

[Screen 1]

## **Integrated Water Resources Science and Services (IWRSS) Stakeholder Survey**

IWRSS is supported by a consortium consisting of U.S. Geological Survey (USGS), the U.S. Army Corps of Engineers (USACE), and the National Oceanic and Atmospheric Administration (NOAA) (the “IWRSS partner agencies”). These agencies are collaborating to design, develop and implement a national water modeling and information services framework to:

- 1) Infuse new hydrologic science into current water resource management;
- 2) Develop hydrologic techniques and information to support operational water resources decisions;
- 3) Provide advanced hydrologic services to meet stakeholder needs.

It is critical that IWRSS services meet the needs of watershed planners and decision-makers. We are currently looking for opportunities to develop and demonstrate IWRSS. That’s why we need your participation in this effort! As practitioners, you are faced with both routine and emergency decisions that require optimization of limited water resources for sustainable supplies, adequate water quality, and the mitigation of socioeconomic impacts associated with extreme weather events, including floods and droughts. You know what information you need to support sustainable water resource management decisions. We need your expertise and advice so we can design and deliver practical, useful and high-value services. By participating in this effort, you will help shape the future direction of IWRSS.

The purpose of this survey is to provide an opportunity for you to further identify and prioritize your water resources information needs, describe how your information needs support decision making, and describe the benefit of filling your gaps in information. Results of the survey will drive future investment in information and services provided by IWRSS.

As a stakeholder in the [RIVER BASIN], you have valuable insight into the key issues and decisions facing the region, as well as the types of information you need. We ask that you base your answers on your own experience, expertise, and/or role in your organization.

*[Note for OMB reviewer: This survey will be implemented in four river basins: the Potomac, Delaware, Susquehanna, and Hudson River basins. The text above “[RIVER BASIN]” refers to one of the four basins. NOAA NWS will insert the appropriate name into the survey when the survey is implemented.]*

[Screen 2]

**I. To begin, please answer a few questions about your interest in the issues facing the [RIVER BASIN] river basin.**

1. From the following list, please select the PRIMARY sector in which your work or interest is focused in the [RIVER BASIN] river basin? (Check one)

- |                                               |                                                                |
|-----------------------------------------------|----------------------------------------------------------------|
| <input type="checkbox"/> Water Quality        | <input type="checkbox"/> Hydropower                            |
| <input type="checkbox"/> Fish and Wildlife    | <input type="checkbox"/> Other energy extraction               |
| <input type="checkbox"/> Emergency Management | <input type="checkbox"/> River Commerce                        |
| <input type="checkbox"/> Reservoir Management | <input type="checkbox"/> Municipal and Industrial Water Supply |
| <input type="checkbox"/> Watershed Management | <input type="checkbox"/> Recreation                            |
| <input type="checkbox"/> Agriculture          | <input type="checkbox"/> Other (please specify)                |

2. Please indicate any other sectors in which you work or that you are concerned about in the [RIVER BASIN] river basin? (Please check all that apply)

- |                                               |                                                                |
|-----------------------------------------------|----------------------------------------------------------------|
| <input type="checkbox"/> Water Quality        | <input type="checkbox"/> Hydropower                            |
| <input type="checkbox"/> Fish and Wildlife    | <input type="checkbox"/> Other energy extraction               |
| <input type="checkbox"/> Emergency Management | <input type="checkbox"/> River Commerce                        |
| <input type="checkbox"/> Reservoir Management | <input type="checkbox"/> Municipal and Industrial Water Supply |
| <input type="checkbox"/> Watershed Management | <input type="checkbox"/> Recreation                            |
| <input type="checkbox"/> Agriculture          | <input type="checkbox"/> Other (please specify)                |

3. Please select the affiliation that best describes your work or interest in the [RIVER BASIN] river basin? (Check one)

- |                                             |                                                  |
|---------------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Federal Government | <input type="checkbox"/> Non-profit organization |
| <input type="checkbox"/> State Government   | <input type="checkbox"/> Academic                |
| <input type="checkbox"/> Local Government   | <input type="checkbox"/> Private Citizen         |
| <input type="checkbox"/> Industry/Business  |                                                  |

4. How many years have you been working on or interested in issues in the [RIVER BASIN] river basin?

- Less than 5 years  
 5 - 10 years  
 11 - 15 years  
 More than 15 years

5. How many years have you been interested in issues related to water resources management?

- Less than 5 years
- 5 - 10 years
- 11 - 15 years
- More than 15 years

6. How frequently do you deal with issues related to water resources management?

- Daily
- Weekly
- Monthly
- Less than once a month

7. Do your job responsibilities include providing input to strategic planning; program, facility, operations or financial management; or project planning decisions on water resources information?

- Yes, my job responsibilities include those tasks.
- No, my job responsibilities do not include those tasks.

[Screen 3]

## II. Priorities.

**For the purposes of this survey, we are using, as a starting point, the water resources priorities identified by the [RIVER BASIN COMMISSION]. The list of priorities, with examples of each is provided below.**

**[Insert list of issues with examples.]**

*[Note for OMB reviewer: This survey will be implemented in four river basins: the Potomac, Delaware, Susquehanna, and Hudson River basins. The text above "[RIVER BASIN COMMISSION]" refers to the appropriate commission for the basin. NOAA NWS will insert the appropriate name into the survey when the survey is implemented.]*

*[Note for OMB reviewer:]*

[Note for OMB Reviewer: The set of issues will vary by river basin. NOAA NWS has developed a list for each of the four basins that will be part of the survey and will insert the lists into the appropriate surveys. The list of issues below is being developed for the Susquehanna River Basin and is included here as an example of the type of wording that will be used in this question.]

Please indicate the importance (to you) of each the following issues on a scale from 1 to 5; where 1 is “Not Important at All” and 5 is “Extremely Important.”

How important are each of the following issues?	Not Important 1	Slightly Important 2	Important 3	Moderately Important 4	Extremely Important 5
8. <b>Sustainable Water Use and Development (Water Supply):</b> Meet immediate and future water needs of the people of the basin for domestic, municipal, commercial, agricultural, industrial water supply, and recreational activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. <b>Water Quality:</b> Support the designated uses of all water bodies by achieving water quality that meets or exceeds standards.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. <b>Flooding:</b> Prevent loss of life and significantly reduce future damages from floods within the basin through an integrated system of structural and nonstructural flood damage reduction measures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. <b>Chesapeake Bay:</b> Manage the water resources of the Susquehanna River Basin to assist in restoring and maintaining the Chesapeake Bay so it meets or exceeds applicable water quality standards and supports healthy populations of living resources.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. <b>Aquatic Ecosystem Management:</b> Achieve healthy ecosystems that provide groundwater and surface water of sufficient quality and in adequate supply to support abundant and diverse populations of aquatic, riparian, and terrestrial organisms, as well as human use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Looking at the issues as a group, please rank the three most important issues that you think are facing the [RIVER BASIN], in order of importance; where 1 is the most important issue.

- 1) [Dropdown list of Issues]
- 2) [Dropdown list of Issues]
- 3) [Dropdown list of Issues]

14. Are there any priority issues that were NOT identified by the [RIVER BASIN COMMISSION] in the list above that you would rank as one of your top three most important issues?

Please describe: \_\_\_\_\_

[Screen 4]

### III. Information Needs.

Next, we would like to ask you about the types of information you need to make decisions about the issue you ranked as your top priority issue.

We would like to focus on four categories of information provided by IWRSS partner agencies:

- **Observations:** Data collected using scientific instruments. Examples include meteorological observations such as air temperature, dew point, and precipitation and surface hydrology observations such as river discharge/streamflow, river velocity, and soil moisture.
- **Forecasts:** Meteorological, climatological, and hydrologic information for future times at given locations derived from a model. Examples include meteorological forecasts of atmospheric pressure, atmospheric freezing levels, and wind speed and surface hydrology forecasts of river discharge/streamflow, river stage/elevation, and river velocity.
- **Uncertainty:** Quantification of uncertainty that arises from several sources, including model structure, parameters, initial conditions, and data used to drive and evaluate the model. For example, the probability of exceeding a flood level quantifies the model and data uncertainty for a river level forecast at a given time and location.
- **Analyses:** Public alerts, guidance, estimates, maps, and information derived from the evaluation and integration of meteorological, hydrologic, and climatological data.

For your highest priority issue [#1 Issue from Q13.], describe your access to the following types of information needed for informing decisions.

For each information type, do you have access to it?	I do not need this type of information	I have adequate information to meet my needs	I have the information, but it is not adequate or needs improvement.	I need this type of information but currently have no or very limited access to it.
15. Observations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Forecasts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Uncertainty	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Analyses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[If respondent selects last three columns of: a) Observations then ask: Q19. - Q20., b) Forecasts then ask: Q21.-Q22., c) Uncertainties then ask: Q23.-Q24., d) Analyses then ask: Q25. - Q26., Otherwise go to [Screen 28; survey exit]]

[Screen 5]

**You indicated that you use or are interested in using observation information for decision making.**

19. The observation information that you're interested in supports decision making over what time frames? Please check all that apply.

- Immediate
- <1 day
- 1 to 3 days
- 3 to 5 days
- 5 to 7 days
- 1 week to 1 month
- 1 month to 1 year
- > 1 year
- None of the above

20. How often would you like to see new observation information made available for use?

- Every 15 minutes or less
- 15 minutes to 1 hour
- Hourly
- Daily
- Weekly
- Monthly
- Quarterly
- Annually

[Screen 6]

**You indicated that you use or are interested in using forecast information for decision making.**

21. The forecast information that you're interested in supports decision making over what time frames? Please check all that apply.

- Immediate
- <1 day
- 1 to 3 days
- 3 to 5 days
- 5 to 7 days
- 1 week to 1 month

- 1 month to 1 year
- > 1 year
- None of the above

22. How often would you like to see new forecast information made available for use?

- Every 15 minutes or less
- 15 minutes to 1 hour
- Hourly
- Daily
- Weekly
- Monthly
- Quarterly
- Annually

[Screen 7]

**You indicated that you use or are interested in using uncertainty information for decision making.**

23. The uncertainty information that you're interested in supports decision making over what time frames? Please check all that apply.

- Immediate
- <1 day
- 1 to 3 days
- 3 to 5 days
- 5 to 7 days
- 1 week to 1 month
- 1 month to 1 year
- > 1 year
- None of the above

24. How often would you like to see new uncertainty information made available for use?

- Every 15 minutes or less
- 15 minutes to 1 hour
- Hourly
- Daily
- Weekly

- Monthly
- Quarterly
- Annually

[Screen 8]

**You indicated that you use or are interested in using analyses for decision making.**

25. The analyses information that you're interested in supports decision making over what time frames?  
Please check all that apply.

- Immediate
- <1 day
- 1 to 3 days
- 3 to 5 days
- 5 to 7 days
- 1 week to 1 month
- 1 month to 1 year
- > 1 year
- None of the above

26. How often would you like to see new analyses information made available for use?

- Every 15 minutes or less
- 15 minutes to 1 hour
- Hourly
- Daily
- Weekly
- Monthly
- Quarterly
- Annually

[Screen 9]

### **Barriers to Use**

[If respondent selected the last two columns of Q14-17 matrix: a) Observations then ask: Q27.-Q32., Q51.- Q56. b) Forecasts then ask: Q33.-Q38., Q68.-Q73. c) Uncertainties then ask: Q39.-Q44., Q85.-Q90.



d) Analyses then ask: Q45.-Q50., Q102.-Q107.; Otherwise go to [Screen 28; survey exit].]

[Note to OMB reviewer: We plan to include mouse-over definitions for the respondents to allow them to access definitional information during the survey. We have provided the mouse-over text in the next set of questions as comment bubbles. However, to avoid cluttering this MS Word document, we have left this out of the similar remaining questions.]

You indicated that the observation information you need for informing decisions needs improvement or is unavailable.

What are some of the barriers to using the following types of observation information? Please check all that apply. Place cursor over each type of information listed to see examples.

Types of information	Not available in a format that I can use	Don't know where to get the information	Accuracy is not sufficient	Resolution Is not sufficient	Not enough information available	Don't understand how information can be used
27. Surface Hydrology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. Groundwater Hydrology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. Water Quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. Drainage Basin Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31. Meteorology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. Snow/ice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[Screen 10]

You indicated that the forecast information you need for informing decisions needs improvement or is unavailable.

What are some of the barriers to using the following types of forecast information? Please check all that apply. Place cursor over each type of information listed to see examples.

Types of information	Not available in a format that I can use	Don't know where to get the information	Accuracy is not sufficient	Resolution Is not sufficient	Not enough information available	Don't understand how information can be used
33. Surface Hydrology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34. Groundwater Hydrology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35. Water Quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36. Drainage Basin Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37. Meteorology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38. Snow/ice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[Screen 11]

You indicated that the uncertainty information you need for informing decisions needs improvement or is unavailable.

What are some of the barriers to using the following types of uncertainty information? Please check all that apply. Place cursor over each type of information listed to see examples.

Types of information	Not available in a format that I can use	Don't know where to get the information	Accuracy is not sufficient	Resolution Is not sufficient	Not enough information available	Don't understand how information can be used
39. Surface Hydrology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
40. Groundwater Hydrology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
41. Water Quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
42. Drainage Basin Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
43. Meteorology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
44. Snow/ice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[Screen 12]

You indicated that the analyses you need for informing decisions need improvement or are unavailable.

What are some of the barriers to using the following types of analyses? Please check all that apply. Place cursor over each type of information listed to see examples.

Types of information	Not available in a format that I can use	Don't know where to get the information	Accuracy is not sufficient	Resolution Is not sufficient	Not enough information available	Don't understand how information can be used
45. Public alerts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
46. Meteorological analyses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
47. Hydrologic analyses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
48. Climatological analyses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
49. Flood inundation mapping	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
50. Information integration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[Screen 13]

#### IV. Importance for decision making and Economic Value

Next we would like to ask you about the *importance* of different types of information to your decision making and the economic value of having additional and/or new information to support your decision making on your top priority issue.

We are trying to understand the economic value which may be realized through information provided by IWRSS partner agencies (NOAA, USGS, USACE). For example, improved data can a) help communities provide advanced notice of flood events to reduce personal property damages; b) help planners make more informed decisions about water resources capital investments or c) help operators improve the efficiency of hydropower generation.

Your responses in this section are *critical* to this effort; the IWRSS partner agencies need your feedback about the value of this information in order to build a business case for making new information available. Accurate, detailed answers to the following questions will help the IWRSS partner agencies add new and improved information to the suite of products and services already offered.

[If respondent selected the last two columns of Q15.-18. matrix: a) Observations then ask: Q51., b) Forecasts then ask: Q68., c) Uncertainties then ask: Q85., d) Analyses then ask: Q102.; Otherwise go to [Screen 28; survey exit]]

[Screen 14]

If additional or new observation information were available that meets your decision-making needs, how important would this information be to making decisions in the course of your work?

Type of information	Not Important	Minor Importance	Somewhat Important	Very Important	Critical
51. Surface Hydrology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
52. Groundwater Hydrology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
53. Water Quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
54. Drainage Basin Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
55. Meteorology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
56. Snow/ice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[If the respondent selected the last two columns then go to Q57., otherwise go to Q68.]

[Screen 15]

57. You rated [Types of Information] as very important or critical, please describe the additional or new observation information that you need for your decision making?

[Open]

[If the respondent answered “Yes” to Q7., then go to Q58., otherwise, go to Q68.]

[Screen 16]

**Would you experience any of the following impacts or benefits from using additional or new observational information from IWRSS partner agencies? If you would experience these impacts or benefits, please describe a monetary estimate of the value.**

Types of impacts or benefits	No, this is <b>not</b> something that I would experience	Yes, this is something that I would experience	If yes, please provide a description of the cost avoided or the benefit gained per year or per event; or describe the capital investment decisions dependent upon this information. For example, the additional or new information that would be provided by the IWRSS partner agencies could “help protect \$2 billion of personal property from flood damage each year” or “eliminate the need to build a multi-billion dollar water treatment facility.”
58. Reduced flood damage (property damage, injury or loss of life, lost business, recovery costs)	<input type="radio"/>	<input type="radio"/>	[OPEN]
59. Reduced drought damage	<input type="radio"/>	<input type="radio"/>	[OPEN]
60. Improved wastewater management or treatment	<input type="radio"/>	<input type="radio"/>	[OPEN]
61. Improved stormwater management or treatment	<input type="radio"/>	<input type="radio"/>	[OPEN]
62. Improved drinking water supply or treatment	<input type="radio"/>	<input type="radio"/>	[OPEN]
63. Improved water quality and streamflow	<input type="radio"/>	<input type="radio"/>	[OPEN]
64. Improved navigability (shipping, recreation)	<input type="radio"/>	<input type="radio"/>	[OPEN]
65. Increased efficiency of hydroelectric power generation	<input type="radio"/>	<input type="radio"/>	[OPEN]
66. Improved timing of water withdrawals and releases or its management	<input type="radio"/>	<input type="radio"/>	[OPEN]
67. Other type of impact?	<input type="radio"/>	<input type="radio"/>	[OPEN]

[Screen 17]

**If additional or new forecast information were available that meets your decision-making needs, how important would this information be to making decisions in the course of your work?**

Types of information	Not Important	Minor Importance	Somewhat Important	Very Important	Critical
68. Surface Hydrology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
69. Groundwater Hydrology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
70. Water Quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
71. Drainage Basin Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
72. Meteorology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
73. Snow/ice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[If the respondent selected the last two columns then go to Q74., otherwise go to Q85.]

[Screen 18]

74. You rated [Types of Information] as very important or critical, please describe the additional or new forecast information that you need for your decision making?

[Open]

[If the respondent answered "Yes" to Q7., then go to Q75., otherwise, go to Q85.]

[Screen 19]

**Would you experience any of the following impacts or benefits from using additional or new forecast information from IWRSS partner agencies? If you would experience these impacts or benefits, please describe a monetary estimate of the value.**

Types of impacts or benefits	No, this is <b>not</b> something that I would experience	Yes, this is something that I would experience	If yes, please provide a description of the cost avoided or the benefit gained per year or per event; or describe the capital investment decisions dependent upon this information. For example, the additional or new information that would be provided by the IWRSS partner agencies could "help protect \$2 billion of personal property from flood damage each year" or "eliminate the need to build a multi-billion dollar water treatment facility."
75. Reduced flood damage (property damage, injury or loss of life, lost business, recovery costs)	<input type="radio"/>	<input type="radio"/>	[OPEN]

76. Reduced drought damage	<input type="radio"/>	<input type="radio"/>	[OPEN]
77. Improved wastewater management or treatment	<input type="radio"/>	<input type="radio"/>	[OPEN]
78. Improved stormwater management or treatment	<input type="radio"/>	<input type="radio"/>	[OPEN]
79. Improved drinking water supply or treatment	<input type="radio"/>	<input type="radio"/>	[OPEN]
80. Improved water quality and streamflow	<input type="radio"/>	<input type="radio"/>	[OPEN]
81. Improved navigability (shipping, recreation)	<input type="radio"/>	<input type="radio"/>	[OPEN]
82. Increased efficiency of hydroelectric power generation	<input type="radio"/>	<input type="radio"/>	[OPEN]
83. Improved timing of water withdrawals and releases or its management	<input type="radio"/>	<input type="radio"/>	[OPEN]
84. Other type of impact?	<input type="radio"/>	<input type="radio"/>	[OPEN]

[Screen 20]

**If additional or new uncertainty information were available that meets your decision-making needs, how important would this information be to making decisions in the course of your work?**

Types of information	Not Important	Minor Importance	Somewhat Important	Very Important	Critical
85. Surface Hydrology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
86. Groundwater Hydrology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
87. Water Quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
88. Drainage Basin Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
89. Meteorology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
90. Snow/ice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[If the respondent selected the last two columns then go to Q91., otherwise go to Q102.]

[Screen 21]

91. You rated [Types of Information] as very important or critical, please describe the additional or new uncertainty information that you need for your decision making?

[Open]

[If the respondent answered "Yes" to Q7., then go to Q92., otherwise, go to Q102.]

**Would you experience any of the following impacts or benefits from using additional or new uncertainty information from IWRSS partner agencies? If you would experience these impacts or benefits, please describe a monetary estimate of the value.**

Types of impacts or benefits	No, this is <b>not</b> something that I would experience	Yes, this is something that I would experience	If yes, please provide a description of the cost avoided or the benefit gained per year or per event; or describe the capital investment decisions dependent upon this information. For example, the additional or new information that would be provided by the IWRSS partner agencies could “help protect \$2 billion of personal property from flood damage each year” or “eliminate the need to build a multi-billion dollar water treatment facility.”
92. Reduced flood damage (property damage, injury or loss of life, lost business, recovery costs)	<input type="radio"/>	<input type="radio"/>	[OPEN]
93. Reduced drought damage	<input type="radio"/>	<input type="radio"/>	[OPEN]
94. Improved wastewater management or treatment	<input type="radio"/>	<input type="radio"/>	[OPEN]
95. Improved stormwater management or treatment	<input type="radio"/>	<input type="radio"/>	[OPEN]
96. Improved drinking water supply or treatment	<input type="radio"/>	<input type="radio"/>	[OPEN]
97. Improved water quality and streamflow	<input type="radio"/>	<input type="radio"/>	[OPEN]
98. Improved navigability (shipping, recreation)	<input type="radio"/>	<input type="radio"/>	[OPEN]
99. Increased efficiency of hydroelectric power generation	<input type="radio"/>	<input type="radio"/>	[OPEN]
100. Improved timing of water withdrawals and releases or its management	<input type="radio"/>	<input type="radio"/>	[OPEN]
101. Other type of impact?	<input type="radio"/>	<input type="radio"/>	[OPEN]

[Screen 23]

**If additional or new analyses were available that meet your decision-making needs, how important would this information be to making decisions in the course of your work?**

Types of information	Not Important	Minor Importance	Somewhat Important	Very Important	Critical
102. Public alerts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
103. Meteorological analyses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
104. Hydrologic analyses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
105. Climatological analyses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
106. Flood inundation mapping	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
107. Information integration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[If the respondent selected the last two columns then go to Q108., otherwise go to Q119.]

[Screen 24]

108. You rated [Types of Information] as very important or critical, please describe the additional or new analysis information that you need for your decision making?

[Open]

[If the respondent answered "Yes" to Q7., then go to Q109., otherwise, go to Q119.]



[Screen 25]

**Would you experience any of the following impacts or benefits from using additional or new analyses from IWRSS partner agencies? If you would experience these impacts or benefits, please describe a monetary estimate of the value.**

Types of impacts or benefits	No, this is <b>not</b> something that I would experience	Yes, this is something that I would experience	If yes, please provide a description of the cost avoided or the benefit gained per year or per event; or describe the capital investment decisions dependent upon this information. For example, the additional or new information that would be provided by the IWRSS partner agencies could “help protect \$2 billion of personal property from flood damage each year” or “eliminate the need to build a multi-billion dollar water treatment facility.”
109. Reduced flood damage (property damage, injury or loss of life, lost business, recovery costs)	<input type="radio"/>	<input type="radio"/>	[OPEN]
110. Reduced drought damage	<input type="radio"/>	<input type="radio"/>	[OPEN]
111. Improved wastewater management or treatment	<input type="radio"/>	<input type="radio"/>	[OPEN]
112. Improved stormwater management or treatment	<input type="radio"/>	<input type="radio"/>	[OPEN]
113. Improved drinking water supply or treatment	<input type="radio"/>	<input type="radio"/>	[OPEN]
114. Improved water quality and streamflow	<input type="radio"/>	<input type="radio"/>	[OPEN]
115. Improved navigability (shipping, recreation)	<input type="radio"/>	<input type="radio"/>	[OPEN]
116. Increased efficiency of hydroelectric power generation	<input type="radio"/>	<input type="radio"/>	[OPEN]
117. Improved timing of water withdrawals and releases or its management	<input type="radio"/>	<input type="radio"/>	[OPEN]
118. Other type of impact?	<input type="radio"/>	<input type="radio"/>	[OPEN]

[Screen 26]

119. Are there any other types of information that were NOT identified above that you would rank as needing improvement and critical for informing decisions on [ISSUE #1]? Please describe:

[Open ended]

[If the respondent answered “Yes” to Q7., then go to Q121, otherwise, go to Screen 28]

[Screen 27]

**Would you experience any of the following impacts or benefits from using other types of additional or new information from IWRSS partner agencies? If you would experience these impacts or benefits, please describe a monetary estimate of the value.**

Types of impacts or benefits	No, this is <b>not</b> something that I would experience	Yes, this is something that I would experience	If yes, please provide a description of the cost avoided or the benefit gained per year or per event; or describe the capital investment decisions dependent upon this information. For example, the additional or new information that would be provided by the IWRSS partner agencies could “help protect \$2 billion of personal property from flood damage each year” or “eliminate the need to build a multi-billion dollar water treatment facility.”
120. Reduced flood damage (property damage, injury or loss of life, lost business, recovery costs)	<input type="radio"/>	<input type="radio"/>	[OPEN]
121. Reduced drought damage	<input type="radio"/>	<input type="radio"/>	[OPEN]
122. Improved wastewater management or treatment	<input type="radio"/>	<input type="radio"/>	[OPEN]
123. Improved stormwater management or treatment	<input type="radio"/>	<input type="radio"/>	[OPEN]
124. Improved drinking water supply or treatment	<input type="radio"/>	<input type="radio"/>	[OPEN]
125. Improved water quality and streamflow	<input type="radio"/>	<input type="radio"/>	[OPEN]
126. Improved navigability (shipping, recreation)	<input type="radio"/>	<input type="radio"/>	[OPEN]
127. Increased efficiency of hydroelectric power generation	<input type="radio"/>	<input type="radio"/>	[OPEN]
128. Improved timing of water withdrawals and releases or its management	<input type="radio"/>	<input type="radio"/>	[OPEN]
129. Other type of impact?	<input type="radio"/>	<input type="radio"/>	[OPEN]

[Screen 28]

**You have completed the survey! Thank you for your participation!**

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Public reporting burden for this collection of information is estimated to average 45 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other suggestions for reducing this burden to Thomas Graziano, NOAA National Weather Service, 1325 East-West Highway, SSMC2 Rm.13426, Silver Spring, MD 20910.

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