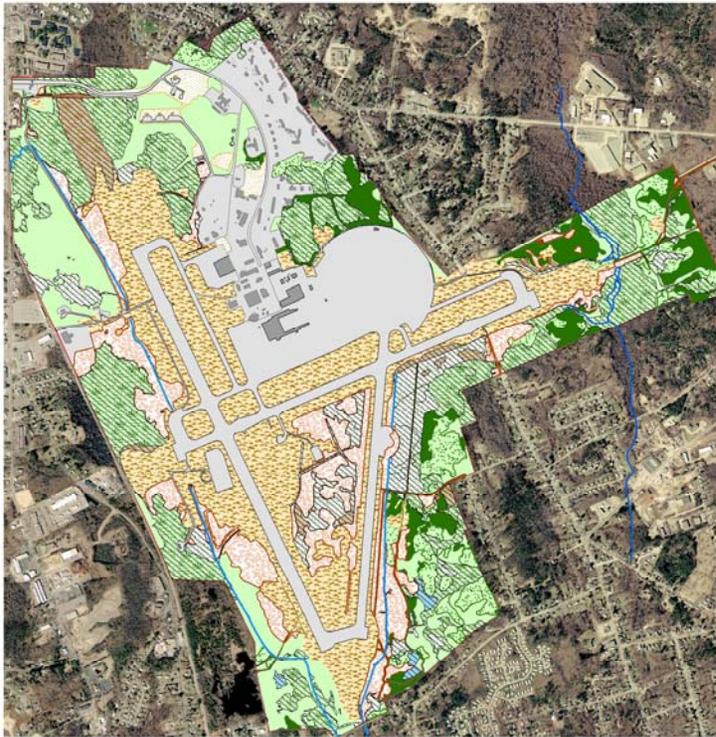


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# Basewide Assessment Update NAS South Weymouth Restoration Advisory Board Meeting August 11, 2005

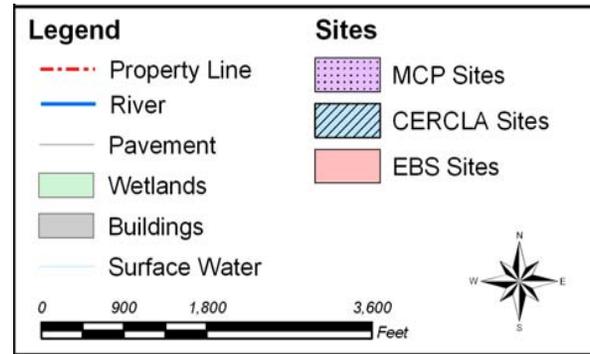
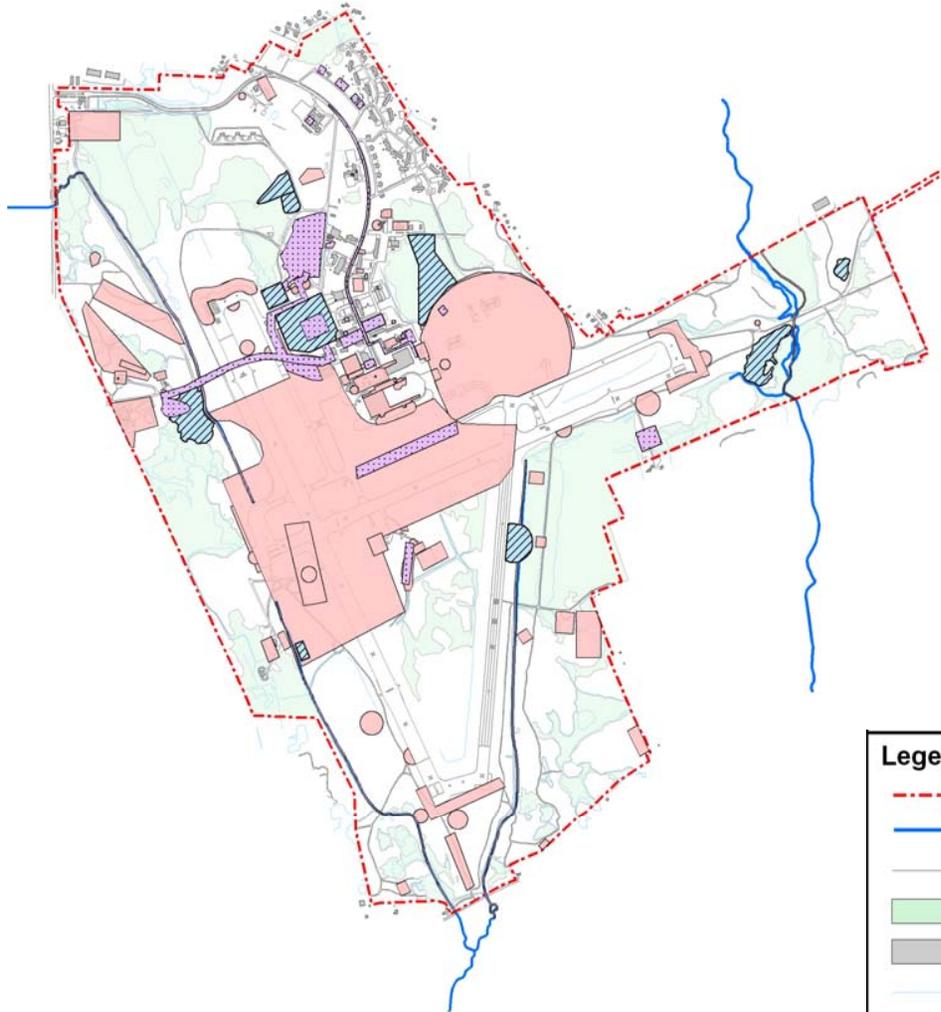


# Objective

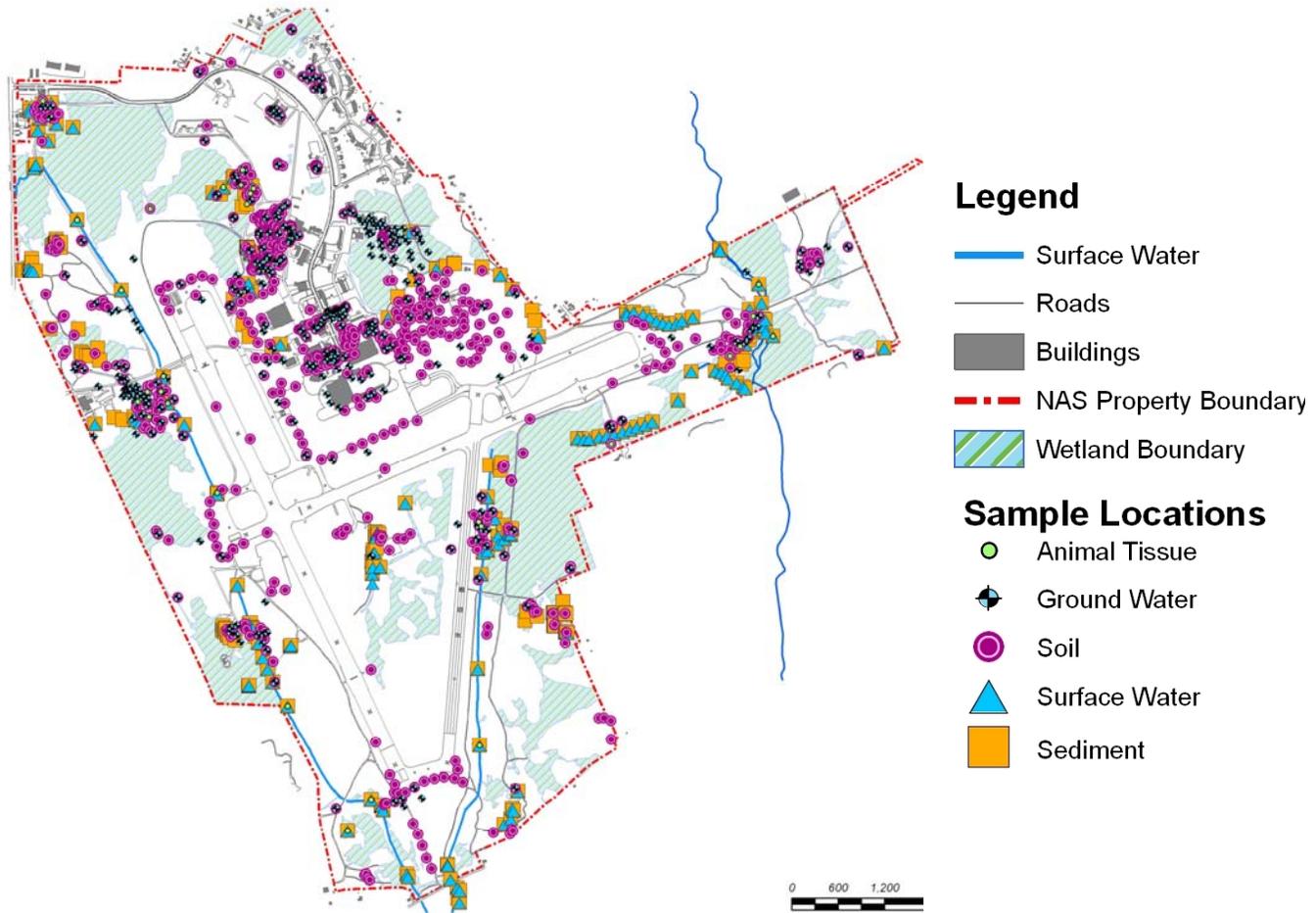
- Update the RAB on the progress of the Navy's Basewide Assessment, which will consider the following elements:
  - ❖ Hydrogeological Evaluation
  - ❖ Watershed Evaluation
  - ❖ Geochemical Evaluation
  - ❖ Ecological Risk Assessment
- Basewide report to supplement ongoing MCP, CERCLA, and EBS programs



# Environmental Sites at NAS South Weymouth



# Sampling Locations at NAS South Weymouth



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# Data Management and Interpretation

- Substantial data sets exist from variety of environmental programs
  - ❖ CERCLA, MCP, EBS, Coast Guard
- Multiple rounds of sampling and analysis at many locations
  - ❖ 398 groundwater monitoring wells
  - ❖ 167 surface water sampling locations
  - ❖ 272 sediment sampling locations
  - ❖ 1,009 soil sampling locations



# Approach

- Given substantial data synthesis and analysis challenges, an iterative approach with frequent Navy/agency interaction proposed
  - » Compile existing data;
  - » Prepare work plans;
  - » Conduct limited and focused field program;
  - » Compile newly collected data;
  - » Data analysis and interpretation;
  - » Review newly collected data in context of historical data;
  - » Prepare interim deliverables with agency review;
  - » Conduct additional data gap field work, if required;
  - » Complete Basewide Report;
  - » Risk Management/Supplemental Sampling, as required



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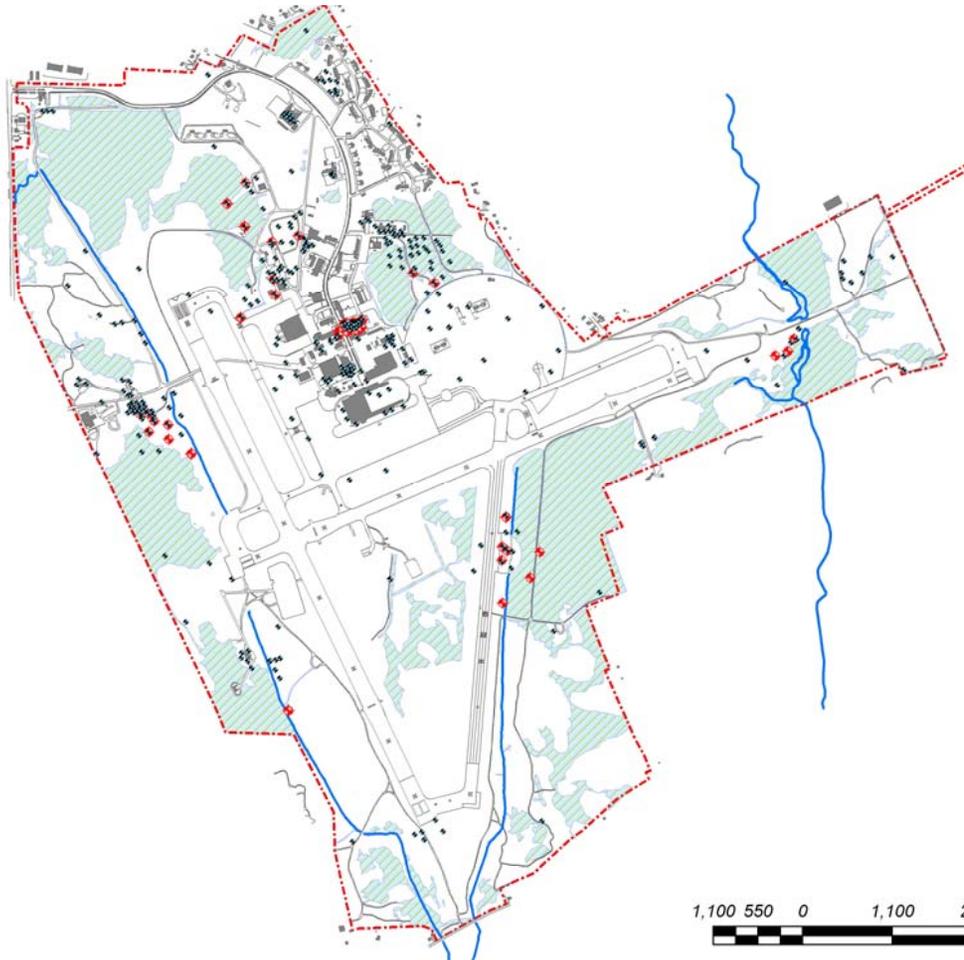
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# Hydrogeological Evaluation

- Designed to provide a broad interpretation of hydrogeological features:
  - ❖ Understanding of basewide groundwater flow through hydrogeologic units, including bedrock and over-burden
  - ❖ Initial phase of work will be conducted using existing information
  - ❖ Includes comprehensive synoptic water level gauging event and additional bedrock characterization
- Data will be used to assist with development of individual conceptual site models for remaining environmental sites



# Monitoring Wells at NAS South Weymouth



## Legend

- Surface Water
- Roads
- - - NAS Property Boundary
- Buildings
- ▨ Wetland Boundary

## Well Locations

- ⊕ Shallow
- ⊕ Deep



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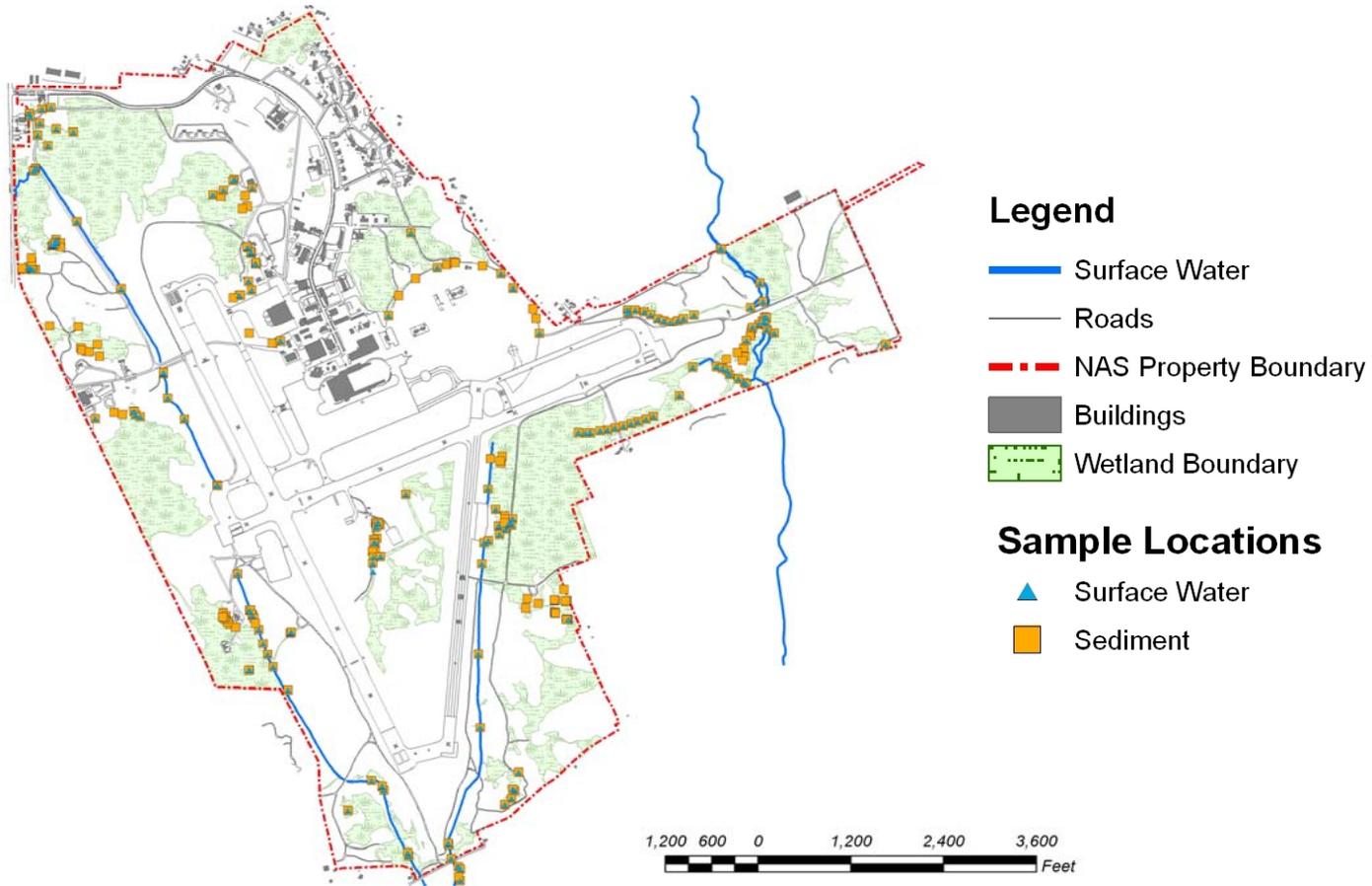
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# Watershed Evaluation

- Will focus on the 2 major watersheds:
  - ❖ French Stream (EBS Study Area 62); and
  - ❖ Old Swamp River (EBS Study Area 104)
- Evaluation of potential risks to human health and the environment from exposure to surface water and sediment
  - ❖ Primarily relying on existing data
  - ❖ Screening level human health evaluation
  - ❖ Weight-of-Evidence aquatic and benthic receptor evaluation



# Surface Water and Sediment Sampling Locations



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# Geochemical Evaluation

- Primary focus on orange “floc”, which has been observed in French Stream and its tributaries
  - ❖ Considerable public/agency attention
- Working hypothesis is that “floc” is related to iron-rich groundwater being discharged to surface water bodies
  - ❖ May be associated with environmental activities
  - ❖ May be associated with historically filled wetlands
- May be naturally occurring (i.e., area was an “iron bog”)



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# Geochemical Evaluation – Orange Floc

- What is the composition of the floc?
- What is the source of the constituents in the floc?
- What causes the floc to form in French Stream?
- What is the potential ecological impact associated with exposure to the floc?



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# Higher Trophic Level Risk Evaluation

- Will assess potential risks to vertebrate wildlife with large home ranges
  - ❖ Focus on carnivores and omnivores
  - ❖ Food chain uptake
    - » Considerable tissue residue data from base available
  - ❖ Persistent, bioaccumulative, and toxic chemicals
- Will rely on existing chemistry and biology data
- May involve complex modeling effort, depending upon initial findings



# Basewide Food Chain Evaluation



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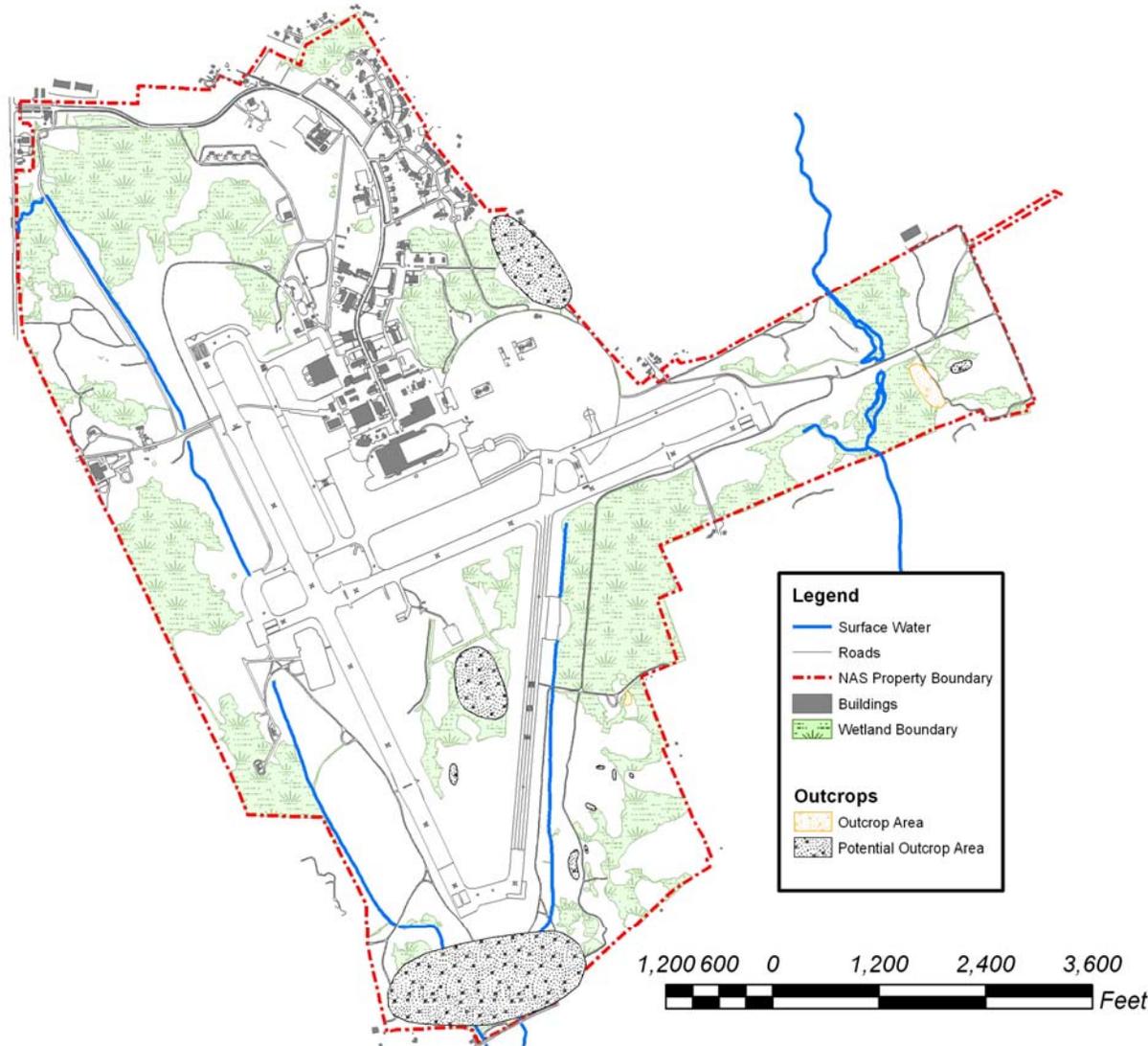
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# Focused Field Program

- Field program to be initiated in Fall 2005
  - ❖ Bedrock mapping
  - ❖ Water level measurements from 150+ wells
  - ❖ Installation of 12 piezometers and staff gauges
  - ❖ French Stream monitoring
    - » Primarily focused on evaluating potential source(s) and composition of orange floc
    - » Mapping and sampling
    - » Groundwater/surface water interactions
    - » Seasonal changes



# Bedrock Fracture Mapping



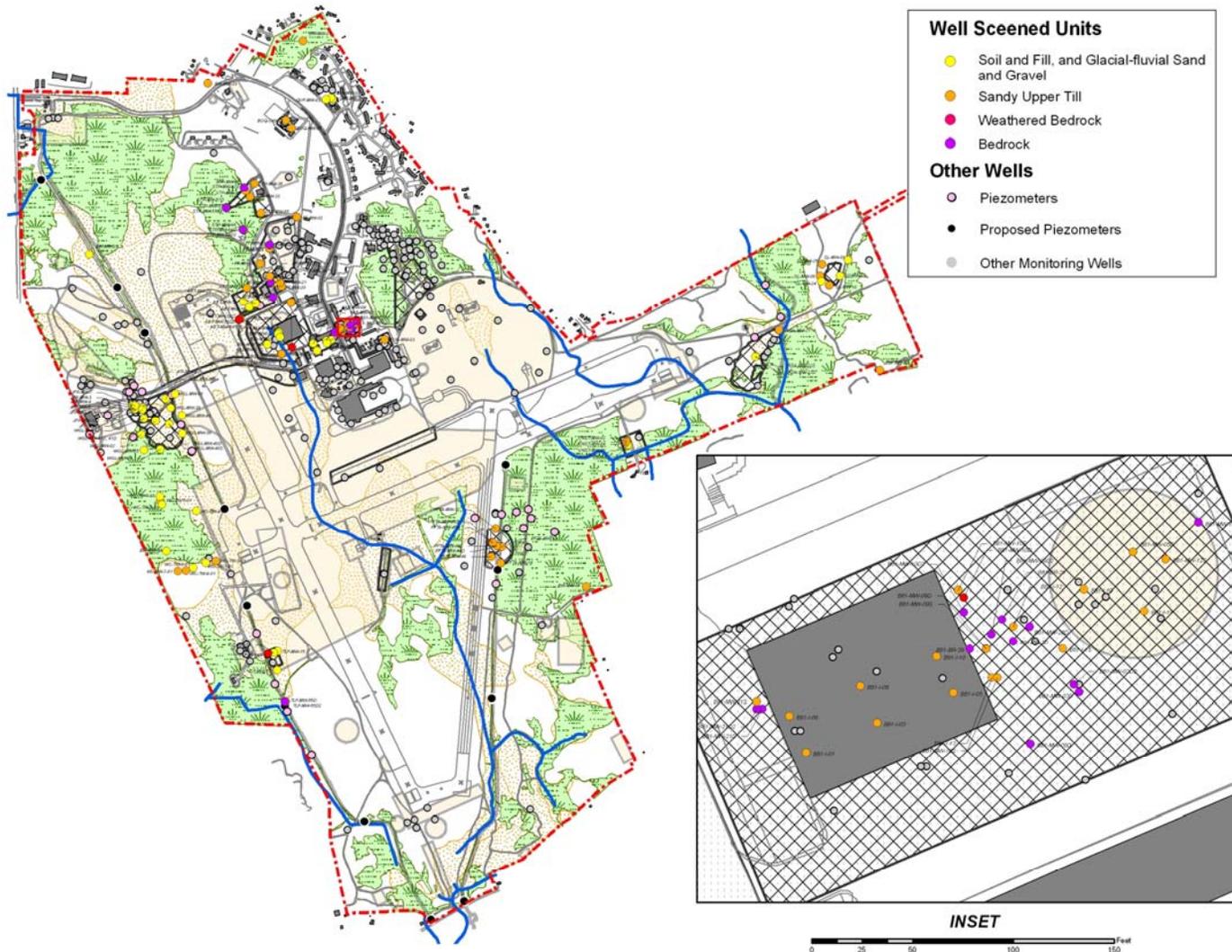
# Existing and Proposed Piezometers



Legend		Sample Locations	
	NAS Property Boundary		Proposed Piezometers (shallow / deep couplets) - locations may change based on reconnaissance of French Stream
	Roads		Existing Piezometers
	French Stream	<b>Environmental Sites</b>	
	Buildings		MCP Sites
	Current Wetland Boundary		CERCLA Sites
	Approximate Extent of Wetlands Filled during Base Construction (Digitized from 1941 USGS Topographic Map)		EBS Sites



# Water Level Measurements



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# Summary

- Basewide work to focus on French Stream and Old Swamp River
  - ❖ Hydrogeologic, Watershed, Geochemical, and Ecological Risk evaluations to be considered
  - ❖ Orange “floc” recognized as a community concern -- hence focus in the Basewide Work plan
- Draft Final Work Plan in agency review
- Focused field program to be initiated in Fall 2005
- Iterative sampling, analysis, and data interpretation approach agreed to by all parties

