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September 17, 2014

Mr. Timothy J. Larson
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau D
625 Broadway, 12th Floor
Albany, NY 12233-7016

RE: Onondaga Lake: Cap Porewater Sampling Methods Demonstration Work Plan September 2014

Dear Mr. Larson:

Enclosed you will find one bound copy, and three electronic versions (PDF & original) of the Onondaga Lake: Cap Porewater Sampling Methods Demonstration Work Plan, dated September 2014. We are distributing per your instructions.

Please feel free to contact Ed Glaza at 315-451-9560 or me if you have any questions.

Sincerely,

John P. McAuliffe, P.E.
Program Director, Syracuse

Enclosure

cc: Harry Warner, NYSDEC (1 bound, 1 PDF)
Bob Nunes, USEPA (1 bound, 3 PDF)
Mike Spera, AECOM (1 bound, 1 PDF)
Bob Montione, AECOM (1 bound, 1 PDF)
Mark Sergott, NYSDOH (1 PDF)
Justin Deming, NYSDOH (Cover Ltr Only)
Kenneth Lynch, NYSDEC (1 bound)
Tara Blum, NYSDEC (1 bound, 1 PDF)
Norman Spiegel, Env. Protection Bureau (ec Cover Ltr Only)
Andrew Gershon, Env. Protection Bureau (ec Cover Ltr Only)
Margaret Sheen, Esq., NYSDEC (Cover Ltr Only)
Argie Cirillo, Esq., USEPA (Cover Ltr Only)
Joseph Heath, Esq., (ec Cover Ltr Only)
Thane Joyal, Esq. (1 PDF)
Curtis Waterman, Onondaga Nation (1 PDF)
Alma Lowry, Onondaga Nation (1 PDF)

cc (continued):

Jeanne Shenandoah, Onondaga Nation (1 bound plus ec Cover Ltr Only)
Fred Kirschner, AESE, Inc. (1 PDF)
William Hague, Honeywell (Cover Ltr Only)
Dave Matthews, UFI (1 PDF)
Brian Israel, Esq., Arnold & Porter (1 PDF)
Joe Detor, Anchor QEA, (1 PDF)
Steve Miller, Parsons (1 PDF)
John Nolan, Parsons (1 bound)
Ed Glaza, Parsons (1 bound)

ONONDAGA LAKE: CAP POREWATER SAMPLING METHODS DEMONSTRATION WORK PLAN

ONONDAGA COUNTY, NEW YORK

Prepared For:

Honeywell

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SEPTEMBER 2014

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF ACRONYMS

AHA	Activity Analysis Plan
ft	feet
PDI	pre-design investigation
PSHEP	Project Safety, Health, and Environmental Plan
SSHEP	Subcontractor Safety, Health and Environmental Plan

ONONDAGA LAKE: CAP POREWATER SAMPLING METHODS DEMONSTRATION WORK PLAN

1.0 INTRODUCTION

The Onondaga Lake sediment cap is designed to provide long-term chemical isolation of contaminants and maintain physical stability while providing a suitable habitat substrate. This work plan describes the objectives and execution of a field demonstration of porewater sampling methods and techniques that may be applicable for use during the long-term cap physical and chemical monitoring program. The ability to collect porewater samples in various substrates present in the habitat and chemical isolation layers will be demonstrated. However, no sample analysis is planned as part of this demonstration.

As part of the future long-term monitoring, chemical monitoring will be conducted to verify that the chemical isolation layer is performing consistent with expectations. Chemical monitoring will include sampling within each of the primary cap modeling areas and is contemplated to involve collection of porewater and cap material samples from the chemical isolation and habitat layers of cap.

The coarsest substrate present in various areas within the habitat and erosion protection layers varies from sand to gravely cobbles, with the coarser materials occurring closer to shore. There are sampling considerations associated with each of these substrates that dictate the compliance monitoring strategy that will be used in different areas, as detailed below and shown on Figures 1 through 5.

- Zone 1: Sand – There are no restrictions on sample collection of the cap media or porewater in these areas. As part of the future long-term monitoring program, cap material samples will be collected from the bottom of the habitat layer in these areas and compared to the cap performance criteria. Cap material and/or porewater samples may also be collected from the underlying chemical isolation layer as an indicator of cap performance. Although physical samples (cores) will be collected in these areas, it will be very difficult or impossible to differentiate between the habitat and chemical isolation layers because they consist of the same material. Therefore, for purposes of determining sampling intervals, it will be assumed that the habitat layer thickness is equal to the required design minimum and that any cap material beneath this is part of the chemical isolation layer. Cores will be advanced through the full thickness of the cap into the underlying sediment. Thus, the total thickness of the cap will be known. This information will be used to verify that the full thickness of the cap is present and will be considered in identifying the appropriate sampling intervals.
- Zone 2: Fine gravel – As part of the quality control sampling during cap construction, it was demonstrated that coring through this material is achievable. However, this material is too coarse to collect a sample for laboratory analysis. Pending implementation of this porewater sampling demonstration work plan, it is anticipated

that a peeper can be pushed through this substrate in order to collect a porewater sample from within the bottom of the habitat layer and within the underlying chemical isolation layer. Compliance in these areas will be verified based on sampling of the porewater within the habitat layer and underlying chemical isolation layer and/or sampling of cap material in the underlying chemical isolation layer, and consideration of sample results in adjacent areas. Physical observation of these cores will be used to determine the thickness of the various cap layers and to determine the appropriate peeper sampling intervals.

- Zone 3: Coarse gravel or gravely-cobble. This material is too coarse to push a core through in order to determine the cap profile. Pending implementation of this porewater sampling demonstration work plan, it is anticipated that a peeper can be pushed through this substrate in order to collect a porewater sample within the habitat layer and underlying chemical isolation layer. For determining the correct intervals for porewater sampling, it will be assumed that the habitat layer thickness (including the habitat/erosion protection layer) is consistent with the design minimum, and that any cap material beneath this is part of the chemical isolation layer. Compliance in these areas will be verified based on sampling of the porewater within the habitat layer and/or underlying chemical isolation layer, sampling of the cap material from the bottom of the overlying finer habitat substrate in areas where this is part of the cap design, and consideration of sample results in adjacent areas.

In addition, sampling in the areas of coarse substrate will be performed in a limited number of dedicated sampling "ports" in Remediation Area D. A sampling port is a large-diameter "manhole" riser section that is placed above the chemical isolation layer and filled with a finer-grained material (such as sand) in place of the larger armor stone. The sampling ports will facilitate collection of core and porewater samples within the habitat/erosion protection and chemical isolation layers. Sampling port locations and details have been provided in a design addendum (Parsons, 2013).

Details regarding the porewater sampling method demonstration are provided below. Real-time adjustments and modifications will be made as necessary in the field to optimize sampling techniques and achieve project objectives as part of the methods demonstration. Modifications and details on equipment, methods and logistics will be described in detail in a report following completion of the field work. Recommendations for future cap monitoring will be based on the sampling techniques and methods evaluated under this work plan.

2.0 MOBILIZATION AND LOGISTICS

Health and Safety

Parsons ranks health and safety as its highest priority.

The existing Project Safety, Health, and Environmental Plan (PSHEP) (Parsons, 2014), will be used for investigations contained in this work plan. If tasks are identified that fall outside the scope currently defined in the PSHEP, a new Activity Hazard Analysis (AHA) will be completed

before the task begins. Site subcontractors will also be required to submit a Subcontractor Safety, Health, and Environmental Plan (SSHEP) for approval prior to the start of field activities. Copies of the PSHEP, AHAs, and SSHEPs will be maintained at each work area.

Site Facilities, Decontamination, and Waste Handling

The support zone and facilities established for construction activities will be used for the methods demonstration. All decontamination and waste management activities will be conducted in accordance with Phase I Pre-Design Investigation (PDI) Work Plan (Parsons, 2005).

3.0 FIELD METHODOLOGY DEMONSTRATION

The demonstration locations proposed in this work plan will address the need for developing porewater sampling equipment and methodologies capable of penetrating the sediment cap, obtaining sufficient volumes of porewater, and ensuring sample integrity is not compromised such that cap performance can be assessed. Five locations are shown on Figures 6 and 7 where peeper demonstration activities will be completed during this demonstration. These locations were selected to span the range of cap designs, water depths and underlying substrates, taking into consideration the capping areas that will be completed prior to the time this sampling methods demonstration is intended to take place (i.e., late 2014). Peeper installation and retrieval will be completed in all substrates to the full depth of the cap, except cobble, as shown in Figures 6 and 7 and the table below. No areas of cobble are anticipated for construction prior to completion of this sampling demonstration. The need for future demonstration of peeper installation through cobble will be evaluated based on the results of the currently planned activities. To demonstrate repeatability, peeper deployment will be completed in duplicate at each location, with duplicate locations separated by approximately 10 feet (ft). If necessary, multiple attempts will be made to advance the peeper.

Sampling Locations

Sample Location #	Cap Model Area	Water Depth (ft)	Cap Substrate Type
1	C2	4-10	Coarse gravel
2	C2	0-4	Coarse gravel
3	D-West	10-30	Medium sand
4	D-West	4-7	Fine gravel
5	D-West	0-4	Medium sand overlying coarse gravel

It is anticipated that porewater peepers can be advanced through the sand, fine gravel, coarse gravel and cobble to allow for porewater collection at the bottom of the habitat layer and from the chemical isolation layer. To evaluate this assumption, the high-grade, stainless steel extended peepers constructed for the Phase 1 PDI will be modified, prepped and installed at the locations shown in Figures 6 and 7 as specified in Standard Operating Procedure 16 to the Phase 1 Work Plan. The extended peepers are currently 10 to 15 ft long. Prior to installation the peepers will be cut to a length of 6 ft for ease of installation. The peepers will be fitted with a depth installation plate to set the penetration depth. The peepers will be fitted with a tuffryn membrane and stainless steel screens (Figure 8) to preserve the integrity of the membrane. Peepers will be installed to the appropriate depth and then retrieved immediately (as no actual samples are being collected) to verify the structural integrity of the peeper and membrane.

4.0 REPORTING

Upon completion of the methods evaluation, Parsons will prepare and submit a technical memorandum summarizing the results of the methodology evaluation and recommendations for future sampling activities to NYSDEC.

5.0 REFERENCES

Parsons, 2005. *Onondaga Lake Pre-Design Investigation: Phase I Work Plan and Appendices*. Prepared for Honeywell, Morristown, New Jersey. Syracuse, New York.

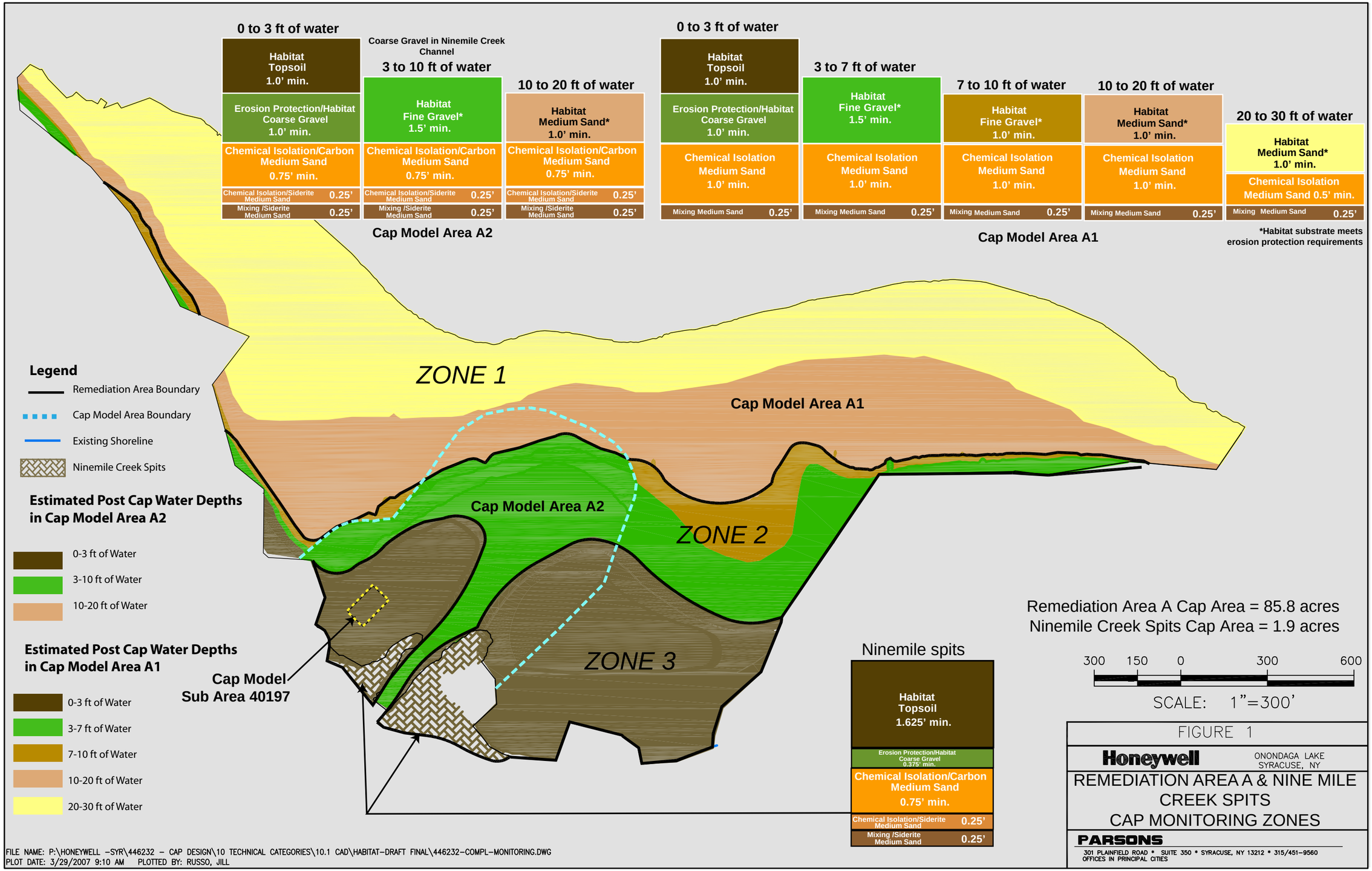
Parsons, 2005a. *Onondaga Lake Pre-Design Investigation: Quality Assurance Project Plan*. Prepared for Honeywell, Morristown, New Jersey. Syracuse, New York.

Parsons, 2005b. *Onondaga Lake Phase I Pre-Design Investigation: Sampling and Analysis Plan*. Prepared for Honeywell, Morristown, New Jersey and Syracuse, New York.

Parsons, 2013. *Onondaga Lake Capping, Dredging, Habitat and Profundal Zone (SMU 8) Final Design Cap Sampling Port Design Addendum.* Prepared for Honeywell, Morristown, New Jersey and Syracuse, New York.

Parsons, 2014. *Honeywell - Syracuse Operations, Maintenance, and Monitoring Project Safety, Heath, and Environmental Plan*. Prepared for Honeywell. June 2014.

FIGURES



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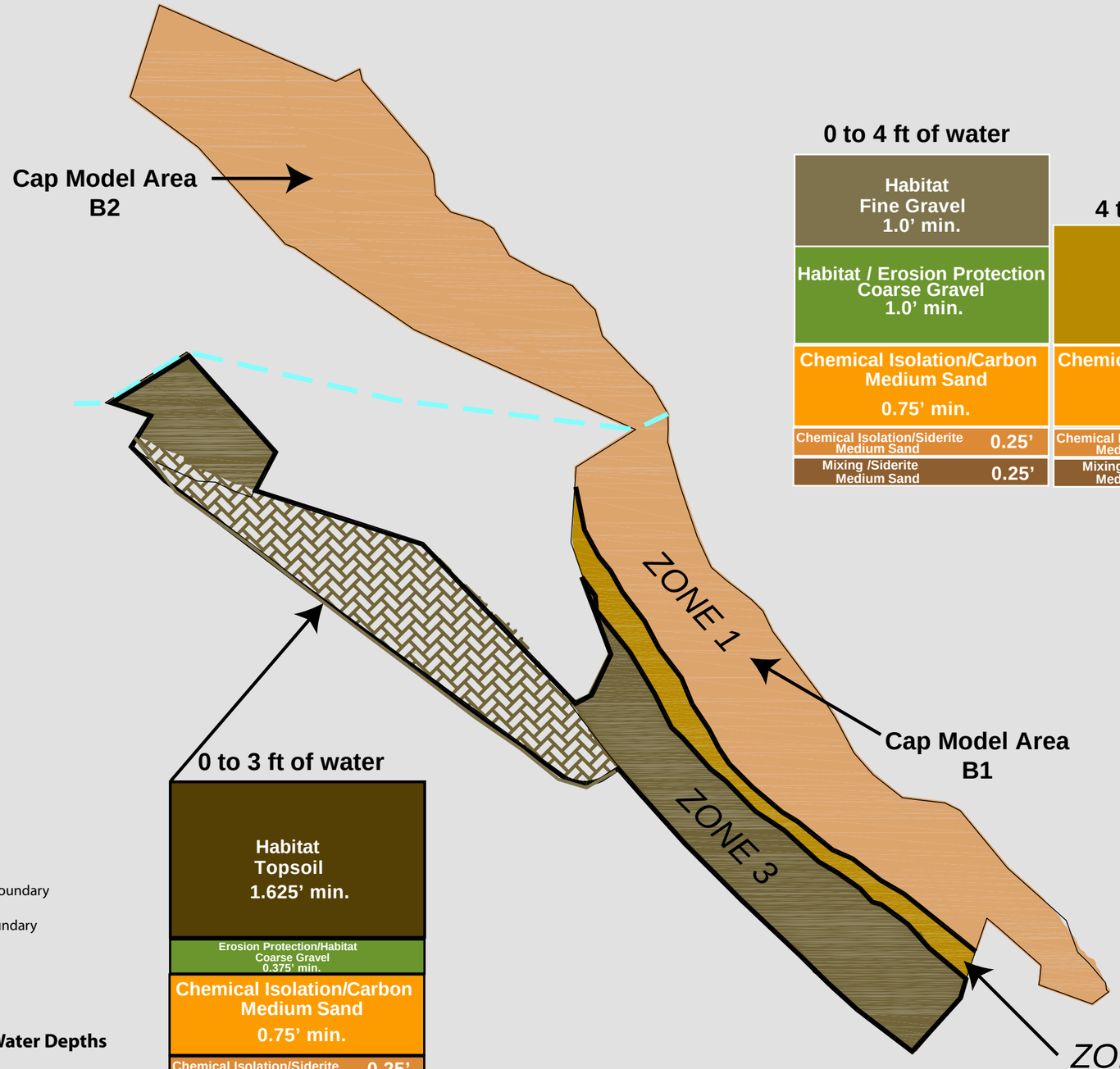

0 to 4 ft of water

Habitat Fine Gravel 1.0’ min.
Habitat / Erosion Protection Coarse Gravel 1.0’ min.
Chemical Isolation/Carbon Medium Sand 0.75’ min.
Chemical Isolation/Siderite Medium Sand 0.25’
Mixing /Siderite Medium Sand 0.25’

4 to 10 ft of water

Habitat Fine Gravel* 1.5’ min.
Chemical Isolation/Carbon Medium Sand 0.75’ min.
Chemical Isolation/Siderite Medium Sand 0.25’
Mixing /Siderite Medium Sand 0.25’

10 to 30 ft of water

Habitat Medium Sand* 1.0’ min.
Chemical Isolation/Carbon Medium Sand 0.75’ min.
Chemical Isolation/Siderite Medium Sand 0.25’
Mixing /Siderite Medium Sand 0.25’

*Habitat substrate meets erosion protection requirements

0 to 3 ft of water

Habitat Topsoil 1.625’ min.
Erosion Protection/Habitat Coarse Gravel 0.375’ min.
Chemical Isolation/Carbon Medium Sand 0.75’ min.
Chemical Isolation/Siderite Medium Sand 0.25’
Mixing /Siderite Medium Sand 0.25’

Wastebed 1-8 Connected Wetland

Legend

- Remediation Area Boundary
- Cap Model Area Boundary
- Existing Shoreline
- Connected Wetland

Estimated Post Cap Water Depths

- 0-4 ft of Water
- 4-10 ft of Water
- 10-30 ft of Water

250 0 250 500

SCALE: 1”=250’

Remediation Area B Cap Area=19.4 acres
WB 1-8 Connected Wetlands Area=2.4 acres

FIGURE 2

Honeywell — ONONDAGA LAKE SYRACUSE, NY

REMEDIATION AREA B & WB 1-8
CONNECTED WETLAND
CAP MONITORING ZONES

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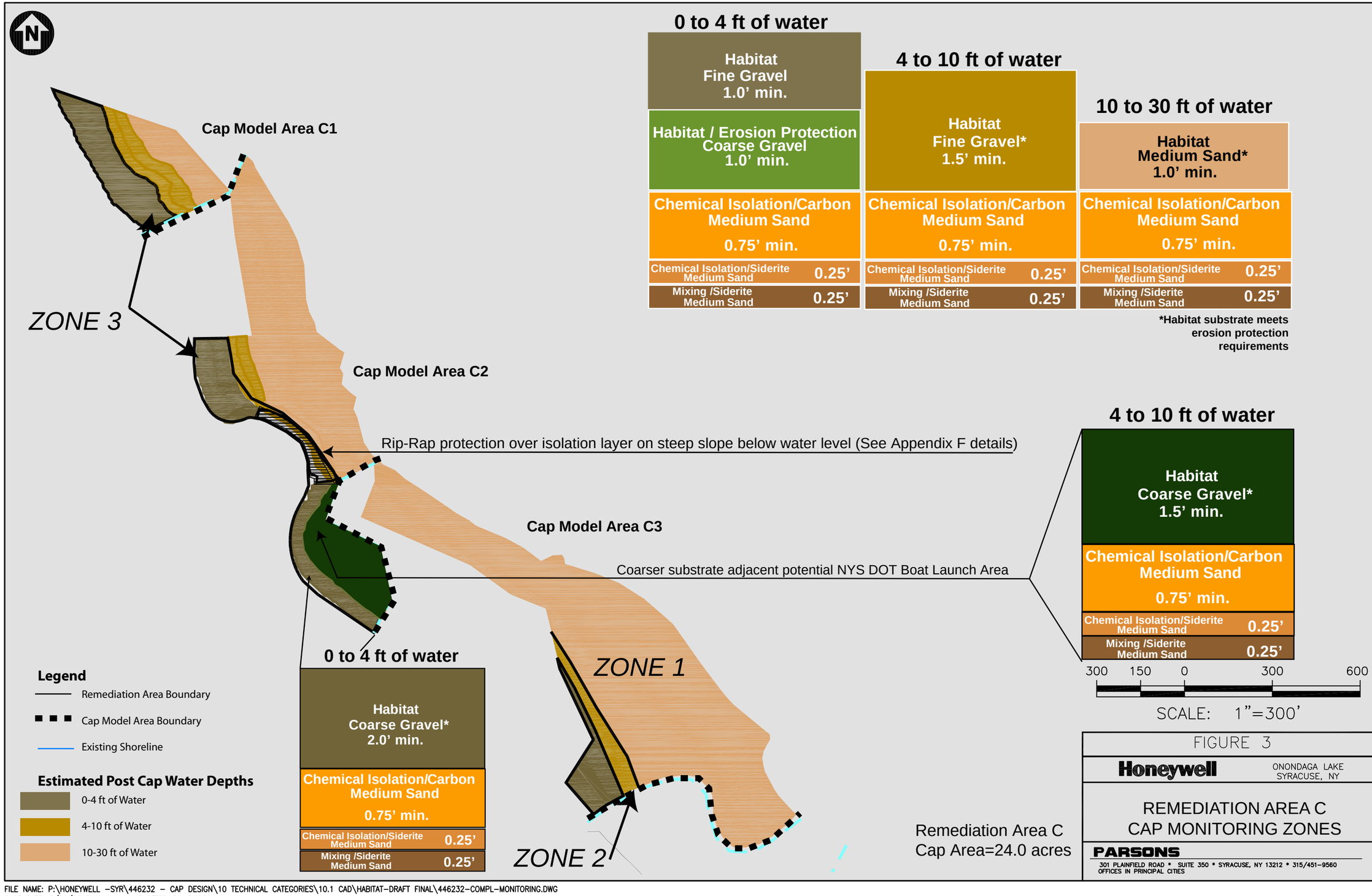

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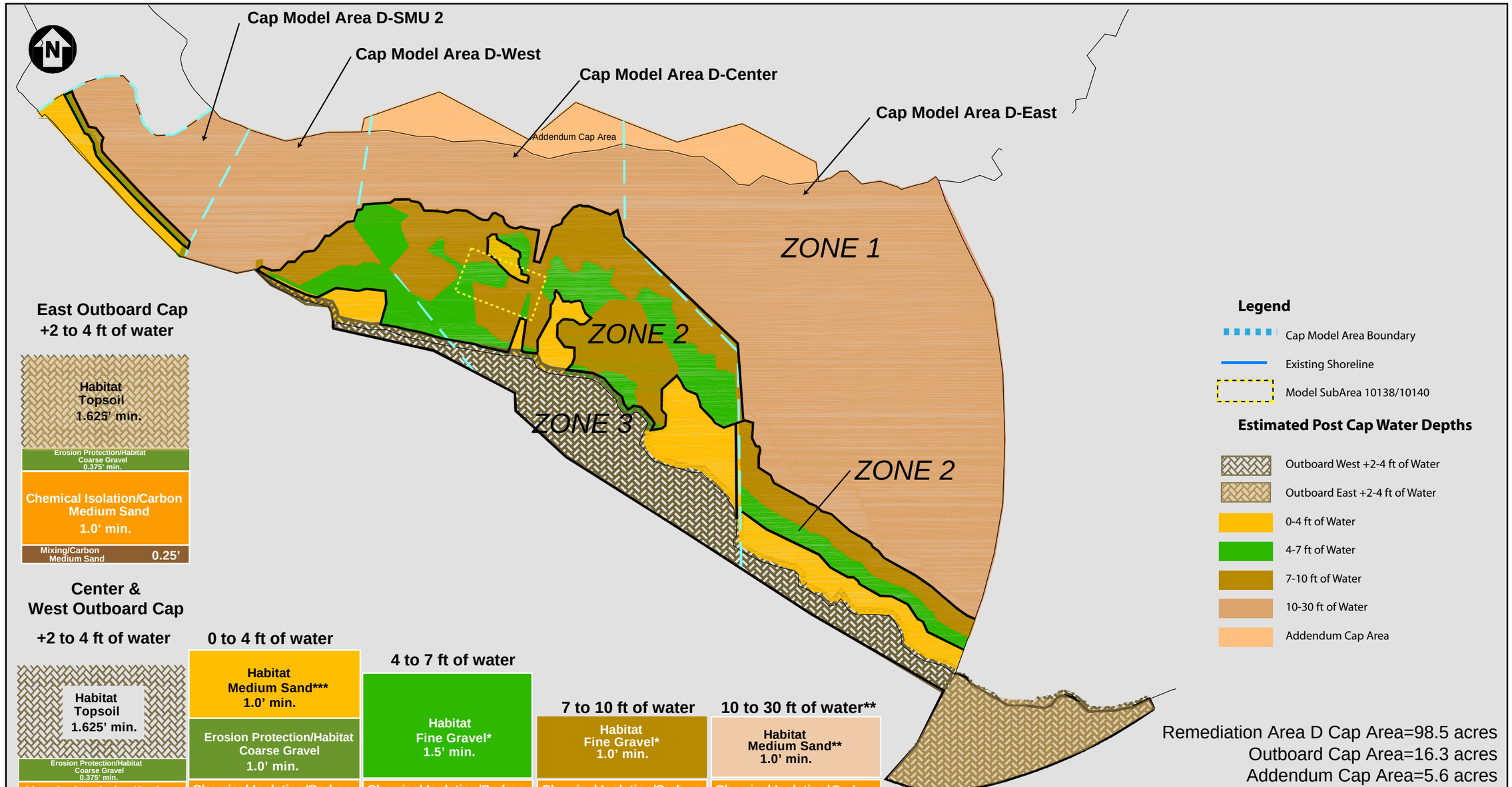

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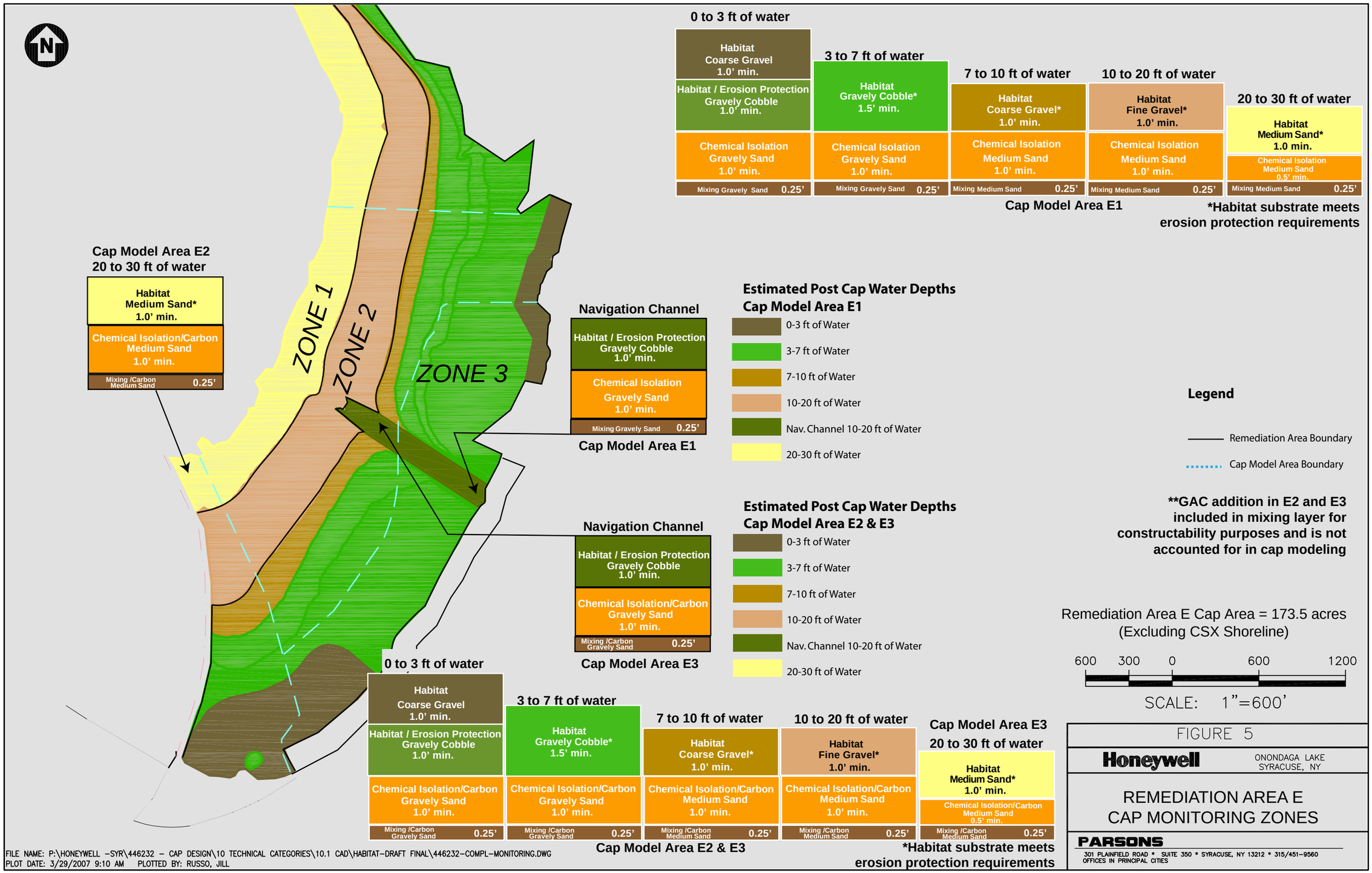

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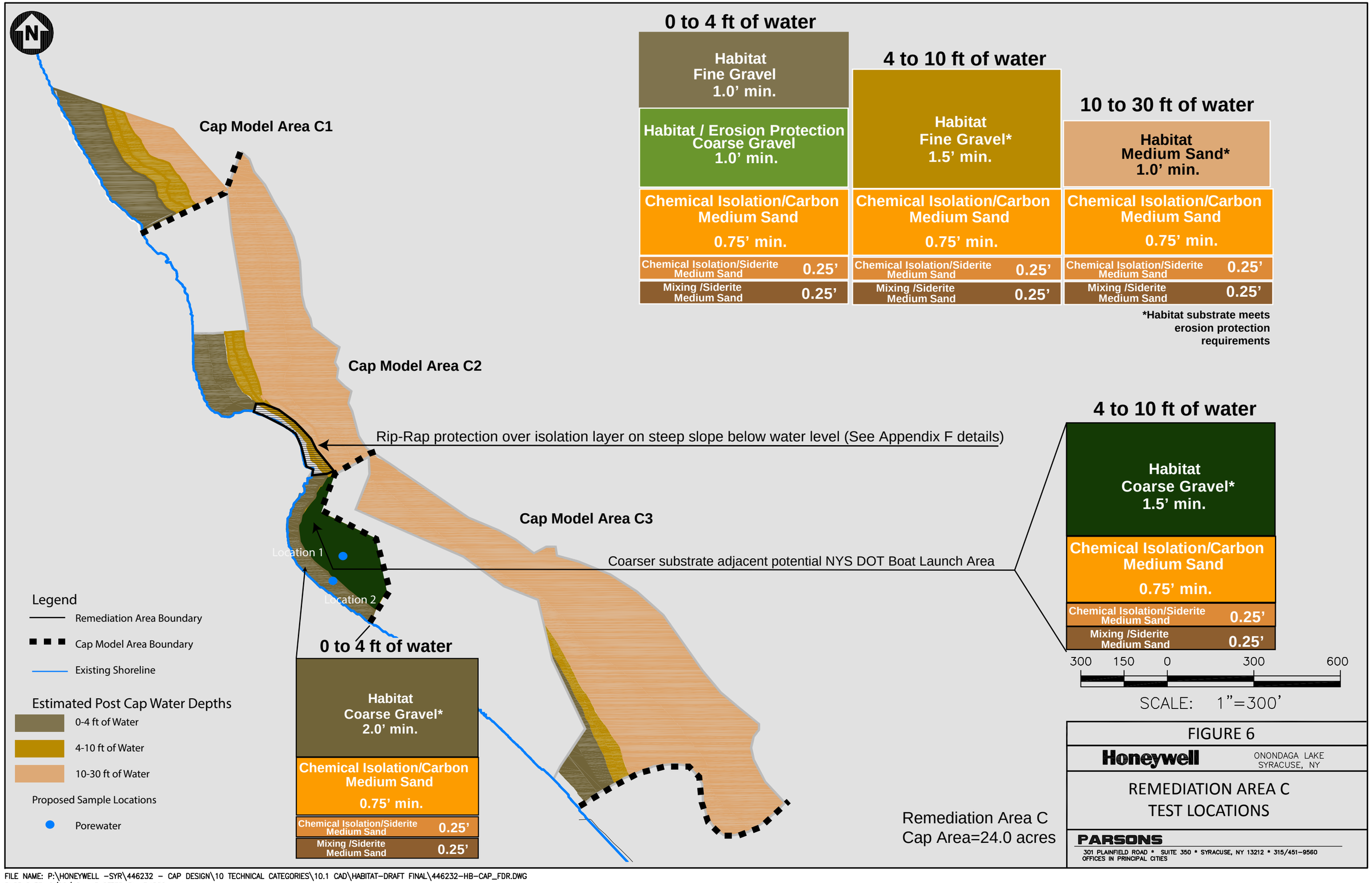

FIGURE 6

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REMEDIATION AREA C
TEST LOCATIONS

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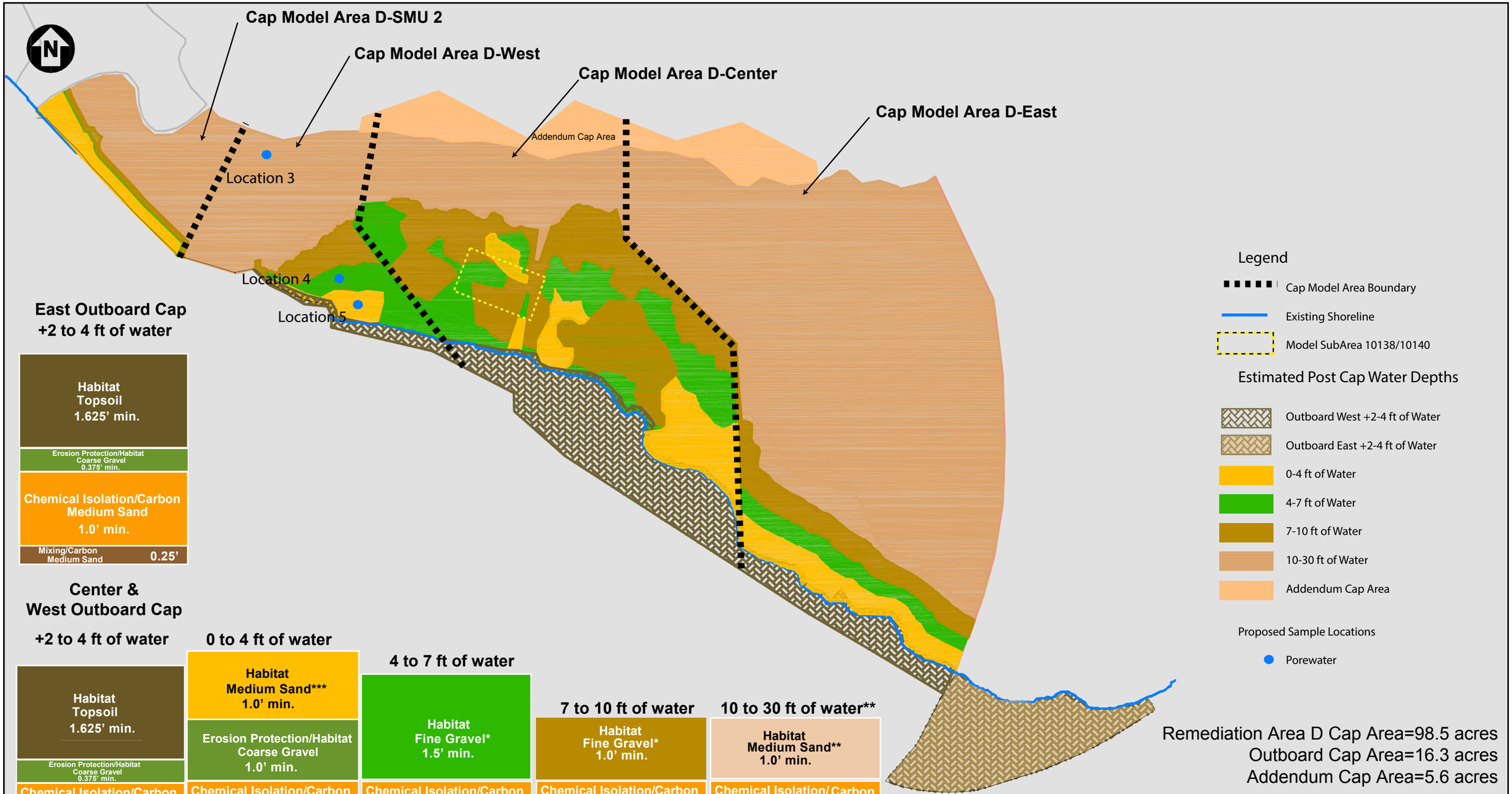
p:\HONEYWELL-SYR\09\9.3\WORKLING DRAFT\FIGURES\FIGURE 6 REM C.AI



Remediation Area D Cap Area=98.5 acres
Outboard Cap Area=16.3 acres
Addendum Cap Area=5.6 acres

FIGURE 7

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ONONDAGA LAKE
SYRACUSE, NY

REMEDIATION AREA D
TEST LOCATIONS

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FIGURE 8

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ONONDAGA LAKE
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MODIFIED PEEPER PROTECTIVE SCREEN

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P:\Honeywell -SYR\446232 - Cap Design\09 Reports\9.3 Final Design Report\Working Draft\Figures\Section 4\FIGURE 8 PEEPER.AI