE «Mykolayivvodokanal»	Head of material and technical supply department

/8/	Moyseyenko Mykola Mykolayovych	CCE «Mykolayivvodokanal»	Head of drainage network
/9/	Naumenko Iryna	«CEP» Ltd	Consultant of VEMA S.A.

APPENDIX A: COMPANY PROJECT DETERMINATION PROTOCOL

BUREAU VERITAS CERTIFICATION HOLDING SAS

Check list for determination, according JOINT IMPLEMENTATION DETERMINATION AND VERIFICATION MANUAL (Version 01)

Guidelines for Users of the JI PDD form or DVM Paragraph	Check Item	Initial finding	Project participants' actions review	Final Conclusion
Guidelines for Users of the JI PDD form Section A General description of the project				
A.1. Title of the project				
A.1	Is the title of the project presented?	The title is presented: "Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal".	OK	OK
A.1	Is the sectoral scope to which the project pertains presented?	The sectoral scopes were listed: Sector 1 - Energy industries (renewable/non-renewable sources) Sector 3 - Energy consumption.	OK	OK
A.1	Is the current version number of the document presented?	The current version of the document: PDD, Version 03 dated April 2, 2012. See Section A.1.	OK	OK
A.1	Is the date when the document was created presented?	The date when the document was created: April 2, 2012.	OK	OK
A.2. Description of the project				
A.2	Is the purpose of the project included with a concise, summarizing explanation (max. 1-2 pages) of the: a) Situation existing prior to the starting date of the project	The project's main purpose is reduction of electric energy consumption by modernization and development of central water supply, drainage and wastewater treatment systems, which includes replacement and modernization of pumps and water distribution systems, installation of frequency regulators,	OK	OK

Guidelines for Users of the JI PDD form or DVM Paragraph	Check Item	Initial finding	Project participants' actions review	Final Conclusion
	b) Baseline scenario and c) Project scenario (expected outcome, including a technical description)?	optimization of the technological process of water pumping, introduction of a mini hydroelectric power plant (MHEPP) in Mykolayiv city. Implementation of the above-mentioned technologies will allow for a decrease of greenhouse gas emissions (CO_2) and promote sustainable development of city. Detailed information on the baseline and project scenarios with technical description is provided in Sections A.2 and A.4.2. of the PDD.		
A.2	Is the history of the project (incl. its JI component) briefly summarized?	**CAR 01.** Please include the date of signing of the Emission Reductions Purchase Agreement relating to the Joint Implementation project between VEMA S.A. and CCE "Mykolayivvodokanal" into the description of project history.	**CAR 01**	OK
A.3. Project participants				
A.3	Are project participants and Party(ies) involved in the project listed?	Parties involved in the project: CCE "Mykolayivvodokanal" (Ukraine - the Host party) and VEMA S.A. (Switzerland).	OK	OK
A.3	Is the data of the project participants presented in tabular format?	The data of the project participants is presented in tabular format.	OK	OK
A.3	Is contact information provided in Annex 1 of the PDD?	Annex 1 to the PDD provides contact information on CCE "Mykolayivvodokanal" and VEMA S.A.	OK	OK
A.3	Is it indicated, if it is the case, that the Party involved is a host Party?	Ukraine is the Host Party.	OK	OK
A.4.1.1	Host Party(ies)	Ukraine is the Host Party.	OK	OK
A.4.1.2	Region/State/Province etc.	Mykolayiv region, Ukraine	OK	OK
A.4.1.3	City/Town/Community etc.	Mykolayiv city.	OK	OK

Guidelines for Users of the JI PDD form or DVM Paragraph	Check Item	Initial finding	Project participants' actions review	Final Conclusion
A.4.1.4	Detail of the physical location, including information allowing the unique identification of the project. (This section should not exceed one page).	Information about location is given in Section A.4.1.4 of the PDD. Information about the structural and separate units of CCE "Mykolayivvodokanal" is provided. **CAR 02.** Please provide detailed information about facilities included in the project.	**CAR 02**	OK
A.4.2. Technologies to be employed, or measures, operations or actions to be implemented by the project				
A.4.2	Are the technology(ies) to be employed, or measures, operations or actions to be implemented by the project, including all relevant technical data and the implementation schedule described?	PDD Section A.4.2 provides the description of project milestones, some relevant technical data relating to main equipment to be installed as well as project activities and schedule. Project engineering represents the current cutting-edge practice **CAR 03**. Please provide references to web-sites of manufacturers whose pumping equipment will be used in the project. **CAR 04.** The project provides for replacement of worn-out shut-off and control valves with new shut-off and control valves of European manufacture. Please explain which positive changes are expected due to this replacement, and provide references to the manufacturers. **CAR 05.** Please provide the information and due justification of the positive changes due to installation of frequency regulators. **CAR 06.** Please indicate end dates for each activity and stage in the project implementation schedule. **CAR 07.** Please provide information about measures to optimize the technological process of water pumping in the relevant section of the PDD. **CAR 08.** Please describe the procedure of pipeline replacement at CCE "Mykolayivvodokanal".	**CAR 03** **CAR 04** **CAR 05** **CAR 06** **CAR 07** **CAR 08** **CAR 09** **CAR 10** **CAR 11** **CAR 12** **CAR 13** **CAR 14** **CL 01** **CL 02** **CL 03** **CL 04**	OK OK OK OK OK OK OK OK OK OK OK OK OK OK OK OK

Guidelines for Users of the JI PDD form or DVM Paragraph	Check Item	Initial finding	Project participants' actions review	Final Conclusion
		CAR 09. Please add data on quantitative indicators of project activities for each activity. **CL 01.** Please explain and provide evidence of how the fact that the measures implemented under the project activity are not a part of the maintenance program (emergency, planned repair works, etc.) will be guaranteed. **CL 02.** Please provide explanation to Figure 8 in the text of the PDD in the relevant section. **CAR 10.** Please check the numeration of figures and tables in the text of the PDD. **CL 03.** Please explain in which way the emission reductions due to the aeration system modernization will be achieved. **CL 04.** Please explain the technology of the installation of a mini hydroelectric power plant and provide information on the use of this technology in Ukraine and abroad. **CAR 11.** Please provide correct references to Accompanying Documents. **CAR 12.** In Section A.4.2. of the PDD, specifications of frequency regulators (Table 7) is in the English language. Please provide the information in Ukrainian. **CAR 13.** Please explain which positive changes pumping equipment replacement will lead to. **CAR 14**. Please provide information about the reasons why the proposed measures will not be implemented without the project activity, taking into account national and/or sectoral policies and circumstances.		
A.4.3. Brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed JI project, including why the emission reductions would not occur in the absence of the proposed project, taking into account national and/or sectoral policies and circumstances				

Guidelines for Users of the JI PDD form or DVM Paragraph	Check Item	Initial finding	Project participants' actions review	Final Conclusion
A.4.3	Is it stated how anthropogenic GHG emission reductions are to be achieved? (This section should not exceed one page)	The project activities, which include modernization of pumps, water distribution and drainage networks, installation of frequency regulators, wastewater treatment systems will increase the energy efficiency of water supply and drainage systems so that they will supply, drain and treat the same amount of water, wastewater, while consuming fewer electric energy. Saving the traditional carbon fossil fuels at power plants will reduce CO_2 emissions from the national power grid.	OK	OK
A.4.3	Is it provided the estimation of emission reductions over the crediting period?	The estimation of emission reductions over the crediting period is provided in Section A.4.3.1. of the PDD. **CAR 15.** The length of the crediting period indicated in the PDD is 15 years while the calculation of annual emissions is provided for only 7 years. Please make corresponding amendments. **CAR 16.** In section A.4.3.1. there are incorrect references to Section E and Accompanying documents. Please provide the correct references.	**CAR 15** **CAR 16**	OK OK
A.4.3	Is it provided the estimated annual reduction for the chosen credit period in tCO_2e?	The annual emission reductions in t CO_{2e} are provided for the first commitment period, as well as for the period before and after the first commitment period within the project.	OK	OK
A.4.3	Are the data from questions above presented in tabular format?	Information for the crediting period, before and after the crediting period is presented in tabular format. See the PDD (Version 03) Tables 10, 11 and 12, Section A.4.3.1.	OK	OK
A.4.3.1. Estimated amount of emission reductions over the crediting period				
A.4.3.1	Is the length of the crediting period Indicated?	The length of the crediting period is indicated in the PDD Section A.4.3.1. and Section C.	OK	OK

Guidelines for Users of the JI PDD form or DVM Paragraph	Check Item	Initial finding	Project participants' actions review	Final Conclusion
A.4.3.1	Are estimates of total as well as annual and average annual emission reductions in tonnes of CO_2 equivalent provided?	Total as well as annual and average annual emission reductions in tonnes of CO_2 equivalent are provided in accordance with the calculated values in the tables of Section A of the PDD and the Accompanying documents.	OK	OK
Project approvals by Parties				
19	Have the DFPs of all Parties listed as "Parties involved" in the PDD provided written project approvals?	**FAR 01**. The project has no approval of the Host Party. To obtain the Letter of Approval the final Determination Report must be submitted to the State Environmental Investment Agency of Ukraine that includes this Determination Protocol and the list of sources of Reference information. **FAR 01** will be closed after the Letter of Approval is issued by the Party involved. **CAR 17**. The Parties involved are stated in the English language in the Ukrainian version of the PDD Section A.3. Please provide appropriate translation.	**FAR 01** **CAR 17**	Pending. OK
19	Does the PDD identify at least the host Party as a "Party involved"?	The Host Party involved is Ukraine.	OK	OK
19	Has the DFP of the host Party issued a written project approval?	Reference to **FAR 01.**	**FAR 01**	Pending.
20	Are all the written project approvals by Parties involved unconditional?	Reference to **FAR 01.**	**FAR 01**	Pending.
Authorization of project participants by Parties involved				
21	Is each of the legal entities listed as project participants in the PDD authorized by a Party involved, which is also listed in the PDD, through: − A written project approval by a Party	Party involved 1: Ukraine (the Host Party), legal entity is CCE "Mykolayivvodokanal". Party involved 2: Switzerland, legal entity is VEMA S.A. The Parties involved will be authorized in accordance with the	**FAR 01**	Pending decision.

Guidelines for Users of the JI PDD form or DVM Paragraph	Check Item	Initial finding	Project participants' actions review	Final Conclusion
	involved, explicitly indicating the name of the legal entity? or − Any other form of project participant authorization in writing, explicitly indicating the name of the legal entity?	relevant project approvals. Pending **FAR 01.**		
Baseline setting				
22	Does the PDD explicitly indicate which of the following approaches is used for identifying the baseline? − JI specific approach − Approved CDM methodology approach	Yes, the chosen baseline is described in Sections A.1. and B.1 of the PDD. A specific JI approach is used for setting the baseline. **CAR 18.** Please provide information on mini hydro power plant installation into the description of the project scenario. **CAR 19.** Please provide information on alternative to mini hydroelectric power plant construction.	**CAR 18** **CAR 19**	OK OK
JI specific approach only				
23	Does the PDD provide a detailed theoretical description in a complete and transparent manner?	The choice of the applicable baseline for the project category is sufficiently justified; detailed theoretical description is provided in section B.1 of the PDD version 03. **CAR 20**. Please provide the description of the approach chosen for baseline setting regarding the deviations from the methodology AM00020, applied in the current project.	**CAR 20**	OK
23	Does the PDD provide justification that the baseline is established: (a) By listing and describing plausible future scenarios on the basis of conservative assumptions and selecting the most plausible one? (b) Taking into account relevant national and/or sectoral policies and circumstance?	The PDD provides detailed, full and transparent description and justification that the baseline is established by: (a) Identifying plausible future scenarios and choosing the most plausible one. As a result of evaluation of several alternatives the most plausible of them have been identified and will be used as a baseline: - Alternative 1.1 - Operation of existing equipment will continue ("business as usual" scenario), and electricity	OK	OK

Guidelines for Users of the JI PDD form or DVM Paragraph	Check Item	Initial finding	Project participants' actions review	Final Conclusion
	− Are key factors that affect a baseline taken into account? (c) In a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, date sources and key factors? (c) In a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, date sources and key factors? (e) In such a way that ERUs cannot be earned for decreases in activity levels outside the project or due to force majeure? (f) By drawing on the list of standard variables contained in appendix B to "Guidance on criteria for baseline setting and monitoring", as appropriate?	consumption will increase - Alternative 2.1 - Continuation of current situation, obtaining electricity without introduction of alternative energy sources (b) Taking into account key factors such as technological rules of Ukraine's water supply and drainage sector, Ukrainian environmental legislation and other national legislation, as well as key relevant factors, such as the ability of financing the construction and reconstruction of drinking water supply and drainage systems, availability of local technologies and methods of the project, skills and experience in implementing mini HEPPs; (c) In a transparent manner with regard to the choice of JI approach and assumptions, parameters, data sources and key factors for identifying initial conditions listed in tabular format in Section B.1. (d) Taking into account of uncertainties and using conservative assumptions (e) In such a way that ERUs cannot be earned for decreases in activity levels outside the project or due to force majeure (f) By drawing on the list of standard variables. The baseline is set, the detailed description is provided in Section B of the PDD version 03.		
24	If selected elements or combinations of approved CDM methodologies or methodological tools for baseline setting are used, are the selected elements or combinations together with the elements	The baseline assumptions of the developed JI specific approach are clearly described in full in Section B.1 of the PDD version 03. **CAR 21.** Please provide correct description of the parameter	**CAR 21** **CAR 22** **CAR 23** **CAR 24**	OK OK OK OK

Guidelines for Users of the JI PDD form or DVM Paragraph	Check Item	Initial finding	Project participants' actions review	Final Conclusion
	supplementary developed by the project participants in line with 23 above?	EF_y throughout the PDD. **CAR 22.** The value of EF_g parameter is incorrect. Please provide correct value for the parameter according to the data source and make corrections of calculations in Accompanying Documents. **CAR23**. Annex 2 must include a summary of key elements. Please add relevant information in Annex 2. **CAR 24.** Please include information on carbon dioxide emission factor for consumption of electricity from the Ukrainian national power grid into Annex 2. **CAR 25.** Description of $V^y_{r,m}$ parameter and its data source are incorrect. Please make corresponding corrections and add references to the data source. **CAR 26**. Definition of $EC^y_{r,t}$ parameter in Section D.1 does not correspond to the definition given in Section D.1.1. Please make necessary corrections. **CAR 27.** Definition of $V^j_{b,m}$ parameter in Section B.1. does not correspond to the definition given in Section D.1.1.4. **CAR 28.** Parameter $EC^j_{b,t}$ is defined twice. Please make necessary corrections. **CL 05.** Please explain what documentary evidence was provided by the company regarding electricity and flow meters readings.	**CAR 25** **CAR 26** **CAR 27** **CAR 28** **CL 05**	OK OK OK OK OK OK
25	If a multi-project emission factor is used, does the PDD provide appropriate justification?	When calculating emissions reductions the following factors are used:	**CAR 29**	OK

Guidelines for Users of the JI PDD form or DVM Paragraph	Check Item	Initial finding	Project participants' actions review	Final Conclusion
		EF_y - Carbon dioxide emission factor for consumption of electricity from the Ukrainian national power grid, t CO_2e/MWh EF_g - carbon dioxide emission factor for the power grid of Ukraine when generating electricity by a mini hydroelectric power plant, t CO_2e/MWh. **CAR 29.** Please provide the correct reference to information about baseline calculation and the source "research of Global Carbon B.V".		
CDM methodology approach only				
Additionality				
JI specific approach only				
28	Does the PDD indicate which of the following approaches for demonstrating additionality is used? (a) Provision of traceable and transparent information showing the baseline was identified on the basis of conservative assumptions, that the project scenario is not part of the identified baseline scenario and that the project will lead to emission reductions or enhancements of removals (b) Provision of traceable and transparent information that an AIE has already positively determined that a comparable project (to be) implemented under comparable circumstances has additionality (c) Application of the most recent version of	Additionality of the project activity is demonstrated and assessed by using the "Tools for the demonstration and assessment of additionality" (Version 06.0.0). **CL 06.** Please explain how technological barriers may hinder the project implementation. **CL 07.** Please specify which of the proposed technologies are already widely used in Ukraine. **CAR 30.** In the section describing the additionality of the project, the developer states that the methodological guidance for the demonstration and assessment of additionality (hereinafter referred to as Additionality guidelines) was used. Additionality assessment does not follow the example which was set by the Additionality guidelines: steps 2, 3, 4 are not duly divided into sub-steps. Therefore, the section relating to additionality assessment should be duly changed.	**CAR 30** **CL 06** **CL 07**	OK OK OK

Guidelines for Users of the JI PDD form or DVM Paragraph	Check Item	Initial finding	Project participants' actions review	Final Conclusion
	the "Tool for the demonstration and assessment of additionality. (allowing for a two-month grace period) or any other method for proving additionality approved by the CDM Executive Board".			
29 (a)	Does the PDD provide a justification of the applicability of the approach with a clear and transparent description?	Detailed analysis described in Sections A.4.3, B.1 and B.2, shows that emissions in the baseline scenario are likely to exceed emissions in the project scenario due to the implementation of project activities.	OK	OK
29 (b)	Are additionality proofs provided?	The baseline scenario provides that all equipment, including the old equipment that is characterized by low efficiency but which is still operable equipment, will work in the usual mode for a long time, and no emission reductions will take place. The baseline scenario is described in detail in Sections B.1 and B.2 of the PDD. The project scenario provides for the reduction of GHG emissions due to a comprehensive modernization of pumping and water distribution equipment, modernization of aerotanks and implementation of mini hydroelectric power plant. The project scenario is duly described in Section A.4.2. The above-mentioned sections of the PDD provide the proofs. **CAR 31.** Please specify the financial expenses for mini hydroelectric power plant implementation.	**CAR 31**	OK
29 (c)	Is the additionality demonstrated appropriately as a result?	The fact that the project activity itself is not the baseline scenario is clearly demonstrated in sections A.2, B.1, B.2 . **CL 08.** Please specify whether there are any mandatory government programs or policy which provide for reconstruction of water supply and drainage systems in Mykolaiv city.	**CL 08**	OK