

NAS Report 1 Abbreviated Implementation Plan: Biological and Water Quality Monitoring

| | Recommended for Implementation | Program Component | Recommendation | Description | Fiscally Feasible | Implementation Strategy | Additional Comments |
|----|--------------------------------|---|--|--|--|--|--|
| 25 | Done | Biological Monitoring | Measure the distribution of the CSR (108:32) | Measuring CSR distribution should be a high priority, using a randomized or stratified randomized approach throughout Landa Lake, Spring Island and other areas of potential habitat. | Yes | N/A | This study was conducted in 2014 by ZARA environmental as part of the Applied Research program. The study established a distribution during a low flow year; but did not establish a population estimate with confidence. This study could be expanded by conducting again during a normal flow year or attempting to establish a population estimate. |
| 26 | Done - in progress | Biological Monitoring | Continue monitoring index reaches (114:33) | Monitoring of index reaches needs to continue in order to assess trends and build on existing databases. | Yes - currently covered in existing budget. | N/A | This is already part of the Bio Monitoring work plan and program |
| 27 | Yes | Biological Monitoring | Develop quantitative sampling methods for the CSR (116:1) | New quantitative sampling methods are needed for the CSR to complement and improve upon the cotton lure approach. The comprehensive survey of CSR distribution proposed as part of the Applied Research Program should be given high priority. | Yes - conduct research as part of the Applied Research program | Add this research to the 2016 Applied Research work plan (Immediate Implementation approach) | *This project was previously proposed but did not make it through the planning process to implementation. The SC felt the Cotton Lure approach was sufficient. *Workshop participants generally supported establishment of new methods. |
| 28 | Yes | Biological and Water Quality Monitoring | Increase coordination and integration of the biological monitoring and water quality monitoring programs (115:9) | The bio monitoring and water quality monitoring programs are only loosely integrated. Increased coordination and integration of the bio monitoring and water quality monitoring activities is needed. | Yes | Utilize the Water Quality work group along with key individuals familiar with the Bio Monitoring program, to develop a strategy to implement this recommendation. (Immediate Implementation approach) | It is recommended that a scientific Ph. D be added to the HCP staff to assist with this workgroup facilitation, analysis and resulting implementation. |

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| 29 | TBD | Water Quality Monitoring | Enhance nutrient sampling. | <p>Enhance sampling for nutrients is recommended. It is expected that nutrients and other urban background contaminants may be more important than many of the specific toxins that are currently included in the sampling program. The planned elimination of many of these parameters after one or two initial rounds of sampling if significant detections are not observed is supported by the NAS.</p> | <p>Potentially - for this component to be added to the WQ program, another of equal fiscal impact would need to be removed.</p> | workgroup analysis and determination | <p>*As several years of data have been collected under the HCP WQ program and much has been learned, it is time to take a step back and revisit the WQ monitoring program from a holistic approach. It is recommended that a work group be formed to consider all NAS WQ recommendations and look for needed modifications based on data collected. *Additionally it is recommended that a scientific Ph. D be added to the HCP staff to assist with this workgroup facilitation, analysis and resulting implementation.</p> |
| 30 | TBD | Water Quality Monitoring | <p>Conduct additional residential herbicide, residential chemicals, and personal care product testing (113:9)</p> | <p>Household chemicals, personal care products and residential herbicides should be evaluated for their potential to be introduced into the springs and river systems.</p> | <p>Potentially - for this component to be added to the WQ program, another of equal fiscal impact would need to be removed.</p> | workgroup analysis and determination | <p>*As several years of data have been collected under the HCP WQ program and much has been learned, it is time to take a step back and revisit the WQ monitoring program from a holistic approach. It is recommended that a work group be formed to consider all NAS WQ recommendations and look for needed modifications based on data collected. *Additionally it is recommended that a scientific Ph. D be added to the HCP staff to assist with this workgroup facilitation, analysis and resulting implementation.</p> |

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| 31 | No | Biological Monitoring | Provide a clear mechanism to scale results to the entire spring and reach system (115:1) | The sampling programs do not provide a clear mechanism to scale results to the entire spring and reach system. It may be necessary to provide system-wide estimates of population densities. | No - the Bio Monitoring Budget is already maxed out. For this sampling to be added, another component would need to be dropped. | N/A | <p>*The purpose of expanding the index reaches to representative reaches (system wide representation) has not been determined. If this is considered, a rationale as to why a system wide representation is needed for ITP compliance should be developed.</p> <p>*The Biological Goals and Objectives are tied to the previously identified reaches, not the entire river system.</p> <p>* NAS themselves comments that this is necessary only if desired.</p> |
| 32 | No | Biological Monitoring | Increase the frequency of sampling in Comal Springs system (106:7) | <p>Because of the apparent sensitivity and variable response of SAV to flow conditions, particularly in the Comal River, it would be best to either sample the total river more frequently than every five years or increase and/or randomize the sampling locations if a more accurate representation of SAV throughout the river is desired. The above sampling methods do not include data needed for the SAV modeling efforts, i.e., plant biomass. For dominant species and species specifically used in the modeling process, biomass data should be collected annually (and may need to be collected multiple times during the growing season to estimate specific growth rates) to validate the percent cover data and to provide accurate data for the SAV model.</p> | No - the Bio Monitoring Budget is already maxed out. For this sampling to be added, another component would need to be dropped. | N/A | Originally, the Variable Flow sampling was conducted 4 times a year. It has since been reduced to twice a year as it was determined there was additional advantage to sampling a higher frequency. |

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| 33 | No | Biological Monitoring | Conduct special studies on the fountain darter (106:47) | These special studies could be performed for a limited time to confirm or even improve the interpretation of the standard year-to-year monitoring. One set of studies could be designed to address the representativeness of the index reaches, and to benchmark the degree of uncertainty when index information is extrapolated to the regional or system level. | No - the Bio Monitoring Budget is already maxed out. For this sampling to be added, another component would need to be dropped. | N/A | *The purpose of expanding the index reaches to representative reaches (system wide representation) has not been determined. If this is considered, a rationale as to why a system wide representation is needed for ITP compliance should be developed. *The Biological Goals and Objectives are tied to the previously identified reaches, not the entire river system. * NAS themselves comments that this is necessary only if desired. |
| 34 | No | Biological Monitoring | Expand macro invertebrate surveys (110:5) | Macro invertebrate surveys should be expanded to habitats that are not currently being evaluated to provide information on the overall health of the aquatic ecosystem, similar to what is done for surface waters throughout the United States as part of national bio assessment programs | No - the Bio Monitoring Budget is already maxed out. For this sampling to be added, another component would need to be dropped. | N/A | The participants in the workshop supported this recommendation, but did not identify how it contributed to compliance. |

Clarifying Statements

All aspects of this table are Science components

None of the recommendations are required for compliance except for #26

All recommendations are operational and/or politically feasible

None of the recommendations are fatal flaws of the program or support achieving biological goals/objectives