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ENVIRONMENTAL REVIEW CHECKLIST FOR IDENTIFYING POTENTIAL ENVIRONMENTAL IMPACTS OF PROJECT ACTIVITIES AND PROCESSES

Amendment to the ERC DCN: 2015-UKR-008 (in part A6.4 Arrangement of a fire extinguishing system)

Implemented under:
Local Alternative Energy Solutions in Myrhorod (LAESM) Project

DCN: IDEA ODP SIEE_LAESM_ND

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ENVIRONMENTAL REVIEW CHECKLIST FOR IDENTIFYING POTENTIAL ENVIRONMENTAL IMPACTS OF PROJECT ACTIVITIES AND PROCESSES

The Environmental Review Checklist for Identifying Potential Environmental Impacts of Project Activities and Processes (ERC) is intended for use mainly by implementing partners to: assess activity-specific baseline conditions, including applicable environmental requirements; identify potential adverse environmental effects associated with planned activity(s) and processes; and develop environmental mitigation and monitoring plans (EMMPs) that can effectively avoid or adequately minimize the identified effects.

Activity and Site Information

Project Name: ***(as stated in the triggering IEE)***	Local Alternative Energy Solutions in Myrhorod (LAESM) project
Mission/Country:	Ukraine
DCN of Triggering IEE:	IDEA ODP SIEE_LAESM_ND; 2015-UKR-008
Activity/Site Name:	Reconstruction of a central storage facility and construction of two annexes for keeping bio fuel in Myrhorod, Poltava Oblast
Type of Activity:	Amendment to the ERC DCN: 2015-UKR-008 to revise part 4 "Arrangement of a fire extinguishing system" of Section A6 "Detailed description of activity and site"
Name of Reviewer and Summary of Professional Qualifications:	Olena Chernikova, MDI Environmental Consultant
Date of Review:	July 27, 2015

A. Activity Description

1. Activity purpose and need

The purpose of this ERC amendment is to revise part 4 of Section A6 of the approved ERC # DCN: 2015-UKR-008 (Arrangement of a fire extinguishing system). This amendment changes the arrangement of the fire extinguishing system; all other terms of ERC # DCN: 2015-UKR-008 remain unchanged.

The previously approved ERC (DCN: 2015-UKR-008) was prepared when the technical design documentation for reconstruction of the central straw storage facility was pending approval of the state expertise agency "UkrDerzhBudExpertisa". In order to get the "UkrDerzhBudExpertisa" final approval, it was recommended to revise the design documentation regarding the fire safety system as the "UkrDerzhBudExpertisa" experts believed that the capacity of water in two plastic reservoirs (50 m^3 each) may not be enough for fire extinguishing due to the storage territory size and volume of stored straw (up to 2000 tons). So, the technical documentation was revised to include a new fire safety system and got necessary approval. Therefore, this ERC amendment is prepared to reflect the revision of the fire safety system for the central storage facility.

2. Location of activity

The same as for #DCN: 2015-UKR-008.

3. Beneficiaries, e.g., size of community, number of school children, etc.

The same as for #DCN: 2015-UKR-008.

4. Number of employees and annual revenue, if this is a business

The same as for **#DCN: 2015-UKR-008.**

5. Implementation timeframe and schedule
Estimated timeframe of activity: August - October 2015.

6. Detailed description of activity and site, e.g., size of the facility or hectares of land; steps that will be taken to accomplish the activity

4) Arrangement of a fire safety system

The fire safety system of the central straw storage anticipates: laying of an external and internal water supply pipelines; installment of fire extinguishing equipment kits; manual powder fire extinguishers; fire alarm system (including a fire alarm device PPKP-Lun'-9P with a digital GSM auto-dial module for transferring a signal to the municipal fire-fighting system); automatic smoke detectors inside the storage buildings; manual fire alarms; sound and light alarms installed on the facades of the storage buildings; lighting protection system; and electricity supply arrangement.

4.1. Laying of an external and internal water supply pipelines to provide water for the fire safety system

An external water supply pipeline will be laid at the depth of 1.5 m outside the storage buildings and will be connected to the existing city water pipeline to supply water to the internal water supply pipelines of three storage facilities. The length of the external water supply pipeline will be 130 m; it will be made of the high density polyethylene (HDPE) pipes of 100 mm in diameter.

An internal steel annular water supply pipeline will be laid inside of each storage facility according to the fire safety regulations (Order #1417 *"On approval of fire safety rules in Ukraine"* dated December 30, 2014**,** and State Building Norms DBN B.2.5-64.2013 and DBN B.1.1-7-2002). It will consist of the steel pipes, each of 80 mm in diameter, which will be placed at a height of 3- to 4.5 meters above the floor and attached to the walls with the standard metal brackets and metal pipe clamps located at a distance of 2-2.5 m from each other (approx. 40 pipe clamps per 100 m will be required) inside each storage building. All steel pipes will be painted in green color in accordance with regulatory requirements (DBN V.2.5-64: 2012 "*Internal water supply and sewer system"*). When storage facilities operate in the routine mode, there will be no water in the fire safety water system.

The length of each steel water supply pipeline for each storage building is as follows:

Steel pipe length in the existing storage facility – 135 m (Picture 1, #1)
Steel pipe length (Annex 1) – 150 m (Picture 1, #2)
Steel pipe length (Annex 2) – 130 m (Picture 1, #3)

Standard fittings will connect plastic pipes of the external water supply pipeline with steel pipes of the internal water supply pipeline in a reinforced concrete box (1.5 m x 1.5. m) under the ground, at a depth of 2 m, outside the storage buildings (Picture 1). The reinforced concrete box will be located at a distance of 8 m from the central storage building and 5 m from Annex 1. The pipes junction will also provide for an electric valve installation. In case of a fire and when fire alarm is performed, or the button of the fire extinguishing equipment kit is pressed, the electric valve will be automatically released and water will be supplied to the internal water pipeline. Electricity for the electric valve will be supplied via an electric cable connected to the power distribution unit, which is located in the service room (Picture 1) and connected to the 220V electrical network of the "Spetskomuntrans" communal enterprise.

It is planned that in case of a fire, the water used for firefighting will be collected into the storm water overflow and directed into the drainage system. In case of the fire outside storage buildings, it is envisaged to use fire-fighting vehicles which will take water from the city water pipeline, with fire hydrants located on Shishatska St., at the entrance to the "Spetscomuntrans" territory. The nearest fire-station is located at a distance of 1.1 km from the activity site.

4.2 Installation of equipment for the internal fire safety system

An internal fire safety system will include twelve (12) fire extinguishing equipment kits (4 for each storage facility), which will be installed into the branches/legs of the internal water supply pipeline and attached to the walls by the standard fasteners at the height of 1.35 m above the floor (Picture 1). Each fire extinguishing equipment kit will consist of a fire hydrant, a canvas sleeve hose (more than 10 m in length), a hose nozzle, and two manual powder fire extinguishers of the OP-10 type. The manual powder fire extinguishers will be placed in a separate metal box (2 manual powder fire extinguishers per box), located by each fire extinguishing equipment kit. Twenty four (24) manual powder fire extinguishers will be installed inside all three storage facilities (8 for each storage building). According to the fire safety rules (NAPB B.03.001-2004), an additional cart-mounted (wheeled) manual powder fire extinguisher will be placed on the floor inside each storage facility, to the left of the main entrance (total of 3 – 1 for each storage building). In the event of smoke and fire alarm activation, the storage personnel will use fire extinguishing equipment kits as follows: unfold the canvas sleeve hose and press the button located inside of each fire extinguishing equipment kit, thus activating the water flow.

4.3 Installation of the automatic fire alarm system

The fire alarm system includes twelve (12) automatic fire alarms with twelve (12) smoke detectors (4 for each storage facility, Picture 1), which will be attached to metal structures of the ceiling in each storage building with standard clamps at a height of 5.8 m above the floor (Picture 1, red bullets). The fire alarms and smoke detectors will transfer the signal to the fire alarm device PPKP-Lun'-9P which will be installed in the service room, inside the central storage building, to the right from the main entrance (Picture 1). Also, three (3) sound and light alarms will be installed on the facades of the storage buildings (Picture 1), and will be activated in case of fire. Electricity for the fire alarm device "PPKP-Lun'-9P" will be supplied via the power distribution unit located in the same service room and connected to the 220V electrical network of the "Spetskomuntrans" communal enterprise. The back-up electricity supply will be provided by the "PPKP-Lun'-9P" internal rechargeable battery set (voltage will not exceed 12V, operation life is 3 years). In case of fire, the fire alarm device PPKP-Lun'-9P will turn on the sound and light fire alarm and transmit the signal to the city fire fighting central control console via a digital GSM auto-dial module.

Electricity for the twelve automatic fire alarms with twelve smoke detectors will be provided via a low-voltage power cable of 12V, which will be laid inside the storage buildings and connected to the fire alarm device "PPKP-Lun'-9P". The low voltage power cable will be used to minimize the risk of a fire and short circuit.

In addition to the automatic fire alarms, it is anticipated to arrange six (6) manual fire-alarm devices (2 for each storage facility). The manual fire alarm device is a button, which will be located near the main and emergency exits inside each storage building and attached to the wall at the height of 1.5 meters above the floor (Picture 1, yellow triangles). Electricity for the manual fire-alarm device will be supplied via a low-voltage power cable of 12V. In case the automatic fire alarm doesn't function, storage personnel can use the manual fire alarm device to activate the fire alarm.

4.4 Installation of a lighting protection system

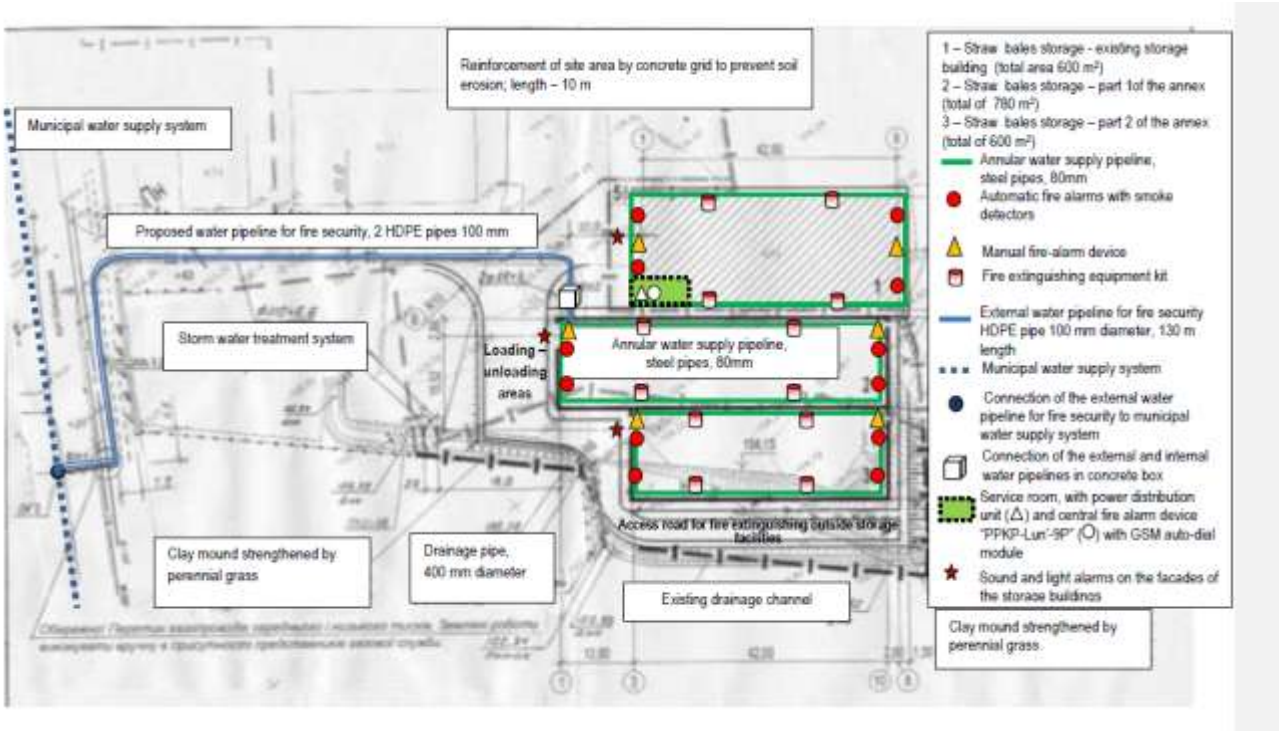
As stipulated by the state technical regulations (DSTU B. V.2.5-38: 2008 "*Lightning protection for buildings and structures"*), the lightning protectors will be installed on the rooftops of each storage facility.

USAID funds will be used for equipment purchase and installation works regarding fire safety system of the central storage facility.

7. Existing or planned certifications, e.g., ISO 14001 EMS, ISO 9000, HCCP, SA 8000, Global Gap, Environmental Product Declarations, Eco Flower, EcoLogo, Cradle to Cradle, UL Environment, GREENGUARD, Fair Trade, Green Seal, LEED, or various Forest Certifications. N/A

8. Site map, e.g., provide an image from Google Earth of the location.

9. Photos of the site.



Picture 1. Fire security system layout.

B. Activity-Specific Baseline Environmental Conditions

1. Population characteristics

2. Geography

3. Natural resources, e.g., nearby forest/protected areas, ground and surface water resources

4. Current land use

5. Proximity to public facilities, e.g. schools, hospitals, etc.

6. Other relevant description of current environmental conditions in proximity to the activity

C. Legal, Regulatory, and Permitting Requirements

1. National environmental impact assessment requirements for this activity.
   - Law of Ukraine *"About Work Safety" #2695-XII, 14.10.92.*
   - Order #1417 *"On approval of fire safety rules in Ukraine"*
   - NAPB B.03.001-2004 *"Typical regulations of fire extinguishers dislocation"*
   - State Building Norms :
     - *Design of fire safety systems (B.2.5-13-98 1);*
     - *Fire safety of construction (DBN B.1.1- 7-2002);*
     - *Engineering equipment of buildings and structures / Fire protection systems (DBN B.2.5-56:2010);*
     - *Lightning protection for buildings and structures* (*DSTU B. V.2.5-38: 2008*);
     - *Water supply external networks and structures* (DBN B.2.5-64.2013)
     - *Internal water supply and sewer system (DBN V.2.5-64: 2012).*

Applicable National or local permits for this activity, responsible party, and schedule for obtaining them:

Permit Type	Responsible party	Schedule
Building/Reconstruction : *Permit for excavation works for water pipes laying*	Local subcontractor, Myrhorod City Council	Available
Water Use *Water for fire extinguishing*	Utility Company "Spetscomuntrans"	Available
Other Fire inspection permit and certification of fire protection equipment	Utility Company "Spetscomuntrans", Local subcontractor	To be obtained before the start of works

2. Additional National, European Union, or other international environmental laws, conventions, standards with which the activity might be required to comply **N/A**

E. Engineering Safety and Integrity *(for Sections E. and F., provide a discussion for any of the listed issues that are likely to have bearing on this activity)*

1. Will the activity be required to adhere to formal engineering designs/plans? Have these been or will they be developed by a qualified engineer? **Yes, the revised design documentation (in part of the fire safety system) was developed by a qualified engineering company and got approval by the relevant Ukrainian entities.**
2. Do designs/plans effectively and comprehensively address:
   a. Management of storm water runoff and its effects?

b. Reuse, recycling, and disposal of construction debris and by-products? **Yes. During construction works, infertile soil, construction debris will be reused. If fuel and/or lubricants (F&L) are spilled, the contaminated soil should be removed and disposed on a landfill.**

c. Energy efficiency and/or preference for renewable energy sources? **No. It is not envisaged to have electrical lighting in the storage building since straw loading and uploading will be done in the day time. Besides, absence of electric wiring and lamps minimizes/prevents the risk of short circuits and fire. Low-voltage power supply networks (12 V) will be laid and used for fire safety needs only.**

d. Pollution prevention and cleaner production measures? **Yes. The design documentation should contain a plan of pollution prevention. Mitigation measures will be undertaken.**

e. Maximum reliance on green building or green land-use approaches? **No.**

f. Emergency response planning? **Yes. The design documentation contains a plan of the fire protection system and an evacuation plan**.

g. Mitigation or avoidance of occupational safety and health hazards? **Yes. The design documentation should contain the emergency plan, which should consider the measures for emergency response (fire protection system, including automatic fire-alarm system) and elimination of the emergency consequences, if any.**

h. Environmental management of mobilization and de-mobilization? **Yes. For the purpose of mitigation of occupational hazards, safety regulations will be introduced and an evacuation plan developed. Personnel will wear protective clothing and respirators. Before commencement of any works, workers will undergo safety training. Adherence to safety regulations will be monitored on a daily basis.**

i. Capacity of the host country recipient organization to sustain the environmental management aspects of the activity after closure and handover?

j. Are there known geological hazards, e.g., faults, landslides, or unstable soil structure, which could affect the activity? If so, how will the project ensure structural integrity?

3. Will the site require grading, trenching, or excavation? Will the activity generate borrow pits? If so, how will these be managed during implementation and closure? **Yes. Laying of the external water pipeline will be performed. A special permit for excavation works already available.**

4. Will the activity cause interference with the current drainage systems or conditions? **No.** Will it increase the risk of flooding? **In case of a fire, water used for firefighting will be collected into the storm water treatment facility, cleaned by storm water treatment system and directed into the existing drainage channel.**

5. Will the activity interfere with above- or below-ground utility transmission lines, e.g., communications, water, sewer, or natural gas? **Yes. The intersection of the gas pipeline is envisioned. Excavation works should be executed manually in the presence of the gas system maintenance personnel. A special permit for excavation works already available.**

6. Will the activity potentially interfere with vehicle or pedestrian traffic? **Maybe. Road signs will be used and temporary flex barriers will be installed during outside water pipeline construction.**

7. Does the activity increase the risk of fire, explosion, or hazardous chemical releases? **Maybe. Safety regulations will be introduced. A fire extinguishing system will be introduced.**

8. Does the activity require disposal or retrofitting of polychlorinated biphenyl-containing equipment, e.g., transformers or florescent light ballasts? **Yes. The rechargeable battery set**

(12 V) for the fire safety system will be replaced each 3 years. Old battery set will be retrofitted or properly utilized.

F. Environment, Health, and Safety Consequences

1. Potential impacts to public health and well-being

a. Will the activity require temporary or permanent property land taking?
b. Will activities require temporary or permanent human resettlement?
c. Will area residents and/or workers be exposed to pesticides, fertilizer, or other toxic substances, e.g., as a result of farming or manufacturing? If so, how will the project:
   i. Ensure that these chemicals do not contaminate ground or surface water?
   ii. Ensure that workers use protective clothing and equipment to prevent exposure? Control releases of these substances to air, water, and land?
   iii. Restrict access to the site to reduce the potential for human exposure?
d. Will the activity generate pesticide, chemical, or industrial wastes? Could these wastes potentially contaminate soil, groundwater or surface water?
e. Will chemical containers be stored at the site?
f. Does the activity remove asbestos-containing materials or use of building materials that may contain asbestos, formaldehyde, or other toxic materials? Can the project certify that building materials are non-toxic? If so, how will these wastes be disposed of?
g. Will the activity generate other solid or hazardous wastes such as construction debris, dry or wet cell batteries, florescent tubes, aerosol cans, paint, solvents, etc.? If so, how will this waste be disposed of? **Yes. During the excavation and installation works solid waste will be generated –remnants of packaging materials, paints, solvents, aerosol cans, etc. This waste will be temporary collected at the territory of "Spetscomuntrans" Utility Company. Recyclable materials will be recycled. Non-recyclable materials will be removed and disposed of at an authorized landfill once per week**.
h. Will the activity generate nontoxic, nonhazardous solid wastes (subsequently requiring land resources for disposal)? **Yes. Excavation works for external water pipeline laying will result in removing of a layer of infertile soil. This removed soil will be covered with the film to prevent air pollution and will be used for leveling and compaction of the territory.**
i. Will the activity pose the need to handle and dispose of medical wastes? If so, describe measures of ensuring occupational and public health and safety, both onsite and offsite.
j. Does the activity provide a new source of drinking water for a community? If so, how will the project monitor water quality in accordance with health standards?
k. Will the activity potentially disturb soil contaminated with toxic or hazardous materials?
l. Will activities, e.g., construction, refurbishment, demolition, or blasting, result in increased noise or light pollution, which could adversely affect the natural or human environment? **Yes. Water pipeline construction may result in temporarily increased noise levels at the site. The works will be conducted in working hours (9.00-22.00), as stipulated by the legislation of Ukraine.**

2. Atmospheric and air quality impacts

a. Will the activity result in increased emission of air pollutants from a vent or as fugitive releases, e.g., soot, sulfur dioxide, oxides of nitrogen, volatile organic compounds, methane. **Maybe, minor temporary air pollution may occur as a result of operation of the construction equipment/machinery but it is appropriate if machinery operation**

meet the requirements of technical state standards. Will the activity involve burning of wood or biomass? **No.**

b. Will the activity install, operate, maintain, or decommission systems containing ozone depleting substances, e.g., Freon or other refrigerants? **No.**

c. Will the activity generate an increase in carbon emissions? **Maybe. Construction machinery and equipment will generate some amount of carbon emissions; however, no significant increase is anticipated.**

d. Will the activity increase odor and/or noise? **Maybe. Some excavation and installation works will increase noise. The works will be conducted in working hours between 9.00-22.00, according to Ukrainian legislation. Painting may create an odor in the immediate area. It will be recommended to use odorless polyvinyl acetate paint.**

3. Water quality changes and impacts

a. How far is the site located from the nearest river, stream, or lake?

b. Will the activity disturb wetland, lacustrine, or riparian areas?

c. What is the depth to groundwater at the site?

d. Will the activity result in increased ground or surface water extraction? **Maybe.** If so, what are the volumes? Permit requirements? **When storage facilities are operated in the routine mode, there won't be water in the pipes thus meaning that increasing of water consumption during operation of storage facilities is not anticipated. Amount of water needed for fire extinguishing is included in the water consumption permit of "Spetscommuntrans" which is available**

e. Will the activity discharge domestic or industrial sewage to surface, ground water, or publicly-owned treatment facility?

f. Does the activity result in increased volumes of storm water run-off and/or is there potential for discharges of potentially contaminated (including suspended solids) storm water? **No. The water used for firefighting will be collected into the storm water system, cleaned in the storm water treatment facility and discharged into the existing drainage system. No storm water run-off is anticipated**.

g. Will the activity result in the runoff of pesticides, fertilizers, or toxic chemicals into surface water or groundwater?

h. Will the activity result in discharge of livestock wastes such as manure or blood into surface water?

i. Does the site require excavation, placing of fill, or substrate removal (e.g., gravel) from a river, stream or lake?

4. Land use changes and impacts

a. Will the activity convert fallow land to agricultural land?

b. Will the activity convert forest land to agricultural land?

c. Will the activity convert agricultural land to commercial, industrial, or residential uses?

d. Will the activity require onsite storage of liquid fuels or hazardous materials in bulk quantities?

e. Will the activity result in natural resource extraction, e.g., granite, limestone, coal, lignite, oil, or gas?

f. Will the activity alter the viewshed of area residents or others?

5. Impacts to forestry, biodiversity, protected areas and endangered species

a. Is the site located adjacent to a protected area, national park, nature preserve, or wildlife refuge?

b. Is the site located in or near threatened or endangered (T&E) species habitat? Is there a plan for identifying T&E species during activity implementation? If T&E species are identified during implementation, is there a formal process for halting work, avoiding impacts, and notifying authorities?

c. Is the site located in a migratory bird flight or other animal migratory pathway?

d. Will the activity involve harvesting of non-timber forest products, e.g., mushrooms, medicinal and aromatic plants (MAPs), herbs, or woody debris?

e. Will the activity involve tree removal or logging? If so, please describe.

6. Historic or cultural resources

a. Are there cultural or historic sites located at or near the site? If so, what is the distance from these? What is the plan for avoiding disturbance or notifying authorities?

b. Are there unique ethnic or traditional cultures or values present in the site? If so, what is the applicable preservation plan?

G. Further Analysis of Recommended Actions *(if the applicable IEE requires the use of ERCs to perform further analysis of recommended actions, then check the appropriate box below. If this analysis is not required, then skip this and proceed with Section H. If required by the IEE, the ERC shall be copied to the Bureau Environmental Officer (BEO)).*

☐ **1. Categorical Exclusion:** The activity is not likely to have an effect on the natural or physical environment. No further environmental review is required.*

☒ **2. Negative Determination with Conditions:** The activity does not have potentially significant adverse environmental, health, or safety effects, but may contribute to minor impacts that can be eliminated or adequately minimized by appropriate mitigation measures. EMMPs shall be developed, approved by the Mission Environmental Officer (MEO) (and the BEO if required by the IEE) prior to beginning the activity, incorporated into work plans, and then implemented. See Sections H and I below.*

☐ **3. Positive Determination:** The activity has potentially significant adverse environmental effects and requires further analysis of alternatives, solicitation of stakeholder input, and incorporation of environmental considerations into activity design. A Scoping Statement must be prepared and be submitted to the BEO for approval. Following BEO approval an Environmental Assessment (EA) will be conducted. The activity may not be implemented until the BEO clears the final EA. For activities related to the procurement, use, or training related to pesticides, a PERUSAP will be prepared for BEO approval.

☐ **4. Activity Cancellation:** The activity poses significant and unmitigable adverse environmental effects. Adequate EMMPs cannot be developed to eliminate these effects and alternatives are not feasible. The project is not recommended for funding.

Note regarding applicability related to Pesticides (**216.2(e): The exemptions of §216.2(b)(l) and the categorical exclusions of §216.2(c)(2) ***such as technical assistance, education, and training are not applicable to assistance for the procurement or use of pesticides.

H. EMMPs *(Using the format provided below, or its equivalent, list the processes that comprise the activity, then for each, identify impacts requiring further consideration, and for each impact describe the mitigation and monitoring measures that will be implemented to avoid or adequately minimize the impacts. All environment, health, and safety impacts requiring further consideration, which were identified in Section F., should be addressed)*

1. Activity-specific environmental mitigation plan (Upon request, the MEO may be able to provide your project with example EMMPs that are specific to your activity.)

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
Mobilization and Site Preparation				
Permits and licenses for: - Waste disposal and recycling - Water use - Excavation works (laying of pipes)	Impact on air, water, land and human health	**YES**	- Obtain necessary permits and licenses before the start of works - Sign a contract for execution of works with companies which have appropriate licenses to perform the works - Have a proof of contractors' use of appropriate equipment, including transport	- Permits, licenses, contracts with companies-contractors
Ensuring work safety	Human health	**YES**	- The works should be executed according to State Building Norms DBN A.3.2-2-2009 "Industrial Safety in Construction" and DBN A.3.1-5-2009 "Organization of Construction" - Perform training on safety prior to the start of works and throughout the activity - Elaboration of safety rules, including evacuation plan	- Work safety briefing records - Safety rules, including evacuation plan
Development of fire security system design and technical documentation	Impact on air, water, land and human health	**YES**	- Develop a plan for fire security system installation - Design activities to minimize any impact of the anticipated works on the environment and public health	- Fire security system design - Fire security equipment specifications
Procurement, delivery and storage of fire security equipment and relevant materials	Impact on air, land and human health	**YES**	- All involved should comply with Order #1417 "On approval of fire safety rules in Ukraine" - Request the staff to use PPE at work - It is necessary to purchase certified equipment and materials - It is strongly recommended to use enclosed space for materials and equipment storage	- Observations/ photos - Certificates for equipment and materials - User manuals for fire extinguishers - Contract for waste disposal/utilization and related receipts (or similar records)

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
			- Separate the generated wastes (recyclable and non-recyclable, toxic and non-toxic) and get them disposed of properly - Place clear informative/ warning signs around the construction and storage area (for example, red tape)	
Activity Implementation Phase				
Laying of a water supply pipelines (inside and outside buildings) to provide water for the fire safety system	- Impact on human health - Impact on land, and water	**YES**	- Minimize the impact on human health in compliance with State Building Norms DBN A.3.2-2-2009 "Industrial Safety in Construction" and DBN A.3.1-5-2009 "Organization of Construction": - perform training on safety prior to the start of works; - request staff to use protective clothes, etc.; - limited access of unauthorized staff to working area; - Place clear informative/ warning signs around the construction area (for example, red tape) - Use machines with the low level of noise and emissions which meet the requirements of State Building Norms DBN B.2.8-9-98. "Construction machinery, equipment and tools. Operation of construction equipment. General requirements" - Water pipeline construction may result in temporarily increased noise levels at the site. The works will be conducted in working hours (9.00-22.00), as stipulated by the legislation of Ukraine - Excavation works will result in removing a layer of infertile soil due to all works will be performed on industrial territory. This removed soil will be covered with the film to prevent air pollution and	- Observations/ photos - Design documentation - Work safety briefing records - Permit for excavation works - Contract for waste disposal/utilization - Water use permit

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
			will be used for leveling and compaction of the territory - The intersection of gas pipeline is envisioned. Excavation works should be executed by hand in the presence of gas system maintenance personnel - Minimize contamination of soil/water associated with the work of construction machinery. If fuel and/or lubricants (F&L) are spilled, the contaminated soil should be removed and disposed on a landfill	
Installation and testing of a fire safety equipment inside storage facilities (fire alarms, smoke detectors, fire extinguishing equipment kits, fire alarm device, manual fire extinguishers)	- Impact on human health - Impact on land, air and water	**YES**	- Minimize the impact on human health in compliance with State Building Norms DBN A.3.2-2-2009 "Industrial Safety in Construction" and DBN A.3.1-5-2009 "Organization of Construction": - perform training on safety prior to the start of works - request staff to use protective clothes, etc. - Place for installation of automatic fire alarms and smoke detectors and fire extinguishing equipment kits inside of storage facilities should be chosen in accordance with the design documents and State Building Norms DBN B.1.1- 7-2002 Fire safety of construction and SBN B.2.5-56:2010 Fire protection systems - Lay a low voltage (12V) network inside the storage facilities to minimize/ prevent the risk of short circuits and fire - Water used for firefighting will be collected into the storm water treatment facility, cleaned by storm water treatment system and directed into the drainage channel - Low-voltage rechargeable battery set for standby power supply and low-voltage wires	- Design documentation - Works safety briefing records - Observations /photos - Records of fire protection system checking - Fire safety permit - Certificates for all materials and equipment - Contract for waste disposal/utilization - Battery sets utilization records

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
			will be used for fire alarm device supply to minimize fire risks in storage facilities - Battery set should be replaced each 3 years. Old battery set should be retrofitted or properly utilized. - Place for installation of manual powder fire extinguishers should be chosen according to the fire safety rules (NAPB B.03.001-2004)	
Installation of sound and light alarms on the facades of the storage buildings	- Impact on human health	**YES**	Minimize the impact on human health in compliance with State Building Norms DBN A.3.2-2-2009 "Industrial Safety in Construction" and DBN A.3.1-5-2009 "Organization of Construction": - perform training on safety prior to the start of works - request staff to use protective clothes, etc.	- Design documentation for electrical network -Works safety briefing records - Observations /photos - Records of fire protection system checking
Installation of electrical network for fire safety system	- Impact on human health - Impact on land, air and water	**YES**	- Minimize the impact on human health in compliance with State Building Norms DBN A.3.2-2-2009 "Industrial Safety in Construction" and DBN A.3.1-5-2009 "Organization of Construction": - perform training on safety prior to the start of works - request staff to use protective clothes, etc. - Lay a low voltage (12V) network inside the storage facilities to minimize the risks of fire. - All low-voltage power supply wires inside the storage facilities will be connected to fire alarm device "PPKP-Lun'-9P" - The back-up electricity supply of fire alarm device will be provided by an internal rechargeable battery set (voltage will not exceed 12 V, operation life is 3 years)	- Design documentation for electrical network - Works safety briefing records - Observations /photos - Records of fire protection system checking - Certificates for all materials and equipment

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
Installation of a lightning protection system for buildings and structures	- Impact on human health - Impact on land, air and water	**YES**	- Develop a plan for lightning protection system installation. - Design activities to minimize any impact of the anticipated works on the environment and public health. - Sign a contract for execution of works with subcontractor which has appropriate licenses to perform the works - Lightning protectors will be installed on rooftops of each storage facility as required by the national technical regulations (DSTU B. V.2.5-38: 2008 "Lightning protection for buildings and structures")	- Lightning protection system design - lightning protection equipment specifications - Observations /photos - Records of lightning protection system checking - Certificates for all equipment
Site Closure				
Removal of waste, working equipment, tools and materials	- Impact on land, air, and human health	**YES**	- Minimize the impact on staff health (use protective clothes, etc.) in compliance with State Building Norms DBN A.3.2-2-2009 "Industrial Safety in Construction" and DBN A.3.1-5-2009 "Organization of Construction" - Use machines and equipment with low level of noise and emissions - Dispose generated waste according to its hazard class and if recycling is possible (State Sanitary Norms DSanPiN 2.2.7.029-99 "Hygienic requirements for industrial waste management and definitions of the class of hazard for public health")	- Work safety briefing records - Observations /photos - Contract for waste disposal/ utilization and related receipts (or similar records)
Re-cultivation of the territory	- Impact on soil, human health	**YES**	- Develop a re-cultivation plan - Minimize the impact on staff health (use protective clothes, etc.) in compliance with State Building Norms DBN A.3.2-2-2009 "Industrial Safety in Construction" and DBN A.3.1-5-2009 "Organization of Construction" - Technical re-cultivation includes possible renovation of the road and pavement, etc. in compliance with the State Building Norms DBN B.2.2-5:2011 "Provision of public	- Observations/ photos - Work safety briefing records - Re-cultivation plan

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
			services and improvement of territories"	
Activity Handover. Site Exploitation				
Fire safety system operation, including safety rules and evacuation plan	- Impact on human health - Impact on land, air and water	**YES**	- Minimize the impact on staff health due to introduction of safety rules and performed trainings in compliance with the Order #1417 "On approval of fire safety rules in Ukraine" and Law of Ukraine "On work safety" #2695-XII dated October 14, 1992 - User manuals for all fire extinguishers are presented on stands inside storage facilities. - Elaborated evacuation plan for emergency situations - Minimize impact on land, air and water by keeping safety rules in compliance with the Environmental Protection Law of Ukraine (1991, #1264-XII); - Fire safety control by the local fire inspection on checking the fire protection system - Low voltage network should minimize fire risks	- Work safety briefing records - Lists of provided protective clothes - Records of checking the fire protection system - Photos - Safety rules for staff -User manuals for all fire extinguishers - Evacuation plan for emergency situations

2. Activity-specific monitoring plan

Monitoring Indicators	Monitoring and Reporting Frequency	Responsible Parties	Records Generated
Permits and licenses for activity implementation obtained: - Waste disposal and recycling; - Water use - Excavation works;	Before the start of each phase of work	MDI, Company-Subcontractor	Permits and licenses obtained
Fire permit and regular checks certificates	Local partner is monitored by the Myrhorod fire inspection once a year	Myrhorod Utility Company "Spetscomuntrans"	Permit obtained Records of fire safety checking
Visual reviews of fire system installation	At inception phase and upon a completion of work	MDI, Company-Subcontractor	Photos
Records on work safety briefings	Before the start of each phase of work	Company-Subcontractor	Records on work safety briefings
Technical documentation of fire security system	Once, before start of the installation	Myrhorod Utility Company "Spetscomuntrans"	Technical design documentation, - Observations/photos
Payments for waste disposal	Monthly monitoring	Myrhorod Utility	Receipts paid for waste

Monitoring Indicators	Monitoring and Reporting Frequency	Responsible Parties	Records Generated
		Company "Spetscomuntrans"	disposal
Re-cultivation plan	Once, before start of the water pipes laying	Company-Subcontractor Myrhorod Utility Company "Spetscomuntrans	Technical design documentation, - Observations/photos
Evacuation plan	Once, before start of the storage facilities operation	Myrhorod Utility Company "Spetscomuntrans	Observations/photos

I. Certification of No Adverse or Significant Effects on the Environment

I, the undersigned, certify that activity-specific baseline conditions and applicable environmental requirements have been properly assessed; environment, health, and safety impacts requiring further consideration have been comprehensively identified; and that adverse impacts will be effectively avoided or sufficiently minimized by proper implementation of the EMMP(s) in Section G. If new impacts requiring further consideration are identified or new mitigation measures are needed, I will be responsible for notifying the USAID COR/AOR, as soon as practicable. Upon completion of activities, I will submit a ***Record of Compliance with Activity-Specific EMMPs*** using the format provided in ERC Annex 1 or its equivalent.

Ruslan Tormosov, LAESM Project Director/COP — Date: 08/10/2015

J. Approvals:

Maria Garastovskaya, USAID AOR — Date: August 10, 2015

Larissa Piskunova, Deputy Mission Environmental Officer — Date: 8/10/15

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Ukraine /Local Alternative Energy Solutions in Myrhorod – *Amendment of the ERC #DCN: 2015-UKR-008 (Arrangement of a fire extinguishing system)* **18**

ERC ANNEX 1

RECORD OF COMPLIANCE WITH ACTIVITY-SPECIFIC ENVIRONMENTAL MITIGATION AND MONITORING PLANS (EMMPs)

Subject:	*Amendment to the ERC DCN: 2015-UKR-008 (in part A6.4 Arrangement of a fire extinguishing system)*
To:	*Maria Garastovskaya /AOR*
Copy:	*Larissa Piskunova/Deputy Mission Environmental Officer*
Date:	November 27, 2015

The previously approved ERC (DCN: 2015-UKR-008) was prepared when the technical design documentation for reconstruction of the central straw storage facility was pending approval of the state expertise agency "UkrDerzhBudExpertisa". In order to get the UkrDerzhBudExpertisa" final approval, it was recommended to revise the design documentation regarding the fire safety system as the "UkrDerzhBudExpertisa" experts believed that the capacity of water in two plastic reservoirs (50 m3 each) may not be enough for fire extinguishing due to the storage territory size and volume of stored straw (up to 2000 tons). So, the technical documentation was revised to include a new fire safety system and got necessary approval.

This ERC amendment was prepared to reflect the revision only of the fire safety system for the central storage facility.

The revision included: laying of an external and internal water supply pipelines to provide water for the fire safety system; installment of fire extinguishing equipment kits; placement of manual powder fire extinguishers; installation of the fire alarm system (including a fire alarm device PPKP-Lun'-9P with a digital GSM auto-dial module for transferring a signal to the municipal fire-fighting system); placement of automatic smoke detectors inside the storage buildings; manual fire alarms; sound and light alarms installed on the facades of the storage buildings; lighting protection system; and electricity supply arrangement.

This memorandum is to certify that MDI and the partner organizations have met all conditions of the EMMPs for this activity. A summary of how mitigation and monitoring requirements were met is provided below.

1. Mobilization and Site Preparation

Work safety was ensured for prevention of any accidents during reconstruction/construction/excavation works. This included training in safety prior to the start of works and throughout the activity. In procurement of materials and equipment, MDI and its partners ensured the materials are certified, non-toxic and asbestos-free and that low energy consumption and other hygienic norms and requirements were observed.

2. Activity Implementation Phase

During the activity implementation phase, expected were human health impact, dust and noise, impact on air; and odor slightly increased. The impact on the workers' health was minimized due to the use of respirators, protective clothes. The impact on land was minimized due to collecting waste in a container with a lid and waste disposal on the landfill after the works were finished; covering the extracted soil by plastic film to minimize wind erosion and prevent future contamination. To minimize the noise/emissions, machinery with low level of noise/emissions was used. The impact on human health, land, air and water was minimized due to the installation of a fire extinguishing system, laying internal and external water supply pipelines to provide water for the fire safety system (as per the ERC Amendment), and laying a low voltage network inside the control center building of the storage facility. To minimize fire risks in storage facilities, low-voltage rechargeable battery set for standby power supply and low-voltage wires was used.

3. Site Closure Phase

The Capital Development Department of Myrhorod City Council accepted the reconstruction works by signing a corresponding works acceptance certificate on November 26, 2015.

4. Activity Handover

The central storage facility is maintained by the Utility Company "Spetscommuntrans".

Sincerely,

November 27, 2015

Implementer Project Director/COP — Date

Ruslan Tormosov

Approved:

November 27, 2015

USAID/COR/AOR/Activity Manager — Date

Maria Garastovskaya

Distribution:

- Project Files
- MEO
- Bureau Environmental Officer