CWIP

Environmental Guidelines for USAID Environmental Screening of Projects Associated with the Ridge to Reef Programme

ARD

Coastal Water Quality Improvement Project

USAID Contract No. 532-C-00-98-00777-00

Environmental Guidelines
For USAID

Environmental screening of projects associated
with the Ridge to Reef Programme

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Prepared for the:

Government of Jamaica's
Natural Resources Conservation Authority

And the

United States Agency for International Development

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Preface

The Coastal Water Quality Improvement Project (CWIP) is a six-year bilateral initiative between the Government of Jamaica's National Environment and Planning Agency (NEPA)/Natural Resources Conservation Authority (NRCA) and the United States Agency for International Development (USAID). Five distinct, but interrelated, activities associated with coastal water quality improvement are being carried out to form a synergy of interventions contributing to the achievement of the USAID Strategic Objective 2 (SO2) – Improved quality of key natural resources in selected areas that are both environmentally and economically significant. CWIP is being implemented by Associates in Rural Development, Inc. (ARD) with assistance from Camp, Dresser & McKee, Inc. (CDM) and the Construction Resource and Development Centre (CRDC).

The objective of these guidelines is to provide direction for the design, implementation, construction, assessment and monitoring of environmentally sensitive activities associated with projects funded by USAID and undertaken by the Ridge to Reef Programme. The Ridge to Reef Programme consists of:

- The Coastal Water Quality Improvement Project (CWIP),
- The Ridge to Reef Watershed Project (R2RWP) and
- Environmental Audits for Sustainable Tourism (EAST).

These guidelines will assist in the decision making process for approval of proposed projects, sub projects or grant activities based on an environmental assessment. This is to ensure that projects under CWIP and R2RWP achieve their objectives without resulting in adverse environmental impacts either directly or indirectly while maximizing the positive effects. Additionally, these guidelines are intended to ensure USAID's compliance with national standards and regulations that govern activities that can have adverse environmental impacts.

Ianthe Smith, Environmental Engineering & Management Consultant, developed these guidelines using CWIP and R2RWP contractual work statements as well as other Environmental Guidelines for USAID projects in other countries as resource material.

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Environmental Guidelines for USAID

1.0 About These Guidelines

1.1 Background & Purpose

The objective of these guidelines is to provide direction for the design, implementation, construction, assessment and monitoring of environmentally sensitive activities associated with projects funded by USAID and undertaken by the Ridge to Reef Programme. The Ridge to Reef Programme consists of:

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A number of reference documents were reviewed which provided background information and assistance in the preparation of these guidelines. The documents included:

1. CWIP contractual work statement, planning and status reports
2. R2RWP contractual work statement
3. Environmental Guidelines developed for USAID projects in other countries

Project activities under CWIP and R2RWP will need to be screened for possible environmental impacts in accordance with these environmental (screening) guidelines.

These guidelines provide a checklist for assessing potential environmental consequences of programming initiatives and clearly define evaluation procedures.

This document is not intended for use as a technical design manual.

1.2 Who Should Use These Guidelines?

These guidelines are for use by USAID, its contractors or implementing agencies to ensure the consideration and minimization of negative environmental impacts in designing, assessing and monitoring the project activities. Technical personnel with environmental training should conduct the environmental screening of project activities. Where these projects are deemed to have potentially moderate or significant impacts, they should also conduct the environmental review.

The guidelines will also be useful in highlighting adverse effects for which the contractor can then implement mitigation measures for minimizing such effects.

1.3 How To Use These Guidelines

The main types of project activities to be undertaken by the Ridge to Reef programme fall into the main categories of Agriculture, Eco-tourism, Sanitation (Water, Wastewater, Solid Waste) and Community Initiatives. These guidelines will assist the reviewing officer to:

a. Identify the environmental impacts associated with projects in these categories;

b. Ascertain if there are mitigation measures for adverse impacts resulting from the projects;

c. Evaluate the extent of the impacts;

d. Determine whether an Environmental Impact Assessment (EIA) is required; and

e. Determine if alternative projects should be considered.

The screening form should be completed using the examples of adverse impacts associated with activities within specified sectors as a reference. (See Section 3 of these guidelines)

2.0 Definition of Terms

Environmental Impact Assessment (EIA)- is an assessment of the positive and negative impacts that a project will have on the environment. It usually involves the evaluation of more than one alternative including the 'do nothing' alternative with respect to environmental impacts and the cost of mitigating impacts and the monitoring that will be required during the construction and after the project is completed. It results in the preferred alternative being recommended based on the evaluation.

An ***adverse impact*** is described as an effect on the environment caused by the project that is large in magnitude and its consequences are important. The characteristics of the project action must be large in magnitude and important to cause an adverse effect determination and the requirement for an EIA.

Effects and ***impacts*** are considered the same and indicate how the project activities will affect the environment. Project activities may have beneficial (positive) impacts as well as adverse (negative) impacts.

An impact may be ***direct*** or ***indirect***. A direct (primary) impact is an effect directly caused by the project's construction or operational activities and is generally associated with the project site and the local area surrounding the project site. An indirect (secondary) impact is an effect indirectly caused by the project as a result of the direct impact and is usually associated with the overall region surrounding the project site and can occur later in time. For example, increased water abstraction from a well to supply irrigation water can eventually lead to saline soils, which would be an indirect impact.

Residual impacts are those effects of the project that occur or remain after the project has been completed

Project activities can result in ***cumulative impacts***. This is the incremental increase in the impact on the environment over a period of time, which can include past, present and future actions.

Adverse impacts:

(a) Minimal impact - the impacts are such that they are easily mitigated at little or no cost and only exist for a short time

(b) Moderate impact - the impacts may be minor in nature but last for a long time or they may be intense for a short period. Mitigation measures may be costly and monitoring of the effectiveness of the mitigation measures will be required.

(c) Significant impact - these are multiple, diverse, long lasting and intense impacts that require significant expenditure for mitigation and careful monitoring during and after the project is completed. Where these impacts become apparent it is advisable that the project proponent review the original project concept or alternatives to the project.

(Examples of different types of impacts are presented at Section 4 of these guidelines)

Mitigation measures - these are specific actions to reduce the intensity and/or duration of adverse impacts that may result from project activities. The costs associated with implementing these measures should be included in the budget for the project.

Emergency Response Measures are specific measures or mitigation actions to minimise the adverse impacts associated with natural or man-made disasters such as earthquake, hurricane, fire, power failure, flooding etc.

Assessing officer

This officer should be a technical officer with environmental training in the organization implementing the project. He/she will be responsible for conducting the environmental screening of project activities and for conducting environmental reviews (Appendix 1) where applicable. Where possible, officers/personnel directly involved in implementing the project should not conduct the environmental screening of the project activities. This will help to ensure objectivity in the screening exercise.

Reviewing officer

The reviewing officer should be a technical officer from USAID with environmental training who will review the submissions of the assessing officer.

3.0 Environmental Impacts & Mitigation Measures by Sector

The Table in this section presents examples of some potentially adverse environmental impacts that can occur as well as associated mitigation measures for projects undertaken in the following areas:

- Agriculture,
- Ecotourism,
- Sanitation (water, wastewater, solid waste) and
- Community Initiatives

The examples provided are not exhaustive and are only intended to provide a sample for personnel involved in the environmental screening exercise.

Possible resources that can be affected adversely by project activities include:

- Land
- Water resources
- Air quality (including noise)
- Human health
- Coastal resources
- Energy
- Transportation
- Recreation & open space
- Natural habitats, protected areas etc.
- Communities
- Historic resources
- Aesthetics

	Potential Impacts	Illustrative Mitigation Measures
AGRICULTURE		
Land Resources	▪ Contamination of soil by the use of pesticides and fertilizers ▪ Soil erosion due to land clearing practices for farming and improper irrigation practices ▪ Degradation due to shortened fallow periods and pressuring marginal lands by extending agricultural lands ▪ Demised soil structure in terms of organic content ▪ Loss of vegetation and biodiversity during land clearing ▪ Pollution due to waste/manure/ wastewater from livestock rearing	▪ Minimize use of pesticides and fertilizers through environmental manipulation, biological control, botanical insecticides, physical and mechanical control ▪ Integrated pest management ▪ Select appropriate irrigation method to suit crop ▪ Refrain from clearing entire project area, select trees and plants that can be retained ▪ Where applicable recycle for use as compost, biogas etc.
Water resources	▪ Contamination of underground and surface water due to pesticide use ▪ Contamination of surface water from sediments in storm water runoff due to soil erosion ▪ Eutrophication of freshwater and marine resources due to fertilizer runoff ▪ Reduced biodiversity and productivity of fisheries due to eutrophication ▪ Changes in volume and seasonal flow of rivers due to large scale irrigation systems ▪ Pollution due to waste/manure/ wastewater from livestock rearing	▪ Only use pesticides approved and registered for use by the PCA ▪ Apply pesticides in accordance with instructions ▪ Do not dispose of or wash spray cans in rivers/streams ▪ Practice organic farming to reduce the need for fertilizers ▪ Where applicable recycle organic waste for use as compost
Air quality including noise	▪ Contamination of the air due to the application of pesticides ▪ Depletion of the ozone layer from using the fumigant methyl bromide ▪ Emissions and noise from agricultural equipment used for land clearing and harvesting	▪ Avoid applying pesticides in windy conditions ▪ Use alternative fumigants to methyl bromide ▪ Ensure that equipment is regularly serviced

	Potential Impacts	Illustrative Mitigation Measures
Human health	▪ Health risks to the person applying the pesticide/fertilizer from inhalation and skin contact ▪ Health risks by eating contaminated food ▪ Health risks from using contaminated water	▪ Avoid applying pesticides/fertilizers during windy periods ▪ Use protective gear and facial masks when applying pesticides/fertilizers ▪ Do not apply pesticides to vegetables and fruits just prior to harvesting ▪ Do not wash or dispose of spray cans in rivers/streams
Coastal Resources	▪ Eutrophication of coastal area due to fertilizer runoff during rainfall events ▪ Reduced biodiversity and productivity of fisheries due to eutrophication of coastal areas ▪ Landfilling of wetlands from soil erosion ▪ Drainage of wetlands for irrigation	▪ Practice organic farming to reduce the need for fertilizers ▪ Refrain from clearing entire project area, select trees and plants that can be retained ▪ Identify sustainable water source for irrigation
Recreation & open space	▪ Permanent foreclosure of future recreational opportunity due to large agricultural projects	▪ Identify and develop alternative recreational area for community
Natural Habitats, Protected Areas, etc.	▪ Degradation of protected areas ▪ Threatening endangered species ▪ Introduction of new species that may not be compatible with existing flora and fauna	▪ Survey to identify & thereby avoid ecologically sensitive areas ▪ Seek advice from the NRCA to avoid siting inappropriate projects in protected areas ▪ Identify alternate location for project where incompatibility of species exist ▪ Conduct controlled testing to determine suitability of specie to be introduced
Communities	▪ Displacement of communities due to large scale agricultural operations ▪ Reduction of open space available to community	▪ Develop and implement relocation plan for affected residents at the same or improved standard of living

	Potential Impacts	Illustrative Mitigation Measures
ECO-TOURISM		
Land Resources	▪ Exploitation of the area's carrying capacity ▪ Loss of vegetation and soil erosion due to land clearing practices for accessing site	▪ Survey to identify ecologically sensitive areas ▪ Identify appropriate areas for tourism development and attractions
Water Resources	▪ Contamination of water sources due to improper wastewater disposal from tourism developments and attractions ▪ Siltation of rivers, coastal areas and wetlands due to soil erosion from tourism developments under construction (e.g. hotels)	▪ Install wastewater treatment facilities ▪ Reuse grey-water where applicable ▪ Use silt traps and bund walls for containment of construction material
Air Quality including noise	▪ Emissions and noise during construction (e.g. roads, hotels) ▪ Increased vehicular traffic noise and emissions due to siting of tourism developments and attractions	▪ Use well maintained vehicles and equipment ▪ Limit construction activity to defined daylight hours ▪ Do not exceed the carrying capacity of the area
Human Health	▪ Increase in communicable diseases due to increased movement of people into the area	▪ Improve health care facilities ▪ Public and community education on preventative measures
Natural Habitats, Protected Areas, etc.	▪ Disturbance and possible degradation of habitat for tourism developments and attractions ▪ Loss of biodiversity	▪ Avoid protected areas for development projects ▪ Ensure that there is adherence to the carrying capacity for eco-tourism projects
Coastal Resources	▪ Disturbance and possible degradation of habitat from tourism developments and attractions ▪ Sedimentation due to eroded soil from storm water runoff	▪ Survey to identify ecologically sensitive areas ▪ Avoid locations where significant modification to the shoreline is required
Transportation	▪ Increased vehicular traffic due to siting of tourism developments and attractions ▪ Higher vehicular speed because of improved or new roads which can result in the loss of wildlife and human life	▪ Develop traffic management plan for the area to reduce congestion ▪ Set speed limit

	Potential Impacts	Illustrative Mitigation Measures
Communities	▪ Use of area conflict between tourism management and community ▪ Degradation of area because of conflicting use ▪ Migration of people to the vicinity because of increased employment opportunities ▪ Seasonal labour patterns as a result of employment opportunities ▪ Potential cultural change due to migration of people	▪ Survey local community to ascertain how best to use resources in the area ▪ Consensus between resource users of the community and tourism on the use of resources in the area ▪ Training and hiring local community members
Historic Resources	▪ Destruction and degradation of historic resources ▪ Pirating, salvaging, exceeding the carrying capacity etc. of historic resources/sites	▪ Authentication and inventorying of historic resources ▪ Restricting visits to historical attractions within carrying capacity
Aesthetics	▪ Loss of aesthetic attributes	▪ Identify appropriate areas for tourism development and attractions
SANITATION (WATER, WASTEWATER & SOLID WASTE)		
Land Resources	▪ Loss of soil cover due to erosion from land clearing for treatment plant construction and pipe laying ▪ Pollution from industrial waste ▪ Depletion of land resources for use as solid waste disposal sites ▪ Pollution from improper solid waste disposal	▪ Avoid clearing entire project site ▪ Use silt traps and bund walls for containment of construction materials ▪ Avoid leaving extensive lengths of pipeline trenches open ▪ Industries to institute waste minimization programmes (reuse & recycling)

	Potential Impacts	Illustrative Mitigation Measures
Water Resources	▪ Depletion of fresh water (surface & underground) for water supplies ▪ Disruption/alteration of surface water flows resulting from impoundments, dams or abstraction for water supplies ▪ Pollution from untreated or inadequately treated wastewater ▪ Pollution due to frequent mechanical breakdown of mechanical treatment plants and an inability to replace expensive spare parts ▪ Pollution from onsite sanitation systems due to lack of customer connections to central sewerage system ▪ Pollution from improper solid waste management practices	▪ Identify sustainable sources of water ▪ Ensure that wastewater is treated to meet the NRCA's trade & sewage effluent standards ▪ Train sewage treatment plant operators ▪ Where applicable reuse grey water for irrigation ▪ Choose appropriate technology with adequate availability of spare parts, preferably with less reliance on mechanical equipment ▪ Institute public education programmes and incentives for customers to connect to the central sewerage system
Air Quality including noise	▪ Emission of foul odors from wastewater treatment facilities ▪ Noise from mechanical equipment	▪ Maintenance of equipment and adequately trained personnel to handle such situations ▪ Where applicable use technologies that reduce the possibility of noise & odours
Human Health	▪ Increased potential of water borne diseases and disease carrying insects from the improper disposal of sewage and the disposal of inadequately treated sewage ▪ Increased potential for vector transmitted diseases from improper disposal of solid waste	▪ Educate community on proper hygienic practices and maintenance of latrines ▪ Educate the community members on sustainable solid waste management practices ▪ Where applicable institute reuse & recycling programmes
Coastal Resources	▪ Degradation of coastal resources due to the release of poorly treated wastewater ▪ Pollution from sanitation systems not connected to the central sewerage system	▪ At least secondary treatment of wastewater is achieved before being released into coastal waters ▪ Adherence to NRCA's sewage and trade effluent standards ▪ Customers to connect to the central sewerage system

	Potential Impacts	Illustrative Mitigation Measures
Energy	▪ Increased demand on energy supply for mechanically operated treatment plants	▪ Choose appropriate technology, preferably with less reliance on mechanical equipment
Recreation & Open Space	▪ Permanent foreclosure of potential recreational areas when siting water & wastewater treatment facilities	▪ Choose project site based on compatibility with present and future land use
Natural Habitats, Protected Areas, etc .	▪ Degradation of terrestrial, aquatic and coastal habitats and wildlife due to location of water and wastewater treatment facilities and due to the discharge of inadequately treated effluents ▪ Alteration of stream flow from water supply projects reduces the availability of water downstream for fisheries	▪ Identify appropriate site for treatment facilities based on land use ▪ Treat effluents to comply with NRCA's trade & sewage effluent standards ▪ Identify a sustainable source of water supply
Communities	▪ Opposition to proposed project due to lack of community involvement/participation during the planning phase ▪ Migration of people to location where water and wastewater facilities are available	▪ Ensure community involvement in the planning phase ▪ Design should anticipate growth in population to be served in the future
Historic Resources	▪ Conflict in land use	▪ Site facilities to avoid conflict with other land uses
Aesthetics	▪ Loss of aesthetic attributes	▪ Design to enhance aesthetics
COMMUNITY BASED INITIATIVES		
Land Resources	▪ Deforestation from construction, agriculture ▪ Soil erosion from land clearing for agriculture and construction ▪ Increased storm water runoff with potential for flooding associated with land clearing or paving ▪ Pollution and degradation of land resources due to poor solid waste storage and disposal practices	▪ Examine alternative sites for project ▪ Refrain from clearing entire project area, select trees to be retained ▪ Replant trees and plants after construction ▪ Use silt traps to manage soil erosion during construction phase ▪ Community education on solid waste management ▪ Institute reuse & recycling programmes where applicable

	Potential Impacts	Illustrative Mitigation Measures
Water Resources	▪ Loss of water resources ▪ Contamination of water resources ▪ Siltation of water resources due to land clearing	▪ Ensure proper management of solid waste ▪ Sewage and trade effluent to meet NRCA standards ▪ Avoid clearing entire site
Air Quality including noise	▪ Increased air pollution and noise from agriculture and construction	▪ Use well maintained equipment ▪ Limit working hours to specified daylight periods
Coastal Resources	▪ Loss of coastal resources due to development ▪ Over-exploitation of coastal resources (e.g. overfishing, improper fishing practices)	▪ Ensure development is compatible with coastal resources ▪ Use sustainable fishing practices
Natural Habitats, Protected Areas, etc.	▪ Loss of wildlife and associated habitats due to project	▪ Avoid siting projects in protected areas designated by NRCA ▪ Identify endemic and endangered species and develop a plan to protect them
Communities	▪ Reluctance of community members to be involved in the project ▪ Unsustainable project	▪ Involve community members in the development of the project planning ▪ Develop a strategic plan that addresses social, economic and environmental issues

4.0 Examples of Types of Impacts

This section provides illustrative examples of the types of adverse environmental impacts that can occur from project activities. Defining the types of impacts during the environmental screening process can assist the assessing and reviewing officers to determine whether an environmental review is required or if the project concept should be redefined.

A. Minimal Impact

The construction of an access road (to a site) is likely to only last for a few days or weeks and wetting periodically can mitigate the fugitive dust generated by the construction activities. The adverse impact (fugitive dust) associated with the road construction is of short duration, and it is not too costly to mitigate.

B. Moderate Impact

Land clearing for construction can result in the loss of valuable topsoil and the contamination of surface water during rainfall events. The former occurs over a long period of time and will ultimately impact on the fertility and viability of the soil while the latter has a short but intense impact on the river/stream. Mitigation measures to reduce these moderate impacts include selection of trees and other vegetation that can be retained instead of clearing the entire site of vegetation and the installation and regular maintenance of silt traps to prevent sediments from being conveyed to rivers/streams. The silt traps will need to be monitored to assess their effectiveness as a mitigation measure. While the costs associated with the first mitigation measure are minimal, the costs of the second will need to be included in the project's budget.

C. Significant Impact

Land filling wetlands to construct hotels or tourist attractions will ***directly*** result in the permanent destruction of natural habitats of flora and fauna. It may ***indirectly*** affect the viability of seagrass beds and coral reefs, as the wetland that once acted as a filter for sediments and chemicals is no longer there.

D. Cumulative Impact

Farming practices can result in the following adverse impacts becoming a more severe cumulative impact on surface water:

- Land clearing which can lead to soil erosion and sedimentation of rivers/streams;
- Fertilizer and pesticide use can result in chemical contamination and eutrophication of rivers/streams when washed off during rainfall events;
    - Clearing of watershed areas for farming can affect the rainfall patterns and reduce the flow of water in rivers/streams;
    - Water for irrigation from rivers/streams can reduce downstream water flows.

    The cumulative impact of the above activities leads to the deterioration and depletion of the river/stream over time and will affect its possible uses downstream

5.0 Environmental Screening for Significance of Impacts

RIDGE TO REEF PROGRAMME
PROJECT SCREENING FORM

General Information

Activity:
_____

Contractor/Grantee:
_____

Duration:
_____

Location:
_____

Description of Activity
_____

_____

_____

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INSTRUCTIONS

Completing The Screening Form

For each section indicate the level of impact that the project activity is likely to have. Only negative/adverse impacts should be noted. The criteria must be satisfied in each case for the impact to be defined below:

Minimal Impact

- Short duration (hours, days, a few weeks).
- Does not result in permanent damage to the environment or human health.
- Either no mitigation measures are required or only simple, low cost mitigation measures are required.

Moderate Impact

- Duration spanning many weeks or months.
- May result in permanent damage to the environment or human health if no mitigation measures are implemented.
- May be a number of minimal impacts that can result in a cumulative impact that is moderate.
- Mitigation measures are required to prevent permanent damage.

Significant Impact

- Duration spanning months or years, and may continue after the completion of the project or activity.
- Will result in permanent damage even with mitigation measures.
- May be a number of minimal and/or moderate impacts that can result in a cumulative impact that is significant.
- Mitigation measures are required that are usually costly; may require proponent to look at less costly alternatives.

Notes:

- If an answer to a question is maybe, consider the worst case scenario.
- If there is uncertainty about the extent/intensity of an impact, it should be categorized as an impact at the more intense level. For example, if there is uncertainty about whether the impact is small or moderate, indicate that it is moderate.
- If a project is included on the Natural Resources (Prescribed Areas) (Prohibition of Categories of Enterprise, Construction and Development) Order 1996, completed permit application, licence application (for the discharge of trade/sewage effluent) and Project Information Forms (PIF) must be submitted to the NRCA. They will advise if an

Environmental Impact Assessment is required. See Appendix 2 for the list/types of project included in the Order.

- If a project requires the abstraction of water from surface or underground resources, a licence application must be submitted to the Water Resources Authority.

- The assessing officer is to complete the screening form and evaluate the results to determine the types of environmental impacts that may occur as a result of the project

- The assessing officer should note the positive impacts or cumulative impacts associated with the project in the space provided for other comments near the end of the screening form

- Where the impacts are found to be minimal after the evaluation is complete, attach information on the nature of the impacts and the mitigation measures, if applicable. This information is to be submitted with the screening form to the reviewing officer

- Where the impacts are found to be moderate or significant after the evaluation is complete, the assessing officer should conduct an environmental review in accordance with the requirements at Appendix 1 and submit the review with the completed screening form to the reviewing officer

- If the reviewing officer accepts the result, the project can be implemented; if not, the review process should be restarted from the project definition and development stage (Appendix 4 contains a flow chart of the environmental screening process)

- Appendix 3 has a list of the principal agencies that play a role in environmental management in Jamaica that should be consulted as a stakeholder if the project activities fall within their area of responsibility

EVALUATION OF RESULTS

Minimal Impacts

Where only minimal impacts have been indicated, no environmental impact assessment is required, just a list of minor impacts and the associated mitigation measures if applicable.

Moderate Impacts

Where moderate or significant impacts have been indicated, the assessing officer who should be a suitably qualified environmental professional should conduct an environmental review. The review should be in accordance with the format described at Appendix 1

Significant Impacts

Where only significant impacts are likely to occur, the project proponent should examine alternatives to the project or implement mitigation measures where these are found to be cost effective.

Notes:

- Where an environmental review is conducted, a copy of the results of the review should be sent to the Natural Resources Conservation Authority (NRCA).

- Monitoring reports should be sent to the NRCA during the construction and operation phases of projects that require an environmental review.

	Small impact	Moderate impact	Large impact	Can the impact be reduced or eliminated by a project change or by mitigation measures [State how]
AIR QUALITY (INCLUDING NOISE)				
1. To what extent will the following affect air quality?				
Use of pesticides				
Use of methyl bromide (ozone depleting substance)				
Emissions from machinery used for land clearing, construction				
Fugitive dust from land clearing, quarrying, construction				
Emissions from increased vehicular movement				
Emissions from industrial facilities				
Odours from waste disposal or recycling facilities				
Odours from wastewater treatment/disposal or recycling facilities				
Noise & vibration from machinery for land clearing, construction, mining, blasting				
Noise & vibration from increased vehicular flow				
2. Is the project designed to comply with the NRCA's national standards/regulations governing air quality and air pollution? Yes___ No___				
3. What will be the extent of the impact from noise (e.g. from blasting, movement of heavy equipment such as tractors, trucks etc., driving piles)				
WATER RESOURCES ***[E.g. rivers, springs, underground water etc.]***				
1 To what extent will the following affect water resources:				
Contamination from the use of pesticides, fertilizers, manure and other agricultural runoff				
Eutrophication of surface water from fertilizer use and pollution [solid waste or wastewater] upstream				
Water abstraction from surface or underground water resources or spring				
Sedimentation/land filling caused by agricultural practices, construction, quarrying, mining				
Pollution caused by improper waste and wastewater disposal practices				

	Small impact	Moderate impact	Large impact	Can the impact be reduced or eliminated by a project change or by mitigation measures [State how]
Dams or water retention structures				
Increased surface runoff due to paved areas including roads, clearing vegetation from land				
2. Is the project designed to comply with NRCA's trade effluent standards or sewage effluent standards Yes___ No___				
COASTAL RESOURCES				
1. To what extent will the following affect coastal resources (marine water quality, coral reefs, seagrass beds etc.)?				
Contamination from the use of pesticides, fertilizers, manure and other agricultural runoff				
Eutrophication of coastal water from fertilizer use, manure and pollution [solid waste or wastewater] upstream				
Sedimentation/ land filling of wetlands and bays caused by agricultural practices, construction, quarrying, mining upstream				
Pollution caused by improper solid waste and wastewater disposal practices				
Dredging				
Increased surface runoff due to paved areas including roads and clearing vegetation from land				
Waste oil from boats and other recreational equipment				
2. Is the project designed to comply with NRCA's trade effluent standards or sewage effluent standards Yes___ No___				
LAND RESOURCES				
1. To what extent will the following affect land resources:				
Deforestation (land clearing, fuel wood and construction)				
Soil erosion (land clearing for construction & farming)				
Mining or quarrying				
Land filling (wetland or swamps)				
Disposal of hazardous waste (waste oils, PCBs, asbestos)				
Disposal of solid waste				

	Small impact	Moderate impact	Large impact	Can the impact be reduced or eliminated by a project change or by mitigation measures [State how]
2. (a) Has reuse or recycling of solid waste been incorporated into the project design? Yes____ No____				
(b) Will this enhance the project or mitigate potential adverse impacts? Yes____ No____				
HUMAN HEALTH				
1. To what extent will the following affect human health:				
Fugitive dust (from construction, mining, quarrying)				
Noise & vibration (from heavy duty vehicles, blasting)				
Odours (solid waste, wastewater)				
2. Will the project cause the release of chemicals that are harmful to health, corrosive, flammable, toxic (e.g. PCBs, asbestos)				
NATURAL HABITATS & ECOLOGICAL RESOURCES				
1. To what extent will the following affect natural habitats & associated flora & fauna:				
Noise & vibrations (mechanical equipment, vehicles, blasting)				
Fugitive dust (construction, mining)				
Deforestation (land clearing, fuel wood)				
Soil erosion (agricultural practices, construction)				
Disposal of solid waste				
Disposal of trade & sewage effluent				
Pesticide & fertilizer use				
2. To what extent will destruction or loss of natural habitat affect endemic plant or animal species (e.g. death, migration etc.)?				
3. To what extent will destruction or loss of natural habitat affect plant or animal species that are not endemic (death, migration etc.)?				
4. Will the project be situated in a protected area declared by the NRCA? Yes___ No___				

	Small impact	Moderate impact	Large impact	Can the impact be reduced or eliminated by a project change or by mitigation measures [State how]
VISUAL RESOURCES				
1. To what extent will views, vistas & aesthetics of the community be affected?				
2. How will future extensions or expansions to the current project affect views, vistas & aesthetics of the community?				
HISTORIC & ARCHAEOLOGICAL RESOURCES				
1. To what extent will the project affect historic or archaeological resources				
2. Will project be site near to any site or structure with historic or archaeological significance? Yes___ No___				
OPEN SPACE & RECREATION				
1. To what extent will the project affect current and future open and recreational space				
2. Is this open and recreational space important to the community? Yes___ No___				
COMMUNITIES				
1. To what extent will the following aspects of a community be adversely affected:				
Transportation & traffic				
Population size and density				
Employment opportunities				
Housing				
Farming/agriculture				
Water				
Recreation				
2. Is there any public/community opposition to the project? Yes___ No___				

	Small impact	Moderate impact	Large impact	Can the impact be reduced or eliminated by a project change or by mitigation measures [State how]
EMERGENCY RESPONSE MEASURES				
Have emergency response measures been incorporated into the project? Yes____No____				
INDIRECT/CUMULATIVE IMPACTS				
Are there indirect and/or cumulative impacts resulting from project activities? Indirect Yes____No____ Cumulative Yes____No____				

1. Other Comments:

_____

_____

_____

_____

_____

_____

2. Are there feasible mitigation measures to eliminate or reduce adverse impacts? [Summarize from checklist]

_____

_____

_____

_____

_____

_____

3. Which of these mitigation measures have been incorporated into the project design?

_____

_____

_____

4. Are there provisions in the project [where applicable] for regular maintenance [of equipment etc.] to prevent adverse impact on the environment? Yes____ No_____

Explain:

_____

_____

_____

5. Are the overall impacts: Minimal____ Moderate_____ Significant_____

6. State the benefits of the project [social, economic, environmental]

_____

_____

_____

_____

_____

7. Is an environmental review required Yes____ No_____

(Please attach the environmental review to the screening form so that it can be reviewed by the reviewing officer)

8. Is the project recommended for implementation, if no state reasons Yes____ No____

_____

_____

_____

_____

Assessing officer _____ Date _____

9. Are the results of the assessment accepted by the reviewing officer, if no state why?

Yes____ No_____

_____

_____

_____

_____

Reviewing officer _____ Date _____

Notes:

Where a project is recommended for implementation, there should be:

(a) Strict adherence to the implementation of the mitigation measures.

(b) Monitoring of the effectiveness of the mitigation measures.

(c) Monitoring of the project to anticipate and address environmental impacts which may not have been identified prior to the start of the project.

Resource Material

1. Coastal Water Quality Improvement Project (CWIP) Semi Annual Report, August 1999 - January 2000

2. Coastal Water Quality Improvement Project (CWIP) First Annual Work Plan, April 20, 1998

3. Coastal Water Quality Improvement Project (CWIP) Second Annual Work Plan, January 31, 1999

4. Coastal Water Quality Improvement Project (CWIP) Third Annual Work Plan, January 31, 2000

5. Coastal Water Quality Improvement Project (CWIP) Life of Project Plan, April 20, 1998

6. Natural Resources Conservation Authority (NRCA) State of the Environment Report, 1997

7. Natural resources Conservation Authority (NRCA) Environmental Screening Form

8. Environmental Screening /Report Form CAPAS Small Grants Program

9. Environmental Guidelines for Small Scale Activities in Africa, Environmentally Sound Design for Planning and Implementing Humanitarian and Development Activities, edited by W. I. Knausenberger, G. A. Booth, C. S. Bingham, J. J. Gaudet; Technical paper No. 18, June 1996

10. Ridge to Reef Programme, Section C - Description/specifications/work statement

11. Coastal Water Quality Improvement Project (CWIP), Section C - Description/specifications/work statement

Environmental Review

The Environmental Review should be about 4-7 pages long (more if required) and consist of following sections:

1. **Background, Rationale and Outputs/Results Expected**

   - Summarize and cross-reference proposal.

2. **Activity Description**

   - Succinctly describe location, siting, surroundings (include a map or a sketch map).

   - Provide both quantitative and qualitative information about actions needed during construction, how intervention will operate and any secondary development activities that are required to build or operate the primary activity. For example, road to a facility, need to quarry or excavate borrow material, need to lay utility pipes to connect with energy, water source or disposal point or any other activity needed to accomplish the primary one but in a different location.

   - If various alternatives have been considered and rejected because the proposed activity is considered more environmentally sound, explain these.

3. **Environmental Situation**

   - Affected environment, including essential baseline information available for all affected locations and sites, both primary and secondary activities.

   - Indicate if the project will be located on a brownfield (previously disturbed) or greenfield (virgin) site.

4. **Evaluation of Activities and Issues with Respect to Environmental Impact Potential**

   - Include impacts that could occur before construction starts, during construction and during operation, as well as any problems (residual impacts) that might arise with restoring or reusing the site, if the facility or activity were completed or ceased to exist.

   - Explain direct, indirect, induced and cumulative effects on various components of the environment (e.g., air, water, geology, soils, vegetation, wildlife, aquatic resources, historic, archaeological or other cultural resources, people and their communities, land use, traffic, waste disposal, water supply, energy, etc.).

   - Indicate positive impacts and how the natural resources base will be sustainably improved.

5. Environmental Mitigation Measures (including monitoring and evaluation)

   - For example, indicate means taken to avoid, reduce or compensate for impacts, such as restoration of borrow or quarry areas, replanting of vegetation, compensation for any relocation of homes and residents.

- Indicate how mitigation measures will be monitored to ensure that they accomplish their intended result or what monitoring might be needed for impacts that one is uncertain about.

- Provide an estimate for the mitigation measures (even as a percentage of the project budget)

6. **Other Information** (as appropriate)

   - Where possible, include photos of the site and surroundings; list the names of any reference materials or individuals consulted.

Note:

Specific plans for monitoring of key environmental indicators and mitigation of impacts during activity implementation are especially important; these must be addressed in the review. Information on monitoring results and mitigation of impacts are to be included in all progress reports. Important information and a criterion for evaluation of environmental soundness is showing how the activity is part of or guided by an integrated, community-based resource and land use plan or planning and management framework that considers the appropriate use of multiple resources.

APPENDIX 2

The Natural Resources (Prescribed Areas) (Prohibition of Categories of Enterprise, Construction and Development) Order 1996

The following is the list of project/activities included on the Natural Resources (Prescribed Areas) (Prohibition of Categories of Enterprise, Construction and Development) Order 1996. If a proposed project is included on this list, completed permit application, licence application (for the discharge of trade/sewage effluent) and Project Information Forms (PIF) must be submitted to the NRCA. Based on a review of the submitted forms, they will advise if an Environmental Impact Assessment is required.

1. Power generation plants

2. Electrical transmission lines and substations greater than 69 kV

1. Pipelines and conveyors, including underground cables, gas lines and other such infrastructure with diameter of 15 cm and over.

2. Port and harbour developments

5. Development projects

   - Subdivisions of 10 or more lots
   - Housing projects of 10 houses or more
   - Hotel/resort complex of more than 12 rooms
   - Airports including runway expansion greater than 20%
   - Office complex greater than 5000 square metres

6. Eco-tourism projects

7. Water treatment facilities including water supply, desalination plants, sewage and industrial wastewater

8. Mining and mineral processing

   - Bauxite
   - Minerals - including aggregate, construction and industrial minerals
   - Peat
   - Sand
   - Metallic
   - Non-metallic

9. Metal processing

   - Non-ferrous metals
   - Ferrous metals
   - Foundry operations, metal plating

10. Industrial projects

    - Chemical plants

- Pulp, paper and wood processing
- Petroleum production, refinery, storage and stockpiling
- Fish and meat processing plants
- Food processing plants
- Detergents manufacturing, including manufacturing of soap
- Manufacture of containers and packaging materials including cans, bottles, boxes and cartons
- Distillery, brewing and fermenting facilities
- Manufacturing of edible fats, oils and associated processes
- Cement and lime production
- Paint manufacture
- Tanneries
- Manufacturing of pesticides or other hazardous or toxic substances
- Boxing plants
- Citrus, coffee, cocoa, coconut, sugarcane processing plants
- Manufacture of textiles
- Solar salt production

11. Construction of new highways, arterial roads and major road improvement projects

12. River basin development projects

13. Irrigation or water management projects including improvements

14. Land reclamation and drainage projects

15. Watershed development and soil conservation projects including river training, check dams, and retaining walls

16. Modification, clearance or reclamation of wetlands

16. Solid waste treatment and disposal facilities

18. Hazardous waste storage or treatment or disposal facilities

19. Processing of agricultural waste

20. Cemeteries and crematoriums

21. Introduction of species of flora, fauna and genetic material

22. Slaughterhouse and abattoir

23. Felling of trees and clearing of land of 10 hectares or over for agricultural development

24. Clear cutting of forested areas of 3 hectares and over on slopes greater than 25 degrees

APPENDIX 3

National Agencies Involved in Environmental Management

1. National Environment and Planning Agency (NEPA)

Environmental Management & Regulatory responsibilities [formerly the responsibilities of the Natural Resources Conservation Authority (NRCA)]

- Approves Permits required for specific projects and activities (See Appendix 2)
- Approves Licences required for the discharge of trade and sewage effluent
- Approves Licences required for marine dredging (Beach Control Act)
- Approves Licences required for works and modification in coastal areas
- Designates Protected areas
- Regulates compliance with environmental standards and regulations
- Town planning responsibilities [formerly the responsibilities of the Town Planning Department (TPD)]
- Implementing arm of the Town & Country Planning Authority
- Prepares national, regional, urban and local development plans and Development Orders
- Advises local authorities on applications for subdivisions, change of use and building activities

2. Water Resources Authority (WRA)

- Approves Licences for surface and underground water abstraction
- Permission to site (solid & hazardous) waste disposal facilities
- Works in collaboration with the National Water Commission (NWC) on strategies to alleviate seasonal water supply problems

3. Pesticides Control Authority (PCA)

- Registers the use of pesticides, herbicides, fungicides etc. in Jamaica
- Prohibits the use of certain pesticides, herbicides, fungicides etc. in Jamaica
- Code of practice for handling and disposal of residual chemicals and containers

4. Environmental Control Division (Ministry of Health)

- Approves the design and specifications of sewage treatment facilities and water treatment facilities

- Responsible for the control of air and water pollution, abatement of environmental health hazards setting standards for health and safety in the workplace

5. Local Authorities (Parish Councils and the Kingston & St. Andrew Corporation [KSAC])

- Approve development projects within their respective Parishes
- Approve water supply and sanitation projects at the local level
- Responsible for public cleansing and beatification of public areas and land use planning
- Maintain some public bathing beaches

6. Office of Disaster Preparedness and Emergency Management (ODPEM)

- Develops and approves evacuation plans for natural and man-made disasters
- Assists organizations to develop their emergency response plans

7. Parks and Markets agencies

- Provides solid waste collection and disposal services

8. National Water Commission (NWC)

- Agency responsible for supplying water to major urban areas
- Provides water for new developments based on proximity to water supplies they manage
- Approves the design of sewage treatment facilities that they ultimately have to take over from developers to operate

9. Tourism Product Development Company (TPDCo)

- Plans and implements projects in resort areas
- Develops and monitors standards and guidelines for the tourism industry
- In collaboration with Government Ministries and agencies, it manages the Sustainable Environment Tourism (SET) programme, to improve resort towns

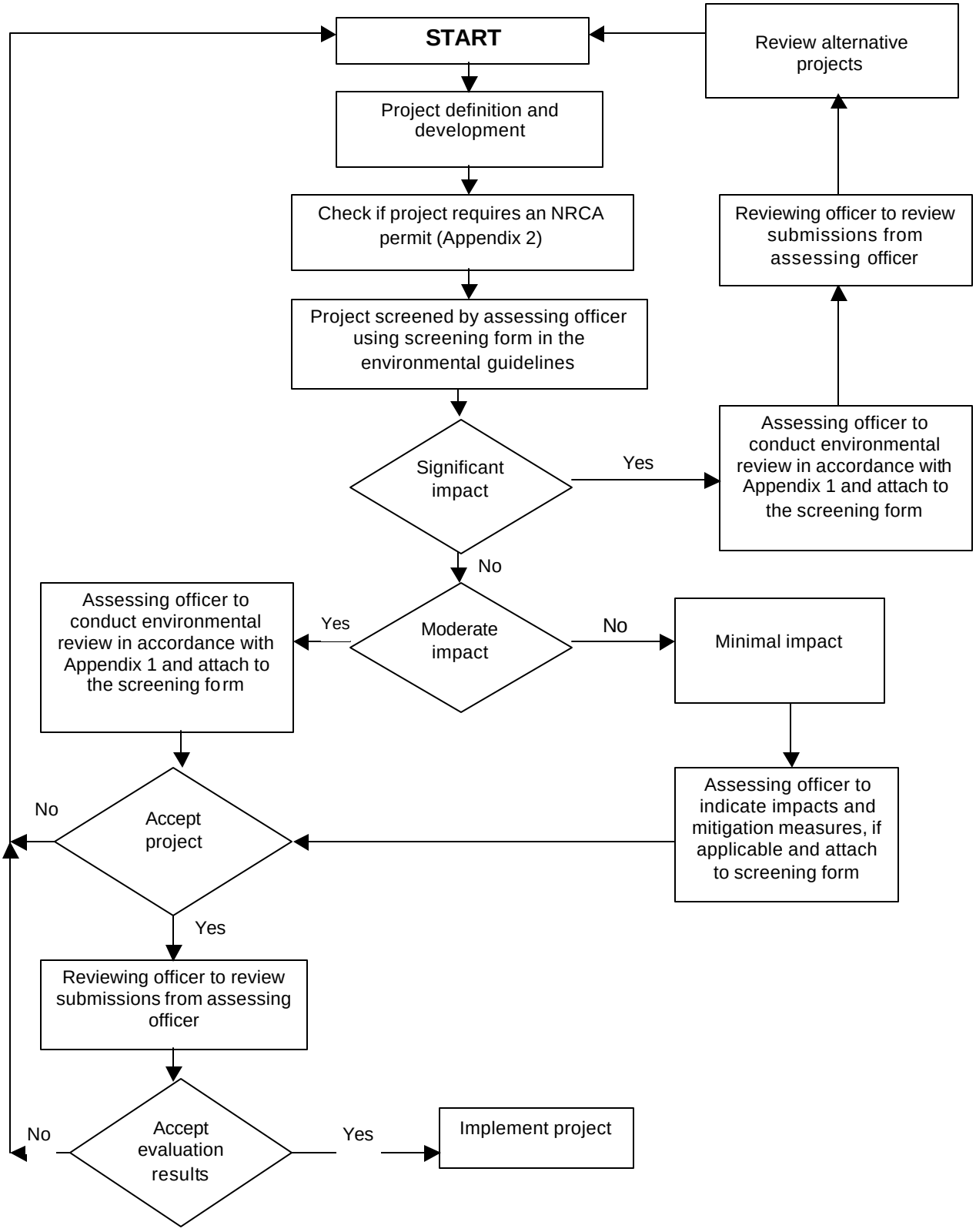
10. Other Agencies involved in environmental management

- Bureau of Standards - ISO 14000 Environmental Management Systems
- Jamaica Bauxite Institute - Environmental Management in the bauxite/alumina sector
- Jamaica Coast Guard - Monitoring marine environment for environmental breaches
- Fisheries Division (Ministry of Agriculture) - Regulates and monitors fish resources
- Jamaica Maritime Institute - Sustainable shipping practices

- Lands Department - Land use
- Land Development & Utilization Commission - Land use
- Marine Police - Monitoring marine environment for environmental breaches
- Mines and Geology (Ministry of Mining) - Mining and quarrying operations
- National Irrigation Commission - Irrigation water and systems
- Petroleum Corporation of Jamaica - Unleaded gasoline
- Rural Agricultural Development Authority (RADA) - Sustainable agricultural practices
- Rural Physical Planning Unit - Land use
- Scientific Research Council (SRC) - Waste and wastewater management systems

APPENDIX 4

Flow Chart of Environmental Screening Process



Illustrative Case Studies

ENVIRONMENTAL SCREENING FOR SIGNIFICANCE OF IMPACTS

Ridge To Reef Programme
Project Screening Form

General Information

Activity: Grey water reuse

Contractor/Grantee: Negril Chamber of Commerce

Duration: 18 months

Location: Long Bay Beach Park

Description of Activity

Grey water from showers at the Long Bay Beach Park is pumped from an underground storage tank to a reed bed for treatment. From there the wastewater flows by gravity to an above ground pond [which is supposed to have fish & shrimp in it]. The pond is equipped with an automatic pump which conveys the treated water to four large [60 gallon] storage tanks in parallel. The treated wastewater is to be used to irrigate an aloe vera plot, a small vegetable garden and a nearby football field. If the storage tanks are full the treated wastewater from the pond can be directed towards the central sewage system by a manually operated valve.

The aloe vera plot is maintained in collaboration with the Hairbraider's Association, who use the aloe vera for massages and haircare to reduce the use of oils, soaps and lotions which also contribute to contamination of the beach environment.

INSTRUCTIONS

Completing The Screening Form

For each section indicate the level of impact that the project activity is likely to have. Only negative/adverse impacts should be noted. The criteria must be satisfied in each case for the impact to be defined below:

Minimal Impact

- Short duration (hours, days, a few weeks).
- Does not result in permanent damage to the environment or human health.

- Either no mitigation measures are required or only simple, low cost mitigation measures are required.

Moderate Impact

- Duration spanning many weeks or months.
- May result in permanent damage to the environment or human health if no mitigation measures are implemented.
- May be a number of minimal impacts that can result in a cumulative impact that is moderate.
- Mitigation measures are required to prevent permanent damage.

Significant Impact

- Duration spanning months or years, and may continue after the completion of the project or activity
- Will result in permanent damage even with mitigation measures
- May be a number of minimal and/or moderate impacts that can result in a cumulative impact that is significant
- Mitigation measures are required that are usually costly; may require proponent to look at less costly alternatives

Notes:

- If an answer to a question is maybe, consider the worst case scenario.
- If there is uncertainty about the extent/intensity of an impact, it should be categorized as an impact at the more intense level. For example, if there is uncertainty about whether the impact is small or moderate, indicate that it is moderate.
- If a project is included on the Natural Resources (Prescribed Areas) (Prohibition of Categories of Enterprise, Construction and Development) Order 1996, completed permit application, licence application (for the discharge of trade/sewage effluent) and Project Information Forms (PIF) must be submitted to the NRCA. They will advise if an Environmental Impact Assessment is required. See Appendix 2 for the list/types of project included in the Order.
- If a project requires the abstraction of water from surface or underground resources, a licence application must be submitted to the Water Resources Authority.
- The assessing officer is to complete the screening form and evaluate the results to determine the types of environmental impacts that may occur as a result of the project.
- The assessing officer should note the positive impacts or cumulative impacts associated with the project in the space provided for other comments near the end of the screening form.

- Where the impacts are found to be minimal after the evaluation is complete, attach information on the nature of the impacts and the mitigation measures, if applicable. This information is to be submitted with the screening form to the reviewing officer.

- Where the impacts are found to be moderate or significant after the evaluation is complete, the assessing officer should conduct an environmental review in accordance with the requirements at Appendix 1 and submit the review with the completed screening form to the reviewing officer.

- If the reviewing officer accepts the result the project can be implemented; if not, the review process should be restarted from the project definition and development stage (Appendix 4 contains a flow chart of the environmental screening process).

- Appendix 3 has a list of the principal agencies that play a role in environmental management in Jamaica that should be consulted as a stakeholder if the project activities fall within their area of responsibility.

EVALUATION OF RESULTS

Minimal Impacts

Where only minimal impacts have been indicated, no environmental impact assessment is required, just a list of minor impacts and the associated mitigation measures if applicable.

Moderate Impacts

Where moderate or significant impacts have been indicated, the assessing officer who should be a suitably qualified environmental professional should conduct an environmental review. The review should be in accordance with the format described at Appendix 1

Significant Impacts

Where only significant impacts are likely to occur, the project proponent should examine alternatives to the project or implement mitigation measures where these are found to be cost effective.

Notes:

- Where an environmental review is conducted, a copy of the results of the review should be sent to the Natural Resources Conservation Authority (NRCA).

- Monitoring reports should be sent to the NRCA during the construction and operation phases of projects that require an environmental review.

	Small impact	Moderate impact	Large impact	Can the impact be reduced or eliminated by a project change or by mitigation measures [State how]
AIR QUALITY (INCLUDING NOISE)				
1. To what extent will the following affect air quality?				*Ensure appropriate throughput of wastewater through the system to prevent water in pond from becoming stagnant*
Use of pesticides				
Use of methyl bromide (ozone depleting substance)				
Emissions from machinery used for land clearing, construction				
Fugitive dust from land clearing, quarrying, construction				
Emissions from increased vehicular movement				
Emissions from industrial facilities				
Odours from waste disposal or recycling facilities				
Odours from wastewater treatment/disposal or recycling facilities				
Noise & vibration from machinery for land clearing, construction, mining, blasting				
Noise & vibration from increased vehicular flow				
2. Is the project designed to comply with the NRCA's national standards/regulations governing air quality and air pollution? Yes___ No___				
3. What will be the extent of the impact from noise (e.g. from blasting, movement of heavy equipment such as tractors, trucks etc., driving piles)				
WATER RESOURCES ***E.g. rivers, springs, underground water etc.]***				
1. To what extent will the following affect water resources:				
Contamination from the use of pesticides, fertilizers, manure and other agricultural runoff				
Eutrophication of surface water from fertilizer use and pollution [solid waste or wastewater] upstream				
Water abstraction from surface or underground water resources or spring				
Sedimentation/land filling caused by agricultural practices, construction, quarrying, mining				
Pollution caused by improper waste and wastewater disposal practices				

	Small impact	Moderate impact	Large impact	Can the impact be reduced or eliminated by a project change or by mitigation measures [State how]
Dams or water retention structures				
Increased surface runoff due to paved areas including roads, clearing vegetation from land				
2. Is the project designed to comply with NRCA's trade effluent standards or sewage effluent standards Yes___ No___				
COASTAL RESOURCES				
1. To what extent will the following affect coastal resources (marine water quality, coral reefs, seagrass beds etc.)?				
Contamination from the use of pesticides, fertilizers, manure and other agricultural runoff				*Avoid over- irrigation of the football field as this could lead to seepage of treated wastewater back into the marine environment*
Eutrophication of coastal water from fertilizer use, manure and pollution [solid waste or wastewater] upstream				
Sedimentation/ land filling of wetlands and bays caused by agricultural practices, construction, quarrying, mining upstream				
Pollution caused by improper solid waste and wastewater disposal practices				
Dredging				
Increased surface runoff due to paved areas including roads and clearing vegetation from land				
Waste oil from boats and other recreational equipment				
2. Is the project designed to comply with NRCA's trade effluent standards or sewage effluent standards Yes___ No **X**				*Project should be designed to ensure compliance with standards; testing effluent quality should be included as one way to monitor the effectiveness of the treatment method*
LAND RESOURCES				
1. To what extent will the following affect land resources:				
Deforestation (land clearing, fuel wood and construction)				
Soil erosion (land clearing for construction & farming)				
Mining or quarrying				

	Small impact	Moderate impact	Large impact	Can the impact be reduced or eliminated by a project change or by mitigation measures [State how]
Land filling (wetland or swamps)				*Explore the possibility of composting the lilies thinned from the reed bed along with other organic waste from the property*
Disposal of hazardous waste (waste oils, PCBs, asbestos)				
Disposal of solid waste				
2. (a) Has reuse or recycling of solid waste been incorporated into the project design? Yes____ No **X**				
(b) Will this enhance the project or mitigate potential adverse impacts? Yes **X** No____				
HUMAN HEALTH				
1. To what extent will the following affect human health:				*Ensure appropriate throughput of wastewater through the system to prevent water in pond from becoming stagnant*
Fugitive dust (from construction, mining, quarrying)				
Noise & vibration (from heavy duty vehicles, blasting)				
Odours (solid waste, wastewater)				
2. Will the project cause the release of chemicals that are harmful to health, corrosive, flammable, toxic (e.g. PCBs, asbestos)				
NATURAL HABITATS & ECOLOGICAL RESOURCES				
1. To what extent will the following affect natural habitats & associated flora & fauna:				
Noise & vibrations (mechanical equipment, vehicles, blasting)				
Fugitive dust (construction, mining)				
Deforestation (land clearing, fuel wood)				
Soil erosion (agricultural practices, construction)				
Disposal of solid waste				
Disposal of trade & sewage effluent				
Pesticide & fertilizer use				

	Small impact	Moderate impact	Large impact	Can the impact be reduced or eliminated by a project change or by mitigation measures [State how]
2. To what extent will destruction or loss of natural habitat affect endemic plant or animal species (e.g. death, migration etc.)?				
3. To what extent will destruction or loss of natural habitat affect plant or animal species that are not endemic (death, migration etc.)?				
4. Will the project be situated in a protected area declared by the NRCA? Yes **X** No___				
VISUAL RESOURCES				
1. To what extent will views, vistas & aesthetics of the community be affected?				*The storage tanks should be located and painted to blend in with the natural surroundings*
2. How will future extensions or expansions to the current project affect views, vistas & aesthetics of the community?				
HISTORIC & ARCHAEOLOGICAL RESOURCES				
1. To what extent will the project affect historic or archaeological resources				
2. Will project be site near to any site or structure with historic or archaeological significance? Yes___ No___				
OPEN SPACE & RECREATION				
1. To what extent will the project affect current and future open and recreational space				*Installation of the irrigation system for the football field should be designed so that there is minimal disruption to activities & minimal destruction to the field*
2. Is this open and recreational space important to the community? Yes **X** No___				
COMMUNITIES				
1. To what extent will the following aspects of a community be adversely affected:				
Transportation & traffic				

	Small impact	Moderate impact	Large impact	Can the impact be reduced or eliminated by a project change or by mitigation measures [State how]
Population size and density				
Employment opportunities				
Housing				
Farming/agriculture				
Water				
Recreation				
2. Is there any public/community opposition to the project? Yes___ No **X**				
EMERGENCY RESPONSE MEASURES				
Have emergency response measures been incorporated into the project? Yes____No **X**				*Emergency measures should be considered for power failures that will render pumps inoperable. An alternative energy source could be considered based on feasibility e.g. solar energy or battery pack*
INDIRECT/CUMULATIVE IMPACTS				
Are there indirect and/or cumulative impacts resulting from project activities? Indirect Yes **X** No____ Cumulative Yes **X** No____				*Avoid over- irrigation of the football field as this could lead to seepage of treated wastewater back into the marine environment*

1. Other Comments:

The pond needs to be designed to ensure that it does not become a breeding ground for mosquitoes and to prevent unwanted creatures from making it a habitat. Mosquito mesh could be used to cover the pond.

The storage tanks connected in parallel should have provisions to allow for maintenance of each tank. Also the system should be designed to facilitate emptying the storage tanks, preferably in a manner that conveys the treated grey water to the central sewage system.

2. Are there feasible mitigation measures to eliminate or reduce adverse impacts? [Summarize from checklist]

a. *Ensure appropriate throughput of wastewater through the system to prevent water in pond from becoming stagnant*

b. *Avoid over- irrigation of the football field as this could lead to seepage of treated wastewater back into the marine environment*

c. *Project should be designed to ensure compliance with standards; testing effluent quality should be included as one way to monitor the effectiveness of the treatment method*

d. *Explore the possibility of composting the lilies thinned from the reed bed along with other organic waste from the property*

e. *The storage tanks should be located and painted to blend in with the natural surroundings*

f. *Installation of the irrigation system for the football field should be designed so that there is minimal disruption to activities & minimal destruction to the field*

g. *Design irrigation system so that there is no access to the water from the irrigation system by persons in nearby communities that may not have access to piped water*

h. *Emergency measures should be considered for power failures that will render pumps inoperable. An alternative energy source could be considered based on feasibility e.g. solar energy or battery pack*

i. *Mosquito mesh to cover the pond (after the reed bed) to prevent unwanted debris, insects (mosquitoes) and animals e.g. crabs from entering the pond while maintaining aerobic conditions*

j. *Design measures to facilitate flow to central sewage system from the four storage tanks in case this water cannot be used or tank (s) need to be taken out of service*

3. Which of these mitigation measures have been incorporated into the project design?

   None

4. Are there provisions in the project [where applicable] for regular maintenance [of equipment etc.] to prevent adverse impact on the environment? Yes **X** No_____

Explain: *Maintenance plan to be developed as an output of the project*

5. Are the overall impacts: Minimal **X** Moderate_____
   Significant_____

6. State the benefits of the project [social, economic, environmental]

   Social benefit to the Hairbraider's Association by incorporating them into the project

   Economic benefits to the Negril Chamber of Commerce from the sale of aloe vera sucker, cultivation of vegetables and lower water bills as a result of lower treated water consumption

   Environmental benefits from the diversion of grey water from the marine environment and reduction in the use of oils and soaps by visitors to the beach by promoting the use of aloe vera

7. Is an environmental review required Yes____ No **X**

   (Please attach the environmental review to the screening form so that it can be reviewed by the reviewing officer)

8. Is the project recommended for implementation, if no state reasons Yes **X** No____

   On condition that the above mitigation measures are incorporated into the project

   Assessing Officer *Ianthe Smith* Date 29/08/00

8. Are the results of the assessment accepted by the reviewing officer, if no state why?

   Yes____ No_____

_____

_____

_____

_____

Reviewing officer _____ Date _____

Notes:

Where a project is recommended for implementation, there should be:

(a) Strict adherence to the implementation of the mitigation measures

(b) Monitoring of the effectiveness of the mitigation measures

(c) Monitoring of the project to anticipate and address environmental impacts which may not have been identified prior to the start of the project

ENVIRONMENTAL SCREENING FOR SIGNIFICANCE OF IMPACTS

RIDGE TO REEF PROGRAMME
PROJECT SCREENING FORM

General Information

Activity: Chicken rearing to:

(a) Generate manure that can be used as an organic fertilizer so that the use of chemical fertilizers can be eliminated in farming practices and

(b) Raise funds for a basic school

Contractor/Grantee: NEPT

Duration: One year

Location: Rock Spring All Age School

Description of Activity

The Rock Spring Community Club will rear chickens and compost the manure from the chickens into an organic fertilizer. The compost will be used on a demonstration plot to cultivate vegetables and to compare the effectiveness of the organic fertilizer to that of the chemical fertilizers. The tree nursery project in the community, sponsored by the Canada/Jamaica Green Fund will also benefit from the use of the organic fertilizer for the propagation of seedlings.

A maximum of 800 chickens can be reared and the sale of chicken and compost are potential sources of revenue for the community funds to establish a basic school.

INSTRUCTIONS

Completing The Screening Form

For each section indicate the level of impact that the project activity is likely to have. Only negative/adverse impacts should be noted. The criteria must be satisfied in each case for the impact to be defined below:

Minimal Impact

- Short duration (hours, days, a few weeks)
- Does not result in permanent damage to the environment or human health
- Either no mitigation measures are required or only simple, low cost mitigation measures are required

Moderate Impact

- Duration spanning many weeks or months

- May result in permanent damage to the environment or human health if no mitigation measures are implemented
- May be a number of minimal impacts that can result in a cumulative impact that is moderate
- Mitigation measures are required to prevent permanent damage

Significant Impact

- Duration spanning months or years, and may continue after the completion of the project or activity
- Will result in permanent damage even with mitigation measures
- May be a number of minimal and/or moderate impacts that can result in a cumulative impact that is significant
- Mitigation measures are required that are usually costly; may require proponent to look at less costly alternatives

Notes:

- If an answer to a question is maybe, consider the worst case scenario.
- If there is uncertainty about the extent/intensity of an impact, it should be categorized as an impact at the more intense level. For example, if there is uncertainty about whether the impact is small or moderate, indicate that it is moderate.
- If a project is included on the Natural Resources (Prescribed Areas) (Prohibition of Categories of Enterprise, Construction and Development) Order 1996, completed permit application, licence application (for the discharge of trade/sewage effluent) and Project Information Forms (PIF) must be submitted to the NRCA. They will advise if an Environmental Impact Assessment is required. See Appendix 2 for the list/types of project included in the Order.
- If a project requires the abstraction of water from surface or underground resources, a licence application must be submitted to the Water Resources Authority.
- The assessing officer is to complete the screening form and evaluate the results to determine the types of environmental impacts that may occur as a result of the project
- The assessing officer should note the positive impacts or cumulative impacts associated with the project in the space provided for other comments near the end of the screening form
- Where the impacts are found to be minimal after the evaluation is complete, attach information on the nature of the impacts and the mitigation measures, if applicable. This information is to be submitted with the screening form to the reviewing officer
- Where the impacts are found to be moderate or significant after the evaluation is complete, the assessing officer should conduct an environmental review in accordance with the requirements at Appendix 1 and submit the review with the completed screening form to the reviewing officer

- If the reviewing officer accepts the result, the project can be implemented; if not, the review process should be restarted from the project definition and development stage (Appendix 4 contains a flow chart of the environmental screening process)

- Appendix 3 has a list of the principal agencies that play a role in environmental management in Jamaica that should be consulted as a stakeholder if the project activities fall within their area of responsibility

EVALUATION OF RESULTS

Minimal Impacts

Where only minimal impacts have been indicated, no environmental impact assessment is required, just a list of minor impacts and the associated mitigation measures if applicable.

Moderate Impacts

Where moderate or significant impacts have been indicated, the assessing officer who should be a suitably qualified environmental professional should conduct an environmental review. The review should be in accordance with the format described at Appendix 1

Significant Impacts

Where only significant impacts are likely to occur, the project proponent should examine alternatives to the project or implement mitigation measures where these are found to be cost effective.

Notes:

1. Where an environmental review is conducted, a copy of the results of the review should be sent to the Natural Resources Conservation Authority (NRCA)

2. Monitoring reports should be sent to the NRCA during the construction and operation phases of projects that require an environmental review

	Small impact	Moderate impact	Large impact	Can the impact be reduced or eliminated by a project change or by mitigation measures [State how]
AIR QUALITY (INCLUDING NOISE)				
1. To what extent will the following affect air quality?				*Ensure that contents of the compost bins are not exposed to water/rainfall*
Use of pesticides				
Use of methyl bromide (ozone depleting substance)				
Emissions from machinery used for land clearing, construction				
Fugitive dust from land clearing, quarrying, construction				
Emissions from increased vehicular movement				
Emissions from industrial facilities				
Odours from waste disposal or recycling facilities				
Odours from wastewater treatment/disposal or recycling facilities				
Noise & vibration from machinery for land clearing, construction, mining, blasting				
Noise & vibration from increased vehicular flow				
2. Is the project designed to comply with the NRCA's national standards/regulations governing air quality and air pollution? Yes___ No___				
3. What will be the extent of the impact from noise (e.g. from blasting, movement of heavy equipment such as tractors, trucks etc., driving piles)				
WATER RESOURCES ***[E.g. rivers, springs, underground water etc.]***				
1. To what extent will the following affect water resources:				
Contamination from the use of pesticides, fertilizers, manure and other agricultural runoff				
Eutrophication of surface water from fertilizer use and pollution [solid waste or wastewater] upstream				
Water abstraction from surface or underground water resources or spring				
Sedimentation/land filling caused by agricultural practices, construction, quarrying, mining				
Pollution caused by improper waste and wastewater disposal practices				

	Small impact	Moderate impact	Large impact	Can the impact be reduced or eliminated by a project change or by mitigation measures [State how]
Dams or water retention structures				
Increased surface runoff due to paved areas including roads, clearing vegetation from land				
2. Is the project designed to comply with NRCA's trade effluent standards or sewage effluent standards Yes___ No___				
COASTAL RESOURCES				
1. To what extent will the following affect coastal resources (marine water quality, coral reefs, seagrass beds etc.)?				
Contamination from the use of pesticides, fertilizers, manure and other agricultural runoff				
Eutrophication of coastal water from fertilizer use, manure and pollution [solid waste or wastewater] upstream				
Sedimentation/ land filling of wetlands and bays caused by agricultural practices, construction, quarrying, mining upstream				
Pollution caused by improper solid waste and wastewater disposal practices				
Dredging				
Increased surface runoff due to paved areas including roads and clearing vegetation from land				
Waste oil from boats and other recreational equipment				
2. Is the project designed to comply with NRCA's trade effluent standards or sewage effluent standards Yes___ No___				
LAND RESOURCES				
1. To what extent will the following affect land resources:				*Chicken waste generated from slaughtering must be disposed of in a manner so that vermin and rodents are not attracted to the area. Chicken entrails could be used as animal feed if feasible.*
Deforestation (land clearing, fuel wood and construction)				
Soil erosion (land clearing for construction & farming)				
Mining or quarrying				
Land filling (wetland or swamps)				
Disposal of hazardous waste (waste oils, PCBs, asbestos)				

	Small impact	Moderate impact	Large impact	Can the impact be reduced or eliminated by a project change or by mitigation measures [State how]
Disposal of solid waste				
2. (a) Has reuse or recycling of solid waste been incorporated into the project design? Yes **X** No____				*Composting chicken manure*
(b) Will this enhance the project or mitigate potential adverse impacts? Yes **X** No____				
HUMAN HEALTH				
1. To what extent will the following affect human health:				*Ensure that contents of the compost bins are not exposed to water/rainfall*
Fugitive dust (from construction, mining, quarrying)				
Noise & vibration (from heavy duty vehicles, blasting)				
Odours (solid waste, wastewater)				
2. Will the project cause the release of chemicals that are harmful to health, corrosive, flammable, toxic (e.g. PCBs, asbestos)				
NATURAL HABITATS & ECOLOGICAL RESOURCES				
1. To what extent will the following affect natural habitats & associated flora & fauna:				
Noise & vibrations (mechanical equipment, vehicles, blasting)				
Fugitive dust (construction, mining)				
Deforestation (land clearing, fuel wood)				
Soil erosion (agricultural practices, construction)				
Disposal of solid waste				
Disposal of trade & sewage effluent				
Pesticide & fertilizer use				
2. To what extent will destruction or loss of natural habitat affect endemic plant or animal species (e.g. death, migration etc.)?				
3. To what extent will destruction or loss of natural habitat affect plant or animal species that are not endemic (death, migration etc.)?				

	Small impact	Moderate impact	Large impact	Can the impact be reduced or eliminated by a project change or by mitigation measures [State how]
4. Will the project be situated in a protected area declared by the NRCA? Yes **X** No___				*Great Morass*
VISUAL RESOURCES				
1. To what extent will views, vistas & aesthetics of the community be affected?				
2. How will future extensions or expansions to the current project affect views, vistas & aesthetics of the community?				
HISTORIC & ARCHAEOLOGICAL RESOURCES				
1. To what extent will the project affect historic or archaeological resources				
2. Will project be site near to any site or structure with historic or archaeological significance? Yes___ No___				
OPEN SPACE & RECREATION				
1. To what extent will the project affect current and future open and recreational space				
2. Is this open and recreational space important to the community? Yes___ No___				
COMMUNITIES				
1. To what extent will the following aspects of a community be adversely affected:				
Transportation & traffic				
Population size and density				
Employment opportunities				
Housing				
Farming/agriculture				
Water				*Collect rainwater for chicken rearing*

	Small impact	Moderate impact	Large impact	Can the impact be reduced or eliminated by a project change or by mitigation measures [State how]
Recreation				
2. Is there any public/community opposition to the project? Yes___ No **X**				
EMERGENCY RESPONSE MEASURES				
Have emergency response measures been incorporated into the project? Yes____No **X**				*a. Identification of an alternate source of water for chicken rearing when river in the area runs dry* b. *Safety measures to prevent chickens contracting diseases e.g. footbath to wash the soles of shoes of those entering the chicken coop*
INDIRECT/CUMULATIVE IMPACTS				
Are there indirect and/or cumulative impacts resulting from project activities? Indirect Yes____No **X** Cumulative Yes____No **X**				

1. Other Comments:

The bedding for the chicken coop should be such that it can also be composted e.g. sawdust from the nearby sawmill. This is also a good way for the sawmill to get rid of its waste.

2. Are there feasible mitigation measures to eliminate or reduce adverse impacts? [Summarize from checklist]

   a. Ensure that contents of the compost bins are not exposed to water/rainfall so that foul odours are not generated

   b. Chicken waste generated from slaughtering must be disposed of in a manner so that vermin and rodents are not attracted to the area. Chicken entrails could be used as animal feed for other livestock in the area if feasible.

   c. Identification of an alternate source of water for chicken rearing when the river in the area runs dry e.g. collect rainwater

d. Safety measures to prevent chickens contracting diseases e.g. footbath to wash the soles of shoes of those entering the chicken coop

3. Which of these mitigation measures have been incorporated into the project design?

   None of the above were initially incorporated into the project, however all were subsequently incorporated when problems occurred with the exception of the possibility of using the chicken entrails for animal feed

4. Are there provisions in the project [where applicable] for regular maintenance [of equipment etc.] to prevent adverse impact on the environment? Yes____ No **X**

Explain: *Project should include the development of a maintenance programme for the chicken coops and the composting operations*

5. Are the overall impacts: Minimal **X** Moderate_____ Significant_____

6. State the benefits of the project [social, economic, environmental]

   Social benefits include a strengthened community club with project experience, a strengthened relationship between the community and the school, fresh chicken meat produced locally, training for community members in organic farming and part time employment for some community members

   Economic benefits include the creation of a fund from which community projects can be financed (initially the basic school), income generation for the community from the sale of chicken, compost, and tree seedlings.

   Environmental benefits include the recycling of chicken manure to make organic fertilizer, the use of organic fertilizers instead of chemical fertilizers for farming and for the cultivation of tree seedlings which will contribute to river and coastal water improvement

7. Is an environmental review required Yes____ No **X**

   (Please attach the environmental review to the screening form so that it can be reviewed by the reviewing officer)

8. Is the project recommended for implementation, if no state reasons

   Yes **X** No____

   On condition that the mitigation measures are incorporated into the project

Assessing officer: *Ianthe Smith* Date *29/08/00*

9. Are the results of the assessment accepted by the reviewing officer, if no state why?

   Yes____ No_____

_____

_____

_____

_____

Reviewing officer _____ Date _____

Notes:

Where a project is recommended for implementation, there should be:

(a) Strict adherence to the implementation of the mitigation measures

(b) Monitoring of the effectiveness of the mitigation measures

(c) Monitoring of the project to anticipate and address environmental impacts which may not have been identified prior to the start of the project

CWIP

Coastal Water Quality Improvement Project