NORTHERN WATERSHED RESTORATION STRATEGY

SUBMITTED BY:

NORTHERN WATERSHED WORKING GROUP

RESTORATION STRATEGY FOR THE NORTHERN WATERSHED

1.0 Introduction

1.1 Background

In his 1998 State of the Union Address, President Clinton announced a major new Clean Water Initiative to speed the restoration of our nation's waters. This initiative is designed to achieve clean waters by encouraging federal and non-federal agencies, other organizations and interested citizens to work in a collaborative manner to restore our highest priority watersheds. In October, 1997, Vice President Gore directed the Department of Agriculture (USDA) and the Environmental Protection Agency (EPA) to work with other federal agencies and the public to prepare the action plan that would form the foundation for this collaborative effort. The plan was completed in May, 1998; it is called the Clean Water Action Plan (CWAP). The federal government is committed to contributing its technical and financial resources to the implementation of the Plan, but only to those states, territories, and tribes that meet the Plan's requirements and time lines.

Guam responded to this federal offer and to the opportunity to work together to restore and protect our waters, by creating an interagency work group to design a CWAP for Guam. The group was formed in June, 1998. The group worked quickly and after less that two months released the first required CWAP product, the Unified Watershed Assessment. This document describes the CWAP and the process used by the group to respond to the CWAP challenge, and presents the group's Unified Watershed Assessment that describes and prioritizes Guam's watersheds. This document provides the basis for the development of the next CWAP requirement, the Restoration Strategy for Guam's priority watersheds. The Restoration Strategy presents the group's proposed restoration activities for the Northern Watershed.

1.2 Restoration Strategy Development Team Organization

The Water Planning Committee (WPC) was formed on August 1987 under Section 57034 of Title 10, Guam Code Annotated (GCA), Public Law 17-87 authorizes and directs the Governor of Guam and the GEPA Administrator to enter into agreements with the agencies of the United States of America. The WPC first convened in August 1987 and became inactive in 1989.
The committee was re-established in June of 1998, in time to work with the new national water initiatives announced by President Clinton in his 1998 State of the Union Address. The WPC was formed to delineate watersheds on Guam, and to prioritize the watersheds in terms of those with the greatest need for the development and implementation of restoration strategies. In July of 1998, the Natural Resources Conservation Service (NRCS) presented a map to the WPC that delineated watersheds on Guam. The WPC then organized those watersheds by category based

on national criteria, the data available for each watershed, and the severity of environmental impacts suffered by each watershed.

The Northern Watershed was designated by the Water Planning Committee as the priority for the development and implementation of a restoration strategy. This was done because the Northern Watershed comprises the Northern Guam Lens (NGL), which was designated as a sole source aquifer by the USEPA in 1978, under the provisions of Section 1424 (e) of the federal Safe Drinking Water Act and is the source for the vast majority of Guam's drinking water. The Northern Watershed Working Group was appointed by the WPC in July 1998. It consists of the Department of Agriculture, Department of the Air Force, Natural Resources Conservation Service, Guam Waterworks and Guam EPA, with the Water and Environmental Research Institute (WERI) being designated as the Group Leader.

1.3 Northern Watershed Restoration Strategy Rationale

The Tumon Bay area of the Northern Watershed was designated as the highest priority watershed in the 1998 303(d) list for Guam for which Total Maximum Daily Loads (TMDLs) need to be developed. The restoration strategy described herein is aimed at the eventual development through a phased approach of establishing TMDLs for specific chemicals in the Tumon/Yigo Sub-basin. The specific chemicals in groundwater and surface water in the Tumon/Yigo Sub-basin for which TMDLs need to be developed are shown in Figure 1 and in Table 1. The Tumon/Yigo Sub-basin was delineated as the Yigo Sub-basin in the NGL Study (1982) (Figure 2). Delineation of the sub-basin was based on the configuration of the volcanic basement which in part controls the occurrence and flow of groundwater within the aquifer. The topography of the upper surface of the basement acts to provide sub-surface groundwater divides which partially separate groundwater connection in different parts of the aquifer. The assumption is that precipitation which infiltrates within a particular sub-basin will recharge groundwater in that sub-basin and will not impact or flow into other sub-basins.

This document refers to the subject sub-basin as the Tumon/Yigo Sub-basin, shown in Figure 3 as part of the Northern Watershed. This was done because groundwater not intercepted by pumping wells within this sub-basin flows beneath Tumon Village and discharges to Tumon Bay. Any contamination present in this portion of the aquifer will, therefore, ultimately affect groundwater production in Tumon Village and recreational beaches along the bay, which receives groundwater discharges in the form of springs and seeps.

Tumon Bay is an area that is currently under intensive recreational use and can be characterized as "threatened water which currently fully supports beneficial uses... but is expected to degrade as a result of (impact) from planned development..." (EXPECTATIONS FOR IMPLEMENTATION FOR CLEAN WATER ACT SEC. 303 (D)). In light of the expected increase in development in Tumon, a decrease in impacts to the Bay is not evident in the near future. Because of its economic and recreational importance to Guam, Tumon Bay needs to be monitored closely for impacted water quality due to storm water drainage, the occurrence of high fecal bacteria counts found in the sediment at the shore of Tumon Bay (a study by E. Matson of UOG titled "TERRESTRIAL GROUNDWATER SOURCES OF FECAL INDICATOR BACTERIA IN GUAM"), the alteration of groundwater flow under Tumon Bay due to active hotel construction (MATSON, 1996) and high nutrient concentration in Tumon Bay spring discharges resulting from possible use of fertilizers on hotel grounds near the bay (Denton, 1998). Our proposal is to earmark this bay as high priority site for TMDL development and to conduct a two (2) year study at this bay that will include physical and chemical analysis, toxic pollutant analysis and further water quality characterization by biological assessments.

2.0 Geology

Guam is the largest and southernmost island of the Mariana archipelago in the west central Pacific (Figure 4). It is located about 3,800 miles west-southwest of Hawaii and 1,600 miles east of the Philippines. The island is about 30 miles long and 4 to 12 miles wide.

Northern Guam is underlain by at least a 250-meter section of Neogene limestones, deposited as reef systems on an early Tertiary seamount (Tracey et al, 1964) (Figure 5). The two aquifers in northern Guam are the Miocene Barrigada Limestone, considered by earlier studies to represent deeper water, off-reef platform conditions and the Pleistocene Mariana Limestone which contains a wide spectrum of shallow-water carbonate facies, but is believed on many lines of evidence to represent a Pleistocene reef-margin complex (Tracey et al, 1964, Schlanger, 1964). Geomorphically, northern Guam is a terraced plateau comprised of karstic areas the locations of which and degree of development are controlled by normal faults and shear zones extending into the volcanic basement (Barrett et al 1982).

Southern Guam consists of highly eroded terrain generally comprised of volcanic rocks. Carbonates are restricted to intermittently distributed coastal escarpments and narrow terraces where Neogene reef-margin facies persist. Volcanics range from pillowed flows along the southwest coast through thick and often slumped sequences of highly weathered agglomerates, tuffaceous mudstones, and graywackes further inland.

In central Guam and along the southeastern coast, the Mariana Limestone lies in either faulted or unconformable sedimentary contact with weathered volcaniclastics and the older limestones (Figure 5). In these areas, except Orote Point and the reef facies the Mariana is argillaceous (up to 16% by weight (Schlanger 1964), a condition that affects both groundwater and surface water hydrology. It should be noted that the Alifan limestone located in central Guam is not argillaceous and is highly permeable.

3.0 Hydrogeology

Guam is comprised of two equally sized hydrogeologic provinces. In the southern half of the island, groundwater is present in volcanic rock of low permeability, and the water table rises to hundreds of feet above sea level. In northern Guam, most groundwater is contained within the aquifer termed the Northern Guam Lens (NGL) that occurs within karstic and highly permeable Barrigada and Mariana Limestones. Groundwater flow occurs within the NGL both as diffused flow porous sections and conduit flow through solution channels. The water table rises from sea level at the coast to tens of feet in southern portions of the NGL where the limestone is in close proximity to volcanic rock which has contributed significant amounts of clay during deposition of the limestone thus reducing the permeability of the aquifer. The NGL was designated as a principal source aquifer in 1978 (Guam EPA).

Most of the freshwater supply is contained in a characteristic "lens" beneath the limestone plateau in the northern part of the island. This groundwater lens occurs in two conditions. Whenever the total depth of the porous limestone extends significantly below sea level, it is termed a "basal" condition. Under basal conditions the fresh groundwater lens is underlain by salt water. Where impermeable volcanic material protrudes into the aquifer at or near sea level, a "parabasal" condition exists (i.e.,. the fresh water lens is underlain by volcanics).

In the basal zone, freshwater exists in equilibrium contact with saltwater. Freshwater extends some 40 feet below sea level for each foot of head above sea level, as developed by pressure differences due to density differences of the fluids present in the aquifer. The transition zone between freshwater and saltwater is thickest near the coast, where it is affected by tidal forces, and thinnest at the furthermost point inland.

Generally the high permeability of the limestone aquifer limits the static head of groundwater to content, heads can reach up to 30 feet above sea level.

A quasi-equilibrium of such a groundwater lens is achieved by leakage from the lens to the sea through springs and seeps along the coastline, and recharge which takes place as rainfall percolates into the ground and flows through channels and interconnected pores in the limestone into the freshwater lens.

The porosity of the limestone occurs as well defined open spaces created by the presence of freshwater in the interstices of the rock. Secondary porosity within the vadose zone results from the dissolution of limestone by infiltrating rainfall which is initially under saturated with respect to calcite and becomes saturated as it approaches the water table. In the saturated zone, porosity development occurs at the base of the lens where mixtures of fresh and saline waters are again under saturated with respect to calcite. During quiescent geologic periods of time when Guam's elevation has remained relatively constant, horizons of increase porosity has developed.

Continual uplifting of the limestone plateau has resulted in large solution cavities being lifted above the water table. As these caverns lose their hydraulic support, collapse has taken place resulting in surface karst features being formed such as sinkholes, troughs and escarpments. Along and parallel to fault lines in the volcanic basement, this process has been magnified to the extent that major surface expressions have been created, such as the Yigo Trough, the Harmon Sink and Agana Swamp.

4.0 Restoration Strategy

The restoration strategy proposed herein has been scoped to focus on watershed restoration goals for the Tumon/Yigo Sub-basin which can be initiated and partially realized within the implemented as a phased approach which will lead to the development of chemical-specific TMDLs for this watershed. The proposed strategy for the first phase of restoration of the Tumon/Yigo Sub-basin consists of three task; 1) contaminant source identification and reduction, 2) innovative septic tank design pilot project, and 3) public education. The three tasks are outlined below. Specific actions within the three tasks proposed to be performed during the first year of funding are identified in the following sections. Cost estimates for each proposed action are presented in Section 5.0.

4.1 Source Reduction.

The major focus of the restoration strategy for the northern watershed will be the documentation, investigation, and eventual reduction of potential contaminant sources located within the Tumon/Yigo Sub-basin (Figure 3). Contaminants have not only impacted production wells in the sub-basin, they have also migrated to the coast where they are present in spring discharges to Tumon Bay, a popular recreational beach. This sub-basin is the area of major production of potable groundwater within the Northern Watershed, and has also been subjected to extensive urbanization. This urbanization includes numerous medium- and small-size industrial operations which use and store hazardous materials, and hotels located along Tumon Bay. These operations include dry cleaners, automobile repair shops, gas stations, and other small-scale industrial operations. Hotel operations include dry cleaning and the potential use of fertilizers and pesticides, as discussed below.

Reasons for delineating this area as a priority are basically two fold. Firstly, because of the facts stated above, it is critical that groundwater quality in this sub-basin is protected. As presented in the Northern Watershed Assessment Report (Guam EPA, 1998), chemical contaminants have already been detected in production wells within the sub-basin, and further groundwater quality degradation needs to be guarded against. Once chemical contaminants find their way into the aquifer, the most efficient method of removing them from drinking water is through wellhead treatment. This process is very costly.

Secondly, closer to Tumon Bay, the discharge zone for the Tumon/Yigo Sub-basin, high-density urbanization in the form of high rise hotels and condominiums has resulted in high capacity infrastructure systems, increased urban runoff, inadequate stormwater retention/detection systems, and potentially unquantified pesticide and fertilizer use on hotel grounds. Water samples collected from beaches and spring discharges to Tumon Bay have indicated elevated concentrations of fecal bacteria (Matson), nutrients (Denton), and thallium, and detections of TCA and PCE (Naval Facilities Engineering Command, 1996). High nutrient levels in spring water appear to spawn localized algal blooms that degrade the aesthetic quality of recreational beaches. Thallium concentrations in spring waters have been measured at levels well above the 2 ppb MCL of the safe drinking water standards. Two known uses of thallium are as an insecticide and rodenticide.

The restoration strategy proposed herein will focus on Tumon Bay and aquifer restoration in terms of the identification and reduction of contaminant sources responsible for occurrences of TCA, TCE and PCE in production wells in the sub-basin, and fecal bacteria, thallium, TCA, PCE, and nutrients in Tumon Bay springs and beaches. A likely source for the detections of PCE, TCA and TCE in groundwater is poor operational and disposal methods for solvents at dry cleaners. Two possible sources of thallium in spring discharges are pesticide and rodenticide use at Tumon hotels. Fertilizer use at hotels and various infrastructure leaks and associated operational and maintenance problems are likely sources of nutrients and bacteria, respectively, in spring discharges and beaches. The first step in the restoration strategy will be to establish background levels and seasonal fluctuations of contaminants in spring discharge along Tumon Bay.

4.1.1 Tumon Bay Restoration

The Proposed method to identify and reduce potential sources of spring discharge contamination will follow a strategy similar to the one proposed to be used for groundwater contamination in the sub-basin. Note that only the first bullet listed below in Section 4.1.1 is proposed to be accomplished during the first year of funding. A cost estimate for this action is presented in Section 5.0. The over all strategy consists of:

- Establish background and comprehensive seasonal variation in contaminant concentration resulting from varying rainfall conditions through sampling and analysis of each of the springs to be considered as part of this restoration strategy, even though chemical impacts to spring discharges have been measured by past investigations.

- An inventory and record search of suspected hotels and infrastructure systems.

- Investigate possible bacteria sources issuing from springs present along Tumon Bay, especially sources of the integrity of local sewage and drainage systems.

- Link possible sources to specific spring discharges through a series of dye trace studies.

C Assess spring discharges for nutrient and bacteria loading, and the proliferation of algal blooms to determine the relationship between nutrient and bacteria load and algae growth to the nutrient and bacteria sources.

C Reduce and eliminate contaminant sources determined to adversely affect the quality of spring discharges. By successfully reducing sources and measuring the reduction of chemical impacts to spring discharges would allow TMDL's to be developed for the various contaminants.

4.1.2 Aquifer Restoration

For TCA, TCE and PCE present in production wells in the sub-basin, the proposed restoration strategy to be performed in the years subsequent to the first year of funding will consists of:

C A search of inventory records of materials used and stored at various facilities, focusing on dry cleaning operations.

C From this records search, facilities which use significant quantities of materials which Contain TCA, TCE or PCE would be investigated by inspectors to insure that none of the hazardous materials have been or are being disposed of improperly or escaping into the environment due to inappropriate operations.

C Suspect facilities would subsequently be investigated by field crews collecting samples for chemical analysis of the above listed contaminants. Samples would be in the form of soil gas and soil matrix in order to determine the presence or absence of contaminants within the soil at the facility. If contaminants are found to be present, additional samples may be required to determine the extent and magnitude of contamination in order to assess the magnitude of the threat contaminants pose to human health and the environment.

C If a significant threat is determined to exist, appropriate remedial and removal actions would be designed and implemented to restore and protect the watersheds including enforcement of existing laws.

The Northern Watershed Working Group is proposing that the above investigative and remedial actions be undertaken over a period of years by consultants selected by the WPC under the supervision and management of GEPA which will supply any enforcement authority necessary for the performance of the work. Consultants will be selected by the WPC based on their responses to requests for proposals. Work will be contracted on an iterative basis whereby the scope of work for each phase of investigation will be determined by the results obtained from the previous phrase or phases of investigations. For example, the number and scope of investigations into facilities, hotels and infrastructure systems will be determined from the results of the record searches, and the number and scope of remedial and removal actions will be determined from the results of site visits and sampling. It should be noted that the strategy is a multi-year effort. Only those actions that have been scoped in terms of estimated costs are proposed for funding for the first year of implementation.

4.2 Innovative septic tank design pilot project.

Another impact to watershed groundwater was identified in the Northern Watershed Assessment Report (Guam EPA, 1998) as an increase in nitrate concentrations in production wells within the Tumon/Yigo Sub-basin, as well as elsewhere in the watershed. There are many possible sources of nitrate input to groundwater in the watershed; one of which is the use of septic systems for sewage disposal. Implementation of the I Tanota Land Use Plan is expected in the near future. Implementation of this plan will potentially increased the density of residential lots to four per acre in the Tumon/Yigo Sub-basin. If sewer systems will not be available in these areas, nitrate introduction to the aquifer would increased. To determine the extent to which current septic systems are a source of nitrate to the aquifer, a pilot project is proposed to compare effluent discharges from a current system to discharges from a septic system designed to reduce nitrate emissions. An example of a proposed design and specifications of the system to reduce nitrates from septic effluent are presented in Appendix 1.

The pilot project will consist of the installation of an innovative system at a residential site over the aquifer. Over a period of time designed to represent various weather conditions typical for the island, system effluent will be monitored within the leach field in terms of the parameters specified in Appendix 1. Over the same period of time, leachate will be sampled for the same parameters in the leach field of a conventional septic system at a near by residence. The selection of the conventional system will be based on the similarity of physical conditions and system usage between the two test case sites. Physical conditions such as the proximity of the two test sites, soil thickness and type, vegetation, weather conditions, and surface topography will be considered. System usage similarity will be based on the number and age of permanent and temporary residents, and lifestyle. A cost estimate for this action is presented in Section 5.0.

4.3 Public education

Appropriate educational programs would be designed to help restore the northern Guam watershed. They could focus on a number of issues and stakeholders, and employ a variety of teaching and training resources. The common denominator is an increased and educated awareness of the basic hydrologic components of the northern Guam watershed, and a working knowledge of the key environmental/economic parameters tied into its restoration. The educational program of the restoration strategy could include any or all of the following tasks:

- Introduce 2 semester course consisting of a number of sequenced water resource training modules designed for local school teachers at all levels. Modules could be offered and coordinated through UOG/College of Continuing Education.

- C Develop curricular materials for direct introduction into DOE and private school classrooms. Materials could include posters, coloring books, videos, slide sets, maps, field trip guides, water testing kits, etc. Materials will address a number of broad as well as specific issues including hydrologic cycle, hydrogeology, water production, field measurement techniques, well and stream management practices, pollution, water quality, toxicology, water and sewer transmission and treatment, economics, wetlands issues, flooding, sedimentation, and much more.

- C Develop short courses and/or workshops targeted to specific stakeholders in the community: politicians, planners, business community, government agency personnel, village mayors, teachers, professors, etc.

- C Arrange for full tuition, partial stipend scholarships at UOG for one or more graduate students in the Environmental Sciences Masters Program who would undertake thesis research projects on the northern Guam watershed.

5.0 Cost Estimates

! Tumon Bay spring sampling. Assumptions:

Sample 10 springs, 5 times each during one year. A total of 50 samples.
Sample for full chemical analysis.
QA/QC samples at 10 percent (field blanks and duplicates) = 10 samples.
60 samples at $1,520/sample = **$91,200**
Contractor labor : two people for 120 hours at $100/hr. (With reports) = **$24,000.**

Total cost = **$115,200**

! Installation and monitoring of innovative septic system. Assumptions:

Install one septic system similar to that in Appendix 1 = **$10,000.**
Install four lysimeters to monitor leachate quality at the site of the innovative design, and at a selected control site with a standard septic design (8 total).
8 lysimeters @ $ 4,000/ lysimeter = **$32,000**
Sample leachate from 8 lysimeters 5 times during one year = 40 samples.
QA/QC samples at 10 percent = 8 samples; 48 total samples.
Analyze leachate for nitrate, phosphate, and bacteria.
48 samples X $120/sample = **$ 5,760**
Contractor labor two people for 80 hours at $100/hr. (With report) = **$16,000**.

Total cost = **$ 53,760**

! Public education. Assumptions:

Two semester UOG course for school teachers.	**$3,000**
Curricular materials.	**$6,000**
Short course development and initial presentation	**$4,000**
Tuition scholarship and partial stipend	**$5,000**
Total Cost	**$18,000**

<u>Total first year project cost</u> **<u>$186,960</u>**

6.0 <u>Summary</u>

6.1 Implement an Innovative Septic Tank Pilot

Population over this sub basin is growing, along with an increased density of residential lots. The sewage infrastructure is expected to continue to be far from adequate. Concerns related to septic contamination of aquifer are growing, with increasing levels of nitrate concentrations in production wells within the Tumon/Yigo Sub-basin.

6.1.1 Proposed Action

1. Determine the extent to which current septic systems are a source of nitrate to the aquifer. Assess and compare the current system with an innovative septic tank system, one which is designed to reduce nitrate emissions.

Lead - GEPA
Cost - $52,000

6.2 Assess contaminant contributions from the Harmon Industrial Area

The Harmon Industrial area was once home to the Navy's Brewer Field, and now supports most of the Guam's light industries. It is immediately upstream of the Tumon-Maui well and upstream of Tumon Bay springs, both of which are experiencing some levels of contamination from industrial chemicals. It is highly probable that the source of the contamination of the Tumon-Maui well and Tumon Bay is this industrial area. This conclusion, though based on best professional judgement, is speculative, because we do not have site information for this area.

6.2.1 Proposed actions

1. Inventory the area for industrial concerns and type of chemical is utilizes in their operations. Complete a map and a GIS compatible database of information.
   Lead - Galt Siegrist, utilizing St. John's students
   Cost - $2,000 for supplies
2. Explore possibility of federally funded pontentially responsible parties (PRP) search.
   Lead - GEPA, coordinating with USEPA
3. Investigation and enforcement
   Lead - GEPA
4. Note - $35,000 additional is available from CZM for documentation, investigation, and reducation of potential contaminant sources in the sub- basin, and for public education. More tasks could be added, based on results of inventory and other analyses.

6.3 Clean - up Contaminated Drinking Water Production Wells.

The Tumon-Maui well is one of our major potential production wells (900+ gallons per minute), and is an important water source for GWA. It also provides "a window" into the aquifer. The well is contaminated (TCA and PCE,), and the Air Force has shut the well down.

The Air Force is not pursuing remediation or monitoring at the well. Past remediation on Guam has utilized air filters or charcoal filter systems, both of which face numerous technical challenges here, with our high mineral levels. Alternative, more innovative techniques for well remediation are being utilized and researched elsewhere and may be practical here on Guam.

6.3.1 Proposed Action

The WPC recognizes the contamination of this well as a major concern in the watershed. The WPC will table immediate action on this item, however, pending the outcome of several other issues (for example, decisions about well ownership).

6.4 Assess level of fertilizers/pesticides/herbicides utilized in Tumon Area

There is at least a perception that the aesthetics of Tumon Bay are declining due to perceived increasing levels of algae in Tumon Bay. And, elevated levels of thallium in several Tumon springs, are of concern. (Thallium is linked to the use of pesticides and herbicides.) It is possible that near shore impacts from landscaping practices may elevate levels of nutrients, pesticides and herbicides in the bay.

6.4.1 Proposed Actions

1) Conduct a survey of fertilizers and pesticides/herbicides utilized in Tumon Area
   Cost - $7,500
2) Conduct verification sampling, as deemed necessary.
   Example - 10 sites, 5 samples per site for metals and nutrients; $140/sample = $14,500

6.5 Conduct Baseline Monitoring (of downstream) Tumon Bay Springs.

All restoration projects should include in their design, the ability to evaluate the (lack of) success of the work. The springs along Tumon Bay are the outlet for ground water flow from the Tumon-Yigo sub-basin, and should be representative of ground water contamination levels. Sampling these springs will provide baseline data, data which is currently inadequate.

6.5.1 Proposed Action

1) Sample Tumon Bay springs
   Sample 10 springs, 4 times per year = 40 samples; Complete full chemical analysis;
   QA/QC; labor - 2 people for 100 hours (field sampling and report preparation)
   Lead - GEPA
   Total cost - $96,000

6.6 Public Education

Public education is key to preventing further groundwater contamination problems.

6.6.1 Proposed Actions

1) Three day hydrology course for Island teachers $4,000
2) Curricular materials
3) Short course development and initial presentation
4) Publication of annual "State of the Watersheds" $5,000
for both watersheds, which summarizes the results of the watershed restoration successes and progress. This might be used to produce a newspaper supplement.
5) Radio spots and/or publication of brochures targeted for those sectors that are contributing to ground water contamination problems.
6) Public recognition for "clean establishments."

7.0 References

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