New York State

Adirondack Park Agency

Compensatory Wetland Mitigation Guidelines

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Summary of Major Provisions of Adirondack Park Agency
Compensatory Wetland Mitigation Guidelines*

1. All projects shall be designed and undertaken to first attempt to avoid all impacts to wetlands.

2. Secondly, all projects must attempt to minimize the amount, intensity and duration of wetland impacts.

3. Impacts are allowed to occur only when compensation has a high probability of success and the development project provides a necessary public good.

4. Compensatory mitigation should be "in-kind" with the following replacement ratios:

   a) 1.5 for 1, in the same subcatchment;
   b) 2 for 1, in the same major watershed or ecozone; and
   c) 2.5 for 1, in an adjacent major watershed or ecozone;
   d) higher ratios for non-adjacent watersheds or ecozones, to be determined by the Agency on a project by project basis.

5. Compensatory mitigation should be "on-site" with the following replacement ratios:

   a) 1.5 for 1, if replacing at higher value in the same subcatchment;
   b) 2 for 1, if replacing at equal or higher value in the same major watershed or ecozone or replacing at lower or equal value in the same watershed; and
   c) 2.5 to 1, if replacing equal or higher value in an adjacent major watershed or ecozone;
   d) higher ratios, if replacing high value wetlands, to be determined by the Agency on a project by project basis.

6. Mitigation proposals should be based on plans containing clear specific detail, short and long-term goals and measurable performance criteria.

7. Mitigation preferably should be completed prior to starting the permitted project or implemented concurrently with it.

These are guidelines, not rules. Failure to meet them will not automatically result disapproval of an application. Each application will be judged on its particular me including all other aspects of its impact on the resources of the Adirondack Park and mitigation measures or offsets proposed.

*See the full text of the compensatory wetland mitigation guidelines for the complete set of provisions and for explanatory details.

New York State Adirondack Park Agency

Compensatory Mitigation Guidelines

I. Purpose

Since the 1780's, it has been estimated that New York State has lost 1.5 million acres or 60% of its original wetland acreage (Mitsch & Gosselink, 1993). The New York State Freshwater Wetlands Act (Environmental Conservation Law Article 24, hereafter "the Act") recognizes that wetlands provide a variety of functions and benefits important to the people and environment of New York. The Act requires that wetlands on private and public lands be preserved, protected and conserved "consistent with the general welfare and beneficial economic, social and agricultural development of the state." It is a general state wetland policy that there be no net loss of wetlands acreage or function.

The Department of Environmental Conservation has extensive experience in wetland mitigation. Its 1993 document, "Guidelines on Compensatory Mitigation" has been invaluable in preparing these guidelines.

The Agency is charged with the administration of the Freshwater Wetlands Act and Adirondack Park Agency Act within the Adirondack Park to both protect wetlands and accommodate beneficial development that may impact them through the regulatory program. Mitigation of project impacts affords the opportunity to resolve this apparent paradox. Section 578.10 of the Agency's Rules and Regulations (9 NYCRR) describes the conditions under which wetland disturbance permits may be issued based on the value classification of the wetlands

This memorandum provides general guidance to Agency staff and others on mitigation as part of the freshwater wetlands regulatory program.

The science of restoring, creating or enhancing wetlands in a mitigation context is evolving. Caution should be used when permitting wetland alteration on the expectation that losses can be fully compensated. Priority must be placed on avoiding impacts given the uncertainties associated with compensation.

There is no "cookbook" approach to mitigation that will cover every possible case. The Park's wetlands are too diverse and the range of projects with a potential impact on them is too great. Mitigation for each project must be decided on the basis of the character of a

particular wetland, the nature of the project's impacts and the opportunities to first avoid and minimize then, if not feasible, to offset these impacts. The guidance provided here offers a framework for project-specific decisions.

Mitigation in an enforcement context is distinctly different from mitigation as part of the permitting process. Illegally altered wetlands must be restored to their condition prior to the violation unless the violator can show that it is not technically feasible or that restoration will result in even greater damage. Only then can alternatives to restoration be considered.

This guidance memorandum deals with compensatory measures an applicant may wish to take to offset project impacts that cannot be avoided or further minimized in order to qualify for a wetland permit. The aim is to fully replace wetland acreage and all functions and benefits lost as a result of the project.

General mitigation planning concepts follow, with more detailed planning considerations listed in the Appendix. These guidelines should be applied sensibly and flexibly. The detail needed, the intensity of follow-up monitoring, and the requirements for performance guarantees must be considered in the context of the value of the wetland being impacted and the magnitude of the impacts. All mitigation proposals, even if relatively small, should be documented, however.

II. Legal Effects of These Guidelines

These are Guidelines, not rules. Failure to meet them will not automatically result in disapproval of an application. Each application will be judged on its particular merits, including all other aspects of its impact on the resources of the Adirondack Park and mitigation measures or offsets proposed. If these guidelines are not met, the Environmental Program Specialist assigned to the application will consult with the Agency's technical staff, and may, depending on the individual case, recommend that a public hearing be held to further examine compensatory mitigation coals and methods.

III. What Is Mitigation?

Wetland mitigation is defined as any activity that seeks to avoid or lessen negative effects to wetlands from development and/or to compensate for those negative effects. This definition is based on others in use throughout the country and those found in wetlands texts. A semi-hierarchical approach to mitigation recognizes the practical nature of the project review process.

The approach used by Agency staff reviewing a project for wetland mitigation involves applying the following sequential procedure.

1. Avoidance: Potential impacts and their sources are identified. Agency staff advise, consult with the project sponsor, project consultants and independent experts, then formulate alternatives that will theoretically eliminate impacts to the wetland. (This step and the following are also used by the Regulatory Programs Division to assess and modify projects in terrestrial and aquatic systems.)

2. Minimization: Constraints such as economic viability, project site configuration and size, and surrounding resources of note may militate against avoidance. If the project cannot be modified completely to eliminate impacts to the wetland, Agency staff, against in consultation with the project sponsor and consultants and independent experts, develop modifications in the project proposal to reduce the amount, intensity and duration of impacts.

3. Compensation: If negative effects accruing from the proposed project cannot be avoided, the project sponsor may be required to compensate for wetland acreage or functional losses from those effects depending upon the value classification of the affected wetland and the severity of the impacts. The higher the class or the greater the impact, the greater the burden of proving overriding need so as to avoid having to fully compensate for unavoidable impacts.

Compensation mitigation can take several forms, all of which have been attempted in the Adirondack Park:

a. Restoration: This compensation activity attempts to restore, reclaim, rehabilitate or recreate the hydrologic regime and other features of a previously disturbed wetland. This is a highly effective and preferred technique since the site to be manipulated was at one time a functioning wetland. If the water regime can be restored chances are good that the other things that make a wetland will appear in time and that the natural wetland functions will be successfully re-established. Water is the key driving force in all wetland systems. Oftentimes activities as simple as filling ditches, collapsing or plugging drains and removing other drains diversions will restore historic water quantity.

b. Creation: Creation is the construction of a new wetland, where none occurred before, by flooding or excavating dry upland. This technique is perhaps the most prone to failure. The wetland creator must guarantee water of sufficient quality in the correct amounts and at the correct times of the year to maintain semi-aquatic plant and animal communities in perpetuity. Guaranteeing adequate hydrology may involve very complicated engineering and continual water level monitoring and manipulation, and may not be appropriate unless undertaken in a very controlled situation and to provide specific functions such as wastewater treatment.

On the other hand, creation can be successful when it is done by enlarging an existing wetland or waterbody. "Contiguous" creation must be carefully evaluated to

offer protection for the main wetlands. Often, too, several acres of wetland can be constructed adjacent to an existing wetland or aquatic system for the cost of creating one acre of isolated wetland from upland.

c. Enhancement: Enhancement is the manipulation of one or more of the following: physiography, hydrology, vegetational succession. The manipulation is intended to accelerate, control and guarantee change of "low" quality wetland to "high" function and value wetland in exchange for loss of another "low" value wetlands. Enhancement is a less preferred mitigation technique than restoration because it results in an overall reduction of wetland acreage. It is the most recent and least proven technique to compensate for wetland loss.

"High" and "low" are subjective terms based on perceived or measured quality of the wetland system. High value wetlands are those categorized as 1, 2 or in §578.5 of the Agency's Rules and Regulations, (9 NYCRR) such as bogs, deciduous forested swamps, emergent marshes and shrub swamps. High value wetlands usually provide multiple values such as flood and storm control, wildlife habitat, subsurface water resources protection, pollution treatment, erosion control, nutrient cycling, recreation, education and scientific research, and open space and aesthetic values (ECL Article 24 §24-0105.7. High value wetlands may also be the repository of endangered or threatened species, have high productivity or diversity, be associated with surface water systems or significant geologic features, or provide important social values (9 NYCRR §578.5).

In principle, enhancement trades an area of chronically low value wetland for direct manipulation of a different and larger area of low value wetland. The manipulation alters the low value wetland so that it produces a higher level of value in a shorter period of time than would have occurred naturally. It is argued that the net loss of acreage is more than made up for by the acceleration to high functioning. It is important to note that the lost wetland acreage should have little opportunity to become high functioning. Enhancement should be considered as appropriate mitigation when existing important functions of the enhanced wetland are not impaired by the alterations.

IV. General Mitigation Planning Concepts

1. Mitigation Goals - Simple establishment of wetland vegetation is not acceptable as a mitigation project. The replacement wetlands' performance must achieve the performance levels of the lost wetlands. Meeting clear and specific performance standards is the measure of successful mitigation.

2. Replacement Ratios - The Agency will generally require project sponsors to mitigate for impacts to flood storage and water quality functions within, adjacent or contiguous with the

wetland impact site(s). It is very often necessary to replace more acreage than has been impacted to fully compensate for losses. Larger acreage may be needed as insurance against the uncertainties associated with trying to create a new wetland. Higher replacement ratios may also be needed to compensate for the long time it will take for a mitigation wetland to function at the same level and provide the benefits of the wetland being replaced.

3. Persistence. - Mitigation wetlands must persist over time and should be self-sustaining, but not necessarily remain static. Ecological changes will occur naturally in response to both internal and external processes. Wetlands should be designed with the capacity to adapt to changing conditions and still persist in some form. They should not require intensive long-term maintenance in order to remain as a viable wetlands, unless the maintenance is provided for as a project cost and is guaranteed in some manner such as bonding.

4. Monitoring - Integral to any compensation mitigation technique is the need to monitor. Monitoring is conducted to determine:

- if the compensation objectives are being successfully implemented,
- if and what contingency plans must be commenced, and,
- when the compensation goals have been met.

Mitigation projects should be monitored for an appropriate period, determined on a case-by-case basis. Long-term monitoring such as a five-year minimum monitoring period with annual or biannual reports and one or two additional reports at 10 and 15 years is generally needed to assure the continued viability of mitigation wetlands. Monitoring requirements should be coordinated with other regulatory agencies having jurisdiction over the project. There must be provisions to ensure that corrective action will be taken as needed until the wetland mitigation goals are met. Conversely, if it has become obvious during the initial five-year monitoring period that the mitigation goals have been met and that the mitigation effort will persist, provision should be made to terminate the monitoring effort.

5. Guarantees - An applicant must be bound to complete mitigation in accordance with the permitted plans and to do monitoring and remedial work as needed. An environmental monitor may be needed, at the applicant's expense, for larger or more complex mitigation projects. These requirements should be included as permit conditions.

Performance bonds or some other form of financial assurance that mitigation projects will be successfully completed and monitored will be considered for larger projects or projects with a high risk of failure. Financial guarantees should also be considered when
of the mitigation wetland may change, such as when a developer completes the sale of the property involved.

Regardless of size, mitigation wetlands are regulated by the Freshwater Wetlands Act after completion. They will be surveyed, typed and added to the Official New York State Wetlands Map for the county. Additional forms of long-term protection may be desirable as well; restrictive deed covenants or conservation easements are useful devices.

V. When Is Mitigation Required?

Compensatory mitigation is by definition undertaken to offset unavoidable impacts to a wetland as a result of a specific project. Proposals for wetlands restoration, creation or enhancement are not acceptable as mitigation if the effort is being undertaken as part of a separate program to restore or create wetlands, such as the Fish and Wildlife Service's Partners in Wildlife Program or the Natural Resource Conservation Service's Wetland Reserve Program. The object of these programs is to increase wetlands; a mitigation wetland is designed to replace lost wetland acreage and functions. Using a non-regulatory wetland restoration or creation project as regulatory mitigation will result in a net loss of wetland acreage and functions. Neither should converted wetlands simply being abandoned be acceptable as mitigation unless additional efforts are specifically taken to restore wetland hydrology and vegetation, and reversion to wetland would not have occurred in the foreseeable future without human intervention. Permanent protection of an existing wetland by dedication, easement or fee title acquisition does not in itself constitute compensatory mitigation.

Compensatory mitigation as part of the regulatory process must be related to the impacts of a project. Applicants cannot be required to provide mitigation for losses not related to their project. Temporary disturbances, where pre-construction conditions are essentially restored, for example when laying a pipeline, do not require compensatory mitigation since there is no permanent loss. However, impacts to the wetland still must be first avoided or, if not possible, minimized as with any other project, and efforts to reduce disturbances during construction, such as providing erosion control, will still be required.

Applicants should be advised to consult with all regulatory parties (Army Corps of Engineers, Department of Environmental Conservation) early in the project design stage to assure that proposed mitigation measures meet all applicable standards and so that consistent terms and conditions can be developed for local, state and federal permits.

VI. Guidelines

Each wetland project that the Agency has reviewed since its inception has contained elements of mitigation. The hierarchical mitigation concept of avoidance, minimization and compensation has a long history at the Agency. The concept is a common sense approach

to determining the suitability of development activities on a site. The following mitigation protocol based on the current state of knowledge, past experience and the best ways of implementing the Agency's Rules and Regulations should be used:

1. All projects shall be designed and undertaken to first make reasonable attempts to avoid impacts to wetlands.

2. Secondly, if wetland impacts are unavoidable, all projects must attempt to minimize the amount, intensity and duration of impacts. Compensatory mitigation is only used when it can offset project impacts that cannot be avoided entirely or reduced any further.

3. If the project is such that compensation has a high probability of success, economically and ecologically, and contributes to the public good, the minimized impacts are allowed to occur and compensation is required.

4. If the project is proposed on a preexisting lot of record, is the only reasonable use of the land in question, and impacts are avoided or minimized to the greatest extent possible but wetland is still being impacted, the permit should be approved if the key values of Class I wetlands are not destroyed and on-site sewage disposal standards can be met or municipal sewage disposal is available.

5. The project should be denied even if it is proposed on a pre-existing lot of record and if the key values of a Class I wetland are destroyed or if on-site sewage disposal standards can't be met and municipal sewage disposal is not available.

6. If the project is such that compensation has a high probability of failure, economically or ecologically, and does not substantially provide a necessary public good, the project should be denied.

7. Compensatory mitigation should preferably be "in-kind," such as replacing a wetlands that is being altered with a wetland of the same type; e.g. replacing emergent marsh with emergent marsh. The functions and benefits of the replacement wetland are assumed to be generally the same as those of the wetland being replaced. Unavoidable impacts to other wetland functions that cannot be mitigated on-site may be mitigated by debiting on the following basis, with preference given to in-kind replacement:

In-kind:

a) 1.5 for 1, in the same subcatchment;
b) 2 for 1, in the same major watershed or ecozone (as defend by DEC Habitat Inventory Unit); and
c) 2.5 for 1, in an adjacent major watershed or ecozone;
d) higher ratios for non-adjacent watersheds or ecozones, to be determined by the Agency on a project-by-project basis.

Out-of-kind:

a) 1.5 for 1, if replacing at higher value in the same subcatchment;
b) 2 for 1, if replacing at equal or higher value in the same major watershed or ecozone or replacing at lower or equal value in the same watershed, and
c) 2.5 to 1, if replacing equal or higher value in an adjacent major watershed or ecozone;
d) higher ratios, if replacing high value wetlands, to be determined by the Agency on a project-by-project basis.

Replacement with the same wetland type maintains the amount of that type in some geographical context. It is the most conservative approach when project impacts have not been or cannot be fully assessed.

Replacement with a different type, for instance replacing forested wetlands with emergent marsh, is considered "out-of-kind" and is acceptable in limited circumstances. It is not always possible to replace some types of wetlands such as bogs or mature red maple swamps, and it is not always desirable to replace a wetland type. For example, the wetland type being lost may be predominant regionally. Successful replacement with a different, less common type can increase regional biological diversity. It may also better contribute to other regional conservation goals.

The reasons for choosing out-of-kind replacement should be documented as part of the permitting process.

Whether in-kind or out-of-kind, the proposed mitigation must provide substantially the same or more benefits than will be lost through the proposed activity. Trade-off of one significant function for another must be avoided. For example, flood control could be provided without replacing lost wildlife habitat, but should not be allowed. The full array of lost functions and benefits should be replaced as closely as possible.

8. Compensatory mitigation should preferably be "on-site," that is, undertaken in the same relative landscape position in the same subcatchment as the wetland impacted by a project. It does not necessarily have to be within the same site boundaries as the project, but it must involve the same subcatchment.

Off-site mitigation is acceptable and can be desirable in some circumstances. On-site mitigation may not always be possible or desirable. For example, the configuration or physical limitations of a site may preclude on-site compensation or the site may be contaminated. If a function is not site-dependent, mitigation done off-site may compensate for its loss. However, the benefits being provided by some wetland functions are site-dependent; others are not. Mitigation off-site does not compensate for loss of a function that is site-dependent but is not replaced on-site.

A function like flood control or storm water management usually must be replaced on-site if continued protection of the immediate downstream area is needed. Replacement of functions like water quality maintenance or nutrient export may be acceptable off-site if the mitigation occurs in the same watershed. Values like recreation, open space and aesthetics might be replaced within the same city, town or county. Wetland fish habitat must be replaced on the same body of water. An isolated wetland can be valuable for specific functional goals, if it is strategically placed, such as an open marsh located near upland nesting cover. Mitigation for lost wildlife habitat may be acceptable off-site within The same ecological zone as defined by the Agency.

The major point is that while the array of impacted functions and benefits should be replaced, it may be possible to separate them and compensate for different losses in different places. However, any development activity involving wetlands or the subsequent required mitigation activity should be viewed, planned, implemented and monitored in a local and regional watershed protection context. The reasons for choosing a particular mitigation strategy should be documented as part of the permit application process.

9. Mitigation proposals should be based on plans containing clear specific detail, short and long-term goals and measurable performance criteria. Project sponsors are responsible for retaining appropriate professionals for designing and implementing mitigation measures as a legitimate project expense. Innovative proposals should be encouraged, but they require more detailed planning monitoring and critical evaluation.

10. Mitigation preferably should be completed prior to starting the permitted project or implemented concurrently with it. Pre-project mitigation greatly enhances the Agency's ability to enforce or modify mitigation requirements since the permit can still be revised or revoked if necessary. Completing the mitigation prior to the project allows time to assess the likelihood of success.

However, up-front mitigation may not always be practical or desirable. For example, when mitigation work is done concurrently with the permitted project, soils and vegetation from the impacted wetland can be used in the mitigation work.

Mitigation must be incorporated into a construction schedule approved by the Agency and part of the permit.

VII. Grouping Mitigation Efforts

Scattered small-scale mitigation actions may provide limited benefits, may not persist over time and often are less successful. Consolidating efforts into a single larger project is more cost effective, is more likely to be successful, and is likely to provide more wetland benefits.

a. Joint mitigation projects are those where mitigation for a number of proposed projects is combined into a single, cooperative effort. A single mitigation project may be proposed by one applicant to compensate for impacts of a number of discrete projects, or by several applicants to compensate for the unavoidable impacts of their separate projects.

Each permitted project must still meet the requirements to first avoid and then minimize impacts. In-kind, on-site mitigation must also be considered on the individual permitted projects before compensation through a joint mitigation project is approved. The joint mitigation project should replace all functions cumulatively lost by the individual wetland alterations.

It is essential that responsibilities be clearly allocated between and among applicants and that all commitments are made legally binding

b. Mitigation banking means creating or restoring a large wetland in advance of specific projects requiring permits and mitigation. Mitigation "credits" are assigned to the functions and/or acreage restored or created in the "bank." As unavoidable project impacts are permitted in the area, credit is "debited" from the bank to meet the mitigation requirements for those permitted projects. Project impacts must still be avoided and minimized, and on-site, in-kind considerations must still be met.

The Agency is actively exploring, the concept of mitigation banking. It will be incorporated into the regulatory program when significant policy and operational questions are addressed. Separate guidance will be provided at that time.

VIII. Acknowledgements

Three documents were used extensively in developing these Guidelines and provided needed inspiration:

Division of Fish and Wildlife. 1993. Freshwater Wetlands Regulation: Guidelines on Compensatory Mitigation. New York State Department of Environmental Conservation, Albany, New York. 13 pp.

Mitsch, W.J. and J.G. Gosselink. 1993. Wetlands. Van Nostrand Reinhold, New York, New York. 722 pp.

Pierce, G.J. 1993. Wetland Construction, Enhancement, & Restoration Techniques. Wetland creation course notebook. Southern Tier Consulting, Inc., West Clarksville, New York.

Appendix

Considerations In Mitigation Planning

Pre-Application Phase

In pre-application discussions, applicants should provide the following:

1. a sketch plan of the impacted wetland and the mitigation wetland;

2. a written narrative and video or photographic description of existing conditions on the site to be affected by a proposed project, adjacent and nearby land cover and uses, characteristics of the wetland including size, boundaries, type and functions, and parameters such as hydroperiod, water depth and vegetative types;

3. location of the proposed project in relation to the wetland, the nature of the project and its potential impact on the wetland's acreage and functions;

4. the efforts made to avoid and minimize project impacts to the wetland and their feasibility;

5. the nature of any compensatory mitigation proposed, including location, total acreage, acreage by covertypes sought, type (e.g. restoration), associated wetland buffers, characteristics, hydrologic regime including hydroperiod and water depth, design and construction procedures to be used, management needs and provisions for, monitoring and long-term maintenance;

6. the goals of the mitigation activity described as specific functional attributes that can be assigned measurable structural elements.

Application Phase

The project described in the application should have been designed to first avoid and then, if avoidance is not possible, to minimize impacts on the wetland. This information should be documented as part of the application.

A detailed mitigation plan should be provided if the applicant wishes to offer compensatory mitigation for unavoidable impacts. The plan should include the date it was prepared and the date of any subsequent revisions, along with the name and qualifications of the author(s). For certain projects, the Agency will require appropriate professional input. The plan should address both the wetland impacted and the replacement wetland as follows:

1. Impacted Wetland

Provide a plan with sufficient detail on existing contours, grades, topographic features and profiles at a scale sufficient to assess project impacts on the wetland. Provide a separate plan or overlay at the same scale of the proposed project features.

Provide a narrative which describes:

- acreage and boundaries
- type and structure of the wetland, including vegetation
- wetland function and values
- hydrology including, source and quality of water and hydroperiod
- soil characteristics and other pertinent information, such as water depth and wildlife present
- nature of the project impacts and the changes they will cause, including the timing of the impacts

Cite the source of data.

2. Mitigation Wetland

Provide a map with sufficient detail and at a scale to be able to determine where the replacement wetland will be located and its size, boundaries and topographic features.

Provide a narrative which describes goals and specific objectives for the mitigation wetland, including the functions and benefits to be provided and clear performance standards and criteria for assessing project success.

Describe physical, ecological and hydrological characteristics in sufficient detail to be able to assess whether losses in the impacted wetland are mitigated. Characterization should include, but not be limited to, desired vegetational covertypes, water depth and hydroperiod, reference wetland data.

Provide details on construction, including:

- diking, excavation, or other means by which the wetland will be created
- construction schedule and equipment to be used
- measures to control erosion and sedimentation during construction
- plantings – plants to be used, source and type of stock, procedures including planting protocol and spatial arrangements, area to be planted, schedule, replacement guarantees. If vegetation from the wild will be used, identify the source and measures to prevent introduction of undesirable exotics.
- soils - suitability of *in situ* soils for water retention, source and type of imported soils, other soil treatments.
- chemicals -- explain the purpose for using chemicals and the precautions to be taken to minimize use and to protect the wetland.

Provide details on management of the mitigation site, including:

- measures to assure persistence of the wetland
- vegetative management
- sediment and erosion control
- monitoring plans, including methods and schedule for data collection and provisions for mid-course corrections
- provisions for long-term protection of the site, such as permanent conservation easement
- provision for bonding or other financial guarantees

Describe plans for periodic reporting, including during and at the end of construction, and during and at the end of the monitoring period. Reports should be brief, concise and supported with land-based photography or videography from fixed locations. Air photography is desirable but not essential in most cases. The reports should document success or failure of achieving the structural goals.

Identify the name, qualifications and experience of the person(s) implementing the mitigation plan.