SUPPLEMENTAL INITIAL ENVIRONMENTAL EXAMINATION (SIEE)

Zika AIRS Project (ZAP) Indoor Residual Spraying (IRS 2) Task Order Six
and
Global Health Supply Chain-Procurement and Supply Management Task Order Four
El Salvador

1. EXECUTIVE SUMMARY

1.1. PROGRAM/ACTIVITY DATA

1.1.1. Vector Control

<table>
<thead>
<tr>
<th>Program/Activity Number</th>
<th>AID-OAA-TO-14-00035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program/Activity Title</td>
<td>Zika AIRS Project (ZAP) Indoor Residual Spraying (IRS 2) Task Order Six</td>
</tr>
<tr>
<td>Country/Region</td>
<td>El Salvador/LAC</td>
</tr>
<tr>
<td>USG Foreign Assistance</td>
<td>3 Investing in People</td>
</tr>
<tr>
<td>Framework</td>
<td>3.1 Health</td>
</tr>
<tr>
<td></td>
<td>3.1.3 Malaria</td>
</tr>
<tr>
<td>Period Covered</td>
<td>April 12, 2017 – September 25, 2018</td>
</tr>
<tr>
<td>Life of Project Amount</td>
<td>$328,606,455.08 (Total Task Order ceiling, actual country-level funding will be a subset of the total amount)</td>
</tr>
<tr>
<td>Management Unit Contact Point</td>
<td>Allison Belemvire, COR and Malaria Technical Advisor, <a href="mailto:abelemvire@usaid.gov">abelemvire@usaid.gov</a></td>
</tr>
</tbody>
</table>

1.1.2. Commodity Procurement

<table>
<thead>
<tr>
<th>Program/Activity Number</th>
<th>AID-OAA-I-15-00004/ AID-OAA-TO-16-00018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program/Activity Title</td>
<td>Global Health Supply Chain-Procurement and Supply Management Task Order Four</td>
</tr>
<tr>
<td>Country/Region</td>
<td>El Salvador/LAC</td>
</tr>
<tr>
<td>USG Foreign Assistance</td>
<td>3 Investing in People</td>
</tr>
<tr>
<td>Framework</td>
<td>3.1 Health</td>
</tr>
<tr>
<td></td>
<td>3.1.6 Maternal and Child Health</td>
</tr>
<tr>
<td>Period Covered</td>
<td>April 25, 2107-September 30, 2017</td>
</tr>
<tr>
<td>Life of Project Amount</td>
<td>$8,000,000 in Zika funds (Total Zika funding under Task Order, actual country-level funding will be a subset of the total amount)</td>
</tr>
<tr>
<td>Management Unit Contact Point</td>
<td>Carmen Tull, COR and Acting Chief of Child Health and Immunization, <a href="mailto:ctull@usaid.gov">ctull@usaid.gov</a></td>
</tr>
</tbody>
</table>

1.1.3. Document Information
1.2. ENVIRONMENTAL ACTION RECOMMENDED

<table>
<thead>
<tr>
<th>Categorical Exclusion</th>
<th>X</th>
<th>Negative Determination</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Determination</td>
<td>X</td>
<td>EMMP (country-level)</td>
<td>X</td>
</tr>
</tbody>
</table>

Project does not cover the following activities:
- Construction other than minor renovation and cosmetic improvement
- Grading or land modification other than within immediate vicinity of the affected residences to eliminate standing water
- Indoor residual spray activities, which would require an SEA
- Fumigation activities at storage facilities
- Use of other vector control methods not explicitly discussed.

1.3. THRESHOLD ENVIRONMENTAL DETERMINATIONS

<table>
<thead>
<tr>
<th>Activity or Activity Category</th>
<th>Recommended Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement, storage, delivery/distribution, and application of World Health Organization Pesticide Evaluation Scheme (WHOPES)-recommended and U.S. Environmental Protection Agency (USEPA)-approved larvicides.</td>
<td>Negative determination, per 22 CFR 216.3(a)(2)(iii), subject to conditions</td>
</tr>
<tr>
<td>Procurement, storage, and delivery/distribution to consignees of US Environmental Protection Agency (USEPA)-approved personal repellents, and training of health providers and beneficiaries on the proper use of personal repellents.</td>
<td>Negative determination, per 22 CFR 216.3(a)(2)(iii), subject to conditions</td>
</tr>
<tr>
<td>Perform entomological monitoring to measure the density, habits, and longevity of the Aedes mosquitoes in El Salvador, including insecticide resistance testing of mosquitoes in the affected areas and creation of a national database for Zika surveillance and control.</td>
<td>Negative determination, per 22 CFR 216.3(a)(2)(iii), subject to conditions</td>
</tr>
<tr>
<td>Community-led social mobilization and education campaigns to actively/continually reduce/eliminate standing water sources where Aedes</td>
<td>Categorical Exclusion, per 22 CFR 216.2(c)(2)(i) and (v)</td>
</tr>
</tbody>
</table>
mosquito species breed.

<table>
<thead>
<tr>
<th>Conducting minor facility renovation or cosmetic improvements, where necessary to accommodate structures for project activities.</th>
<th>Negative determination, per 22 CFR 216.3(a)(2)(iii), subject to conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement, installation, commissioning, operation, and maintenance of treatment equipment for pesticide waste (i.e. incinerators).</td>
<td>For incinerators with capacities to destroy approximately 12 to 100 kilograms of waste per hour.</td>
</tr>
<tr>
<td></td>
<td>Negative Determination, per 22 CFR 216.3(a)(2)(iii), subject to Conditions</td>
</tr>
<tr>
<td></td>
<td>Note: Multiple installations serving a facility that in total exceed these thresholds receive a positive determination (see below).</td>
</tr>
<tr>
<td></td>
<td>For incinerators with capacities to destroy &gt; 100 kilograms of waste per hour.</td>
</tr>
<tr>
<td></td>
<td>Positive Determination, per 22 CFR 216.3(a)(2)(iii), with resulting scoping study and, if necessary, an Environmental Assessment developed and approved by the COR and the GH BEO.</td>
</tr>
</tbody>
</table>

1.4. SUMMARY OF IMPLEMENTATION, MONITORING, AND REPORTING MEASURES

1. **Environmental Management Training.** The GH CORs assigned to this program will enroll in and successfully complete the Bureau for Global Health Environmental Management Process Training course. The course is offered through GHPOD.

2. **Provision of the IEE.** The CORs shall provide the Implementing Partners with a copy of this SIEE and brief the Implementing Partners on their environmental compliance responsibilities.

3. **COR monitoring responsibilities.** As required by the ADS 204, the CORs will actively monitor and evaluate whether the conditions of this SIEE are being implemented effectively and whether new or unforeseen consequences arise during implementation not identified and reviewed in this SIEE. If new or unforeseen consequences arise, the team will suspend the activity and initiate appropriate, further review, in accordance with 22 CFR 216.

4. **Annual compliance documentation and reporting.** Each Implementing Partner is responsible for the preparation of an Environmental Mitigation and Monitoring Plan (EMMP) for its activity and submitting the completed plan to the COR for review and

---

1 USAID PATH Incinerator Guidebook (2010)

pg. 3

April 18, 2017
approval with the project work plan and prior to initiating work on the activity. The completed EMMP is included with the SIEE. The EMMP will outline the environmental impacts that can be reasonably anticipated from the implementation of the program activities, the mitigation measures to address the impacts, monitoring measures, and frequency of inspection. Each COR is responsible for reviewing and approving his or her respective Implementing Partner’s EMMP and providing a copy to the Global Health (GH) Bureau Environmental Officer (BEO) for review and concurrence.

Each Implementing Partner is responsible for annually preparing and submitting to the respective COR an Environmental Mitigation and Monitoring Report (EMMR) to document compliance with the conditions of this SIEE. EMMRs must be submitted to the CORs within 60 days after the end of each fiscal year. The EMMR template is attached to the SIEE.

5. Integration of compliance responsibilities in prime and subcontracts, agreements, and grants. The CORs shall ensure that the contract document references and requires compliance with the conditions set out in this SIEE, as required by ADS 2014.3.4(a)(6) and ADS 303.3.6(3)(e). The Implementing Partners shall assure that subcontracts, agreements, and grants reference and require compliance with relevant elements of these conditions.

6. Assurance of sub-awardee, -grantee, -contractor capacity and compliance. The Implementing Partners shall assure that sub-awardees, grantees, contractors have the capability to implement the relevant requirements of this SIEE. The Implementing Partners shall, if appropriate, provide training to sub-awardees, -grantees, and -contractors in their environmental compliance responsibilities.

7. Pesticides or pesticide products. This SIEE applies for any program activities conducted involving the procurement, use, research, or disposal of pesticides and/or larvicides and their waste products based on consultations with the GH BEO. All contracts must follow the procedures of the below-referenced Programmatic Environmental Assessment (PEA) for Integrated Vector Management (IVM) (January 2017) and the Zika Programmatic PERSUAP (July 2016). Indoor residual spray activities are not covered by this SIEE and require an SEA. Under the Zika Programmatic PERSUAP, the following conditions apply:
   a. Implementing Partners may only support active ingredients approved in the PERSUAP and registered for use in El Salvador;
   b. Pesticide use/support must be governed by the principles of IVM;
   c. Implementing Partners must ensure the application of only effective larvicides;
   d. Implementing Partners must provide training on safer pesticide use and first aid;
   e. Implementing Partners must assure the use of Personal Protective Equipment (PPE); and
   f. Implementing Partners must ensure monitoring of mitigations measures, record
keeping, and reporting.

8. **Compliance with human subject research requirements.** The CORs, in consultation with the BEO for the Global Health Bureau, shall assure that the Implementing Partners and sub-awardees demonstrate completion of all requirements for ethics review and adequate medical monitoring of human subjects who participate in research trials carried out through this agreement. The BEO for Global Health may request copies of documentation from the CORs to demonstrate compliance with applicable requirements of human subject trials. All documentation demonstrating completion of required review and approval of human subject trials must be in place prior to initiating any trials and cover the period of performance of the trial as described in the research protocol.

9. **New or modified activities.** As part of its work plan, each Implementing Partner, in collaboration with the respective COR, shall review all ongoing and planned activities to determine if they are within the scope of this SIEE. Each Implementing Partner shall complete the screening questionnaire (Part 1 of the EMMT) with the work plan.
   a. If activities outside the scope of this SIEE are planned, the COR shall assure that an amendment to this SIEE addressing these activities is prepared and approved prior to implementation of any such activities.
   b. Any ongoing activities found to be outside the scope of this SIEE shall be modified to comply or halted until an amendment to this SIEE is submitted and approved.

10. **Compliance with Host Country requirements.** Nothing in this SIEE substitutes for or supersedes Implementing Partner’s or sub-awardee’s/-grantee’s/-contractor’s responsibility for compliance with all applicable host country laws and regulations. The Implementing Partners and sub-awardee, -grantee, -contractor must comply with host country environmental regulations unless otherwise directed in writing by USAID. However, in the case of a conflict between host country and USAID regulations, the latter shall govern.

11. **Closeout of activity, environmental responsibilities.** Each Implementing Partner will prepare a closeout plan consistent with contract documentation for COR review and approval that outlines responsibilities for end-of-project operation clean up and disposal of healthcare, construction, surplus pesticide and other wastes, and/or transition of other operational responsibilities. Where identified as needed, the closeout/transition operation will provide training to support continuity of environmental responsibilities.

12. **Waste Management Plan.** The Implementing Partners will prepare an integrated Waste Management Plan (WMP), or use an equivalent existing SOP, that will define and detail direct and indirect waste streams generated by Implementing Partner-managed activities and specify appropriate management and disposal practices for each. The primary components required in a WMP are described in Annex F.

13. **Mercury-containing commodities.** The Implementing Partners will not procure
mercury-containing commodities. Any exception to this restriction must include a written justification and approval by the GH COR.

14. **Asbestos and lead-based paint.** The Implementing Partners will not use construction materials containing asbestos or lead-based paint. When conducting renovation on existing buildings, the Implementing Partners will investigate for the presence of asbestos or lead paint prior to initiating work and will provide appropriate PPE and a disposal process for handling the hazardous waste, if identified.

15. **Air pollution control technology for incinerators.** Small- or large-scale incinerators procured or operated by the Implementing Partners must contain adequate air pollution control technology to ensure compliance with host country guidelines and applicable international air quality emission requirements, including:
   - AP 42 and Emission Factors: US Environmental Protection Agency.

A small-scale incinerator is one with a capacity to destroy approximately 12 to 100 kilograms of waste per hour, while a large-scale incinerator has a capacity to destroy more than 100 kilograms of waste per hour. Refer to the USAID PATH Incinerator Guidebook for additional information on incinerators.

16. **Development and implementation of SOPs.** The Implementing Partners will develop or use existing Standard Operating Procedures (SOPs) addressing core activities including, but not limited to, procurement, storage, inventory management, and distribution of larvicides and personal repellants. These SOPs must be approved by the respective COR and reflect properly referenced industry best practices.

17. **Solicitation of international transport and disposal of hazardous waste.** The solicitation of third party services for the international transport and disposal of hazardous and potentially hazardous waste, including pesticides and empty pesticide containers, requires prior review and approval of solicitation documents by the COR and concurrence by the GH BEO.
<table>
<thead>
<tr>
<th>Laura Chittenden</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zika Regional Health Advisor,</td>
<td></td>
</tr>
<tr>
<td>Latin America and Caribbean Bureau</td>
<td></td>
</tr>
<tr>
<td>cleared via email</td>
<td>05/23/2017</td>
</tr>
<tr>
<td>Eduardo Quevedo</td>
<td>Date</td>
</tr>
<tr>
<td>Project Management Specialist</td>
<td></td>
</tr>
<tr>
<td>USAID/EI Salvador</td>
<td></td>
</tr>
</tbody>
</table>

1.5.2. Concurrence:

<table>
<thead>
<tr>
<th>Rachel Dagovitz</th>
<th>6/6/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Health Bureau Environmental Officer</td>
<td>Date</td>
</tr>
</tbody>
</table>

1.5.3. Distribution List:
COR or designee is responsible for distributing the approved IEE to stakeholders on the distribution list below:
Kellie Stewart, Regional Zika Coordinator
Joe Torres, Regional Environmental Advisor, Central America and Mexico
Mary Rodriguez, Mission Environmental Officer, El Salvador
## 1.5. APPROVAL OF ENVIRONMENTAL DETERMINATION AND MEASURES

### 1.5.1. Clearance:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paul Mahanna</td>
<td>Office Director, Global Health Bureau, Office of Infectious Disease</td>
<td>6/1/2017</td>
</tr>
<tr>
<td>Allison Belemvire</td>
<td>ZAP COR and Malaria Technical Advisor, Global Health Bureau, Office of Infectious Disease</td>
<td>5/22/2017</td>
</tr>
<tr>
<td>Carmen Tull</td>
<td>GHSC-PSM TO4 COR and Acting Chief of Child Health and Immunization, Global Health Bureau, Office of Maternal and Child Health and Nutrition</td>
<td>5/24/2017</td>
</tr>
<tr>
<td>Diana Shannon</td>
<td>Latin America and Caribbean Bureau, Environmental Officer</td>
<td>5/25/2017</td>
</tr>
</tbody>
</table>
## SECTION 2: SIEE SUPPORTING INFORMATION

### 2.1. PROGRAM/ACTIVITY DATA

#### 2.1.1. Vector Control

<table>
<thead>
<tr>
<th>Program/Activity Number</th>
<th>AID-OAA-TO-14-00035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program/Activity Title</td>
<td>Zika AIRS Project (ZAP) Indoor Residual Spraying (IRS 2) Task Order Six</td>
</tr>
<tr>
<td>Country/Region</td>
<td>El Salvador/LAC</td>
</tr>
<tr>
<td>USG Foreign Assistance Framework</td>
<td>3 Investing in People</td>
</tr>
<tr>
<td></td>
<td>3.1 Health</td>
</tr>
<tr>
<td></td>
<td>3.1.3 Malaria</td>
</tr>
<tr>
<td>Period Covered</td>
<td>April 12, 2017 – September 25, 2018</td>
</tr>
<tr>
<td>Life of Project Amount</td>
<td>$328,606,455.08 (Total Task Order ceiling, actual country-level funding will be a subset of the total amount)</td>
</tr>
<tr>
<td>Management Unit Contact Point</td>
<td>Allison Belemvire, COR and Malaria Technical Advisor, <a href="mailto:abelemvire@usaid.gov">abelemvire@usaid.gov</a></td>
</tr>
</tbody>
</table>

#### 2.1.2. Commodity Procurement

<table>
<thead>
<tr>
<th>Program/Activity Number</th>
<th>AID-OAA-I-15-00004/ AID-OAA-TO-16-0001800018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program/Activity Title</td>
<td>Global Health Supply Chain-Procurement and Supply Management Task Order 44</td>
</tr>
<tr>
<td>Country/Region</td>
<td>El Salvador/LAC</td>
</tr>
<tr>
<td>USG Foreign Assistance Framework</td>
<td>3 Investing in People</td>
</tr>
<tr>
<td></td>
<td>3.1 Health</td>
</tr>
<tr>
<td></td>
<td>3.1.6 Maternal and Child Health</td>
</tr>
<tr>
<td>Period Covered</td>
<td>April 2016 – September 2017</td>
</tr>
<tr>
<td>Life of Project Amount</td>
<td>$8,000,000 (Total Zika funding under Task Order, actual country-level funding will be a subset of the total amount)</td>
</tr>
<tr>
<td>Management Unit Contact Point</td>
<td>Carmen Tull, COR and Acting Chief of Child Health and</td>
</tr>
</tbody>
</table>
2.2. **PURPOSE AND SCOPE**

The purpose of this document, in accordance with Title 22, Code of Federal Regulations, Part 216 (22 CFR 216), is to provide a preliminary review of the reasonably foreseeable effects on the environment of Zika activities in El Salvador under ZAP IRS 2 Task Order Six and GHSC-PSM Task Order 4, and on this basis, to recommend determinations and, as appropriate, attendant conditions for these activities. Upon final approval of this SIEE, these recommended determinations are affirmed as 22 CFR 216 Threshold Decisions, and conditions become mandatory.

The ZAP initiative is an expansion of the President's Malaria Initiative (PMI) AIRS Project and focuses on evaluating vector control methods to combat Zika in Latin America and Caribbean countries. As part of this effort, the [2017 Programmatic Environmental Assessment (PEA)](http://www.pmi- malaria.org) for Malaria was amended on June 22, 2016 to authorize Zika vector control activities, including larviciding, procurement and distribution of personal repellents, and indoor residual spraying (with conditions). The [2016 IEE amendment](http://www.pmi-malaria.org) mandates development of a country-specific SIEE to ensure that local conditions and considerations are accounted for, and the proper mitigation activities are undertaken. The SIEE reviews the reasonably foreseeable effects of proposed activities on the environment, and provides a recommendation for a Threshold Decision with proposed conditions. Additionally, a [Zika Programmatic PERSUAP](http://www.pmi-malaria.org) was prepared that specifies the active ingredients that may be used and places conditions upon their use.

This SIEE satisfies the requirements in the programmatic IEE and addresses activities to be conducted in El Salvador by USAID Implementing Partners to reduce the morbidity and mortality of vector-borne diseases, such as Zika. Vector control interventions for Zika that are currently supported by USAID include:

- Vector mapping and insecticide resistance monitoring
- Larval breeding site reduction through household visits and community mobilization
- Larviciding of *Aedes* breeding sites

Specifically, this SIEE addresses activities, considerations, potential health and environmental impacts, mitigation approaches, and recommendations for implementing larval source management (i.e., larviciding breeding sites) and procuring/distributing personal repellents (i.e., substances designed to discourage mosquitoes from landing on or biting people) in El Salvador.

The Ministry of Health (MINSAL, Ministerio de Salud) has implemented their own vector
control activities – e.g., indoor residual spraying (IRS), fogging, aerial and outdoor spraying – to reduce the threats of mosquito-borne arboviruses (e.g., dengue, chikungunya, Zika). However, USAID/El Salvador will not be supporting these activities as this SIEE only addresses activities related to larviciding and activities supporting the application of larvicide in the communities and the procurement, storage, and delivery to consignees of personal repellents.

The funding ceiling for the entire ZAP task order covers other vector control activities and the funding for El Salvador-specific activities is not separated. The Zika larviciding activity will be implemented in two application cycles in the period spanning April 12, 2017 to September 25, 2018.

Repellent procurement, managed by GHSC-PSM, is comprised of a one-time donation of personal repellents to the host country.

2.3. PROGRAM OVERVIEW

2.3.1. Background

Zika, a virus spread by Aedes mosquitoes, was designated a Public Health Emergency of International Concern on February 1, 2016 by the World Health Organization (WHO). Though the symptoms of Zika virus disease are generally mild, including fever, rash, and joint pain, there are devastating consequences if infected during pregnancy. Zika virus disease can cause severe brain defects, including microcephaly, where an infant's head and brain are small and underdeveloped. There is no cure for these debilitating effects. Although Zika was first recorded in Uganda in 1947, the first cases of this current Zika epidemic were confirmed in Brazil in 2015. Since then, local transmission has been reported in most of Latin American and the Caribbean (LAC).

The areas of highest density for the Zika virus tend to be in urban and suburban environments. Infected mosquitoes of the Aedes genus are the primary vectors for transmitting the Zika virus to humans. In tropical regions, it is mainly the Aedes aegypti mosquito transmitting the disease. The Aedes aegypti mosquito favors human hosts and is uniquely adapted to survive in urban areas. It is the same mosquito that transmits dengue, chikungunya, and yellow fever. In particular, Aedes aegypti mosquitoes tend to thrive in "densely populated areas which lack reliable water supplies, waste management, and sanitation" services due to their preference for artificial water containers during the larval phase.

In an effort to help combat the Zika virus in Latin American and Caribbean countries, the USAID-funded PMI AIRS Project has expanded its scope of work to support the implementation of vector control methods to prevent Aedes mosquito-borne diseases. Under this new ZAP initiative, USAID and its Implementing Partners will provide technical expertise,

---

build local governments' capacity, create innovative implementation models, implement vector control programs, and engage local communities in affected countries.

Because of congenital malformations associated with the vertical transmission of Zika, USAID is working with Implementing Partners to protect vulnerable pregnant women from infection. A Zika component was added to the maternal and child health task order under the Agency's flagship health commodity procurement and supply chain project, GHSC-PSM. At the point of care, service delivery partners are working to integrate Zika into existing antenatal care services, and will assist providers in integrating the commodity donation in antenatal care services. GHSC-PSM will establish an agreement with a reliable supplier, deliver products to El Salvador, provide logistics technical assistance as necessary, and ensure that stakeholders receive information on proper handling, use, and disposal of repellent.

2.3.2. Zika Management Approach

This section describes the management approach, including roles and responsibilities for environmental compliance activities required under the multiple USAID projects in El Salvador to which this SIEE pertains.

There are two GH activities conducted under this SIEE:

1. The procurement, storage, use, application, and disposal of pesticides and entomological monitoring will be conducted under ZAP, which will be implemented by Abt Associates. Other activities under this project include multiple partners' projects, including ZAP, focus on the provision of education to the communities and community mobilization to conduct environmental management activities aimed at reducing and eliminating *Aedes aegypti* breeding sources.

2. The procurement, storage, delivery, and instructions on the use of personal repellents will be managed by the GHSC-PSM project.

**COR and Zika Environmental Compliance Technical Advisor Responsibilities**

The COR and Technical Offices are located at USAID locations in the Washington metropolitan area. As required by ADS 204, the COR adequately monitors and evaluates whether the conditions of this SIEE are implemented effectively and whether new or unforeseen environmental impacts from his or her awards arise during implementation not identified and reviewed in this SIEE. The COR will be ultimately responsible for the preparation of additional environmental analysis/documentation, when needed. The COR is also responsible for implementing other relevant GH environmental compliance procedures, including proper notification to the GH BEO and Contracting/Agreement Officer, review of Implementing Partner documents and reports, and adequate recordkeeping.

If new or unforeseen environmental impacts arise from an activity, the corresponding COR of the project will investigate the activity and take appropriate action, including suspending the activity until the appropriate review in accordance with 22 CFR 216 is completed. If an activity outside the scope of this SIEE is planned, the corresponding COR of the project in consultation with the Zika Environmental Compliance Technical Advisor will assure that an
amendment to this SIEE addresses the new/revised activity. This SIEE amendment must receive the concurrence of the LAC BEO and GH BEO prior to implementation of the new activity. Any ongoing activities found to be outside the scope of this SIEE shall be modified to comply or halted until an amendment to this SIEE is approved.

Each COR is responsible for reviewing and approving EMMPs that are prepared for the awards under his or her purview. Implementing Partners provide EMMPs to their respective COR for approval, who then forwards the EMMPs to the GH BEO for concurrence. The Zika Environmental Compliance Technical Advisor will track Zika Program environmental compliance activities and assist the Zika Program in preparing and reviewing SIEEs, SIEE amendments, EMMPs and other environmental compliance documents. The CORs are responsible for consulting with the GH BEO to review the activities under their awards and determine if additional environmental analyses are needed.

Some activities may require additional environmental analyses (e.g., Scoping Statement, Environmental Assessment). These additional analyses will be undertaken by the Implementing Partner or the COR with support from the Zika Environmental Compliance Technical Advisor and submitted to the GH BEO for review and concurrence as outlined in this SIEE. Other environmental analyses may also require GH BEO concurrence, as specified in this SIEE.

The COR shall assure that the appropriate SIEE documentation is in place prior to implementation of any such activity, and that the Implementing Partner shall not undertake activities that are not addressed in the SIEE.

Mission Responsibilities

Zika POCs in the Missions will conduct project monitoring, coordinated with the CORs, during which they will document whether the conditions of the SIEE and EMMPs are implemented effectively and whether new or unforeseen environmental impacts arise during implementation, not identified and reviewed in the SIEEs. The POCs will properly document the monitoring activities and notify the COR if any issues arise. The roles and responsibilities of the CORs and Zika Environmental Compliance Technical Advisor are described above under the COR and Zika Environmental Compliance Technical Advisor Responsibilities section.

2.3.3. Description of Activities

The USAID Global Health Bureau has determined that the proposed effort, as described in this SIEE responds to the needs of the community and country as it relates to managing Zika in El Salvador and conforms to the requirements established in 22 CFR 216 for pesticide use. This document does not mandate the execution of the proposed larviciding nor personal repellent; rather, it documents the environmental planning and impact analysis to be executed by the Zika team in preparation for the proposed action. The design and standards of operation of the program are established to avoid and reduce any potential health and environmental impacts. USAID has concluded that the proposed action, when executed as described in the SIEE, the Zika Programmatic PERSUAP, and the Initial Environmental Examination amendment is consistent with the Government of El Salvador’s and USAID’s goal of reducing negative pregnancy outcomes due to Zika in El Salvador while minimizing...
negative impact to the environment and to human health.

The proposed actions recommended for approval in this 2017 SIEE are:

- Procure, store, and distribute larvicides to target mosquito larvae and prevent their maturity into adult mosquitoes. The Implementing Partners will provide the necessary training to personnel that transport, store and/or use donated larvicides to prevent or mitigate environmental impacts.

- Procure, store, transport, and distribute personal repellents to in-country health establishments. The Government of El Salvador, with support from USAID Implementing Partners, will store the repellents and distribute them to beneficiaries (i.e., pregnant women). GHSC-PSM will provide the necessary guidance to recipients that store and distribute donated personal repellents to prevent or mitigate environmental impacts.

- Perform entomological monitoring to measure the density, habits, and longevity of the *Aedes* mosquitoes in El Salvador. To determine the most effective vector control activities, test the insecticide resistance of mosquitoes in the affected areas and help government authorities to create a national database for Zika surveillance and control.

- Community-led social mobilization and education campaigns to actively/continuously reduce/eliminate standing water sources where *Aedes* mosquito species breed.

- If needed, the Implementing Partner will conduct minor renovation or cosmetic improvements to structures that may be required for project activities.

- If needed, the Implementing Partner will conduct the procurement, installation, commissioning, operation, or maintenance of treatment equipment for pesticide waste (i.e. incinerators). Incinerators will not exceed the maximum capacity to burn 100 kilograms of waste per hour.

The following summarized list characterizes the scope and nature of the supported activities:

1. Work with the *Ministerio de Agricultura y Ganadería*, the government agency in El Salvador that maintains the list of registered pesticides and manages importation of chemicals into the country, to establish cost-effective supply chain mechanisms, including procurement, distribution and storage of larval source management related commodities, and execute certain aspects of activities related to these vector control strategies.

2. Work with personnel from the Ministry of Health (*Ministerio de Salud*, MINSAL), specifically within the *Sistema Basico de Salud Integral* (SIBASI) to implement safe and high-quality larval source management support in El Salvador.

3. Ensure quality control measures for operations and monitoring are established and/or refined and implemented.

4. Contribute to evidence-based, country-level Zika vector control policy development, and disseminate experiences and best practices.

5. Contribute to the collection and analysis of routine entomological and epidemiological data, in order to effectively monitor and promote evidence-based vector control interventions.

6. Strengthen the capacity of the MINSAL personnel and other relevant institutions in the managerial, technical, supervisory, and evaluative functions of vector control strategies by engaging, training, and supervising personnel at the central,
departmental, municipal, and community levels. In addition, ensure that planning and implementation of vector control interventions includes attention to gender considerations to protect women and children of targeted communities from vector-borne disease.

2.4. BASELINE INFORMATION AND APPLICABLE HOST COUNTRY REQUIREMENTS

2.4.1. Locations Affected

El Salvador is located along the Pacific Coast of Central America, and borders Guatemala and Honduras. It has a total population of 6,250,000 according to 2015 estimates within a territory of 21,041 Km², making it one of the most densely populated countries in the Americas (309 inhabitants/Km²).\(^3\) Within El Salvador, 7,527 suspected Zika cases have been reported across all departments through the 19th of November, 2016, with the highest number of suspected cases per capita in Chalatenango (317 cases per 100,000 inhabitants), Cabañas (245 cases per 100,000 inhabitants), and Cuscatlán (237 cases per 100,000 inhabitants).\(^4\)

USAID-supported Implementing Partners will facilitate key vector control and disease prevention activities in El Salvador, specifically by supporting host country efforts on the application of larvicides in Aedes breeding sites and distribution of personal repellents to vulnerable patients. Activities will be implemented at a national level and will focus on the most affected cities. Densely populated areas are considered the most suitable areas due to their high level of Zika incidence.

2.4.2. Applicable Laws, Regulations and Policies

Procurement or use of pesticides in USAID-funded activities in El Salvador is subject to USAID’s Pesticides Procedures (22 CFR 216.3 (b) (1) (i) (a through l)), summarized in the 12-factor analysis, below, and are restricted to chemicals recommended by WHOPES\(^5\) for the same use. WHOPES endorsement is based on safety and efficacy criteria. The assessment of the 12 factors of the pesticide procedures as required by 22 CFR 216 is provided in Annex E of this SEE.

Insecticide selection for any USAID supported Zika program is subject to the criteria listed in the Zika Programmatic PERSUAP and host country requirements. Procurement or use of pesticides in USAID-funded activities in El Salvador is restricted to chemicals registered by the Ministerio de Agricultura y Ganadería (MAG) of El Salvador. To procure or use any pesticide not already on the federal registry of allowable chemicals, the pesticide would be subject to procedures for proposal, evaluation, and approval established and regulated by the government of El Salvador, specifically by MAG. Table 1 in Annex E includes a list of active ingredients (Al’s) that are


\(^5\) http://www.who.int/whopes/recommendations/en/
supported in the Zika Programmatic PERSUAP along with the registration status in El Salvador.

In addition to complying with USAID and host country requirements, international standards will be reviewed for applicability. In particular, guidelines on the management and disposal of pesticides from the Food and Agriculture Organization (FAO) will be referenced and implemented, as appropriate.

Other Relevant Environmental Compliance Documentation:

- Initial Environmental Examination and amendments for PMI-Indoor Residual Spraying Contracts [Link]
- Integrated Vector Management Programs for Malaria Vector Control (2017 UPDATE) Programmatic Environmental Assessment (MVC PEA) [Link]
- Programmatic Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP), Global Health Zika Vector Control, July 2016. [Link]
- EU. AP 42 and Air Emission Factors (2009)

2.5. EVALUATION OF POTENTIAL ENVIRONMENTAL IMPACTS

The potential adverse impacts of permitted larvicides and personal repellents are described in the Zika Programmatic PERSUAP and are summarized below. The active ingredients in the larvicides and the repellents are generally considered low-risk active ingredients.

Larvicides

The primary larvicide selected for application in El Salvador, Bacillus thuringiensis subsp. israelensis (Bti), is a naturally occurring bacterium for which four formulations are currently approved by the WHO. According to the WHO Larval Source Management Manual (p. 44), "Bti is a naturally occurring, spore-forming bacterium found in soil and aquatic environments throughout the world. During sporulation, Bti produces a highly specific delta endotoxin, which is only toxic to larvae of mosquitoes, black flies, and closely related flies upon ingestion. Bti is
effective where insects have developed resistance to synthetic and/or biochemical larvicides. Residual efficacy is dependent on target habitat/species complex and formulation type."

The formulation of Bti that is anticipated for use is applied directly to household drinking water or other household water containers, not other natural water sources, and can be scooped and dumped into the containers. Bti was selected based on resistance, as no known resistance data has been found, and acceptability, as many countries are already using Bti for their own programs. For these reasons, and due to the short-term nature of the project (two application seasons; ending September 2018), a rotation to another product is highly unlikely. However, this SIIE is not limited to the use of Bti for larviciding and other larvicides approved for use under the Zika Programmatic PERSUAP and registered in El Salvador for larval control may be implemented.

Should larvicide rotation be necessary, pyriproxyfen will not be used under this program due to the high probability of pregnant or potentially pregnant women coming into contact with the insecticide. In addition, temephos will not be used under this program due to insecticide resistance and because it can no longer be purchased after December 31, 2016 in accordance with the Zika Programmatic PERSUAP due to USEPA canceling its registration. In general, the potential risks associated with larviciding include:

1. Occupational risks for workers involved in the transport and storage of larvicides, including vehicular accidents and the potential for spill/contamination.
2. A variety of health risks to applicators and residents, including both acute poisoning and chronic effects.
3. Risks to non-target organisms, particularly aquatic organisms and beneficial insects such as pollinators.
4. Poor spray control, mixing, clean up or disposal practices, including improper disposal of pesticide waste products and potentially contaminated PPE, if used, that may contaminate air, soil, or water sources. This may also include improper design of fixed soak pits or improper use of mobile soak pits.
5. Inventory management issues and risks of theft from vector control program stocks, leading to unintended and uncontrolled use by unauthorized personnel, damage and potential expiration affecting pesticide effectiveness.

The MVC PEA and the Zika Programmatic PERSUAP specify a set of measures to control these risks, including restrictions on the pesticides that can be used and required safer use practices; for larviciding and personal repellants, these practices are specified in the country-specific EMMPs for El Salvador. Application of larvicides will be consistent with WHO’s Larval Source Management Manual.

USAID’s pesticide procedures are set out in (22 CFR 216.3 (b)(1)(i)(a through l)). These procedures apply to any USAID “assistance for the procurement or use, or both” of pesticides. These factors include, among others, US EPA registration status, toxicological risks (human and environmental), effectiveness, proposed methods of application and compatibility with target and non-target ecosystems. These factors are addressed in this SIIE in Annex E and provide additional detailed analysis on the above-mentioned risks, as well as procedures to avoid or mitigate those risks.

Repellents
Only repellents with EPA-approved active ingredients will be procured under GHSC-PSM. The active ingredient selected for procurement and use in Haiti is N,N-diethyl metatoluamide (DEET), and the formulation will be lotion or pump spray. Chronic exposure to DEET can lead to potential reproductive and development issues. If not properly disposed, it has the possibility of leaching into groundwater and is slightly toxic to freshwater fish and invertebrates but not toxic to mammals. Toxicity is generally associated with manufacturing grade concentrations (100%), and the commercially available products will have lower concentrations of DEET and lower toxicity.

The repellent is being procured and distributed in-country for use by pregnant women. GHSC-PSM, through its Implementing Partner. GHSC-PSM, will procure, and distribute to MOH, repellents for storage in facilities supported by the ASSIST Project, which is implemented by the University Research Co., LLC. Insect repellents will be distributed and stored in moderate temperatures and away from water, foods, or medicines to avoid contamination. GHSC-PSM will be responsible for ensuring distribution to health establishments through the public sector or a third party logistics provider and for ensuring appropriate product labels.

Recipients of repellent, and those who will be distributing it, will receive information in Spanish to ensure understanding of how to use and dispose of the product.

**Entomological Monitoring**

Entomological monitoring is necessary to determine if interventions are effective in controlling the Zika vector. Entomological monitoring and vector control research activities may use laboratory equipment, chemical reagents, pesticides, and entomological surveillance supplies that have the potential to cause adverse health and environmental impacts if not properly managed. These materials require special care and management to minimize their expiration and/or damage. In addition, disposal of testing materials and chemical reagents generated during these activities may have the potential to cause adverse impacts to land and water sources if not properly managed.

In El Salvador, entomological monitoring and testing activities will be carefully monitored and follow established SOPs in place for mitigating adverse environmental impacts.

**Community-Led Social Mobilization and Education Campaigns**

USAID seeks to strengthen and expand the capacity of existing or emerging local partners, including a broad range of community members involved in supporting health and other sectors, and to foster linkages between national and local systems in mobilizing communities. In support of this effort, the Implementing Partner will promote robust community-led social mobilization and communication campaigns to actively/continually reduce/eliminate standing water sources where Aedes species mosquitoes breed (e.g., managing water collection basins, storage containers, wells, gutters, roof structures and drains), but do not involve the application of larvicides. Thus, activities in this category have negligible foreseeable direct impacts on the environment.

**Minor Facility Renovations or Cosmetic Improvements**

Minor repairs to structures may be necessary during implementation of the project, including minor structural and cosmetic work for laboratories, offices, warehouses, and clinics. Environmental impacts from minor renovations include the generation of solid waste, which
may lead to environmental impacts if not properly managed. In addition, the use of toxic materials such as asbestos, lead paint, formaldehyde (sometimes used in products like particle board, plywood, and insulation) are unsafe for both workers and future users of the facilities as residues can present health hazards, especially to children. Renovation activities may also present accident risks to workers. Where access to a site is not well controlled, there are potential safety risks to the surrounding community, especially to children.

No construction activities other than the minor repairs to structures or cosmetic improvements described above will be conducted under ZAP. The relatively small renovation projects anticipated under ZAP should not have significant adverse impacts are expected to be limited.

**Hazardous Waste Treatment Equipment and Facilities (i.e. Incineration)**

In their operations, all hazardous waste treatment equipment and installations themselves present hazards, particularly (but not only) when improperly operated or sited, or when the equipment is incorrectly specified. Examples of these risks and impacts, which generally scale with treatment capacity or size, include:

- Worker risks due to mishandling of pesticide wastes
- Toxic air emissions and toxic ash from incineration:
  - Incineration of materials containing chlorine (e.g. PVC plastics) can generate dioxins and furans, which are human carcinogens and have been associated with a range of adverse health effects. Only modern incinerators, operating at >1,100 °C, fitted with special gas-cleaning equipment, and operated and maintained to specification, are able to comply with the international emission standards for dioxins and furans.
  - Incineration of heavy metals or materials with high metal content (in particular lead, mercury and cadmium) can lead to the spread of toxic metals in the environment. Only modern incinerators operating at 850-1,100 °C and fitted with special gas-cleaning equipment are able to comply with the international emission standards for dioxins and furans.
- Odors, litter, noise, and heavy traffic associated with central waste facilities.

While it is unlikely that ZAP will be responsible for operating (managing) hazardous waste treatment equipment and installations, the project's decisions or influence over decisions with regard to equipment specifications, choice of technique, and siting (among other factors) are expected to have significant influence over the impacts of this equipment and these installations in operation.

The choice of disposal technique, equipment specifications, and siting (among other factors) require close attention to the specific need and context of use, activities in this category need subsidiary review conducted with attention to identifying and controlling these risks, with such review becoming progressively more intensive as risks escalate.

---

[6](http://bmb.oxfordjournals.org/content/68/1/183.full)
2.6. RECOMMENDED DETERMINATIONS AND CONDITIONS

Based on the foregoing analysis, the activities described by this SIIE are recommended for a Negative Determination with Conditions for larval source management, subject to the conditions and mitigations described below and in the EMMP. Upon approval of this SIIE, these recommendations become affirmed, and implementation of the recommended conditions becomes mandatory.

2.6.1. Recommended Determinations

<table>
<thead>
<tr>
<th>Activity or Activity Category</th>
<th>Recommended Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement, storage, distribution, and application of World Health Organization Pesticide Evaluation Scheme (WHOPES)-recommended and U.S. Environmental Protection Agency (USEPA)-approved larvicides.</td>
<td>Negative determination, per 22 CFR 216.3(a)(2)(iii), subject to conditions</td>
</tr>
</tbody>
</table>

Activities relating to procurement, storage, management, distribution, and application of larvicides are recommended for negative determination with conditions. Conditions include, but are not limited to, the following:

- Insecticide selection for any USAID supported Zika program is subject to the criteria listed in the Zika Programmatic PERSUAP and host country requirements.
- Ensure storage facility, application equipment, and PPE is appropriate for the active ingredient used and in accordance with approved SOPs.
- As appropriate, provide training to applicators on the information in the Zika Programmatic PERSUAP, approved SOPs, PMI BMPs, and approved WMP, developed for the safe and effective storage, distribution, application, and disposal of insecticides.
- Distribute insecticides to facilities that can manage such commodities safely in storage, use, and disposal (i.e. in a manner generally equivalent to Implementing Partner’s own SOPs and WMP).
- Handling, treatment, and disposal of nonhazardous (general waste) and hazardous wastes must be in accordance with the approved WMP. The WMP, which outlines SOPs for managing waste processes, must be in accordance with international best practices (i.e.
<table>
<thead>
<tr>
<th>Procurement, storage, transportation, and distribution, delivery of USEPA-approved personal repellents to consignees, including guidance to health providers and consignees on the proper use of personal repellents.</th>
<th>Negative determination, per 22 CFR 216.3(a)(2)(iiii), subject to conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities relating to procurement, storage, distribution/delivery, and application of personal repellents are recommended for negative determination with conditions. Conditions include, but are not limited to, the following:</td>
<td></td>
</tr>
<tr>
<td>• Mosquito repellent selection for any USAID supported Zika program is subject to the criteria listed in the Zika Programmatic PERSUAP and host country requirements</td>
<td></td>
</tr>
<tr>
<td>• The Implementing Partner must advise health providers on the proper procedures for handling and distributing personal repellents at health establishments</td>
<td></td>
</tr>
<tr>
<td>• Develop communication materials to inform users on acceptable use and disposal of personal repellents</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Entomological monitoring to measure the density, habits, and longevity of the Aedes mosquitoes in El Salvador, including insecticide resistance testing of mosquitoes in the affected areas and creation of a national database for Zika surveillance and control.</th>
<th>Negative determination, per 22 CFR 216.3(a)(2)(iiii), subject to conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities relating to entomological monitoring and vector control research activities are recommended for negative determination with conditions. Conditions include, but are not limited to, the following:</td>
<td></td>
</tr>
<tr>
<td>• Implement new or existing SOPs for the safe storage, transport, and use of equipment, chemical reagents, pesticides, and supplies in conformance with international best practices (e.g., WHO, FAO) and host country requirements.</td>
<td></td>
</tr>
<tr>
<td>• Provide training to workers on the approved SOPs and WMP developed for properly handling and disposal of wastes.</td>
<td></td>
</tr>
</tbody>
</table>

<p>| Community-led social mobilization and Categorical Exclusion, per 22 CFR 216.2(c)(2)(i) |</p>
<table>
<thead>
<tr>
<th>Education campaigns to</th>
<th>Activities involving studies, education, technical assistance, training, or information transfer, except to the extent they directly affect the environment (such as construction of facilities, etc.) are recommended for categorical exclusion.</th>
</tr>
</thead>
<tbody>
<tr>
<td>actively/continually reduce/eliminate standing water sources where <em>Aedes</em> mosquito species breed.</td>
<td><strong>Negative determination, per 22 CFR 216.3(a)(2)(iii), subject to conditions</strong></td>
</tr>
</tbody>
</table>
| Conducting minor facility renovation or cosmetic improvements, where necessary to accommodate structures for project activities. | Activities relating to small-scale renovation activities are recommended for negative determination with conditions. **Conditions include, but are not limited to, the following:**  
- No construction activities other than the minor repairs to structures or cosmetic improvements described will be conducted.  
- An SOP will be developed, or an existing approved SOP will be used, and implemented for renovation activities and will be undertaken in a manner generally consistent with international and USAID best management practices per the "Small-Scale Construction" chapter of the USAID Sector Environmental Guidelines ([www.usaidgems.org/sectorGuidelines.htm](http://www.usaidgems.org/sectorGuidelines.htm)).  
- If the presence of asbestos is suspected in a facility to be renovated, the facility must be tested for asbestos before rehabilitation works begin. Should asbestos be present, then the work must be carried out in conformity with host country requirements, (if any) and in conformity with guidance to be provided by the health team. All results of the testing for asbestos shall be communicated to the COR. No asbestos may be used in construction or rehabilitation.  
- No lead-based paint shall be used. Paint will be stored properly so as to avoid accidental spills or access by children; empty cans will be disposed of in an environmentally safe manner away from areas where contamination of water sources might occur; and the empty cans will be broken or punctured so that they cannot be reused as drinking or food containers. |
| Procurement, installation, commissioning, operation, and maintenance of treatment equipment for pesticide waste (i.e. incinerators). | For incinerators with capacities to destroy approximately 12 to 100 kilograms of waste per hour.

**Negative Determination, per 22 CFR 216.3(a)(2)(iii), subject to Conditions**

Note: Multiple installations serving a facility that in total exceed these thresholds receive a positive determination (see below)

- Wastes will only be disposed in incinerators that meet the following requirements (drawn from WHO and FAO guidelines):
  - Commercially licensed facilities that are accredited and licensed by the host governments to dispose toxic waste. Obtain a list of all the approved and licensed facilities from the environmental agencies/authorities.
  - Facilities that are assessed by the Implementing Partner and found to satisfy PMI and international requirements for toxic waste disposal.
  - Incinerators constructed or procured by the Implementing Partner that meet international standards (WHO/FAO).
  - Incinerators that consistently burn between 1100 deg. C and 1300 deg. C, with a minimum 2-second residence time in the afterburner chamber (hot zone) with excess oxygen (>11%) and with high levels of induced turbulence in the gas stream to promote complete combustion. The gas stream is then rapidly cooled to eliminate the risk of dioxin and furan formation. (Note: Some non-chlorinated pesticides may be incinerated at 850 deg. C or above. Consult with ECSM).
  - Incinerators with air scrubbers to ensure minimal impact to air quality.

---

In some cases, incineration can be negotiated with the pesticide manufacturers, who are responsible for recapturing solid wastes and then disposing of those wastes in an environmentally sound manner.

Alternatively, cement kilns or furnaces may be considered for disposal in countries where cement factories or copper furnaces and meet the above criteria are available.

- The USAID operating unit financing the activity must prepare an amended SIEE pertaining to the specific site and circumstance in question as part of the decision to finance an incinerator. The GH COR must approve the amended SIEE with concurrence by the GH BEO prior to detailed design, procurement, or operation. The SIEE must be informed by relevant industry Environmental, Health and Safety Guidelines and require Best Management Practices.  

- If the amended SIEE results in a positive threshold determination, the operating unit must prepare a scoping statement and, as necessary, an EA. See below for scoping requirements pertaining to incinerators.

For incinerators with capacities to destroy > 100 kilograms of waste per hour

Positive Determination, per 22 CFR 216.3(a)(2)(iii), with resulting scoping study and, if necessary, an Environmental Assessment developed and approved by the COR and the GH BEO

- Scoping studies for incinerators must analyze, at a minimum: the waste stream content and quantity, required pollution control technology, capacity of the host country to manage and operate the incinerator to comply with environmental and health standards, estimated operating costs, and other factors that the GH COR and BEO may determine necessary to ensure successful operation of the incinerator.

- The scoping study will outline the pollution control technology that will be required with the procurement to ensure that the incinerator

---

2.6.2. Recommended Conditions

1. **Environmental Management Training.** The GH CORs assigned to this program will enroll in and successfully complete the Bureau for Global Health Environmental Management Process Training course. The course is offered through GHPOD.

2. **Provision of the IEE.** The CORs shall provide the Implementing Partners with a copy of this SIEE and brief the Implementing Partner on their environmental compliance responsibilities.

3. **COR monitoring responsibilities.** As required by the ADS 204, the CORs will actively monitor and evaluate whether the conditions of this SIEE are being implemented effectively and whether new or unforeseen consequences arise during implementation not identified and reviewed in this SIEE. If new or unforeseen consequences arise, the team will suspend the activity and initiate appropriate, further review, in accordance with 22 CFR 216.

4. **Annual compliance documentation and reporting.** Each Implementing Partner is responsible for the preparation of an Environmental Mitigation and Monitoring Plan (EMMP) for their activity and submitting the completed plan to the COR for review and approval with the project work plan and prior to initiating work on the activity. The completed EMMP is included with the SIEE. The EMMP will outline the environmental impacts that can be reasonably anticipated from the implementation of the program activities, the mitigation measures to address the impacts, monitoring measures, and frequency of inspection. The CORs are responsible for reviewing and approving their Implementing Partner's EMMP and providing a copy to the Global Health (GH) Bureau Environmental Officer (BEO) for review and concurrence.

Each Implementing Partner is responsible for annually preparing and submitting to the respective COR an Environmental Mitigation and Monitoring Report (EMMR) to document compliance with the conditions of this SIEE. EMMRs must be submitted to the CORs within 60 days after the end of each fiscal year. The EMMR template is attached to

http://www.ifc.org/wps/wcm/connect/1cd72a004885577cfbdf4ff6a6515bb18/Final+-+Waste+Management+Facilities.pdf?MOD=AJPERES
5. **Integration of compliance responsibilities in prime and subcontracts, agreements, and grants.** The CORs shall ensure that the contract document references and requires compliance with the conditions set out in this SIEE, as required by ADS 2014.3.4(a)(6) and ADS 303.3.6(3)(e). The Implementing Partner shall assure that subcontracts, agreements, and grants reference and require compliance with relevant elements of these conditions.

6. **Assurance of sub-awardee, -grantee, -contractor capacity and compliance.** The Implementing Partners shall assure that sub-awardees, grantees, contractors have the capability to implement the relevant requirements of this SIEE. The Implementing Partners shall, if appropriate, provide training to sub-awardees, -grantees, and -contractors in their environmental compliance responsibilities.

7. **Pesticides or pesticide products.** This SIEE applies for any program activities conducted under this contract involving the procurement, use, research, or disposal of pesticides and/or larvicides and their waste products based on consultations with the GH BEO. All contracts must follow the procedures of the below-referenced Programmatic Environmental Assessment (PEA) for Integrated Vector Management (IVM) (January 2017) and the Zika Programmatic PERSUAP (July 2016). Indoor residual spray activities are not covered by this SIEE and require an SEA. Under the Zika Programmatic PERSUAP, the following conditions apply:
   a. Implementing Partners may only support active ingredients approved in the PERSUAP and registered for use in El Salvador;
   b. Pesticide use/support must be governed by the principles of IVM;
   c. Implementing Partners must ensure the application of only effective larvicides;
   d. Implementing Partners must provide training on safer pesticide use and first aid;
   e. Implementing Partners must assure the use of Personal Protective Equipment (PPE); and
   f. Implementing Partners must ensure monitoring of mitigations measures, record keeping, and reporting.

8. **Compliance with human subject research requirements.** The CORs, in consultation with the BEO for the Global Health Bureau, shall assure that the Implementing Partners and sub-awardees demonstrate completion of all requirements for ethics review and adequate medical monitoring of human subjects who participate in research trials carried out through this agreement. The BEO for Global Health may request copies of documentation from the CORs to demonstrate compliance with applicable requirements of human subject trials. All documentation demonstrating completion of required review and approval of human subject trials must be in place prior to initiating any trials and cover the period of performance of the trial as described in the research protocol.

9. **New or modified activities.** As part of its work plan, each Implementing Partner, in collaboration with the respective COR, shall review all on-going and planned activities to determine if they are within the scope of this SIEE. Each Implementing Partner shall
complete the screening questionnaire (Part 1 of the EMMT) with the work plan.

a. If activities outside the scope of this SIEE are planned, the COR shall assure that an amendment to this SIEE addressing these activities is prepared and approved prior to implementation of any such activities.

b. Any ongoing activities found to be outside the scope of this SIEE shall be modified to comply or halted until an amendment to this SIEE is submitted and approved.

10. **Compliance with Host Country requirements.** Nothing in this SIEE substitutes for or supersedes Implementing Partner’s or sub-awardee’s/-grantee’s/-contractor’s responsibility for compliance with all applicable host country laws and regulations. The Implementing Partners and sub-awardee, -grantee, -contractor must comply with host country environmental regulations unless otherwise directed in writing by USAID. However, in the case of a conflict between host country and USAID regulations, the latter shall govern.

11. **Closeout of activity, environmental responsibilities.** Each Implementing Partner will prepare a closeout plan consistent with contract documentation for COR review and approval that outlines responsibilities for end-of-project operation clean up and disposal of healthcare, construction, surplus pesticide and other wastes, and/or transition of other operational responsibilities. Where identified as needed, the closeout/transition operation will provide training to support continuity of environmental responsibilities.

12. **Waste Management Plan.** The Implementing Partners will prepare an integrated Waste Management Plan (WMP), or use an equivalent existing SOP, that will define and detail direct and indirect waste streams generated by Implementing Partner-managed activities and specify appropriate management and disposal practices for each. The primary components required in a WMP are described in Annex F.

13. **Mercury-containing commodities.** The Implementing Partners will not procure mercury-containing commodities. Any exception to this restriction must include a written justification and approval by the GH COR.

14. **Asbestos and lead-based paint.** The Implementing Partners will not use construction materials containing asbestos or lead-based paint. When conducting renovation on existing buildings, the Implementing Partners will investigate for the presence of asbestos or lead paint prior to initiating work and will provide appropriate PPE and a disposal process for handling the hazardous waste, if identified.

15. **Air pollution control technology for incinerators.** Small- or large-scale incinerators procured or operated by the Implementing Partners must contain adequate air pollution control technology to ensure compliance with host country guidelines and applicable international air quality emission requirements, including:

• AP 42 and Emission Factors: US Environmental Protection Agency.

A small-scale incinerator is one with a capacity to destroy approximately 12 to 100 kilograms of waste per hour, while a large-scale incinerator has a capacity to destroy more than 100 kilograms of waste per hour. Refer to the USAID PATH Incinerator Guidebook for additional information on incinerators.

16. Development and implementation of SOPs. The Implementing Partners will develop or use existing Standard Operating Procedures (SOPs) addressing core activities including, but not limited to, procurement, storage, inventory management, and distribution of larvicides and personal repellants. These SOPs must be approved by the respective COR and reflect properly referenced industry best practices.

17. Solicitation of international transport and disposal of hazardous waste. The solicitation of third party services for the international transport and disposal of hazardous and potentially hazardous waste, including pesticides and empty pesticide containers, requires prior review and approval of solicitation documents by the COR and concurrence by the GH BEO.
2.7. MONITORING AND REPORTING

The Implementing Partners and the CORs, in consultation with the BEO, will actively monitor and evaluate whether environmental consequences unforeseen under activities covered by this IEE arise during implementation and modify or end activities as appropriate. Monitoring and reporting will be documented via the Environmental Mitigation and Monitoring Template (EMMT).

The EMMT consists of three parts:

- **The Environmental Screening Form**
  
The COR conducts annual screenings of their projects using the Environmental Screening Form to determine whether project activities and annual work plans remain within the scope of the activities reviewed during the IEE process. For sub-projects, sub-grants, and sub-activities, Implementing Partners must annually screen their activities and submit the completed form to the COR. If an activity does not fall within the scope of this IEE, a supplemental or amended environmental document must be prepared.

Refer to the attached GH Environmental Screening Form.

- **The Environmental Mitigation and Monitoring Plan (EMMP)**
  
Each Implementing Partner is responsible for submitting the EMMP to the respective COR for review and approval. The GH BEO concurs on the EMMP. The EMMP is submitted with the work plan, after clearance of this IEE and prior to initiating project work. Implementing Partners will use the EMMP to describe the specific actions they will undertake under each category of activity when screening reveals potential environmental impacts as outlined in Section 2.5 of this IEE. The EMMP also identifies the person responsible for monitoring compliance with mitigation measures and the indicator, method, and frequency of monitoring.

Refer to the attached GH EMMP Template.

- **The Environmental Mitigation and Monitoring Reporting (EMMR)**
  
Annually, the Implementing Partners are responsible for completing the EMMR and submitting it to the mechanism's corresponding COR. The EMMRs are reviewed by the COR and the BEO (and/or MEO, as appropriate). The EMMRs ensure compliance with 22 CFR 216 and ADS 204.5 by documenting that the conditions specified in this IEE have been met for all activities carried out in El Salvador under ZAP IRS 2 Task Order Six and GHSC-PSM Task Order Four by reporting on the results of applying the mitigation measures described in the EMMP and identifying outstanding issues with respect to required conditions. Verification may require digital photos and/or site visits.

The Implementing Partners for ZAP IRS 2 Task Order Six – El Salvador and GHSC-PSM Task Order Four will submit the EMMRs on all activities within 60 days after the end of each fiscal year for the life of the project, using the guidance and forms contained in the GH IEE Bureau Operating Procedure (BOP). Any sub-awards, sub-grants, and sub-activities must incorporate provisions stipulating a) the completion of
an annual environmental monitoring report and b) that activities to be undertaken will be within the scope of the environmental determinations and recommendations of this SIEE. This includes assurances that any mitigating measures required for those activities will be followed.
Refer to the attached GH EMMR Template.


## A. Environmental Screening Form

### Project Title

<table>
<thead>
<tr>
<th>Project Name:</th>
<th>Original IEE File #/DCN:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of Prime Implementing Organization:</th>
<th>Date of Screening:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of Sub-awardee Organization (if this EMMT is for a sub):</th>
<th>Funding Period for this award:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FY__-FY__</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Geographic location of USAID-funded activities (Province, District):</th>
<th>Current FY Resource Levels:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FY____________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>This report prepared by:</th>
<th>Date of Previous EMMT for this organization (if any):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:___________________</td>
<td>____________________________________________________</td>
</tr>
<tr>
<td>Date:___________________</td>
<td>____________________________________________________</td>
</tr>
</tbody>
</table>

Indicate which activities your organization is implementing.

<table>
<thead>
<tr>
<th>Key Elements of Program/Activities Implemented</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

---

*pg. 31*  
*April 25, 2017*
<table>
<thead>
<tr>
<th></th>
<th>Education, Technical Assistance, or Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Includes:</td>
<td>strategic planning, data analysis, technical consultation, surveys, knowledge and information transfer, meetings, technical material development, outreach programs, and training services.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Research and Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Includes:</td>
<td>health-related research and development activities aimed at advancing knowledge and technology, including research and evaluation, monitoring and surveillance, programs, pilot studies, case studies, and assessments.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Public Health Commodities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Includes:</td>
<td>procurement, storage, transportation, distribution, and disposal of public health commodities, including pharmaceuticals, nutritional supplements, chemicals (e.g., disinfectants, solvents, laboratory reagents, etc.), medical supplies, and family planning commodities (e.g., contraceptives, condoms, etc.).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Small-Scale Construction or Rehabilitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Includes:</td>
<td>hospitals, clinics, laboratories, voluntary and counseling testing centers, or training centers. Total surface area of the disturbed environment is under 10,000 square feet and less than $200,000 total cost.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Small-Scale Water and Sanitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Includes:</td>
<td>pond and spring improvements and installation of hand-dug wells, individual or community latrines, hand-washing stations, and small-scale septic and leach field systems.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Nutrition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Includes:</td>
<td>small-scale food production, procurement and distribution of supplements, preventing undernutrition, providing nutritional care and support, and improving nutritional outcomes in programs.</td>
</tr>
</tbody>
</table>
Vector Control

Includes: procurement, distribution, or use of pesticide products such as insecticide-treated bednets, larviciding agents, and fumigants.

NOTE: USAID uses USEPA's definition of pesticides, which includes "any substance intended for: preventing, destroying, repelling, or mitigating any pest. This includes herbicides, fungicides, plant regulators, and desiccants."

Emergency Response

Includes: coordination with outside organizations and technical experts, deployment of resources and response teams, and development of technical materials.

DESCRIPTION OF ACTIVITIES:

Provide a description of activities with sufficient details to understand the scope and scale of the interventions. The EMMP should reference the governing IEE (GH- or country-level).
B. Environmental Mitigation and Monitoring Plan

Add Introduction and additional narrative here, as needed.

<table>
<thead>
<tr>
<th>Category of Activity from Section 2.6 of _IEE</th>
<th>Describe specific environmental threats of your organization's activities (based on analysis in Section 2.5 of _IEE)</th>
<th>Description of Mitigation Measures for these activities as required in Section 2.6 of _IEE</th>
<th>Who is responsible for monitoring?</th>
<th>Monitoring Indicator</th>
<th>Monitoring Method</th>
<th>Frequency of Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Education, Technical Assistance, Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Research and Development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Public Health Commodities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Small-Scale Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Small-Scale Water and</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category of Activity from Section 2.6 of __ IEE</td>
<td>Describe specific environmental threats of your organization's activities (based on analysis in Section 2.5 of __ IEE)</td>
<td>Description of Mitigation Measures for these activities as required in Section 2.6 of __ IEE</td>
<td>Who is responsible for monitoring?</td>
<td>Monitoring Indicator</td>
<td>Monitoring Method</td>
<td>Frequency of Monitoring</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
<td>----------------------------------</td>
<td>---------------------</td>
<td>---------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Sanitation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Nutrition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Vector Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Emergency Response</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Prepared by:

Signature.......................................................... Date:__________

Name and Title......................................................

Reviewed and Approved by:

Signature.......................................................... Date:__________

April 25, 2017
Agreement Officer's Representative/Contracting Officer's Representative

Concur:

Signature ________________________________ Date: __________________

GH Bureau Environmental Officer

pg. 36 April 25, 2017
C. Environmental Mitigation and Monitoring Report

Add Introduction and additional narrative here, as needed.

<table>
<thead>
<tr>
<th>List each Mitigation Measure from column 3 in the EMMP (EMMT Part 2 of 3)</th>
<th>Status of Mitigation Measures</th>
<th>List any outstanding issues relating to required conditions</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Education, Technical Assistance, Training</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Research and Development</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Public Health Commodities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Small-Scale Construction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Small-Scale Water and Sanitation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Nutrition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Vector Control</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

pg. 37 April 25, 2017
D. References and Resources


Bureau for Global Health Project Design and Approval Guidance


E. 12-Factor Analysis of Pesticide Use in El Salvador

This section provides country-specific assessments of the 12 factors of the pesticide procedures as required by 22 CFR 216.

1. The United States Environmental Protection Agency's (USEPA) Registration Status of the Requested Pesticide

USAID will work closely with the Salvadoran government, with full and clear disclosure, and provide any necessary assistance in the mitigation of risk from the use of these larvicides and repellents. This SIEE, supported by the USAID Global Health Zika Vector Control Programmatic Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP), and distributed to the Salvadoran competent authorities, provides the assessment, notification and mitigation requirements of US regulations. USAID is therefore empowered, upon acceptance of this document and the receipt of formal authorization from a competent Salvadoran authority, to use in all of El Salvador the larvicides and repellents that are authorized by the PERSUAP and any amendments, under the conditions specified therein.

2. The Basis for Selection of the Requested Pesticides

Insecticide and repellent selection for any USAID supported Zika program is subject to the criteria listed in the programmatic PERSUAP for Zika vector control. In addition, selected larvicides and repellents must be registered in El Salvador for larval control, and have demonstrated and documented efficacy against the *Aedes* mosquito in the local Salvadoran context. Finally, appropriate storage capacity, application equipment, and PPE for each formulation must be available.

3. The Extent to Which the Proposed Pesticide Use Is Part of an Integrated Pest Management (IPM) Program

MINSAL implements an integrated approach to vector management in the country, using a combination of chemical, biological, and physical control methods, including the application of larvicides and adulticides. MINSAL complements these vector control methods with a community-based, interdisciplinary approach to source reduction and health promotion via public engagement and mobilization. Teams comprised of health promoters, outreach personnel, and vector control operators visit homes of suspected Zika cases, perform site inspections and remove potential sources, search for other cases in the immediate neighborhood vicinity, and apply larvicides.

In addition to the environmental management component, for personal protection, the Implementing Partners will work with the MINSAL and other partners in country to provide communication materials that recommend wearing long clothing and staying covered during the day; using personal repellents; using netting and screens to protect indoor spaces, beds, and cribs or strollers; and staying in air-conditioned spaces when possible.

---

4. The Proposed Method or Methods of Application, Including Availability of Appropriate Application and Safety Equipment

This SIEE has been prepared to allow for a broad spectrum of application methods while maintaining adherence to the product label requirements of the active ingredients (AIs) that have been approved and are registered for use in El Salvador (Table 1). For each formulation, application must be performed according to the directions on the container’s label, and any application equipment must be maintained according to the manufacturer’s specifications.

Note: Liquid concentrates and emulsifiable concentrates may only be handled and applied by trained larvicide applicators, and all spraying applications must be performed by trained larvicide applicators.

For handling of any insecticide, basic hygiene practices should be followed during and after applying the product. If PPE is required for use, Implementing Partners must ensure, in accordance with pesticide BMPs and/or manufacturers’ instructions, that PPE is available and require its use and maintenance according to precautions included in the extended pesticide profiles described in the Zika Programmatic PERSUAP. All PPE will be used and disposed of according to approved project standard operating procedures (SOPs) and the PMI BMPs, which include guidelines on selection and use of wash areas for decontamination between uses and prior to disposal.

All technicians will be trained per the Zika Programmatic PERSUAP, approved SOPs, the PMI BMPs, the approved Waste Management Plan (WMP), and international and host country regulations; on the proper preparation, application, decontamination, and disposal procedures.

For the Bti larvicide, the baseline PPE requirements are a long-sleeved shirt and long pants, shoes, plus socks, and a National Institute for Occupational Safety and Health (NIOSH)-approved dust/mist filtering respirator meeting at least N-95, R-95, or P-95 standards. Eye protection is also recommended.

Application of any selected repellent will be guided by the instructions on the manufacturer’s label. Additionally, all recipients of the repellent will receive instructions on application to reinforce proper usage.

5. Acute and Long-Term Toxicological Hazards Associated with the Proposed Use and Measures Available to Minimize Such Hazards

In general, the AIs listed in Table 1 have low toxicity to humans and are approved for treating drinking water. For example, the chronic effect of repeated exposure to high concentrations of Bti, the selected larvicide, is allergic sensitization. Should selection of another larvicide be necessary, pyriproxyfen will not be used under this program due to the high probability of pregnant or potentially pregnant women coming into contact with it.12

In contrast to their mammalian toxicity, several AIs listed in Table 1 can be highly or very highly toxic to aquatic organisms. The larvicide selected for application in El Salvador, Bti, is a naturally occurring bacterium, for which four formulations are currently approved by the WHO. According to the WHO Larval Source Management Manual (p. 44), “Bti is a naturally occurring,

---

spore-forming bacterium found in soil and aquatic environments throughout the world. During sporulation, Bti produces a highly specific delta endotoxin, which is only toxic to larvae of mosquitoes, black flies, and closely related flies upon ingestion. Bti is effective where insects have developed resistance to synthetic and/or biochemical larvicides. Residual efficacy is dependent on target habitat/species complex and formulation type. Bti was selected based on resistance, as no known resistance data has been found, and acceptability, as many countries are already using Bti for their own programs. For these reasons, and due to the short-term nature of the project (two application seasons, ending September 2018), a rotation to another product is highly unlikely. However, this SIEE is not limited to the use of Bti for larviciding and other larvicides approved for use under the Zika Programmatic PERSUAP and registered in El Salvador for larval control may be considered.

The Zika Programmatic PERSUAP, Annex I, pp. 37-40, describes toxicity risks of larvicides listed in Table 1 to humans and ecological resources. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas; thus, treated water sources should be contained and not allowed to overflow, and if treated water cannot be drained into proper waste disposal receptacles, it should only be drained once the AI is likely to be no longer active, i.e., several months following application. Disposal of many forms of larvicide involve the use of fixed or mobile soak pits to dispose of effluent waste. If required, these soak pits will be designed, constructed, operated, and decommissioned in accordance to PMI’s BMP.

The use of backpack sprayers or similar small-scale spraying equipment might be necessary because some of the AIs that may be used (i.e., aliphatic solvents/mineral oil, monomolecular films, and Bacillus sphaericus) are formulated only as liquid concentrates or granular slurries. If spraying of larvicides is included as part of a county program, the sprayers must be trained in proper technique, including determination of appropriate treatment locations, spray drift management, and proper equipment maintenance and decontamination. The drift management cautions and procedures in the programmatic PERSUAP, as well as any guidance on the product label must be followed. The Implementing Partner will develop a training program that covers all aspects of applying each approved larvicide.

The selected larvicide, Bti, will be in a granular formulation that can be scooped or dumped into water sources, thus reducing impacts due to spray drift and the need to maintain spray equipment. However, Implementing Partners need to ensure the above precautions are taken should a rotation in AI be required.

Regardless of application method, the Implementing Partners will develop a training program that covers all aspects of applying each approved larvicide, as well as the procedures for cleanup or disposal post-application of any equipment and/or PPE used.

The selected AI for repellents, DEET, does not demonstrate any human toxicity, but should another compound be chosen from those listed in the PERSUAP, IR3535 and oil of eucalyptus have both demonstrated acute eye irritation, and information regarding the washing of hands after application and the avoidance of eye areas should be included in the usage instructions.

6. The Effectiveness of the Requested Pesticide for the Proposed Use - Vector Resistance

In general, vector resistance to larvicides has received little attention in El Salvador, and capacity to conduct pesticide resistance testing in country is limited. Temephos continues to be
applied despite some evidence of resistance reported in the San Salvador Metropolitan Area.\textsuperscript{13} The USEPA discontinued the registration of temephos as a larvicide for domestic use in the U.S., although it is still recommended by the World Health Organization.\textsuperscript{14}

USAID partners intend to provide support for in-country vector resistance testing that will be conducted prior to procurement and application of larvicides. Testing will be performed according to WHO test procedures for insecticide resistance monitoring unless other generally accepted methods are available and effective.

### 7. Compatibility of the Proposed Pesticide with Target and Non-Target Ecosystems

The potential for negative interactions between larvicides used for Zika vector control considered in this SIEE and ecosystems in El Salvador is greatest for aquatic organisms, but also for terrestrial organisms.\textsuperscript{15} Many of the larvicides approved for activities described herein and registered in El Salvador are highly toxic to aquatic organisms, namely fish and invertebrates, as well as to terrestrial organisms, particularly important pollinators.

The Bti bacterium produces insecticidal crystal proteins that kill susceptible larvae within 24 hours of ingestion. It is safe for use in drinking water or on irrigated crops. Bti has been issued a WHO toxicity rating of III, meaning it is slightly hazardous, with an LD\textsubscript{50} of over 2000 mg/kg body weight. At recommended dosages, it is harmless to non-target aquatic invertebrates, insects, fish, birds, animals and humans; it is not acutely toxic to freshwater or marine fish, marine invertebrates, or birds; it is practically not toxic to bees or mammals; and it is moderately toxic to freshwater invertebrates. The impacts of Bti, as well the other approved Als, to these organisms are described in Annex I, on pp. 37-40, in the Zika Programmatic PERSUAP.

Regardless of the Al, operators must follow the procedures (i.e. the use of personal protective equipment) and guidelines outlined in the WHO Larval Source Management Manual, new or existing SOPs, the PMI BMPs, the Zika Programmatic PERSUAP (July 2016), and the project WMP to ensure that larvicides are properly applied and disposed of to avoid contaminating groundwater and associated watersheds or harming organisms that serve important ecological functions. Judicious mixing will be stressed to ensure that, at the end of the day, minimal quantities of larvicide will remain so as to minimize waste requiring management.

Most Als in repellents have little data on the impacts to target and non-target ecosystems, but DEET has demonstrated to be slightly toxic to freshwater fish and invertebrates and birds in large quantities, and should not be used or disposed, in close proximity to these ecosystems. Should another repellent be selected from those covered under the PERSUAP, picaridin is moderately toxic to freshwater fish, and application and disposal of this compound will be done to avoid freshwater sources and in accordance with Annex I, pp. 39-40, in the Zika Programmatic PERSUAP.


\textsuperscript{14} https://archive.epa.gov/pesticides/reregistration/web/html/temephos_red.html

8. The Conditions under Which the Pesticide is to be Used

Because Zika cases have been concentrated in high density population centers in El Salvador, vector control activities will be concentrated – but not exclusively – in urban or populated areas. Such areas often have poor drainage and trash collection, which result in prevalence of stagnant water in which mosquitoes can breed. Urban water discharge is generally not treated and flows into freshwater bodies including reservoirs. Outside of urban areas, water treatment and sanitation rarely exist. For all of these reasons, following the procedures outlined in the project SOPs and PMI BMPs for the use and disposal of larvicides using appropriate PPE, and the handling of PPE, will be required of Zika vector control operators in El Salvador. Depending on the infrastructure in country, mobile soak pits will potentially be used.

9. The Availability and Effectiveness of Other Pesticides or Non-Chemical Control Methods

The Implementing Partners may use certain agents and techniques for larval source management, such as biological larvicides and/or small-scale environmental management, which mainly refers to various methods of removing standing water that can act as breeding sites.

Multiple Implementing Partners will conduct environmental management activities, relating to the education and mobilization of communities to eliminate unnecessary standing water sources, cover necessary standing water sources, scrub household containers, and eliminate trash and other receptacles that may store water and serve as a breeding site for Aedes mosquitoes.

GHSC-PSM will also procure, and distribute to the Sistemas Básico de Salud Integral (SIBASIs) personal repellents for use by pregnant women. Recipients of the repellent will be trained on its proper application, based on label instructions, and disposal of waste in appropriate receptacles.

Finally, the Implementing Partners covered under this document will coordinate with other in-country programs to ensure messaging on both basic environmental management and personal protection from mosquito bites is provided in various communication media.

10. The Requesting Country’s Capacity to Regulate and Control Pesticides Distribution, Storage and Use of the Requested Pesticides

El Salvador has experience with vector management for malaria, dengue, chikungunya, and Zika prevention and control programs. Table 1 provides information on the AIs that are approved for use.

MINSAL has trained personnel at the national level, but additional personnel will be required to carry out Zika control operations described in this SIEE. Any personnel utilized for these operations must be trained in safe and environmentally responsible techniques for storage, transport, use, and disposal of pesticides and PPE, as described in the WHO Larval Source Management Manual, Zika Programmatic PERSUAP and PMI’s BMPs for IRS.
Table 1: AlS Registered in El Salvador

<table>
<thead>
<tr>
<th>Larvicide</th>
<th>Registered in El Salvador? Y/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aliphatic solvents (active ingredients include mineral oil &amp; aliphatic petroleum hydrocarbons; e.g., Bonide mosquito larvicide, BVA 2 mosquito larvicide oil)</td>
<td>Y</td>
</tr>
<tr>
<td>Bacillus sphaericus</td>
<td>Y</td>
</tr>
<tr>
<td>Bacillus thuringiensis israelensis (e.g., B.t.i technical powder bioinsecticide)</td>
<td>Y</td>
</tr>
<tr>
<td>Methoprene</td>
<td>N</td>
</tr>
<tr>
<td>S-Methoprene</td>
<td>N</td>
</tr>
<tr>
<td>Monomolecular surface films (e.g., Arosurf MSF and Agrique MMP)</td>
<td>N</td>
</tr>
<tr>
<td>Pynproxyfen (e.g., Sumilarv)</td>
<td>N</td>
</tr>
<tr>
<td>Spinosad (e.g., Natular; Novus)</td>
<td>N</td>
</tr>
<tr>
<td>Temephos (e.g., Abate)</td>
<td>Y</td>
</tr>
<tr>
<td>IR3535 (3-(N-acetyl-N-butyl)aminopropionic acid ethyl ester)</td>
<td></td>
</tr>
<tr>
<td>DEET (N,N-Diethyl-metatoluamide; e.g., OFF!)</td>
<td></td>
</tr>
<tr>
<td>Oil of lemon eucalyptus (para-Menthanes-3,8-diol)</td>
<td></td>
</tr>
<tr>
<td>Picaridin (1-(1-Methylpropoxycarbonyl)-2-(2-hydroxyethyl)piperidine; e.g., Cutter Advanced; Avon Skin-So-Soft)</td>
<td></td>
</tr>
</tbody>
</table>


1 Example trade names, if available, for formulations containing the active ingredient are listed.
2 Bacillus thuringiensis is the name officially listed in the chemical registry.
3 Because the USEPA cancelled registration for temephos, it may not be purchased after December 31, 2016, but may be used until supplies are exhausted or its expiration date, whichever comes first. Due to extensive resistance to temephos, it will not be a candidate for IP larviciding.

Through MINSAL and SINIBASI, vector control coordinators, operators, and beneficiaries are aware of vector management campaigns. There are trained personnel who are active in vector control operations at local, departmental, and national levels. Additional personnel may be required to carry out Zika control operations described in this SIEE. In that case, they must be trained in safe and environmentally responsible techniques for storage, transport, use, and disposal of larvicides and PPE, as described in the Zika Programmatic PERSUAP and PMI's Best Management Practices for Indoor Residual Spraying manual.

A recent assessment of existing Zika control capacity in El Salvador highlighted "substandard practices related to insecticide and equipment management" as a major finding, further stating: "Chemical storage facilities were inadequate and there was a glaring lack of disposal facilities for insecticide residues and contaminated equipment."

The PMI's Best Management Practice manual describes specific requirements for storage, use, and disposal of insecticides, which include standalone, ventilated storage facilities; isolated washing stations that prevent spillage or drainage of wastewater into groundwater or freshwater.

---

bodies; and PPE use and maintenance. To address the lack of safe storage, distribution, and disposal of larvicides and PPE in El Salvador, development of an environmentally compliant insecticide management strategy and refurbishment of existing facilities will be required. Implementing Partners will work with local authorities to find the best solution to safely manage any related waste products related to vector control, following the WHO Larval Source Management Manual, SOPs, and PMI BMPs.

11. The Provisions Made for Training of Users and Applicators

Before operations commence, partners will develop a training plan as described in the Zika Programmatic PERSUAP and PMI’s Best Management Practices for IRS for all personnel involved in the transportation, storage, use and disposal of larvicides. The training curricula must:

- Cover all categories of individuals supporting operations.
- Cover all relevant key topics outlined below.
- Provide annual refresher trainings.

The training curricula will include the following key training topics, as appropriate:

- Definition of larvicides, pesticides and insecticides;
- Insecticide risks and the understanding that insecticides are bio-poisons;
- Concepts of active ingredients versus formulated products;
- Classes of insecticides and the concept that specific insecticides have different modes of action;
- Interpretation of pesticide labels -- particularly to understand PPE requirements and other precautions, dosage rates, and to identify AIs, and expiration dates;
- Proper application rates for each formulation;
- Insecticide resistance and techniques for avoiding it;
- Survey of the core elements of safer larvicide use: IVM, purchase, transport, storage, preparation, application, clean-up and disposal, including PPE use and disposal;
- Pesticide first aid and spill response; and
- Proper equipment operation and maintenance, where applicable.

12. The Provisions Made for Monitoring the Use and Effectiveness of the Pesticide

As noted above, larvicide efficacy and vector resistance to pesticides are areas in need of technical and logistical support to ensure effective vector control activities. Currently, the MINSAL tracks multiple metrics of larval presence, including number of homes per area with larvae, number of sampling ports with larvae present, and number of sampling ports with larvae per number of houses visited. While these metrics provide various views of larval presence and the frequency of larval presence, they are insufficient to assess vector resistance to larvicides. MINSAL officials are aware of the need for and are willing to develop testing facilities and protocols, but to date lack the resources in country to implement these activities. Development of national programs in entomology and epidemiology is a high priority for the MINSAL and presents a significant opportunity for USAID to bolster existing IVM capacity in El Salvador. Under the ZAP initiative, USAID will strengthen host country capacity by establishing entomological surveillance best practices in selected areas. ZAP El Salvador will also enhance the capacity and skills of counterparts in VC and entomology to more effectively program and
implement activities for the reduction of Zika and other arbovirus transmission (including national training in VC and entomology, sub-national and community-level skill building, and procurement of supplies and equipment).
F. Waste Management Plan (WMP)

The need for Al rotation is unlikely due to there currently being no known resistance to Bti, its current use by the Government of El Salvador, and its intended use for only two application cycles. However, should unforeseen circumstances lead to the need for a rotation of the Al, the selected Al must have demonstrated Aedes susceptibility, and its required application equipment and PPE, as described in the Zika Programmatic PERSUAP (July 2016) must be available in El Salvador.

Each Implementing Partner must develop an integrated Waste Management Plan (WMP) that will define and detail direct and indirect waste streams generated by Implementing Partner-managed activities and specify appropriate management and disposal practices for each waste stream. The WMP must:

- Classify and require management of each ZAP commodity the project proposes to procure or manage by level of risk, as per WHO guidance.
- Require assessment of local disposal options and requirements and identify, on a country basis, the disposal option for each class of ZAP commodity will procure or manage, as well as for general non-contaminated packaging. The disposal options identified will comply with local requirements and be generally consistent with the following guidelines and resources:
  - Pharmaceuticals and chemical wastes—WHO Safe Management of Wastes from Healthcare Activities. See particularly 8.11, "Applications of treatment and disposal methods to specific waste categories."
  - Non-contaminated packaging and general waste—USAID Sector Environmental Guidelines: Solid Waste.
  - Zika PERSUAP and PEA.
- Require compliance with the Basel convention on the control of transboundary movement of hazardous wastes and their disposal: http://www.basel.int/portals/4/basel%20convention/docs/exti/baselconventiontext-e.pdf
- Require that records be maintained of all disposal activities to document compliance.
- Incorporate appropriate monitoring and continuous improvement mechanisms.
- Specify the process for managing the transportation and potential international shipment of hazardous waste for disposal, if applicable. If the international disposal of hazardous waste is to be conducted by a third party, the Request for Proposal (RFP) for these third-party services for the international shipment must be approved by the GH COR with concurrence by the GH BEO. Solicitation of services for international exportation of hazardous material for disposal may not be initiated without approval of the RFP.
Re: Revised El Salvador SIEE
1 message

Allison Belemvire <abelemvire@usaid.gov> Tue, May 23, 2017 at 10:38 AM

To: Laura Chittenden <lchittenden@usaid.gov>

I clear.

Thanks, Allison

On Tue, May 23, 2017 at 11:34 AM, Laura Chittenden <lchittenden@usaid.gov> wrote:

Dear Allison,

The Mission in El Salvador has cleared the Zika SIEE; we are sending this simultaneously to Carmen for her clearance as she will be unavailable starting this afternoon. Could you please review and clear?

Thank you,
Laura

---------- Forwarded message ----------
From: Eduardo Quevedo <equevedo@usaid.gov>
Date: Tue, May 23, 2017 at 10:29 AM
Subject: Re: Revised El Salvador SIEE
To: Laura Chittenden <lchittenden@usaid.gov>
Cc: Jason Seuc <jseuc@usaid.gov>, Julie Gerdes <jgerdes@usaid.gov>

Hi Laura, I have reviewed the document and have no comments, you have my clearance.

On Fri, May 5, 2017 at 3:57 PM Laura Chittenden <lchittenden@usaid.gov> wrote:

Hello Eduardo,

Please find attached the revised El Salvador SIEE for your review and clearance. Of course, please consult Mary and/or Joe as needed.

Best regards,
Laura

---
Laura R. Chittenden, Ph.D.
Zika Regional Health Advisor for Latin America and the Caribbean
USAID / LAC Bureau
Email: lchittenden@usaid.gov
Phone: +1-650-241-8429

---
Eduardo Quevedo M.D.
Project Management Specialist
Economic Growth Office
USAID / El Salvador
Laura R. Chittenden, Ph.D.
Zika Regional Health Advisor for Latin America and the Caribbean
USAID / LAC Bureau
Email: ichittenden@usaid.gov
Phone: +1-650-241-8429

Allison Belemvire, MPH
Health Science Specialist | President's Malaria Initiative
USAID | Bureau for Global Health | Office of Infectious Disease, Malaria Division
2100 Crystal Drive | 10082B | Arlington, VA 22202
Desk: 571-551-7428
iPhone: 703-501-1703
abelemvire@usaid.gov
Re: SIEE clearance
1 message

Carmen Tull <ctull@usaid.gov> Wed, May 24, 2017 at 9:41 AM
To: Julie Gerdes <jgerdes@usaid.gov>
Cc: Rachel Sellstone <rsellstone@usaid.gov>, Laura Chittenden <lchittenden@usaid.gov>

I clear, thanks

On Tue, May 23, 2017 at 11:30 AM, Julie Gerdes <jgerdes@usaid.gov> wrote:

Hi Carmen,

Please find the SIEEs for El Salvador and Haiti for your review and clearance attached. Please let me know if you have any questions.

Thanks,
Julie

--

Julie Gerdes
Zika Coordination Advisor
Bureau for Latin America and the Caribbean
U.S. Agency for International Development
Washington, DC
(202) 712-4062

--

Carmen Coles Tull
Acting Chief, Child Health and Immunization Division
Office of Maternal and Child Health and Nutrition
USAID | Global Health Bureau
(t: +1-571-551-7066 | c: +1-202-341-5495 | ctull@usaid.gov)